

TAXING POLLUTION: A COMPARISON BETWEEN SOUTH AFRICA, THE UNITED KINGDOM, AUSTRALIA AND MALAYSIA

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	IV
ABSTRACT	V
OPSOMMING	VI
CHAPTER ONE: INTRODUCTION AND STATEMENT OF PROBLEM	1
1.1 INTRODUCTION	1
1.2 DEFINING THE PROBLEM	2
1.3 RESEARCH OBJECTIVES.....	2
1.4 IMPORTANCE OF THE QUESTION BEING ASKED	3
1.5 RESEARCH DESIGN.....	3
1.6 SAMPLING.....	4
1.7 DATA COLLECTION	5
1.8 DATA ANALYSIS	6
CHAPTER TWO: POLLUTION TAX LEGISLATION IN MALAYSIA, AUSTRALIA AND THE UNITED KINGDOM	7
2.1 INTRODUCTION	7
2.2 MALAYSIA - ACCELERATED CAPITAL ALLOWANCES.....	7
2.3 MALAYSIA - PIONEER STATUS.....	8
2.4 MALAYSIA - DEDUCTABLE DONATIONS	11
2.5 AUSTRALIA - DEDUCTIBILITY OF ANTI-POLLUTION EXPENDITURE.....	11
2.6 AUSTRALIA - DEDUCTABLE DONATIONS.....	14
2.7 THE UNITED KINGDOM - CAPITAL ALLOWANCES.....	14
2.8 THE UNITED KINGDOM - VAT AND EXCISE DUTIES.....	17
2.9 THE UNITED KINGDOM - OTHER ANTI-POLLUTION LEGISLATION.....	17
2.10 CONCLUSION	18
CHAPTER THREE: SOUTH AFRICAN ENVIRONMENTAL TAX LEGISLATION.....	19
3.1 INTRODUCTION	19
3.2 THE INCOME TAX ACT - SECTION 37B	19
3.3 THE INCOME TAX ACT - OTHER SECTIONS IN THE INCOME TAX ACT	22
3.4 CUSTOMS AND EXCISE DUTIES	23
3.5 CASE LAW.....	24
3.6 CONCLUSION	25
CHAPTER FOUR: COMPARISON AND ANALYSIS OF TAX LEGISLATION	26
4.1 INTRODUCTION	26
4.2 CAPITAL ALLOWANCES	26
4.3 COMPARISON AND ANALYSIS - OTHER INCOME TAX DEDUCTIONS	28
4.4 INDIRECT TAXES.....	30
4.5 CONCLUSION	31
CHAPTER FIVE: POLLUTION TAX POLICIES AND FUTURE STRATEGIES	32
5.1 INTRODUCTION	32
5.2 SOUTH AFRICA	33
5.3 MALAYSIA	37
5.4 AUSTRALIA.....	41
5.5 THE UNITED KINGDOM.....	42
5.6 CONCLUSION	45
CHAPTER SIX: COMPARATIVE STATISTICS	48
6.1 INTRODUCTION	48
6.2 FUEL TAXES	48
6.3 EMISSION GRAPHS AND DATA.....	51
6.4 SOUTH AFRICA - POLLUTION TAX INCOME AND EXPENDITURE AND EMISSION trends	57
6.5 MALASIA, AUSTRALIA AND UK ENVIRONMENTAL POLICIES.....	60
6.6 SUMMARY	64



CHAPTER SEVEN: SURVEY RESULTS	66
7.1 INTRODUCTION	66
7.2 SOUTH AFRICA	66
7.3 OPINIONS IN THE UNITED KINGDOM, MALAYSIA AND AUSTRALIA	76
7.4 CONCLUSION	78
CHAPTER EIGHT: CONCLUSION.....	79
8.1 INTRODUCTION	79
8.2 TAX LEGISLATION AND POLICIES	79
8.3 STATISTICS AND OPINIONS	80
8.4 OVERALL CONCLUSION	81
REFERENCES	84

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ABSTRACT

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The research covers the taxation and other economic methods employed by the governments of South Africa, Malaysia, Australia and The UK to address the problem of rising pollution, with specific attention to carbon emissions.

All four countries provide income tax deductions for environmental expenditure and investments; however South Africa is the only country that does not yet provide income tax allowances for renewable energy technology. In contrast, only the UK has applied a variety of indirect taxes for the purpose of reducing pollution. Even so, if a person considers the emission statistics in comparison to all the taxes, one cannot say for certain that these taxes and incentives have made any significant impact on carbon dioxide (CO₂) emissions thus far. Nevertheless, the tax initiatives displayed does show promise and the taxes also produce additional revenue for governments. However, a significant finding is that there is a strong correlation between the movements in fuel taxes and the movement in total CO₂ emission figures over the past two decades. Moreover, vehicles are considered to be the highest source of CO₂ emissions, thus it seems that fuel taxes have made a real impact on the amounts of CO₂ emitted.

Even so, the issue remains that governments may sway from strict pollution taxation regimes as soon as they are perceived to bear negative economic consequences regardless of the impact on the environment, unless there are clearly quantified targets for the country as well as negative consequences for the government if the country does not reach those targets.

OPSOMMING

BELASTING OP BESOEDELING: 'N VERGELYKING TUSSEN SUID AFRIKA, DIE VERENIGDE KONINGKRYK, AUSTRALIË EN MALEISIË

deur

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Die navorsing handel oor belasting en ander ekonomiese metodes wat die regerings van Suid Afrika, Maleisië, Australië en die Verenigde Koninkryk ('VK') onderskeidelik aanwend om die probleem van stygende vlakke van besoedeling, en veral koolstofuitlaatgasse aan te spreek.

All vier die lande se inkomstebelastingwetgewing maak voorsiening vir belastingaftrekkings ten opsigte van besteding wat verband hou met omgewings bewaring en bestryding van besoedeling asook aansporings ten opsigte van die investering in omgewingsbewaring en die bestryding van besoedeling. Dis is egter slegs Suid Afrika wat tot op die hede, geen aftrekkings bied vir investering in hernubare energiebronne nie. In kontras hiermee, is dit slegs die VK wat verskeie indirekte belastings aanwend om besoedeling te verminder.

As 'n persoon die besoedelings statistieke in aanmerking neem, kan 'n persoon nie met sekerheid se of alle belasting heffings en aansporings tot dus ver enige definitiewe effek op koolstofsuiwgas (CO₂) gehad het nie. 'n Beduidende bevinding wat egter gemaak is, is dat daar 'n sterk positiewe korrelasie is tussen die beweging in belasting heffings op brandstof en die hoeveelheid CO₂ uitlatings, vir die afgelope twee dekades. Daarbenewens word motors geag om die grootse bron van CO₂ besoedeling te wees, dus dui hierdie statistieke daarop dat belasting heffings op brandstof 'n daadwerklike impak maak op die CO₂ uitlatings.

Dit wil egter voorkom dat regerings geneig is om af te wend van streng besoedelings belastingmaatreels sodra 'n regering van mening is dat so 'n belasting 'n negatiewe impak

op die ekonomie het, tensy die regering onderworpe is aan duidelik gekwantifiseerde teikens en daar strafmaatstawwe is indien `n land nie die teikens bereik nie.

CHAPTER ONE

INTRODUCTION AND STATEMENT OF PROBLEM

1.1 INTRODUCTION

The most recent summary report of the Intergovernmental Panel on Climate Change (a body of about 4 000 experts), revealed that the rate of global warming and sea level rise has accelerated over the last 100 years. The panel stated that they are 90 percent certain that this is directly related to human activities (Dada, 2007:2).

With this in mind, governments around the world have resorted to tax as a means of saving the environment and creating sustainability in the utilisation of its natural resources.

The purpose of this study will be to compare the ways in which South Africa, the United Kingdom, Australia and Malaysia's revenue authorities attempt to both penalise behaviour that has a negative impact on the environment and reward behaviour that has a positive impact on the environment, by utilising taxes.

The reasons for selecting these particular countries are:

The United Kingdom:

- South Africa's tax law is derived from the English tax law;
- the UK is one of the most active countries in taxing pollution.

Malaysia:

- Malaysia, like South Africa, is a developing country and its economy is similar to that of South Africa. Both countries have a gross annual income per capita of \$ 4 960 and South Africa and Malaysia were ranked 29th and 25th respectively of the 175 countries on the World Bank's 'Ease Of Doing Business' ratings for 2006 (World Bank, 2008:3); and
- being an Eastern Asian country, culturally different from the western world, some insight may be gained on the general taxing philosophies upheld by such countries.

Australia:

- is geographically similar to South Africa in terms of average rainfall and temperatures;
- like South Africa, Australia is rich in coal deposits which are mined and burned to produce electricity, to the detriment of the environment;
- Australia has been one of the most reluctant countries worldwide to implement environmental stewardship measures.

1.2 DEFINING THE PROBLEM

Adam Smith (1776:42) stated that taxes should be fair, certain, convenient and efficient. However, unlike normal taxes, the primary goal of pollution tax is not to produce income for the fiscus but to prevent the destruction of our planet, or is it? The question is: To what extent can pollution tax be applied to alter the behaviour of people and what is the desired effect that pollution tax should have in a country?

The problem then lies in finding ways of applying pollution taxes and incentive schemes so that it will do what it is supposed to do, which is to prevent pollution. Such taxes and incentives ought to preserve and improve the environment, without placing an undue burden on the economy of the country; ideally while at the same time stimulating economic growth.

Effectively defining the parameters in which pollution tax should operate seems to be a tricky affair: *“The tax system should be rational and progressive, coherent and consistent. It should give clear signals. But environmental tax proposals frequently fail one or more of those tests, trapped between the goal of raising revenue and the achievement of environmental objectives. As a result, they usually succeed only in being sub-optimal on both counts and looking dishonest from a policy perspective”* (Wales, 2007:12).

1.3 RESEARCH OBJECTIVES

The main objectives will be to obtain a good overall understanding of the current status of pollution tax in South Africa, to compare the South African pollution tax regime to those of

the other countries selected in the study and then to draw on the results of the comparison to obtain an understanding of the impact of environmental taxes. Once such an understanding is reached the aim will be to determine the best ways to implement and administer pollution taxes and incentive schemes in South Africa.

1.4 IMPORTANCE OF THE QUESTION BEING ASKED

Joanne Yawitch (2007:1), convenor of national government's climate change committee had this to say: "*Climate change is a serious matter for the Government. It is a priority on the highest level*". The question is not whether or not local government should intervene, but how?

The need for a clear understanding of how government is to implement a pollution tax strategy is concisely illustrated in the following quote: "*The politics of green taxation is a question of how to design tax schemes, rather than a question of whether or not to use such instruments in environmental regulation...even very similar governments have introduced very different tax schemes,*" - (Daugberg & Svendsen, 2001:81).

1.5 RESEARCH DESIGN

A quantitative research approach is best suited to answer the research question, in which the aim will be to establish the relationship between pollution and pollution taxes in each country. However, some form of qualitative research will also need to be undertaken to establish the nature of the taxes in the respective countries, which in essence means a case study of the specific country's pollution tax policies will be carried out.

In terms of quantitative research the following tests will be done:

- Cross sectional and inferential statistical data will be gathered on revenue derived from pollution taxes and pollution levels in each of the respective countries; and
- Two separate opinion polls will be conducted in South Africa; the first to obtain an idea of the general public's opinions on pollution and tax; the second to obtain an idea of tax specialists' opinions on pollution and tax. The results will be compared against the results of pollution surveys conducted in the other three countries.

1.6 SAMPLING

1.6.1 Target population

For opinion poll number one, the target population will be all South African citizens that can understand both the concepts of pollution and tax.

Since the population must be able to understand both the concepts of pollution and tax, the population will not be representative of the South African public at large, but will be redefined to exclude people younger than 18 and people that are mentally handicapped or illiterate. For the purposes of this study the population will be defined as the “South African adjusted adult population”.

The aim is to find an understanding of whether South Africans feel that there is a need to introduce more elaborate pollution taxes, what perceptions they have regarding the subject and how much they would be willing to pay, proportional to their income, to secure a comfortable future.

For opinion poll number two, the target population will be South African “tax practitioners” and “tax professionals”. The term “tax practitioners” is to be defined as those people who work with tax on a regular basis in their profession. “Tax professionals” is to be defined as those people who have a post graduate qualification with tax as one of their major subjects, which are not already included in the definition “tax practitioner”.

The questions in the poll will be directed in such a way as to determine the tax practitioners’ views on pollution tax legislation.

1.6.2 Sampling method

Sample one, the Adjusted South African adult population:

Due to limitations in resources, the quota sampling method will be used to adjust, to some extent, for sample participants’ availability. Nonetheless, a sample that is not fully representative of the demographics in the nine provinces should not have a material influence on the reliability of the outcome of the opinion poll.

Sample two, tax practitioners and tax professionals:

The convenience sampling method will be used since the population is, in principal, homogenous in nature and thus should not affect the reliability of the opinion poll.

1.6.3 Sample size

The guidelines that will be used in selecting sample size are those of Gay and Airasian as referred to in Practical Research (Leedy, 2005:207). It is proposed that for all populations of 5 000 or more, at least 400 representatives should be sampled. If the population is greater than 1 500 but less than 5 000, a sample size of 20% is suggested.

Sample 1: Statistics South Africa's latest projections show that there are more than 27 600 000 people in South Africa older than 20; therefore, requiring a sample size of at least 400. This will be the minimum amount of questionnaires to be completed. All legitimately completed questionnaires will be taken into account, and a wide variety of participants will be sourced.

Sample 2: For the population of tax practitioners and tax professionals, a sample size of 50 will be drawn. This amount is less than the suggested sample size for the population, as it can be assumed that there are more than 1 500 'tax practitioners' in South Africa. However, the limited resources with which this study is conducted means that a minimum of 50 participants will be considered sufficient to obtain an understanding of tax practitioner's opinions on the topic.

1.7 DATA COLLECTION

1.7.1 Survey method

The questionnaires will be published on an internet site (www.pollutiontaxgrants.co.za). Before completion of the questionnaire the participant will first be required to indicate whether or not he or she works with tax on a regular basis, which in turn will prompt either survey one or two. The site will be advertised on radio stations that provide free advertising services for non-profit purposes, through word-of-mouth and by e-mailing the website link to various mailing lists.

1.7.2 Measurement

To measure the results of the opinion poll, a combination of a rating scale and a checklist will be used. The rating scale will give the participant five options ranging from one as the most negative to five being the most positive, with three being neutral

1.7.3 Pre-testing

The draft questionnaires will firstly be given to an independent third party with questionnaire design knowledge who will be asked to comment on the layout and language regarding the following:

- ambiguous items;
- “double-barrelled” questions;
- item order;
- fictitious constructs and assumptions;
- leading questions;
- length of questionnaire, questions and instructions; and
- sensitive questions.

Thereafter, the questionnaire will be given randomly to 25 people to complete. An additional section will be incorporated to allow for comment on the questionnaire.

1.8 DATA ANALYSIS

Statistical data on pollution and revenue will be scrutinised for trends and correlations in tax revenues and pollution outputs in the respective countries Results from studies conducted in the other three countries will also be analysed.

CHAPTER TWO

POLLUTION TAX LEGISLATION IN MALAYSIA, AUSTRALIA AND THE UNITED KINGDOM

2.1 INTRODUCTION

This chapter will explore environmental taxes and incentives relating to Malaysia, Australia and the United Kingdom respectively by investigating the details of the taxation legislature established to penalise pollution or incentivise pollution reduction.

2.2 MALAYSIA - ACCELERATED CAPITAL ALLOWANCES

The first anti-pollution tax incentives were introduced in 1997, when accelerated allowances for pollution-reducing equipment were established. The allowances were put into effect by inserting a schedule of rules into the “Malaysian Income Tax Act 53 of 1967” (hereafter referred to as the “Malaysian Tax Act”). Subsequently, all the accelerated allowances for environmentally-related equipment have been introduced by adding to this schedule of rules, rather than by incorporating the allowances into the Malaysian Tax Act.

While the classifications of the types of companies qualifying for the capital allowances have broadened annually up to the latest amendments in 2005, a secondary and even more generous initiative was introduced in 2005 by means of the Promotion of Investments Act of 1986, which will be discussed later in this chapter.

According to the latest revised rules falling under Schedule 3 of the Malaysian Tax Act, a taxpayer will receive an initial allowance of 40% of the costs of the pollution-reducing asset as well as an annual allowance of 20% per year. The initial allowance and the annual allowance can both be claimed in the first year of assessment in which the asset is brought into use. In effect, this means that the taxpayer will obtain a deduction of 60% of the cost of the asset in the first year of assessment and 20% in each of the following two years of assessment.

Taxpayers qualifying for the accelerated allowance are those who utilise any of the following assets directly or indirectly in their business:

- plant and machinery for recycling waste or for further processing of wastes into finished products;
- plant and machinery for environmental control or protection (for example, emission-reducing filters in chimneys);
- buses using natural gas; and
- equipment for gas refuelling at natural gas outlets.

Malaysian taxpayers are also permitted to deduct 100% of the cost of:

- plant and machinery used exclusively for conservation of energy;
- plant and machinery used to generate energy from renewable resources for own consumption.

2.3 MALAYSIA - PIONEER STATUS

Under the Promotions of Investments Act, 1986 (“PIA”), an incentive scheme entitled “Pioneer Status” was introduced in 2005. This incentive scheme upholds even greater tax incentives for environmentally-friendly investments than those contained within the schedules for the Malaysian Tax Act. In terms of this scheme, certain companies fulfilling the qualifying criteria become eligible to apply for “Pioneer Status”, thereby getting retrospective and future tax exemptions or accelerated capital allowances on specified environmental activities and assets.

Companies involved with any the following:

- undertaking waste recycling activities;
- energy conservation services (including for own consumption); or
- generation of renewable energy (including for own consumption);

can apply for pioneer status by submitting a specified form to the Malaysian Industrial Development Authority. All applications must be submitted before 31 December 2010.

The benefits for companies concerned with each of the undertakings as listed above will now be discussed individually.

2.3.1 Waste recycling activities

As from 1 January 2001, companies undertaking waste recycling activities using “high technology” (defined as new and emerging technologies related to recycling activities) in the following areas:

- recycling of agricultural waste or agricultural by-products;
- recycling of chemicals; and
- recycling of reconstituted wood-based panel board or products;

are eligible for the following benefits, of which the company may elect only one:

- option one, an income tax exemption for 70% of its statutory income for a period of five years; or
- option two, a wear-and-tear allowance of 60% of the cost of those assets to be offset against 70% of statutory income for a period of five years.

These options are enacted with retrospective effect from 1 January 2001 as stated above, which means that any previously finalised assessments of those companies that have successfully applied for the pioneer status will be re-opened and revised accordingly.

Where the taxpayer elects option one, any accumulated losses and unabsorbed capital allowances incurred during the pioneer period will be carried forward when the pioneer period (of five years) expires, to be deducted against post-pioneer income relating to the same promoted activity or promoted product. In the same way, if a taxpayer elects option two, any unutilised allowances can be carried forward to subsequent years until the whole amount has been fully utilised.

2.3.2 Energy consumption activities

As far as energy consumption activities are concerned, companies can be divided into two categories:

- companies providing energy conservation services; and
- companies that incur capital expenditure for conserving energy for own consumption.

The first category of companies (providing energy conservation services) can opt for the same benefits as those listed for companies involved in “Waste Recycling Activities”. In addition, they are also granted exemption from sales tax and import duty on equipment used in the projects.

The second class of companies can only elect option one as described under “Waste Recycling Activities”.

As with companies involved in Waste Recycling Activities, companies qualifying under this heading can also utilise any losses and capital allowances occurring as a result of the pioneer status subsequent to the expiry of the period, if those allowances were not fully utilised within the prescribed period.

2.3.3 Generation of renewable energy (including for own consumption)

For the period 28 October 2000 to 31 December 2005, companies generating renewable energy from the following sources:

- palm oil mill / estates waste;
- rice mill waste;
- sugar cane mill waste;
- timber / sawmill waste;
- paper recycling mill waste;
- municipal waste; and
- biogas (such as from a landfill, palm oil mill effluent, animal waste);

will qualify for the same benefits as the companies utilising assets for recycling or energy consumption reduction as mentioned above. Qualifying companies will, in addition, become eligible for further exemption or allowances for a second five-year period.

Companies electing option one are granted an income tax exemption, increased to 100% of statutory income derived from the generation of renewable energy for another five years. Companies electing option two will receive an additional increased income tax allowance of 100% on the qualifying capital expenditure for the second five-year period to offset against 100% of its statutory income.

As with companies involved in Energy Conservation Activities, companies qualifying under this heading are also granted exemption from sales tax and import duty on equipment used in the projects, as well as being able to carry forward any unabsorbed losses and allowances.

2.4 MALAYSIA - DEDUCTABLE DONATIONS

Section 44 of the Malaysian Tax Act allows a taxpayer the following deduction:

“(6)..., an amount equal to any gift of money made by him ... for that year to an organisation established exclusively for the conservation or protection of the environment;”

Where the person is a company, the deductions shall not exceed five percent of the aggregate income of the company. A “person” is defined in section one of the Malaysian Tax Act as any natural or incorporeal person including specifically a company, a body of persons and a “corporation sole”. The income of organisations as described in subsection 6 of section 44 will be exempt from tax, regardless of whether such persons have a profit-making objective or not. Such entities may however not distribute any profits to their members, beneficiaries or shareholders.

2.5 AUSTRALIA - DEDUCTIBILITY OF ANTI-POLLUTION EXPENDITURE

2.5.1 Capital allowances and income deductions

In 1992, the Australian tax legislators first introduced deductions for “Environment Protection Expenditure” in the Australian Income Tax Assessment Act 1963. In the current form of the Australian Income Tax Assessment Act 1997 (“ITAA 1997”), the environmental tax provisions can be found under section 40-755. This is essentially an all-encompassing section for matters concerning deductions for expenditure incurred for the sole or dominant purpose of carrying out environmental protection activities.

Subsection 2 of section 40-755 goes on to define environmental protection activities as any activities carried on, by or for the taxpayer:

- preventing, fighting or remedying; or

- treating, removing or storing;
 - pollution resulting, or that is likely to result, from his “earning activity”; or
 - pollution of or from the site of his “earning activity”; or
 - pollution of or from a site where an entity was carrying on any business that a person has acquired and will carry on substantially unchanged as that person’s “earning activity”;

No other activities will qualify as environmental protection activities. It is also stipulated that no deduction will be afforded for any activity concerned with environmental impact assessment under this section. Nevertheless, any equipment used for environmental impact assessments can depreciate over a period of 10 years, as stated under section 40-100.

The full amount of any qualifying expenditure laid out is deductible in the year it in which it was incurred, regardless of whether it was incurred on capital or revenue account, or whether it was incurred before trading activities commenced, during the course of trading or after trading activities have ceased. However, any environmental expenditure incurred relating to land, buildings and plant may not be deducted in terms of this section. Where expenditure is incurred in connection with plant or equipment, an allowance can be claimed over the shorter of the period of the project or five years. The cost of buildings erected and earthworks carried out exclusively or mainly for the purpose of environmental protection activities can be deducted over the shorter of the period of the project or ten years. However, when such trading activities result in a capital gain, the taxpayer will not be allowed to deduct the expenses related to environmental protection activities.

“Earning activities” referred to in this section include (as well as the normal activities that produce income for any taxpayer) the activities of exploration or prospecting and mining site rehabilitation. The explanatory memorandum issued on the section explains that, when the activities of the taxpayer involve the leasing or granting of rights to use land owned by a taxpayer, the taxpayer can still deduct expenditure incurred in environmental protection activities relating to the site, even if the pollution or waste has been caused by another entity that uses the site (Australian Commissioner of Taxation. 2002b).

“Pollution” is not defined in the Australian Tax Act but it has been stated in several rulings that the word “pollution” should be attributed its ordinary meaning, which includes air, water, sound and other types of pollution. However, it excludes “visual pollution”, being, areas which are unsightly but hold no danger for any biological life forms.

2.5.2 Rulings

There have been several cases in which Australian taxpayers have applied to the Australian Revenue Authority to deliver binding rulings on the deductibility of amounts under section 40-755 of the ITAA 1997. These rulings not only show how the section should be interpreted but also set a precedent that the Australian Tax Authority has to follow. The following examples show the Australian Revenue authority’s exceptionally conservative and literal application of the letter of the law, which leaves no margin for interpretation of the legislators’ intention or the spirit of the act.

In Australian Tax Office (“ATO”) Ruling 2008/43 (Australian Commissioner of Taxation, 2008) a taxpayer incurred expenses for constructing a septic tank system on a property it was leasing out. However, as the taxpayer had acquired the land “with the intention of repairing and improving it so that it would be suitable for rent”, he installed a septic tank system as part of these repairs and improvements. It was held that no deduction for this expenditure would be allowed, for the reason that only expenditure incurred for the sole or dominant purpose of carrying on an eligible environmental activity is deductible under section 40-755. It is imperative that expenses be directed primarily to environmental protection, so a deduction will not be available if the protection of the environment is only a residual or subsidiary purpose of the taxpayer.

In ATO Ruling 2003/17 (Australian Commissioner of Taxation, 2003) a taxpayer incurred substantial costs in acquiring and propagating vegetation next to a road it had constructed. The taxpayer contended that a significant reason for planting the vegetation was to prevent erosion. However, the ruling was made that erosion does not constitute pollution and, as such, no deduction may be afforded for those expenses under section 40-755.

A judgment was made in ATO Ruling 2004/44 (Australian Commissioner of Taxation, 2004) that expenses incurred for setting up a fund or company for the sole or main

purpose of providing remedial environmental services will not be deductible under section 40 – 755, as the funds are, in fact, not incurred for preventing, fighting or remedying pollution or for treating, cleaning up, removing or storing waste. Only the cost incurred for the activities themselves can be deducted (illustrating the definite direct link required before the expenses can be deducted).

2.6 AUSTRALIA - DEDUCTABLE DONATIONS

In accordance with section 30-5 of the ITAA 1997, a taxpayer may deduct any gift or donation made in money or in kind to any organisation registered under subsection 30-5(5)(E). There is no limit to the amount that may be deducted (barring some anti-avoidance provisions for connected person transactions).

For an organisation to be eligible to register under the above-mentioned section:

- its principal purpose must be protection of the environment;
- it must not pay any of its profits or financial surplus, or give any of its property to its members, beneficiaries, controllers or owners; and
- it must have rules providing that, if the public fund is wound up, any surplus assets of the fund are to be transferred to another fund on the register.

Of the 429 environmental organisations registered in Australia, only 13 are currently listed on the register for section 30-5(5)(E).

2.7 THE UNITED KINGDOM - CAPITAL ALLOWANCES

2.7.1 Plant and equipment

Her Royal Majesty's Income Tax Act 2007 does not contain any references to pollution or environmental allowances, deductions or penalties. Instead, all taxing legislation pertaining to environmental or pollution affairs is contained in various different acts and orders. The first to be discussed is the accelerated capital allowances as contained in the Capital Allowances Act 2001.

In 2001, an “enhanced capital allowance” of 100% of expenditure laid out for “energy-saving plant and equipment” was introduced as an anti-pollution incentive. Subsequently, in 2003, the scope of the enhanced capital allowance incentive was widened to include expenditure on “environmentally beneficial plant or machinery”. These allowances are contained in sections 45A and 45H of the Capital Allowances Act 2001 respectively. Both these sections refer to the criteria lists set out by the Department of the Environment, Transport and the Regions, to determine whether the plant and equipment qualify as energy-saving or environmentally beneficial.

To determine the energy-saving criteria applicable to the technology employed by the taxpayer, the taxpayer must consult the list hosted electronically on the website of the Department of Environment, Transport and the Regions, which contains details of all the qualifying technologies, including, among others, boiler equipment, combined heat and power equipment, lighting and thermal screens. For example, a solar-powered water heater will fall in the category “solar thermal systems”, and, if the person selects the relevant technology on the list, it will show that such a heater must:

*“achieve a minimum instantaneous efficiency of 50% for operating conditions of $T^*m = 0.05$ (i.e. ambient temperature of 20°C, collector temperature 60°C and solar radiation 800W/m²), where T^*m is as defined in BS EN 12975-2:2006.”* (Department of Environment, Transport and Regulations. 2008)

This illustrates the technical nature of the requirements, which an ordinary taxpayer would generally not know. Hence the supplier of the asset would have to be able to assure the person acquiring the assets that it complies with the specified requirements.

Environmentally beneficial plant and equipment can, in turn, be classified into two categories, reduced carbon dioxide (CO₂) emission units and water conservation equipment. Reduced CO₂ emission units relate to vehicles. The Department of Energy sets out the following criteria to qualify for the 100% allowance:

- the vehicle must be "unused and not second hand" and first registered on or after 17 April 2002;
- and be either an electric car, or
- a vehicle with CO₂ emissions of not more than 120gm per km driven.

As with energy-saving equipment, the criteria with which water conservation plant and equipment must comply in order for the persons using the equipment to qualify for any deductions under the Capital Allowances Act are of a highly technical nature. There is a long list of categories into which the asset can fall, such as water-saving taps or toilets, water flow monitoring equipment and rain water recovery systems. For instance, the criteria for a low flow shower head are the following:

“A low flow showerhead is defined as a showerhead that delivers a fully formed spray pattern, with a flow rate of no more than 9 litres/minute when operated at dynamic pressures up to 5 bar (for all spray settings)” (United Kingdom. 2008).

2.7.2 Contaminated land

If a company incurs any expenditure (of a capital or revenue nature) in respect of land acquired for the purposes of a trade carried on by that company, which is “qualifying land remediation expenditure” in respect of the land; and at the time of acquisition the land is in a “contaminated state”, then that company can claim an allowance of 150% of the qualifying land remediation expenditure (schedule 22 to the Capital Allowances Act of 2001) in the year in which the expenses are incurred.

Land in a contaminated state means land that contains substances in, on or under the land that:

- are causing harm or have the potential to cause harm; or
- are polluting water or are likely to pollute water.

Qualifying land remediation expenditure means:

- any cost incurred in respect of employees, materials or sub-contractors which is directly undertaken by the company; for
- “preventing or minimising, or remedying or mitigating the effects of any harm, or any pollution of controlled waters, by reason of which the land is in a contaminated state, or restoring the land or waters to their former state (schedule 22 sub-paragraph 4(3)); and
- which the company would not otherwise have incurred had that land not been contaminated.

2.8 THE UNITED KINGDOM - VAT AND EXCISE DUTIES

2.8.1 VAT penalties and concessions

The standard VAT rate of 17.5% is reduced to 5% on “energy-saving materials”. “Energy-saving materials” consist of building insulations, heating control systems, solar panels and wind and water turbines of whatever nature. There are no further requirements with which such assets must comply before the reduction in the VAT rate can be applied.

2.8.2 Excise duties

An additional excise duty is levied on all vehicles purchased within the UK, based on the amount of CO₂ emissions emitted by the vehicle. The duty on vehicles registered before March 2001 is based on engine size, as emission statistics for such vehicles are not available. The duty on vehicles registered after March 2001 is levied according to a sliding scale based on the CO₂ emission in grams per kilometre travelled. The duty ranges from £0 for cars producing less than 100g of CO₂ per km to £400 for vehicles producing more than 226g of CO₂ per km. The duty is reduced by between £15 and £20 (depending on the emissions bracket within which the vehicle falls) if the vehicle uses an alternative fuel.

2.9 THE UNITED KINGDOM - OTHER ANTI-POLLUTION LEGISLATION

Various other anti-pollution or environmentally-related levies and charges have been enacted since 1996. All these laws are published in separate schedules referred to in the Finance Act of 2001, as amended by the Finance Bill of 2007.

These levies are:

- A Climate Change Levy, charged on:
 - electricity - £0.00456 per kilowatt hour;
 - gas supplied by a gas utility or any gas supplied in a gaseous state that is of a kind supplied by a gas utility - £0.00159 per kilowatt hour;
 - any petroleum gas, or other gaseous hydrocarbon, supplied in a liquid state - £0.01018 per kilogram; and
 - any other taxable commodity - £0.01242 per kilogram.

- An Aggregates Levy, charged at £1.95 per tonne on commercially extracted rock, gravel, sand or natural minerals. (The levy was introduced to reduce the extraction of aggregates from “virgin” land and to promote the recycling thereof.)
- A landfill tax charged on waste discarded at any dumping site, at:
 - £32 per tonne for all waste, except for
 - inert waste (non-harmful waste such as rocks and plant materials) charged at £2.50 per tonne.

The tax is charged to the landfill site owner, who in turn recovers the charges from customers.

In addition, landfill site owners are granted an income tax deduction for moneys paid to registered environmental bodies. The environmental bodies are those organisations involved in environmental cleaning activities and conservation of a natural habitat or a species in its natural habitat. Under this relief provision, the landfill owner is able to donate up to 6.6% of the landfill tax to a registered environmental body that it would have paid over to the Revenue Authority and get an income tax deduction of 90% of the amount paid over.

2.10 CONCLUSION

All three countries have various incentive policies in place to encourage investments in pollution reduction technologies. However, it has been shown that only the United Kingdom has been bold enough to impose punitive measures within the framework of direct and indirect taxing acts, which forces UK taxpayers to face financial consequences for their polluting behaviours.

The following chapter will investigate the specific tax legislation in South Africa that directly or indirectly refers to the air, water and natural habitat within the Borders of the Republic of South Africa.

CHAPTER THREE

SOUTH AFRICAN ENVIRONMENTAL TAX LEGISLATION

3.1 INTRODUCTION

While the previous chapter provided a detailed representation of pollution taxing regimes in the three other countries selected for this study, this chapter will explore the specific tax legislation that has both direct and indirect bearing on pollution of the environment in South Africa.

In his 2007 budget speech, the South African minister of finance, Trevor Manuel (2007:25), acknowledged that “[t]he *Income Tax Act* has not kept pace with changes to the local and international environmental regulatory regime” and soon after the speech, section 37B was inserted in the Income Tax Act 58 of 1962 (from here on referred to as the “Income Tax Act”) as a general environmental income tax incentive measure.

3.2 THE INCOME TAX ACT - SECTION 37B

3.2.1 The wording of the section: Capital allowances

South Africa’s most evident pollution tax-related legislation is the newly-enacted section 37B on capital allowance incentives mentioned above. This section grants the taxpayer:

- in the case of an “environmental treatment and recycling asset”, an allowance of 40 percent of the cost of the asset in the year of assessment that it is brought into use for the first time by that taxpayer, and 20 percent in the remaining three years thereafter; and
- in the case of an “environmental waste disposal asset”, an annual allowance of 5 percent of the cost of the asset.

“Environmental treatment and recycling asset” is defined in section 37(1) as any new and unused plant or equipment applied towards or the treatment the recycling of water, air, solid waste pollution or recycling as well as any plant and equipment applied towards controlling or monitoring such pollution. The asset must be utilised in the course of the taxpayer’s trade in a process that is ancillary to any process of manufacture or a similar process.

Finally, there must be a requirement placed on the taxpayer by any law of the Republic to comply with measures that protect the environment, before the deduction can be claimed.

“Environmental waste disposal asset” is defined in section 37(1) as any new and unused air, water, and solid waste disposal site, dam, dump, reservoir, or other similar structure, or any improvement thereto. The structure must be of a permanent nature and be utilised in the course of a taxpayer's trade in a process that is ancillary to any process of manufacture or a similar nature. Finally, there must be a requirement placed on the taxpayer by any law of the Republic to comply with measures that protect the environment, before the deduction can be claimed.

3.2.2 Interpretation of the wording on the capital allowances

The term ‘new and unused’, cited above, could conceivably contain some ambiguity. This term occurs in several parts of the Income Tax Act, but has not been defined within the confines of the Act; however South African case law has provided taxpayers with a clear frame of reference as to how the phrase should be interpreted.

One case that summarises the meaning succinctly and presents a clear indication as to how the phrase is to be interpreted is the Income Tax Case No 672 (16 SATC 227, 1948). In this case, the taxpayer argued that certain machinery that he had purchased (which was required by the Act of that time to be ‘new and unused’ if the taxpayer was to qualify for an accelerated allowance), while not absolutely brand new, was new for him. In delivering his judgement, Judge CJ Ingram (1948:229) rather amusingly commented on arguments raised by the taxpayer in his appeal, when he said:

“[The taxpayer] first of all would attribute the word “new” meaning new to the taxpayer and he puts somewhat drastically the illustration – I buy a new house or acquire a new wife. But in each of those cases we quite understand that neither the house nor the wife is new in the sense that it has not been used before.”

In this case, it is made clear that, when an asset is acquired from someone else, and that asset has been used by the previous owner (even if for a different purpose), that asset is second-hand and can never again be “new and unused”. Thus, for any expenditure related to environmental treatment and recycling assets and environmental waste disposal assets

to qualify for the allowance, the asset must be absolutely “new and unused” and may not have been used before.

A second question that arises concerns the extent to which the law requires the taxpayer to comply with measures to protect the environment. Section 27 of the National Environmental Management Act of 1998 places a legal obligation on every person who causes, has caused or may cause significant pollution or degradation of the environment to take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring. The section also stipulates that where as any harm to the environment is authorised by law or cannot reasonably be avoided or stopped, that all persons must undertake such efforts to minimise and rectify such pollution or degradation of the environment.

In consequence it would seem that all taxpayers are required by a law of the Republic to comply with measures that protect the environment as required by section 37B(1)(c).

Moreover, under the heading of section 37B in the explanatory memorandum (2007:51), the legislator explains that environmental capital expenditure should be permitted some level of depreciation, even if the capital outlays are only supplementary to the process of manufacture. Taxpayers are compelled to make capital investments that ensure that the environment is protected; as an ordinary legal precondition during the operation of the business. Therefore, such investments should be encouraged as a matter of sound government policy.

It is therefore also evident that the provision should not be interpreted as being restrictive for the scope of application of this section, but that it serves simply as an anti-avoidance measure to prevent companies from deducting any kind of expense under the cloak of environmental protection.

3.2.3 Cession of trade

Where a taxpayer has ceased or is in the process of ceasing a trade and that taxpayer incurs expenditure or losses in respect of the decommissioning, remediation or restoration of that trade, by motivation of the fact that the taxpayer is complying with any law of the

Republic that provides for the protection of the environment upon the cessation of trade; such expenditure or losses are deductible in terms of section 36B(6). Nevertheless the taxpayer may only deduct such expenses or losses if they would otherwise have been allowed as a deduction in terms of section 11 had that taxpayer still been carrying on that trade and if the expenditure or losses is not allowed as a deduction in any other section of the Act.

Following from section 37B(6), subsection 7 confers that any "assessed loss" as defined in section 20(2) that arises because of the above mentioned deduction may be set off against income derived by that taxpayer subsequent years of assessment notwithstanding the fact that the taxpayer was not carrying on any trade.

Expenses related to the protection or restoration of the environment during or after the closure of a trade would typically not be allowed as a deduction under section 11(a), because "*decommissioning, remediation and restoration generally fall outside the ongoing process of trade and production requirements*" stipulated in that section (Explanatory Memorandum on The Revenue Laws Amendment Bill, 2007:52). For this reason, subsections 6 and 7 effectively allow non-trade-related expenses to be deductible. Unlike the treatment of pre-trade expenditures and losses under section 11A, these post-trade losses and expenditures are not ring-fenced, and assessed losses arising from the above-mentioned activities may be set off against income derived by a taxpayer without having to consider whether or not the taxpayer has actively carried on trade during the relevant year.

3.3 THE INCOME TAX ACT - OTHER SECTIONS IN THE INCOME TAX ACT

3.3.1 Mining companies

Section 37B also eliminates the inequity purported to have existed, seeing that, in terms of section 37A (and previously section 11(hA)), only companies involved in mining activities are allowed to deduct cash contributions made to a company or trust which applies its property solely for rehabilitation of land impacted by the mining activities, after closure or decommissioning of those activities. The amount is deductible in full, in the year in which it is paid, irrespective of whether it is of a capital or revenue nature.

The requirement that the amount must be paid in cash is unusual, as it means that no liability may be recognised in respect of such a transaction and that the payment may not be made in kind. However, the body that receives the cash is exempted from tax in terms of section 10(1)(cP).

3.3.2 Farming activities

In terms of the provisions of paragraph 12 of the First Schedule to the Income Tax Act, a person involved in farming activities can deduct, in full, any expenditure (whether of a capital or revenue nature) laid out in respect of the eradication of noxious plants and the prevention of soil erosion. These expenses can be deducted even if it creates an assessed loss and the deduction is not limited to taxable income derived from farming activities (Huxam & Haupt, 2007:215).

3.4 CUSTOMS AND EXCISE DUTIES

The only other reference in South African taxing laws to “environmental” or “pollution” enactments is in part three of the Customs and Excise Act, 91 of 1964 (hereafter referred to as the “Customs and Excise Act”). Part three of the Customs and Excise Act, entitled “Environmental Levy”, was inserted into the Act by the second Revenue Laws Amendment Act of 2003, with effect from 1 July 2004.

In terms of the provisions in ‘Environmental levies’, the import or manufacture of plastic flat and carrier bags with a thickness of less than 24 microns is prohibited, except for the following types of bags: bread bags, refuse bags, bin liners, household plastic bags, primary packaging and plastic bags for export. In addition, an environmental levy of 3 cents per bag is imposed on manufacturers for all plastic carrier bags and flat bags, with a thickness of more than 24 microns that they produce, excluding bags manufactured for used for packaging, refuse bags and refuse bin liners.

The explanatory memorandum for the above-mentioned amendment act makes it clear that the levy is charged in addition to any duty prescribed in the Customs and Excise Act. VAT is also charged on the duty, as shown in this example from SARS’ Environmental Levy external policy revision document (number 2):

DESCRIPTION	AMOUNT
10 000 x carrier plastic bags	R 5 000-00
Levy due @ 0.03c / per bag	R 300-00
SUB-TOTAL	R 5 300-00
VAT @ 14%	R 742-00
PRICE inclusive of VAT @ 14%	R 6 042-00

In a media statement released by the Department of Environmental Affairs and Tourism (South Africa, 2004) on the subject of the plastic bag regulations, the reason stated for specifying a minimum thickness of no less than 24 microns was that this thickness was judged to be reasonable for promoting plastic bag recycling, because thicker bags make recycling economically more viable. Secondly, the aim of the levy, along with the thicker bags, is to encourage the final users of the bags to re-use them, thereby reducing litter and raising public awareness about environmental issues.

The government's general fiscal policy is not to allocate tax revenues to any specific purpose, but to divide the entire pool of funds as determined in the budget on a pro-rata basis. However, the government decided to deviate from this policy and to utilise a portion of the funds from the plastic bag levy to set up a Black Economic Empowerment entity, which will undertake to market the re-use of plastic bags, as well as to collect and recycle them. It could not be established whether such enterprises are currently operational. However, in several newspaper articles it has been reported that no amount of the plastic bag levy revenues that the government pledged to the program has to date been applied as promised.

3.5 CASE LAW

To date, no tax court cases have dealt specifically with any environmental or pollution-related issues, although numerous court cases have dealt with matters of contravention of environmental laws. However, because these cases did not concern any matters of taxation, they fall outside the scope of this study.

A tax case that does bear some significance for the purposes of this study is *Commissioner for Inland Revenue v Manganese Metal Company (Pty) Ltd* (58 SATC 1,

1995). A court case dealing with the issue of whether expenditure incurred for the purpose of creating a long-term disposal facility *to* ensure the avoidance of pollution and protection of the environment was of a capital nature. The taxpayer argued that, unlike, for example, an ordinary water dam which remains usable over and over again as water is impounded and released, this dam (the disposal facility), as it fills up, ceases to provide any further use. The dam thus provided no enduring benefit and consequently formed part of the working capital of the business.

However, the judge held that the dam was of a capital nature, being an improvement that was a fixed asset forming part of the income-earning structure. More significantly, though, it was held that getting rid of the waste was an essential and material aspect of the taxpayer's operations and that he should be granted an allowance to overcome a measure of hardship, considering that farmers, for example, can deduct capital expenses for erosion works.

3.6 CONCLUSION

It is apparent that the sections that encumber deductions for environmental expenses in the Act are restricted to limited applications and the legislator has, thus far, not been very generous in providing deductions to the common taxpayer for such expenditure, whether of a capital or income nature. Furthermore the wording of section 37B does contain some ambiguities and its wording is somewhat complicated, which could make it difficult to administrate.

Conversely, in considering the punitive taxation measures it has emerged that only the tax enacted specifically for this purpose of deterring environmentally damaging actions, is the plastic bag levy. Although fuel and electricity levies may also serve to reduce pollution, such levies have not purposely been created for environmental conservation.

The next chapter will analyse how the South African legislation compares against the legislation of the other countries.

CHAPTER FOUR

COMPARISON AND ANALYSIS OF TAX LEGISLATION

4.1 INTRODUCTION

While Chapter 2 detailed the taxation legislation of Malaysia, Australian and The United Kingdom, specifically governing anti-pollution penalties and incentives, Chapter 3 detailed the South African taxation legislation specifically relating to pollution prevention. The similarities and differences of the taxation legislation will now be compared.

4.2 CAPITAL ALLOWANCES

4.2.1 Comparison of definitions of the assets

In the South African Income Tax Act, assets qualifying for an accelerated allowance are specifically defined. However, the definitions are wide and are not limited to specifically-identified items. The assets must be used for air, water or waste treatment, recycling or control; or, the assets must be used for air, water or solid waste disposal, in which case the asset must be a site, dam, dump, reservoir or similar structure. Lastly, it is required that the assets be used in a process ancillary to any process of manufacture or a similar process.

Notoriously absent from the South African legislation is any reference to energy saving and renewable energy assets or activities. All three of the other countries make some reference to energy-saving equipment or activities.

As is the case with the South African Income Tax Act, the definitions contained in the Malaysian Income Tax Act are wide and unrestrictive, and, as in South Africa, the assets must be used for recycling or processing waste or for waste control. However, in addition, allowances are granted specifically for:

- gas buses and gas-refuelling equipment; and
- energy-conservation equipment and renewable energy-generating equipment.

Conversely, the section of the Australian Income Tax Assessment Act that encompasses all deductions for pollution-reducing commodities (section 40 – 755) does not contain within its parameters any definitions regarding the assets. Instead, the Australian legislature has elected to define the activities for which special deductions are granted. Any plant and equipment used within the defined activities receives an allowance. The defined activities are all connected with:

- preventing, fighting or remedying pollution; or
- treating, cleaning or storing waste.

A significant difference from the other countries' restrictions is that Australian taxpayers can receive the allowance even if the pollution or waste is or was not caused by the taxpayer himself.

The United Kingdom is the only country with definitions that actually refer to specific types of assets. The lists of assets included in the definitions are extensive and essentially include all assets that a company could possibly use for the said causes. Moreover, the United Kingdom is the only country in which minimum performance requirements are laid down for those assets listed (see Chapter 2.4.1.1)

4.2.2 Comparison of allowance percentages

Below follows the table of comparison for the different allowances granted for each class of assets:

Table 1: Allowances for recycling and pollution control assets

Country	South Africa	Malaysia	Australia	United Kingdom
Recycling Assets	40% in year one 20% in three remaining years	60% in year one 20% in two remaining years	Depends on project life, minimum 20% per year	100% in year one
Renewable energy assets	No allowances	100% in year one	Depends on project life, minimum 20% per year	100% in year one

Special allowances and allowances relating to land constructions for each of the countries as described in the four countries' taxation acts can be summarised as follows:

South Africa

- Income tax allowance of 5% per year for waste disposal dams, reservoirs, sites or dumps.
- Income tax allowance of 100% on relevant capital expenditure for farming and mining companies (refer to Chapter 3.2.2).

Malaysia

- “Pioneer Status” for waste recycling and energy consumption assets: 60% of the cost of the asset in the first year and 40% in the following year.
- “Pioneer Status” for assets used to produce renewable energy: 100% of the cost of the asset.

Australia

- An allowance over the shorter of the periods of the project or 10 years for earthworks on land for environmental protection.

The United Kingdom

- A deduction of 150% for assets used in land remediation activities (refer to Chapter 2.4.1.2 for details of land remediation).

4.3 COMPARISON AND ANALYSIS - OTHER INCOME TAX DEDUCTIONS

4.3.1 Donations to organisations created to benefit the environment

South Africa, in contrast to the other three countries does not expressly incentivise donations to environmental organisations. The distinction being that in South Africa donations to environmental organisations are deductible only if the organisation is specifically registered as a non-profit entity, whereas none of the three foreign countries' taxation acts stipulate that an 'environmental organisation' has to be registered as a not-for-profit entity before the donor may claim a deduction for his gratuitous act. Furthermore the limitation of the maximum allowed as a deduction of 5 percent of the taxable income of the taxpayer is significantly less than the amounts allowed by the other three countries.

4.3.2 Non-capital income tax deductions

In many instances ordinary non capital expenditure incurred for environmental purposes may be in contravention of the common requirement that expenses must have been incurred for the purpose of the trade and in the production of income. These requirements are similar in the income tax legislation of all four countries.

The normal income tax deductions are summarised below:

South Africa

- In terms of subsection 6 of section 37B, a taxpayer can deduct expenses incurred for environmentally-related “*decommissioning, remediation or restoration*” that would not otherwise have been deductible.
- In addition, in terms of subsection 7, the taxpayer can create an assessed loss with these expenses and they will not be ring-fenced.

Malaysia

- Under the “Pioneer Status” initiative, companies undertaking waste recycling activities or energy conservation services can elect for 70% of their income from those activities to be exempt from income tax for a period of five years.
- Under the “Pioneer Status” initiative, companies involved in the generation of renewable energy can elect for 70% of their income to be exempt from income tax for a period of five years, as well as an exemption of 100% of their income for the consecutive five-year period.

Australia

- Companies can deduct 100% of expenses incurred in environmental protection activities, even if these expenses are not incurred in the production of income (such as rehabilitation expenditure and cleaning of the property of the lessee). These include expenses of a capital nature.

The United Kingdom

- A deduction of 150% of the qualifying land remediation expenditure (refer to Chapter 2.4.1.2 for details).

4.4 INDIRECT TAXES

Below is a summary of the VAT (or Sales Tax), Excise Duties, and miscellaneous pollution and environmental tax levies and incentives in each of the countries.

Table 2: Comparison of indirect tax incentives and penalties

Country	Indirect tax incentives	Indirect tax penalties
South Africa	No apparent incentives.	<ul style="list-style-type: none"> - Excise Duty of 3 cents on plastic bags together with the minimum thickness requirements laid down in the Customs and Excise Duty Act. - Tax of 2% on electricity consumption to encourage more efficient use of electricity.
Malaysia	Companies involved in energy conservation services or the generation of renewable energy are exempted from sales tax and import duty on equipment used in the projects.	No apparent penalties.
Australia	No apparent incentives	No apparent penalties
United Kingdom	<ul style="list-style-type: none"> - Standard VAT rate of 17.5% is reduced to 5% on 'energy-saving materials'. 	<ul style="list-style-type: none"> - Excise duty levied on the sale of new vehicles in the United Kingdom based on the amount of CO₂ emissions emitted by the vehicle. - Climate Change Levy charged on the use of electricity, gas and any other taxable commodity. - Aggregates Levy, charged at £1.95 per tonne on commercially-extracted rock, gravel, sand or natural minerals - Landfill tax charged on waste discarded at any dump site, at £32 per tonne for all waste, except inert waste (non-harmful waste such as rocks and plant materials) charged at £2.50 per tonne.

4.5 CONCLUSION

In general, when putting all the countries side by side it is clear that South Africa's incentives are not as generous as those of the other countries, however only South Africa and the UK provides taxation penalties. The following chapter will summarise the common strategies of the governments to understand if more taxes can be expected or whether other measures such as carbon credits are preferred.

CHAPTER FIVE

POLLUTION TAX POLICIES AND FUTURE STRATEGIES

5.1 INTRODUCTION

Studies by economic scholars on pollution taxes have shown that a “double dividend”, possibly even a “triple dividend”, can be obtained when such a tax, and the revenue therefrom, is applied precisely. Daugberg and Svendsen (2001:3) describes a “Double dividend” as an occurrence where there are two benefits from that action, namely the efficient collection of revenues and a reduction in pollution, while a “triple dividend” is the same as double dividend with the addition of a third benefit, the promotion of economic growth. Daugberg & Svendsen (2001:32) also state that tax instruments may achieve the desired objectives (of reducing pollution) at much lower social costs than regulatory approaches.

Yet “[t]he gulf between economists and the rest of humanity is deep and wide, but often almost invisible to the economists” (Hatfield-Dodds, 2002:2). Therefore, the implementation of pollution taxes by governments is by no means a foregone conclusion, as other factors, such as socio-economic pressures, public perceptions, foreign investment and global competitiveness also carry a lot of weight in the policy-making milieu.

Furthermore, national governments have been burdened with having to choose between emissions tax and emission “cap-and-trade” systems. A “Cap-and-trade” system is an economic tool whereby a government limits the quantity of emissions that any one company within a certain industry may emit within a specified time frame, for example, annually or quarterly. If a company exceeds its limit it must buy additional emission capacity from companies that will not exceed their quota, or halt its operations until a new time frame commences. Proponents of one will usually discredit the other, but there is no rationale for these systems to be considered mutually exclusive. In fact it has been suggested that a combination of the two would, in all probability, achieve better results than if one were used to the exclusion of the other (Daugberg & Svendsen, 2001:34). The difference between the two systems has been summarised (although somewhat

subjectively) by Eileen Claussen (2007:1), President of the PEW Centre for Global Climate Change as follows:

“A tax provides for cost certainty; the cost is fixed because of the tax. Cap-and-trade, on the other hand, provides for environmental certainty. What’s fixed is the cap itself — and it is based on an assessment of the level of emissions you need to get to in order to protect the climate.”

5.2 SOUTH AFRICA

5.2.1 Historical policies and targets

In 1994, the Katz Commission of Inquiry published the *Interim Report of the Commission of Inquiry into Certain Aspects of the Tax Structure of South Africa*. The report indicated, *inter alia*, that a governmental objective can be achieved more efficiently by means of tax incentives than by government expenditure programs (Katz, 1994:132). It is therefore surprising that until recently very little provision has been made in tax or environmental conservation legislation for schemes that promote or incentivise environmental custodianship.

In 1997, South Africa ratified the United Nations (‘UN’) Framework Convention on Climate Control, (from here onwards referred to as the ‘UNFCCC’), which is frequently referred to as the ‘Kyoto Protocol’. The Kyoto Protocol, chaired in Kyoto, Japan, is “*a protocol to the international Framework Convention on Climate Change with the objective of reducing greenhouse gases in an effort to prevent anthropogenic climate change*’ (OECD, 2007).

Countries that ratified the convention are obligated to commit themselves to reducing their overall greenhouse gas emission levels by 8 percent during the first commitment period, which spans the period from 2008 to 2012 (UNFCCC, 2007). Developing countries, including South Africa, are not subject to any quantitative greenhouse gas reduction commitments under the Protocol. Developing countries that undersigned this convention are required merely to show that they are actively involved in reducing their greenhouse emissions (UNFCCC, 1995). South Africa’s decision to sign and ratify the Kyoto Protocol gives an indication of the government’s commitment to the fight against global warming.

The Department of Environmental Affairs and Tourism published the White Paper on Integrated Pollution and Waste Management. The paper was essentially the government's first practical means of effecting and communicating anti-pollution policies. The paper, published in the *Government Gazette* of 17 March 2000, prescribed legislation pertaining to the different governmental departments including the Departments of Water and Forestry and Minerals and Energy. The foreword to the paper stated that: "Unlike previous policies that focussed predominantly on so-called 'end pipe' treatment, this White Paper underscores the importance of preventing pollution and waste and avoiding environment degradation" (South Africa. 2001). It also emphasised that future pollution reduction strategies would be aimed at waste minimisation and pollution prevention.

However, the paper proposed no set targets or maximum emission numbers that could serve as guidelines on pollution levels, nor did it prescribe minimum requirements to which industries or companies should adhere. Instead, the paper merely mentioned that all identified forms of pollution must be reduced and controlled at "acceptable levels", but it failed to elaborate on what "acceptable levels" may be.

This is a matter for concern, as it appears that no deliberation was given to the Department of Environmental Affairs and Tourism's Discussion Document Three: *The Proposed Method for the Introduction of Economic Tools of Environmental Management in South Africa* (South Africa. 1996), in which it was clearly stated that, although economic tools (such as taxes and cap-and-trade systems) are "*potentially powerful weapons in the defence of the environment*", it is fundamental that environmental targets are established prior to their implementation.

When one in turn considers the control regulations and policies currently in force in South Africa, it is apparent that the pollution restrictions in place pertaining to maximum volumes and concentration levels of polluting substances that may be expelled by industries are solely for the purpose of ensuring the immediate health and safety of those in close proximity to the pollution sources rather than for ensuring the long-term protection of the environment (Gunn, 2007:18).

A further issue for debate is the method of application of government revenue funds. The South African government has always insisted on a policy whereby different revenue

streams from various taxes may not be earmarked or retained for specific applications. Instead, all revenue from taxes is pooled together (with concomitant loss of identity) and distributed as determined in accordance with the national budget (PWC, 2006:3). This policy is in direct conflict with the broadly-accepted economic theory that pollution tax is most effective when a portion of revenues collected therefrom is separated and retained for anti-pollution incentives and invested in pollution-reducing technologies.

Since 2004 there has been a major legislative reform process, spearheaded by the Department of Environmental Affairs and Tourism, which has led to the promulgation of several new acts relating to environmental management. These include the National Environmental Management: Biodiversity Act, the National Environmental Management: Protected Areas Act and the National Environmental Management: Protected Areas Amendment Act. These acts were promulgated in the Government Gazette between November 2004 and February 2005 (Paterson, 2006:24). In 2006, the Department of Environmental Affairs and Tourism also adopted the *White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity*. This paper emphasised the government's responsibility to increase the financial investments required for conserving biodiversity.

However, environmental objectives must be reconciled the basic needs of South Africa's people. "*Innovative ways must therefore be found to add to and reinforce the fundamental economic value to biodiversity, and to promote and develop economic activities that are compatible with and which complement the conservation and sustainable use of biodiversity*" (South Africa, 2006a). However, public goods like healthcare, housing and education will always be prioritised over biodiversity conservation with regard to the allocation of funds (Paterson, 2006:16). Evidence of this can be seen in the South African government's 2004/2005 budget, wherein it was disclosed that a mere 0.08 percent of the country's total expenditure would be allocated to preserving biodiversity and conservation.

5.2.2 Current developments

In his 2008 budget speech, the Minister of Finance, Trevor Manuel (2008:19), announced that several initiatives/reforms were under consideration by the treasury. These included emission charges and tradable permits, tax incentives for cleaner production technologies, a reform of existing vehicle taxes to encourage fuel efficiency and a proposal to encourage biodiversity conservation by private landowners through an income tax deduction. Commitments relating to pollution incentives in the 2007 budget were promptly implemented, indicating that anti-pollution tax policies are regarded as a matter of priority and that government is serious about reducing pollution levels.

The above-mentioned proposals outlined in the 2008 budget were initially put forward for discussion in 2006, when the National Treasury published a draft paper entitled *A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa*. The 139-page document outlined various strategies for addressing environmental fiscal reforms, drawing comparisons with the United Kingdom, New Zealand, Chile and Sweden. Recommendations were provided for the following five areas (South Africa, 2006b)

- Transport
 - Charging fuel levies at different rates depending on the fuel type. Bio-diesel would attract the lowest rate and petrol the highest.
 - Reforming the customs and excise duties and licensing fees, basing the charge on the net weight of a vehicle, the assumption being that heavier vehicles by default cause more pollution.
- Energy
 - Metropolitan municipalities should charge electricity users at a higher rate than that charged by the National Electricity Regulator, with the excess to be channelled towards development of more efficient and renewable power sources.
- Water and waste water
 - Charging tariffs for water treatment, and cost-recovery charges for the implementation of water-resource protection and catchment strategies.

- Charging for the supply of the water at different rates, based on user activities, and habitual polluters should also be required to pay more for water supplies.
- Mining
 - Establishing wider and more stringent requirements and enforcement measures on mining companies regarding the rehabilitation of mining areas.
- Waste management
 - Widening the scope of environmental customs and excise duties to include other items in addition to plastic bags.
 - Charging for waste removal based on the type of waste. For example the lowest charges would be for recyclable goods and the highest charges for hazardous waste.

There are, however, concerns that “South Africa has a complex and largely un-coordinated network of national and provincial laws that regulate the conservation and use of South Africa’s bio diversity” (Paterson, 2006:23). Taking this into account, it has been suggested that the various Environmental Management Acts should interact with the Income Tax Act to promote efficiency and to empower the government to enact enforcement measures, and penalise non-compliance towards environmental act(s), as well as incentivise good behaviour (Paterson, 2006:23).

5.3 MALAYSIA

Although Malaysia signed the UNFCCC in 1993, it ratified the Kyoto Protocol only in 2002. The initial environmental policy documents, drafted after 1993, focused on the protection of environmental resources, in particular the conservation of the Malaysian rain forest, which plays a major role in absorbing CO₂ emissions. The policy documents also focused on reducing CO₂ emissions by enhancing the (fuel) efficiency of vehicles and transport systems (Malaysia, 2002).

In order to promote conservation of and appreciation for the environment, the Malaysian Department for Education “*made a strategic and wise decision by concluding a decision to include Environmental Education in its 112th Education Planning Committee meeting*” (Daniel, 2008:1). This essentially suggests that environmental education is to become part

of the national school curriculum and that learners will be required to complete an environmental education subject as a requirement in their secondary school education.

Currently the Malaysian Government is focusing its efforts on the effective implementation, evaluation and control of its policies relating to the environment. This suggests that the Malaysian Government considers the environmental policies that have been put in place to be satisfactory for meeting future pollution and emission targets (Malaysia, 2008).

This was evident also in the Malaysian government's 2008 budget speech, in which it was stated that one of the government's major aims was "[r]educing the approval time for the Environmental Impact Assessment from three months to five weeks" (Abdullah, 2008:2). A second factor indicating that the Malaysian government has progressed from merely putting environmental policies in place to enforcing those policies is the fact that it has stated that policing environmental regulations and penalising transgressions is a priority (Abdullah, 2008:2).

In Malaysia's most recent government policy communication document, the *Third Outline Perspective Plan*, it was plainly stated that:

"Government will ... intensify enforcement efforts to ensure that environmental laws and regulations are complied with. However, these measures will be complemented by the use of innovative economic and tax instruments, including the removal of distortions and barriers that impede the efforts of improving environmental quality and optimal natural resource use."
(Royal Malaysian Customs, 2008a)

The Malaysian government has recognised CO₂ emissions from vehicles as the greatest source of greenhouse gas pollution in Malaysia, but remains confident that its current structures will be able to address this (Royal Malaysian Customs, 2008b). These structures include, *inter alia*, special allowances for gas buses (refer to Chapter 2.2.4) and subsidies for low emission fuels and the exemption of hydrogen from fuel taxes (Royal Malaysian Customs, 2008a).

In addition, the Malaysian government has been making extensive use of and values cap-and-trade systems as a means of limiting certain pollutants. The government prides itself on being "the pioneer" among non-OECD countries on utilising trading permits systems. There are currently two trade permit systems in place, one for CFC gases (which are

known to damage the ozone layer), and the other for vehicles, to reduce carbon emissions. The quota tariffs are revised annually and trade permits are issued quarterly (Economic Planning Unit of Malaysia, 2007).

The foundation of the Malaysian government's fiscal policy for ensuring the country's "green" future is captured in the *Economic Instruments for Environmental Management Malaysia Handbook* ("The Handbook") issued by the Economic Planning Unit in 2004 and revised in 2007. The handbook provides a toolkit for designing and developing economic instruments for addressing environmental issues.

The *Handbook* (2007:31) shows that the government favours a "cess" tax charge together with taxes imposed on products or activities to change consumer behaviour. In the *Handbook*, a cess is described as a tax that is collected for a specific purpose. The cess charged on rubber exports to finance rubber research is raised as an example. The taxes are to be collected by service providers (or public agencies) to recover the costs of services, as well as to maintain the system.

It has also been found that fiscal incentives to encourage compliance with environmental objectives and to promote the use of resources that are less harmful to the environment have been especially effective. "*The best example of a market incentive is old newspapers (ONP). Ten years ago, they were thrown out with the garbage. Today, people store them, waiting for the ONP pick-up*" (Handbook 2007:33).

Key future focus points as set out in the *Handbook* (2007:8) are:

- to ensure transparency of fiscal objectives, as "[t]axpayers are more willing to bear the burden of a new pollution tax if they understand what is being introduced and why";
- to ensure that all new incentives are announced well in advance to allow taxpayers to adjust their production processes; and
- to ensure that the legal and institutional framework can support and enforce the proposals .

It has also been submitted that new decisions will involve inputs from all affected parties and relevant stakeholders in the design process improvements.

The *Handbook* (2007:35) sets out the following five focal points:

- Reducing excessive use of pesticides by using a 'cess':
It is proposed that a 10 percent cess be levied on both imported and locally-manufactured pesticides, as well as formulated products and products that could be used for formulating pesticides. This will be imposed at the retail level and the tax collected will be channelled back to the Pesticides Board.
- Collecting used pesticide containers:
It has been decided that a deposit refund system will be put in place, whereby the purchaser will receive a voucher together with the purchase of a pesticide..
- Managing lubricant waste oil:
Disposing of lubricant waste oil is problematic, in that it is usually disposed of indiscriminately, because this is far cheaper than disposing it in the required manner as scheduled waste. Consequently, a cess on lubricants that will be levied on end-users is imminent. The funds will be used to subsidise the licensed oil collectors.
- Implementing a solid waste management program:
"If the number of tourists continues to rise as projected, the additional solid waste anticipated will exceed the island's management capacities." As a result, a tourist eco-tax will be levied on all tourists visiting Malaysia, which will increase the total cost of tourist excursions to the country by roughly two percent. A further proposal is to introduce a levy on residents who do not participate in waste separation programs. The proposal was in accepted principle; implementation is postponed until the situation is favourable for introducing the eco-tourist tax .
- Initiating a used tyre management system:
To discourage the disposal of tyres and encourage their recycling, a sales tax of three Malaysian Ringgit (RM) per tyre for passenger cars and RM18 per tyre for trucks is to be imposed.

5.4 AUSTRALIA

In 1994 the Australian Department of Environment, Sports and Territories set up the Centre for Education, by means of the Australian Environmental Economics Unit, to address “environmental policy and international competitiveness” (Australia, 1998:2). According to the Department of Arts, Sport, Environment and Territories (Australia, 1998:2), little has been achieved by seminars conducted by this Centre, as no environmental tools have been established and no other official government documentation has ever been effected as a result of the discussions.

In July 2000, however, at the Second Environmental Economics Round Table Proceedings, concrete progress was made towards the application of environment-related taxes. The proceedings resulted in the drafting and tabling of *The Environmental Economics Research Paper No. 7*. In the paper, the use of subsidies and tax incentives, taxes and charges, and tradable permit schemes were all advocated as useful tools for addressing environmental issues. A noteworthy observation made in the report (Australia, 2000:5) is that environmental harm may also be amplified if cap-and-trade schemes are applied incorrectly. For example, in markets where no trading of emission quotas are enforced, it would result in the overuse of some resources and undervaluation of others, especially as far as mineral resources are concerned.

More recently, the (recently superseded) Australian Prime Minister, John Howard, has faced considerable criticism from the Australian media concerning his lack of enthusiasm over implementing pollution reduction measures, owing to his concern that such measures would impact negatively on the Australian economy and the country’s ability to compete in global markets (Garrett, 2007).

However, at the start of the second quarter of 2007:

“... the Prime Minister looked at the opinion polls and apparently decided he needed to do a few things in regard to global warming: form a taskforce on emissions trading; draw up a PR campaign; and say he was no longer the climate change sceptic he has been throughout his term of government ... as a desperate attempt to divert attention from 11 years of inaction on climate change” (Garrett, 2007).

Australia consequently ratified the United Nations Framework Convention on Climate Change (the Kyoto Protocol) in 2007, and set the following emission targets (UNFCCC, 2007):

- to reduce greenhouse gas emissions by 20 percent by 2020;
- to reduce greenhouse gas emissions by 60 percent by 2050.

In addition, the following initiatives are being formulated by the newly-established taskforce:

- setting up a national emissions trading scheme;
- substantially increasing the Mandatory Renewable Energy Target and supporting the clean energy industry;
- funding a Solar Home Power Plan;
- offering low-interest loans for green home renovations; and
- investing 500 million Australian dollars in a Green Car Innovation Fund and a National Clean Coal Fund respectively.

However, the Australian Business Council (2008) conveyed that sectors of the economy that are exposed to international competition should be given free permits under such a trading scheme until there is a global carbon market. Lastly, the introduction of a new tax on petrol is being considered as part of policy measures to reduce emissions from vehicles (Australia. 2008b).

5.5 THE UNITED KINGDOM

The UK signed the UNFCCC in 1993, and subsequently also ratified the Kyoto Protocol on 16 February 1995. The UK government has since remained a committed and pioneering role player in the fight against pollution and global warming (Australia. 2001:1). Following the ratification of the Kyoto Protocol, the UK government introduced several pollution taxes to comply with the obligations of the Protocol.

A further significant step that has been taken towards ensuring compliance with the Protocol, is the commissioning of the Stern Committee. The Committee was commissioned in 2006, as a separate independent body, to investigate how the ruling administration should approach the issues of carbon emissions and global warming. The

Government has since accepted the findings of the Stern Committee, which were published in the Stern Report. The Stern report (2007:3) stipulated, *inter alia*, that the government will seek to increase pollution taxes in future since taxes can be used to establish the true economic cost of carbon emissions.

It is evident that the UK government was already giving effect to these observations, as it has been raising the levels of pollution-related taxes significantly over a number of years. This was substantiated in an article published by the RMI National Franchised Dealer Association (2007), which commented on all the taxes that influence the vehicle industry. In this article, it was mentioned, *inter alia*, that:

- between 1993 and 1999, fuel duty excises were increased by five to six percent per annum in real terms; this “road fuel duty escalator” was designed to reduce CO₂ emissions and to take into account other environmental factors;
- a “climate change levy” on energy use by business and the public sector was introduced in April 2001. Industries entering into voluntary agreements can get an 80 percent refund of the climate change levy;
- as from 2002, firms in certain industries have to participate in a CO₂ emission trading scheme to meet their targets. The revenue is recycled back into the industry through lower Employers’ National Insurance Contributions, tax breaks for investments in energy efficiency and renewable energy; and
- the revenue of the “Landfill Tax”, introduced in 1996, as well as the aggregates levy (refer to Chapter 2.2.7.), are increasing annually, although taxes are paid back through reduced Employers’ “National Insurance” contributions.

Presently, the UK government’s “*appetite for addressing climate change has never been greater*” (PWC, 2007:1). This is emphasised by the draft Climate Change Bill published by the Government in March 2007; “*that will make meeting the UK’s targets for a 60 percent reduction in CO₂ emissions by 2050, and a 26 to 32 percent reduction by 2020 (against the base year 1990) legally binding*”. The bill was approved by the House of Lords on 31 March 2008, but has not yet been ratified.

According to the British Department for Environment, Food and Rural Affairs (United Kingdom. 2008) (from here onwards referred to as “DEFRA”), the act will be the first of its kind worldwide to establish a long term legally binding framework to deal with the dangers

of climate change. It is hoped that the act will receive Royal Assent (enactment) by autumn 2008 and that the bill will clearly indicate the UK government's stance on and commitment to environmental policies.

In addition to establishing legally enforceable targets, the new Climate Change Act will also give the Government the power to review the target, "*based on a report from the new independent Committee on Climate Change on whether it should be even stronger*" (United Kingdom, 2008). The above-mentioned bill furthermore makes provision for establishing five-yearly revisable carbon budgets, which will set binding limits on annual carbon dioxide emissions; "*[t]hese budgets will be backed by strong annual accountability and independent scrutiny.*" Significantly, the bill also makes provision for credits to be given for emission reductions purchased overseas in "cap-and-trade" arrangements to be counted towards the UK's targets, "*to recognise the potential for investing in low carbon technologies abroad*" (United Kingdom, 2008).

In the draft Climate Change Bill consideration is also given to the reduction of plastic carrier bags. It is proposed that a reduction of the number of "single user carrier bags" by 70 percent should be enforced (United Kingdom, 2008). It is suggested that retailers must first be given an opportunity to voluntarily effect a reduction in the number of bags being distributed, and that if they are unsuccessful in doing so, a mandatory ban on all carrier bag distribution will be enforced.

The following additional key provisions are contained within the bill:

- it will provide for the establishment of and convey powers to an independent, expert body to be known as the Committee on Climate Change, to advise the Government on all matters pertaining to carbon budgets and carbon trading schemes;
- it contains enabling powers to introduce new trading schemes, such as the Carbon Reduction Commitment, through secondary legislation; and
- it places reporting requirements on the Committee on Climate Change, and the government to report to Parliament on a regular basis.

Following a review of the greenhouse gas emission targets set out in the Kyoto Protocol, the UK government is of the opinion, based on the most recent data on emissions and average annual temperature trends, that the short- and medium-term emission targets by

the Protocol will not be enough to reduce the effects of greenhouse gas emissions sufficiently to achieve the desired reduction of global temperatures (KPMG, 2008a). Consequently, the UK government has set targets more restrictive than those proposed in the Kyoto Protocol. For example, the Climate Change Bill's proposed target of reducing carbon emissions by 26 to 32 percent by the year 2020 is substantially higher than the 20 percent mark set out in the Kyoto Protocol. The UK government is also currently endeavouring to reduce carbon emissions by 12 percent by 2012, as opposed to the 8 percent required by the Kyoto Protocol (KPMG, 2008a).

There has, however, been some criticism of and opposition to this policy in the UK Parliament. The House of Commons (2007:14) argued that there is "*compelling evidence*" that 'Kyoto credit projects' *should be subject to serious doubt*".

The House of Commons (2007:12) has also expressed major concerns that the social cost of CO₂ emissions is excessive in Britain because "green taxes in the UK are already well in excess of the level they need to be to meet these social costs". According to the Committee the excessive restrictions effected by the carbon trading scheme cost each British household over 400 British Pounds ("£") in 2006. The strict emission targets set in the UK have meant that British companies and the government have had to pay a £470 million subsidy to the rest of the European Union during 2006, according to the European Union Emissions Trading Scheme.

5.6 CONCLUSION

In all four of the above-mentioned countries, serious investigations into and introspection on environmental policies, in particular those related to global warming and carbon emissions, commenced in the early 1990s. This can be attributed to the commission of the UNFCCC in 1993. As the ministries responsible for environmental affairs in all four countries subsequently commissioned discussions and drafted policy papers, they have all established that tax is a fundamental means of addressing the required reduction in carbon emissions.

While both the UK and Australia have specific quantified emission targets that they will have to attain, Malaysia and South Africa have yet to commit themselves formally to specific emission targets for future time-frames. However, Malaysia and the UK are the

only two countries to currently apply cap-and-trade systems as a means of reducing pollution in certain industries. While Australia is considering the implementation of cap-and-trade systems, it will give free permits under such trading schemes until there is a global carbon market sector, so as not to reduce its ability to compete internationally.

A summary of the short term proposals under review for each country is listed below.

- For South Africa it was proposed that:
 - tax incentives for cleaner production technologies must be implemented;
 - a reform of the existing vehicle taxes to encourage fuel efficiency is needed;
 - and
 - biodiversity conservation by private landowners through an income tax deduction has been made must be encouraged.
- For Malaysia it was proposed that:
 - improved turnaround times for the Malaysian Revenue Authority in dealing with environmental assessment forms should become a priority;
 - Sales taxes or “cess” taxes will be introduced to:
 - i. reduce excessive use of pesticides;
 - ii. manage lubricant waste oil;
 - iii. implement a solid waste management program;
- For Australia it was proposed that:
 - the mandatory renewable energy targets must be increased;
 - a Solar Home Power Plan will be funded;
 - low-interest loans for green home renovations should be offered; and
 - a 500 million Australian dollar investment is to be made in a Green Car Innovation Fund and a National Clean Coal Fund respectively.
- For The UK it was proposed that:
 - tax amounts charged on the different pollution taxes should be increased consistently.

The four countries have received the following criticisms relating to their pollution tax policies:

- South Africa
 - too little of the government's tax revenue is spent on pollution-reducing incentives (Paterson, 2006:23);
 - there is a lack of interaction between the national environmental legislation and the Income Tax Act, which consequently fails to promote efficiency (Paterson, 2006:23); and
 - there is no enforcement mechanism to penalise non-compliance with the environmental act and to incentivise good behaviour (Paterson, 2006:23).
- Malaysia
 - There is no apparent criticism of the Malaysian government's current pollution tax policies in itself. However, the Malaysian government has endeavoured to improve communication to its citizens regarding pollution strategies (Economic Planning Unit of Malaysia, 2007).
- Australia
 - The failure of the ruling government to acknowledge global warming as a real threat has been widely condemned, as it has resulted in a lack of pollution tax policies and incentives being implemented until recently (Garrett, 2007).
- The UK
 - the UK is facing some criticism over the high pollution taxes that its citizens are required to pay, especially individuals falling within the lower income brackets (House of Commons, 2007:1).
 - There has been a certain amount of disapproval of the very stringent restrictions placed on emission levels for emissions trading in the UK, especially as UK firms have had to pay foreign entities for additional emission credits (House of Commons, 2007:1).

While pollution tax legislation mechanisms were explored in prior chapters, this chapter investigated the four countries' philosophies on interventions in pollution reduction. The next chapter will scrutinise the effects of these policies by comparing the trends in pollution emissions, with the concomitant expenses and income.

CHAPTER SIX

COMPARATIVE STATISTICS

6.1 INTRODUCTION

While the previous chapters explored the laws put in place and the strategies and attitudes of the four governments towards pollution and taxes, the question is whether there is any concrete evidence to demonstrate that the laws and strategies have been applied as proposed and whether they have been successful. In this chapter, the pollution tax revenues and pollution reduction expenditure by the governments, as well as the emission statistics of the four countries will be analysed and compared to assess the impact of the laws and strategies to date.

However, to quote Winston Churchill (1940) *"[t]he only statistics you can trust are those you falsified yourself"*; this appears to be very true in the sphere of emission statistics, as companies, governments and "green" organisations alike try to persuade the masses as to how good or bad the picture is. For example, Greenpeace alleges that Porsche is an environmentally "unfriendly" company, as their vehicles emit more CO₂ per vehicle than those of any other manufacturer (Venter, 2007a:145). Porsche, on the other hand, contends that their vehicles produce the lowest CO₂ emissions per horsepower of all vehicles anywhere in the world. They go so far as to claim that the Porsche motor company is, in fact, an extremely environmentally-friendly company (Venter, 2007a:145).

This underlines the fact that quantitative statistics are often laced with interpretive technicalities, underscoring the importance of understanding the statistics within the underlying context.

6.2 FUEL TAXES

Although fuel taxes have been the primary source of pollution tax revenue for many countries the world over, it is often argued that it is not a pollution tax but merely a convenient and certain way of collecting tax revenues. This was echoed in a news report published by the BBC;

“[t]he main reason excises are levied on petrol and diesel is to raise revenue. Excise is levied on these fuels partly because consumption of these fuels is relatively unresponsive to changes in excise rates.”(Symonds, 2005)

The fact is that fuel is an inelastic supply product, which essentially means that consumer demand for the product remains relatively unchanged in the short term, regardless of movements in the price of the product (Steyn, 2001). Yet the motivation for fuel taxes is that they encourage more efficient use of the resource and/or the use of alternative products in the long term.

In support of this notion, studies have found that a tax on fuel use causes people, in principle, to adjust their behaviour in the long run, primarily as far as their choice of cars is concerned. Moreover, a fuel tax affects fuel use (and thus also carbon emissions) to a much greater extent than would an arrangement of car-purchase taxes (for example, vehicle excised duties) and annual taxes (Schipper & Johansson, 1999:41).

The table below compares the total fuel taxes for 1997 and 2007, both as a percentage of total fuel cost and in absolute monetary terms, for unleaded petrol and low sulphur diesel. (The total tax amounts in the respective currencies have all been converted to US dollars at the prevailing exchange rates as at 31 July 2008.)The taxes include all pollution taxes, sales taxes and other duties levied as a percentage of the average fuel price during each year in question.

Table 3: Comparative fuel taxes

	Petrol				Diesel			
	1997		2007		1997		2007	
	%	USD	%	USD	%	USD	%	USD
South Africa	35%	0.17	28%	0.25	31%	0.14	24%	0.22
Malaysia	10%	0.03	0%	0.00	10%	0.04	0%	0.00
Australia	57%	0.44	41%	0.43	59%	0.45	37%	0.46
The UK	81%	1.11	61%	1.14	79%	1.22	58%	1.45

Source: OECD (2008a)

A comparison of the data for fuel taxes in real terms reveals that fuel taxes for all countries increased or decreased only marginally. On the other hand, fuel taxes as a percentage of the fuel price decreased, on average, by 14 percent. This essentially demonstrates that, as external factors like crude oil prices force fuel prices up, all the governments are willing to

diverge from harsh fuel tax policies in order to restrain the inflationary effects of higher fuel prices.

Malaysia has not been levying taxes on petrol or diesel; it also had the lowest rate and amount of tax on petrol and diesel in 1997 by a substantial margin. In actual fact, the Malaysian government abolished sales tax on diesel in October 1999, and followed this by exempting petrol from sales tax in June 2004. It has been reported that the Malaysian government currently subsidises 24.2 Malaysian sen (cents) per litre of unleaded petrol and 19, 64 sen per litre for diesel (Blarke, 2008:3).

It was mentioned in Chapter 5.5.3 that the Malaysian government has recognised CO₂ emissions from vehicles as the leading source of carbon pollution. However, at the same time, the Malaysian government expressed confidence that the tax instruments they had put in place would be adequate to address rising pollution levels. Considering that Malaysia paid back USD 8.1 billion in 2007 to commuters in the form of fuel tax exemptions (Blarke, 2008:3), it calls into question the reliability of the government's contentions that the pollution tax penalties and incentives are going to address the problem of rising carbon emissions.

The table also demonstrates that the duty levied on petrol in Australia decreased by a mere 0.01 US dollars from 1997 to 2007, and the taxes on diesel increased by 0.01 US dollars for the same 10-year period. In actual fact, since March 2001, the rate of excise duty on unleaded petrol in Australia has remained unchanged at AU\$ 0.381 per litre. At the same time, Australia also provides a fuel subsidy to combat the inflationary effect of high crude oil prices. This illustrates, as mentioned in Chapter 5.4.4, the Australian ruling government's reluctance to raise taxes that could have negative economic consequences.

In the UK, fuel tax rose in 1997 to a record high of 81 per cent of the total fuel cost. However, a change in the ruling administration in 1997 brought about a slow but steady decrease in the percentage that the fuel tax bears the total fuel price. Even so, fuel tax in real terms in the UK is more than double that of any other country in the study and as pollution reduction plans are starting to make a more serious impact, the trend is expected to reverse. In evidence of this, the UK government announced that fuel levies are earmarked to increase by 2 pence per litre in 2008 and 2009 respectively (Her Majesty's

Revenue & Customs, 2008). Moreover, UK Treasury figures showed that revenue from fuel duties rose from £21.6 billion in the 1998-99 financial year to £23.3 billion in the 2000-01 financial year; the amount represents approximately 6% of total revenue earned by government.

While the UK and Australia levy only one type of fuel duty and a sales tax on the supply of fuel, South Africa levies no less than eight different taxes, such as a petrol pipelines levy and a sleight levy, a customs duty, a road accident fund levy and the normal fuel levy. However, unlike Australia and the UK, petrol and diesel are a zero-rated supply for VAT (sales tax) purposes in South Africa (section 11(1)(h) of the Value Added Tax Act 89 of 1991.

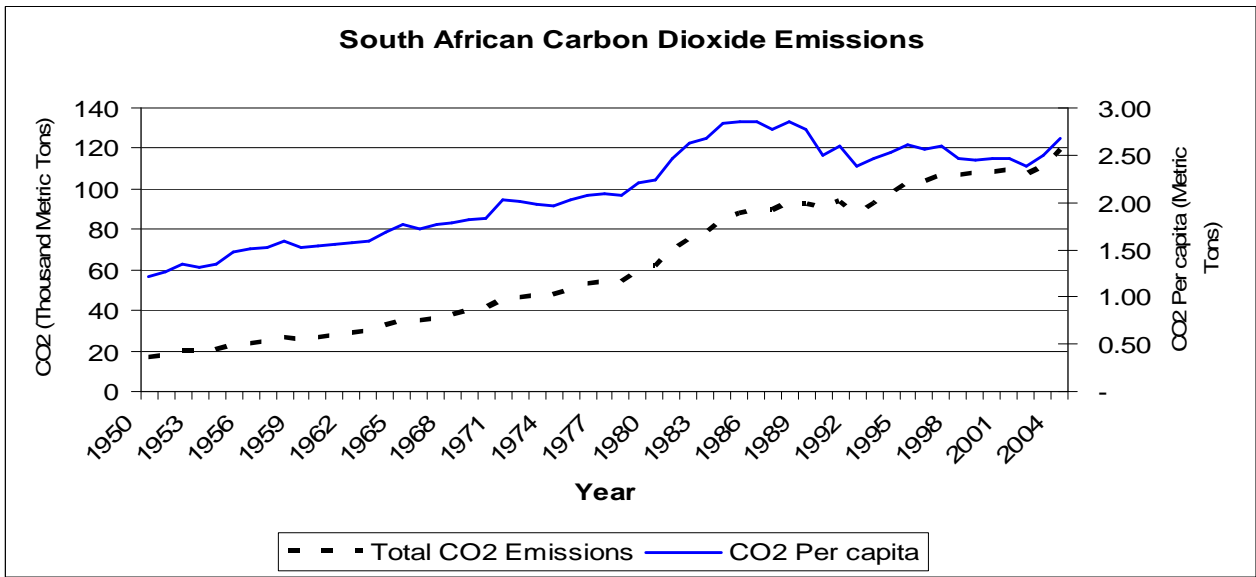
Interestingly, South Africa is the only country where the tax on diesel is lower than the tax on petrol in real terms. Diesel is generally more expensive than petrol because of the higher international demand. This is because “diesel is the fuel of economic growth with demand rising rapidly” (Australia, 2008c). Thus, where taxes are raised as a percentage of the price of the fuel, taxes on diesel are normally going to be higher.

6.3 EMISSION GRAPHS AND DATA

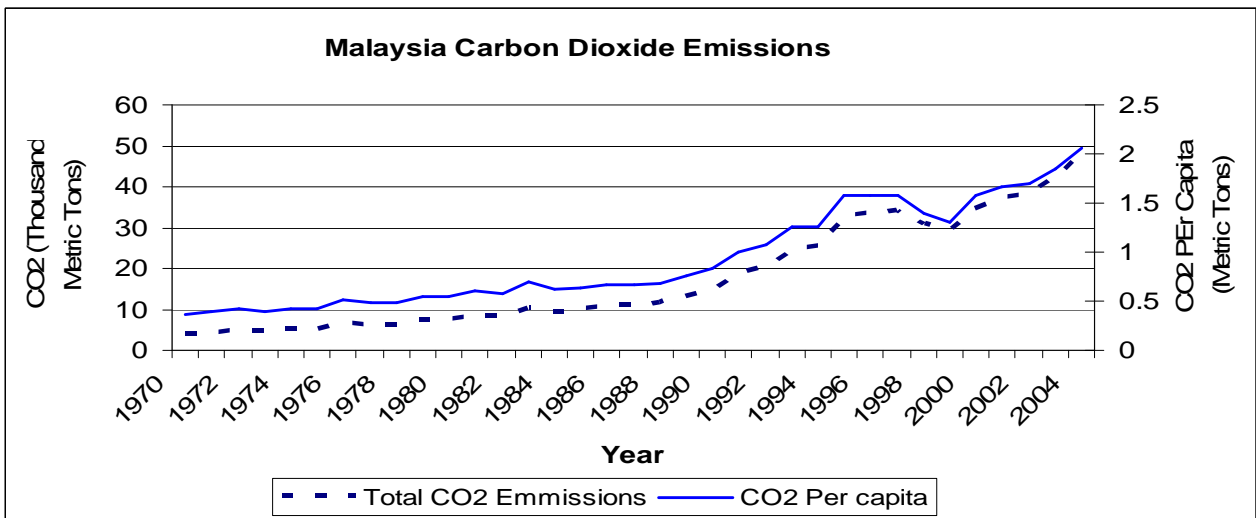
6.3.1 Emissions from fossil fuels

Below are the graphs for the each of the country's CO₂ emissions produced from the burning of fossil fuels (OECD, 2007). Fossil fuels, as referred to in this text, include all liquid, gas and solid fuels that are consumed to produce energy. It is estimated that approximately 30 percent of each country's CO₂ emissions is contributed by the burning of fossil fuels, the remaining 70 percent being made up from a large variety of factors like natural fires and other natural processes (OECD, 2007). In considering the effects of pollution taxes on emission statistics, it is therefore prudent to consider only the results of emissions over which each country has control. The statistics of CO₂ from fossil fuels may thus be a better indicator of the effectiveness of a country's pollution tax administration than the statistics for the total CO₂ emissions by each country.

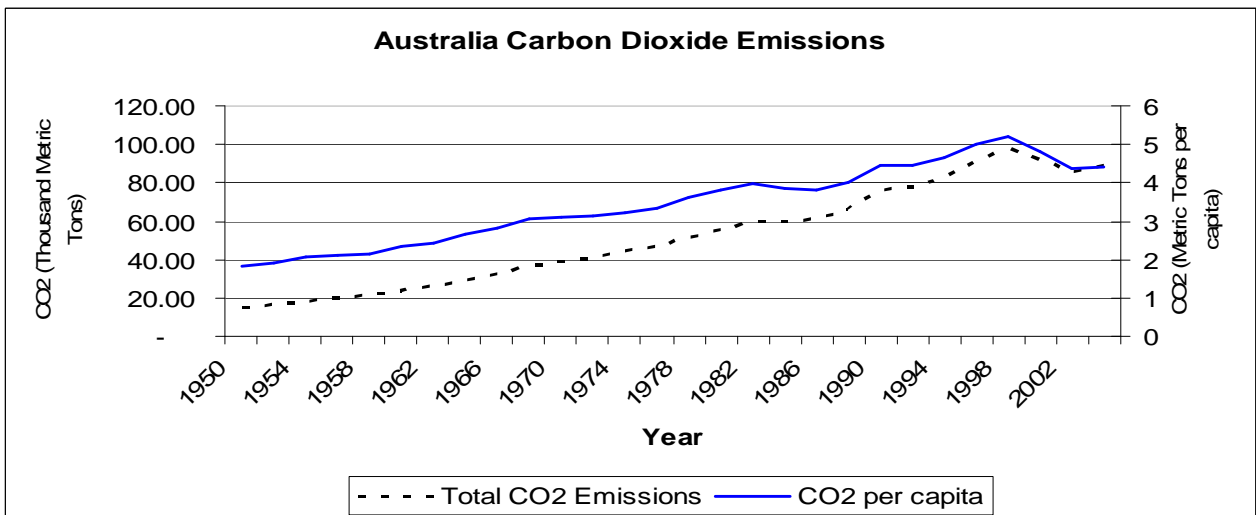
Graph 1: CO₂ emissions produced from fossil fuels in South Africa



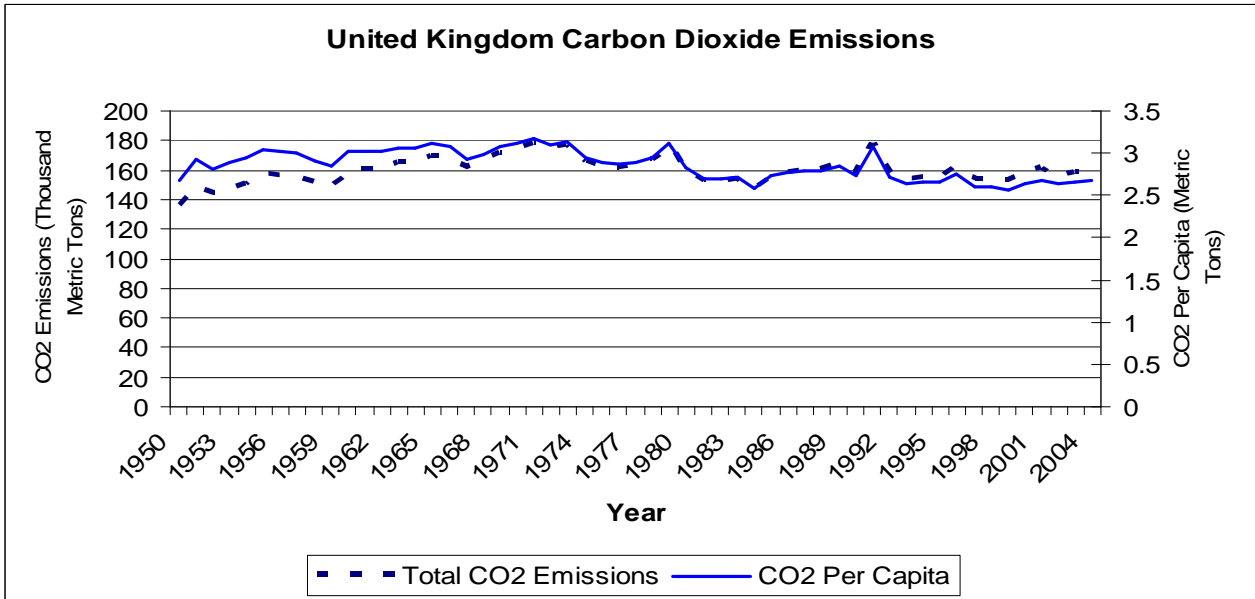
Graph 2: CO₂ emissions produced from fossil fuels in Malaysia



Graph 3: CO₂ emissions produced from fossil fuels in Australia



Graph 4: CO₂ emissions produced from fossil fuels in the United Kingdom



6.3.2 Interpretation of emissions graphs

It must first be noted that comparable data on CO₂ emissions from burning fossil fuels have been released only up to the end of 2004, so the effectiveness of the latest changes in the pollution tax laws may not be gauged from the graphs. Moreover, the effects of pollution tax enactments introduced before 2004 do not immediately affect CO₂ emissions, as the citizens and industries have to adapt their behaviour, largely by acquiring more efficient equipment or finding ways of being efficient, which results in staggered or delayed greenhouse gas reductions.

When examining the lines from each graph above, the trend in the CO₂ per capita compared against the trend in total CO₂ emissions may be the best indication of the effectiveness of anti-pollution measures, since CO₂ emissions per capita should decrease (or at least stabilise) when people change their behaviours as a result of pollution taxes and incentives and carbon trading. This is despite the fact that the total amount of CO₂ emitted by the country may still be increasing owing to the growth in the population.

Considering the trends in total emissions emitted per year, it can be observed that Australia and the UK have both shown a definite decline in total CO₂ emissions from 1998 onwards, while total CO₂ emissions for the developing countries Malaysia and South Africa

have continued to rise. This can be attributed mainly to the astonishing economic growth experienced in South Africa and Malaysia. However, at 4.5 Metric Tons of CO₂ per capita, Australia's CO₂ per capita measure was 73 percent higher than that of South Africa and the UK, both of which had a CO per capita measure of approximately 2.6 in 2004. Malaysia was the "best" performing country in this respect, with a CO₂ per capita measure of 2.1 Metric Tons in 2004.

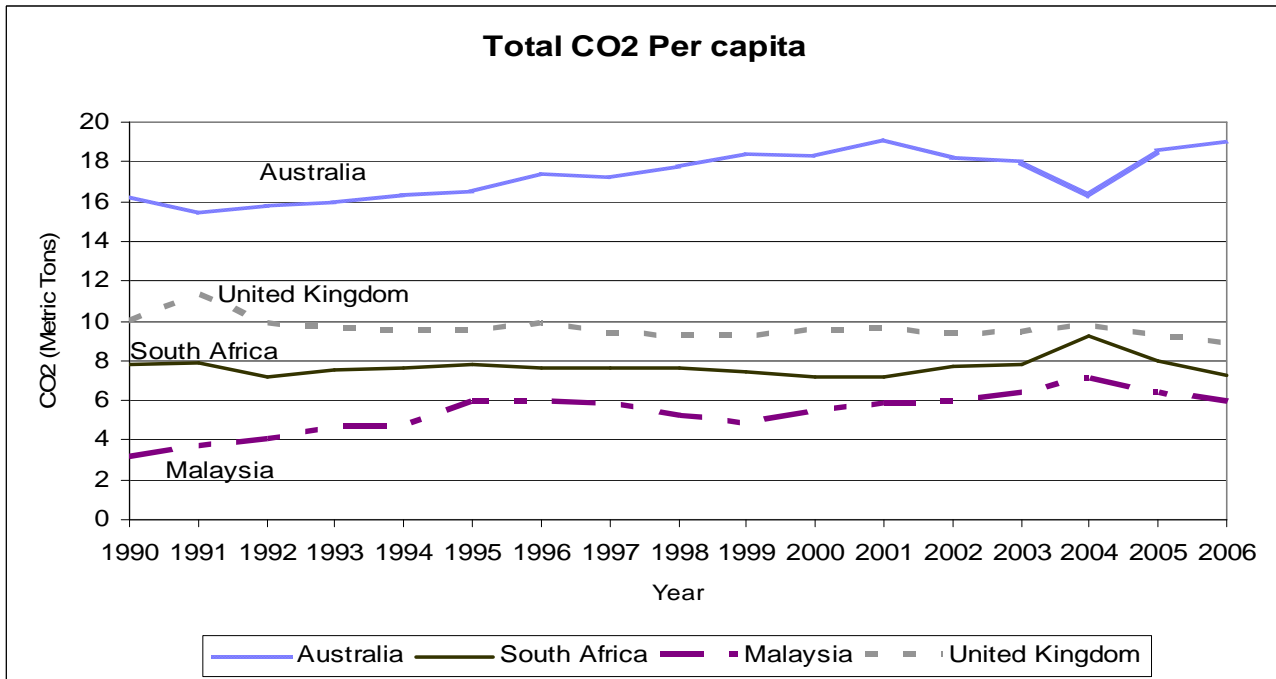
Conversely, if one considers the aggregate amount of CO₂ introduced into the atmosphere by each country from the burning of fossil fuels, Australia ranks as having the second-lowest total CO₂ emissions at roughly 85,000 Metric Tons of CO₂ for 2004, compared to South Africa and the UK, which emitted roughly 122,000 and 160,000 Metric Tons of CO₂ respectively in 2004.

Despite the fact that the Australian government has been the most hostile to pollution taxes and has been reluctant to introduce pollution tax measures, the total amount of emissions and emissions per capita from fossil fuels in the country has been decreasing over the last ten years. The decrease in total emissions can be attributed, mainly to the fact that the Australian government has opted, where possible, to burn gas rather than coal for electricity production. The development of more fuel-efficient transportation in the last ten years has also played a role in reducing carbon emissions.

The strong economic growth period experienced in Malaysia and South Africa as from 1998 created an unprecedented rise in vehicle sales (Venter, 2008b:15) which was a driver for the increase in emissions in the two countries. By comparison, the UK and Australia did not experience similar surges in vehicle sales. Accordingly, the effectiveness of fuel taxes may not be accurately construed from the statistics. However, the UK's expensive fuel tax regime does draw a parallel with the reduction in emissions over the last ten years in the UK's emissions graph.

Whereas the graphs above showed the trends in CO₂ emissions per capita from fossil fuels, the graph below shows the total amount of CO₂ per capita for each country. In addition, the graph extends to 2006, which gives a better indication of the effectiveness of pollution tax policies that have become more prevalent in the recent past.

Graph 5: Total CO₂ emissions per capita



Source: World Bank (2008)

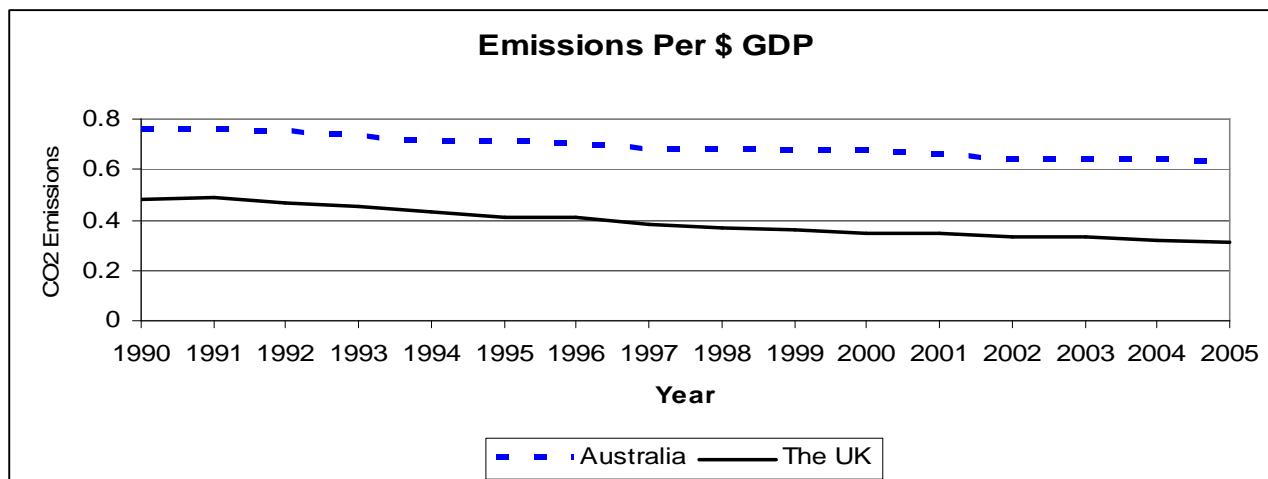
It is once more clear that Australia’s CO₂ emissions per capita are significantly higher than those of the other three countries. Secondly, comparing Australia with the other three countries, it is evident that the other countries’ CO₂ per capita amounts start decreasing steadily after reaching their respective peaks in 2004. Australia’s graph, on the other hand, shows a steady increase in CO₂ volumes per capita after 2004. This may be the most compelling evidence that Australia’s lack of pollution tax incentives prior to 2007 negatively impacted its CO₂ volumes, as opposed to the other countries.

Finally, where the UK and South Africa had very similar CO₂ per capita measures from fossil fuel burning, the UK has a distinctly higher total CO₂ per capita count. The lack of natural vegetation in the UK to absorb CO₂ may be the main reason for the difference (World Resources Institute, 2007). Increased incentives for reforestation may therefore be required.

6.3.3 Emissions per Gross Domestic Product (“GDP”)

The graph below illustrates the quantity of CO₂ emitted for every US dollar of the GDP earned by each country. This is commonly referred to as the “carbon efficiency count”. The graph essentially illustrates whether a country has been able to utilise its resources more effectively in producing its revenue over time. As it is cheaper to produce revenues without having to control greenhouse gas emissions, this could serve as an indication of whether pollution taxes have had any effect on the way in which the revenues are produced.

Graph 6: CO₂ emissions per dollar of GDP “carbon efficiency count” for Australia and The UK



Source: World Bank (2008)

Accurate historical information is not available for either South Africa or Malaysia, so this section will compare data for only Australia and the UK. For both countries, there is a gradual decline in the slope of the lines. This may not necessarily indicate that pollution taxes have had the desired effect on emissions per capita, as the natural progress in technology would also result in a reduced CO₂ quota per US dollar of GDP. However, part of the rationale behind pollution taxes is that they will encourage increased investment in more efficient technology, so the effects of pollution taxes cannot be excluded as a possibility.

The second factor contributing to the increase in “carbon efficiency” is that a higher percentage of developed countries’ income is being produced from consulting services, as opposed to manufacturing activities. Consulting services require less energy and produce

fewer emissions. Tax may therefore not have had a great effect on the reduction in CO₂ per dollar of GDP (World Resources Institute, 2007).

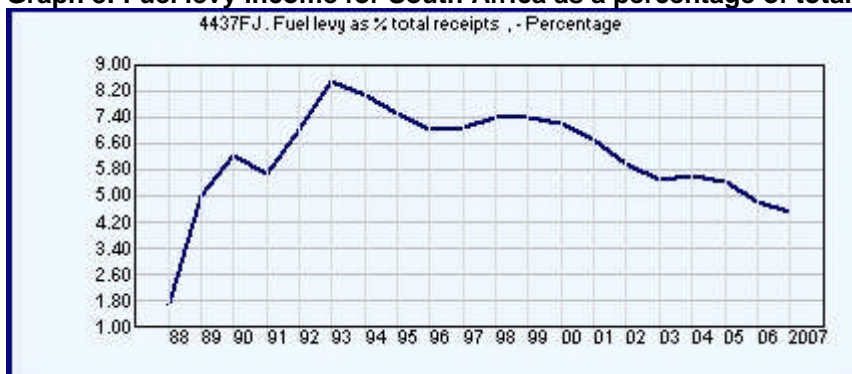
However, it is remarkable that the UK has consistently managed to produce every dollar of domestic revenue at 0.3 Metric Tons of CO₂ less than Australia. It is thus likely that the strict pollution tax regime of the UK as compared with Australia's almost non-existent pollution tax administration until 2008 has compelled UK individuals and corporations alike to be conscientious about the amount of greenhouse gases they create in their day-to-day business activities.

6.4 SOUTH AFRICA - POLLUTION TAX INCOME AND EXPENDITURE AND EMISSION TRENDS

6.4.1 Fuel tax revenues and expenditure

The graph below shows how the fuel levy income as a percentage of the total tax revenues has declined over the past 13 years (Department of Trade and Industry, 2008).

Graph 8: Fuel levy income for South Africa as a percentage of total tax revenue



In 1997 the total income from fuel levies amounted to R10, 392 million (which was the 4th largest after VAT, STC and Income Tax), while the total government revenue for the year was R146, 520 million. The largest income portion was earned from income tax on persons and individuals at R59, 519 million. In 2006/2007, fuel taxes amounted to R21, 864 and the total earned for the year was R480, 942 million. Yet again, the largest source of income was tax on persons and individuals (income tax) at R140, 762 million.

Thus, even though it may seem surprising that the contribution of fuel taxes to total government revenue has decreased by 2.6 percent from 1997 to 2007, the total fuel tax revenues nevertheless increased by 110 percent over the same ten-year period. However, the contribution of income tax revenues from persons and individuals increased by 136 percent in the same ten-year period, while tax revenues from companies also increased dramatically. The steady decrease in the contribution of fuel taxes to government revenue appears therefore not to be a function of the fuel levies but rather one of the exceptional growth in tax revenues from individuals and companies, owing to the strong growth in the economy.

Nevertheless, at face value, the fact that the fuel levies have been increasing steadily in real terms, as shown in Table 3 (Chapter 5.2.2), while the total fuel levy revenues decreased over that time reinforces the argument that fuel taxes have been effective in reducing demand for fuel relative to economic growth.

6.4.2 Plastic bag revenues and expenditure

The plastic bag levy contributed R76 million towards the state's revenues, which constitute 0.013 percent of the total tax revenues collected in the 2008 financial year. The total revenue from the plastic bag levy was significantly less than that from all other tax revenues, except for the donations tax, which raised R43 million in tax revenue for fiscus. However, the plastic bag revenue has steadily been increasing, from R41 million in the 2005/2006 financial year to R61 million in the 2006/2007 financial year (Gosling, 2007).

The year in which the plastic bag levy was introduced saw a reported 88 percent reduction in the production of plastic bags. Subsequently, the rates of plastic bag production have gradually been increasing to their current level, which is approximately 70 percent less than the pre-plastic bag levy levels (PET Plastic Recycling South Africa, 2008).

Despite the significant reduction in plastic bag production, it has been argued that the plastic bag tax levied is not substantial enough to effectively reduce the total amount of plastic bags being produced. By way of comparison, the plastic carrier bag tax levied by the Irish Revenue Services of 0.15 Euros (R1,64) on each plastic bag sold has caused a 95 percent reduction in the consumption in plastic bags since its inception in Ireland in 2002 (O'Murchu, 2007).

6.4.3 Allocation of government funds

The following table contains the budgeted allocation of funds in R million for the Department of Tourism and Environmental Affairs as compared with the total allocated tax revenue.

Table 4: Allocation of funds to environmental affairs

	2006	2007	2008	2009	2010
Tourism and environment	1 775.69	2 059.66	2 790.52	3 061.69	3 446.86
Total fund allocated	416 684.00	470 192.47	547 373.69	605 095.91	669 606.05
Percentage of total	0.426%	0.438%	0.510%	0.506%	0.515%

Source: National Treasury:2008

As can be seen from the above table, an extremely small portion of the total tax revenues has been allocated to environmental affairs, although the government budget shows that government is planning to invest slightly more in the department over the next two years. Allocation of plastic bag revenues to environmental purposes has also been unsatisfactory thus far. It was reported, that since 2005 National Treasury has only given R18 million of the R102 million collected from plastic bag levies to the department of environmental affairs. Environmental Affairs used the money to set up a non-profit company with the purpose of creating and managing a recycling program. The company has been battling with red tape which meant that although 11 managerial post were willed in 2006 not one recycling depot has been established. Treasury also gave R5.1 million to the South African Bureau of standards to apply towards ensuring that no bags less thinner than 24 microns are produced or imported into South Africa (Gosling, 2007:3).

6.4.4 Pollution from electricity consumption

The history of carbon emissions from electricity production has been succinctly summarised as follows:

With a domestic economy powered by coal, South Africa has experienced a 7.2-fold increase in fossil-fuel CO₂ emissions since 1950, with 80-90% of emissions from coal. For 2004, 82% of South Africa's fossil-fuel CO₂ emissions of 119 million metric tons of carbon were from coal' (Burger, Petzer, 2007:9)

Eskom's annual report (2008:14) showed that there was an annual increase in the level of CO₂ emissions from its electricity production, from 208,9 million tons in 2007 to 223.6

million tons in 2008. The report further affirmed that Eskom estimated that their total CO₂ emissions would continue rising for the next 17 years before adequate cleaner burning technology will be available to significantly reduce emissions.

With effect from February 2002, Eskom was converted into a public company, 100 percent of its equity share capital is held by the State (Eskom Conversion Act, 2001:5). Moreover, in terms of section 10(1)(cA) of the Income Tax Act Eskom is specifically exempted from having to pay income tax. Tax penalties on carbon emissions would therefore theoretically not affect the fiscus and could thus be an effective means of addressing the problem, although in all likelihood the additional cost will be passed on to all electricity consumers.

6.5 MALASIA, AUSTRALIA AND UK ENVIRONMENTAL POLICIES

6.5.1 Malaysia

When it comes to Malaysia's pollution tax policies:

“a lot only exists on paper... there are still problems in implementation at a practical level... air quality readings are taken, but they have not been published since 1999. Another example is cars. There are no prototype tests in which new models are thoroughly inspected by an independent authority before they are approved for the market.” (Lee, 2008:2)

An unrelated article similarly concluded that Malaysia has been lax in enforcing environmental policies (Heins, 2006). The Malaysian government has also been lenient on specific industries where foreign investment is sought despite the pollution and damage caused to the environment by foreign companies in particular (Heins, 2006).

The article, in which the cost of pollution to the Malaysian economy was investigated, identified as a major source of pollution in Malaysia the forest fires from neighbouring countries, a problem against which pollution taxes are ineffectual. It also identified air pollution as costing the Malaysian government 800 million ringgit annually (Heins, 2006).

When it comes to other types of pollution, a total of 1.103 million metric tons of scheduled waste were generated in 2006, up 101% from 548,916 metric tons the year before. However the “Solid Waste Management Program” mentioned in Chapter Four has not yet come into effect, but should play a significant role in reducing waste generation. The measurements of water quality have also shown that harmful substances in water have

risen by 3.2% in 2006 from the prior year (Malaysia, 2008). Nonetheless, “*the overall air quality for Malaysia deteriorated slightly (less than one percent) in 2006 compared to the previous year*” (Malaysia, 2008). The report further mentioned that the deterioration in air quality could be attributed to the trans-boundary pollution from neighbouring countries and that local air pollutants have actually decreased. However, the Malaysian government has not published any data regarding cost or allocation of funds to pollution reduction, despite the fact that the comprehensive application requirements for Pioneer Status ensures that such data is, in fact, available for the government.

6.5.2 Australia

In the Australian 2007 report on the status of its pollution policies, reference is made to the OECD definition of environmental taxes, quoted as “*any compulsory, unrequited payment made to general government levied on tax bases deemed to be of particular environmental relevance*” (Australian Greenhouse Office, 2007:33). The report stated (based on the above-mentioned definition of environmental taxes), that revenue from environmental taxes amounted to 2 percent of the GDP in Australia, while environmental taxes amounted to 3 percent of the GDP in the United Kingdom.

In 1997 the Australian government recognised a need to raise funds to upgrade power plants, and a Specific Electricity Levy (“SEL”) was introduced. This amounted to 80 Australian dollars per household per year, although pensioners and low-income groups were granted exemption. Over a five-year period, 485 million Australian dollars were raised from the SEL. However, at the same time, no noticeable decrease in the demand for electricity had occurred.

As the above example demonstrates, a tax, which may technically be classified as a pollution tax, have contributed a fair amount of revenue towards the government’s coffers , yet it has not altered consumer behavior nor has it made any significant impact on the environment, because the tax amount itself is relatively insignificant to consumers.

An important concession made by the Australian government, under subsection 8(1) of the Australian Excise Duty Act, is the 100 percent exemption of biodiesel from excise duty,

which would otherwise have been levied at 38.143 Australian cents per litre. The *Explanatory Memorandum*, 2003 stated that the estimated cost of the biodiesel grants would be AU\$15 million in 2003-2004, AU\$44 million in 2004-2005, AU\$76 million in 2005-2006 and AU\$99 million in 2006-2007. The memorandum also pointed out that the costs involved in providing the grant in respect of the low sulphur fuels was AU\$21 million in 2005-2006 and AU\$41 million in 2006-2007.

In 1998, income from fuel taxes amounted to 8,2 percent of the total income of the state. This figure remained relatively constant and as fuel taxes still contributed 8.2 percent of the total tax income of the state in 2003. The Australian government's expenditure on fuel and energy totalled AU\$1,599 million in 1998, and rose to AU\$2,050 million in 2003. At the same time, the average year-on-year budgeted allocation of energy tax revenues to subsidies shows a steady decline from 8 percent to 5.6 percent. Therefore, while fuel tax revenues have remained relatively constant, the government is applying less thereof for subsidies, which is generally accepted as a positive factor in reduction in emissions from fuel.

The Australian Federal Government plans to achieve its international greenhouse gas commitments, in part by reducing land clearing rates (Boele, 2007). Although Australia has been a habitual offender on the CO₂ emissions front, the government has made a great effort to apply funds to increase indigenous forest. From the period of 2000 to 2005 an average of 5 000 (kt) of carbon equivalent has been saved due to change in land use alone (Boele, 2007). Although the CO₂ reductions are less than one percent of total CO₂ equivalent amounts, it is nevertheless a positive factor, serving as an example of the practical use of tax revenues to reduce emissions.

5.5.3 The United Kingdom

In 2007, UK net CO₂ emissions were estimated to be 543.7 million tonnes. This was 2 percent lower than the 2006 figure of 554.5 million tonnes. The decrease was attributed to the switch from coal to natural gas for electricity generation, combined with lower fossil fuel consumption by households and industry (National Statistics Environmental Accounts,

2007). While emissions from transport and households have been steady, the business sector raised CO₂ emissions by 1.4 percent from the previous year.

It was estimated that in 1996 the fuel duty strategy saved between 1,500 and 2,000 kilo tons of Carbon equivalents (ktCe). In 2000 the figure increased to savings of 3,000 (ktCe). This represented a saving of approximately 8 percent of the total CO₂ emissions in road transport that year. More recently, the climate change levy (refer to Chapter 2.2.9) and climate change levy agreements contributed to a CO₂ saving of 4,400 ktCe in 2006 (National Audit Office, 2007). At the same time, the climate change levy yielded £744 million, which represented 0.15 percent of the total receipts from that year (National Audit Office, 2007). It was further estimated that the annual administrative burden across these suppliers was a total of £13 million. This is equivalent to 0.26 percent of the total burden placed on business by HMRC, or 1.7 per cent of levy receipts (KPMG, 2008b).

The most recent data provided by the Department of Environmental Affairs showed that 4.2 percent of the UK's electricity is generated from renewable sources, a considerable margin behind the EU target of 20 percent by 2020. To put this measure into perspective, countries like Denmark, Austria, Portugal, Sweden, Croatia, Latvia and Turkey are already ahead of the EU target. In an attempt to remedy the matter, the climate change levy will be increased substantially over the next three years (National Audit Office, 2007).

The landfill tax contributed £14 million to the total tax pool in 2007. It is estimated that, with the annual £8 rise in the levy, the amount will increase to £30 million in 2010. It is anticipated that the total amount of biodegradable municipal waste disposed of in landfills will reduce to 75% of the 1995 UK total tonnage by 2010 and 35% of the 1995 UK total tonnage by 2020. These targets were set and are enforced by the European Union (EU). The UK will face fines imposed by the EU of up to £180,000,000 for every year that the targets are not met (Directorate-General for Taxation and Customs Union. 2007).

The UK National Department of Statistics has, however, reported that pollution taxes, both as a percentage of GDP and of total tax revenues, increased until 1999 but have since been decreasing. *“These falls were a result of growth in the economy and in total taxes and social contributions exceeding that of environmental taxes”* (National Statistics. 2008).

The table below shows how UK citizens increased recycling activities from 1993 to 2007. This table underlines the increase in awareness of the public regarding pollution.

Table 5: Relative percentages of UK citizens taking part in recycling activities

<i>Proportion of people recycling, 1993-2007</i>								
Year	Percentage of people							
	Paper	Tins and cans	Glass	Food waste	Plastic	Cardboard	Garden waste	Clothes
1993	48	25	44	22	-	-	-	-
1996-7	51	34	47	25	-	-	-	-
2001	52	29	42	19	22	-	-	-
2007	88	68	80	19	58	61	41	34

Source: National Statistics (2008)

6.6 SUMMARY

From an overall perspective on pollution statistics, it is clear that Australia is the largest producer of greenhouse gases, while the UK is the second biggest polluter among the four countries, although the UK emission graphs have shown the lowest increase over the long term. South Africa is in third place among the four countries, but is still a major contributor to the total global greenhouse gas emissions. Malaysia overall emits the least greenhouse gas, but it has had the highest percentage increase in the long term.

When the revenues from pollution taxes are analysed, it is clear that, when countries have imposed pollution taxes, these revenues have been comparatively small in relation to the total tax income, even if these amounts are not immaterial in real terms. The exception is fuel taxes, which have contributed substantially to the government's coffers. In considering tax revenues re-invested into pollution reduction, the lack of statistics for any of the countries may be evidence to suggest that none of the governments are investing significant sums of money in the reduction of pollution. In fact government expenditures have often negated the positive effects of pollution taxes, examples being the fuel subsidies in Malaysia and Australia.

The next chapter will summarise how pollution taxes and incentives are perceived by the people subject to taxes. The results may give an indication of the extent of citizens' possible tolerance of increases in the taxes, in light of the fact that the penalties imposed

and incentives granted may not at this stage be large enough to achieve the desired results.

CHAPTER SEVEN

SURVEY RESULTS

7.1 INTRODUCTION

In the previous chapters the legislation, government policies and statistics relating to pollution and taxes were explored. However, since the aim of pollution taxes and incentives are, in part, to address the behaviour, attitudes and perceptions of the general population, these factors will to some extent determine the success of the taxes and incentives. This chapter provides a summary of the results of the surveys conducted as part of this study, as well as the results of surveys conducted in the other countries; to gain insight into taxpayers' opinions on the subject and how pollution taxes penalties and incentives would alter their behaviour.

7.2 SOUTH AFRICA

A concern that was revealed in the pre-testing comments, with regards to the general public questionnaire, was that some of the questions may have been somewhat complex for the average person to comprehend entirely. For this reason, participants in the general public questionnaire might not have been able to give truthful answers to specific questions thus affecting the reliability of results.

The only commentary from the pre-testing of the tax practitioner questionnaire was that a participant's understanding of the ease of measuring pollution and administration of pollution taxes may have resulted in participants interpreting the questions differently. Moreover, as mentioned in Chapter 1.1.6 a sample size of at least 400 participants from the general public is required before one can accept the result of the sample to as representative of the population. Due to various technical problems a sample size of only 164 participants was obtained. Nevertheless, as the results show, the clear trends on the opinions of the participants make it possible to form a conclusion of what the common attitudes and perceptions of the general South African public are.

7.2.1 General public questionnaire

The following depicts the results of the general South African adjusted adult population questionnaire (refer to Chapter 1.1.6. for the population definition).

Question 1

Do you agree with the concept that excessive Carbon Dioxide (CO₂) in the atmosphere is causing Global warming and that it is a serious issue that requires human intervention.

Yes	No
96.34%	3.66%

Question 2

Tax incentives and tax penalty systems could be used as an effective means to reduce the amount of CO₂ in our atmosphere to such a degree that global warming is reversed.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
1.22%	14.02%	11.59%	47.56%	25.61%

Question 3

Regardless of my opinion on the first two questions above, companies that cause pollution should be taxed on excessive pollution emissions.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
0.61%	1.83%	0.61%	15.24%	81.71%

Question 4

Government should seek to tax all types of pollution such as dangerous gasses, water pollution and air pollution, not only CO₂ emissions.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
0.61%	1.83%	1.22%	17.68%	78.66%

Question 5

I would make a concerted attempt to invest in products and equipment that reduce pollution such as solar panels, recycling services, energy saving and water saving equipment etc. if I could get a tax deduction for such expenditure.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
0.61%	2.44%	2.44%	22.56%	71.95%

Question 6

I am in favour of pollution taxes even if it causes an increase in the prices of products that I use, as long as such taxes effectively reduce pollution and create a long term benefit

Definitely Not	I don't think so	Not sure	Possibly	Definitely
4.27%	4.88%	17.07%	40.24%	33.54%

Question 7

Every vehicle currently sold in South Africa's CO₂ emission statistics (in grams per kilometre) is currently documented, for example at the low end of the scale a Peugeot 107 emits 133 grams of CO₂ for every km that it travels and at the other end of the scale a BMW M3 emits 341 grams of CO₂ for every kilometre travelled.

Given this information: If the South African government started taxing vehicles, a taxation based on the actual emission figures should be preferred over systems based on the cars' engine size or fuel consumption (as is used in countries like England).

Definitely Not	I don't think so	Not sure	Possibly	Definitely
1.22%	3.66%	12.20%	34.15%	48.78%

Question 8

The new 2% tax on my electricity bill is a fair method of taxing energy consumption and I will endeavour to reduce my electricity usage as a result.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
6.10%	21.34%	6.10%	29.88%	36.59%

Question 9

I am of the opinion that pollution tax penalties and tax incentives should only apply to Companies, not to individuals.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
18.29%	29.27%	12.80%	21.95%	17.68%

Question 10

I would only be in favour of pollution tax if other taxes were reduced to compensate so that the total tax burden remained the same, (hence good anti pollution behaviour will also not see you paying less tax than before).

Definitely Not	I don't think so	Not sure	Possibly	Definitely
2.44%	15.85%	16.46%	28.05%	37.20%

Question 11

I am aware of the current pollution taxes and anti pollution incentives in South Africa and think that the government has done enough to communicate its pollution tax initiatives to the public.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
2.44%	15.85%	16.46%	28.05%	37.20%

Question 12

I believe that taxing pollution and anti pollution incentives will ultimately lead to improved quality of life.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
1.83%	4.27%	9.15%	46.95%	37.80%

Question 13

No amount of pollution tax and anti pollution tax incentives will ever make South Africa "green" or "clean"

Definitely Not	I don't think so	Not sure	Possibly	Definitely
9.15%	39.02%	25%	16.46%	10.37%

Question 14

In my opinion South Africa is producing more pollution than other countries of a similar size

Definitely Not	I don't think so	Not sure	Possibly	Definitely
3.05%	23.78%	31.71%	28.05%	13.41%

Question 15

I would support taxing pollution only if it does not reduce short and medium term (1 to 5 year) economic growth in South Africa

Definitely Not	I don't think so	Not sure	Possibly	Definitely
8.54%	14.02%	29.27%	32.32%	15.85%

Question 16

If we introduce pollution tax it will reduce South Africa competitiveness in the global market when competing with countries that do not impose environmental tax penalties.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
7.32%	30.49%	25.61%	31.10%	5.49%

Question 17

I believe that The South African Revenue Services (SARS) will be able to administer environmental taxes and incentives effective and efficiently as well as allocate the revenues there from appropriately.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
9.76%	18.90%	23.78%	31.71%	15.85%

Question 18

The current plastic bag levy of 3 cents per bag on all plastic shopping bags is an effective environmental levy from which the environment has benefitted.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
12.80%	23.78%	12.80%	30.49%	20.12%

In analysing the results, it is clear that the majority of subjects and thus possibly the South African public are in favour of pollution taxes and that there is generally a positive attitude towards the suggested pollution taxes. Moreover, despite the possibility of negative consequences, the majority of participants were still in favour of such taxes although not as decidedly as when it is suggested that the taxes will merely penalise the culprits.

7.2.2 Tax practitioner questionnaire

Below follows the results for the opinion poll conducted for South African Tax Practitioners (refer to Chapter 1.1.5 for definition of "South African Tax Practitioners" population). As explained in Chapter 1.1.6, a minimum of 50 responses were required; there were 87 responses to the questionnaire.

Question 1

Excessive Carbon Dioxide (CO₂) in the atmosphere is causing global warming which is a serious issue that requires human intervention.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
3.45%	1.15%	4.60%	13.79%	77.01%

Question 2

Tax incentives and tax penalty systems could be used as an effective means to reduce the amount of CO₂ emissions in our atmosphere to such a degree that global warming is reversed

Definitely Not	I don't think so	Not sure	Possibly	Definitely
3.45%	9.20%	3.45%	45.98%	37.93%

Question 3

Government should seek to tax all types of pollution such as dangerous and obnoxious gasses, water pollution and air pollution, not only CO₂ emissions

Definitely Not	I don't think so	Not sure	Possibly	Definitely
3.45%	8.05%	5.75%	20.69%	62.07%

Question 4

Government should rather seek to reduce pollution through other methods such as carbon trading and regulations.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
3.45%	14.94%	8.05%	45.98%	27.59%

Question 5

Entities that deliver goods or services connected with pollution reduction should be taxed at a reduced rate similar to small business corporations

Definitely Not	I don't think so	Not sure	Possibly	Definitely
6.90%	8.05%	6.90%	34.48%	43.68%

Question 6

Companies that have capital expenditure which qualifies for an accelerated capital allowance in terms of section 37B of the Income Tax Act 58 of 1962 should not be allowed to claim a deduction if the activities are not performed or assets are not utilised within the borders of the Republic of South Africa

Definitely Not	I don't think so	Not sure	Possibly	Definitely
6.90%	18.39%	13.79%	26.44%	34.48%

Question 7

The VAT system can be applied as an effective pollution tax measure, for example, goods and services supplied in connection with pollution reduction are subject to a reduced VAT rate (if not a zero rate), and polluting goods and services are subject to VAT at a rate higher than the standard rate.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
5.75%	21.84%	9.20%	33.33%	29.89%

Question 8

There should be interaction between the Income Tax Act and other acts that regulates pollution in South Africa, such as the Environment Conservation Act of 1989 and Hazardous Substances Act of 1973.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
2.30%	5.75%	8.05%	36.78%	47.13%

Question 9

There should be no import or excise duties on equipment imported to be utilised in reducing pollution, such as wind powered generators, carbon filters etc.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
2.30%	11.49%	4.60%	24.14%	57.47%

Question 10

The current incentive measures and asset allowances (such as those contained in section 37B of The Income Tax Act) for anti pollution expenditure must be increased considerably to serve as more of an incentive measure, for example by increasing the allowance to 150% of the cost of the equipment etc.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
3.45%	5.75%	9.20%	33.33%	48.28%

Question 11

There should be more anti-pollution tax incentives for individuals.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
3.45%	5.75%	9.20%	33.33%	48.28%

Question 12

I would readily be able to advise clients seeking advice regarding environmental tax incentives and tax penalties.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
11.49%	12.64%	19.54%	35.63%	20.69%

Question 13

Every vehicle currently sold in South Africa's CO₂ emission statistics (in grams per kilometre) is currently documented, for example at the lower end of the scale a Peugeot 107 emits 133 grams of CO₂ for every km that it travels and at the other end of the scale a BMW M3 emits 341 grams of CO₂ for every kilometre travelled.

Given this information: If the South African government started taxing vehicles, a tax based on the actual emission figures should be preferred over systems based on the cars' engine size or fuel consumption (as is used in countries like England).

Definitely Not	I don't think so	Not sure	Possibly	Definitely
4.60%	11.49%	13.79%	39.08%	31.03%

Question 14

More levies similar to the plastic bag levy (of 3 cents per bag levied in terms of the Customs and Excise duty Act) should be raised on items that cause more than a specified level of CO₂ to be released into the atmosphere.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
5.75%	6.90%	11.49%	36.78%	39.08%

Question 15

The qualifying criteria contained in the current research and developments provisions of Income Tax Act should be relaxed in order that any type of anti pollution technology development will qualify for the special allowances.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
2.30%	3.45%	9.20%	47.13%	37.93%

Question 16

I believe that The South African Revenue Services will be able to administer environmental taxes and incentives effective and efficiently as well as allocate the revenues there from appropriately.

Definitely Not	I don't think so	Not sure	Possibly	Definitely
9.20%	19.54%	16.09%	33.33%	21.84%

Question 17

Rate the following five penalties in the order that you feel would be the most (1) to the least (5) effective in South Africa at reducing pollution while at the same time promoting long term economic growth.

- 1: Taxing carbon emissions for all companies at a fixed rate for every gram of CO₂ emitted over a specified limit.

1	2	3	4	5
24.14%	26.44%	20.69%	16.09%	12.64%

- 2 Companies that have pollution emissions (of whatever nature) above specified limit should forfeit deductions that would otherwise have been allowed by other sections in the Act.

1	2	3	4	5
19.54%	19.54%	24.14%	21.84%	14.94%

- 3: A company will not be allowed to claim any input VAT and will be required to charge Output VAT at a rate of 2% above the standard rate of 14%, for any purchase, sale or services directly connected with causing CO₂ emissions or other listed types of pollution over a specified amount.

1	2	3	4	5
17.24%	14.94%	20.69%	32.18%	14.94%

- 4: Companies must be taxed for all CO₂ emission at a sliding scale increasing exponentially as the CO₂ emissions increase

1	2	3	4	5
25.29%	24.14%	22.99%	16.09%	11.49%

- 5: Given that every new vehicle sold in South Africa's CO₂ emission statistics are available individuals should be taxed on a rate per CO₂ emissions multiplied by the number of kilometres travelled based on the emission statistics for that vehicle, unless the owner can prove that more than 90% of the time the vehicle is being fuelled with bio fuels that significantly reduces the CO₂ grams per km emitted by the vehicle.

1	2	3	4	5
12.64%	12.64%	25.29%	19.54%	29.89%

Question 18

Rate the following five incentives in the order that you feel would be the most (1) to the least (5) effective in South Africa at reducing pollution while at the same time promoting long term economic growth.

- 1: An expansion of section 11D (deductions in respect of scientific or technological research and development) should be introduced where the development of technologies and innovations that can be shown to reduce environmental degradation should be allowed an allowance of 200% of the original cost of all capital and income expenditure incurred in connection therewith.

1	2	3	4	5
26.44%	17.24%	22.99%	16.09%	17.24%

- 2: Entities that can produce Bio fuels and bio fuel technologies produced from products other than maize, sunflower or other produce and entities that produce pollution free renewable energy should be exempted from income tax as well as being allowed to raise output VAT at a zero rate.

1	2	3	4	5
21.84%	21.84%	20.69%	20.69%	14.94%

- 3: Zero rated VAT as well as exemption from customs and excise duties of all products connected with reduced emission technologies.

1	2	3	4	5
14.94%	18.39%	29.89%	17.24%	19.54%

- 4: Entities carrying on a trade with the sole or main purpose of supplying goods and services connected with the reduction of CO₂ emission or reduction of other classes of harmful pollution should be taxed at 15% as well as qualifying for accelerated allowance

1	2	3	4	5
17.24%	29.89%	22.99%	17.24%	12.64%

- 5: All individuals that have vehicles that emit less than 100g CO₂ for every km travelled will be given a special travel allowance deduction for total kilometres travelled (including private Kilometres) as well as being exempt from any emission levies.

1	2	3	4	5
26.44%	13.79%	18.39%	19.54%	21.84%

7.2.3 **Discussion of results**

It seems that tax practitioners' convictions regarding pollution taxes and incentives are somewhat less certain than those of the general public. Nevertheless, there are definite indications that tax practitioners too believe that global warming is caused directly by carbon emissions and that tax measures should be utilised to deal with the problem. Furthermore, participants appeared to be positive about the outcomes that such taxes will have.

Considering especially the punitive measures suggested, it is clear that no specific measure was strongly favoured above the other proposals by the majority of the tax

practitioners, although VAT was, in general, the most favoured measure. Considering the suggested incentive measures, the results were equally irresolute. An expansion of the section 11D was overall, the most favoured of the five choices as the most effective method to reduce pollution and improve long term economic growth in South Africa.

7.3 OPINIONS IN THE UNITED KINGDOM, MALAYSIA AND AUSTRALIA

Of the three foreign countries in the study, the UK is the only country for which a detailed opinion poll on the subject of pollution has been published. Below follows a table with some of the relevant results from the ‘Survey of Public Attitudes and Behaviours toward the Environment 2007’, conducted on behalf of the UK Department of Environment, Food and Rural Affairs by the British Market Bureau.

Table 6: UK citizens’ attitudes and behaviours towards the environment

Statement	Percentage of people				
	Strongly agree	Tend to agree	Neither agree nor disagree	Tend to disagree	Strongly disagree
It is too much effort to do things that are environmentally friendly	3	15	21	42	18
I don’t believe my behaviour and lifestyle contribute to climate change	8	21	25	35	12
People who fly should bear the cost of the environmental damage that air travel causes	16	28	25	18	13
I would favour a system that rewarded me if I recycled everything I could and penalised me if I didn’t	20	32	24	15	9
I would only buy appliances with high energy efficiency ratings even if they cost more	31	33	18	12	6
I would be prepared to pay more for environmentally friendly products	12	33	25	20	10

Source: Department of Food, Environment And Rural Affairs (United Kingdom. 2007)

The following table shows what the perceived impact the following behaviour changes would make to global warming:

Table 7: UK citizens' perceptions regarding behaviour changes

Behaviour	Percentage of people				
	Major Impact	Medium	Small Impact	No difference	Don't know
Reducing water use at home	37	35	21	6	1
Improving / installing insulation at home	44	35	16	5	1
Flying less	48	27	17	8	0
Cutting down gas and electricity use at home use	50	33	13	3	0
Using a more fuel efficient car	52	30	13	5	1
Using a car less	52	29	13	5	1
Recycling more	56	29	12	3	1

Source: Department of Food, Environment And Rural Affairs (United Kingdom. 2007)

As in the case with the opinion polls conducted as part of this study, it is apparent that people are willing to pay more, whether in tax or for the product itself, if the premium results in a reduction in pollution. Furthermore, the relative spread of the percentages for the five choices and the recognition of the effects of pollution on global warming showed in the UK survey are similar to the results of the opinion poll conducted as part of this study. The above mentioned survey did not venture in depth into taxes. Only one question specifically raised the topic of taxes, asking the following:

“For the sake of the environment, car users should pay higher taxes”.

The responses were:

Strongly Agree	Tend to agree	Neither agree nor disagree	Tend to disagree	Strongly disagree
8%	17%	18%	25%	28%

In light of the generally favourable view towards pollution reduction measures, this response is somewhat unexpected. Although the excessively high tax on fuel in the UK in comparison with the other three countries, could explain the negative stance of UK citizens on car users paying even more taxes.

Although there are no formal opinion results available for Australia or Malaysia, it is evident, from looking at various journals, news paper articles and discussion forums, that the majority of citizens of both countries are in favour of government intervention through taxes to reduce pollution. The “polluter pays” principal has been upheld most often as the way of the future with regards to taxing pollution in the various articles. Opinion polls for all of the countries have confirmed that more than 90 percent of the people of those

countries believe that global warming is a reality and that something should be done to address it (OECD, 2008b).

7.4 CONCLUSION

It is apparent that the majority of citizens in all four countries are in favour of pollution tax initiatives and other mechanisms to address pollution causing global warming. As concluded from the previous chapters, with the exception of the UK, few direct taxes have hit the pockets of polluters or consumers of polluting products. On the other hand, indirect taxes, and more specifically fuel taxes, generally a less obvious burden for taxpayers, have been producing the mainstay of the pollution tax revenues for the various governments. Since the pollution taxes are masked somewhat within the cost of the products, the perceptions of the citizens may not reflect the reality regarding pollution taxes. However, the results from the UK pollution survey indicate that, where the taxes become more onerous, the attitudes of the general public towards pollution taxes become less approving.

It has also become apparent in previous chapters that the South African government is actively making efforts to address pollution problems. However, communicating with and informing the citizens of the country about these efforts appear to be an area they have overlooked to a great degree. It is recommended therefore, that the government should make a concerted effort to raise awareness of its current pollution incentives, which will make the incentives more effective.

The next chapter, which is the concluding chapter, will consider all the results from all the previous chapters, against the objectives set out in Chapter One.

CHAPTER EIGHT

CONCLUSION

8.1 INTRODUCTION

The question essentially posed in the research proposal was:

Which methods and to what extent pollution taxes and tax incentives can be applied to alter the behaviour of people, while still being an effective method of collecting revenues for the fiscus.

The reason for this question being that:

“[a] tax system should be rational and progressive, coherent and consistent. It should give clear signals. But environmental tax proposals frequently fail one or more of those tests, trapped between the goal of raising revenue and the achievement of environmental objectives” (Wales, 2007:12).

The paper seeks to answer the question by comparing the technical pollution taxation legislation in Chapters 2, 3 and 4, the general approach by governments in Chapter 5, pollution statistics in Chapter 6 and finally the results from opinion polls in Chapter 7. From these research undertakings the relative degrees of success that the respective governments have achieved may be construed.

8.2 TAX LEGISLATION AND POLICIES

An inspection of the particular countries' taxation legislation revealed that all four countries offer some form of an allowance for capital expenditure incurred in respect of pollution reduction or containment equipment. In addition, all the countries except for South Africa, are also granting special accelerated income tax allowances for investments in renewable energy equipment, as is evident from the in the analysis summarised in Chapter Four.

These allowances seem to be fair tax measures, incentivising taxpayers to invest in pollution reduction technology and the environment. Even so, it may be argued that there is discrimination against individuals and businesses that are not functioning within the

specific industries where allowances are granted, and that their efforts to reduce pollution and their investments into the environment are not rewarded.

While industry specific incentives will, in principal, benefit the whole community, it is the allowances from indirect taxes that provide a real financial recompense to anyone willing to invest in the environment. However, it is only the UK that is currently applying indirect taxes as an incentive measure, providing in particular, reduced VAT rates for energy saving materials and items. Indirect taxes are applied in stead as an additional cost to discourage pollution, although, as is the case with the incentives, only the UK has applied indirect taxes extensively to control pollution. Furthermore, it can be seen that fuel and electricity levies are the most prevalent indirect taxing methods applied to perturb persons from exploiting polluting resources. It has also been illustrated, in South Africa, that plastic bag levies is a particularly effective method of reducing plastic pollution.

Looking at the overall pollution reduction strategies of the individual countries, it is apparent, that setting specific quantified emission targets is imperative. However, specific targets set for a country will only be truly effective if there is a higher body with the authority to punish the government of that country if it does not meet its targets; as countries have often relaxed or chosen not to enforce pollution taxes when economic prospects are looking down, seeing that there are no real consequences in doing so.

Finally, considering these results to determine the best ways to implement and administer pollution taxes and incentive schemes in South Africa, it is suggested the legislator should insert of a paragraph within the wording of all sections that allow deductions for environmental expenditure which will make it clear that such allowances are available for any taxpayer who has incurred expenditure for the benefit of the environment. As for additional taxes, it should be most efficient and effective to expand on indirect taxes, since this will not require a great deal of additional infrastructure and administration for the revenue authority while raising revenue and altering behaviours.

8.3 STATISTICS AND OPINIONS

In inspecting and comparing pollution statistics it has become apparent that Australia and Malaysia were both above their respective 1990 CO₂ emission levels in 2006 while South

Africa and the UK were below their respective 1990 CO₂ levels. Concurrently, emissions from vehicles are commonly regarded as the greatest cause of greenhouse gasses worldwide. So, while Australia and Malaysia have both reduced fuel taxes and offer fuel subsidies, South Africa and the UK have constantly been raising fuel taxes. Bearing in mind the above mentioned emission trends of the four countries, one can surmise that fuel taxes influenced the volumes of CO₂ being emitted.

With the exception of fuel taxes, pollution taxes generally contribute less than 1 percent of the total revenues from taxes. However, the specific pollution tax taxes are very small in relation to the costs of the underlying supplies, so there is considerable scope to increase these types of taxes, which will both increase the revenue and be a greater deterring factor for polluters.

Considering, then, how the pollution tax revenues collected should be invested to reduce pollution, the Australian government has shown that one does not necessarily have to apply the revenues in complex and elaborate anti-pollution investments, but that simple reforestation is an effective and successful initiative, in cutting down on total CO₂ emissions.

In general, people seem to favour pollution taxes, even if it makes products more expensive, furthermore people mostly acknowledge that pollution taxes and incentives will motivate them to change their behaviour. Thus raising environmental taxes may not cause the uproar in the tax paying masses that politicians commonly claim, especially if taxes are off-set by attractive incentives.

8.4 OVERALL CONCLUSION

There is a general consensus that more drastic measures need to be taken to reduce pollution as much as is necessary to ensure that the earth that will remain habitable for future generations. However, considering human nature, it is inconceivable that all people will change their polluting habits of their own accord. Therefore, pollution taxes and incentives are essential to compel people to be more responsible.

This study has shown that both tax incentives and penalty measures are effective in raising revenue and changing behaviours. However, to answer the question as to how a government should go about in applying environmental taxes and incentives, it is apparent that a wide basis of participation is necessary. In other words allowances and incentive measures should not only be available for the select few taxpayers in industries producing energy or wastes, but should be provided to all persons who alter their behaviour to benefit the environment. Similarly, penalties and taxes should not prejudice specific industries or persons but should penalise all types of behaviour and consumption that causes pollution.

The simplest way to provide tax benefits to all persons is through indirect taxes. It was also evident that indirect taxes were applied mostly as punitive measures to curtail polluting. It was also demonstrated that pollution tax is a good way for the fiscus to earn revenue. Nevertheless, when a pollution tax is effective, that specific pollution tax's contribution to total revenue will reduce, thus if reliance is to be placed on the revenues from pollution taxes, such taxes will have to increase frequently over a period of time.

However, not one country has applied the income tax act to penalise pollutions, and specifically carbon pollution, thusfar, instead, carbon trading schemes have been preferred. All existing environmental tax penalties have been taxing carbon emissions indirectly, mainly through consumption of carbon emitting resources. While CO₂ emissions have been reducing, the reductions have not been significant enough to meet the targets set in the Kyoto Protocol. Thus, income tax surcharges on carbon emissions should be the next step in the pollution taxation regime, to reach the aims of reducing carbon emission globally to their 1950 levels as proposed in the Kyoto Protocol.

Matters such as the re-negotiation of double tax agreements and tax treatment of the carbon trading gains and losses and the financial instruments connected thereto must also be considered in depth before any significant and detailed legislative amendments can be proposed.

Based on conclusions reached in this paper, the following pollution taxes and incentives are proposed for further investigation within the framework of the South African revenue laws:

- widening the scope of the allowances under section 37B of the Income Tax Act to include all types of assets and structures that will benefit the environment;
- increasing the allowance given under section 37B to provide for accelerated write-off periods;
- providing special allowances for the cost incurred in creating renewable sources of energy;
- reducing the VAT rate on energy saving materials and increasing the VAT rate on excessively polluting supplies;
- granting a fixed income tax deduction per tree for all persons, for every indigenousness tree planted in South Africa; and
- raising a tax surcharge on carbon emissions caused by companies.

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