

**Ecological Taxation and South Africa's Agricultural Sector:  
International developments and local implications**

by

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# DECLARATION

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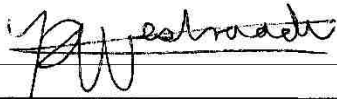
I, Petrus Westraadt, declare that:

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**ECOLOGICAL TAXATION AND SOUTH AFRICA'S AGRICULTURAL SECTOR:  
INTERNATIONAL DEVELOPMENTS AND LOCAL IMPLICATIONS**

is my own work and all the sources that I consulted or quoted from, are indicated and acknowledged by means of complete references.

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# LIST OF ABBREVIATIONS AND ACRONYMS

ACCUs - Australian carbon credit units

BTA - Border Tax Adjustment

CCAs - Climate Change Agreements

CCBA - Climate, Community and Biodiversity Alliance

CCL - Climate Change Levy

CDM - Clean Development Mechanism

CFI - Carbon Farming Initiative

CH<sub>4</sub> - Methane (chemical formula)

CO<sub>2</sub> - Carbon Dioxide (chemical formula)

CPM - Carbon Pricing Mechanism

CPS - Carbon Price Support

DECC - Department of Energy and Climate Change

ERF - Emissions Reduction Fund

EU - European Union

FAO - Food and Agriculture Organization of the United Nations

FAOSTAT - Food and Agricultural Organization of the United Nations Statistics Division

FNSEA - National Federation of Agricultural Holders' Unions (French: Fédération Nationale des Syndicats d'Exploitants Agricoles)

FTC - Fuel Tax Credit

GDP - Gross Domestic Product

GHG - Greenhouse gas

GLEAM - Global Livestock Environmental Assessment Model

GPFLR - Global Partnership on Forest and Landscape Restoration

GPS - Global Positioning System

HGV - Heavy Goods Vehicle

IPCC - Intergovernmental Panel on Climate Change

ITA - Income Tax Act 58 of 1962

KZN - KwaZulu-Natal

LPG - Liquid petroleum gas

N<sub>2</sub>O - Nitrous Oxide (chemical formula)

NFF - National Farmers' Federation (Australia)

NFU - National Farmers Union (UK)

NZ - New Zealand

OECD - Organisation for Economic Co-Operation and Development

OFA - Ontario Federation of Agriculture

OTS - Ontario Tire Stewardship

PAYE - Pay-As-You-Earn

REDISA - Recycling and Economic Development Initiative of South Africa

SA - South Africa / South African

SADC - Southern African Development Community

SARS - South African Revenue Service

SATMC - South African Tyre Manufacturers Conference

SDL - Skills Development Levy

UIF - Unemployment Insurance Fund

UK - United Kingdom

UN - United Nations

UNEP - United Nations Environment Programme

UNFCCC - United Nations Framework Convention on Climate Change

USA - United States of America

VAT - Value-added tax

VCS - Verified Carbon Standard

WWF - World Wide Fund for Nature (formerly World Wildlife Fund)

WWF-SA - World Wide Fund for Nature South Africa

# ABSTRACT

The study focussed on the research question namely: “How will the introduction of new ecological taxes impact the South African agricultural sector?” To answer the question, eight international eco-taxes were selected and further investigated. The nature and history of each eco-tax was examined. The effects or expected effects (where implementation have not yet taken place) of the eco-taxes on the agricultural sectors of the foreign countries, were then considered. The study continued by considering the possible impact on South African agriculture, should these taxes be implemented in South Africa. This was accomplished by extrapolating the foreign effects previously investigated. Mindful of findings, recommendations were then made of what eco-taxes could be implemented which will not impede South African agriculture. It was concluded that the British Climate Change Levy and Climate Change Agreement scheme, Australian Carbon Farming Initiative and Swedish meat consumption tax could be considered for implementation.

## Key terms:

Agriculture, Carbon dioxide (CO<sub>2</sub>), Carbon sink, Carbon tax, Climate change, Double dividend hypothesis, Ecological taxation (eco-tax), Emissions, Energy, Food security, Global warming, Greenhouse gas (GHG), Livestock, Pollution.

# CHAPTER 1

## BACKGROUND AND INTRODUCTION

### 1.1 INTRODUCTION

This chapter provides background regarding the ecological problems that our planet and South Africa (SA) currently face. Ecological taxation and South African (SA) agriculture are then briefly introduced and discussed. The research methodology, which includes the research question (problem statement), objective and method are provided. The importance and benefits of the study, delimitations, definitions of key terms and underlying assumptions are also discussed. This chapter concludes with an explanation of the dissertation's structure and a summary.

#### 1.1.1 The Ecological Problem

Certain aspects of ecological problems currently experienced globally and in SA, are explained below. This includes what it entails, international initiatives that tries to address it and practical fiscal policy solutions available to governments.

#### ***Pollution, eco-destructive practices, climate change***

From an international perspective, the World Wide Fund for Nature (formerly World Wildlife Fund) (WWF) 2016 Living Planet Report sketches a disturbing picture of the current state of the environment globally. Several problems are highlighted by the report. There is increasing pressure from the human populace, which threatens the very same natural resources humans depend upon, thereby placing water and food security at risk and creating natural resource competition. The Living Planet Index indicates a decrease of 58% of biodiversity from 1970 to 2012, where the greatest damage occurred in freshwater habitats. By 2020, vertebrate numbers may therefore decrease by an average of 67% in comparison with the 1970 figures. Climate change, biosphere wellbeing, land-system transformation and bio-geochemical flows all provide evidence of the impact human beings have on the environment and the related risks. Important eco-systems, which are dependent on each other and must all be preserved, are in danger due to staggering increases in human activities and resource consumption (World Wide Fund for Nature 2016: 15, 18).

Locally, the 2016 State of the Environment Report, dealing with environmental research and reporting, which took place during 2011 and 2012 in SA (SA Department of Environmental Affairs 2016b: 3), also identified various ecological challenges facing the country. This include challenges associated with human settlement, land, biodiversity and eco-system health, inland water, oceans and coasts, air quality, climate change, energy and waste management. The report also identified several “tipping points” or key issues of concern. Managing these “tipping points” correctly, could mean the difference between ecological sustainability on the one hand versus ecological descend on the other, as these ecological areas of concern are already balanced on a knife-edge (it can go either way) (SA Department of Environmental Affairs 2016c: iii, 27).

In addition, the tipping points are important as it denotes, amongst numerous available eco-management intervention options, the few areas that will provide the maximum eco-returns, considering that resource constraints place a limit on the number of eco-management interventions, which can be implemented at any given time. In order of prominence, the tipping points are:

- water
- land degradation
- greenhouse gas emissions
- non-renewable resources

(SA Department of Environmental Affairs 2016c: iii, 27)

### ***International eco-initiatives***

A selection of international eco-related initiatives by governments and international organisations that attempt to curb pollution, eco-destructive practices and climate change are discussed below:

- Atmospheric initiatives

The Kyoto Protocol, which is an international agreement connected to the United Nations Framework Convention on Climate Change (UNFCCC), is arguably the most well-known atmospheric initiative. It sets internationally binding emissions reduction targets for participants (United Nations 2014). The Kyoto Protocol is named after the city in which it was adopted, namely Kyoto, Japan (on 11 December 1997). On 16 February 2005, it came into force and 184 parties to the UNFCCC eventually sanctioned it. It was a historic occasion as it was the first verifiable

agreement where numerous world nations agreed upon reducing six types of greenhouse gas (GHG) emissions to curb climate change (i.e. global warming). It set mandatory emission reduction targets for the European community, as well as 37 industrialised nations. The main difference between the UNFCCC and the Kyoto Protocol is that the UNFCCC encourages parties to reduce while the Protocol compels them to reduce. Developed nations are required to do more in reducing their emissions than developing nations, in terms of the “common but differentiated responsibilities” principle (Ireland - Environmental Protection Agency 2016).

A new international agreement, the Paris agreement, will replace the previous Kyoto Protocol agreement. As the case was with the Kyoto Protocol, the Paris agreement is considered to be linked to, or “under” the umbrella of, the UNFCCC (World Resources Institute 2016). The Paris agreement was adopted by 195 countries at the COP21 Climate Conference in Paris during December 2015 (European Commission 2016). COP21 is an acronym that refers to the 21<sup>st</sup> conference held in Paris by “Conference of the Parties” countries, which is countries that signed the 1992 United Nations Framework Convention on Climate Change (CBS News 2015). The Paris agreement aims to:

- Ensure that, in the long run, the average global temperature is kept far below 2°C, which is where it was before industrialization.
- Pin the increase in the average global temperature at 1.5°C, as this will drastically reduce adverse climate change effects.
- Recognise that, although it is important for global emissions to peak sooner than later (for purposes of driving emissions down after this point), this will take longer in developing economies.
- Implement initiatives to reduce emissions drastically after it has peaked in developing countries.

(European Commission 2016)

- Water initiatives

The United Nations (UN) Oceans Network’s objective is to advance co-ordination and co-operation between international organisations’ secretariats and other entities involved in activities linked with the ocean. Its mandate is to:



1. Improve UN system undertakings concerning coastal regions and the oceans as far as coherence and coordination are concerned.
2. Share UN information to find aspects where synergy is present and alliances can be built, within the mandate of the UN, as well as the mandates of other organisations.
3. Assist organisations that are part of UN-Oceans in contributing yearly to UN reports regarding oceans, the law of the sea and sustainable fisheries.
4. Assist with the sharing of ocean related information between agencies, including information pertaining to lessons learned, experiences, best practices and tools and methods.

(United Nations Environment Programme [s.a.]

In addition to the UN's oceans initiative, it also runs the UN-Water initiative and the inter-agency coordination entity dealing with all issues relating to:

1. ground and surface freshwater (quantity and quality, improvement, administration, assessment, monitoring and use (agriculture, domestic, eco-systems), the interaction between sea and freshwater),
2. interaction between freshwater and sanitation, as well as access to and use of sanitation,
3. disasters and extreme events pertaining to water.

UN-Water's main aim is therefore to promote and complement existing fresh water projects by encouraging organisations to work together to achieve their goals timeously and effectively (United Nations Water 2014).

- Land initiatives

The restoration of the world's destroyed and damaged forests and adjacent sites is the main goal of the Global Partnership on Forest and Landscape Restoration (GPFLR). The GPFLR is a global network of various entities such as governments, communities, organisations and research/academic institutions (Global Partnership on Forest and Landscape Restoration 2016a). Prominent members include, amongst others, the governments of the United States, United Kingdom, Switzerland, the Netherlands, Germany and Rwanda, as well as the Food and Agriculture Organisation of the United Nations, United Nations Convention to Combat Desertification, Secretariat of the United Nations Forum on Forests, United Nations Environment Programme, World Conservation Monitoring Centre, World Bank, World Resources Institute,

International Model Forest Network and International Union for Conservation of Nature (Global Partnership on Forest and Landscape Restoration 2016b).

The GPFLR specifically focusses on the Bonn Challenge, which aims to restore 150 million hectares of deforested and damaged land by 2020 and 350 million hectares by 2030. It intends to achieve this by catalysing support (lobbying governments, the private sector, the media and civil society) and to fast track restoration by building knowledge networks (share lessons learned and knowledge obtained while promoting objectives with all members via networking). The GPFLR will also employ capacity building (organising workshops and courses) and landscape transformation through ideas (constant collaboration and sharing of information and ideas) to reach its objectives (Global Partnership on Forest and Landscape Restoration 2016a).

### ***Possible fiscal policy solutions***

According to the Organisation for Economic Co-Operation and Development (OECD), governments have various economic and policy tools at their disposal to help reduce practices that destroy the environment. Tools include regulations, education, innovation policies, eco-subsidies and eco-taxes. Regulations, for example, entail the government dictating whom and how reductions must be achieved and would include actions such as limiting or prohibiting the use of certain chemicals or forcing businesses to use certain technologies. Subsidies involve providing tax relief for ecological “goods” versus taxing ecological “bads”, for example in the form of VAT exemptions on energy-saving equipment, faster depreciation rates on green energy capital expenditure or subsidising hybrid electric cars. Market-based policy instruments include tradable permits for emissions, as well as eco-taxes, such as motor fuel taxes, as it exacerbates local air pollution and global warming (Organisation for Economic Co-Operation and Development [OECD] 2011: 1, 2, 3).

These policy tools can assist governments to achieve certain ecological goals, for instance to reduce water pollution, prevent further deforestation, reduce GHG emission as per Kyoto Protocol targets (and other possible future protocols), restore damaged vegetation, etc. The eco-tax policy tool is discussed in the next section.

## 1.1.2 Ecological Tax

Ecological tax is one of the market-based policy instruments available to governments to address the ecological problem and is discussed below.

### *The concept*

Oxford Online Dictionaries (2013b) defines “eco-tax” as “a tax levied on products, practices, or activities which are considered to be harmful to the environment”. The word “eco” is a noun short for ecology (Collins Dictionary 2013a). If used in the combining form of “eco-”, it denotes ecology or ecological (Collins Dictionary 2013b). The term “ecological tax” or “ecological taxation”, therefore, has the same meaning as “eco-tax” as per the Oxford definition. The European Commission defines environmental tax as, “A tax whose tax base is a physical unit (or a proxy of it) of something that has proven, to have a specific negative impact on the environment”. Four subsets of eco-taxes are distinguished namely energy, transport, pollution and resource taxes (European Commission 2001: 9, 12).

The Urban Institute and Brookings Institution’s Tax Policy Centre (2007) states that “Green taxes (also called “environmental taxes” or “pollution taxes”) are excise taxes on environmental pollutants or on products, which when used, produce such pollutants.” It is clear that eco-tax, ecological taxes, environmental taxes, green taxes and pollution taxes are interchangeable terms for the same concept. In this study the term ecological taxation will be used and eco-tax as an abbreviated form. It is important to note that this definition does not only apply to carbon emissions. Carbon tax is only a sub-set of eco-taxes, according to the four subsets provided above.

### *Importance*

In the 2006 draft policy paper of National Treasury “A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa”, it is stated that:

The National Treasury believes that, where appropriate, environmentally related taxes could have an important role to play in South Africa’s future tax policy. In combination with other measures, such as regulation and voluntary approaches, these instruments can play a role

in meeting current and future environmental challenges. In addition, environmentally related taxes could help to improve the efficiency and equity of the tax system.

(SA Department of National Treasury 2006: 56)

It is therefore clear that the SA government deems eco-taxes as an important part of available policy measures to curb eco-destructive practices. From an international perspective the OECD deem eco-taxes as an important governmental tool to address eco-destructive practices. It has successfully been field tested in the past to tackle numerous eco-issues including waste disposal, water pollution and air emission pollution (OECD 2011: 1). In Europe alone, 30 countries have implemented some form of eco-tax regime within their taxing system to fight pollution (Eurostat 2016). Eco-taxes have various advantages such as economic effectiveness, environmental efficiency, transparency and effective public revenue raising properties. It can directly remedy situations where the market fails to factor in environmental damage during economic activities, by adding-in the impact of destructive practices into prices. It also provides flexibility to producers and consumers in choosing the best and cheapest method to decrease their eco-damaging footprint (OECD 2011: 1-2).

### **1.1.3 Agriculture in South Africa**

What SA agriculture entails, its importance and the challenges that it currently experience, are discussed in more detail below.

#### ***The concept***

The word “agriculture” stems from the Latin word *agricultura* which, if further broken down, incorporates the words *ager* denoting “field” and *cultūra* denoting “cultivation” (World Wide Fund for Nature - South Africa [SA] 2015: 1). In SA, agriculture consists of a well-developed commercial farming sector on the one hand and subsistence farming in rural areas on the other. There are seven climate zones, from subtropical to Mediterranean to semi-desert. The land area is 1.2 million square kilometres, roughly one-eighth the size of the United States, while the coastline spans 3 000 kilometres. Eight commercial ports, combined with the country’s vast biodiversity, enable the production and export of a large variety of agricultural products, including subtropical citrus, deciduous fruit, grain, wool, cut flowers, livestock and game (SouthAfrica.info 2012a).

Only 12% of SA land is suitable for crop production and only 22% of this can be classified as arable land with a high agriculture potential. The greatest restriction on agriculture is water availability, due to irregular and unpredictable rainfall. Approximately 1.3 million hectares of land are irrigated and about 50% of freshwater in SA is used for agriculture. A diverse mix of agricultural activities is practised. These include extensive crop production and mixed farming in high winter and summer rainfall areas, sheep farming in arid areas and cattle ranching in the bushveld. The most common crop is maize, followed by wheat, sugar cane and sunflowers, whilst fruit, local wines and cut flowers are exported. SA is self-reliant in almost all-important agricultural produce and is a net food exporter (SouthAfrica.info 2012a). Recently, however, it has become a net importer of certain important produce, such as meat and wheat, due to struggling local farmers (World Wide Fund for Nature - SA 2015: 2).

### ***Importance***

Farming is considered a cornerstone of the SA economy. It is directly or indirectly responsible for about 21% of the country's GDP, where 2% directly relates to agriculture, 12% relates to agriculturally linked manufacturing and processing (agriculture provides the raw material required by this activity) and  $\pm 7\%$  relates to ecosystem services (i.e. constant usable water supply, flood protection, grazing and pollination). It also provides jobs, aids social welfare and boosts eco-tourism. In the past, public unrest broke out in many countries soon after a substantial increase in food prices. This highlights the importance of the agricultural sector and food security to ensure economic and social stability. Food security (when every individual has access to enough inexpensive nutritious food) is, therefore, of paramount importance and SA is still currently considered a food secure jurisdiction (World Wide Fund for Nature - SA 2015: 2, 4).

Furthermore, the agricultural sector is vital to the SA economy due to the employment of approximately 638 000 people (SouthAfrica.info 2012a). Another estimated 8.5 million people are directly or indirectly reliant on this sector for their employment and earnings. In addition, agriculture's importance lies in its job creation potential and the dent this labour intensive industry can make on unemployment in SA (SouthAfrica.info 2012a). It has the potential to generate up to a million new jobs by 2030 for the largely unskilled SA workforce, by means of labour-intensive, high-value crop development. This will support government to reach the employment and economic upliftment targets that are specified in Vision 2030 of the National Development Plan (World Wide Fund for Nature - SA 2015: 5, 40).

SA's agricultural sector plays an important role in world food security as well as on the African continent. SA is one of the top 10 producers (according to value) of chicory roots (3<sup>rd</sup>), grapefruit (3<sup>rd</sup>), pears (7<sup>th</sup>), green maize (7<sup>th</sup>), castor oil seed (9<sup>th</sup>), maize (9<sup>th</sup>), lupines (9<sup>th</sup>), sisal (10<sup>th</sup>) and fibre crops (10<sup>th</sup>). Other important commodities include sunflower seed (11<sup>th</sup> worldwide), cereals (11<sup>th</sup>), oranges (11<sup>th</sup>), indigenous chicken meat (11<sup>th</sup>), game meat (12<sup>th</sup>), wool (greasy) (12<sup>th</sup>), soybeans (12<sup>th</sup>), lemons and limes (12<sup>th</sup>), nuts (13<sup>th</sup>), grapes (13<sup>th</sup>), indigenous cattle meat (14<sup>th</sup>), sugar cane (15<sup>th</sup>) and indigenous sheep meat (16<sup>th</sup>) (Food and Agricultural Organization of the United Nations Statistics Division [FAOSTAT] 2013).

### ***Current challenges***

According to Inge Kotze (Senior Manager: Sustainable Agriculture Programme: World Wide Fund for Nature South Africa (WWF-SA)):

The practice of growing crops, raising livestock or tending trees – producing the food and fibre vital for humanity's survival – has never before faced the multitude and diversity of challenges that now beset the sector.

Challenges include input cost increases, unpredictable weather patterns and political, as well as social problems. These challenges may permanently debilitate the dynamic of SA agriculture, if it does not adapt to changing conditions (World Wide Fund for Nature - SA 2015: 1).

In the same vein the Department of Environmental Affairs states, that with regard to SA agricultural land, there has been a lot of pressure on land related resources during the last 20 years, which meant that healthy eco-systems and natural resources had to be sacrificed for economic and social development. In future it will be important that appropriate steps are taken to avoid further degradation of land, to ensure that resources are managed correctly and to help with the recovery of important ecological services (SA Department of Environmental Affairs 2016c: 4).

Chapter 5 will take a closer look at current problems SA farmers face. This includes electricity related problems, possible land expropriation, droughts, violent crime, exchange rate fluctuations, interest rate hikes and access to finance. It also includes no farm subsidies afforded to farmers, price increases that cannot be absorbed by people earning a low income, which drive down demand as well as problems associated with trade unions, labour unrest and minimum wages.

#### **1.1.4 Eco-taxes versus SA Agriculture**

The interplay between eco-taxes (as a fiscal policy measure to curb the ecological problem) and the SA agricultural sector (as a means to ensure food security in the country) are discussed below.

##### ***Unification of the two concepts***

From the above it is evident that the SA agricultural sector and ecological tax are very important and relevant concepts. Eco-taxes are required to help reduce pollution, non-sustainability and climate change. A healthy SA agricultural sector must be nurtured to ensure food security in the country. The question begs to be answered what the implications are when these two dynamic and important fields meet. In countries where there are tangents between agriculture and the rollout of new eco-taxes, very interesting developments and changes are taking place from an agricultural and ecological tax perspective.

In Australia, for example, under the Carbon Farming Initiative (CFI) programme, farmers and graziers plant trees and earn carbon credits that they can then resell. Where trees once made way for livestock the situation is being reversed, due to a change in policy from one requiring farmers to clear land for sheep farming, to one that encourages the planting of trees by way of economic incentives. Farmers utilise income from carbon credit sales to pay expenses, although some farmers fear that sheep farming will be adversely affected. A change in product mix is, therefore, expected (i.e. a decrease in sheep and other livestock related products and more timber related products), and a change in the mix of input costs. Challenges would be to integrate new trees into farmland, so as not to compromise food and water security (ABC News 2012b).

##### ***Finding a balance***

From the Australian CFI example, it is clear that where eco-tax and agricultural policy meet, one of the implications is that an equitable balance needs to be struck between the two policies. This will promote a healthy environment where life can flourish, while simultaneously guaranteeing the agricultural sector's ability to produce enough food for the country's citizens (food security). This sentiment of finding a balance is echoed by the OECD (OECD 2011: 1), which states that eco-challenges are forcing governments to consider new ways in reducing eco-destructive practices, whilst not negatively affecting economic growth. Again, there is a trade-off between ecological policy measures and the economy (of which the agricultural economy is a subset). The view of

the Department of Environmental Affairs is that healthy eco-systems and natural resources had to be sacrificed for economic and social progress during the past 20 years, where agricultural land is concerned. This also alludes to a trade-off between farming and the ecology and the necessity to find a balance (SA Department of Environmental Affairs 2016c: 4).

From a SA agricultural viewpoint, the finding of a balance is arguably even more important than in a country such as Australia, because of the very frail position in which SA agriculture already finds itself. Too many new eco-taxes or eco-taxes set at too high levels may destroy this sector. It is also interesting to note that the four ecological “tipping points” in SA (see section 1.1.1) above), are in areas that have a direct bearing on agriculture namely:

- water (irrigating crops and livestock drinking water)
- land degradation (crops are cultivated on large areas of land and land is required for livestock grazing)
- greenhouse gas emissions (livestock and mechanised activities on the farm releasing greenhouse gas)
- non-renewable resources (use of electricity generated from non-renewable sources and diesel)

It would therefore appear that the “tipping points” (most important areas of concern where immediate action is required for a healthy ecological future in SA), largely involve the same ecological resources which the SA agricultural sector requires. Again, this indicates a fine balancing act.

### ***Research required***

To find a suitable balance between appropriate eco-taxes (employed to counteract destructive ecological practices) on the one hand and a healthy agricultural sector (food security) on the other hand, further research are required.

Inge Kotze of WWF-SA also echoes the necessity for further research to aid policy decision-making. She states that current available SA agricultural statistics are mainly outdated and that there is not much up-to-date, reliable and precise data available. She is therefore of the opinion that an urgent need for more research and investment in the agricultural sector exists. This



research will assist policy makers to take effective and well-directed decisions and manage the implementation of policies more effectively (World Wide Fund for Nature - SA 2015: 1). The levying of an eco-tax by government constitutes a policy that must be implemented.

Similarly, the Department of Environmental Affairs states that unavailable data and an inadequate body of scientific information regarding quality and changes of the agricultural land resource, is impeding informed decision making by policy makers with reference to the best way to balance the different needs associated with the land (i.e. economic and social needs versus ecological needs). It further states that there is a tendency to make use of old policy interventions, which may not necessarily reflect the latest and best available management intervention policies (SA Department of Environmental Affairs 2016c: 4).

The need for research into ecological policy measures, relating to the global agricultural sector, is highlighted by the Food and Agriculture Organization of the United Nations (FAO), (with specific reference to the mitigation of GHG emission produced by agriculture). Although a large volume of valuable research have been done over the years regarding technologies that mitigate emissions deriving from agriculture, far less headway has been made to develop successful mitigation policies (Gerber, Steinfeld, Henderson, Mottet, Opio, Dijkman, Falcucci & Tempio 2013: 91). An eco-tax levied by a government is an example of one such mitigation policy.

In 2016 a report was issued by the European Commission called, “An economic assessment of GHG mitigation policy options for EU agriculture”, which provided much required additional research regarding mitigation policy options. It, however, did not remedy the lack of research from a SA perspective and also identified various international areas where further research is required. Aspects requiring further research include:

- benefits, costs and uptake barriers regarding mitigation measures where technology is involved
- CO<sub>2</sub> emissions deriving from agriculture needs to be incorporated in the study
- how different nations will incorporate their agricultural sectors into their Intended National Contributions in terms of the Paris Agreement reached at the COP21

(Pérez Domínguez, Fellmann, Weiss, Witzke, Barreiro-Hurlé, Himics, Jansson, Salputra, Leip 2016: 98).

## **1.2 RESEARCH METHODOLOGY**

The research methodology used in this study is provided in this section. Aspects relating to the research question, objectives and methods are covered.

### **1.2.1 Introduction to the Research Question**

As discussed above, the WWF-SA, the SA Department of Environmental Affairs, the FAO (Food and Agriculture Organization of the United Nations) and the European Commission agree that there are currently insufficient data and research available on effective management, intervention and mitigation policy measures in agriculture (outdated, accuracy and consistency doubt, unavailable data, inadequate information and poor progress). The lack of research hinders policy makers to implement correct decisions (well directed, effective, up-to-date), regarding policies and procedure (mitigation, intervention, sustainability) which aim to promote healthy ecological practices in the agricultural sector. This problem is experienced in SA as well as internationally – currently a global problem. As explained in section 1.1.2 above, eco-taxes can be regarded as one of the market-based policy instruments available to governments, to enhance good eco-agricultural practices. Further research is therefore required to investigate the eco-tax policy measure, which is a sub-component of available measures for which inadequate data and research currently exist.

Furthermore, the SA agricultural sector is already in a frail position due to a multitude of challenges (see section 1.1.3 above, as well as section 5.2 below). If too many new eco-taxes are implemented or the rate is too high, SA agriculture and food security may be in jeopardy. Various eco-taxes already exist in SA of which some were recently implemented. An array of new eco-taxes are currently being considered, examined and discussed internationally, which may eventually find their way to the SA taxing regime (some are already in the pipeline). An investigation of the impact or effect these taxes may have on the frail SA agricultural sector, is thus necessary. The findings/outcomes of such an investigation could assist policy makers in making correct decisions.

With regard to possible existing research on the above subject matter, various SA data sets were searched to identify possible studies done in this field. These searches included the institutional repositories of the University of Pretoria, University of Stellenbosch, Rhodes University, UNISA, University of Cape Town, University of Johannesburg, University of the Free State, University of

the Western Cape, University of the Witwatersrand, University of KZN, University of North-West, Durban University of Technology and University of Limpopo. It was found that a number of studies were done, covering certain elements of eco-taxes in SA, with reference to new international developments. However, the nature of these studies was of a more generalised, broader nature and did not concentrate on a specific industry. No specific, thorough in-depth study has been done into the possible impact of new international eco-taxes on the SA agricultural sector, if these new eco-taxes should be implemented in this country.

### **1.2.2 Research Question (Problem Statement)**

Considering the above, the research question is therefore “How will the introduction of new ecological taxes impact the South African agricultural sector?”

In order to answer this question, a sample of the most recent international eco-tax trends and legislation applicable on the agricultural sector, will be investigated to evaluate its impact or potential impact on the SA agricultural sector, if authorities implement it locally.

### **1.2.3 Research Objective**

In order to achieve the main objective of the study, namely to determine what the impact of new introduced eco-taxes might be on the SA agricultural sector, several sub-objectives must be met:

- Firstly, the relevant tax and eco-tax concepts and theory, which are relevant to this study, must be determined and discussed. This is necessary to equip and familiarise the reader with important and relevant concepts that are required to better comprehend the body of work that follows.
- Secondly, eco-taxes recently implemented or proposed on the international arena must be identified and discussed. Only those eco-taxes with specific implications for the agricultural sector should be considered. The discussion should include the purpose, workings and a brief history of each tax, as well as its characteristics. Direct, indirect and other specifically targeting taxes should also be contemplated.

- The identified agricultural-related eco-taxes should then be investigated and analysed to determine the most important financial, socio-political and other effects (or expected effects), on the agricultural sectors of the applicable countries where it was implemented or proposed.
- The possible impact of these international eco-taxes on the SA agricultural sector, if implemented here, should then be considered by extrapolating the foreign effects previously investigated. Careful thought should also be given to the unique challenges that SA agriculture currently faces in this sub-objective.
- Finally, a conclusion should be made where the identified eco-tax options are summarised, to identify the differences and similarities in the workings and effects thereof. In addition, recommendations can then be made for a possible list of agricultural eco-taxes to be considered in a SA context.

#### **1.2.4 Research Method**

##### ***Theory of research***

The Oxford Learner's Dictionary defines the noun "research" as "a careful study of a subject, especially in order to discover new facts or information about it", while the Oxford Living Dictionary defines it as "the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions" (Oxford Learner's Dictionaries 2017b & Oxford Living Dictionaries 2017c). According to Watkins (2012: 4), the aim of "formal research" is to improve a person's understanding of a certain complicated subject in the "real world" by way of a "structured, organised, systematic, critical, objective enquiry" with the end goal to find solutions and answers to the difficult subject matter.

Furthermore, research can be classified as being either empirical or theoretical in nature. Empirical research entails observations by way of experimenting or fairly passive observations. The observations can then be used to draw conclusions and a claim can be made if a conclusion has worth and can be used to supplement the current body of knowledge (Remenyi, Williams, Money & Swartz 2009: 31 as cited by Watkins 2012: 8).

On the other hand, theoretical research involves the studying of subject matter via educated and knowledgeable peoples' texts and discourse, where such people are in a position to comment on certain issues pertaining to the subject matter. Normally theoretical research does not consist of actual evidence gathering nor direct observations. By reflecting on other people's thoughts and ideas, the theorist may arrive at another new and unique conclusion or view, which may constitute a new theory. Similarly, as with empirical research, a claim can be made if this theory has worth and can supplement the current body of knowledge (Remenyi *et al.* 2009: 31-32 as cited by Watkins 2012: 8).

Another distinction that can be made is quantitative versus qualitative research. The table below provides a summary of the differences between these two paradigms.

**Table 1.1: Distinguishing characteristics of the quantitative and qualitative research paradigms**

<b>Research Focus</b>	<b>Qualitative research paradigm</b>	<b>Quantitative research paradigm</b>
Purpose of the research	<ol style="list-style-type: none"> <li>1 To describe and explain</li> <li>2 To explore and interpret</li> <li>3 To build theory</li> </ol>	<ol style="list-style-type: none"> <li>1 To explain and predict</li> <li>2 To confirm and validate</li> <li>3 To test theory</li> </ol>
Nature of the research process	<ol style="list-style-type: none"> <li>1 Holistic</li> <li>2 Unknown variables</li> <li>3 Flexible guidelines</li> <li>4 Emergent design</li> <li>5 Context-bound</li> <li>6 Personal view</li> </ol>	<ol style="list-style-type: none"> <li>1 Focused</li> <li>2 Known variables</li> <li>3 Established guidelines</li> <li>4 Predetermined methods</li> <li>5 Context-free</li> <li>6 Detached view</li> </ol>
What is the data like, and how is the data collected?	<ol style="list-style-type: none"> <li>1 Textual and/or image-based data</li> <li>2 Informative, small sample</li> <li>3 Loosely structured or non-standardised observations and interviews</li> </ol>	<ol style="list-style-type: none"> <li>1 Numeric data</li> <li>2 Representative, large sample</li> <li>3 Standardised instruments</li> </ol>
How is data analysed to determine the meaning?	<ol style="list-style-type: none"> <li>1 Search for themes and categories</li> <li>2 Acknowledgement that analysis is subjective and potentially biased</li> <li>3 Inductive reasoning</li> </ol>	<ol style="list-style-type: none"> <li>1 Statistical analysis</li> <li>2 Stress on objectivity</li> <li>3 Deductive reasoning</li> </ol>
Method of communicating findings	<ol style="list-style-type: none"> <li>1 Words</li> <li>2 Narratives, individual quotes</li> <li>3 Personal voice, literary style</li> </ol>	<ol style="list-style-type: none"> <li>1 Numbers</li> <li>2 Statistics, aggregated data</li> <li>3 Formal voice, scientific style</li> </ol>

(Source: Leedy & Ormrod 2010: 96 as adapted and cited by Watkins 2012: 10)

In this study, the enquiry to improve the understanding of a complicated real-world subject, as provided in the research question above, is done by way of theoretical research (non-empirical) and a predominantly qualitative research paradigm, in the form of an extended literature review, which aims to achieve the main, as well as the sub-objectives discussed above. An extended literature review is very useful, *inter alia*, to evaluate the current situation within a field.

### **Data selection**

Eight international eco-taxes, which have the potential to affect SA agriculture directly or indirectly, were selected for further investigation in subsequent chapters, by way of an extended literature review. The reasons why these specific taxes were chosen are summarised below.

#### **France: Heavy Goods Vehicle Road Tax**

This eco-tax was chosen as there are several similarities between France and SA with regard to its implementation. The farming sector in France, for instance, bitterly opposed the tax (RFI 2013b). In the Western Cape, serious concerns are being raised about negative implications the Winelands tolling project will have on agriculture (Politicsweb 2015). In Gauteng, e-tolling has also been opposed (Eyewitness News 2013) and agricultural vehicles are not exempt, nor receive any concessions (IT Web 2014), as was originally the case in France (Tax-News 2013b). Additionally, this tax was selected as France is considered the agricultural leader in Europe (France Diplomatie – French Ministry of Foreign Affairs and International Development 2016) and therefore the agricultural business sector is of crucial importance to France, as is the case in SA. The aim is, amongst others, to reduce the volume of heavy goods vehicles on roads (with a resulting decrease in carbon emissions) and to motivate role-players to switch to green transport options (Tax-News 2013a).

#### **Ontario, Canada: Eco-fee or Eco-tax on Tyres**

The tyre eco-fee (or eco-tax), which help finance tyre recycling in Ontario which is a province of Canada (Ontario Tire Stewardship 2014), was selected as Canadian lessons might be relevant to SA farmers. SA farmers, like their Canadian counterparts, make use of farming equipment such as tractors, harvesters, bailers and trucks requiring heavy-duty tyres (Farmer's Weekly 2012a; Michelin 2015). In modern SA farming, rubber tyres are therefore an indispensable

practical aid. As such, increased costs will affect most SA farmers, as was the case in Canada (Farmer's Weekly 2012a; Ontario Federation of Agriculture 2013a). Considering the uproar an increased tyre eco-tax caused amongst Canadian farmers and agricultural unions (Ontario Federation of Agriculture 2013a; Ottawa Business Journal 2013), it is prudent to investigate this eco-tax thoroughly in the SA context. A tyre levy was introduced into the SA tax system during 2012, and it was recently converted into an official tax administered by government (see section 5.4).

### ***Britain: Climate Change Levy and Climate Change Agreements***

This eco-tax package is applicable on numerous energy sources, including electricity, coal utilised as fuel (i.e. lighting, heating and power) and gas consumed by UK agricultural entities (Her Majesty's (HM) Revenue & Customs 2013b), but excludes petrol and diesel (SA Department of National Treasury 2010: 69-70). As SA recently suffered serious electricity supply problems (SA Institute of Race Relations 2015: 1, 6, 7, 10, 11) that required major saving measures, this tax was chosen as it can act as a potent fiscal tool encouraging savings. Following diesel, electricity is the most important energy source for SA farmers (Farmer's Weekly 2015). The impact such an eco-tax might have on SA agriculture, requires further investigation.

### ***Australia: Carbon Tax on Fuel***

Diesel is currently the most important energy source for SA farmers (Farmer's Weekly 2015). Furthermore, SA is in the process of implementing a carbon tax of which certain details have not yet been finalised (The Davis Tax Committee 2015: 1-2). Therefore, the SA version of the carbon tax might, as was the case in Australia (Grant Thornton 2011b), also possibly be applied to fuel, including diesel used in agriculture. Owing to the importance of diesel to SA farming and the looming carbon tax, the Australian carbon tax on fuel was chosen as the results and lessons learned, can be superimposed on SA agriculture.

### ***Australia: Carbon Tax on Carbon Emissions***

Currently in SA, the proposed carbon tax on certain carbon emissions is advancing fast (SA Department of National Treasury 2015: 1; Blue North 2016; Deloitte 2016; SA Department of National Treasury 2016: 1). There are, however, serious concerns about the effectiveness of such an eco-tax to curb carbon emissions on the one hand, as well as the effect it may have on

SA agriculture when, and if, implemented here (Farmer's Weekly 2011a; Business Unity South Africa 2015: 2, 4, 8-9; Chamber of Mines of South Africa 2015: 21-22). For this reason, the Australian carbon tax was selected as it was recently briefly implemented in Australia and just as quickly repealed again (Reuters 2011; Australia - Department of the Environment 2014). SA can therefore learn some important lessons from the Australian carbon tax pilot programme, where the agricultural impact will be the study focus.

### ***Australia: Carbon Farming Initiative***

The Carbon Farming Initiative (CFI) was selected for further investigation, as National Treasury's 2013 carbon tax policy paper alludes to agriculture's capability to assist in carbon mitigation, although the finer details in this earlier paper is still vague. The paper mentions that land-use and forestry act as a net sink and that it could assist in removing carbon from the air. It also states the possibility that owners of land, which is used for agriculture and forestry, may participate in a carbon scheme by utilising carbon offsets (SA Department of National Treasury 2013a: 63). Subsequently National Treasury published further documentation, which confirms their intention to implement a similar scheme. Documentation includes the "Carbon Offsets Paper" (2014) and the "Draft Regulations on the Carbon Offset in terms of the draft Carbon Tax Bill" (2016) (SA Department of National Treasury 2014: 1-2; SA Department of National Treasury 2016: 1). It is therefore evident that a similar scheme as the Australian CFI is planned for SA, which necessitates a closer look at the Australian CFI which was implemented during 2011 (Australia - Department of the Environment [s.a.]).

### ***Sweden: Meat Consumption Tax***

In terms of value, indigenous cattle meat was the number one commodity produced in SA during 2013, followed by indigenous chicken meat. Indigenous sheep meat was the eighth most valuable agricultural commodity produced, while indigenous pig meat sat at number eleven. Other animal related commodities, on which a meat tax could possibly apply, are cow's milk (third most important commodity in value terms during 2013) and chicken eggs as the seventh most important commodity after sugar cane (FAOSTAT 2015). The meat consumption tax which was suggested in Sweden (Säll & Gren 2012: 4-5; EurActive 2013) was selected as meat and meat related commodities constitute such an important part of the SA agricultural economy, affecting producers (farmers) as well as consumers (households).



## ***United Nations: Cow Flatulent Tax***

As stated above, cattle meat was the number one agricultural commodity (measured in value) produced in SA in 2013, while fresh cow milk was number three on the list (FAOSTAT 2015). An eco-tax levied up-stream on cattle meat and cow's milk will therefore have a significant impact on the SA agricultural economy. Specifically on farmers involved in meat and milk product production, the business involved in its further processing and distribution and finally the end-consumer, locally and abroad. Therefore, it will also influence exports. For above-mentioned reasons the cow flatulent tax, which was suggested in 2010 by the United Nations (UN) (Business Green 2010), was selected for further investigation.

### ***Central theme matrix***

In chapter 5 recurring "central themes" are identified for the above-mentioned eco-taxes, from information drawn upon chapter 5 as well as previous chapters. These central themes are listed in a separate section for each specific eco-tax and are then summarised by way of an "eco-tax by central theme" summary at the end of chapter 5. In chapter 6 the "eco-tax by central theme summary" is then used to compile a Central Theme Matrix (Table 6.1), which must be taken into account by decision makers, when the possible implementation of agri-eco-taxes are considered in SA. Various recommendations then follow regarding the question whether or not the identified foreign eco-taxes should be implemented in SA. These recommendations are made in light of arguments for and against the eco-taxes, based on the identified central themes as well as other relevant factors discussed in previous chapters. At the end of chapter 6, a final "Agri-Eco-Tax Implementation Matrix" is provided which summarises the final conclusion regarding which eco-taxes should be implemented in SA and which ones should not.

### **1.2.5 Research Ethics**

Ethical clearance for research performed during this study was obtained from the College of Accounting Science's Research Ethics Review Committee.

### **1.3 DELIMITATIONS**

The actual effectiveness of eco-taxes (as a fiscal policy) in scientific terms, to curb environmental harmful activities which lead to pollution, climate change, etc., will not be investigated and discussed, including any scientific and analytical data to this effect. An in-depth analysis of the identified eco-taxes' socio-economic effects on agricultural communities (such as farm workers), will not be conducted. However, certain related concepts (such as job losses or bankruptcy in the agricultural sector), will be broadly discussed under financial effects.

Furthermore, no comparison will be made between eco-taxes on the one hand and carbon trading schemes on the other hand, to determine which fiscal instrument is the more suitable option for governments to implement. Events and developments up to 30 September 2016 will be incorporated in the study and only in exceptional circumstances, where background and importance warrants it, will there be deviated from this cut-off date. The effects on other SA economic sectors such as manufacturing, retail, banking, etc. will not be investigated. Neither will the effects it may have on the agricultural sectors of SADC (Southern African Development Community), be investigated.

In general, the study will not consider the question whether overseas eco-taxes and incentives should replace any current taxes and incentives running in SA. The only part of the study that briefly touches on this point is the UK CCL/CCA scheme section in chapter 5, but no further in-depth analysis regarding this question is conducted. This aspect is therefore identified as a field in which further research should be carried out in the future.

### **1.4 IMPORTANCE AND BENEFITS OF THE STUDY**

Worldwide governments are in the process of trying to mitigate the effect of climate change, as well as other ever-increasing environmental destructive practices, by means of utilising eco-taxes as a fiscal policy tool (OECD 2011:1-2). With reference to the proposed carbon tax which Treasury is planning to implement in the near future (SA Department of National Treasury 2013b: 1-2), as well as other developments, such as the introduction of a carbon tax on new cars in 2010 (Mail & Guardian 2010), it has become evident that SA is following this international trend.

According to the WWF-SA, agriculture forms the foundation of developing economies such as SA. It furthermore contributes to food security, adds value to raw materials, provides employment and is important for social welfare (World Wildlife Fund - SA 2009: 2). According to the second quarter report for 2016 of Statistics SA, approximately 825 000 individuals were employed in the SA agricultural sector for the period April to June 2016 (Statistics South Africa 2016: vi).

It is therefore of great importance that issues jeopardising the survival of the SA agricultural sector, be investigated thoroughly. As will be shown in subsequent chapters, new eco-taxes implemented or proposed in foreign countries have already caused a material economic and tax impact on those countries' agricultural sectors (either positively or negatively) or are expected to do so. Research regarding the possible effect that these new eco-taxes will have on the SA agricultural sector, if implemented, is imperative. It will aid various SA role players to have a better understanding of the economic and tax impact, which this relevant new class of tax could have on the SA agricultural sector. A thorough understanding of said subject matter will assist decision makers in arriving at informed decisions regarding the implementation and the management of certain agricultural eco-taxes.

If implemented, there is no question that the proposed carbon tax of National Treasury will have a direct, as well as indirect impact on the SA agricultural industry. It is also clear that it is already a very contentious issue. The carbon tax may have a detrimental impact on the economic viability of practising agriculture in SA, if policy makers are not careful and vigilant in the manner and timing of implementation, especially if implemented along-side other new international eco-taxes. Similarly, the agricultural industry will have to be prepared to absorb the financial effects of the new carbon tax, while retaining operational effectiveness and profitability in the future. For this reason, research is required.

Knowledge obtained during this study can also be used as a springboard for future research, to explore the possible effects which eco-tax may have on industries other than the agricultural industry, such as the mining sector, where there are several overlapping areas of similarity (for example the extensive use of water resources, heavy machinery, land, chemicals, energy, etc.). New knowledge can also assist in further research on the consequences of eco-taxes on the agricultural sectors of other similar geographical and political domains, such as common wealth nations and neighbouring sub-Saharan African countries.

## 1.5 DEFINITIONS OF KEY TERMS

- Agriculture: “The science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products” (Oxford Online Dictionaries 2013a).
- Carbon dioxide (CO<sub>2</sub>): A gas that is odourless, colourless and not poisonous which forms when carbon is combusted or when living organisms respire. It is considered to be a greenhouse gas (United Nations as cited by the OECD 2013).
- Carbon sink: The ability of a forest, ocean or natural surroundings to absorb atmospheric CO<sub>2</sub> according to the Oxford Online Dictionaries (2014).
- Carbon tax: This is a tax on the use of fossil fuels or on activities that cause carbon dioxide to be released, harming the environment, as defined by the Cambridge Dictionaries Online - Business English Dictionary (2012).
- Climate change: Oxford Living Dictionaries (2017a) states that this phenomenon can be defined as a change in regional or global climate patterns, with specific reference to a change that became noticeable during the mid to late 20<sup>th</sup> century onwards and mainly ascribed to higher levels of CO<sub>2</sub> in the atmosphere originating from fossil fuel use.
- Double dividend hypothesis: This hypothesis proposes that by increasing eco-taxes two advantages are obtained. The first advantage is environmental improvement. The second advantage is improved economic effectiveness where eco-tax income is used to decrease other taxes (Fullerton & Metcalf 1997: Abstract).
- Ecological taxation (eco-tax): Oxford Online Dictionaries (2013b) defines “eco-tax” as “a tax levied on products, practices, or activities which are considered to be harmful to the environment”.
- Emissions: The process of releasing greenhouse gases and/or its precursors into the atmosphere (United Nations as cited by the OECD 2013).
- Energy: “a source of power, such as fuel, used for driving machines, providing heat, etc.” (Oxford Learner’s Dictionaries 2017a).
- Food security: “When all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life” as per the definition provided by the World Health Organization (WHO) (2012).
- Global warming: The recent and on-going rise in global average temperature near Earth’s surface as defined by the United States Environmental Protection Agency article (2012).

- Greenhouse gas (GHG): This is a type of gas that traps heat in the atmosphere according to the United States Environmental Protection Agency (2013).
- Livestock: According to the Oxford Living Dictionaries, “livestock” is farm animals regarded as an asset (Oxford Living Dictionaries 2017b).
- Pollution: The introduction of substances or energy into the environment, resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and impair or interfere with amenities and other legitimate uses of the environment according to the European Environmental Agency (2012).

## 1.6 UNDERLYING ASSUMPTIONS

The following assumptions are made with regard to this study:

- According to the OECD publication “The Political Economy of Environmentally Related Taxes” (2006: Forward), eco-tax will be used increasingly in the future by governments to curb environmental destructive practices of entities functioning within the economy and to promote energy efficient, environmental friendly and long term sustainable business practices.
- The SA government will follow this worldwide trend in taxing pollution and the depletion of scarce natural resources, either by choice or as a compulsory requirement to adhere to international ecological conventions, where the government may be a signatory.
- These new taxes will affect the SA agricultural sector or certain sub-components thereof directly or indirectly on a financial level, as well as on certain other levels such as socio-political.

## 1.7 STRUCTURE OF THE DISSERTATION

This study consists of six chapters, which are briefly discussed below.

### *Chapter 1 - Introduction and background*

This chapter provides background regarding the subject matter. Eco-tax and SA agriculture are introduced. The chapter then provides the problem statement and research objectives, the reason why the study is important, who it may benefit and what the goals and outcomes are. This information is provided to explain the purpose and rationale behind this study.

### *Chapter 2 - Relevant tax principles and concepts relating to eco-taxes*

Important theory and issues pertaining to tax and eco-tax are discussed in broad terms to give the reader a more comprehensive understanding and knowledge base of the subject matter for purposes to understand and follow arguments.

### *Chapter 3 – New ecological taxes proposed or implemented internationally*

Eco-taxes, which have recently been implemented or proposed on the international stage and which are specifically relevant to and impact agricultural activities, are identified and discussed. The discussion includes the purpose, how the eco-tax works, as well as the historical development of each eco-tax selected. The characteristics of the selected taxes are also provided.

### *Chapter 4 - The effect of new ecological taxes on foreign countries' agricultural sectors*

This chapter builds on the previous chapter. An in-depth examination is conducted of the financial and other effects the identified eco-taxes had on the agricultural sectors of the foreign countries where it has already been implemented. In cases where the eco-taxes are still in the proposal phase, the projected financial and other effects it will have, according to foreign farming unions, pressure groups, economists and politicians, are examined. The chapter also links each eco-tax with certain important chapter 2 eco-tax theory and concepts.

## *Chapter 5 - The effect that new ecological taxes will have on the South African agricultural sector*

By means of a discussion based on the results, lessons learned and projections in foreign countries, the findings in chapters 3 and 4, regarding the impact or possible impact of the eco-taxes on agriculture are projected (made applicable) on the SA agricultural sector with its unique characteristics and challenges (political, economic, social, weather etc.). Central themes are also identified and listed.

## *Chapter 6 - Summary of ecological taxes, findings and recommendations*

The different identified eco-taxes are summarised to develop a theoretical framework or matrix of future agricultural environmental taxes to be considered in SA, which will not jeopardise the survival of SA agriculture, whilst still offering the government a fiscal tool against environmental destructive practices. Cognisance are given to findings made in previous chapters by way of arguments for and against the eco-taxes and resulting recommendations. Eco-taxes that should rather not be implemented are also identified.

### **1.8 CHAPTER SUMMARY**

This chapter briefly provided background of global ecological problems, as well as SA environmental issues. Ecological taxation and the SA agricultural sector were also briefly discussed. The research methodology (including research question, objectives and method), delimitations, importance and benefits of the study and underlying assumptions were provided. The study's structure was discussed to illustrate how the stated research objective will be accomplished. In the next chapter, important tax and eco-tax concepts are examined in more depth. Knowledge of these concepts is essential, before the eight identified eco-taxes are further investigated. The concepts to be discussed include the principles of a good tax policy, earmarking of taxes, tax classes, eco-tax characteristics, eco-tax advantages and disadvantages, international eco-tax, as well as the double dividend hypothesis. SA taxes and eco-tax developments are also considered.

# CHAPTER 2

## RELEVANT TAX PRINCIPLES AND CONCEPTS RELATING TO ECO-TAXES

### 2.1 INTRODUCTION

In this chapter, certain important theories and issues regarding taxes and eco-taxes are broadly discussed to impart background knowledge required and to better understand the content, arguments and explanations in further chapters. A broad background regarding SA taxes and eco-taxes will also be provided.

### 2.2 THE PRINCIPLES OF A GOOD TAX POLICY

According to the American Institute of Certified Public Accountants, a good tax policy should have the following ten characteristics:

1. *Equity and Fairness.* Similar taxpayers should be taxed on a similar basis.
2. *Certainty.* The guiding tax rules must be clear on how the tax is calculated and how and when it is payable.
3. *Convenience of Payment.* The time of payment and manner of payment must suit the taxpayer.
4. *Economy in Collection.* Collection costs must be low for taxpayers and the government alike.
5. *Simplicity.* Taxation laws and rules must be simple and understandable.
6. *Neutrality.* The influence of tax law on taxpayers' decisions of how to structure or perform a transaction must be small.
7. *Economic Growth and Efficiency.* The expansion and the effectiveness of a country's economy should not be hindered by a tax system.
8. *Transparency and Visibility.* The taxpayer must be aware that a tax exists and understand the implementation of it.
9. *Minimum Tax Gap.* The design of tax must ensure maximum compliance.
10. *Appropriate Government Revenues.* The state must be able to accurately ascertain the quantum and time of tax collection.

(American Institute of Certified Public Accountants 2001: 7-8)



## **2.3 MAIN CLASSES OF TAX**

According to Fay ([s.a.]), taxes can be broadly arranged in three categories namely taxes on income, taxes on property and taxes on goods or services.

### **2.3.1 Taxes on Income**

Taxes on income include income tax, which is levied on personal and business revenue. This also includes the tax on capital gains, which is a tax paid on profits originating from the disposal of an asset. Estate taxes (for example estate duty) are levied on deceased estates and gift tax (donations tax for example) is charged on wealth transfer while a person is still alive (such as assets donated by a donor).

### **2.3.2 Taxes on Property**

Property tax is levied on real estate or other personal assets and is normally based on the value of the property. It is usually levied by local authorities (such as a municipality, for example) on a periodic basis, such as monthly rates and taxes payable to the local council.

### **2.3.3 Taxes on Goods or Services**

Sales tax levied at the point of sale is calculated as a percentage of the sales value of the product or service sold. There are different rates applicable in different jurisdictions and sometimes the rate also varies between different types of products. Excise taxes are another form of tax on goods and are calculated not on the value of the product sold, but on the quantity. Yet another form of goods and services taxes is user charges levied on a wide range of services such as toll roads, licenses, airplane tickets, financial transactions, etc.

## **2.4 DIRECT VERSUS INDIRECT TAXES**

Direct taxes refer to a charge that is levied on and collected from a particular group of individuals or entities. Income tax is an example of this type of tax, where the tax is calculated and levied on the entities, which in reality earn the income. Indirect taxes, on the other hand, refer to those taxes that are collected from entities other than those individuals or businesses, which are actually

liable for the payment of the tax (Investorguide.com 2012). The Oxford Dictionary of English states that a direct tax is “a tax, such as income tax, which is levied on the income or profits of the person who pays it, rather than on goods or services” (Oxford Dictionary of English 2010a). Indirect taxes are “levied on goods and services rather than income or profits” (Oxford Dictionary of English 2010b). In a SA context, direct taxes can be defined as “taxes charged on taxable income or capital of individuals and legal entities” while indirect taxes can be classified as “taxes imposed on goods and services ... rather than on individuals or companies” (SA Department of National Treasury & South African Revenue Service [SARS] 2015: 239, 241).

## **2.5 EARMARKED OR DEDICATED TAXES AND USER CHARGES**

Earmarking occurs when the proceeds of taxes are dedicated to a specific designated end use. In the United States, the federal gasoline tax is a good example of this, where proceeds are allocated to the Highways Trust Fund. On the other hand, user charges for services provided to the public are imposed on the users of the service. The income from these charges is used to pay for the cost of said services. The difference between earmarked taxes and user charges in real world applications is semantic according to Newbery and Santos (1999: 104, 105).

User charges can be described as price-like financial instruments spontaneously materialising when a service, restricted to paying customers, is funded. To directly charge for a service is often expensive or not practical. Instead, it may be easier to rather impose a charge on a commodity required to enjoy the service. Using this logic, a road use levy may be collected most effectively by an annual motor licence fee, thereby gaining legal access to the highway. Similarly, a user charge or tax can be levied on fuel of which consumption correlates well with the use of highway services. The British Treasury do not support the earmarking or hypothecating of taxes for specific purposes. In the past, it has struggled with the thin borderline that exists between earmarked income streams on the one hand and taxes on the other hand (Newbery & Santos 1999: 104, 105).

The OECD shares the British Treasury’s view that eco-tax revenue should be classified as general revenue for general spending purposes or to decrease debt or other taxes. Eco-tax revenue can possibly be used to reimburse entities that have been negatively affected by eco-destructive practices, but this may be impractical as:

- It is extremely difficult to quantify the effect of ecological damage caused by several contamination sources, on individuals.
- Eco-tax revenues should be spend across the board for public purposes such as health care, to help society in adjusting to destructive environmental practices, etc. This is because the environment is a public asset that depreciates due to pollution and this affects society as a whole.
- Eco-issues have many inter-generational concerns relating to it.

(OECD 2011: 8)

According to the OECD, earmarking of eco-tax revenue is not recommended, as it is normally difficult to accurately plot tax revenue from a certain source, against spending relating to a specific goal. This may lead to too much or too little being collected and allocated because of constant toying with the tax rate. It is, therefore, more advisable to budget independently for governmental income and spending (OECD 2011: 8). In SA, the National Treasury is also not in favour of eco-tax revenue earmarking, as they are of the opinion that it is not consistent with good fiscal management policies. They state that earmarking should be considered on a case-by-case basis, depending on specific situations (SA Department of National Treasury 2006: x).

## **2.6 TAX TYPES RELEVANT TO THE STUDY**

Taxes on goods and services (see section 2.3.3 above), are relevant to this study, because various international eco-taxes, which are examined in greater depth later on, fall into this category. It can further be sub-divided into sales taxes (Value-added tax for example), customs and excise (excise duty and customs duty) and user charges (i.e. e-toll charges levied on road users). Tax incentives are also discussed.

### **2.6.1 Sales Taxes**

In SA sales taxes include, for example, Value-added tax (VAT) which is levied at 14% and which is ultimately a consumption based tax. In SA a vendor who supplies goods or services or a person who imports goods or supplies imported services, must calculate and levy VAT (SARS 2014a: 2-3).

## 2.6.2 User Charges

User charges are levied on a wide range of services (Fay [s.a.]) and it is the service user who pays the charge (Newbery & Santos 1999: 104, 105). In SA, user charges are levied on goods and services such as airplane tickets, financial transactions, fuel, toll roads etc. (Newbery & Santos 1999: 104, 105; Eyewitness News 2013; SARS 2014a: 3; Fay [s.a.]). Section 2.5 above explains in more detail what user charges entail.

## 2.6.3 Customs and Excise

Customs and excise taxes are another form of tax on goods or services. In SA this includes customs duty, specific excise duty, specific customs duty, *ad valorem* excise duty, *ad valorem* customs duty, the fuel levy, etc. (SARS 2014a: 3). Customs duty relates to imported goods and its purpose is to create tax revenue for the government, as well as to protect the local market against cheap overseas imports (Stiglingh, Koekemoer, Van Zyl, Wilcocks & De Swardt 2016: 1123). Excise duty, on the other hand, is levied on domestic and locally produced goods. It aims to add to the income of the treasury and “internalise an external cost”. This corrects externalities and help to facilitate a change in behaviour (Stiglingh *et al.* 2016: 1129). Excise taxes are normally levied on the quantity of the item being sold and not on its value, for example a fuel tax levied on each litre of petrol sold (Fay [s.a.]).

## 2.6.4 Tax Incentives

A tax incentive is “a reduction made by the government in the amount of tax that a particular group of people or type of organization has to pay or a change in the tax system that benefits those people” (Collins Dictionary 2017). It can also be described as “a reduction in taxes that encourages companies or people to do something that will help the country’s economy” (Cambridge Dictionary 2017).

## 2.7 MARKET-BASED INSTRUMENTS AND THE ECOLOGY

Without governmental involvement, businesses and households will have no market force motivation to include ecological damage in their cost structures or budgets. This is because the negative impact of pollutants are usually distributed over the broader population and do not

directly influence the costs, which the polluting party has to bear. Ecological protection, therefore, needs to be initiated by the broader community, which usually equates to governmental participation. Historically, eco-policy mainly consisted of so-called “command-and-control” regulations that were rigid and had a “sniper” approach (OECD 2011: 2).

Recently governments have shown increasing interest in market-based instruments, in contrast to rigid regulatory instruments, to curtail harmful eco-practices. Such instruments include eco-taxes and tradable emission permits. Several reasons exist for the increase in use of eco-taxes. Firstly, eco-taxes deal directly with market failure, which denotes the market’s inability to include the cost of ecological destructive practices into its cost structure. If the eco-tax is well designed, it will increase the price of the product or service, by taking into account eco-destructive costs. This outward harm to the ecology is classified as an “externality” and is internalised into market prices by levying eco-taxes. This ensures that economic role players take into account the cost of harming the environment when they make economic decisions (OECD 2011: 2).

Eco-taxes give consumers and businesses the choice to find the least expensive method to curb ecological damage. It is more fluent than rigid regulatory instruments, where governments normally specify how and by whom polluting activities must be reduced. Similarly, subsidies and incentives for eco-friendly products or services involve a hands-on approach, where the government directs the economy in a certain direction (the government for example prefers one eco-solution to another). In the case of regulatory instruments, as well as subsidies/ incentives, the marketplace is steered in a prescriptive fashion, as the authorities are trying to “pick winners” (OECD 2011: 2).

The problem with “picking winners” is that vast volumes of data is required regarding constantly varying economic conditions, as well as eco-technologies, which carry an inherent risk that incorrect decisions could be made. Rigid regulations also carry a higher cost than eco-taxes, as it compels decision makers to make use of a set solution, while more affordable options may be available. As eco-taxes increase the cost of creating pollution, it makes these destructive practices less desirable from a financial perspective. An eco-tax gives economic role players the flexibility to decide for themselves how they are going to alter their harmful behaviour. Market forces, in other words, automatically determine the most economic method to reduce eco-damage (OECD 2011: 2).

## 2.8 CHARACTERISTICS OF AN EFFECTIVE ECO-TAX

According to the OECD, the points below should be kept in mind when an effective eco-tax is designed. These points can also translate to characteristics which an effective eco-tax or eco-tax system should have:

1. The pollutant or polluting behaviour should be targeted by the eco-tax and only in exceptional circumstances, should exceptions be made.
2. The range should be as broad as the scope of the harm to the ecology.
3. The tax rate should be in proportion to the harm caused.
4. The tax rate must be predictable and the rationale behind it plausible, to motivate ecological reform.
5. Eco-tax income should support fiscal consolidation or the decrease in other taxes.
6. Other policy instruments, outside the tax, should address distributional impacts on, for example, low-income households.
7. Coordination and transitional relief should be applied in instances where there are competitiveness concerns, such as other tax jurisdictions with lower rates, which encourage businesses to relocate.
8. The eco-tax system should incorporate effective communication with the public to ensure public acceptance.
9. In certain circumstances, eco-taxes and other policy instruments must be combined to deal with certain issues.

(OECD 2011: 1, 4-12)

According to Soares (2011: 2, 16, 17, 27) the design features (which again can be translated as characteristics of a good eco-tax) must contain the following features, namely:

1. Eco-taxes should target exact eco-objectives and be led by environmental criteria.
2. The design and management of eco-taxes should be handled by eco-experts and not by institutions who are mainly concerned in preserving the tax base.
3. The design of the eco-tax should aim to promote improvement potential rather than to punish absolute pollution amounts.

## **2.9 ADVANTAGES AND DISADVANTAGES OF ECO-TAX**

Eco-taxes have the following broad advantages and disadvantages:

### **2.9.1 Advantages**

1. It is a more flexible and cost effective policy to curb environmentally destructive practices in comparison to regulations, subsidies and incentives.
2. The environment, which eco-taxes create for economic role players to freely choose (within boundaries) how to manage an increase in internalised cost, has various beneficial spin-off effects. This includes ongoing encouragement to decrease eco-harmful practices. A target-based regulation gives no further motivation to reduce pollutants once the target is met, but eco-taxes afford businesses an on-going incentive to lower the pollutants, even after large reductions have been achieved.
3. With regard to carbon emissions, eco-taxes create a demand for more low emission alternatives, which in turn, stimulate supply without direct government intervention by way of subsidies. This again causes the price of the alternatives to drop and makes it even more viable.
4. Eco-taxes spur on innovation by internalising costs providing motivation to develop eco-friendly technologies or to implement existing ones.

(OECD 2011: 2-3)

### **2.9.2 Disadvantages**

1. Damaging avoidance activities: In certain cases eco-taxes may have the reverse of effects intended, where parties being taxed behaves in a more environmentally damaging way than the proxy of pollution being taxed (behaviour is changed, but in a negative way). Where a high toxic waste tax is levied, it may motivate companies to decrease waste, but it may also spur on illegal dumping of toxic waste in rivers.
2. Distributional effects: Eco-taxes may be levied on transport, fuel or energy that are commodities on which a high percentage of low-income households' earnings are spent.

Eco-taxes are, in other words, very often regressive in nature. A clean environment may be considered a luxury item. Benefits derived from eco-taxes may relay to rich households, while poor households in effect are subsidising the rich for this luxury. Furthermore, poor households are subsidising the rich at a cost which is proportionately higher to them (with relation to their income), than it is to the rich households.

3. International competitiveness: Eco-taxes increase the cost of manufacturing products. This may cause local products to be more expensive than products manufactured in countries where no eco-tax is applicable. This, in turn, may lead to the sales of the local product decreasing on international markets, as cheaper alternatives are available to the consumer.
4. Geographically varying damage: This is where the pollution rate varies between different pollution sources (such as different emissions sources that might contain different carbon quantities). A one-size-fits-all eco-tax may cause inefficiencies (mismatch between the pollution proxy and the relating eco-tax). This may require that a tailor made source-by-source eco-tax is levied to obtain a more equitable result.

(Fullerton, Leicester & Smith 2008: 4-5)

## **2.10 THE DOUBLE DIVIDEND HYPOTHESIS**

The double dividend hypothesis proposes that by increasing eco-taxes, two types of advantages or dividends can be obtained. The first dividend is environmental improvement. The second dividend is improved economic effectiveness by utilising eco-tax income to decrease or partially replace other taxes such as taxes on income, which may distort savings and labour decisions (Fullerton & Metcalf 1997: Abstract).

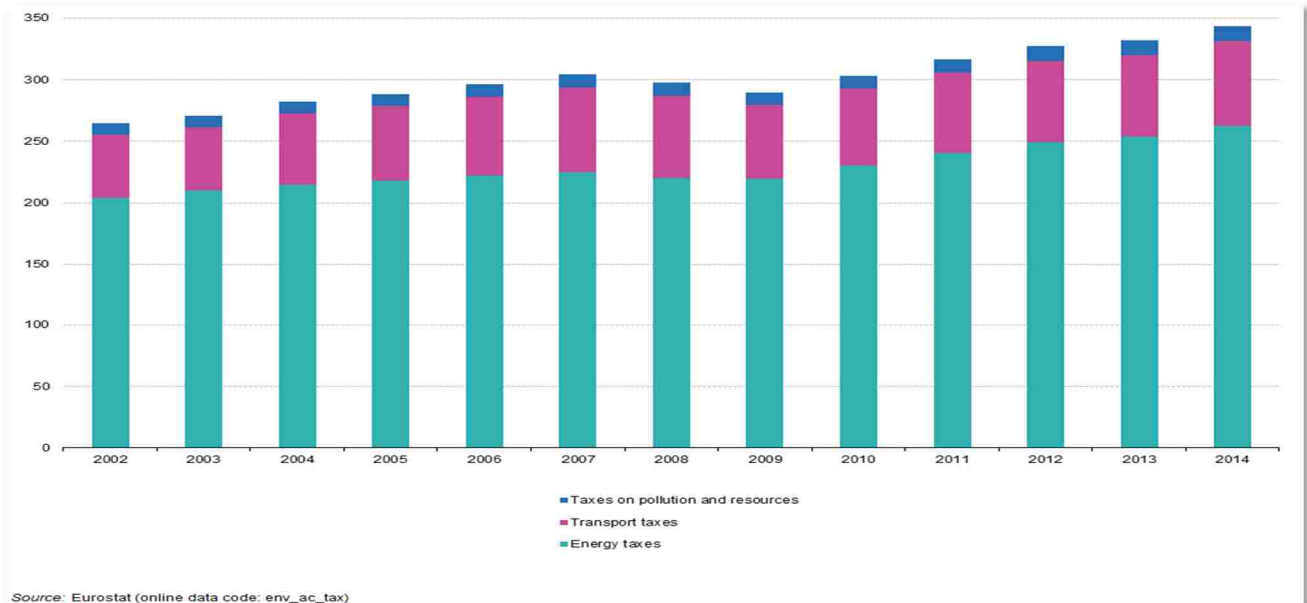
According to Milne (2007), this concept is also known as the revenue neutral tax approach, environmental tax reform or green tax shifting. As a substitute for sending tax revenues to a general fund or dedicating them to a specific environmental problem, the tax authorities adopt an alternative policy. In this policy, a similar degree of fiscal relief is afforded from other existing taxes that may inhibit economic activity (such as income tax or labour tax) to the same extent as the increase in green taxes.



## 2.11 EUROPEAN UNION ECO-TAXES

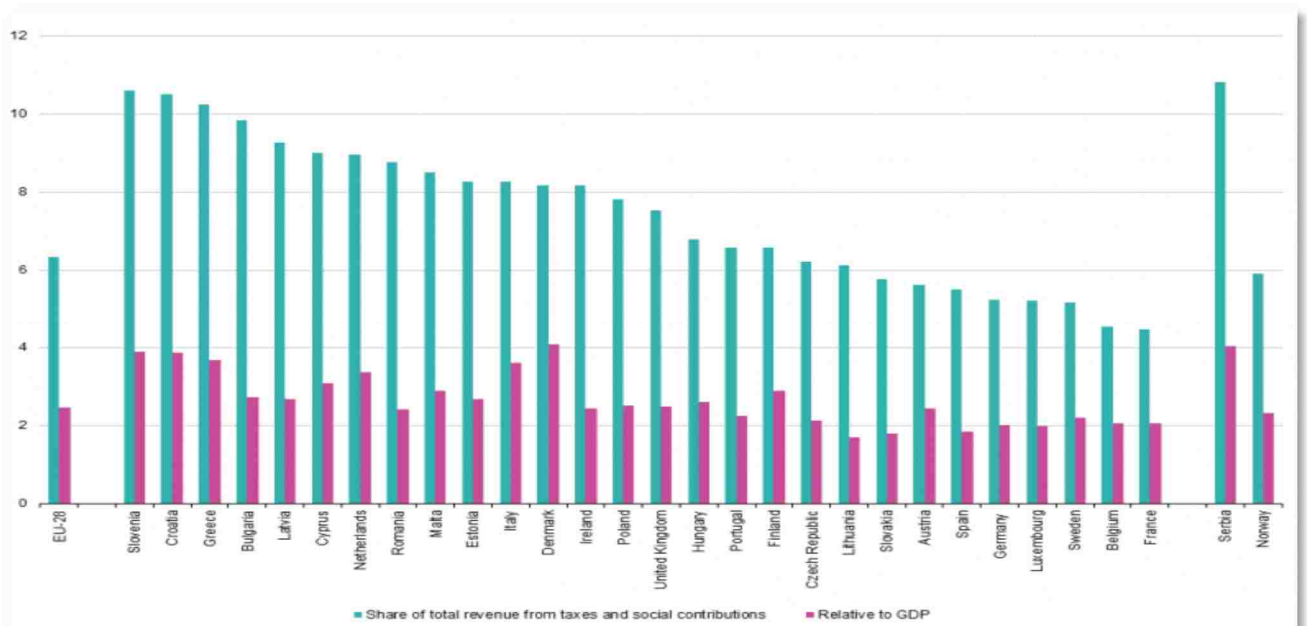
In various countries across the globe, eco-taxes have formed a part of their tax systems for quite some time. In the European Union (EU), for instance, revenue derived from eco-taxes increased with an average of approximately 2.2% per annum (with reference to current prices) since 2002. In the same period, GDP at market prices increased with 2.5% per year on average. In 2014, eco-tax revenue was EUR 79 billion more than in 2002. Refer to figure 2.1 below (Eurostat 2016).

**Figure 2.1: Total eco-tax revenue by tax type for EU, 2002 to 2014 (billion EUR)**



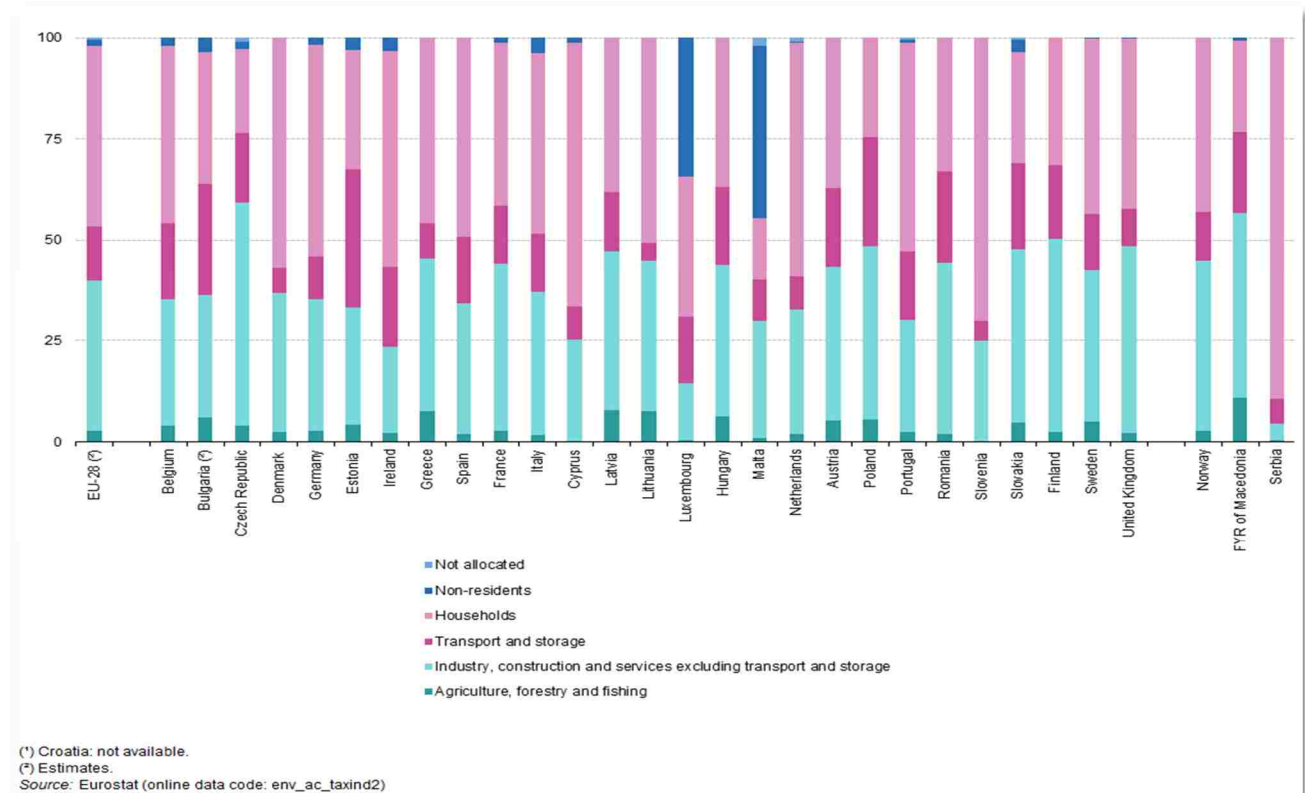
(Source: Eurostat 2016)

**Figure 2.2: Total eco-tax revenue per EU country, 2014 (%)**



(Source: Eurostat 2016)

**Figure 2.3: Energy taxes by economic activity per EU country, 2013 (% of energy tax revenue)**



(Source: Eurostat 2016)

Figure 2.2 above indicates eco-tax revenue in relation to total tax and social contribution revenue, as well as in relation to GDP in EU countries. From the figure, it is clear that eco-taxes contributed more than 10% of total tax and social contribution revenue in three EU countries, namely Greece with 10.2%, Croatia with 10.5% and Slovenia with 10.6%. Figure 2.3 shows energy eco-taxes by economic activity. Agricultural eco-taxes (derived from agriculture, forestry and fishing activities) contributed 3% for EU countries on average, ranging from 0% in Slovenia to as much as 8% in Greece for example (Eurostat 2016).

## 2.12 INTERNATIONAL CARBON TAXES

Various countries across the globe have started placing a price on carbon by means of carbon taxes and other carbon related fiscal policy instruments.

In Europe, Sweden has the highest carbon tax and uses a system of progressive exemption reductions. Denmark applies the same system, but with lower tariffs and households must pay the full carbon tax. In France, a fossil fuel carbon tax was proposed in 2009, but was then rejected

as the government felt it was unfair to certain taxpayers and would not reduce CO<sub>2</sub> emission or save the environment. Revenue recycling takes place in the EU by tax shifting (taxing “bads”, such as pollution, while decreasing taxes on “goods” such as labour), which promotes the double dividend concept (SA Department of National Treasury 2013a: 36).

Previously China’s aim was to increase renewable energy sources to 11.4% of the total energy consumption by 2015. It is further endeavouring to increase this percentage to 15% by 2020. It also worked towards decreasing CO<sub>2</sub> emissions by 17% per unit of gross domestic products (GDP), by 2015. A carbon tax and a trading system, which will put a price on carbon, are also in the pipeline. Other developments include the planting of 6 million hectares of forests, putting limits on the amount of energy that may be consumed per unit of production, experimental cap-and-trade schemes, eco-protection charges and renewable power such as hydro-power (SA Department of National Treasury 2013a: 37-38).

In India forestry, gas and oil, electricity generation, transport and construction industries will be incorporated in its low-carbon plan. An excise or carbon tax of about US\$1 for each ton of coal was introduced on 1 July 2010 and is being charged on local as well as imported coal. Proceeds are utilised to fund the Indian National Clean Energy Fund, as well as research into eco-friendly programmes and technologies. High-energy consuming businesses and producers of electricity will be subject to compulsory energy saving targets under the PAT (Perform, Achieve and Trade) scheme (SA Department of National Treasury 2013a: 38).

In Mexico, a large carbon mitigation programme is being implemented to reduce GHG emissions with 30% by 2020 and 50% by 2050. Climate change legislation was introduced during April 2012, with compulsory emission targets set. The new legislation provides a structure for the government to implement climate change budgets, carbon mitigation investments and carbon markets. A national emission-trading scheme is envisaged soon, which includes cross border trade. The aim is to grow renewable energy sources for electricity generation to 35% by 2024 (SA Department of National Treasury 2013a: 39).

## **2.13 TAX TYPES IN SOUTH AFRICA**

Taxes collected in terms of the Income Tax Act 58 of 1962 (ITA) include normal income tax and several other sub-categories of taxes which form part of income tax. Sub-categories of income

tax include employees' tax (referred to as Pay-As-You-Earn (PAYE)), provisional tax, capital gains tax and withholding tax, the latter pertaining to non-resident sellers of SA fixed property (SARS 2014a: 2).

PAYE and provisional tax are not separate taxes from income tax, but merely payments made in advance towards the final income tax liability, which is determined on assessment. Other taxes collected in terms of the ITA include foreign entertainers and sports people withholding tax, royalty withholding tax, micro businesses turnover tax, donations tax and dividends tax. Value-added tax (VAT) is charged at 14% in terms of the Value-Added Tax Act 89 of 1991 and is a destination consumption based tax. The latter is calculated on the supply of all products and services by a vendor made in the course of furthering his business. It is also calculated on goods imported by any entity, as well as its supply of imported services. The VAT Act provides for certain exceptions, exemptions, adjustments and deductions (SARS 2014a: 2-3, 6).

The national government charges duties and levies under the Customs and Excise Act 91 of 1964. These include ordinary customs duty, specific excise duty, specific customs duty, *ad valorem* excise duty and *ad valorem* customs duty. It also includes the environmental levy, fuel levy, ordinary levy (the same as the ordinary customs duty paid by state entities in Botswana, Lesotho, Namibia and Swaziland for particular purposes), the anti-dumping duty and the countervailing duty. Estate duty, air passenger departure tax, mineral and petroleum resources royalties, securities transfer tax, the skills development levy (SDL), transfer duty and unemployment insurance fund (UIF) contributions are also charged under the applicable Acts. The national government levies all the aforementioned taxes. Provisional and local spheres of government do not levy taxes. Local government, however, do charge rates calculated on non-moveable property to finance local and municipal services (SARS 2014a: 3).

## **2.14 ECO-TAXES AND INCENTIVES IN SOUTH AFRICA**

### **2.14.1 Eco-taxes**

SA ecological taxes consist of the electricity levy on power generated from non-renewable sources (3.5c per kilowatt hour; R8.64bn raised in 2015), the CO<sub>2</sub> tax on motor vehicle emissions (R90 per g CO<sub>2</sub>/km for each gram of emissions above 120 gCO<sub>2</sub>/km on normal passenger vehicles; R1.48bn raised in 2015), the incandescent light bulb levy (R4 per globe; R91m raised

in 2015), the plastic bag levy (6c per bag; R174m raised) and the international air passenger departure tax (R190 per passenger for international flights or R100 per passenger for flights to Botswana, Lesotho, Namibia, Swaziland; R907m raised in 2015). These eco-taxes were introduced in response to global climate change by amending the behaviour of SA citizens. The table below indicates eco-taxes collected from 2010/11 to 2014/15 (SA Department of National Treasury & SARS 2015: 11-12).

**Table 2.1: Ecological taxes collected for the 2010/11 to 2014/15 financial years**

R million	International air departure tax	Plastic bag levy	Electricity levy	Incandescent light bulb levy	CO <sub>2</sub> tax on motor vehicle emissions	Total
2010/11	649	150	5 103	151	626	6 679
2011/12	762	161	6 323	144	1 617	9 007
2012/13	873	151	7 984	137	1 567	10 712
2013/14	879	169	8 819	72	1 711	11 650
2014/15	907	174	8 648	91	1 483	11 303

(SA Department of National Treasury & SARS 2015: 12)

In the 2014/2015 financial year, SARS collected a total of R983.6bn in taxes (SA Department of National Treasury & SARS 2015: viii). The percentage of eco-taxes in relation to total tax revenue for 2014/15 was therefore, only 1.15% (R11.3bn/ R983.6bn). Eco-taxes thus form a small portion of tax revenue, which gives ample scope to implement new eco-taxes or increase existing ones. Earmarking of these taxes for dedicated eco-purposes versus using it for general revenue generation was discussed above. A new carbon tax and a carbon offset scheme are in the pipeline in SA. A tyre recycling levy of R2,30 per kg was also officially incorporated into the SA government's revenue base as from 1 February 2017 (SAnews.gov.za 2016).

#### **2.14.2 Eco-incentives**

There are various eco-tax incentives in SA, summarised in the table on the next page.

**Table 2.2: Climate change-related tax incentives**

Instrument	Description
Renewable energy depreciation allowance (Section 12B)	An accelerated depreciation allowance exists for capital equipment used for renewable electricity generation from wind, solar, small-scale hydro and biomass at the rate of 50: 30: 20 per cent over three years.
Depreciation allowance for biofuels production (Section 12B)	An accelerated depreciation allowance exists for capital equipment used for biofuels production at the rate of 50: 30: 20 per cent over three years.
Tax exemption for certified emissions reductions (Section 12K)	Revenues generated from the sale of certified emissions reductions resulting from projects under the Clean Development Mechanism are exempt from income tax.
Biodiversity conservation and management expenses (Section 37C)	Income tax write-offs are provided for expenditure incurred in the management and maintenance of biodiversity and priority areas under the National Environmental Management Biodiversity Act and the Protected Areas Act.
Research and development tax incentive (Section 11D)	There is a 150 per cent income tax deduction for scientific and technological research and development expenditure, and research and development capital expenses can be written off at the rate of 50: 30: 20 per cent over three years.
Building research and development tax incentive (Section 13(1))	There is a 5% per year depreciation allowance available on buildings and improvements to buildings utilised for research and development purposes.
Industrial policy incentive (Section 12I)	Energy efficiency-related criteria are given in the Industrial Production Policy incentive scheme.
Proposed tax incentive for energy efficiency savings (Section 12L)	Businesses can claim a deduction against taxable income in the form of an amount equal to the monetary value of proven energy efficiency savings.
Additional deduction in respect of roads and fences in respect of production of renewable energy (Section 12 U)	Where renewable energy production of a project exceeds 5 MW, businesses can claim a deduction against taxable income of all expenses actually incurred in the year of assessment.
Deductions in respect of environmental expenses (Section 37B)	An environmental treatment and recycling asset can be depreciated at the rate of 40: 20: 20: 20, while a waste disposal asset can be depreciated over 5 years.

(Sources: SA Department of National Treasury 2013a: 69; South African Institute of Chartered Accountants 2014; South Africa - Income Tax Act 58 of 1962)

## **2.15 CURRENT ECO-TAX DEVELOPMENTS IN SOUTH AFRICA**

### **2.15.1 Carbon Tax Developments**

A carbon tax can be defined as a market-based instrument which places a price on carbon, and which aims to reduce greenhouse gas (GHG) emissions, by taxing carbon emissions directly. An emission trading scheme, on the other hand, tries to achieve this indirectly by restricting the quantity of emissions produced by businesses by way of trade based carbon prices and also a trade in carbon allowances (SA Department of National Treasury 2010: 27). In SA, a carbon tax has been in the pipeline for several years (see historical development in section 5.7 below).

The proposed carbon tax has been hailed as the “biggest change to the SA tax landscape since the introduction of capital gains tax in 2001”. Businesses, as well as private households, will be affected to a greater or lesser extent, and they will have to strategize to ensure they can cope with the effect carbon taxes can have on their operations. Furthermore, all SA companies, big and small across all industry types, will have to take pro-active steps to manage all the business consequences of this new tax. Businesses not directly liable to pay the carbon tax will still be indirectly affected by it, because it will be embedded in their supply chain as well as in their electricity usage (Moneywebtax 2013).

An initial carbon price of R120 per ton of CO<sub>2</sub> is planned, which will increase at 10% per annum during the first phase of implementation. When the tax-free threshold, as well as other relief is factored in, the effective tax rate will initially vary between R12 and R48 per ton of CO<sub>2</sub>. If it commences with a fairly low carbon tax price, which progressively increases over five to ten years, it will allow businesses in SA (with specific reference to high carbon emitters) adequate time to switch to more green practices in order to decrease their carbon footprint and eco-tax costs. Initially the first phase was anticipated to start on 1 January 2015 and stretch to 31 December 2019 (SA Department of National Treasury 2013b: 1-2), but implementation was postponed several times and a possible implementation date of 1 January 2017 have now been mooted (Business Day Live 2014; Deloitte 2016, Blue North 2016).

### **2.15.2 Carbon Offsets Developments**

Changes in the way land and forests are used can add or remove carbon from the atmosphere (it acts as a net sink) and therefore, an extremely complex baseline will be required to levy a

carbon tax on these activities. An option is suggested for owners of agricultural resources and activities where they can participate in the process by the use of offsets. Owing to the current void of accurate measuring methods and a trustworthy baseline for purposes of affixing a carbon tax to agricultural activities, the Department of Agriculture has launched an inventory taking process. This inventory taking process aims to develop better emission methodology and data gathering techniques for this sector. In March 2016, the Department of Environmental affairs issued a report in which a baseline is provided for the SA agricultural sector, both on a national as well as a provincial level (SA Department of Environmental Affairs 2016a: iv, 13).

### **2.15.3 Environmental Tyre Levy Developments**

In the 2015 Budget proposals, the SA government revealed their intention to implement an environmental tyre levy. The purpose of the levy is to motivate entities to recycle, recover and re-use this type of waste, taking cognisance of the fact that approximately 108 million tons of waste is created per annum in SA. Originally, the implementation date was set to be during the last term of 2015, but it was then postponed. According to the 2016 budget, the tyre levy would have been implemented on 1 October 2016 and would be charged on all re-treaded and new pneumatic tyres. It would be levied as a formal tax in terms of the Customs and Excise Act at a rate of R2,30 per kg on both local manufactured and imported tyres and would be paid on top of any existing import or export duties (Cliffe Dekker Hofmeyr 2016). The implementation date, however, was postponed to 1 February 2017, to give SARS additional time to meet with all affected parties regarding practical implementation issues (SAnews.gov.za 2016).

According to the South African Tyre Manufacturers Conference (SATMC), the payment of the levy is however, not a new occurrence. Previously SATMC members did pay a tyre recycling levy of R2,30 per kg. This payment, however, was not made to SARS but to Redisa (Recycling and Economic Development Initiative of South Africa). This is in terms of compulsory tyre recycling legislation and not in accordance with specific tax legislation (i.e. Customs and Excise Act). Redisa was appointed by the Department of Environmental Affairs to manage the previous programme. The programme can be classified as an industry-funding model for the management of tyre waste. The new levy introduced in the 2016 budget replaces the Redisa levy and in future, the payments will be made to SARS. The Minister of Finance has now incorporated the levy into the revenue base of the fiscus and it will therefore form part of the general SA pool of eco-tax revenue (South African Tyre Manufacturers Conference 2016).



With the change in tyre levy modus operandi, the SATMC is going to liaise with National Treasury and the Minister of Finance regarding several governance issues. This is to ensure that the levy is used for earmarked purposes, including to:

- Ascertain how funds previously paid to Redisa was utilised to achieve the objectives of the government's Waste Tyre Management Plan.
- Ensure that the tyre manufacturing industry and government are represented in Redisa's governance structures to safeguard that funds are used correctly. In the past, the SATMC was excluded from any oversight of Redisa. As such they were unable to judge if levies paid by the industry assisted Redisa in achieving the desired recycling result.
- Ascertain that the levy rate corresponds with the true cost of recycling the tyre, including administration and subsidising costs.

(SATMC 2016)

## **2.16 OTHER IMPORTANT ECO-TAX CONCEPTS**

In this section certain general eco-tax concepts that form part of the eco-tax philosophy, are discussed.

### **2.16.1 Behavioural Changes**

According to the OECD "...the aim of environmental taxes is precisely to provide incentives to change production techniques to make them less polluting." (OECD 2011: 4). It also states, "By seeking to reduce polluting behaviours, environmental taxes by definition are intended to alter production decisions and to have a disproportionate impact on polluters". There are also other fiscal options available to help governments in curbing eco-destructive practices by changing behaviour. This includes information programmes, regulations, innovation policies and environmental related subsidies. Eco-taxes, however, have various advantages above other policies, such as economic effectiveness, environmental efficiency, public revenue raising and transparency (OECD 2011: 10). Therefore, the goal of an effective eco-tax is to change the behaviour of polluting entities to "green" behaviour.

To ensure effective behavioural changes, the eco-tax must be charged on a basis directly equivalent to the polluting activities or on a unit of pollution. By escalating polluting activity costs, various pollution curbing behavioural changes can be stimulated. These include switching to cleaner manufacturing processes, development of new green products, utilising existing lower polluting products, implementing technologies that capture and neutralise emissions and a reduction in manufacturing output and/or consumption. It is also important that customers are aware of a certain product/service that is not green and comprehend how the tax is calculated. With the levying of a tax on energy, for example, the consumer's behaviour will not change if he/she is unaware of the eco-tax and how behavioural change will assist in lowering the tax. Eco-taxes provide a constant stimulus to decrease harmful activities over long time periods, even after a substantial reduction in pollution has been achieved (OECD 2011: 3, 4, 11).

### **2.16.2 Availability of Alternatives**

This concept is closely linked to the previous sub-section. To change behaviour, alternatives must be available to the producer (the farmer in the context of this study) or the consumer, including the alternative of producing or buying less of a certain product. Eco-taxes promote flexibility among businesses and consumers to decide how they want to alter their behaviour to save eco-tax costs by decreasing their ecological destructive activities. Resulting market forces will “automatically” limit eco-destructive practices. Eco-taxes on petrol and diesel and carbon tax on cars can serve as an example. These taxes increase the cost of owning and driving a motor vehicle and thereby encourage the consumers to commute more responsibly which, in turn, reduce emissions and air pollution. Available alternatives are, for example, to drive smaller or more fuel-efficient vehicles. They can also make use of an electric or hybrid vehicle or utilise public transit, walk or cycle, carpool or live closer to their workplace (OECD 2011: 2).

### **2.16.3 Effect on Inflation**

In 2013, the Bank of England governor, Sir Mervyn King, accused the UK government of pushing up inflation due to high green taxes and tuition fees. He remarked that green taxes, levied on energy, pushed up prices that, in turn, made it harder for the Bank of England to keep inflation within the set targets in the short run. Since the beginning of 2011 to the beginning of 2013, the average energy bills for households escalated by almost 25%. Energy suppliers blamed governmental green taxes for this. Inflation of above 2% per year was anticipated from 2013 until

2016, with 3 years of pressure on the living standards of households (Mail Online 2013). From Sir Mervyn's comments, it is clear that eco-taxes have an effect on inflation.

#### **2.16.4 Effect on Investment**

Eco-taxes can have a positive effect on investment in a country, if implemented and managed correctly. In the Netherlands, thousands of projects were implemented by means of eco-tax incentives. Projects include re-forestation, organic farming, wind turbines and eco-friendly greenhouses. This was done by way of the Green Fund Scheme that is a private scheme. Incentives by means of the tax system, are provided in an effort to motivate private individuals to provide capital, which is invested in bank managed "green funds". No capital gains tax (normally 1.2% of the investment amount) is applicable on these green capital investments up to a certain ceiling, and proceeds are taxed at a low rate (European Commission 2012).

The banks managing the schemes, in turn, lend funds to eco-projects on very good terms (1% less than normal rates) as the banks are willing to accept a decreased rate of return because of the scheme structuring and tax breaks. The scheme has been very successful in motivating large-scale green projects in the Netherlands, with a minimum charge to the government. In 2010, eco-investments of approximately €6 billion were realised by means of a mere €150 million, which was conceded by the government in the form of tax incentives. The average investment was €30,000 per person (European Commission 2012).

The scheme has helped 6 066 certified eco-projects over 14 years, while the number of investors reached 250 000 in 2009. Various eco-projects were engaged in, including projects involving renewable energy, nature conservation, aquaculture conservation and sustainable buildings. One of these projects entailed the removal of chemicals from wastewater by way of technological advancement at a treatment plant. It was efficient and led to energy savings of a 1.5 million kWh per annum, while sludge quantities decreased by 50% (European Commission 2012).

#### **2.16.5 Effect on Import and Export**

With reference to the Heavy Goods Vehicle (HGV) eco-tax, the Irish Exporters Association (IEA) warned that it would have a major impact on their member's activities, if the tax indeed launched successfully. The chief executive of the IEA, John Whelan, stated that Ireland's exports to France were worth approximately €4.4 billion. €540 million of this figure relates to agricultural food

products, where the transport cost attributed much to the final price. The HGV eco-tax would increase the cost for Irish exporters with at least €97.5 million per annum. Furthermore, the costs for produce, where Irish exporters had to transport it through France to destinations in other countries such as Spain and Italy, would also increase (Independent.ie 2013). This eco-tax, therefore, increases export costs, leading to higher prices in those countries importing the produce (if the extra costs are shifted down to consumers).

## **2.17 CHAPTER SUMMARY**

Important theory and concepts relating to tax and eco-taxes were discussed in this chapter to facilitate a better understanding of information following in subsequent chapters. General theory relating to taxes, such as the principles of a good tax policy, the main types of taxes that exist, the difference between direct and indirect taxes, earmarking and user charges were provided and discussed. The chapter continued by providing eco-tax relevant theory, such as market-based instruments (of which eco-tax is a subset) versus rigid command-and-control regulatory instruments, effective eco-tax characteristics, and eco-tax advantages and disadvantages. The double dividend hypothesis was also explained.

Background theory regarding international eco and carbon taxes as well as SA taxes and eco-taxes (current eco-taxes and new developments) were provided. Lastly, concepts such as behavioural changes, alternatives and certain effects of eco-taxes were discussed. From the above it is clear that eco-taxes are a very dynamic tax field, which will become increasingly prominent as population numbers and resource demand grow. The next chapter is dedicated to the introduction of the selected new eco-taxes, currently being proposed or implemented in foreign countries, and which directly or indirectly influence the agricultural sector in those countries.

## **CHAPTER 3**

### **NEW ECOLOGICAL TAXES BEING PROPOSED OR IMPLEMENTED INTERNATIONALLY**

#### **3.1 INTRODUCTION**

In this chapter, eight new eco-taxes that affect agriculture and which was recently proposed or implemented abroad, are investigated. This is done by providing the purpose, workings and historical development of each eco-tax. Its characteristics are also briefly examined, such as the type of tax, types of pollution targeted, types of agriculture it will affect, what farming input cost it will influence and who the affected concept polluters are. Each section concludes with a brief summary.

#### **3.2 FRANCE: HEAVY GOODS VEHICLE ROAD TAX**

##### **3.2.1 Purpose**

The aim of the Heavy Goods Vehicle (HGV) eco-tax was to raise funds for important transport infrastructure. The second goal was to aid an ecological shift, where the behaviour of businesses is altered to one where they employ more eco-friendly modes of transport, such as rail and water (Tax-News 2013a). The French government also aimed to raise some EUR1 billion per year (Tax-News 2013a) to use in conjunction with other taxes and fiscal reforms in an attempt to reduce the country's deficit to below 3% of GDP, as per a 2015 deadline which was set by the European Union (EU) (RFI 2013a).

##### **3.2.2 Background**

A brief explanation of the workings and history of the HGV eco-tax is provided below.

## ***Workings of the HGV eco-tax***

Approximately 15 000 kilometres of publicly managed roads and motorways of the French road network were initially included in the proposal, when the HGV eco-tax was first suggested by the French authorities. French and foreign goods transport vehicles, with a permissible maximum weight of more than 3.5 tons, would have to pay the tax when they use the designated 15 000 kilometres of road network (VIALTIS 2013d). The auto-routes and other existing toll roads would not form part of the eco-tax network and it was also decided that emergency vehicles (such as fire brigades, police trucks, etc.) would be exempt (The Local 2013). The tax rate would depend on the vehicle's weight, number of axels and its environmental performance and these rates would be adjusted annually by the government (VIALTIS 2013b).

Taxpayers would also see strict enforcement by way of a GPS unit installed in every truck and the units would be monitored across the road network by fixed and mobile monitoring devices. These monitoring checkpoints would be able to pick up whether on-board GPS units function correctly and if faulty or tampered units are detected, authorities will take corrective measures. It would also be possible for French customs officers to inspect the units on major highways as well as inside parking areas. If an owner of a HGV should not pay the eco-tax, it could lead to fines and impoundment of the heavy goods vehicle (VIALTIS 2013a).

## ***Historical development***

This eco-tax was a product of the "Loi Grenelle Environnement" (Grenelle Environmental Law) and was developed by the French government, in conjunction with the Ecomouv consortium. Ecomouv was responsible for its implementation and management, and the French Transport Infrastructure Financing Agency and local and regional authorities (VIALTIS 2013c) would receive the proceeds. The original launch date would have been 20 July 2013, but due to further required development, it was postponed to 1 October 2013 (Tax-News 2013a). Originally, the system would have been tested for a trial period in only one region of France, but due to delays (and also to ensure operational effectiveness), it was decided rather to test it on a nation-wide voluntary basis (Tax-News 2013a). Implementation was again postponed until 1 January 2014, after test trials indicated that the on-board GPS system was not functioning correctly. Since registration opened in July 2013 until September 2013, only 1% of the approximately 800 000 liable heavy goods vehicles were registered (Commercial Motor.com 2013).

On 28 October 2013, the French government stated that they would revise the plan after violent protests in Brittany, western France. Possible concessions included reducing the tax by 50% for the Brittany region, which is remote from the south of France and Paris. The Finance Minister reiterated that the eco-tax would not be scrapped nor the implementation date postponed further (RFI 2013b). A 50% reduction in the tax was proposed due to many problems experienced in Brittany's food industry at that stage. Problems included that thousands of jobs were already lost in the agricultural food processing industry (about 10% of regional jobs in this sector), that Brittany's economy is highly reliant on agriculture and that it is a remote French peninsula which means that transport kilometres and costs are high (Bord Bia 2013).

However, on 29 October 2013 the French Prime Minister suspended the controversial tax, after an emergency meeting was held with role-players from Brittany. The decision was branded a "suspension, not a cancellation", while the Union for a Popular Movement party insisted, the tax should be scrapped altogether, emphasising their view by boycotting the meeting. The Transport Minister stated that the eco-tax would be put on hold, while the effects on agriculture and food processing as well as remote French areas were investigated (RFI 2013c ; France24 2015). The contract would also be renegotiated to try to lower costs (Tax-News 2013d).

During June 2014, it was announced that the tax, in its original form, would be abandoned and that a new scaled down version (called the truck-toll tax) would replace it. Only 4 000 km of roads would be affected instead of the 15 000 km previously envisaged. Milk collection and other agricultural vehicles would be exempt from the tax levied at €0,13 per kilometre. The new truck-toll tax would be rolled out from 1 January 2015 (The Local 2014b). However, after further governmental consultation it was decided to abandon the already watered down truck toll tax altogether. Reasons cited for the decision includes the difficulty of implementing the tax, as well as threats of further protests by truck drivers (Automotive Logistics 2014).

### **3.2.3 Characteristics**

The HGV tax can be described as a tax on goods or services and can be classified as a user charge as it is similar to road tolling where a portion is allocated to important transport infrastructure. It is a direct tax levied on and collected from heavy goods vehicle owners. The aim is to encourage more eco-friendly transport such as rail and water and to target air pollution, including carbon emissions, emitted by the internal combustion process of a truck. The affected agricultural input is transport costs with an estimated increase of 5% to 10% (Tax-News 2013c).

Concept polluters are entities that owns and drives heavy goods vehicles. This eco-tax would affect all farmers to a greater or lesser extent, as the transport of chemicals, seed, feed, livestock, labour, etc. are common farming occurrences.

### **3.2.4 Summary**

In this section, the proposed French HGV road tax was introduced. This tax aimed to generate funds for transport related projects and to promote more eco-friendly transport such as rail and waterways. From the violent protests, it was clear that the tax was a highly contentious issue amongst French farmers. In the next chapter, the reasons why the French farming community was so bitterly opposed to this tax in its original form (that is before the exemption of agricultural vehicle concession was granted), with specific reference to the expected effects on the agricultural sector, are examined.

## **3.3 ONTARIO, CANADA: ECO-FEE OR ECO-TAX ON TYRES**

### **3.3.1 Purpose**

The purpose of the eco-fee or eco-tax on new tyres is to fund the used tyre programme in the Canadian province of Ontario, whereby on-road and off-road tyres are not disposed of in landfills or burned, but rather recycled. The programme also aims to reduce pre-existing tyre stockpiles. Tyres are recycled to create products that can be used commercially, in households or in motor products. It aids job creation and the economy (Ontario Tire Stewardship 2014).

### **3.3.2 Background**

A brief explanation of the workings and history of the eco-tax on tyres is provided below.

#### ***Workings of the eco-tax on tyres***

Ontario Tire Stewardship (OTS) is responsible for managing the programme (The Government of Ontario 2013: 13-14). It is funded by add-on fees known as tyre stewardship fees levied onto the public (that is customers) by Industry Stewards of tyres who, in turn, pays over the fees to OTS (Ontario Tire Stewardship 2014 & Stewardship Ontario 2014). Industry Stewards are companies



that owns brands or is first importers or franchisors of designated goods and packaging that constitutes special or hazardous waste (Stewardship Ontario 2014). Used rubber tyres of passenger vehicles, trucks and off road vehicles such as tractors, are collected and not stockpiled. Pre-existing stockpiles are also systematically reduced and in 2012, 96.3% of tyres were already diverted from disposal at landfills (The Government of Ontario 2013: 13-14).

### ***Historical development***

The OTS programme is run in accordance with the Waste Diversion Act of 2002, which was promulgated in Ontario in an effort to solve the shortcomings in large-scale recycling programmes and in response to global recycling trends and continued pressure. The Act introduced several programmes, one of which is the used tyres initiative introduced in 2009 (The Government of Ontario 2013: 13-14).

In 2013, OTS found itself at odds with the farming community due to drastic eco-fee increases on tyres. The OTS was criticised as eco-fees increased from a flat rate of 15,29 Canadian Dollar (CAD) per tyre, to a new weight-based fee system. In practise, this meant that the new fees would be as high as 352,80 CAD for tyres of 826 and 1543 pounds (that is tyres weighing between approximately 375 kg and 700 kg). After the increase a Deere 9770 combine tyre would tally 1 646 CAD in Ontario, while the closest comparable levy for the same tyre in any other province of Canada, would be the levy in British Columbia of 210 CAD. A discrepancy in fees (780% in the aforementioned example) between Ontario and some other provinces in Canada is therefore evident (Ottawa Business Journal 2013).

The 2013 disagreement was not the first time that Stewardship Programmes were surrounded in controversy. In 2010, Stewardship Ontario informed businesses that they had the option to hide the eco-taxes in product prices to ensure that consumers were “none the wiser” (The Star.com 2010). There were also instances where different stores of the same franchise charged different levies on identical products, such as in the case of Canadian Tire (The Star.com 2013). This effectively confirmed an element of deceit in the programme, which added to public outrage.

In 2016, OTS once again was the centre of much controversy when it was discovered that their board members were using tyre eco-fee funds to finance lavish dinners, expensive wines and luxury hotel and resort accommodation as well as sunset cruises. Fees were also used for political donations, which arguably constitutes unethical behaviour. The chairman of OTS

remarked that, “All those things, I think, were fair and reasonable”. As such, there were public calls that OTS should be shut down. Currently, new legislation is in the pipeline where OTS will eventually be dissolved and where a tyre recycling add-on fee will still be payable by the end-consumer. Under the new legislation, manufacturers would directly fund recycling initiatives (The Star.com 2016a). In June 2016 it was revealed that two top executives had stolen over half a million Canadian dollars from OTS during 2012. When discovered by OTS, attempts were made to conceal the theft. A lack of proper audit controls was cited as one of the reasons for the embezzlement (The Star.com 2016b).

### **3.3.3 Characteristics**

It can be argued that the eco-tax levied on the sale of new tyres constitutes a sales tax at the point of sale (tax on goods or services). It is an indirect tax as it is collected from the consumer, but paid over by the vendor to the stewardship organisation. The aim is to pay for used tyre recycling and to keep tyres from landfills. The concept polluters are entities using tyres, including farmers using tyres on tractors, harvesters, trucks, etc. The affected agricultural input cost is the cost of ploughing, sowing, harvesting and transport, through the increase in the cost of tyres.

### **3.3.4 Summary**

In this section, eco-fees/eco-taxes levied on tyres in the province of Ontario in Canada were introduced and briefly discussed. As with the French Heavy Good Vehicle tax, this Canadian eco-tax is a very contentious issue for farmers and politicians in Ontario.

## **3.4 BRITAIN: CLIMATE CHANGE LEVY AND CLIMATE CHANGE AGREEMENTS**

### **3.4.1 Purpose**

The rationale behind the Climate Change Levy (CCL) is to motivate businesses in the United Kingdom to use less energy and/or more forms of green energy such as hydropower, wind turbines and solar energy (Climate Works 2013). The aim of Climate Change Agreements (CCAs) is to ensure power savings and energy efficiency improvements in high-energy consuming industries without undermining the competitiveness of these industries. CCAs and the CCL were

introduced at the same time and they work in concert as a fiscal package (The Institute of Industrial Productivity 2014).

### **3.4.2 Background**

A brief explanation of the workings and history of the CCL and CCAs eco-tax package is provided.

#### ***Workings of the CCL and CCAs eco-tax package***

##### The Climate Change Levy

The CCL is levied mainly on electricity, solid fuels, gas, coal, coke fuel (processed form of coal), petroleum coke and lignite, which is the lowest quality of coal (Climate Works 2013 & Geology.com 2015). The CCL is included on an energy consumer's energy bill and it may be itemised. Energy suppliers, who in turn pay it over to Her Majesty's (HM) Revenue & Customs, collect the CCL (British Gas 2014). Businesses operating in agricultural, industry, commercial, agricultural, public administration and other services sectors pay the levy. Domestic consumers (households) and low energy usage enterprises, as well as charitable organisations using energy for non-business purposes, are exempt from the CCL. Other exempt energy consumption activities include:

- energy used outside the UK
- electricity derived from sources that is renewable
- certain collective power and heat schemes creates or receives the energy
- energy is utilised in the production of electricity and
- energy will not be utilised as fuel

(Climate Works 2013).

There are two rates for the CCL. The first is the main CCL rate, as discussed above, while the second is the Carbon Price Support (CPS) CCL rate. The main CCL applies to the supply of specific energy products including electricity, coal utilised as fuel (i.e. lighting, power and heating) and gas for business entities outlined in the previous paragraph. The CPS rates of CCL are intended to tax the supply of energy products specifically earmarked to be used in the generation of electricity by power suppliers. This includes coal and gas utilised in the generation of electricity on or after 1 April 2013. The CPS rates of CCL attempt to encourage the power generation sector

to invest in green technology, by giving a clear price signal for carbon emissions (HM Revenue & Customs 2013a).

Petrol and diesel are not covered by the CCL as they are taxed under the hydrocarbon oil duty. Energy-intensive economic sectors, which negotiate CCAs with the environmental department, are afforded discounts on the CCL. These collective bargaining agreements comprise collective improvement targets pertaining to energy usage and carbon emissions for each economic sector as a whole. At first, the high-energy consumption sectors eligible for climate change agreements and reductions were identified per the EU's IPCC directive, but qualifying criteria was extended since (SA Department of National Treasury 2010: 69-70).

Exemptions from the CCL are available for several renewable power source technologies, including wind energy, tidal power, wave energy, hydropower, photovoltaic, photo-conversion, geothermal aquifers, geothermal hot dry rock, agriculture and forestry wastes, energy crops, landfill gas, etc. Enterprises need not create renewable energy themselves, but can acquire "green" electricity from an energy trader. The energy trader must provide proof that this electricity originates from a renewable source by means of a Renewable Levy Exemption Certificate (Climate Works 2013). CCL rates are levied for every energy unit at a specific rate. For main CCL rates, different rates apply for electricity, liquid petroleum gas (LPG), natural gas and solid fuels (HM Revenue & Customs 2013b).

### Climate Change Agreements

CCAs are agreements made between UK industry and the Environment Agency. The Environment Agency administrates the programme for the whole of the UK (United Kingdom - Environment Agency 2014). These voluntary agreements contain targets for qualifying industries to achieve efficient energy use and reduce CO<sub>2</sub> discharges into the atmosphere. The goal of CCAs is to attain improvement in energy savings and effectiveness in high-energy consuming industries, while competitiveness is not undermined. A discount against the CCL on energy accounts can be claimed by businesses that holds a valid CCA (The Institute of Industrial Productivity 2014).

The CCL will be reduced by 90% on electricity accounts and 65% on fuels, provided the business holds a legal CCA and comply with targets. Various industry sectors, including high energy consuming sectors such as the paper, chemical and the supermarket industry as well as

agriculture, qualify for CCAs. Two different types of CCAs exist namely umbrella agreements and underlying agreements. Umbrella agreements are negotiated between industry sectors and the Department of Energy and Climate Change (DECC). These two parties set the energy effectiveness targets by mutual agreement, which is then concluded between the Environment Agency and the sector association (United Kingdom - Environment Agency 2014).

Underlying agreements pertain to agreements within a specific sector, which are held by a site or a collection of business sites. These agreements contain targets relating to effective carbon or energy practices and are tailor made for operations relating to the specific sector. Sector associations, on behalf of businesses in that sector, manage these agreements. Businesses must apply to their respective sector association before they can conclude a CCA. The new CCA scheme commenced in April 2013 and will end on 31 March 2023. Power consumption will be gauged and accounted for against pre-determined and agreed-upon CO<sub>2</sub> emission targets over four target periods, spanning two years each (United Kingdom - Environment Agency 2014).

If a vendor owns multiple qualifying facilities in the same sector, he can choose to either enter into one CCA per facility or alternatively cluster all the facilities under a single CCA, in which case all the facilities will then contribute to the set targets. A target unit is the term used to describe a facility that holds a CCA or multiple facilities grouped under one CCA. A CCL vendor meeting its targets with the conclusion of each two-year target window will stay eligible to participate in the scheme. Every month, the particulars of vendors that hold valid CCAs are published in the form of sector based reduced rate certificates (United Kingdom - Environment Agency 2014).

There are 51 sectors with umbrella agreements and another plus minus 4 300 underlying agreements which pertain to 9 900 facilities. The set targets per industry vary substantially, for example 2.8% for the aluminium sector and 25% for the laundry sector. Two target levels are applicable on CCAs. The first target is called the “sector commitment” pertaining to the whole sector while the second, called the “target unit target”, pertains to the operator. The DECC and sector associations set the sector commitment targets, which can be measured in energy (MWh, GJ) or carbon emissions (KgC, tC) and could be either relative or absolute targets. As such, four different targets can apply namely relative carbon, absolute carbon, relative energy and absolute energy (The Institute of Industrial Productivity 2014).

Two-year certification periods are applicable. Operators that miss set targets will still be allowed to participate in the CCA scheme and receive a CCL concession per the CCA agreement, if a

“buy-out” fee of £12 is paid for each equivalent ton of CO<sub>2</sub> by which the target is not met. Operators who miss targets and fail to pay the “buy-out” fees, will not qualify for any CCL discount. The scheme may be re-entered at the beginning of the next two-year certification period, provided operators compensate for any outstanding “buy-out” fees and applicable penalties. Operators that were decertified must still comply with targets pertaining to the previous periods or alternatively, pay the “buy-out” fee. Operators that realise savings over and above the targets can bank the surplus and set it off against future under attainment of targets (The Institute of Industrial Productivity 2014).

The trade organisation representing each industry is referred to as the sector association, while the single facility or alternatively the group of facilities, which jointly holds one agreement, is called the target unit. Target groups must adhere to certain monitoring requirements. Energy consumption must be monitored against set targets and operators need to report the results for each two-year target period. Sector associations administer underlying agreements on behalf of members through the CCA register. A charge is levied on target groups to be part of the scheme and two types of charges exist. The first is levied on the sector association and the second on the target unit (The Institute of Industrial Productivity 2014).

Certain agricultural processes qualify for sector agreements. All businesses performing these processes may take part in the scheme. The processes are:

1. poultry breeding or rearing for meat and egg production,
2. pig production (indoor),
3. poultry rearing for purposes of egg production,
4. animal feed manufacturing for purposes of agriculture,
5. the growing, harvesting and primary market preparation of horticultural crops,
6. egg processing for food production,
7. vegetable raw material treatment and processing used in beer production,
8. animal slaughter and red meat processing,
9. poultry slaughter and/or poultry meat processing,
10. animal feed production for poultry farm use,
11. dairy and cheese manufacturing operations,
12. processing/treatment of animal/vegetable raw material for food production,
13. production of bread, fresh pastries and cake,
14. distillation of ethyl alcohol for human consumption originating from agriculture,

15. processing of animal material to create purified protein and fat products,
  16. material processing used in the manufacturing of supermarket food products, and
  17. processing of refined salt from minerals for use in food or supplements.
- (HM Revenue & Customs [s.a.]: 5).

### ***Historical development of the Climate Change Levy and Climate Change Agreements***

The first CCA scheme ran from 2001 to 2013 and participating business were able to save 80% on the CCL, by means of a reduced CCL rate allowed by the authorities if steep energy efficiency or reduced CO<sub>2</sub> emission targets were met. The rate was later adjusted to a 65% reduced rate for the supply of taxable commodities made on or after 1 April 2011 for facilities taking part in the programme. The UK government introduced CCAs and the CCL in April 2001. State aid approval was obtained for the scheme, as well as for all sectors involved in eligible processes listed in the Pollution, Prevention and Control (England and Wales) Regulations of 2000. Later on, more sectors were also approved. The old scheme was terminated on 31 March 2011 but was extended until 31 March 2013, after which the new scheme was implemented (HM Revenue & Customs [s.a.]: 2-3).

In contrast to the old scheme, the new CCA scheme requires that each target unit must meet the set targets or if targets are not met, pay the applicable “buy-out” fee to qualify for the decreased CCL. Otherwise, it will not be recertified and thus not be entitled to a reduced CCL for the remainder of the two-year cycle. Therefore one of the differences between the old and new scheme is that target incentives are now set at the level of a single or group of facilities (therefore target units) instead of at the sector level. This change in modus operandi guarantees that all the participants in the scheme are treated the same and that one facility or collection of facilities cannot be carried by other participants (HM Revenue & Customs [s.a.]: 2-3).

During July 2015, the UK government announced that the CCL exemption on energy generated from renewable sources would fall away from 1 August 2015. The CCL would thus be payable on all energy sources: clean and dirty. Affected renewable energy parties would now have to enter into a CCA agreement to reduce their CCL liability (DLA Piper 2016). This decision caused discontent among clean energy producers and the Green Party branded it as a “serious blow for the fight against climate change” (The Guardian 2015). Reasons for this, per the government, included that since the introduction of the CCL, new and improved national policies to support renewable energy generation was implemented. It will also stabilise the CCL revenue, make the

system simpler and assist with fiscal consolidation. By revoking the exemption, the UK government aimed to save £3.9 billion. An estimated third of this value would have assisted renewable electricity generation in other countries. There was proof that certain suppliers received similar help from other countries (double dipping) (HM Revenue & Customs 2015).

### **3.4.3 Characteristics**

The CCL can be classified as a tax on goods or services. It is also an indirect tax as it is collected from the consumer by energy supplying companies and paid over to the UK revenue services, similar to Value-Added Tax. The aim is to persuade UK business to become more energy efficient that, in turn, will lower their carbon footprint. Entities using electricity, fuel and gas (which directly or indirectly contribute to GHG's) are deemed the concept polluters. The agricultural input costs affected are electricity, gas and liquid fuels used for heating and other purposes. The CCL will affect most agricultural entities as electricity and/or gas is essential for modern farming. In the absence of a CCA agreement, the seventeen types of farming and related processes, as per section 3.4.2, will be the parties that experience the most negative impact.

CCAs can be seen as an incentive where businesses, which meet targets, are partially exempt from the CCL levied, by means of a rebate. Consequently, the government therefore takes with the one hand (the CCL) and gives with the other (CCAs). It can be argued that CCAs only create an illusion of a rebate when the scheme, as a whole, still empty the pockets of farmers (only partial exemption applies). Farmers operating in one of the seventeen listed processes will benefit by reduced power costs. It is also important that CCL targets be set at reasonable, realistic percentages to encourage farmers to participate.

### **3.4.4 Summary**

Through the Climate Change Levy (CCL), which can be reduced by meeting targets contained in Climate Change Agreements (CCAs) with the Department of Energy and Climate Change, the UK government seeks to reduce energy consumption and CO<sub>2</sub> emissions. Targets set are monitored, verified and enforced by government. The new CCL and CCAs are applicable to seventeen different agricultural and related processes since 1 April 2013.



## 3.5 AUSTRALIA: CARBON TAX ON FUEL

### 3.5.1 Purpose

The purpose of the amendment to the Australian Fuel Tax Credit (FTC) system was to charge a carbon tax through the fuel tax system, which would force businesses to decrease their fuel consumption and thereby their carbon footprint (Australia - Department of the Environment 2011). This legislative amendment reduced the FTC that was available to businesses, which in turn would raise the cost of fuel, thereby equating to an effective carbon price being charged on fuel consumption. In other words, the carbon tax on fuel would effectively be set-off against the FTC.

### 3.5.2 Background

A brief explanation of the workings and history of the carbon tax on fuel is provided.

#### ***Workings of the carbon tax on fuel***

By way of the Fuel Tax Credit, Australian businesses are granted relief on excise and customs charges levied on fuel consumed for business activities by heavy vehicles, plant, equipment and machinery. Agricultural businesses also qualify for FTCs on gaseous fuels used for non-transport purposes in specific agricultural, fishing and forestry activities subject to the carbon pricing mechanism (see section 3.6 below for additional information regarding this mechanism). Only businesses registered for Goods and Services Tax as well as FTCs are eligible to claim.

Fuels that do not qualify for FTCs are:

- aviation related fuels, except in certain limited circumstances
- fuel for vehicles driven on public roads with a gross mass of 4,5 tons or less
- fuel bought but not used due to theft, loss or other means of disposal
- ethanol, biodiesel or other alternative fuels, subject to government subsidies.

(Australia - Australian Taxation Office 2014)

In the past, certain companies paid a nominal or no excise levy on fuel, because of the Fuel Tax Credit, which reduced or completely nullified the excise liability payable by business entities.

However, when the carbon fuel tax was introduced, the FTC credit was reduced and an amount of the excise levy on fuel became payable. Various businesses over and above the largest polluters, directly affected by the carbon price mechanism, were influenced by the decrease in the FTC. The decrease was supposed to be implemented incrementally over the initial conversion period of three years (starting 1 July 2012). The expectation was that on 1 July 2015, when Australia converted to an emission-trading scheme, the reduction in the FTC would be calculated every six months on a variable basis, by using average weighted carbon prices for that specific period. The decrease in credit value would be determined by the particular emission level of each fuel type (Grant Thornton 2011b).

Carbon emissions arising from fuels that were not part of the FTC system (such as aviation and non-transport gaseous fuels), were subject to effective carbon pricing. This was achieved by increasing the excise on aviation fuel while decreasing the previous exemption on non-transport uses of gaseous fuels. When the scheme commenced on 1 July 2012, heavy on-road vehicles (vehicles weighing more than 4.5 tons) were initially exempt from the tax. However, from 1 July 2014, these vehicles would have been subject to a reduction of the FTC and would thereby effectively had to pay a carbon tax, if it was not repealed in the meanwhile (see further below) (Australian Government 2011: 1, 2).

**Table 3.1: Australian fuel tax credit reductions**

<b>Fuel</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>
<b>Petrol</b>	5.52	5.796	6.096
<b>Diesel and other liquid fuels</b>	6.21	6.521	6.858

The table provides the relevant FTC reductions for certain fuel types over the transitional assistance period of three years. The figures are in cents per litre (Source: Australian Government 2011: 2).

### ***Historical development***

On 28 July 2011, the Australian Government released several exposure drafts of key legislation in its Clean Energy Legislative Package for comment from the public. Four core bills were included as well as numerous other pieces of legislation that cover additional important and

technical matters. Legislation that dealt with arrangements pertaining to fuel tax, were also included in the package, such as:

- Fuel Tax Legislation Amendment (Clean Energy) Bill 2011: This legislation decreases the business Fuel Tax Credit (FTC) that non-exempt businesses may claim regarding their consumption of liquid and gaseous transport fuels. This is the legislative amendment that reduced the FTC available to businesses, thereby effectively charging a carbon price by way of the fuel tax system.
- Customs Tariff Amendment (Clean Energy) Bill 2011: An effective carbon price is brought into force on non-transport and aviation gaseous fuels, by means of excise and customs tariffs.

(Australia - Department of the Environment 2011)

On 8 November 2011, the Clean Energy Legislative Package laws came into force when the upper house voted in favour of the proposed legislation, with an effective rollout date of 1 July 2012 (Reuters 2011).

On 1 July 2006, FTCs were first introduced on heavy vehicles' fuel consumption as well as several other commercial activities. FTCs on taxable fuels used in other business activities, machinery plant and equipment were introduced from 1 July 2008 at half the normal applicable rate. From 1 July 2012, the full FTC rate applied, but the rate for most of the aforementioned activities was decreased simultaneously by the CO<sub>2</sub> levy. In most cases, excise or customs duty applied from 1 December 2011 on gaseous fuels used in transport activities. From 1 December 2011, FTCs became available for gaseous fuels imported, produced or purchased for off-road business activities. A carbon tax was generally applied from 1 July 2012 for taxable combustible fuels. On 1 July 2013, a hike in carbon charges and FTC rate amendments for certain gaseous fuels used for non-transport purposes, took effect (Australia - Australian Taxation Office 2014).

Various legislative amendments, promulgated during 2014, however effectively repealed the carbon tax on fuel that was levied via the FTC system and through excise related duties. These amendments included the Customs Tariff Amendment (Carbon Tax Repeal) Act 2014, the Excise Tariff Amendment (Carbon Tax Repeal) Act 2014 and the Clean Energy Legislation (Carbon Tax Repeal) Act 2014. These amendments came into effect on 1 July 2014 and made provision for the following:

- FTCs will not be subject anymore to a decrease of its value, equivalent to the set carbon price. This applies to certain fuels, as discussed above.
- Duty rates on aviation fuel will be reduced by the equivalent carbon price value.
- No FTCs will be claimable on aviation fuel.
- The removal of FTCs available to agricultural, fisheries and forestry sectors for gaseous fuel used in certain non-transport activities.

(PwC 2014)

### **3.5.3 Characteristics**

This eco-tax takes the form of a reduction in the available FTC. Fuel tax can be classified as a tax on goods and services, but more specifically an excise tax, as the tax is levied not on the value of the product, but on the quantity sold; in this case per litre (see section 2.6.3). In SA, this tax is referred to as the fuel levy (see section 5.5.1) and SARS deems it an excise tax (SARS 2014a: 73). As the available credit decreases, the excise tax increases. It can also be classified as an indirect tax, as the supplier who pays it to the government levies it on the consumer. The purpose is to reduce fuel consumption by increasing the effective price, thereby reducing Australia's carbon footprint. Targeted polluters are businesses consuming fuel and which is already part of the FTC scheme. Fuel is the farming input that may possibly be affected.

### **3.5.4 Summary**

An effective carbon tax on certain fuels used in a number of Australian activities was discussed. Although not directly influencing agriculture with its implementation on 1 July 2012, it would still have an indirect affect by means of carbon taxes being passed onto farmers by their suppliers, a fact which the Australian Government officially acknowledged (Australian Government 2012: 2, 3). If the legislation were not repealed on 1 July 2014, agriculture would have been increasingly affected from this date onwards, when heavy on-road vehicles (exempt from 1 July 2012 to 30 June 2014) would also become liable for a reduction of the FTC. In chapter 4 the impact/expected impact on Australian agriculture is discussed while chapter 5 investigates the likely influence on SA agriculture, should such an eco-tax be implemented.

## **3.6 AUSTRALIA: CARBON TAX ON CARBON EMISSIONS**

### **3.6.1 Purpose**

The purpose of this eco-tax was to help reduce CO<sub>2</sub> and other harmful GHG emissions from Australian pollution sources and to assist in the transition to a clean energy future by placing a price on carbon, thereby incentivising big emitters to reduce their carbon footprint. The expectation was that it would also contribute to research, development, investment and implementation of cleaner energy alternatives, assist in the effective use of energy and provide opportunities for the land sector to reduce GHGs (Australian Government 2012: 2).

### **3.6.2 Background**

A brief explanation of the workings and history of the carbon tax on carbon emissions is provided.

#### ***Workings of the carbon tax on carbon emissions***

In terms of Clean Energy Legislation, a carbon pricing mechanism (CPM) was effectively introduced in Australia on 1 July 2012 (Australia - Department of the Environment 2011). A CPM can be defined as a mechanism whereby a charge is levied on each tonne of CO<sub>2</sub> emissions released in the atmosphere (therefore a system through which an effective carbon tax is charged) (Grant Thornton 2011a). It only directly applied to Australia's biggest carbon polluting business entities, also known as "liable entities" (Australia - Department of the Environment 2011). The CPM covered approximately 60% of all Australian carbon emissions (Australia - Clean Energy Regulator 2014).

Liable entities had to pay the tax by purchasing a carbon unit at a certain price, for each ton of CO<sub>2</sub> released in the atmosphere. A carbon unit is a government permit allowing a business to emit one ton of CO<sub>2</sub> into the atmosphere. Liable entities were required to maintain a carbon unit registry account. From this account they then had to surrender carbon units free of charge to the Australian government, annually or biannually, equivalent to the amount of carbon emitted (measured in tonnes) for a specific year. A company was liable to pay a unit shortfall charge if it did not have sufficient carbon units or surrendered too little units during the year (Grant Thornton 2011a). The liable entity thus effectively paid a carbon tax by way of a two-step system (purchase the carbon credit and give it away at no cost for each equivalent ton of CO<sub>2</sub> released).

The Australian government originally intended to implement the CPM in two separate stages. From 1 July 2012, a fixed price stage applied whereby certain affected businesses were charged a fixed amount for each ton of CO<sub>2</sub> discharged. The second stage would have commenced on 1 July 2015 (if the tax legislation were not repealed on 17 July 2014, effective from 1 July 2014), from which date a market based system would have applied. The price of carbon units would then have been determined on a "floating" basis, on emission markets where units were traded. Such a "floating" system is also known as a 'cap and trade' system. The government would set maximum ceilings and minimum floor prices during this second stage (Grant Thornton 2011a).

An entity was classified a liable entity in accordance with the CPM, if it had operational control over a facility that produced 25 000 equivalent tons of CO<sub>2</sub> emissions or more annually, was a natural gas retailer or an entity that controlled a landfill facility producing 25 000 equivalent tons of CO<sub>2</sub>. Liable entities' liability only extended to "scope 1" emissions originating from energy source combustion, emissions of a fugitive nature (for example coalmines), emissions from industrial processes and waste emissions (Lyster 2011). Emissions constituted scope 1 emissions where:

- the GHG emissions were attributable to facility operations
- the GHG emissions were in Australia
- a methodology exists to measure the emissions in accordance with the National Greenhouse and Energy Reporting Act
- the GHG emissions is not one of the exempted emission types

(Australia - Clean Energy Regulator 2014)

Scope 1 emissions included four types of gas, namely carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and perfluorocarbons from aluminium production. Covered emissions were calculated by way of carbon dioxide equivalence (CO<sub>2</sub>-e) that allows for a uniform measuring unit to which other greenhouse gasses can be converted. In certain cases, emissions from electricity generation, cooling, heating or steam consumption by a facility were classified as exempt scope 2 emissions. Emissions from agricultural facilities were not covered by the CPM. The Carbon Farming Initiative, however, permitted farmers to take part by earning carbon credits through the storing of carbon in trees planted on farm land or the reduction of GHG emissions in their farming activities (see section 3.7 below) (Australia - Clean Energy Regulator 2014).

During the first stage of the CPM, the Clean Energy Regulator was responsible to set the fixed carbon price and to issue carbon units at this price. The carbon units had a year value (vintage year) allocated to it, preventing it from being carried over to later years. The Australian government supported business entities as well as individuals that were significantly affected by the CPM. For example, business entities operating in energy intensive sectors received a certain amount of free carbon units from the Clean Energy Regulator to assist them during the CPM transitional period. Power utility companies with a high carbon footprint also received free units. During the fixed stage, unused carbon units had to be returned to the Regulator (Grant Thornton 2011a). The set prices during the first stage were:

- 1 July 2012 to 30 June 2013 - \$23,00 per carbon unit
- 1 July 2013 to 30 June 2014 - \$24,15 per carbon unit
- 1 July 2014 to 30 June 2015 - \$25,40 per carbon unit

(Lyster 2011)

During the second stage of the CPM, which was meant to commence on 1 July 2015 (if legislation was not repealed), an overall limit for CO<sub>2</sub> emissions on scheme participants would be determined. According to the set limit, the Regulator would issue a fixed number of carbon units per annum. This method would enable the government to control and limit the overall carbon footprint of the country and to meet set targets. As was the case with the fixed stage of the CPM, a vintage year would have been allocated to carbon units issued during the flexible stage. However, unlike the first phase, these carbon units would be bankable for later use and businesses would be able to surrender it at any time (Grant Thornton 2011a).

Furthermore, it was planned that during the second stage the Regulator would auction off a portion of the carbon units, while some units would be given away free of charge to companies heavily affected by the scheme. This would assist them through the CPM transitional period, as was the case during the fixed period. As such, business entities would be able to trade carbon units creating a carbon unit market where prices would mostly be determined by free market forces, but where government would still regulate the limits by means of floor and ceiling prices. When the second flexible stage was meant to commence, it was also envisaged that businesses would be able to purchase comparable carbon units on international markets. These carbon units would be used to offset emissions generated by Australian businesses (Grant Thornton 2011a).

## ***Historical development***

The effective carbon tax on emissions was introduced into Australian law on 8 November 2011, when the upper house voted in favour of the Clean Energy Legislation Package, with an effective implementation date of 1 July 2012 (Reuters 2011). There were several bills in this package, including:

- The Clean Energy Bill 2011 (establishes the carbon price mechanism)
  - The Clean Energy Regulator Bill 2011 (sets up a regulatory organisation to manage the carbon price mechanism)
  - The Climate Change Authority Bill 2011 (a new authority is established to advise the government on the carbon price mechanism's future design)
  - The Clean Energy (Consequential Amendments) Bill 2011
- (Australia - Department of the Environment 2011)

According to the Australian government, the provisions contained under the Clean Energy Bill 2011, which set the carbon price mechanism, originally applied to approximately 500 of Australia's biggest polluters. It contained, amongst others, the following provisions:

- entities covered and what carbon sources are affected
- liable entities must surrender carbon units in line with carbon emissions
- carbon pollution ceilings which would apply from 1 July 2015
- carbon unit allocation which incorporates auctions and free units
- cost containing procedures including price floors and ceilings
- tangents to the Carbon Farming Initiative
- tangents with other trustworthy emission trading schemes
- provisions relating to enforcement, scrutinizing, review and disputes

(Australia - Department of the Environment 2011)

As mentioned, the carbon tax was meant to be phased in over a 3-year period with two different stages; a fixed stage from 1 July 2012 until 30 June 2015 and a floating stage thereafter (Grant Thornton 2011a). However, before the roll-out was completed, the universal carbon tax charged under the 2011 Climate Change Bill and other supporting legislation, were repealed when Royal



Assent was granted to the Carbon Tax Repeal legislation on 17 July 2014, effective from 1 July 2014. Reasons cited by the Australian government for the repeal include:

- It will assist households to lower their cost of living by an average of \$550 for the 2014/2015 financial year, as per modelling done by the Australian Treasury.
- It will decrease retail electricity by approximately 9% and retail gas by 7% for the 2014/2015 financial year. This would not have been possible with a carbon tax of \$25,40 per carbon unit.
- It will enhance the economic growth of Australia, raise the amount of jobs and improve the international competitiveness of Australia by eliminating a "... unnecessary tax, which hurts businesses and families."
- An annual saving of some \$90 million per year compliance costs will be achieved for approximately 370 liable entities.
- Over one thousand pages of unnecessary redundant legislation is eliminated.

(Australia - Department of the Environment 2014)

### **3.6.3 Characteristics**

This tax can be classified as a direct tax as it was levied directly on the pollution producing entity, although the economic effect would filter down to the end consumer in the form of price-increases in goods and services. Input costs affected will include electricity and other indirect power supply prices. The purpose will be to force the largest carbon polluting companies in Australia to reduce their carbon footprint by utilising cleaner technologies or by a decrease in production. All farmers would be influenced to a greater or lesser extent.

### **3.6.4 Summary**

This section discussed the introduction and repealing of a universal carbon tax in Australia. The relevance to SA is significant, as the SA Treasury department aims to implement a similar tax on 1 January 2017. Proper consideration before final implementation of this eco-tax in SA is necessary considering the fact that Australia repealed this multi-billion dollar tax because it was deemed to be an "...unnecessary tax, which hurts businesses and families," as per their official statement. Although emissions deriving from agricultural facilities were not covered by the CPM, it would still have had an indirect impact on the farming community because of increased input

costs, due to carbon taxes being passed on to farmers by their suppliers (Australian Government 2012: 2). The next chapter will examine the impact of this eco-tax on Australian agriculture.

## **3.7 AUSTRALIA: CARBON FARMING INITIATIVE**

### **3.7.1 Purpose**

The Carbon Farming Initiative (CFI) aims to decrease the Australian carbon footprint by promoting carbon storage on land or the reduction of greenhouse gas (GHG) emissions originating from land use. This is achieved by enabling landowners and farmers to receive carbon credits for qualifying carbon abatement activities on their farmland. They can then sell it to business entities that desire to offset their own GHG emissions. It also promotes sustainable farming practices and provides a source of funding for projects, which aim to restore landscapes to its natural status (Australia - Department of the Environment [s.a.]). For every 1 million hectares of new forest, 1% to 2% of national emissions will be offset (ABC News 2012b).

### **3.7.2 Background**

A brief explanation of the workings and history of the CFI is provided.

#### ***Workings of the CFI***

The Australian agricultural sector contributes approximately 18% to Australian GHGs (which include carbon dioxide), due to emissions from various sources such as livestock, soils, fertilisers and transport fuel. As such, it can play a significant role in offering a permanent solution to climate change, if new initiatives to reduce carbon levels in the atmosphere are implemented in this sector. The CFI scheme is one such initiative and pertains to the reduction of emissions in high land-usage sectors (which include agriculture). The CFI scheme could provide financial gain to landholders and farmers, if they proceed to reduce the GHG footprint. They may participate on a voluntary basis and carbon credits could be earned through the following activities:

- decrease emissions originating from livestock
- increase the carbon content of agricultural soil (storing it)
- use more carbon efficient fertilisers
- carbon storage by restoring vegetation and forests.

(Australian Government 2012: 2, 3)

Land and soil usage, for example, has a large influence on the amount of carbon levels in the atmosphere. It is estimated that globally, soil contains about 2,000 billion tons of carbon in different forms such as detritus, “modified soil carbon” and “inert” carbon. One of these carbon forms, namely detritus, is a carbon rich organic material found in top soil and contains approximately 300 billion tons of carbon globally. This organic material decomposes at different rates depending on factors such as soil characteristics and temperature. As decomposition takes place, the organisms responsible for decomposing the detritus in the soil, which include bacteria and fungi, respire a portion of the carbon back into the atmosphere, but a substantial amount still stays locked within the soil as detritus (GHG Online [s.a.]b).

The remaining detritus carbon can be transformed to “modified soil carbon”, which decays slower and therefore prevents carbon from entering the atmosphere for an extended period. Lastly, a small percentage of carbon decomposes to “inert” carbon and this can be entrenched in the soil and isolated from the atmosphere for longer than one thousand years. Soil disturbance activities relating to farming, such as ploughing, can cause large quantities of soil carbon to be released prematurely into the atmosphere due to rapid respiration (GHG Online [s.a.]b).

Both disturbed soil and accelerated decomposition of converted soils can cause CO<sub>2</sub> emissions. Accompanied ground erosion and leakage of nutrients in the soil can further decrease the soil’s carbon sink capabilities. It is roughly estimated that changes in land use by man have led to a cumulative worldwide land carbon sink loss of approximately 200 thousand million tons. Since the mid-nineteenth century, about 90% of carbon sink loss can be attributed to deforestation to create available land for agricultural purposes. Currently, the remaining forests are under extreme pressure as the exploding population requires land for food cultivation and timber for firewood and building purposes (GHG Online [s.a.]a)

The comprehensive Australian carbon tax (see section 3.6) required the largest polluters to pay for carbon pollution in financial terms. Farmers were exempt from the eco-tax on GHG emissions originating from livestock, fertilisers and soils, nor were they required to pay a carbon price on fuel consumed by off-road or light on-road vehicles (see section 3.5). The Australian government acknowledged that due to cost increases resulting from carbon taxes passed on to farmers by their suppliers, farmers may have experienced a moderate financial impact. The government

thus planned to use more than 50% of carbon tax revenue to assist households financially as well as fund other initiatives to support farmers (Australian Government 2012: 2, 3).

Carbon abatement activities refer to carbon farming activities that decrease the GHG emissions, by either accumulating carbon in plants and/or soils (also known as sequestration projects), or reducing harmful GHG's (emission evasion or reduction projects). Farmers conducting qualifying CFI activities will receive a tradable carbon credit. They will be able to sell these credits on carbon markets to businesses that are participants in the carbon pricing mechanism and require carbon credits to offset against unwanted carbon emissions. Credits would also be tradable, on a voluntary basis, with institutions that have assumed carbon emission goals or with companies that sell carbon neutral commodities (Australian Government 2012: 4, 5).

To become eligible to receive carbon credits from the Australian government, CFI projects must produce additional decreases in carbon and related GHG emissions. The concept of extra decreases is called "additionality" and is a pre-requisite for all carbon offset schemes. In other words, "business-as-usual" activities will not qualify for credits. A list of qualifying activities, known as the positive list, is used in the CFI scheme. The activities listed are those that are exceptional in nature and leads to extra abatement. There is also a negative list identifying activities that will not qualify, as they are considered harmful to water sources, biodiversity conservation, agricultural land, employment and local societies. The CFI was designed to maximise abatement opportunities, but without any negative effects on food security, water sources, communities or the environment (Australian Government 2012: 6).

Another requirement is that activities will only qualify if they provide long-term advantages for the environment, such as the permanent prevention of harmful carbon emissions and/or the storage of carbon in trees or in the soil. The market value of credits is fortified by permanency rules in the CFI, which ensure that carbon credits embody a permanent and lasting reduction in GHGs and promotes confidence in the market place. In other words, no demand exists in the market place for carbon credits, which do not signify lasting carbon abatement. This will force farmers to start only with those projects that have long-term positive eco-effects (Australian Government 2012: 6).

Projects that may be considered include tree planting on patches of land where land erosion occurs. It also includes the planting of trees, which will provide shelter for farm animals, act as wildlife passageways or increase the water quality in an area. Tree planting in areas with more

productive or lucrative agricultural uses, is not encouraged by the CFI permanency rules. The Australian government considers these rules to include the unique environmental and climate conditions Australian farmers face on a daily basis. For example, farmers will not be punished if carbon is lost due to circumstances beyond their control such as drought, bushfires, plagues or animal diseases. In these instances, plant life and related carbon stores should generally restore on its own, but if not, farmers will have to take reasonable steps to reinstate it (Australian Government 2012: 6).

The permanency rules allow for farmers and landholders to disengage from these projects at any time, should they wish to dismantle carbon stores. In practise, this will be achieved by returning the equivalent quantity of credits, which was originally issued with relation to the project, to the regulating authority. The cost to the farmer will be the credit's applicable price at the date that it was purchased on the market. The farmer could also use credits from other projects if there is more than one registered project. On condition that trees and vegetation are re-established and the decrease in carbon stores accounted for in line with the assessment methodology, farmers are allowed to harvest carbon stores. Abatement activity benefits are measured by utilising estimation methodology rules, which prescribe how abatement projects must be implemented and emission decreases calculated. Abatement measuring methodologies already approved include piggery methane destruction, landfill gas capturing and combustion, savannah burning and environmental plantings (Australian Government 2012: 6-7).

Amendments were made to the original Carbon Credits (Carbon Farming Initiative) Act of 2011 because of the repealed carbon tax legislation (as discussed in section 3.5 and 3.6 above). This was to ensure its continuation in terms of the newly established Emissions Reduction Fund (see next heading for more detail) (Australia - Department of the Environment and Energy 2016). The new scheme consists of four steps that a participant must follow:

- Step 1: Register the participant and the project.
- Step 2: Obtain a contract from the government by partaking in an auction.
- Step 3: Run specific projects that include adhering to reporting and audit requirements.
- Step 4: The claiming of ACCUs (Australian carbon credit units) for reductions in emissions achieved and the sale of the ACCUs.

(Australia - Clean Energy Regulator 2016d)

To claim ACCUs a form must be completed and submitted to the Clean Energy Regulator. Upon claim approval the ACCUs are credited to an account of the taxpayer (Australia - Clean Energy Regulator 2016c). From this taxpayer account, called the ANREU (Australian National Registry of Emissions Units) account, the ACCUs are then transferred back to the Clean Energy Regulator, which then pays an amount equal to a predetermined price agreed upon during the auction, mentioned in step 2 above (Australia - Clean Energy Regulator 2016a).

### ***Historical development***

The CFI Act of 2011 regulated the Carbon Farming Initiative, which was approved by the Australian Parliament on 23 August 2011. On the 15 September 2011, it received royal assent. On 8 December 2011, further regulations to support the operation of the CFI, including regulations to allow for CFI audits, came into effect. These regulations were subsequently amended on 29 May 2012 (Australia - Department of the Environment [s.a.]). On 25 November 2014, the Carbon Farming Initiative Amendment Bill 2014 received royal assent. In terms of this new legislation the Emissions Reduction Fund (ERF) was established (Parliament of Australia 2014), which builds on the previous CFI scheme (Australia - Department of the Environment and Energy 2016).

The CFI 2014 Amendment Bill amended the previous CFI Act 2011 in several ways. It was now permitted for the Clean Energy Regulator to have auctions and conclude contracts in which emission reductions are purchased. The new bill also provided for the approval of a larger range of projects to reduce emissions and changed qualifying processes and criteria for carbon credit unit accreditation and projects (Parliament of Australia 2014). From December 2014, the CFI scheme was officially incorporated into the Emissions Reduction Fund (ERF). CFI projects automatically became ERF projects with no new registration required (Australia - Clean Energy Regulator 2016b). All of these changes therefore provided the framework for a transition from the old CFI scheme to a new scheme, as the remainder of the carbon tax legislation were repealed on 17 July 2014, effective from 1 July 2014.

### **3.7.3 Characteristics**

The CFI is not a tax as such, but rather a tax incentive to encourage the Australian agricultural sector to participate in national carbon reduction efforts. The purpose therefore is to decrease Australia's carbon footprint as well as other dangerous GHGs, by decreasing or storing it. It is

similar to the CCA portion of the UK CCL/CCA fiscal taxation “tool-box”, where the polluter is rewarded if certain activities are performed and targets met. The concept polluters are the Australian agricultural community, which is estimated to contribute some 18% of Australian GHGs. No farming input costs will be affected, as farmers will earn income by way of selling carbon credits. If farmers choose to participate, all farming activities in Australia can potentially be affected, as all farming activities are conducted by means of land use and/or livestock rearing.

### **3.7.4 Summary**

The CFI programme has the potential to reduce the Australian carbon footprint significantly if managed correctly. A similar programme can arguably be superimposed on the SA agricultural sector, which will assist SA to meet its environmental targets and obligations. Chapter 4 will investigate the effect or anticipated effect that the CFI programme will have on Australian agriculture. In chapter 5, the probable consequences on SA agriculture will be explored, if a similar programme is implemented here.

## **3.8 SWEDEN: MEAT CONSUMPTION TAX**

### **3.8.1 Purpose**

The proposed eco-tax is meant to reduce meat consumption in Sweden and thereby decrease the negative impact of meat production on the environment.

### **3.8.2 Background**

A brief explanation of the workings and history of the meat consumption tax is provided.

#### ***Workings of the meat consumption tax***

It was suggested in a Swedish study that such a meat tax could be levied at consumption level (Säll & Gren 2012: 4-5). This approach was also suggested in another study done by Wirsenius, Hedenus and Mohlin (2010: 2). They argued that various factors such as high monitoring and transaction costs, coupled with limited technology-based abatement opportunities in agriculture,

renders the use of output taxes (consumption taxes for example) more favourable than taxes on emissions (carbon and methane taxes on livestock for example) where agricultural production is concerned. A supermarket or butchery could levy the proposed tax as an add-on fee on the price of the meat product sold and can then be paid over to the revenue authorities, similar to SA VAT.

### ***Historical development***

In January 2013, the Swedish Board of Agriculture recommended a tax to reduce meat consumption in an attempt to decrease the harmful impact of meat production on the environment. In Sweden, as well as in the EU, meat consumption has increased progressively over the last couple of years. The consumption of 87 kg per capita per annum in Sweden is also approximately the EU average. According to Swedish government experts, there are health and ecological advantages in eating vegetables instead of meat. The demand for more meat, specifically in emerging markets, leads to the destruction of water sources, harmful land clearing practices and higher carbon emissions. In comparison, the production of vegetables requires fewer resources and reduces practises like deforestation (EurActive 2013).

The Swedish Board of Agriculture was of the opinion that a voluntary change in the behaviour of consumers and business will not be enough to reach environmental and climate targets. A meat consumption tax was therefore suggested - not only in Sweden, but also in other EU member states. This eco-tax should be applied using different scales, for example, where meats with a large GHG footprint are taxed at a higher rate. They further stated that eco-taxes and subsidies could curb harmful eco-practises, but that it is imperative that these policies are enacted on an international level. This is to ensure that production is not merely moved to low tax rate jurisdictions, while production is still not sustainable. The EU predicts that the average meat consumption per capita in EU states will not increase significantly until 2020, with the appetite for pork and poultry systematically increasing, while red meat demand will slightly reduce over the same period (EurActive 2013). This tax was not implemented in 2013 and during July 2015 the topic was raised again by politicians and other interested parties for further consideration (The Local 2015).

### **3.8.3 Characteristics**

The proposed eco-tax can be classified as a tax on goods or services, levied in the form of an indirect tax similar to VAT (see chapter 2), as it is levied at the final consumption point where the



meat is sold (i.e. consumed). The purpose is to reduce the overall GHG footprint of farmers involved in the meat industry, with a possible additional advantage of further GHG mitigation by the production of bio-energy to substitute carbon base fuels on land that becomes available. The concept polluters are agricultural entities involved in meat production. Therefore, farmers involved in cattle, pig and sheep rearing activities will be affected by a decrease in the demand for meat due to a price increase brought about by the additional tax. There will be no direct effect on meat producing farmers' input costs, as it will be levied higher up in the supply chain at consumption level.

### **3.8.4 Summary**

This section briefly introduced the proposed Swedish direct tax on meat consumption. This tax is relevant to SA, especially taking into consideration that SA is the 14<sup>th</sup> largest indigenous cattle meat producer and 16<sup>th</sup> with reference to indigenous sheep meat (FAOSTAT 2013), as explained in chapter 1 (section 1.1.3).

## **3.9 UNITED NATIONS: COW FLATULENT TAX**

### **3.9.1 Purpose**

The aim is for the agricultural industry to internalise costs associated with eco-destructive practises pertaining to livestock production (Business Green 2010). In other words, if livestock farmers are taxed on GHG emissions from livestock, meat production costs will rise, with accompanying higher meat prices. This, in theory, will lead to lower demand, which in turn will see meat supply decreasing over time resulting in smaller herd sizes and less GHG emitting livestock. Enforcement can be achieved by UN member states signing a binding agreement to reduce livestock emissions to a certain level. Such a binding international agreement is possible in practise, as demonstrated by the Kyoto Protocol (Gerber *et al.* 2013: 92).

### **3.9.2 Background**

A brief explanation of the workings and history of the cow flatulent tax is provided.

### ***Workings of the cow flatulent tax***

The proposed cow flatulent tax can be levied on each head of cattle and paid over by the farmer to the revenue authorities. It is not only limited to beef and milk cows, but can also be easily applied to other farm animals such as pigs. Tax modelling done in the USA regarding such a tax showed that it could, for example, be as high as US\$20 per pig, US\$87,50 per beef cow and US\$175 per dairy cow, with reference to 2008 values (CBS News 2008).

### ***Historical development***

A 2010 report released by the United Nations Food and Agriculture Organisation (FAO), states that the 1.5 billion cattle and buffalo, 1.8 billion small ruminants and 1 billion pigs on the planet, are responsible for methane emissions, which approximate to two billion tons of CO<sub>2</sub> equivalent emissions per annum. This constitutes approximately 6% of annual worldwide GHG emissions. When considering the overall contribution of the livestock industry, which includes management and processing value-chain activities, the figure rises to approximately seven billion tons of CO<sub>2</sub> equivalent per year. This is more than 20% of worldwide GHG emissions. An increase in global meat demand has resulted in larger agricultural herds on the planet (Business Green 2010).

Several measures are proposed to curb these emissions, including a methane gas tax on farm animals. The report contents that market-based strategy, including taxes for the consumption of natural resources, will cause the agricultural sector to internalise expenses associated with destructive environmental practises pertaining to livestock production. It also suggests that subsidies that encourage deforestation, overgrazing, land degradation, harm to water supplies and GHG emissions, should be discontinued. Emissions arising from this industry could be reduced materially by the use of innovative farming technology and methods that results in increased productive land utilisation (Business Green 2010).

At a practical level, the report remarks that decreasing planetary livestock emissions will necessitate innovative programmes nationally as well as internationally. GHGs can be decreased substantially by improved grazing methods, improved herd health and grazing land management. Methane emissions can be cut by 20% using alternative improved livestock feeds (such as mixing lovastatin into feed – see section 4.9.3). Furthermore, special supplements are being developed to curb cattle emission even further. This tax, also sometimes cynically referred to as “fart tax”,

was proposed in the UK in the past. The then UK environment secretary, David Miliband, stated in 2007 that it should be investigated (Business Green 2010).

Countries that explored related tax incentives include New Zealand and the United States of America. In 2003, the New Zealand government proposed a similar tax on cow and sheep flatulence in an attempt to adhere to the Kyoto Protocol requirements, which was signed the previous year. Their scientists estimated that the methane produced by farm livestock accounted for 90% of methane emissions in that country. Another projection was that 15% of worldwide methane emissions originated from cattle, sheep and other ruminants. Methane is one of the strongest greenhouse gases (BBC News 2003). In 2008, the United States Federal government also considered the implementation of a tax on cattle and pigs due to methane gas released when belching and flatulence occurred (CBS News 2008).

In 2013, the FAO issued an updated report titled, "Tackling Climate Change Through Livestock - A global assessment of emissions and mitigation opportunities." A more recent percentage of 14.5% of human induced GHG-emissions is attributed to the livestock sector or approximately 7.1 billion tons CO<sub>2</sub> equivalent emissions (vs 20% in the 2010 report). Beef production accounts for 41% of the livestock sector's emissions, while cattle milk, pig meat and poultry products (meat and eggs) respectively contribute 20%, 9% and 8%. The largest sources of emissions, seen from an activity point of view, are feed production and processing (45%) and ruminant enteric fermentation (39%), while manure storage and processing account for 10% of emissions. Fuel emissions are responsible for about 20% of sector emissions across all categories. Production is expected to increase in the future (Gerber *et al.* 2013: xii).

Various techniques and practices can be implemented to lower CH<sub>4</sub> and N<sub>2</sub>O emissions from livestock as per Table 3.2 below. The use of feed additives and the manipulation of livestock diets is one of the main methods in reducing the enteric CH<sub>4</sub> gas livestock produce. Generally, the influence of an animal's diet on absolute emissions are deemed to be low to medium, although several options (animal productivity and feed effectiveness) can substantially lower emissions. A farm animal's diet will also have an effect on the emission intensity produced by manure. So, for example, the amount of Nitrogen contained in faeces and urine as well as the quantity of fermentable organic matter in faeces, can be manipulated by additives. There are several other ways to control CH<sub>4</sub> emissions such as collecting the biogas emitted in low-oxygen conditions, making sure that conditions are aerobic and storing manure for shorter periods (Gerber *et al.* 2013: 48).

**Table 3.2: Available techniques and practices for non-CO<sub>2</sub> mitigation: feed additives and feeding practices**

Practice/technology	Potential CH <sub>4</sub> mitigating effect <sup>1</sup>	Long-term effect established	Environmentally safe or safe to the animal
<b>Feed additives</b>			
Nitrate	High	No?	NK
Ionophores	Low	No?	Yes?
<b>Plant bioactive compounds</b>			
Tannins (condensed)	Low	No?	Yes
Dietary lipids	Medium	No?	Yes
<b>Manipulation of rumen</b>	Low	No	Yes?
<b>Concentrate inclusion in ration</b>	Low to Medium	Yes	Yes
<b>Forage quality and management</b>	Low to Medium	Yes	Yes
<b>Grazing management</b>	Low	Yes	Yes
<b>Feed processing</b>	Low	Yes	Yes
<b>Macro-supplementation (when deficient)</b>	Medium	Yes	Yes
<b>Micro-supplementation (when deficient)</b>	NA	No	Yes
<b>Breeding for straw quality</b>	Low	Yes	Yes
<b>Precision-feeding and feed analyses</b>	Low to Medium	Ye	Yes

<sup>1</sup> High = ≥ 30 percent mitigating effect; Medium = 10 to 30 percent mitigating effect; Low = ≤ 10 percent mitigating effect. Mitigating effects refer to percentage change over a "standard practice", i.e. study control that was used for comparison and based on a combination of study data and judgement by the authors of this document.  
 NK = Unknown.  
 NA = Not applicable.  
 ? = Uncertainty due to limited research, variable results or lack of/insufficient data on persistence of the effect.

(Source: Gerber *et al.* 2013: 48)

### 3.9.3 Characteristics

If the eco-tax is levied on each head of cattle, sheep and pig and is payable by the farmer, it could be classified as a direct tax (levied on and paid by the farmer) as well as tax on goods or services. Similar to the Swedish meat tax, the goal will be to reduce herd sizes and to promote green farming methods to reduce GHG emissions. The types of agriculture affected will be the rearing of sheep, pigs, cattle and other ruminants. Pollution targeted is GHG emissions originating from livestock where the concept polluter is the livestock-rearing farmer. No input costs of farmers will be affected if the eco-tax is levied on a per-head basis, as the farmer is directly charged.

### 3.9.4 Summary

The proposed cow flatulent tax of the United Nations Food and Agriculture Organisation (FAO) was discussed. In the USA as well as New Zealand, it was already proposed as a measure to curb GHG emissions from livestock. SA should pay closer attention to this tax as a possible means to meet national carbon footprint targets, as it is one of the top twenty producers of

indigenous cattle and sheep meat in the world (FAOSTAT 2013). Before implementing such a tax, careful consideration should be given to current SA agricultural challenges.

### **3.10 CHAPTER SUMMARY**

This chapter introduced eight new international eco-taxes, in different stages of implementation. All of these taxes affect agriculture to a greater or lesser extent. Some are still in the initial proposal phase, others are in the process of being enacted in either the original or amended form (for example, due to public pressure) and some have been repealed shortly after enactment. It is therefore clear that the field of eco-taxes represents a very dynamic and unpredictable frontier of taxation. This is also obvious from the background and theory provided in chapters 1 and 2. The taxes discussed are often highly emotional and contentious issues amongst affected individuals with specific reference to the agricultural and farming communities. In the next chapter, the effects or anticipated effects of these new eco-taxes on the applicable foreign countries' agricultural sectors will receive closer attention, with specific reference to financial effects as well as political and other effects in certain cases.

## **CHAPTER 4**

### **THE EFFECT OF NEW ECOLOGICAL TAXES ON FOREIGN COUNTRIES' AGRICULTURAL SECTORS**

#### **4.1 INTRODUCTION**

This chapter deals with the effects or possible effects relating to the implementation of the eight identified eco-taxes on the agricultural sectors of the countries where it has been enacted or proposed. In certain instances the financial impact on farming communities, as well as the socio-political and other general effects, are investigated. Where the tax is still only in the proposal phase, the expected effects, should it be implemented, are discussed. Where the tax is in the process of implementation, potential effects are discussed including, where applicable, those that could eventually lead to amendments. Where the tax was already repealed shortly after enactment, the effects and anticipated effects that led to the eventual abolishment are discussed. The discussion is based on commentary from farmer unions, pressure groups, politicians, media reports, government publications and independent researchers.

Linkage with certain chapter 2 concepts are also provided, including the principles of a good tax policy, characteristics of an effective eco-tax, earmarking of proceeds, the double dividend hypothesis and available alternatives. In the “principles of a good tax policy” section, those principles where compliance or non-compliance with the principle are most apparent (as evident from background information), are briefly discussed further. Similarly, in the “characteristics of an effective eco-tax” section, those characteristics most apparent in respect of information provided for each tax are briefly debated. In addition, some lessons to bear in mind in the future are provided.

#### **4.2 FRANCE: HEAVY GOODS VEHICLE ROAD TAX**

This particular French eco-tax was introduced in chapter 3. This chapter will explore various effects or possible effects on French agriculture.

#### 4.2.1 Financial Effects on the Agricultural Sector

The French agricultural community expressed a general unhappiness towards the proposed eco-tax, through the largest farmers union, FNSEA (French: Fédération Nationale des Syndicats d'Exploitants Agricoles; English: National Federation of Agricultural Holders' Unions (Omics International 2014)). Certain discriminatory discrepancies contained within the original form of the legislation also caused discontent, such as the question whether all farming transports should be exempt. This occurred after the National Assembly voted in favour of an amendment to exempt milk transport. According to the president of FNSEA, Xavier Beulin, it was irrational to exempt milk transport but no other agricultural product transport, as arguments applying to one type of agricultural product also apply to the rest (i.e. financial discrimination). As such, this illogical decision would increase further calls for all agricultural activities to be exempt. In an open letter to the French government, FNSEA contented that agricultural activities practiced in the countryside were heavily dependent on secondary roads and that the additional tax would add to farmers' financial burden, because of an increase in input and product collection costs. It could also further impair the international competitiveness of French agriculture (Tax-News 2013b).

FNSEA also disputed claims by the French Transport Minister that the eco-tax would not materially influence the price of produce (i.e. food inflation). They argued that, due to current negative economic conditions and growth, it was not the right time to implement such a tax. Moreover, they raised concerns that the poor economic climate and an ever-increasing "incoherent" French taxation regime made it impossible for economic role players to invest in the economy. The union persisted, in their opinion, that the proposed eco-tax would be an "intolerable" economic burden for the agricultural industry which was already battling to stay afloat in an economic crisis (Tax-News 2013c).

According to FNSEA, transport costs would increase between 5% and 10% due to the eco-tax, in a market where profit margins were already under pressure. French farmers would not be able to afford the extra costs as they were already in distress because of a steady decrease in livestock production, and the fact that it was not feasible to pass on higher production input costs to the end consumer. It would benefit foreign importers, by affording them a competitive advantage over their French counterparts, as French producers would have to pay more due to them using French toll roads more often (Tax-News 2013c).

Farmer unions also stated that the HGV would further impede on the agricultural and food-processing sectors, which already experienced a job crisis, especially in Brittany, and therefore

called for at least a two-year postponement (RFI 2013b). Transport cost increases might cause certain companies to go bankrupt, which would lead to further major job losses. The secretary-general of the FNSEA farmers union criticised the tax due to the fact that “some French products will pass through the gates five times compared to those that come from abroad, which will only pay when they arrive in the territory” (The Local 2013). In other words, some products produced and sold within French borders would have to pass through five gantry pay-points while traveling the French road network from the production place to the marketplace, as these products are exclusively transported via French roads. On the other hand, in some instances, international producers would only have to pass one gantry point from the point of entering French borders to the product’s delivery point.

#### **4.2.2 Political Effects on the Agricultural Community**

Four different effects or consequences of a more political nature that influence agriculture can be distinguished, including:

##### ***Violent protests and civil disorder***

Violent protests by vexed farmers broke out during October 2013 in Brittany, Western France. A number of protesting farmers were injured when approximately one thousand angry farmers clashed with police, set tyres alight and occupied a tollbooth. The protesting farmers pledged to continue with demonstrations to oppose the new eco-tax (RFI 2013b). Farmers also tried to destroy a tollgate, burned bales of hay, bombarded police with eggs and injured several police officers (France24 2013). In November 2013, protests continued with tolling control posts being vandalised. Roads were blocked during numerous demonstrations where tens of thousands protested in the South of France (RFI 2013e). Protests also occurred in north-west France where 28 cameras were destroyed and riot police had to disperse protestors with teargas (RFI 2013f).

##### ***Negotiations with government and postponement of eco-tax***

On 29 October 2013, the French government postponed the 1 January 2014 implementation date, due to public pressure and escalating violent protests as well as to allow time to ascertain the impact on farming and food processing industries and remote French districts, such as Brittany. The Agricultural Minister stated that he had “perfectly understood” the message of the farmers and that he would push for changes in legislation (RFI 2013b). Prime Minister Jean-Marc Ayrault



stated that the proposed eco-tax would be postponed “in order to avert the escalation of violence” and “to provide the necessary time for dialogue at the national and regional level” (France24 2013). French government officials and protest leaders who demanded scrapping of the tax, entered into negotiations during November 2013 (RFI 2013d).

### ***Investigations and renegotiations***

On 7 November 2013, the French Finance Minister announced the government’s intention to renegotiate the original contract with the Ecomouv consortium for purposes of minimising the cost of the tax for French taxpayers (Tax-News 2013d). Ecomouv would have charged in excess of 20% of the revenue collected to operate the system, much higher than normally applicable in contracts between the government and private sector. Senators of the Socialist Party launched a parliamentary inquiry into the circumstances surrounding the contentious contract. The previous ecology minister criticised the socialist government for being two faced, as most of its members voted in favour of the tax during the previous administration. The minister also admitted that the eco-tax was a “complicated tax - because it's hard to levy a tax per kilometre” (RFI 2013d).

### ***Government re-packages and scraps the eco-tax***

On 23 June 2014, it was revealed that the HGV eco-tax was abandoned in its original form when details of a new scaled down version of the tax (aptly named the truck-toll tax), was announced in the media. Characteristics of the repackaged tax included:

- The cost will be €0,13 per kilometre for certain roads and the tax will generate approximately €560 million per year, about two thirds of the original eco-tax.
- Only vehicles weighing 3.5 tons or more will be liable for this tax.
- Only 4 000 km of roads will be affected versus 15 000 km previously.
- Vehicles transporting milk and used for agriculture purposes will be exempt (possibly, because it is illogical for the government to exempt milk transport, but not other agricultural transport as explained above).
- The government plans to initiate the tax on 1 January 2015.
- It will promote eco-friendly methods of transport (trains for example), force companies to pay for road usage and fund important transport projects.

(The Local 2014b)

However, during October 2014 the French government decided to scrap the tax in its entirety, as it would be extremely difficult to levy such a tax, as well as due to further planned protests by truckers (Automotive Logistics 2014).

### **4.2.3 Other Effects on the Agricultural Sector and the Government**

In France, there are 8 500 km of inland waterways that can be utilised by boats and barges for transport. France, therefore, has the largest waterway network in Europe and about 20% of the network is suitable for boats weighing more than a 1 000 metric tons. The waterway infrastructure is comprehensive and comprises more than 2 000 civil engineering structures including dams, tunnels, channel bridges and locks (Voies navigables de France [s.a.]). In Europe, inland waterways are currently underutilised as there are some structural problems, including infrastructure that is not properly connected and incorporated with other transport modes, skill shortages and over capacity, which prevent it from being optimally used (European Parliamentary Research Service 2014: 1). One of the HGV eco-tax' aims was to promote alternative transport modes. As such, it was likely that the tax would have caused French farmers to utilise the extensive waterway transport system more frequently.

### **4.2.4 Linkage with Chapter 2**

#### ***Principles of a good tax policy***

It can be argued that this tax does not comply with various characteristics of a good tax policy. Firstly, the *Economy in Collection* requirement is questionable in this case. The cost to administer the system, payable to Ecomouv, would have been more than 20% of revenue collected and therefore a very high operating cost is applicable. It cannot be said that the system adheres to the *Simplicity* principle. The former Ecology Minister admitted that it was a complicated tax "because it's hard to levy a tax per kilometre". The tax is difficult to levy as it requires advance technological equipment (GPS units) that must be installed in each and every truck, numerous mobile and fixed monitoring devices (such as gantries) is required and non-stop monitoring will have to take place.

The HGV eco-tax does not comply with the *Economic Growth and Efficiency* requirement as it possibly might have crushed organised agriculture per farmer unions' contentions and referring to the fact that the French government eventually decided against the tax. It could not initially be

said that it would have been *Fair and Equitable*, as milk transport was exempt, but not other agricultural commodities. Therefore, to conclude, the eco-tax does not comply with the *Economy in Collection*, the *Simplicity*, the *Economic Growth and Efficiency* as well as the *Fair and Equitable* principles.

### ***Characteristics of an effective eco-tax***

Firstly, it can be argued that the pollutant (GHG emissions of trucks) or the polluting behaviour (the driving of said trucks to deliver goods to markets etc.) was targeted by this tax. It could also be argued that the tax would have been proportionate to the harm to the ecology (or at least the French government's best estimates thereof), with reference to different rates that would have been applicable depending on factors such as the weight, number of axels and environmental performance of HGVs. There were also, at first, no other policy instruments that adequately addressed distributional impacts on the agricultural sector. Only at a later stage did the French government concede to exempt all agricultural transport. The eco-tax therefore did not comply with various effective eco-tax characteristics.

### ***Earmarking of proceeds***

The tax would not have been fully utilised to reduce France's carbon footprint, as the government's intent was to use some of the proceeds in an attempt to decrease the GDP deficit to 3% by 2015 (RFI 2013a). Due to the suspension of the tax, 120 governmental public transport projects (such as tram, bus and metro services in French cities) worth 6 billion Euros, were postponed (The Local 2014a). This means the tax was partially earmarked to aid more economic modes of public transport, aiding the environment (less private cars on the roads). Eco-tax proceeds not earmarked for eco-purposes is a contentious issue, as it can be argued that if it is not earmarked to be spent on projects that lowers France's carbon footprint (for instance promoting water or rail transport), the tax loses its purpose and becomes yet another money-making tool to fund general government expenses. The eco-tax was consequently not fully earmarked.

### ***The double dividend hypothesis***

Whilst the HGV eco-tax would have potentially decreased harmful emissions due to entities using less HGV transport (possibly by loading trucks more economically, planning transport routes more

effectively or using alternative transport modes), the tax would not have been used to lower another tax-type. Instead, the tax would rather assist in lowering the country's GDP deficit as well as to partially finance other transport projects. It can therefore not be said that this tax fully complies with the double dividend hypothesis.

### ***Alternatives available***

The French government aimed to promote alternative greener transport modes, including inland water and rail transport, by way of the tax. As previously discussed, France has an extended inland water network that can be utilised for this purpose. In a French context, alternatives are therefore available.

### **4.2.5 Lessons for the Future**

- Governments must first conduct proper financial and practical impact studies before billions of taxpayer money is wasted to build infrastructure and put systems in place to charge a new tax that is impractical and financially destructive for entities such as small and medium scale farmers.
- A well-publicised and transparent public participation process must be followed where all affected parties are consulted, prior to a government signing contracts and commencing to build infrastructure. This mistake was also made in SA, with specific reference to Sanral's Gauteng e-tolling and the Western Cape Winelands toll project (Farmer's Weekly 2012b; City of Cape Town 2016). Attempts to deceive the public and keep them in the dark until completion of construction work can have negative consequences for the authorities.
- When taxpayers exert enough pressure on governments planning to impose unreasonable taxes, it is indeed possible to stall the process or even cause the tax to be scrapped.

### **4.2.6 Summary**

**General remarks** – This section dealt with the effects or possible effects of a mooted HGV road tax on the French agricultural sector. It was a very emotional and contentious issue, which finally led to the eco-tax being scrapped. It would seem that an element of dishonesty was possibly

present, as there was a parliamentary inquiry into the circumstances surrounding the contentious contract.

**Effects** – Various financial effects were identified, including financial discrimination, an increase in production and input costs (most significantly transport), international competitiveness concerns, food inflation, further financial stress on farmers in a weak economy, higher transport costs, agricultural companies going bankrupt and job losses. Political effects include violent protests and civil disorder by farmers, negotiations with the government, postponement of the eco-tax, investigations and renegotiations, re-packaging of the eco-tax and eventual scrapping. As an alternative, farmers may also possibly utilise French waterways more frequently.

**Chapter 2 linkage** – The eco-tax failed in various respects and did not comply with several of the ten principles of a good tax policy or characteristics of an effective eco-tax. Proceeds were not fully earmarked for eco-purposes nor did it completely satisfy the double dividend hypothesis. In a French context, alternatives are available.

**Lessons** – Several lessons for SA were identified, should a similar tax be considered here. Ultimately, the French government had to backtrack on their initial plans due to public pressure and poor planning.

### **4.3 ONTARIO, CANADA: ECO-FEE OR ECO-TAX ON TYRES**

Tyre importers or retailers (Industry Stewards) charge an ad-on fee on tyres when they sell it to customers. This add-on fee is then paid over to Ontario Tire Stewardship (OTS) where it is used to pay for tyre collection and recycling and to keep tyres from ending up on stockpiles or landfills. The impact of this particular tax on the Canadian farming fraternity is investigated below.

#### **4.3.1 Financial Effects on the Agricultural Sector**

The Ontario Federation of Agriculture (OFA), the largest general farm organisation in Ontario, argued that the eco-tax hike would financially harm farmers and countryside communities that rely on a healthy agricultural industry. The increase (from 1 April 2014) would see, in extreme cases, stewardship fees of certain off-road tyres increasing from \$15,29 to \$350 per tyre (an increase of 2 289%). The OFA criticised the Canadian government as well as OTS, because no

proper public participation processes were followed to enable farmers to voice their concerns. Farmers were caught off-guard by the increases, which caused even more damage, as they were unable to prepare financially for it (Ontario Federation of Agriculture 2013a). The OFA was of the opinion that the increases were so drastic, that it necessitated negotiations with OTS, regarding a more reasonable fee structure (Ottawa Business Journal 2013).

According to the OFA, the average weighed increase of 400% would punish farmers unreasonably and would render Ontario farmers internationally uncompetitive. The programme might also become inefficient should farmers import offshore tyres at a lower cost to avoid the high eco-tax at the point of purchase in Ontario (Ontario Federation of Agriculture 2013a). Similarly, the Ontario Flue-Cured Tobacco Growers' Marketing Board was outraged that Waste Diversion Ontario, the government agency responsible for the OTS, accrued a large deficit which farmers now had to help repay through increased eco-fees (The Ontario Flue-Cured Tobacco Growers' Marketing Board 2013).

They cited several negative effects of the proposed increase, including:

- It will affect every Ontario citizen when the input price increases are filtered down to the consumer through the economy by businesses in the natural resource and agricultural industries, in the form of higher prices.
- It will further contribute to the disproportion in tyre prices between Canada and the USA. A cross border tyre trade already exists in Ontario. Tyres are bought for less outside the province, where the stewardship fee does not apply, after which they are "imported" into Ontario. The Ontario eco-tax is not enforced in other Canadian provinces or at the Canadian borders. Tyres "imported" in this manner will avoid the OTS eco-tax. This will mean that the OTS will have to absorb the recycling costs of the imported tyres, which will result in a further deficit.
- It will put a brake on economic recovery. The Ontario tyre dealer, businesses dealing in new equipment and farmers will be negatively affected by the increase, which will increase inflation and damage small business sales.
- The proposed hike will escalate food production costs and food inflation.

(The Ontario Flue-Cured Tobacco Growers' Marketing Board 2013)

### **4.3.2 Political Effects on the Agricultural Community**

Political effects of the proposed increase in the eco-tax include:

#### ***Vexed farmers and politicians***

The OFA urged farmers to voice their unhappiness with the provincial government and the Ontario Legislature, demanding that the increase be scrapped, while exploring more suitable solutions for the recycling problem (Ontario Federation of Agriculture 2013a). Opposition politicians also voiced their dismay with the hikes and remarked that it was nothing more than “a governmental tax grab”, which would motivate consumers to rather buy in the USA. The authorities maintained their contention that the eco-fee was not a tax as it was a fee managed by industry-led stewardship organisations. The proceeds did not go to the provincial government. Politicians also remarked that the government avoided taking responsibility and in effect shifted the responsibility to stewardship organisations. As such, there was no parliamentary oversight to hold industry accountable and to set obtainable targets (Ottawa Business Journal 2013).

#### ***Government negotiations leading to amendments***

After high-level meetings and negotiations with OTS, it was agreed that the fee structure be amended with lower fees, based on weight, applying to agricultural tyres. A new classification method was suggested, where agricultural tyres were placed into a separate class. As such, tyres between 70 kg and 250 kg would be subject to a \$47.04 stewardship fee while tyres above 250 kg would carry a fee of \$182.28. About 70% of all tyres used for agriculture weigh less than 250 kg. The reduced fee schedule would be enacted retrospectively from 1 April 2013, but would be subject to governmental approval. The OFA reluctantly agreed to the new schedule, but considered it only a temporary solution to a bigger problem (Ontario Federation of Agriculture 2013b).

### **4.3.3 Financial Effects on the Government and Related Institutions**

The OFA is of the view that the government must carry the cost of OTS’s debt and that agriculture should not be expected to help service it by means of a higher tyre stewardship levy. They seek government approval for the use of recycled tyres as a fuel, but only if it can be proven that the

production and use is ecologically sustainable. The OFA also expects the following from the government:

- Facilitate the development of practical applications for recycled tyres in the civil engineering industry.
- Establish a streamlined rubber recycling and processing sector.
- Assistance with research to find practical uses for recycled rubber goods is required.
- Develop markets for recycled tyres.

(Ontario Federation of Agriculture 2013b)

#### **4.3.4 Linkage with Chapter 2**

##### ***Principles of a good tax policy***

This tax does not comply with the *Equity and Fairness* requirement of a good tax policy, as consumers in Ontario would pay much more than their counterparts in other Canadian provinces. Payment of the tax at the point of sale to Industry Stewards (tyre dealers) aids *Convenience of Payment*. It is a fairly *Simple* tax to understand (a certain amount is payable to the entity selling the tyre, based on weight). The *Transparency and Visibility* requirement was not complied with as Stewards were previously advised to hide the tax in the normal sales price (see section 3.3.2) and there was no proper public participation process in 2013. To conclude: the eco-tax does not comply with the *Equity and Fairness* as well as *Transparency and Visibility* requirements, although it does comply with the *Simplicity* and *Convenience of Payment* requirements.

##### ***Characteristics of an effective eco-tax***

It cannot be argued that this eco-tax effectively addressed competitiveness concerns, as lower fees in other Canadian provinces applied and Ontario citizens could therefore “import” tyres from other tax jurisdictions with lower rates. There was no effective communication with the public to ensure acceptance (farmers were caught off-guard because no proper public participation processes were followed). Therefore at least two characteristics are not complied with.



### ***Earmarking of proceeds***

The tyre eco-tax constitute an earmarked sales tax as it is used for one specific purpose, namely to finance used tyre recycling initiatives in Ontario, Canada. The idea was that funds would be received by one designated entity (Ontario Tire Stewardship) and utilised by that entity for this sole purpose. This tyre eco-tax is therefore earmarked.

### ***The double dividend hypothesis***

For the double dividend hypothesis to apply the eco-tax must aid environmental improvement and proceeds should be utilised to lower other taxes. If a tax was hidden from the public eye (as was suggested by Stewardship Ontario in 2010) keeping consumers “none the wiser”, the consumer would be unable to effectively ascertain the product’s pollution factor and would therefore be unable to make informed decisions about their purchasing patterns. As such, they would continue to buy items that adversely affect the environment. The Ontario tyre tax proceeds would also not be used to decrease any other taxes. Therefore, the eco-tax on tires do not comply with the double dividend hypothesis.

### ***Alternatives available***

One possible alternative concerning crop dusting, is to use aeroplanes instead of land based vehicles (such as tractors) to spray poison and liquid fertilisers on crops. This will reduce the wear and tear on tyres. However, because of cost and practical considerations, utilisation of aeroplanes is limited. Therefore, no real alternatives are available to farmers that use tyres for agricultural purposes.

#### **4.3.5 Lessons for the Future**

- Continued pressure by taxpayers, especially in the form of a synchronised effort by unions (which provides advantage, bargaining power, and safety in numbers) by means of petitions and/or demonstrations, can move governmental institutions to amend their policies. SA agricultural unions should keep this “bargaining power” lesson in mind.

- Taxpayers need to be alert regarding the actions of semi-state or private sector institutions which administrate a tax on behalf of government, as a degree of deceit is very often present (arguably Sanral e-tolling in SA). Very little effort was made to inform farmers in Ontario of hiked fees and in 2010, businesses were advised to hide the eco-fees so consumers would be “none the wiser”.
- Governments and/or private institutions administrating taxes on behalf of government must ensure that a transparent, well-published public participation process is followed to minimise the risk of negative publicity resulting in the tax failing.
- There must be pricing certainty to prevent unhappiness such as tyre shops charging different levies for the same tyre.
- The perception of a tax (versus a fee or charge) may also invoke a negative response from parties paying the tax, fee or charge. Authorities should be careful how they structure, package and advertise such a levy.

#### 4.3.6 Summary

**General** – This section discussed the effects or possible effects of the tyre tax on the agricultural sector in Ontario, Canada. As in the case of the French HGV eco-tax, the Ontario authorities backtracked on the original version of the tax due to public pressure, resulting in a scaled down version of the initial eco-tax finally being introduced.

**Effects** – Financial effects include unreasonable high tyre prices damaging farmers’ finances, farmers who import tyres from other tax jurisdictions, the eco-tax placing a damper on economic recovery and higher food inflation. Political effects include extremely unhappy farmers and politicians leading to negotiations between agricultural unions and the government. Some financial consequences for the authorities were also identified.

**Chapter 2 linkage** – The *Equity and Fairness* as well as *Transparency and Visibility* principles of a good tax policy are not complied with. On the other hand, the *Simplicity* as well as *Convenience of Payment* requirements are met. At least two characteristics of an effective eco-tax are not met. The intent is to fully use proceeds for recycling purposes (therefore fully earmarked), although the

eco-tax does not satisfy the double dividend hypothesis. There are also no other alternatives available.

**Lessons** – Five important lessons were identified that taxpayers and governments must keep in mind when new taxes are suggested or implemented.

#### **4.4 BRITAIN: CLIMATE CHANGE LEVY AND CLIMATE CHANGE AGREEMENTS**

The Climate Change Levy (CCL) goes hand in hand with Climate Change Agreements (CCA) and operates as a fiscal package. The CCL is the tax in the scheme and the CCA is the incentive to decrease the CCL payable if energy saving targets are met. The effects or possible effects on UK agriculture are discussed in the next sub-sections, as well as certain chapter 2 concepts and lessons.

##### **4.4.1 Financial Effects on the Agricultural Sector**

Possible financial effects of the CCL/CCA scheme on farmers include the following:

##### ***Financial effects if only the CCL is imposed without farmers having the option to participate in the CCA side of the scheme***

Where farmers do not participate in the CCA scheme, by way of either an umbrella agreement or underlying agreement, the consequences of the CCL on farmers may be dire. The same can be said where targets are not met and farmers are expelled from the programme, thus becoming liable to pay the full CCL. The significance of CCAs to farmers is highlighted by the fact that in 2011 (under the old scheme), the UK National Farmers Union (NFU) pledged to ensure that the UK government realised the importance of CCAs to UK agriculture and to ensure the future availability of CCAs. This was in response to the UK government's proposed amendments to the system, whereby the administrative and cost burden would have been shifted to the farmer, making it unprofitable to remain in the scheme. This, in turn, would cause the CCL to be yet another unrecoverable tax (Horticulture Week 2011).

Financial problems which farmers may experience, if they are unable to enter into a CCA for purposes of reducing the CCL payable, are found in the NFU's response to the "Consultation

Paper on Climate Change Levy by HM Customs & Excise” (2000). The CCL was originally proposed in this government document. The following represents some of the more important points raised by the NFU:

1. The levy may leave many farmers out of business.
2. The government provides no proof that the CCL is the most affordable option available to farmers to achieve energy saving targets.
3. The agricultural sector is perceived to be energy intensive. Unlike other high power consuming industries such as steel, cement and aluminium, agriculture consists of many smaller entities that are unable to absorb the CCL’s economic impact as easily as bigger companies.
4. The CCL is considered revenue neutral by the government. This is because the approximate £1.75 billion CCL payable by businesses in the first year will be “refunded” to them by way of a 0.5% reduction in National Insurance Contributions (NIC), based on the businesses’ labour intensity. The CCL will thus be “recycled” back into the economy. However, the UK agricultural sector is not labour intensive, which means that there will be a huge difference between the CCL levied and the reduced NIC costs. The estimated CCL payable by farmers will be £26 million while the NIC reduction will only be £9 million.
5. For a dairy farmer the CCL could, as an example, be £487 while the reduction in the NIC would only amount to £17, which gives a detriment ratio of close to 29:1.
6. The effect on the horticultural industry will be catastrophic as costs may equate to hundreds of thousands of pounds with a detriment ratio of between 7:1 and 35:1. In many cases, all profits will disappear because of this tax.
7. Many farming related businesses are contemplating moving their operations overseas, with negative consequences for employment.
8. As explained in point 4 above, poultry and egg farmers will, for example, have to pay about £25 000 CCL levies with a decrease of only £500 in the NIC.
9. It is very difficult, and sometimes impossible, to pass on extra costs to the consumer due to the competitive markets in which the horticultural and the intensive livestock industries compete. These businesses are sometimes also unable to absorb the extra costs. Smaller agricultural businesses will therefore fail and larger ones will move overseas. Companies moving overseas will export to the UK, which will lead to an increase in transport pollution.
10. Farmers already optimise energy usage to reduce costs as they operate in exceedingly competitive markets. Energy utilised in the form of heat or air-conditioning is also especially important for the welfare of indoor animals. Reducing energy consumption may cause a

sharp decrease in these animals' welfare standards, with an accompanying drop in product quality.

11. The CCL will be harmful for UK agriculture and horticulture. The negative impact on competitiveness for these UK based businesses will be amplified if similar measures are not simultaneously launched in the rest of the EU.

(United Kingdom Parliament 2000)

Based on the possible adverse effects above, the NFU recommended that these sectors be exempt from the CCL or that a reduced rate be applied. Alternatively, the CCL could be recycled back into the agricultural sector (United Kingdom Parliament 2000). The Climate Change Agreement, which was subsequently introduced at the same time as the CCL, adhered to this recommendation.

As explained in section 3.4.2, energy from renewable sources (such as electricity derived from sun, wind and water power) would be exempt from this eco-tax. However, in July 2015 the UK government announced that the CCL exemption, which in the past applied on energy from green renewable energy sources, would fall away from 1 August 2015 onwards. The impact of this decision will be that the cost of green energy will effectively increase by the CCL becoming payable (which typically adds about 15% to the cost of energy purchased) (DLA Piper 2016). Therefore, if farmers previously used energy from renewable sources, they will now have to pay 15% more on their energy bill if the energy supplier does not absorb the extra costs into its cost structure. This UK government decision to suspend the exemption of renewable energy sources from the CCL is an unfortunate turn of events. It will water-down eco-benefits from the scheme as a consumer using, for example, clean electricity from wind or sun power, will have to pay the same eco-tax as a consumer using electricity from a derelict coal power station.

***Financial effects if farmers also participate in the CCA side of the scheme (focussing on poultry farmers, pig farmers and horticulture as an example)***

In terms of negotiated targets (which was agreed upon between the UK National Farmers Union (NFU) and the UK government and subsequently codified in Climate Change Agreements), it is estimated that poultry farmers will save approximately £7.75 million over a ten year period in CCL levies (if targets are met). This will be by means of a discount of 90% on the CCL for electricity and 65% for other qualifying fuels. The agreed upon target is a 17.9% saving on energy. The UK government initially proposed a target of 22%, but the NFU, represented by the Farm Energy

Centre (FEC), convinced them that this target was unrealistic and unachievable and would have discouraged farmers to participate. Factors that limited the saving potential were identified as technology and available investment capital (The Poultry Site 2013).

Similarly, the pig farming industry will save £18.75 million over a ten-year period ending 2023, if targets are met with reference to negotiations between the National Pig Association and FEC with the UK government. The saving consists of rebates on the CCL, reduced energy bills due to less energy consumption as well as a reduction in administration fees. The UK government initially proposed a 31% energy saving target, but this was considered unrealistic and eventually a 22.7% energy saving target was agreed upon (FarmBusiness.cc 2013).

The horticultural industry will also save approximately £20 million from 2014 to 2023 by means of rebates on the CCL, if an agreed upon 14% energy saving target is met. The original 23% energy saving target proposed by the government for the horticultural industry again proved to be too high. After negotiations, the target was reduced to a realistic 14% that will motivate participants to save energy (National Farmers Union 2012). Horticulture, which literally means garden culture, forms part of crop agriculture alongside forestry as well and agronomy. It involves the cultivation of garden crops such as ornamental plants, fruits and vegetables, herbs and spices used for culinary purposes, beverage crops and medicinal plants. Horticulture can be practised in home gardens, by small-scale farmers as well as by large agricultural concerns (Encyclopedia.com 2013).

### ***Additional admin costs for farmers partaking in the CCA side of the scheme***

Certain administrative fees will be payable by the agricultural sector to take part in the CCA scheme. For the horticultural, pig and poultry industries an initial administration fee, annual fees as well as yearly environment agency fees will apply for each site, although discounts are provided to NFU members. For example, the annual administration fees may vary from £215 to £4 075, depending on the farming industry, energy consumption and whether or not the business is a member of the NFU. The administration costs may therefore be quite substantial (Farm Energy Centre 2014).

## 4.4.2 Other Effects on the Agricultural Sector

Other effects of the CCL/CCA scheme include:

### ***Energy efficiency enhancements***

During the first CCL/CCA scheme, the NFU found farmers who were operating in high-energy consumption farming sectors such as poultry, pigs, eggs and horticulture to be more aware of energy efficiency due to the CCL. Consequently, scores of farmers concentrated on decreasing energy use with various overachievements. The potential for even greater energy savings exists through methods such as precision farming and additional investment in power efficient technologies. According to the NFU, the uptake of these technologies could be improved by affordable energy efficient technology education, training and support in how to install these technology and energy efficiency investment incentives (United Kingdom Parliament 2006).

The UK government's decision to tax renewable energy from 1 August 2015 in the same way as "dirty" energy will in future decrease investment in new green energy technology. For instance, the share price of UK companies that specialise in eco-energy dropped significantly after the announcement and research projects in carbon capturing and storage were abruptly halted (DLA Piper 2016). Green energy producers were vexed by the government's decision to scrap the exemption (which would cost them an estimated £910m per year), while providing more financial help to the North Sea oilfields. The director of policy at RenewableUK, Gordon Edge, remarked that:

Yet again the government is moving the goalposts, pushing some marginal projects from profit into loss. It's another example of this government's unfair, illogical and obsessive attacks on renewables.

(The Guardian 2015)

## 4.4.3 Linkage with Chapter 2

### ***Principles of a good tax policy***

Referring to the ten principles of a good tax system as provided in chapter 2, it is clear that at least two principles were not met. The system is complicated (*Simplicity*) considering the volumes of information which must be collected and processed to ensure target compliance. With the

amendments where renewables will no longer be exempt, the government hopes to simplify the scheme. The administration costs for the taxpayer to collect a rebate against the CCL are substantial (*Economy in Collection*) and it seems to be a burdensome system for the government to administer. It can be argued that the tax complies with the *Equity and Fairness* requirement as 17 qualifying agricultural processes were identified, which will all be treated the same under the scheme. Umbrella agreements, where different industry sectors as a whole, negotiate with government, will also ensure that all members in that sector are treated the same in relation to other members in that sector. To conclude, the eco-tax does not comply with the *Simplicity* and *Economy in Collection* principles, although it does comply with the *Equity and Fairness* principle.

### ***Characteristics of an effective eco-tax***

It can be argued that the CCL/CCA scheme complies with the “range should be as broad as the scope of the harm to the ecology” requirement of an effective eco-tax. This is because the CCL is levied on various energy sources in the UK, which has an impact on the environment, including electricity, solid fuels, gas, coal, coke (fuel), etc. Furthermore, it is clear that in the scheme eco-taxes and other policy instruments are combined to deal with certain issues, as the effect of the CCL eco-tax on farmers is mitigated by the CCA policy instrument. The eco-tax therefore adheres to at least two of the effective eco-tax characteristics.

### ***Earmarking of proceeds***

Proceeds are recycled back into the tax system by reducing the National Insurance Contribution (NIC) payable by businesses, based on their labour intensity. Before implementation, it was anticipated that the NIC would be reduced by 0.5% in this manner (United Kingdom Parliament 2000), but after implementation, it was reduced with 0.3%. In the first 3 years after the CCL was implemented, £150 million of proceeds was also attributed to the UK Carbon Trust (Müller 2008: 9). Proceeds are therefore earmarked, although not specifically for green purposes.

### ***The double dividend hypothesis***

By way of the background provided above, it is evident that energy savings are achieved by the CCL/CCA scheme, which means less pollution from coal-fired power stations etc. It also promotes the utilisation of more eco-friendly energy sources. However, the decision of the UK government to suspend renewable energy sources from the CCL in 2015, may water-down the



environmental benefits of the scheme. The UK government recycles the proceeds back into the tax system by reducing the National Insurance Contribution (NIC), payable by business employers (Müller 2008: 9). The CCL/CCA eco-tax package can therefore be seen as complying with the double dividend hypothesis.

### ***Alternatives available***

Previously, before the UK government passed amendments, energy generated from renewable energy sources could be used by farmers to save on the CCL levy. After the “irrational” decision to suspend this exemption, farmers will have to consider other “off the grid” energy options. This includes installing solar panels and wind generators on farms and using new technology such as methane gas derived from manure. However, these alternative energy options might be expensive. Alternatives are therefore available.

#### **4.4.4 Lessons for the Future**

- When taxpayers are given options or alternatives regarding new eco-taxes, by means of a system that allows some manoeuvring space, it seems that they are more prone to accept a new eco-tax. This was cleverly achieved with the CCL and CCA tax package, where a new fixed tax on energy consumption was introduced, but with the simultaneous option to negate the effects (although the net effect of the scheme is still a tax payable).
- The “stick and carrot” CCL/CCA system eventually led, in many cases, to farmers reaching energy saving targets over and above the targets originally set. This is beneficial for the government as additional energy is saved as well as for the farmer whose energy bill is smaller at the end of the month.

#### **4.4.5 Summary**

**General** – This section discussed the CCL/CCA scheme, as it pertains to the UK agricultural sector. Since 2013, an amended version of the scheme was successfully implemented and administered by the UK government. Clean energy was previously exempt from the CCL and encouraged large-scale investment into clean energy projects and research. Unfortunately, this exemption was discontinued, which caused some of these projects to be cancelled. Moreover, it

casts a shadow on the CCL's real motives (i.e. a genuine effort to save energy and promote clean energy investment, research or technology or simply another money making taxing scheme by government under the guise of protecting the environment).

**Effects** – If farmers cannot participate in the CCA side of the scheme, consequences may be dire as explained in the NFU's response to the government's CCL consultation paper. Farmers participating can realise discounts of 90% on the CCL for electricity and 65% for other qualifying fuels. To participate in the scheme, administration fees are payable. Other effects include enhancement of energy efficiency (which may lead to further savings for farmers).

**Chapter 2 linkage** – Various principles of a goods tax policy are arguably not complied with, although proceeds are earmarked (not specifically for green purposes) and the double dividend hypothesis satisfied. It also adheres to at least two of the effective eco-tax characteristics and alternatives are also available.

**Lessons** – The “stick and carrot” (taking and giving) CCL/CCA scheme promotes acceptance of an eco-tax which otherwise might have been rejected, as it incorporates a psychological element of free will (the taxpayer may choose to participate in the CCA side of the scheme).

## **4.5 AUSTRALIA: CARBON TAX ON FUEL**

Chapter 3 briefly provided details regarding a carbon eco-tax on certain fuels used in particular Australian activities. The tax was applied by reducing the Fuel Tax Credit (FTC) available to taxpayers. This section builds further on the previous section in chapter 3, specifically focusing on the possible effects on agriculture.

### **4.5.1 Financial Effects on the Agricultural Sector**

Two different financially related effects on agriculture are identified below.

***Agriculture is exempt, but certain bona fide agricultural activities may not be covered by the concession***

Under the Clean Energy Future Package the agriculture, fishery and forestry sectors would be exempt from carbon tax on fuel. Financial modelling showed that for the majority of agricultural products, a carbon tax on fuel would comprise about two thirds of the total cost of an overall carbon price, if agriculture were subject to the fuel related carbon tax. As such, the Australian National Farmers' Federation (NFF) was outspoken regarding the manner fuel was treated under the new carbon tax legislation. However, even though agriculture in principal was exempt, several bona fide agricultural activities might inadvertently have been excluded from the exemption. This was due to a very narrow and prescriptive legislative definition of which activities represented "agricultural activities" (National Farmers' Federation 2011b: 6).

As an example, the legislative definition of "livestock activities" stated that where livestock is transported on-road to an "agricultural property" it would only be exempt from the FTC adjustment if the purpose of the trip were for "agistment" or "rearing livestock". It seems that transport activities relating to bona fide farming activities (such as where a farmer purchases adult sheep to graze on farmland to dispose of remaining harvest waste and to reintroduce nitrogen into the soil), would not constitute rearing or agistment activities. These activities would therefore be taxable, even though (arguably) unintended. It is also uncertain if livestock transport to a feedlot would qualify as "livestock activities". The NFF argued that the legislation should be broader to embrace all scenarios where fuel was used for farming (National Farmers' Federation 2011b: 6-7). Therefore, the fuel carbon tax could have caused various unintended anomalies, which would have penalised farmers unfairly.

According to research done by the NFF and the Cattle Council of Australia (CCA), it was estimated that the cost of the Australian carbon tax package might be as high as AUD \$7 000 per year for the average Australian beef producer. This estimate included the carbon tax on fuel used for agricultural purposes. This is a substantial figure considering that the average Australian beef producer's farm cash income equates to approximately AUD \$42 000. The research also confirmed fuel to be one of the most important inputs for Australian farmers (National Farmers' Federation 2011a). Considering the financial modelling of the Australian Farm Institute, which indicate that two thirds of an overall carbon price would be attributable to fuel carbon tax (National Farmers' Federation 2011b: 6), it means that about AUD \$4 667 (AUD \$7 000 x  $\frac{2}{3}$ ) of the estimated cost increase would relate to a fuel carbon tax, if agricultural fuel was not exempt.

According to the acting president of the Cattle Council of Australia, Andrew Ogilvie, “Australian beef producers are essential to food production in this country and around the globe”. He was also of the opinion that an effective carbon tax on fuel used by farmers in conjunction with the rest of the carbon price package may render Australian cattle ranchers uncompetitive on the world market. The cattle farming industry, at that stage, was worth \$7 billion a year and employed 120 000 people, which made it a vital Australian industry. The total Australian carbon tax package (including the effective carbon tax on fuel) could therefore possibly have destroyed the cattle industry in Australia (National Farmers’ Federation 2011a).

### ***Trickle-down effect due to heavy trucking exclusion falling away***

For the first two years of the carbon tax on fuel (1 July 2012 until 30 June 2014), the trucking industry was exempt from the scheme. From 1 July 2014, petrol or diesel used by vehicles with a gross vehicle mass exceeding 4.5 tons for on-road purposes would have had to pay the eco-tax that took the form of a reduction in fuel credits of 6,858 cents per litre (Queensland Trucking Association 2011). This proposed figure was later lowered to 1.6 cents per litre after various parties voiced their dismay (Australian Trucking Association 2013: 1). However, as indicated in chapter 3, Australian carbon tax legislation was repealed before the FTC reduction on heavy vehicles could take effect.

The profit margins of businesses involved in trucking, were also under severe pressure. In 2012, the average profitability of the trucking industry measured only 6.2% in comparison with the average figure of 10.2% for all Australian industries. If the fuel carbon tax was implemented, small trucking businesses would be forced to close their businesses due to unprofitability as they would be unable to pass the fuel carbon tax on to customers (by means of increased prices) and simultaneously a lack of profitability would prevent them to absorb it. Larger surviving trucking companies would be able to pass the tax on to customers, either partially or fully. This would mean an expenditure increase for everyone, as 71% of all domestic Australian freight is transported by road (Australian Trucking Association 2013: 2). Thus, it is clear that farmers would have had to pay more to trucking companies that transport their produce to local markets and harbours, as these companies would not be able to absorb the extra tax.

## 4.5.2 Linkage with Chapter 2

### ***Principles of a good tax policy***

The eco-tax is not easy understandable and therefore do not fulfil the *Simplicity* principle (a credit is reduced by x amount, but certain industries' rates differ, certain industries are permanently excluded and some only temporarily, which may be very confusing to the average person). It also hinders *Economic growth and efficiency*, as per the Australian government's own admission. It can therefore be argued that the fuel carbon tax does not comply with all the principles of a good tax, as provided in chapter 2.

### ***Characteristics of an effective eco-tax***

The carbon fuel tax, levied by means of a reduction in the FTC, does indeed target the pollutant or polluting behaviour, which is petroleum fuel carbon emissions released when said fuel is burned for transport purposes. When the eco-tax was enacted, it can be argued that there was transitional relief for certain industries, as heavy hauling trucking was exempt from the tax for the first 2 years of implementation (1 July 2012 until 30 June 2014). The transitional relief also assisted with competitiveness concerns, as it provided companies using road transport time to prepare (adapt their operations) for the pending higher transport costs, rather than to move their operations abroad to tax jurisdictions with a lower carbon fuel tax. The eco-tax therefore adhere to several characteristics of an effective eco-tax.

### ***Earmarking of proceeds***

Proceeds from fuel taxes in Australia is not specifically earmarked for a certain purpose such as road infrastructure expenditure, but is rather added to the general tax revenue pool. Funds in the general tax revenue pool are then allocated towards funding various initiatives under the general budget (Australia - Library of Congress 2014). A decrease in the FTC available will lead to an increase in fuel tax payable. Fuel tax is not earmarked for ecological or other specific purposes and it can therefore be argued that the carbon fuel tax was not earmarked.

### ***The double dividend hypothesis***

This tax will achieve a fuel usage reduction by promoting more responsible and effective utilisation of this resource by businesses, due to the higher costs. As the Australian government did not specifically earmark the fuel tax to reduce other taxes, it cannot be said that the second leg of the double dividend hypothesis has been met. The eco-tax therefore do not fully comply with the double dividend hypothesis. It could, however, be argued that in a general tax pool this eco-tax could be used to reduce other taxes indirectly, if the authorities decrease the rate of other taxes due to the additional income this eco-tax generates.

### ***Alternatives available***

If Australian farmers' fuel and transport costs escalated due to this eco-tax, one possible alternative is an increase in the utilisation of rail transport (with regard to transporting produce from the farm to the marketplace), where the product's nature allows it. On the farm itself, where certain bona fide farm activities would not be exempt, alternative options are very limited. Therefore, there are alternatives available for "off-farm" transport, but not so much for "on-farm" transport.

### **4.5.3 Lessons for the Future**

- Governments need to properly plan before enacting legislation that might prove unpractical, could potentially cause an embarrassment, waste millions of taxpayers' money and slow down economic growth.
- There should be viable alternatives available for taxpayers, if a certain product or service is taxed (in this instance alternatives for transporting farming supplies and produce by road).

### **4.5.4 Summary**

**General** – Under the carbon tax scheme, effectively implemented in Australia from 1 July 2012 (but subsequently repealed on 1 July 2014), a carbon tax on fuel was charged by means of a reduction in the FTC available to certain entities. Fuel used in trucks was initially exempt but would become taxable from 1 July 2014 (Australian Trucking Association 2013: 1). Fuel used in

the agricultural, forestry and fishing sectors was exempt from the eco-tax (National Farmers' Federation 2011b: 6).

**Effects** – Even though agricultural fuel was initially exempt, farmers' input costs would still rise, due to a general increase in prices attributable to the tax' cost trickling down through the economy. Furthermore, not all bona fide agricultural activities would possibly be covered by the concession, increasing farmers' transport costs. The tax would make farmers less competitive.

**Chapter 2 linkage** – The Australian carbon tax on fuel did not comply with some of the principles of a good tax system, as provided in chapter 2. Several characteristics of an effective eco-tax were met. It was not earmarked and did not fully comply with the double dividend hypothesis. Alternatives for "off-farm" transport were available, but not for "on-farm" transport.

**Lessons** – Governments need to properly plan before implementing a tax and there should be viable alternatives available to farmers.

## **4.6 AUSTRALIA: CARBON TAX ON CARBON EMISSIONS**

Australia's general carbon tax on carbon emissions forms part of the Clean Energy Legislative Package that was introduced for comment during 2011. This section will investigate the possible effects on Australian agriculture.

### **4.6.1 Financial Effects on the Agricultural Sector**

Although only the largest polluters had to pay a carbon tax levied in terms of the carbon pricing mechanism (CPM) provisions, other smaller businesses would still be indirectly affected. This would occur in the form of an increase in production input and general business costs, due to CPM price increases passed on by the top Australian polluters (Grant Thornton 2011a).

The Australian National Farmers' Federation (NFF), which is a collective of major farm organisations and commodity councils of different states (which in turn represents individual farmers who are members), raised concerns about the carbon tax impact on Australian agriculture. Research showed that additional costs would have a large impact on farmers due to an increase in electricity and indirect power supply prices. Avgas, fibre and food costs as well as

sunken energy expenses relating to farm input manufacturing, would increase. Even with fuel excluded, the average Australian farmer would still need to pay an additional \$1 500 per annum with a \$23 per ton carbon price. This would erode net farming income with at least 2.4% according to the modelled effects per commodity in Tables 4.1 and 4.2 below and would diminish the Australian agricultural sector's competitiveness locally and abroad (National Farmers' Federation 2011b: 4-5).

**Table 4.1: Projected change in farm business costs and farm cash income, one year after the introduction of a carbon price**

	BEEF FARMS			SHEEP FARMS			GRAIN FARMS		DAIRY FARMS		SUGAR		RICE	COTTON
	Australia	Qld	Vic	Australia	NSW	WA	NSW	WA	NSW	Vic	Central QLD	Burdekin QLD	NSW	NSW
Carbon Price	\$23	\$23	23	\$23	\$23	\$23	\$23	\$23	\$23	\$23	\$23	\$23	23	\$23
Cost – Processor (\$)	\$418	\$546	\$259	\$278	\$549	\$451	\$913	\$2,152	\$3,132	\$2,980	\$18	\$17	\$5,011	\$5,133
Cost – farm (\$)	\$1,145	\$1,406	\$635	\$976	\$1,112	\$1,024	\$2,471	\$2,951	\$4,560	\$3,074	\$1,533	\$7,491	\$2,646	\$4,110
Cost Total (\$)	\$1,563	\$1,952	\$893	\$1,254	\$1,661	\$1,474	\$3,384	\$5,103	\$7,691	\$6,054	\$1,551	\$7,508	7,657	\$9,243
Cost change (%)	0.6%	0.5%	0.7%	0.6%	0.8%	0.5%	0.7%	0.6%	1.5%	1.4%	0.5%	0.8%	2.3%	0.6%
Income change (%)	-3.4%	-2.7%	-2.9%	-3.7%	-5.2%	-3.8%	-5.5%	-2.3%	-6.7%	-7.8%	-2.3%	-2.9%	-2.9%	-2.1%

(Source: The Australian Farm Institute as referred to by the National Farmers' Federation 2011b: 4)

**Table 4.2: Projected change in farm business costs and farm cash income, three years after the introduction of a carbon price (heavy vehicle fuel included)**

	BEEF FARMS			SHEEP FARMS			GRAIN FARMS		DAIRY FARMS		SUGAR		RICE	COTTON
	Australia	Qld	Vic	Australia	NSW	WA	NSW	WA	NSW	Vic	Central QLD	Burdekin QLD	NSW	NSW
Carbon Price	\$25.36	\$25.36	\$25.36	\$25.36	\$25.36	\$25.36	\$25.36	\$25.36	\$25.36	\$25.36	\$25.36	\$25.36	\$25.36	\$25.36
Cost – Processor (\$)	\$2,282	\$2,990	\$1,410	\$1,424	\$2,663	\$2,167	\$4,209	\$9,728	\$7,434	\$7,212	\$101	\$93	\$6,159	\$5,868
Cost – farm (\$)	\$1,758	\$2,143	\$942	\$1,537	\$1,678	\$1,908	\$4,326	\$6,661	\$6,507	\$4,551	\$2,810	\$12,216	\$3,847	\$9,078
Cost Total (\$)	\$4,041	\$5,133	\$2,352	\$2,962	\$4,341	\$4,075	\$8,536	\$16,389	\$13,940	11,763	\$2,911	\$12,309	\$10,005	\$14,946
Cost change (%)	1.5%	1.4%	1.8%	1.5%	2.1%	1.4%	1.7%	1.8%	2.7%	2.8%	1.0%	1.2%	3.0%	1.0%
Income change (%)	-7.4%	-6.0%	-6.7%	-8.3%	-12.7%	-9.4%	-11.5%	-6.5%	-10.6%	-13.0%	-3.8%	-4.1%	-3.6%	-3.0%

(Source: The Australian Farm Institute as referred to by the National Farmers' Federation 2011b: 5)

According to the NFF, other countries acknowledge the importance of agriculture and therefore develop their climate policies to accommodate agriculture while prohibiting any extra costs added to farming entities. The NFF engaged with the government in talks and consultations regarding concerns of the new carbon tax impact on Australian farmers. This resulted in initiatives and concessions, namely:



- The agricultural sector would be exempt from a direct carbon tax levy.
- Fuel used for agricultural purposes would be excluded (as per previous section 4.5 above).
- Over a period of six years, \$429 million will be invested into research and development relating to carbon mitigation relating to agriculture.
- \$946 million will be invested over six years in biodiversity incentive development.
- An investment of \$150 million to assist food-processing manufacturers to become more eco-friendly in the future.
- \$250 million will be invested over six years by a CFI non-Kyoto carbon fund to sustain CFI credits not compliant with the Kyoto Protocol.

(National Farmers' Federation 2011b: 5)

#### **4.6.2 Political Effects on the Agricultural Community**

Before she was elected into power in the 2010 election, the Australian Prime Minister, Julia Gillard, said a government under her leadership would not introduce a carbon tax. However, when she came into power she introduced a carbon tax, contrary to her pre-election promises. This angered opposition parties whose members argued that it would damage the Australian economy and destroy the local economies of certain towns. Tony Abbot, of the opposition, vowed to repeal the tax if his party won the election. According to him it would “make every job less secure but it won't help the environment”. The tax caused public demonstrations in Sydney where “axe the tax” was chanted and early elections were demanded. Opponents noted that electricity costs would increase (ABC News 2012a). As Australian farmers form part of the Australian economy, these political developments undoubtedly affected them.

#### **4.6.3 Linkage with Chapter 2**

##### ***Principles of a good tax policy***

Firstly, it is evident that the Australian carbon tax does not comply with the *Economic Growth and Efficiency* characteristic of a strong tax policy. When the tax was repealed, the Australian government described it as an “unnecessary tax, which hurts businesses and families”. It is not an easy understandable tax (*Simplicity*), considering that it necessitated over one thousand pages of new legislation and the creation of new governmental agencies such as the Clean Energy

Regulator, at great cost. Furthermore, it does not comply with the *Economy in Collection* requirement seeing that compliance costs would run into \$90 million per year for large emitters. The *Economic Growth and Efficiency, Simplicity and Economy in Collection* principles are not complied with.

### ***Characteristics of an effective eco-tax***

As in the case with the carbon tax on fuel, the general carbon tax also targeted the pollutant (carbon and other GHG emissions) and polluting behaviour (the release of pollution in the air by the largest Australian polluters). Other policy instruments outside the tax existed that addressed distributional impacts such as tax break increases available to low-income households (see next heading). Therefore at least two characteristics are complied with.

### ***Earmarking of proceeds***

A portion of the proceeds would be utilised to improve renewable energy investments, energy effectiveness and low carbon substitutes. However, more than 50% of the income generated would be recycled back into the economy by means of tax breaks to households (with specific reference to low-income households) and larger family benefit payments. Furthermore, a portion of the proceeds would be used to assist economic sectors and workers to reduce the negative impact caused by the tax (Centre for Climate and Energy Solutions 2011:1). It is evident that only a portion of the eco-tax income would be specifically earmarked for pure eco-purposes.

### ***The double dividend hypothesis***

The general carbon tax in Australia would probably decrease the amount of carbon and other GHG emission pollution released into the atmosphere. More than 50% of the tax revenue would be recycled back into the economy, by way of a reduction in other taxes to assist households in reducing the negative financial impact of the eco-tax. It can therefore be argued that this tax partially comply with this hypothesis.

### ***Alternatives available***

The carbon tax impact will become noticeable by way of a “trickle down” effect. The carbon tax will cause higher energy prices payable by manufacturers of agricultural products (as well as

higher prices on normal commodities these manufacturers purchase from other businesses, which in turn, is also subject to the tax). All of these additional costs trickle down to farmers in the form of higher prices they must pay for agricultural inputs. Possible energy alternatives could include sourcing energy from renewable sources such as wind, sun and water. Another possibility is to use less energy. No real alternatives are available concerning higher prices of other non-energy inputs (feed, fertilisers, water, etc.) due to the carbon tax's escalating effect on suppliers' costs. To conclude: alternative energy options are available, but no alternatives for more expensive farming inputs.

#### 4.6.4 Lessons for the Future

- A carbon tax on carbons emissions is an “unnecessary tax, which hurts businesses and families” as per the Australian government’s official statement.
- Politicians should not backtrack on pre-election promises, especially where taxes are concerned, as they may soon find themselves ousted in following elections.
- The authorities should follow a proper, transparent consultation process before an eco-tax is implemented.
- If there is enough public discourse and pressure, it is possible to convince the authorities to scrap an unpopular tax.
- Before initiating a full-scale implementation of an eco-tax, the authorities could rather consider implementing a tax for a trial period in one province or region of a country. In doing this, fruitless costs relating to a full-scale implementation and subsequent retraction of a tax (if it is unsuccessful), could be limited.

#### 4.6.5 Summary

**General** – This section discussed the effects or expected effects of the Australian carbon tax on farming activities. Although the intention of this eco-tax seems noble, it was repealed by the Australian government (effective from 1 July 2014), shortly after a costly implementation, as noted in chapter 3.

**Effects** – Various financial effects were identified, including that the eco-tax will increase farmers electricity and indirect power supply costs. The costs of other farming inputs will also increase, which will erode farmers’ net income. All of this will diminish international as well as local competitiveness. Political effects identified include serious disagreements between political parties, public demonstrations and calls for early elections, therefore controversy and strong opposition.

**Chapter 2 linkage** – The *Economic Growth and Efficiency, Simplicity and the Economy in Collection* principles of a good tax policy are not complied with, as well as at least two effective eco-tax characteristics. It was only partially earmarked for pure eco-purposes and partially complied with the double dividend hypothesis. There are energy option alternatives available, but not for more expensive farming inputs.

**Lessons** – Numerous lessons were identified. The most important lesson could be the Australian government’s official statement that the tax was repealed because it “hurt” businesses. It therefore seems unwise for the SA National Treasury to consider implementing this eco-tax in SA, as businesses already struggle and unemployment must be addressed first (Business Unity South Africa 2015: 8-9). Similarly, the agricultural sector already experience difficulty to make ends meet due to electricity shortages, high electricity tariffs, drought, strikes, violent crime, etc. (refer to section 5.2 for more background on SA agricultural challenges).

## **4.7 AUSTRALIA: CARBON FARMING INITIATIVE**

The Carbon Farming Initiative forms part of the Australian Clean Energy Legislative Package that was introduced during 2011. Below, the possible impact on agriculture is discussed further.

### **4.7.1 Financial Effects on the Agricultural Sector**

Livestock farmers dealing with large manure quantities, for example, will be able to earn carbon credit income by the proper management of manure stockpiles. Piggeries, for example, already have an approved manure management methodology (set of instructions) which can be applied to measure a decrease in GHGs. Where piggeries used effluent lagoons to manage manure, cheap technology exists for purposes of utilising this farming by-product (covering the lagoons

and installing equipment capable of capturing and combusting lagoon gas). The lagoon gas can be utilised to warm piglet farrowing sheds and boilers and can be employed for electricity generation. Not only does this technology save farmers money, but also cuts emissions released by effluent lagoons and therefore brings about a win-win situation. According to industry experts, the carbon value of the above-mentioned activities are between AUD\$ 2,50 and AUD\$ 3,50 per carcass. This figure does not include prospective electricity savings (Australian Government 2012: 6).

#### **4.7.2 Other Effects on the Agricultural Sector**

Farmers will be able to apply for projects under the CFI scheme, where trees are planted for carbon abatement purposes and acts as carbon sinks which filters carbon out of the atmosphere for long-term storage in the structure of the tree. There are strict rules that must be followed to determine the amount of carbon abated in this manner. Over and above the carbon sink afforded by planting indigenous trees on exhausted farmland and the resulting financial benefits, other additional benefits exist for farmers. The correct blend of indigenous tree species planted in “shelter belt” patterns on farmland can increase lambing quantities by up to 15%, while simultaneously improving soil quality as indigenous trees increase nitrogen and nutrients in the ground. It also provides a larger natural habitat for native wildlife (Australian Government 2012: 4).

There are many success stories regarding other benefits. For example, near Canberra and NSW’s Southern Highlands green planting projects are used to repair damaged kraals. Lamb losses decreased and durable perennial grazing lands was established in Bungendore, NSW. The restitution of bio diverse vegetation as well as the reintroduction of indigenous flora next to waterways was successfully implemented at Arthursleigh in the Southern Highlands (Australian Government 2012: 4).

#### **4.7.3 Linkage with Chapter 2**

##### ***Principles of a good tax policy***

The CFI comply with several principles, including *Equity and Fairness* (all farmers and landowners alike are welcome to participate in the scheme on a voluntary basis and are treated the same) and *Certainty* (the guiding rules on how the incentive works, how to calculate it and how to redeem

credits are clear). It also includes *Economic Growth and Efficiency* (the tax incentive will assist farmers and therefore the Australian economy). Although the CFI is not a tax *per se*, it still complies with several principles relating to a good tax policy.

### ***Characteristics of an effective eco-tax***

One of the characteristics of an effective eco-tax is that it must target the pollutant or polluting behaviour and allow concessions only in exceptional circumstances. While the CFI is not a tax, it still manages to target pollutants (in this case GHG emissions) in the atmosphere. It achieves pollutant reduction by motivating farmers to follow green farming methods. Examples include improved livestock manure management or storing carbon in carbon sinks such as soil (see “no-tillage” in section 5.8.2) or in trees (see vegetation restoration in section 5.8.2). The CFI thus very successfully adheres to the “target of pollutant” characteristic.

### ***Earmarking of proceeds***

As the CFI is an incentive available to farmers, the Australian government did not earmark any tax proceeds for eco purposes.

### ***The double dividend hypothesis***

As explained above, the CFI will aid in decreasing the Australian GHG footprint by incentivising farmers to emit less harmful GHGs or store carbon. The first leg of the double dividend hypothesis will therefore be complied with. However, as this is an incentive and money will, at the end of the day, be earned by the taxpayer (as oppose to the government earning tax revenues), there will be no funds for the government to recycle back to reduce other taxes. The incentive therefore do not fully comply with this hypothesis.

### ***Alternatives available***

As the CFI is a tax incentive and not a tax, available alternatives are not applicable.

#### 4.7.4 Lessons for the Future

- With reference to the CFI success stories provided by the Australian government, it seems that this scheme provides a win-win outcome to an otherwise difficult situation. Farmers are keen to earn extra income in the form of carbon credits that can be sold on carbon markets, while the overall national Australian carbon footprint is significantly reduced.
- Furthermore, there are no negative consequences for government and the agricultural sector such as protests, riots, negative political publicity and the danger of farming communities going out of business due to unaffordable taxes. This GHG fiscal abatement model should therefore be investigated by other world governments, including SA.

#### 4.7.5 Summary

**General** – This section explored the effects or possible effects of the CFI scheme on Australian agricultural. The scheme is not a tax as such and can rather be classified as an incentive tax policy instrument.

**Effects** – Financial effects include additional income for farmers by way of carbon credits as well as electricity saving options. Other effects include improved soil quality and lambing quantities due to the planting of trees for carbon sequestration purposes.

**Chapter 2 linkage** – The CFI adheres to several principles of a good tax policy as well as the “target of pollutants” characteristic of an effective eco-tax. Earmarking of proceeds and alternatives are not applicable, as the CFI is a tax incentive. It does not fully comply with the double dividend hypothesis.

**Lessons** – The scheme’s win-win outcome regarding carbon footprint reductions for farmers and government, makes it an acceptable, powerful and practical tool to consider in the fight against global warming.

## 4.8 SWEDEN: MEAT CONSUMPTION TAX

In chapter 3 this eco-tax, which was suggested in Sweden, was introduced and discussed. The expected effects, should Sweden introduce this eco-tax, are investigated below.

### 4.8.1 Financial Effects on the Agricultural Sector

In a 2012 Swedish study by Sarah Säll and Ing-Marie Gren, the eco impact that a tax on meat will have on Swedish meat consumption, was explored. In the study, three different meats were considered namely beef, pork and chicken alongside three pollution production by-products namely GHGs, phosphorus and nitrogen. The study examined certain effects should taxes on the price per kg of meat be introduced, calculated at 26% on pork, 28% on beef and 40% on poultry in relation to 2009 prices. It shows that the meat products have a high income and own price elasticity and is complementary with regard to consumption. Concurrent implementation of eco-taxes on all three meats could possibly reduce GHG, phosphorus, ammonia and nitrogen emissions with at least 27%. In a scenario where only a single meat is taxed, a tax on pork gave the largest decrease in polluting emissions, mainly due to the high consumption complement factor (Säll & Gren 2012: 3).

Table 4.3 below provides results regarding the effect on consumer demand, if all three taxes are implemented simultaneously, as well as the effects if implemented separately on each meat product. The results reveal that if the eco-tax is applied on three meat products at the same time, demand is reduced much more than in a scenario where the tax is only applied on one of the meat products at a time. This result is explained by the high rate of cross price elasticity in absolute terms of the meat products (Säll & Gren 2012: 17-18).

**Table 4.3: Percentage decrease in meat demand from introduction of eco-taxes on all meat products or on only one meat product**

	Tax on all meat products %	Tax on beef %	Tax on pork %	Tax on poultry %
Beef	27	11.1	11.3	3.3
Pork	25	6.6	14.8	2.5
Poultry	47.4	12.7	18.5	16.2

(Source: Säll & Gren 2012: 17)



From the projected decrease in demand, it is evident that cattle, pig and chicken farmers' profits will be under pressure if demand decreases with 27%, 25% and 47.4% for beef, pork and poultry respectively. This may lead to meat producing farmers and related agricultural industries, which is not large enough to absorb the sudden drop in demand, to go bankrupt. Less meat-producing farmers may lead to job losses and food security concerns. Farmers who manage to survive will have to increase their prices to compensate for a loss in profit resulting from a sudden drop in demand, although this may be very difficult as farmers are mostly "price takers". They, however, may be able to survive if they diversify their operations and this possibility is discussed further below. If farmers are able to successfully raise their prices it may also contribute to food inflation alongside the increase in the price of meat due to the tax. The concept "price takers" means that farmers cannot recover higher input costs and taxes from customers, as they are obliged to sell their produce at set prices at the time it is delivered at the market or sold (The New Age Online 2012; Mail & Guardian 2013a).

#### **4.8.2 Political Effects on the Agricultural Sector**

In 2015, a petition was launched by a campaign group in Sweden called the Swedish Food and Environment Information (SMMI), to implement a meat tax. Over 7 000 signatures were collected. The petition also gained support from a number of politicians, which made the possibility to levy such a tax in future stronger although, in practise, it was still unlikely to be implemented in the near future, according to the SMMI. The Swedish Minister of Strategy and Future Issues was one of the politicians drawn by the idea and she subsequently formed a working group to examine such a tax further (Global Meat News.com 2015).

#### **4.8.3 Other Effects on the Agricultural Sector**

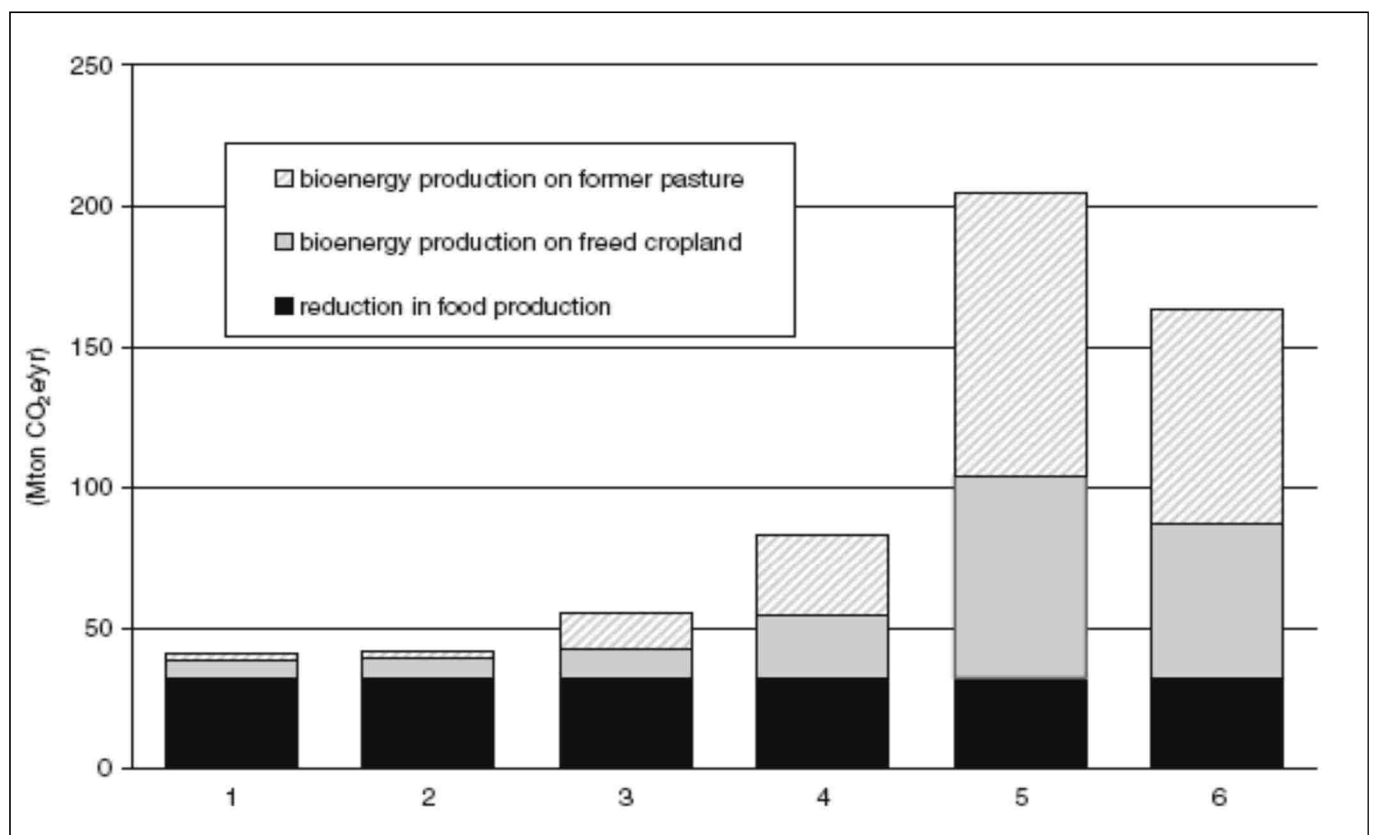
Another Swedish study investigated the effects that a 60 Euro per ton CO<sub>2</sub>-eq tax will have on Swedish Agriculture. One of the ideas put forward is that land no longer utilised for animal rearing due to a decrease in meat demand, brought on by the eco-tax, is alternatively utilised for bio-energy purposes. This would result in an additional decrease in GHG emissions. Six different scenarios were investigated to determine the quantum of the decrease in GHG emissions due to biomass instead of fossil fuels being used, namely:

- Rapeseed is grown to create biodiesel to substitute diesel used for transport.

- Wheat is grown to create bioethanol to substitute petrol used for transport.
- Lignocellulosic crops used in the production of bioethanol transportation fuel replace food crop growth.
- Lignocellulosic crops used in the production of synthetic diesel transportation fuel replace food crop growth.
- Lignocellulosic crops are used to replace oil for heat purposes.
- Lignocellulosic crops are used to replace coal for power purposes.

(Wirsenius *et al.* 2010: 9, 17)

**Figure 4.1: GHG emission decrease scenarios due to changes in food and bio-energy production caused by taxes, on land previously used for food production**



(Source: Wirsenius *et al.* 2010: 17)

Figure 4.1 illustrates GHG emission decrease scenarios due to changes in food and bio-energy production caused by taxes, on land previously used for food production. GHG weighted consumption taxes, which corresponds to 60 Euros per ton CO<sub>2</sub>-eq, were used for the results. Bars 1 and 2 above reflect reductions in emissions for conventional transport biofuels, namely wheat-ethanol and rapeseed-biodiesel. Reduction results for transportation fuels manufactured from lignocellulosic crops are shown in bars 3 and 4. Bar 5 represents biofuel for power results

where coal-based power is substituted by using lignocellulosic crops for power generation. Bar 6 pertains to biofuel for heat where oil-based heat is substituted by utilising lignocellulosic crops for heat (Wirsenius *et al.* 2010: 17).

Introduction of GHG taxes may thus lead to radical changes in the way land is used by farmers. Furthermore, land opening up due to smaller livestock herds, can alternatively be used to grow vegetables. Plants are more efficient in producing nutrients than animals, which will assist in a more sustainable food production model. Planting vegetables would help support the vegetable industry, reduce vegetable prices (economy of scale) and decrease GHG emissions from cattle and other farm animals (The Local 2015). Meat consumption tax proceeds may also be used (earmarked) to subsidise food sources with a lower carbon footprint per the Chatham House study (The Telegraph 2015). A meat eco-tax, combined with effective labelling, will enable consumers to aid sustainable food production by avoiding meat types that have an adverse eco-impact. A possible negative effect of such a tax may be that meat production is moved to a low eco-tax jurisdiction if the tax is levied directly on producers (EurActive 2013).

#### **4.8.4 Linkage with Chapter 2**

##### ***Principles of a good tax policy***

If the meat consumption tax is levied at consumption level (at the supermarket for instance), it could arguably comply with various characteristics of a good tax policy. This includes *Equity and Fairness* (the tax levied equally on similar taxpayers, namely the customers buying and consuming meat) and *Convenience of Payment* (paid at the convenience store where it is bought and therefore the time and payment method suits the taxpayer). It also adheres to the *Economy in Collection* principle (lower collection costs if the supermarket collects the tax from the end consumer and pay it over to the revenue authority) as well as the *Transparency and Visibility* principle (through effective labelling, the taxpayer becomes aware of the tax and why it is implemented). It therefore can comply with several principles. However, if it is set unrealistically high, causing a substantial decrease in meat demand that forces meat farmers to stop their operations on a large scale, the tax will not comply with the *Economic Growth and Efficiency* principle. On the other hand, if the tax is well designed, it can comply with aforementioned principle.

### ***Characteristics of an effective eco-tax***

The pollutant behaviour is the consumption of meat, derived from livestock. It places pressure on water and forest resources (deforestation to clear land for grazing) and causes GHG emissions. This pollutant behaviour is correctly targeted by the eco-tax. Low-income households may be adversely affected and therefore, less luxurious basic meat types, such as chicken, can possibly be exempted from the said tax. This will ease negative distributional impacts. If there is effective labelling and a public consultation and awareness campaign beforehand (such as the Swedish petition project, for example), the effective communication characteristic will be complied with. Several characteristics of an effective eco-tax is therefore embodied in this tax.

### ***Earmarking of proceeds***

It is possible to earmark proceeds for specific eco-purposes, such as promoting or subsidising the production and consumption of fruits and vegetables, which carries a lower carbon footprint as discussed above. The proceeds can also be earmarked for purposes of promoting the manufacturing of biofuel on land that becomes vacant due to less livestock. Therefore earmarking is definitely possible for meat consumption tax proceeds.

### ***The double dividend hypothesis***

If implemented correctly, a meat consumption tax would result in less pressure on water and forest resources as well as less GHG emissions. Fossil fuel pollution will decrease further if land used for livestock is instead used for biofuels. The first leg of the double dividend hypothesis is therefore complied with. If the tax is properly designed, tax proceeds could possibly be used to lower taxes applicable on meat producing farmers, such as income taxes or VAT paid on farming inputs. Therefore, in theory this eco-tax could comply with the double dividend hypothesis.

### ***Alternatives available***

Alternatives could include meat production with a smaller carbon footprint (such as white meat) or to possibly start producing biofuels on vacant land due to smaller herd sizes and a decrease in meat demand. Large-scale vegetable farming rather than “meat farming” could also be considered. Therefore, there are numerous alternatives.

#### 4.8.5 Lessons for the Future

- A tax at consumption level in the meat production chain may be easier and more cost effective to administrate with less variables to consider than a tax imposed on farm level calculated on each farm animal, where monitoring and technology constraints are more prevalent.
- There may be a smaller resistance to this tax by farmers, as they will not immediately feel the effect in the form of an increase in input costs or direct taxes. They will rather feel the influence as a decrease in demand and/or as a reduction in the obtainable price for livestock sold to slaughter houses due to a decrease in demand.
- Livestock farmers can possibly reduce the negative effects of a reduction in meat demand resulting from the tax by planting and selling crops that can be used to produce, for example, bio-diesel on land that becomes available.

#### 4.8.6 Summary

**General** – This section discussed an eco-tax levied on meat consumption at retail level.

**Effects** – Financial effects could include a drastic decrease in meat demand, leading to farmers going out of business, job losses, food inflation and food security concerns. Political effects included a petition lobbying for the eco-tax. Other effects could include an increase in biofuel production by farmers, increased vegetable cultivation and meat production being moved to lower tax jurisdictions, if it is levied at production level.

**Chapter 2 linkage** – The meat consumption tax comply with several of the principles of a good tax policy as well as characteristics of an effective eco-tax. Earmarking of proceeds is possible. In theory, it could also fully adhere to the double dividend hypothesis. There are alternatives available for taxpayers if this tax is levied.

**Lessons** – Three important lessons were identified which should be kept in mind by authorities when designing a meat related tax.

## **4.9 UNITED NATIONS: COW FLATULENT TAX**

This section will focus further on the various possible effects of the cow flatulent tax, which was proposed by the United Nations.

### **4.9.1 Financial Effects on the Agricultural Sector**

The possible effects which the UN cow flatulent tax may have on agriculture can be inferred by referring to governmental and public commentary in New Zealand and the USA, where the same tax type was proposed a couple of years earlier. According to the then president of the Federated Farmers in New Zealand, Tom Lambie, the proposed tax would cause further financial strain on struggling farmers, as they received no subsidies or protection in an already distorted global market. It was estimated that the new eco-tax could cost the typical New Zealand farmer, on average, NZ\$300 per annum (The Guardian 2003).

When the Environmental Protection Agency (EPA) suggested such a tax in the USA, a notice circulated by the American Farm Bureau Federation informed members that “costly and burdensome permits” were in the pipeline and that the projected cost of \$175 per cow per annum would cause many farmers to go bankrupt. Various local chambers of commerce also did their own cost calculations at state level and in North Dakota an amount of \$24 995 per annum for a regular dairy farmer was projected. Ron Sparks, the Commissioner of the Department of Agriculture in Alabama, called the idea “outrageous”. However, the EPA noted that the Clean Air Act did not provide it with a general authorisation to impose taxes or other charges specifically aimed at GHG emissions (The Wall Street Journal 2008). By using federal agriculture department figures, the American Farm Bureau Federation could estimate the yearly tax that farmers would have to pay under such a scheme. Farms with more than 200 pigs or 50 beef cattle or 25 dairy cows would have to pay a tax per annum of approximately US\$20 per pig, US\$87,50 per head of beef cattle and US\$175 per dairy cow. According to various role players, the suggested tax would bankrupt cattle farmers in the USA (CBS News 2008), which may ultimately lead to job losses.

The estimated price increase for the consumer (assuming the farmer is able to adjust his asking price, as farmers are normally price takers) can be calculated with the information below. In 2008, the average annual US Choice beef retail price was US\$4,33 per pound (United States Department of Agriculture 2015). The average market weight for beef cattle was between 1 200 and 1 400 pounds. The average age of beef cattle was between 18 and 22 months when market

weight was reached (Cattlemen's Beef Board and National Cattlemen's Beef Association 2009: 1). A 1 200 pound steer yields approximately 750 pounds of carcass from which approximately 500 pounds of trimmed and deboned meat can be obtained (The University of Tennessee - Institute of Agriculture [s.a.]: 11). With this information, a rough calculation can be made on the impact of the estimated eco-tax of US\$87,50 per head of beef cattle per annum, using 2008 values.

Assuming a 1 200 pound steer of 18 months, the eco-tax would be  $US\$87,50 \times 1.5 = US\$131,25$  over the steer's life span. From the 1 200 pound steer, approximately 500 pounds of meat can be obtained with a retail price of US\$4.33 per pound in 2008, therefore US\$2 165 for the 500 pounds of trimmed and deboned meat can be realised. It is furthermore assumed that the full US\$131,25 eco-tax is absorbed by the 500 pounds of trimmed and deboned meat and none of it by any other off-cuts and by-products obtained from the steer. This implies that in 2008 the price for the meat consumer would have increased by 6.06% ( $US\$131,25 / US\$2165$ ).

More recently, in 2014, the average annual US Choice beef retail price was US\$5.97 per pound (United States Department of Agriculture 2015). If the original proposed value of US\$87,50 for each head of cattle in 2008 is adjusted by 5% per year times 8 years for purposes of arriving at a 2016 comparable value, an adjusted tax value per head of beef cattle of US\$122,50 ( $1 + (8 \times 0.05) \times US\$87,50$ ) is obtained for 2016. This means that over a steer's average lifespan of 1.5 years, the tax will equate to approximately US\$183,75 in 2016 terms as opposed to US\$122,50 in 2008.

#### **4.9.2 Political Effects on the Agricultural Community**

As in the case of the financial effects, discussed above, the possible political effects the UN cow flatulent tax might have on agriculture can be inferred by referring to governmental and public commentary of New Zealand and the USA. When a cow "fart tax" was first proposed in New Zealand in 2003, it caused an outcry from the farming community. Almost half of New Zealand's farmers were against the tax and they made this clear by signing a petition 64 000 signatures strong. Farmers also blocked the streets of Wellington with tractors in protest (The Guardian 2003). The president of the Federated Farmers said, "This decision is yet another example of the government's desire to act in the wider public interest but expecting rural New Zealand to pay for its largesse" (BBC News 2003).

When the Environmental Protection Agency (EPA) in the USA alluded to the implementation of a cow flatulent tax in 2008, they were overwhelmed with letters from ranchers and farmers cautioning the agency of disastrous consequences. Not only did the EPA's remarks not sit well with the agricultural community, but it also drew strong criticism from other governmental institutions. The US Agricultural Department said if the EPA regulated livestock emissions, it would be expensive and require too much operating permit red tape for various agricultural activities, including dairy farmers with more than 25 cows (The Wall Street Journal 2008).

Thus, from above New Zealand and USA commentary, it could be inferred that the effect of the suggested UN cow flatulent eco-tax on UN member states could include resistance (petitions, farmers blocking traffic, etc.) from the farming communities in those UN countries. It may even lead to interdepartmental disputes within the same government, such as where the US Agricultural Department strongly disagreed with the views of the EPA.

#### **4.9.3 Other Effects on the Agricultural Sector**

An interesting development of the failed 2003 New Zealand cow flatulent tax is that where other countries concentrated on electric cars, green energy and other greenhouse gas mitigating technologies, New Zealand scientists approached global warming from a slightly different angle, by experimenting with different dietary drugs to reduce livestock flatulence and belching. The New Zealand Ministry for Primary Industries offered \$150 000 for a one year study to investigate the possibility of mixing lovastatin into sheep and cattle feed to lower emissions. Lovastatin is a natural occurring chemical found in rice-straw and fungus and was developed in the 1980s into a "last resort" drug for people with high cholesterol (Stuff.co.zn 2014).

In 2013, a drug research company concluded that lovastatin might have possible applications as a methane reducing dietary supplement for livestock. This is an important observation, as almost half of New Zealand's GHG emissions are estimated to originate from livestock. This is far more than the worldwide average of developed countries. Important requirements of the experiment were that meat products' quality and quantity may not be compromised, that no traces of lovastatin remain within the meat or milk and that the farm animals do not suffer because of new medication (Stuff.co.zn 2014). The study commissioned by the New Zealand government was named "Using naturally-produced lovastatin to reduce methane emissions: evaluation of delivery technology in different ruminant production systems" (New Zealand - Ministry for Primary Industries 2014). According to the latest update posted, lovastatin does indeed decrease



methane emissions deriving from ruminants (Research Gate 2016). Therefore, the large-scale use of lovastatin in UN countries' cattle feed could possibly occur, should a cow flatulent tax be introduced in these countries.

A study conducted by Chatham House found that soybeans grown even in the least emission effective systems still have a smaller harmful emission footprint per kilogram than that of beef. It further provides a very good source of protein and micro-nutrients. Soybeans produce approximately six times less emissions than beef during its life-cycle as can be seen in the table below (Wellesley, Happer & Froggatt 2015: 13). Therefore, consumers in UN countries could be motivated to change their purchasing patterns and to consider buying alternatives to meat products such as soy-related products.

**Table 4.4: Emissions intensity and protein content of selected animal products and soybeans**

	Average CO <sub>2</sub> e kg/kg protein	Average protein content g/100g product	Average CO <sub>2</sub> e kg/kg product
Beef	291.2	19.4	56.6
Small-ruminant meat*	189.2	16.6	31.3
Pork	51.9	16.9	8.8
Chicken meat	40.3	17.4	7.0
Eggs	31.4	12.6	3.9
Cattle milk	83.6	3.2	2.6
Soybean**	48.8	36.5	17.8

(Source: Wellesley *et al.* 2015: 13)

#### 4.9.4 Linkage with Chapter 2

##### ***Principles of a good tax policy***

The cow flatulent eco-tax adheres to the *Equity and Fairness* principle (similar taxpayers, namely meat producing farmers, are all taxed on the same basis, i.e. per head of cattle) as well as the *Certainty* principle (each head of cattle is taxed, which is a fixed certain method of levying the tax on the taxpayer). It also complies with the *Simplicity* principle (the tax is calculated by multiplying the designated rate with each cow), although the exact amount of GHGs a cow releases for purposes of calculating the designated rate may be complicated. It could possibly not adhere to the *Economic Growth and Efficiency* requirement (a country's economic expansion may be

hindered if farmers close their businesses and food security is at risk). The *Minimum Tax Gap* principle is also not met (farmers in UN countries may not comply with the tax requirements due to a cow “fart tax” being perceived in a sarcastic light and immense negative public perception, as evident from previous sections). Several principles are therefore complied with and several are not complied with.

### ***Characteristics of an effective eco-tax***

The pollutant is targeted (GHGs originating from the cow), by levying an eco-tax on the source of the pollution (the cow). In addition, the tax rate can be set in such a manner that it is proportionate to the environmental harm done, by ensuring that the amount of GHGs released by cows is accurately measured beforehand after which a reasonable tax rate on each unit of GHG is applied. However, it can also be argued that the rationale of taxing cow “farts” and “burps” (or at least the public perception thereof) are flawed and not plausible. The high public opposition could indicate the lack of an effective communication process to sway opinion. It can therefore be argued that the tax adheres to some of the characteristics and not to others.

### ***Earmarking of proceeds***

Proceeds could fund initiatives such as educational programmes, research into new technologies as well as financial aid programmes to assist farmers investing in new technologies, which would help lower GHG emissions from livestock. The lovastatin dietary livestock supplement project is an example of one such initiative where technology and research aid in investigating possible lower GHG emission alternatives. In theory, earmarking of the tax revenue should therefore be possible.

### ***The double dividend hypothesis***

The successful introduction of a cow flatulence eco-tax will aid the environment by assisting in a decrease of GHGs emitted by cows, as explained above. Thus, the first leg of the double dividend hypothesis will be satisfied. The second leg pertaining to a decrease in other taxes brought about by the eco-tax introduction or increase, can be achieved if UN countries design the tax in such a way that the eco-tax is used to lower other taxes (for example labour taxes applicable on farm workers). Therefore, as in the case of the meat consumption tax, the double dividend hypothesis could, in theory, be complied with if the eco-tax is properly designed.

## **Alternatives available**

Farmers could possibly try to use feed that subdue GHG emissions originating from cows. Farmers could also consider reducing cow herd populations and rather invest in chicken farming. Other types of meat such as white meat, with a lower carbon footprint, can also be produced. Therefore, there are several alternatives available.

### **4.9.5 Lessons for the Future**

- In New Zealand and the USA, this tax was quickly dismissed due to public (and in certain cases inter-governmental) pressure. The chances of a successful rollout of this eco-tax in multiple countries simultaneously, as suggested by the UN, without incurring the wrath of the agricultural sectors, are slim.
- Considering public perception, it would therefore be wiser to attempt levying the tax, or a variation of it, higher up in the supply line, for example, at the end-user super market level as in the case of the Swedish meat tax.
- This eco-tax might hurt agriculture and risk global food security, as per the warnings of pressure groups.

### **4.9.6 Summary**

**General** – This section discussed the possible effects a cow flatulent tax could have on the agricultural sector. Due to the comical and sarcastic stigma clinging to a cow “fart tax” as well as the very real possibility of putting farmers out of business, world governments as well as the SA government, should consider all other options and tread lightly before implementing such a tax.

**Effects** – Under financial effects it can be said that the eco-tax may lead to additional financial strain on farmers (in the example over a steer’s average lifespan of 1.5 years, the tax will equate to about US\$183,75 in 2016 terms), it may bankrupt farmers and also lead to job losses. Political effects included public protests from farmers, petitions and intergovernmental disputes.

**Chapter 2 linkage** – Several principles of a good tax policy are complied with, although there are also several that are not complied with. The tax adheres to some of the effective eco-tax characteristics, but several are not met. Earmarking of the tax revenue is, in theory, possible and there are several alternatives available as well. The double dividend hypothesis could be complied with, if the tax is properly designed.

**Lessons** – Three lessons for the future were identified which should be carefully considered.

#### **4.10 CHAPTER SUMMARY**

The financial and other effects (or possible effects) that the selected eco-taxes will have on the agricultural sectors of the applicable foreign countries, were examined. Certain important chapter 2 concepts were discussed as they apply to each specific tax. Lessons to keep in mind for the future were also provided. In many cases, problems or failures can be attributed to authorities' inadequate initial research and planning, a lack of proper public participation and communication with the affected parties and a hasty "steam-roller" implementation approach. This may be due to governments falling over their feet to benefit from the new income streams, which eco-taxes promise. As such, they utilise tactics where ill-considered and unpopular eco-tax legislation is "pushed" through to expedite higher revenue and to try to minimise resistance.

A few success stories were identified such as the Climate Change Levy and Climate Change Agreement scheme in Britain as well as the Australian Carbon Farming Initiative. In Sweden, a decrease in meat consumption with a parallel increase in the growth of bio-fuel crops could also lead to successes. It is possible to implement the meat tax successfully without incurring the wrath of farmers, if farmers could be compensated for a loss in income by proceeds from the sale of biodiesel crops. The next chapter will consider in more depth, the possible effects of the eight identified taxes on SA agriculture, should it be implemented.

## **CHAPTER 5**

### **THE EFFECT NEW ECOLOGICAL TAXES WILL HAVE ON THE SOUTH AFRICAN AGRICULTURAL SECTOR**

#### **5.1 INTRODUCTION**

In chapter 4 the effects of the identified eco-taxes on the agricultural sectors of countries where it was already implemented were discussed. Where eco-taxes were still in the process of being implemented or in the proposal phase, the expected effects they might have on foreign agriculture, were investigated. This chapter focuses on the probable effects on SA agriculture, if these eco-taxes are implemented in SA. However, the government must also consider the current challenges of SA agriculture before deciding whether to implement an eco-tax. Therefore, this chapter commences with a brief summary of SA agricultural challenges.

#### **5.2 CURRENT SOUTH AFRICAN AGRICULTURAL CHALLENGES**

##### **5.2.1 Eskom and Unreliable Electricity Supply**

Most SA farmers are highly dependent on electricity, where disruptions in electricity supply may have a detrimental impact on the farmer's activities and profit margins. For instance, Eskom's load shedding hinders farmers from irrigating their crops, with a corresponding reduction in yield and income. The electricity supply problems therefore jeopardise the large volumes of food SA farmers supply, causes once profitable farming operations to run at a loss and may lead to retrenchments (Fin24 2014b).

According to a presentation made in July 2016 by the then Eskom CEO, Brian Molefe, Eskom did not experience load-shedding problems for 11 months and no load shedding was envisaged until March 2017, if all went well (Fin24 2016). Guaranteed electricity supply is crucial to farmers. For chicken farmers, as an example, load shedding is harmful to the birds' wellbeing and can result in serious health risks. Electricity is required to render chickens unconscious prior to decapitation.

When processing is interrupted, all equipment needs to be sterilised and hundreds of tons of chicken meat must sometimes be discarded at medical waste sites (Fin24 2015b).

Intermittent power supply has an adverse effect on fruit-canning operations in the Western Cape. Apricot canning can only be done within a three to four week window period, during which roughly 2 000 tons of apricots are processed every day. Perishable products necessitate the maintaining of a cold chain, which requires electricity. When the cold chain is under pressure due to load shedding, it can have a detrimental economic effect on towns such as Tulbagh and Ashton, where the fruit-canning sector is the leading job provider. The quality of the canned fruit is negatively affected when the cold chain is broken and the sustainability of the whole industry is put at risk (Fin24 2014b).

The competitive international export markets demand high quality products, which adhere to stringent international food quality control standards. Poor quality will lead to a decrease in demand, as customers are not inclined to buy inferior quality products. This will apply to all agricultural exports where products require electricity to sustain freshness, safety and quality. If products are sub-standard, the sales price must be dropped to compensate for inferiority, leading to smaller profit margins. In extreme cases, SA products could be banned by other countries. Poor electricity supply issues is, however, not the only electricity related problem which farmers grapple with, as will be seen from the next section.

### **5.2.2 High Electricity Tariffs**

Western Cape Farmers objected to Eskom's 2016 proposed electricity tariff increases. They stated that a 16.6% increase will permanently damage the struggling wheat sector and will lead to additional costs of millions of rands for table grape and pome fruit producers. The severe drought already brought wheat farmers to their knees, resulting in no wheat being harvest in the West Coast area. In the Caledon district (responsible for 47% of yield), wheat was still produced by means of irrigation that requires electricity. Pome fruit, stone fruit and table grapes also need an unbroken cold chain requiring electricity (Business Day Live 2016a).

Carl Opperman of Agri-Western Cape stated that the National Energy Regulator (Nersa) must think twice before approving Eskom's application as it is "a threat to the viability of the wheat industry." The Cape Chamber of Commerce agreed with Agri-Western Cape's view. They stated that Eskom should first get their house in order and curb high costs, before trying to force the

public sector and businesses to pay for their past mistakes, poor management and poor planning (Business Day Live 2016a).

The higher than normal 16.6% proposed increase for the 2016/2017 period, is because Eskom needs to recoup overspending of R8 billion, attributable to the excessive use of diesel-fired turbines. Furthermore, they wish to compensate for unearned revenue of R11 billion, due to lower than anticipated electricity sales (Business Day Live 2016a). According to Eskom, the eventual average electricity price increases were 19.13% for 2011/2012, 16.35% for 2012/2013, 7.39% for 2013/2014, 7.67% for 2014/2015 and 11.46% for 2015/2016 (Eskom 2016). It may not be possible for Eskom to ask for lower annual increases in future, due to short and long term structural supply problems (see next section), which necessitates additional capital funding and resulting higher electricity prices.

### **5.2.3 Current and Long Term Electricity Generating Structural Problems**

South African Institute of Race Relations (IRR) is of the opinion that Eskom will be facing an enormous 18 000 MW generating capacity shortfall by 2030, projected on a 3% GDP growth rate per year. Already, this growth rate is insufficient to sustain the country's population growth. The generating capacity of eight Koeberg or four Kusile power stations equals 18 000 MW. To add insult to injury, various coal based power stations are overwhelmed and will have to be replaced before 2030 (SA Institute of Race Relations 2015: 10-11). The IRR describes Eskom's inability to provide adequate and reliable electricity as a national crisis (SA Institute of Race Relations 2015: 1). Reasons cited for current supply problems include:

- The government's past attitude was that Eskom would just "magically" continue producing enough electricity (SA Institute of Race Relations 2015: 6).
- Eskom fell victim to the government's transformation play-ball, which diverted the focus from its main function of ensuring sufficient electricity supply to the country (SA Institute of Race Relations 2015: 6-7).
- Eskom's poor pricing structure since 1994. In the early years after transformation, Eskom did not charge enough for electricity due to pressure from the new government to keep electricity affordable for all. This prevented Eskom from building new power plants, as this would require substantial price increases (SA Institute of Race Relations 2015: 11).

- The construction of the Medupi and Kusile power stations are years behind schedule. This is due to numerous factors such as rushed through construction contracts, labour unrest at sites and a serious shortage of artisans. Evidently, Eskom also “unlearned” how to build new large-scale power stations, as it was decades ago since a major power station was constructed (SA Institute of Race Relations 2015: 7).

The IRR suggested various solutions:

- The management of Eskom’s transmission system should be entrusted to an ISMO (independent system and market operator).
- Third parties must be allowed to produce and sell electricity on a commercial basis inclusion into the national grid.
- Private electrical engineering companies, rather than municipalities, should be responsible for electricity distribution. These companies will compete with each other with regard to electricity supply price and effectiveness to the benefit of the consumer.
- In future, electricity should only be derived from eco-sustainable energy sources that are scientifically and commercially viable.
- Eskom must revert to its prior status as an independent engineering company, with a single purpose to provide dependable electricity and to recruit only on qualification and experience.

(Fin24 2015a)

According to the IRR, alternative sources of clean, commercial viable energy are:

- Nuclear energy - Although politically controversial, nuclear energy has the safest record of any source of energy. It is cheap, has no CO<sub>2</sub> emissions, nuclear waste is small and stable and can be stored safely, reactors can be built relatively fast, it is sustainable and it has a high load factor (i.e. real versus theoretical electricity production at a power plant). Drawbacks include nuclear weapon proliferation, public perception (nuclear energy is incorrectly perceived as expensive, dangerous and unclean) and the risk of large-scale corruption with regard to the nuclear deal between SA and Russia.
- Hydroelectricity and gas turbines – These sources are reliable, proven, cost-effective and sustainable.

(SA Institute of Race Relations 2015: 17-18)



Besides electricity problems, there are other challenges SA farmers face. The next section will discuss uncertainties relating to land issues.

#### **5.2.4 Uncertainty regarding Expropriation of Land**

A proposed plan, by which the government seeks to effectively disown 50% of farmers' land and award it to workers, emerged during August 2014. This policy paper was met with fierce resistance from the Transvaal Agricultural Union (TAU) stating that SA farmers refused to finance 50% of farm-related land reform, as it was unjust and unfair to farmers. They also stated, "Farmers do not owe anyone anything. Farmers did not steal land.", and that the government should finance land reform if they choose to pursue it. They should not expect farmers to do so on their behalf. According to the TAU, the proposed plan was disguised nationalisation, which would be the quickest way to cause a full-scale famine in SA. AgriSA warned that these plans were possibly unconstitutional, impractical, could cause disinvestment in the sector and could destroy food security (Fin24 2014a).

The plan, detailed in a document called the "Final Policy Proposals for Strengthening the Relative Rights of People Working the Land", will give considerable rights to farm workers, which in practise means commercial farmers will lose half of their farms. The government will pay for the 50% portion of the farm disowned. However, the money will not go to the previous owners of the farms, but will rather be placed into a trust for advancing the farm to the benefit of all shareholders. Shares will be allocated to farm workers on a basis of number of years employed as well as their historical contribution in expanding the farm (Fin24 2014a). The share value will be determined by the market value of the land. If the worker receive 10% share equity, the value of the shares will be determined at 10% of the farm's market value at that time (South Africa - Department of Rural Development & Land Reform 2013: 31).

According to AfriBusiness, the proposed plan poses a threat to other SA business owners. This is because civil and ownership rights are inextricably intertwined. AfriBusiness is of the opinion that scrapping or deteriorating property rights will in the end, pave the way to further human rights violations. Farmers are not merely landowners but also business owners. Therefore, the ratification of this policy paper will create a legal precedent in which government could intervene to redistribute any business assets to the employees of that business. Pieter Mulder of the

Freedom Front Plus noted the proposed plan was ill considered, would not solve the land ownership problem but would rather annihilate food security (Fin24 2014a).

In separate developments, the so-called land expropriation bill, which has been in the pipeline since 2008, was approved by parliament on 26 May 2016. It aims to redistribute land from white minorities to the black majority. The bill will allow a government adjudicator to determine the value of the land targeted for expropriation and will remove the willing-seller willing-buyer land reform principle. Farming groups stated that these plans might negatively affect investment and production, taking into consideration the extended drought that plagued SA. They also expressed fears that SA might become a second Zimbabwe and criticised the bill for being unclear regarding practical implementation (Reuters 2016a).

On 26 July 2016, President Jacob Zuma required clarity from parliament regarding certain issues contained in the bill, before he was prepared to sign it into law. Some opposition parties branded the bill unconstitutional. Continued uncertainty caused by the proposed bill was undermining confidence in the country's economy, which was under pressure due to a looming recession and credit rating downgrade (Reuters 2016b). The next section will discuss weather related problems that SA farmers have lately experienced.

### **5.2.5 Drought and El Nino**

In January 2016, the SA Weather Service confirmed that 2015 was SA's driest year ever recorded and that there was no indication the drought would be broken soon. It was aggravated by strong El Nino weather patterns, causing wet conditions in east Africa, with drier conditions in Southern Africa (News24 2016c). El Nino increases the ocean's surface temperature in the equatorial Pacific, which results in abnormal droughts in certain world parts with simultaneous heavy rains in other parts (News24 2016a).

Africa's food security is already under threat and about 30 million people will be affected by the current drought in Southern Africa. In SA alone, maize production decreased by 30%. Due to El Nino, farmers are expected to struggle even more to survive in 2016, as many farmers would still be recovering from the 2015 drought. Nearly 11 million children may be affected by a threatening famine, water scarcity and diseases in Southern Africa as a result of the harsh El Nino weather patterns (News24 2016a). The devastating drought has left approximately 42% of commercial SA farmers in a very difficult financial position, with many considering selling their farms (Business

Day Live 2016c). SA farmers who desires to leave the farming industry may very well be motivated to eventually do so, with reference to the discussion in the next section.

### **5.2.6 Violent Crime**

On 23 December 2015, AfriForum reported 270 farm attacks in SA in 2015 during which 62 murders occurred. The statistics were compiled and verified by AfriForum and the TAU (IOL 2015). AfriForum attempted to force the government to treat farm murders as a priority and to develop safety networks in farming communities. In January 2016, the SA Police Service finally declared farm attacks and murders a priority crime and the deputy CEO of AfriForum, Ernst Roets, classified this as “a major step in the right direction”, (Times Live 2016). Economic consequences of farm attacks may include farmers selling their farms due to high crime levels and safety considerations. This, in turn, causes a loss of productivity and unemployed farm workers. In addition, workers will need to relocate as many of them live on the farm being sold (AfriForum 2015: 14). Farmers also have to deal with various financial related problems which is discussed in the sections to follow.

### **5.2.7 Exchange Rate Fluctuations and Other Economic Factors**

The Rand fell to its lowest level against the US dollar in December 2015, devaluating to more than R16 for US\$1. One of the main reasons cited for the devaluation was the finance minister fiasco (Nene Gate). Other causes for the rapid depreciation included the lower growth rate in China’s economy, the Greek economic crisis, low economic growth in SA, a sovereign credit downgrading risk, electricity supply problems and an expected increase in US interest rates. A weak Rand will in turn lead to higher interest rates as the Reserve Bank tries to curb inflation, resulting from higher prices of imported goods and services. Therefore, the cost of borrowing (debt) will be higher for farmers (Farmer’s Weekly 2016).

A weak Rand may benefit certain farmers, while affecting others negatively. In the absence of low international oil prices, a weaker Rand constitutes higher diesel and other fuel prices for farmers. Fruit farmers are the largest exporters of agricultural products in SA and will benefit from a weaker Rand, as higher selling prices are realised on international markets. Agricultural import sensitive industries (such as dairy) will also benefit, as they will be protected from low-priced imports. A falling Rand will be detrimental to livestock farmers as the cost of grain will increase. Due to the current drought and the Rand that is weaker against major currencies, SA is

experiencing grain shortages and more grain must be imported at a higher cost (Farmer's Weekly 2016). The weak Rand may lead to interest rate hikes, which is another challenge for SA farmers, and will be discussed in the next section.

### **5.2.8 Interest Rate Hikes and Access to Finance**

SA commercial farmers were negatively affected by interest rate hikes announced in November 2015. According to Dawie Maree (Head of Information and Marketing, FNB Agriculture), these farmers already struggled due to the poor Rand and extreme drought that caused higher input costs and greater debt levels. Livestock farmers would be affected the most, as some of their stock would have to be sold to settle debt and therefore they would be unable to divest further. Affording farm feed would be challenging for farmers with limited disposable income. Because of the poor economic situation, the demand for agricultural commodities was also expected to be lower as consumers were under pressure. The effect of higher interest rates would be different for each farmer, depending on the extent of operations (Fin24 2015d).

In July 2016, AgriSA reported farmers would require around R16.6 billion in finance due to the harsh drought. Fifteen thousand of the approximate 35 000 commercial farmers in SA experience cash flow shortages. Due to the drought, roughly two thousand farmers will not be able to secure finance for the next season. Where farmers have pre-existing loans with the Land Bank, the loans are rescheduled to assist farmers, in instances where farmers struggle to repay loans. According to the Land Bank, they are in the process of obtaining a loan worth R1.3 billion from the World Bank to support farmers and in March 2016, the Public Investment Corporation granted a R5 billion loan to the Land Bank of which R400 million had specifically been earmarked for drought relief (Business Day Live 2016b).

### **5.2.9 Lack of Local Farming Subsidies**

According to the International Labour Organisation, SA farmers require more government subsidies to assist them in competing with international suppliers. Due to the current lack of subsidies, farmers have no other alternative than to hire more casual workers to lower costs. Subsequently the need for housing on the farm becomes redundant, which puts additional responsibility on municipalities to provide housing infrastructure to workers. SA farmers must receive more negotiating power and should be encouraged to join forces with other Southern Hemisphere countries on matters such as farm subsidies (Moneyweb 2015).

### **5.2.10 Food Price Increases Affecting the Poor**

As a result of the ongoing drought in SA, it is estimated that R20 billion will be required to import around 5 to 6 million tons of maize to ensure food security (News24 2016b). Due to the weak Rand, these imported commodities will be more expensive making it less affordable, especially for the country's poor. Farmers will experience higher input costs as a result of factors mentioned in sections above, resulting in an increase in farm product prices. More expensive food prices, combined with economic pressure will make these products less affordable to the poor. As such, demand will be under pressure, which in turn will put pressure on farmers' finances. Lastly, SA agriculture also have to deal with labour-related problems, as discussed in the next section.

### **5.2.11 Trade Unions, Labour Unrest and Minimum Wages**

During 2012 and 2013, large-scale labour strikes by farm workers occurred in the Western Cape. During this time an estimated 603 000 farm workers were employed in SA of whom 121 000 worked in the Western Cape with an average minimum wage of R69 per day. It was further estimated that only around 3% of Western Cape farm workers were affiliated with trade unions, which meant that workers' bargaining power was weak and that they could not participate in a protected strike. At the height of the strike, thousands of workers took part in sixteen Western Cape towns. The unrest turned violent when farm workers set vineyards alight and vandalised farm property worth millions of rands (South African History Online 2015).

The N1 highway was blocked during a protest march, stones were thrown, the police retaliated with rubber bullets and several protestors were killed. The trade union COSATU (Congress of South African Trade Unions), other smaller trade unions and the CCMA (Commission of Conciliation, Mediation and Arbitration) were part of negotiations to end the strike, whilst some farmers negotiated directly with workers. The consequences of the strike included a decrease in production (only 600 000 cartons of fruit were packed in De Doorns compared to the usual million cartons) and a minimum wage increase from R69 to R105 per day (South African History Online 2015).

### **5.2.12 Summary**

From the above sections, it is clear that the SA agricultural sector currently experience major challenges threatening its existence. It is not only the farmers' livelihood that are at stake, but also the livelihood of thousands of farmworkers (and their families) employed in this sector, as well as the broader SA public who depend on the sector for food security. Without food security and with substantial increases in food prices, public unrest may break out (World Wide Fund for Nature - SA 2015: 2), which poses a threat to a democratic SA. The SA government and National Treasury should therefore carefully consider all direct and indirect effects implementation of one or more of the discussed eco-taxes might have on SA farmers, before promulgating such tax legislation. The next sections will consider, in more depth, the possible effects of the eight identified foreign eco-taxes on SA agriculture (if implemented).

## **5.3 FRANCE: HEAVY GOODS VEHICLE ROAD TAX**

As explained in chapter 3, the Heavy Goods Vehicle (HGV) tax is an eco-tax France considered and would have been levied by means of on-board electronic tracking equipment installed in heavy vehicles using certain French roads.

### **5.3.1 Current Comparable Taxes in South Africa**

There is currently no HGV eco-tax exclusively levied on heavy goods vehicles on SA roads. E-tolling was introduced in Gauteng during December 2013 (Eyewitness News 2013) and there are similar plans in the pipeline for sections of the N1 and N2 national road network in the Western Cape (Mail & Guardian 2013c), but these initiatives are not exclusively aimed at HGVs (Eyewitness News 2015; Politicsweb 2015). With reference to background in chapter 2, the French HGV eco-tax and SA e-tolling can be classified as a user charge, where proceeds are used for road maintenance. Additionally, it indirectly reduces vehicles on the highway, with a corresponding emission reduction. It is important to note that farm vehicles are not exempt from Gauteng e-toll fees (IT Web 2014) as was the case later on in the French HGV eco-tax saga.

The French HGV eco-tax is similar to the SA e-tolling system in the sense that gantries and on-board electronic equipment are used to track vehicle movement, as it travels between different points on the road network. However, SA e-tolling (as rolled-out in Gauteng) differs in that it

applies to almost all vehicles on the road and not only heavy goods vehicles. Its main purpose is not to assist the environment, but rather to fund the upkeep and upgrading of the road system. To ascertain the effect of a HGV eco-tax on the SA agricultural sector, commentary received regarding e-tolling in SA may therefore be examined in addition to France's response to its HGV eco-tax.

### **5.3.2 Possible Consequences for South African Agriculture**

#### ***Increase in use of alternative transport modes***

A HGV eco-tax could possibly encourage farmers to use alternative transport modes. SA has the 14<sup>th</sup> longest railway network globally and about 80% of Africa's railway network is situated in SA. Projects are underway to upgrade the nearly 20 300 km of SA railway lines to grow market share of container transport and freight volumes. About 1 500 km of railway lines are heavy haul lines and 8 200 km are electrified (SouthAfrica.info 2012b). The railway system is currently underutilised due to various factors including economy of scale. If rail transport is utilised more frequently, the cost per unit of transport will decrease. The railway system struggles with a poor track record riddled by interruptions and inefficiency due to train arson, track theft, constant breakdowns, poor infrastructure investment and poor management (Mail & Guardian 2015).

If a large-scale HGV road eco-tax is implemented on SA roads, it could motivate farmers to use rail transport more frequently. This will drive down the costs if enough agricultural clients make use of trains, provided that Transnet get their house in order. Large-scale rail transport for agricultural produce is a possible alternative to road transport. Agricultural products with a short lifespan (such as fresh milk) would not be suitable for this mode of transport. However, products with a longer lifespan such as grain, fruit and vegetables (if cooling facilities are available), could be hauled by rail.

Should the agricultural sector be subjected to a HGV road tax, transport by water is another method that could possibly benefit the agricultural sector. Unlike France, which has about 8 500 km of waterways, neither SA nor any other Southern Africa Development Country (SADC) has formal inland waterways linked to them (SADC 2012:31-32). As such, inland water transport is not an alternative for road transport in SA. The country possesses a world-class port system with eight commercial ports including Cape Town, Saldanha, Mossel Bay, Port Elizabeth, East

London, the Port of Ngqura, Durban and Richards Bay. Approximately 96% of all SA exports are channelled through these ports (SouthAfrica.info 2012b).

Unfortunately, the port system is not a road transport substitute to export produce of landlocked farmers. As they do not have access to harbour facilities, inland farmers selling on local SA markets have no choice but to use inland transport modes. These farmers first need to move their produce from their inland farms to a harbour area, by means of road or rail. Only after their produce has entered the harbour area, will the efficient SA port system start benefiting farmers.

### ***Possible South African effects with reference to e-tolling***

There are similarities (as well as differences) between the SA e-tolling system and the HGV road tax in France. As such, agricultural related commentary regarding Gauteng and Western Cape e-tolling can be used to a certain extent in predicting what the effects of a countrywide HGV road tax would have on agriculture.

The South African National Roads Agency Ltd (Sanral) implemented e-tolling in Gauteng, to fund the upgrade of 185 km of Gauteng freeways. The total cost for the road construction component of the upgrade amounted to R17.9 billion while an additional R2.7 billion related to e-tolling infrastructure. In 2006, Sanral stated the cost would only be R6.8 billion but due to inflation and construction companies colluding to inflate costs, it increased by approximately 300%. The tender for collecting e-tolls was awarded to the Electronic Toll Collection (ETC) Joint Venture in September 2009 for an amount of R10 billion. ETC is 85% owned by the Austrian organisation Kapsch TrafficCom. Sanral indicated that the collection cost would be 17% of revenue, but recent court papers show this to be closer to 25% of anticipated revenue over a 24-year period. Administration costs for projects of this kind are 5% to 9% of revenue earned, as per international best practice (OUTA 2016).

Discounted Gauteng e-toll tariffs, as on 20 May 2015, are 30 cents per km for light vehicles, 75 cents per kilometre for medium heavy vehicles and 150 cents per kilometre for heavy vehicles. The monthly respective caps are R225, R875 and R2 900 (Eyewitness News 2015). The Transvaal Agricultural Union expressed unhappiness with e-tolling while it was still in the proposal phase. They stated that commercial farmers were not in a position to absorb additional costs such as e-tolling, when they deliver to the market as they depend on market prices at the time the products are delivered (price takers). As such, agriculture is the only sector not in a position to



recoup e-toll charges. Moreover, food security concerns were raised and it was noted that e-tolling was not in the best interest of commercial farmers and consumers alike (The New Age Online 2012).

Organised agriculture is also sceptical about the trustworthiness of Sanral's consultation process, prior to determining e-toll tariffs in Gauteng. A study by AgriSA into the effects of the planned toll tariffs, revealed that the tomato, potato and banana industries reflected an extra annual cost of R6 million. Even with a reduced toll fee, it was estimated that farmers would still pay millions more to deliver produce to the Johannesburg Fresh Produce Market. An additional fuel levy instead of e-toll fees would be more cost-effective. The economist, Mike Schüssler, calculated that charging e-toll fees would cost 19% more than raising the fuel levy, due to administration and other costs. An extra R22 billion per annum would be collected if the fuel levy was raised by R1 per litre, which would be sufficient to maintain the country's road network and to create a proper transport system (Farmer's Weekly 2012b).

An economic impact study of the Winelands Toll Project in the Western Cape, commissioned by Sanral and completed in 2008, concluded that:

- Agriculture is the most sensitive sector regarding road transport costs in the Western Cape. As a ratio to total costs, transport costs are the highest for mining, followed by agriculture. Because the Western Cape has minimal mining activities, agriculture supersedes mining in this province (Standish, Boting & Van Zyl 2008: xi, 100, 101).
- The second most important job-creating sector in the Western Cape is agriculture (Standish *et al.* 2008: 7).
- In the Cape Winelands and Overberg districts, agriculture is the most important economic segment pertaining to formal employment (Standish *et al.* 2008: 11-12).
- The Paarl district's economy is primarily dependent on agriculture and agro-processing (Standish *et al.* 2008: 14).
- Agriculture is the most important economic sector alongside the proposed route and specifically in the Breede River district (Standish *et al.* 2008: 16).

On 20 April 2015, the Western Cape Democratic Alliance issued a report stating that the Western Cape Winelands toll project would destroy current and future farming jobs (according to the National Development Plan, agriculture could create an additional 100 000 jobs), escalate

farmers' expenses, negatively affect seasonal workers' mobility and put a huge burden on the poorest of the poor. Sanral's own report, which they did not want released to the general public, revealed road users would be charged three times more to use the N1 and N2 than the reigning Gauteng tariffs. It would put pressure on already struggling fruit farmers' cash flow in the Elgin and Hex River Valley areas and would hinder farm workers to visit family members (Politicsweb 2015). On 30 September 2015, the Western Cape High Court ruled in favour of the City of Cape Town bid to halt the Western Cape Winelands toll project (Fin24 2015c).

On 16 August 2016, it was reported that Sanral decided to appeal to the Supreme Court of Appeal. The City of Cape Town again argued that the process of declaring toll roads as well as certain preceding events, were improper and unlawful as:

- The Minister of Transport did not properly consider the merits.
- Per the Sanral Act, only the Sanral Board may declare a toll road. The Board did not make such a decision, nor were they provided with information required to assist them to make such a decision.
- An inadequate public participation process was followed and was not in line with applicable legislation. Important information was withheld from the public and public objections and comments were never provided to the Board.
- Sanral's report to the Minister of Transport deliberately hid the fact that 99% of comments received from the public were objections. This included that every municipality, as well as the Western Cape Province, would be affected.
- Sanral's report to the Minister conveniently made no mention of the project's financial feasibility nor the social and financial impact on the poor.
- The concession contract guaranteed R62 billion to the operator and proposed fees 344% higher than Gauteng e-tolls.

(City of Cape Town 2016)

### ***Discussion incorporating alternatives and e-tolling***

SA's road network covers more or less 747 000 km of which 16 200 km are national roads, (which are Sanral's responsibility), around 185 000 km are provincial and 66 000 km municipal roads. Of the national roads, 19% are mostly tolled by Sanral (SouthAfrica.info 2012b). A HGV eco-tax could be levied on all medium and large heavy vehicles on the 16 200 km of national roads not

already subjected to some form of tolling (similar to the original proposal to levy HGV eco-tax on about 15 000 km of French roads). The negative economic effects experienced or anticipated in France (HGV eco-tax) and SA (e-tolling) would probably apply to the SA agricultural sector as a whole. Farmers will experience higher transport costs (increased input costs) and many may end their operations, resulting in a domestic food supply decrease. Thus, SA will be more dependent on imports that, in turn, will place food security under pressure.

If a HGV eco-tax is implemented, government should investigate the possibility to exempt agricultural transport, as was the eventual case in France. If the same fee structure as the Gauteng e-tolls are used (but without a monthly maximum cap as in France), and agricultural vehicles are not exempt, farmers will be under pressure. However, if a reasonable capping system (similar to the Gauteng e-toll caps) is introduced, which applies to the HGV eco-tax levied nationally, the system might be feasible without destroying agriculture.

### **5.3.3 Central Themes**

From the discussion in this section, and information provided in previous chapters relating to the French HGV road tax, the following central themes can be identified:

1. Adjustments to initial eco-tax plan / structure
2. Alternatives available
3. Cost absorption and/or food inflation issues
4. Decline in international competitiveness
5. Discrimination issues
6. Earmarking issues
7. Farmers may go out of business
8. Food security concerns
9. General unhappiness in the agricultural community
10. Input cost increase
11. Job loss possibility
12. Negotiations with government
13. Objections (protests, petitions etc.)
14. Organised agriculture (unions) becomes involved
15. Poor planning from government institutions
16. Poor public participation process

#### **5.3.4 Summary**

This section examined the possible effects of a nationwide Heavy Goods Vehicle eco-tax on SA agriculture. The negative or expected negative impact on agriculture which e-tolling in Gauteng and proposed tolling in the Western Cape will have, was used to gauge the impact of such an eco-tax on SA agriculture, alongside French road tax commentary. Alternatives such as port and rail transport were briefly discussed. With reference to the consensus of both France's and SA's agricultural communities that taxing agricultural transport is improper, the effects may prove detrimental to SA agriculture, should this eco-tax not be managed correctly. Proactive management could include using earmarked proceeds to further upgrade SA's formidable railway system (20 300 km of lines, 14<sup>th</sup> longest in the world, 80% of Africa's railways). Numerous central themes relating to the HGV road tax were also identified.

#### **5.4 ONTARIO, CANADA: ECO-FEE OR ECO-TAX ON TYRES**

The Canadian eco-tax on tyres is levied on new tyres sold in Ontario. Proceeds are used to finance the used tyre programme whereby tyres are recycled.

##### **5.4.1 Current Comparable Taxes in South Africa**

Until 31 January 2012, there was no tyre recycling eco-fee or tax in SA. The Redisa (Recycling and Economic Development Initiative of South Africa) tyre levy was scheduled to be introduced on 1 February 2012, funded by a R2,30 per kilogram charge and applying to all tyres imported or manufactured after this date. Redisa is a non-profit organisation that is autonomous from the tyre industry in SA (Agri Africa 2012). As was the case in Canada, the Redisa levy was surrounded by controversy. The plan was temporarily withdrawn on 25 January 2012, a week before the initial implementation date. This was due to requirements not being met in terms of the Waste Tyre Regulations (WTR) and to afford the public a consultation period (Engineering News 2012).

Various legal battles ensued. In one such a battle, the South African Tyre Recycling Process Company attempted to encourage members to refrain from complying with Redisa regulations. Their court application was dismissed with costs. Secondly, the Retail Motor Industry (RMI) was successful in temporarily halting the plan by means of a High Court interdict, as it was not gazetted properly. When the initial plan was withdrawn and a new approved plan gazetted on 30 November

2012, the RMI yet again tried to interdict the plan (SA Department of Environmental Affairs 2012: 1-2). They were unsuccessful and as such, the rollout went ahead (Infrastructure News 2013).

All tyre producers registered with Redisa had to comply immediately with the new plan published in the Government Gazette. The effective date for these businesses was 30 November 2012. Businesses not yet registered had a grace period of sixty days until 30 January 2013 to register and comply (SA Department of Environmental Affairs 2012: 1-2). Arguably, it would have been more unbiased if all parties only had to comply after the 60-day grace period. The same effective date would then have been applicable to everybody. In many respects, the Redisa levy mirrors the Canadian tyre stewardship eco-fee. As the levy is still fairly new, the impact on Canadian agriculture can be superimposed on SA agriculture (in addition to local commentary) to ascertain the possible effects of an unrealistically high future levy.

During December 2015, Redisa was surrounded in controversy after revelations of a luxury R18 million Johannesburg property they bought, while paying informal street collectors only R2 per tyre, capped to a maximum of R1 500 per person per month (750 tyres cap). This was notwithstanding the fact that Redisa received over R1.1 billion in levies since inception. Furthermore, Redisa misled both the public and the government regarding job creation statistics. Only 54 permanent informal waste collector jobs were created and not 1 948 jobs as claimed. Informal waste collectors only received 0.17% (that is R557 600) of levies to the value of R328 million which Redisa collected for the period between March and September 2015. Since 2013, the privately owned company managing Redisa received approximately R206.5 million in earnings from Redisa. The Department of Environmental Affairs meanwhile opened an investigation into Redisa's activities (City Press 2015).

During 2015, the government indicated the Redisa levy would be replaced by a levy of equal value payable in terms of the Customs and Excise Act. During the 2016 budget, it was announced that the new levy would apply from 1 October 2016 (SATMC 2016), but the implementation date was later on postponed to 1 February 2017 (SAnews.gov.za 2016). The change in the funding model, whereby the levy will be formally incorporated into the tax system, may possibly be a result of alleged irregularities and lack of governance at Redisa.

## 5.4.2 Possible Consequences for South African Agriculture

Various machines and vehicles used for agricultural activities require tyres to function including tractors, combine harvesters, sprayers and trailers (Michelin 2015). Trucks used to transport farming inputs such as farm feed, market produce and labourers also requires tyres. According to the senior economist of Grain SA, Corné Louw, the levy would impose a large additional cost burden on farmers, especially farmers using over-sized tyres. One tyre of certain tractors may weigh up to 400 kg and some large tractors require eight of these. When replacing all the tyres of one of these tractors, the levy would equal  $400 \text{ kg} \times 8 \times \text{R}2,30 = \text{R}7\ 360$  over and above the normal price of the tyres (Farmer's Weekly 2012a).

Considering the Canadian tyre eco-tax, there is consensus between the agricultural sectors of at least two countries (Canada and SA), that a tyre recycling eco-tax is inappropriate for agriculture. It is also interesting to note that in both Canada and SA, no or very little public participation took place before the levy was initially raised. In both cases, allegations were made that funds had been misappropriated. Considering the example of Grain SA, the effect of the tyre levy of R7 360 per tractor on SA farmers will be similar to those contemplated by the Canadian farming fraternity.

For example, if a farmer has five tractors, the price increase could be substantial, equating to higher input costs. This would force the farmer to increase prices where possible (farmers are price takers), in turn decreasing his competitiveness on international markets. This might also lead to higher domestic prices, food inflation, and a decrease in living standards. Food inflation and the resulting knock-on effects would cause lower growth in the SA economy, in concert with other factors, such as Eskom's power supply problems and already high taxes. The negative effects might be mitigated by applying lower tariffs on agricultural tyres, engaging the agricultural sector in proper open dialogue prior to future price hikes and ensuring reasonable price increases.

## 5.4.3 Central Themes

From the discussion in this section, and information provided in previous chapters relating to the Canadian, Ontario tyre eco-tax, the following central themes can be identified:

1. Adjustments to initial eco-tax plan / structure
2. Cost absorption and/or food inflation issues
3. Decline in international competitiveness

4. Discrimination issues
5. Earmarking issues
6. Farmers may go out of business
7. Food security concerns
8. General unhappiness in the agricultural community
9. Input cost increase
10. Job loss possibility
11. Negotiations with government
12. Objections (protests, petitions etc.)
13. Organised agriculture (unions) becomes involved
14. Poor planning from government institutions
15. Poor public participation process
16. Research & development issues

#### **5.4.4 Summary**

The impact or expected impact of a tyre eco-tax on SA agriculture was discussed. There is consensus between farmers in Canada and SA that this eco-tax is unhealthy for agriculture. Poor communication and planning of the authorities before implementing fee structures seems to be an international problem. According to the agriculture sector, it appears that the ideal solution would be to exempt them from said eco-tax, because SA farmers face numerous challenges such as drought, no government subsidies and rising costs, which poses a real challenge in running a profitable farming operation. A list of central themes was also provided in the section.

#### **5.5 BRITAIN: CLIMATE CHANGE LEVY AND CLIMATE CHANGE AGREEMENTS**

The Climate Change Levy (CCL) and Climate Change Agreements (CCA) pertain to the usage of electricity, gas, liquid petroleum and some other forms of taxable energy commodities in Britain. The CCL and CCA work together as a fiscal package. The CCL is the eco-tax payable in the package, while CCAs allow energy consumers to claim a substantial discount against the CCL, if energy saving targets are met.

### **5.5.1 Current Comparable Taxes in South Africa**

On 1 July 2009 SA introduced an environmental levy, pertaining to electricity generation, at 2c/kWh (Eskom [s.a.]: 2). This levy is similar to the CCL on electricity in the UK. A general fuel levy does exist in SA but is utilised as a general tax to help the government to meet their general fiscal responsibilities (Business Tech 2015). The fuel levy is therefore not earmarked or ring-fenced for any specific purpose and cannot be classified as an eco-tax. Therefore, there is no eco-tax equivalent in SA on gas or fuels, such as the CCL in the UK. In addition, when the electricity environmental levy was first introduced in SA, there was no coinciding rollout of a mechanism similar to CCAs in the UK to motivate high-energy users to use less electricity.

Only later, on 1 November 2013, a stand-alone incentive (section 12L of the Income Tax Act No. 58 of 1962) was introduced in the form of the Energy Efficiency Tax Incentive Scheme. This made it possible for the taxpayer to receive economic benefits by way of a tax allowance when saving, amongst other, electricity. The electricity eco-levy and section 12L allowance operates completely independently; on the one hand as an electricity eco-tax and on the other hand as a separate incentive. It is not an integrated package resembling the UK CCL/CCA scheme and is therefore not comparable (South African National Energy Development Institute 2014: 1).

A diesel rebate scheme is available for certain farming activities whereby a certain portion of diesel bought and used in a period may be claimed back, provided the farmer is registered for VAT, used the diesel for qualifying activities and kept the necessary records (SARS 2012: 7, 17). However, as the diesel rebate do not operate to decrease a certain tax or levy earmarked for ecological purposes (the general fuel levy is not earmarked), it cannot be said that SA diesel rebates equates to UK CCAs pertaining to the use of some form of liquid petroleum or gas.

### **5.5.2 Possible Consequences for South African Agriculture**

As is evident from section 5.5.1, there are various levies and incentives in SA relating to energy, including the electricity environmental levy, the fuel levy (not an eco-levy), the section 12L incentive (across various energy types) and the diesel rebate. However, it seems the SA energy taxes and incentives with regard to farming are somewhat fragmented in comparison to the UK where the CCL/CCA package operates as a single, compact fiscal package. The electricity environmental levy and the section 12L incentive are discussed in more depth below, while the importance of electricity and diesel to SA agriculture are also highlighted. The diesel rebate is



discussed in more depth in section 5.6, which deals with the Australian carbon tax on fuel in a SA context. Lastly, the possible financial and other effects on SA agriculture are investigated.

### ***The environmental levy on electricity***

The environmental levy introduced on 1 July 2009 (Eskom [s.a.]: 2) is charged on all electricity generated in SA from ecologically harmful (nuclear) and non-renewable (fossil) fuel sources. It is payable by electricity producers, which must obtain a license from SARS Excise. Proceeds are earmarked to fund energy efficiency projects including the solar-heated water programme, and to repair roads damaged due to coal transport to generate power (SA Department of National Treasury & SARS 2015: 11, 239). It is calculated on a self-assessment excise return and paid monthly (SARS 2015).

Certain generating activities are exempt, including electricity derived from:

- plants where the generating capacity does not exceed 5 Mega Watt
- renewable sources
- renewable source co-generation, waste energy, waste heat as well as joint power and heat, dependent on certain thresholds.
- solar power of a concentrated nature as well as non-renewable sources and where the energy contribution in a calendar year is less than 15% of the total energy contribution (SARS 2014b:3)

Non-renewable sources are defined as coal, natural gas, petroleum based liquid fuels or nuclear energy. Renewable sources include power from biomass, geothermal, hydro, ocean currents, solar, tidal waves and wind (SARS 2014b: 6).

### ***The section 12L allowance***

Section 12L(1) of the ITA (South Africa. Income Tax Act 58 of 1962) states that:

For the purpose of determining the taxable income derived by any person from carrying on any trade in respect of any year of assessment ending before 1 January 2020, there must be allowed as a deduction from the income of that person an amount in respect of energy

efficiency savings by that person in respect of that year of assessment determined in accordance with subsection (2), subject to subsection (3).

Section 12L(2) of the ITA furthermore state that:

The amount of the deduction contemplated in subsection (1) must be calculated at 95 cents per kilowatt hour or kilowatt hour equivalent of energy efficiency savings.

According to the South African National Energy Development Institute (SANEDI), the main reason for introducing section 12L was to promote the effective use of energy. The promulgated effective date of the allowance was 1 November 2013. Businesses will have to adhere to the criteria prescribed in section 12L and related regulations to become eligible. Criteria include that energy saving reports must be compiled by measurement and verification (M&V) specialists performing M&V activities under the supervision of accredited South African National Accreditation System (SANAS) organisations. SANEDI must then issue official energy saving certificates based on the SANAS energy saving reports compiled by the M&V specialists (South African National Energy Development Institute 2014: 1). As a by-product, effective energy use will help the environment as it equates to less carbon emissions from coal power stations.

It is important to note that the section 12L allowance is not limited to electricity only, but pertains to various other forms of energy such as diesel, gas and waste heat. There is however certain exclusions where a business will be prohibited to claim this allowance. The exclusions include electricity produced from renewable sources relating to biomass, wind, hydro sources, ocean currents, geothermal, solar and tidal waves. Electricity originating from co-generation is also excluded. Co-generation refers to the process where electricity is generated from waste and joint power and heat, excluding generation from waste heat retrieval (South African National Energy Development Institute 2014: 1-2).

Unfortunately, the advantage provided by section 12L diminishes as it takes the form of a tax allowance or incentive. This means that it is available as a deduction against taxable income versus a situation where the advantage is available as a rebate deductible from actual tax payable for the year of assessment. Because it is an allowance deductible from taxable income, the taxpayer will effectively receive only between 28% and 41% (depending upon whether it is a company, individual or trust) of the incentive value in real terms versus a 100% advantage if the incentive were in the form of a rebate deductible from actual tax (South African National Energy Development Institute 2014: 2-3).

In other words, if the section 12L incentive is for instance R100, a company has a taxable income (before calculating the incentive) of R1 000 and the incentive is treated as a deduction against taxable income, the company will pay tax of R252 (that is  $(R1\ 000 - R100) \times 28\%$ ). When compared to a situation where the incentive is treated as a rebate against taxable income, the tax payable would only amount to R180 ( $(R1\ 000 \times 28\%) - R100$ ), where the rebate is deducted after calculating taxable income. The tax saving between scenario 1 and scenario 2 is therefore R72. The section 12L incentive is a deduction against normal taxable income and is therefore not “funded” by way of earmarked funds from Treasury. In reality, it is “funded” by the state foregoing on income destined for the general income tax revenue pool.

### ***The importance of electricity for South African agriculture***

After diesel, electricity is the most frequently used energy source in SA agriculture (Farmer’s Weekly 2015). Eskom assists farmers in the form of an energy analysis of a farm’s energy demands, as well as advice on specialised electricity intensive agricultural processes. On completion of the analysis, energy recommendations are made (Eskom 2015a). They offer this service to various agricultural activities, which therefore also provides a good indication of the more important local electricity intensive agricultural activities. These activities include:

1. Agronomy (crops)
  - a. Irrigation activities including running costs, tariff analysis and auto restart
  - b. Processing activities including milling, storage and drying
2. Production of animals (pigs, horses, layers, broilers, ostriches, dairy, fish)
  - a. Environmental control including ventilation, heating and dual energy
  - b. Processing activities such as mixing and milling and heating of water
3. Forestry and horticulture (nurseries, flowers, essential oils, pack-houses)
  - a. Environmental control activities such as ventilation, heating and propagation
  - b. Processing, including cooling, heating, mechanical drying and storage
  - c. Greenhouse activities

4. Services relating to intensive farming
  - a. Distribution including reticulation and schemes relating to self-build
  - b. Electrification activities such as water heating, used by farm workers
  - c. Security related activities including electric fencing, lighting and farm safety
  
5. Food processing activities
  - a. Meat, fruit, vegetables, meat, cereal and dairy processing
  
6. Integrated Demand Management (IDM)
  - a. Irrigation and auto restart activities
  - b. Lighting and dual power systems

(Eskom 2015b)

It is therefore evident that stable and affordable electricity is vital for the survival of modern SA agriculture. During the 2015 budget speech, the Minister of Finance proposed that the electricity levy be raised from 3.5 cents per kW/h to 5.5 cents per kW/h to help curb demand. He indicated that the additional 2 cents per kW/h would be discontinued when the electricity shortage was resolved (Eskom 2015c). However, in May 2015 National Treasury announced that the possible increase from 3.5 cents to 5.5 cents per kW/h was still under review and no final decision had been taken yet (Business Day Live 2015). In November 2015, the electricity levy was still 3.5 cents per kW/h (SA Department of National Treasury & SARS 2015: 11).

### ***The importance of diesel for South African agriculture***

Diesel is important for SA agriculture as it is the energy source SA agricultural entities use the most (Farmer's Weekly 2015). According to SARS the farming activities in table 5.1 below (see section 5.6.2), will qualify for a diesel rebate if a farmer or a farmer's contractor (in certain circumstances) performs it for "own primary production" purposes (SARS 2012: 10-11). The sheer volume of day-to-day activities on which SARS allows a diesel rebate, illustrates that the government recognises the importance of diesel for SA farming.

### ***Financial and related effects on South African Agriculture***

As explained above, SA energy levies and incentives relating to farming are fragmented in comparison to the UK CCL/CCA fiscal package. National Treasury can therefore consider

incorporating these already existing SA energy taxes and incentives into one single legislative tax package, as the case is in the UK. This may reduce duplication and administration costs and increase the uptake by agricultural businesses, due to simplicity and better comprehension. A standalone CCL/CCA scheme over and above already existing energy taxes and incentives may also be considered. This, however, will dramatically increase energy input costs for those farmers not participating in the CCA side of the scheme, as they will have to bear the full CCL levy without a mitigating CCA. If implemented over and above existing energy taxes and incentives, a substantial decrease in current energy taxes and/or an increase in the incentives should be considered to soften the blow.

It might be difficult for SA farmers to participate in the scheme if it is complicated, time-consuming, unpractical and expensive to keep record of energy savings to qualify for a discounted levy. For example, the paperwork SARS requires to claim a diesel rebate is extremely burdensome and may demotivate farmers from participating in the programme. According to Grain SA, which represents approximately 10 000 farmers, members experience huge problems relating to diesel rebates, which jeopardises food security, especially considering the 3-year drought. They need to keep detailed purchase records and sale invoices, logbooks of diesel used by vehicles and equipment as well as diesel storage detail. Onerous logbook detail SARS requires, include the purchase date of diesel, the source, size of the storage tanks, usage and activity details, activity location, opening and closing tank balances, etc. Naturally, farmers struggle to comply and lose the rebate. Moreover, with SARS audits, farmers have to pay penalties and interest if documents do not comply with the stringent requirements (Business Day Live 2016c). This may also be the case if a scheme, similar to the UK's CCL/CCA scheme, is introduced in SA.

Using SA grain farmers as an example, the cost of farming inputs have increased substantially over the past ten years in SA, with specific reference to electricity. This is one of the major challenges grain farmers must currently overcome (Farmer's Weekly 2015). Should a variant of a CCL/CCA eco-tax scheme be implemented, it is essential that energy prices do not escalate to unreasonably high levels, considering its importance for modern day SA farming and to ensure food security.

### ***Other effects on South African agriculture***

With the implementation of a CCL/CCA eco-tax system, the main aim of farmers participating in the CCA leg of such an arrangement will be an increase in energy efficiency to reach energy

targets. Therefore, a positive consequence of this eco-tax scheme will be a general saving in energy-costs for SA farmers. SA grain farmers, for example, lose millions of rands due to equipment and inefficient systems that use excessive energy or are not adequately maintained. This agricultural sub-sector has large potential for enhancement in energy consumption. This includes direct energy consumption (fuel and electricity used in grain drying and crop production machinery and equipment) as well as indirect energy consumption (transport and fertiliser application) (Farmer's Weekly 2015).

The effect of a CCL/CCA eco-tax package could include enhanced energy saving measures implemented by grain farmers on a large scale, such as:

- Improved drying techniques – energy efficient dryer installation, high-temperature drying, and matching fans and grain depth could decrease fuel consumption.
- Energy audits and retrofitting – the best way to decrease mechanical equipment energy usage, is to employ retrofitted energy effective systems and technologies. Before farmers embark on such an exercise, an energy audit should be done.
- Renewable energy – farmers have the option to utilise alternative energy derived from solar photovoltaic panels, solar water heating and mini-hydro schemes.
- Cost-saving measures – prudent analysis by farmers of their energy bills to ensure correct tariffs and calculations may lead to further energy savings.
- Energy advisers – Eskom energy advisers are available to assist farmers with energy saving efforts. With higher energy costs, farmers will probably consult them more frequently.

(Farmer's Weekly 2015)

One of the effects of a CCL/CCA scheme in SA may be enhanced utilisation of above energy saving measures, which will assist grain farmers in saving money, by using less energy as well as receiving discounts on the CCL rates. By utilising pre-paid electricity meters, administration costs of monitoring energy use may also be reduced. For example, itemised billing for each farmer could be discontinued.

### **5.5.3 Central Themes**

From the discussion in this section, and information provided in previous chapters relating to the British CCL/CCA scheme, the following central themes can be identified:

1. Adjustments to initial eco-tax plan / structure
2. Alternatives available
3. Cost absorption and/or food inflation issues
4. Decline in international competitiveness
5. Earmarking issues
6. Farmers may go out of business
7. Food security concerns
8. General unhappiness in the agricultural community
9. Input cost increase
10. Job loss possibility
11. Negotiations with government
12. Objections (protests, petitions etc.)
13. Organised agriculture (unions) becomes involved
14. Research & development issues

#### **5.5.4 Summary**

Various energy taxes and incentives are applicable and available to SA agriculture. These are however fragmented and do not represent a compact fiscal package that works in concert with each other, as is the case with the UK CCL/CCA scheme. Two options exist namely a CCL/CCA scheme replacing already existing fragmented taxes and incentives or a scheme over and above existing taxes and incentives. The second option is not advisable, as it will effectively equate to two different tax systems. It will also lead to a duplication of administrative costs for both the taxpayer and the fiscus as well as over complication (i.e. simplicity is one of the characteristics of a good tax system, as per chapter 2). Whatever the case, increased energy prices will add additional pressure on the farming community's finances, although it may lead to energy savings. The section concluded with a summary of central themes pertaining to the CCL/CCA scheme.

#### **5.6 AUSTRALIA: CARBON TAX ON FUEL**

This Australian eco-tax took the form of a decrease in the Fuel Tax Credit (FTC). The purpose of the FTC was to provide businesses with relief on excise and custom charges on fuel used in machinery, plant and equipment and heavy vehicles. The goal of the carbon tax on fuel (by

means of a decrease in the FTC) was to decrease fuel emissions, by encouraging Australian businesses to use fuel more sparingly due to increased costs. The agricultural sector would be exempt, although Australian agriculture expressed doubt whether all bona fide farming activities would qualify. In this section, the premise is adopted that not all bona fide agricultural activities will be exempt from a carbon fuel tax, if implemented in SA.

### 5.6.1 Current Comparable Taxes in South Africa

Currently the closest concept to a FTC in SA is diesel rebates available to business entities involved in certain activities on land pertaining to farming, mining, forestry etc. (SARS 2012: 8-11). There is, however, no reduction in the value of the available diesel rebate to motivate businesses to use less diesel. A carbon tax on fuel could also be levied directly when fuel is purchased at the pump. In SA the general fuel levy applies, but as previously mentioned, it is used for general tax raising and not earmarked for eco purposes. Although it inadvertently may have a greening effect as less fuel is used, it therefore cannot be classified as an eco-tax.

### 5.6.2 Possible Consequences for South African Agriculture

Fuel, with specific reference to diesel, is used in an array of farming activities. Without it, modern agriculture would not be possible. The South African Revenue Service (SARS) considers the following to be “pure” farming activities that qualifies for diesel rebates:

**Table 5.1: Qualifying farming activities for SARS diesel rebates**

1) Growing, harvesting and storing of harvests on the farm	18) Performing of earthworks for farming purposes
2) Activities relating to apiculture, pasturage and horticulture	19) Building or upkeep of extraction of ground water facilities
3) Farming of oysters and breeding of fish	20) Water pumping exclusively utilised for farming activities
4) Caring and breeding of animals and reptiles	21) Providing water exclusively for farming activities
5) Caring, breeding and transportation of show and race horses	22) Farm product storing
6) Shearing, cutting of hair, fleecing, milking of livestock	23) Packing or keeping farm products fresh on the farm
7) Livestock transportation to a farm for rearing purposes	24) Control of diseases, pests or weeds
8) Livestock herding	25) Trapping or hunting performed as part of farm operations
9) Activities involving hay baling	26) Game farming, apart from tourism undertakings



10) The tending and/or planting of fruit trees	27) Domestic purpose generators and farm equipment
11) Soil or water conservation activities	28) Rail transport of farming goods by means of locomotives
12) Firefighting related activities	29) Contractor transports farm products or inputs and the diesel is supplied on a dry basis, a refund may be claimed for diesel used to
13) Maintenance and building of fences	i) transport produce from farm to market or first point of delivery
14) Maintenance and building of firebreaks	ii) transport farm inputs to the farm, from the supplier's premises
15) Repairs, maintenance or service of equipment and/or vehicles	30) User utilises own vehicles for transport purposes, for
16) Maintenance and building of silos, pens, sheds or silage pits	i) transport farming products to any destination
17) Maintenance and building of water channels, tanks, troughs, dams or irrigation systems	ii) transport farm requirements from any destination to the farm

(Source: SARS 2012: 10-11)

The diesel rebates available to the agricultural sector are calculated in accordance with Schedule 6 of the Customs and Excise Act. If, for instance, one thousand litres of eligible diesel are purchased (diesel purchased and used for any of the activities listed above), 80% of the eligible purchases will qualify for a rebate of 250 cents per litre. The farmer will thus be able to claim R2 000 (1 000 litres x 80% x R2,50) of rebates in the example (South Africa - Government Gazette No 38611: 2015).

The value of diesel refunds claimed for the years ending 2011 to 2014, is provided on the next page. For the 2013/2014 tax year agriculture, forestry and fishing claimed R1 017 million in diesel rebates (SA Department of National Treasury & SARS 2014: 229). If, for argument sake, the effective diesel rebate were decreased by 20%, to set an effective carbon eco-tax, it would mean that agriculture, forestry and fishing would have an additional cost of at least R200 million per year (using 2013/ 2014 figures) in its cost structure. Should this sector be unable to absorb the extra costs, it could very well spell the end for many agricultural businesses, with related loss of farm employment and elevated food security risks.

**Table 5.2: Diesel refunds 2010/11 to 2013/2014**

	2010/11		2011/12		2012/13		2013/14*	
	Mega litres	Amount Rmillion	Mega litres	Amount Rmillion	Mega litres	Amount Rmillion	Mega litres	Amount Rmillion
<b>On land (only 80% of eligible litres qualify)</b>	<b>913.3</b>	<b>1 153.6</b>	<b>1 020.3</b>	<b>1 406.0</b>	<b>1 263.5</b>	<b>1 915.8</b>	<b>1 448.2</b>	<b>2 502.0</b>
Agriculture, forestry and fishing	444.7	563.0	444.5	617.0	391.1	602.1	587.3	1 017.3
Mining and quarrying	442.5	558.2	565.0	774.3	867.2	1 305.8	840.0	1 447.2
Other	26.1	32.4	10.8	14.6	5.2	7.9	20.8	37.4
<b>Rail (100% of eligible litres qualify)</b>	<b>3.8</b>	<b>2.6</b>	<b>4.3</b>	<b>3.4</b>	<b>1.0</b>	<b>0.9</b>	<b>164.5</b>	<b>156.4</b>
<b>Offshore (100% of eligible litres qualify)</b>	<b>19.5</b>	<b>41.6</b>	<b>24.7</b>	<b>56.5</b>	<b>42.3</b>	<b>108.6</b>	<b>48.4</b>	<b>142.2</b>
<b>Electricity (100% of eligible litres qualify)</b>	<b>38.6</b>	<b>81.9</b>	<b>122.8</b>	<b>279.7</b>	<b>498.3</b>	<b>1 251.5</b>	<b>1 180.6</b>	<b>3 367.6</b>
<b>Other<sup>1</sup></b>		<b>3.3</b>		<b>-10.6</b>		<b>0.9</b>		<b>39.5</b>
<b>Total</b>	<b>975.2</b>	<b>1 283.1</b>	<b>1 172.1</b>	<b>1 724.4</b>	<b>1 805.1</b>	<b>3 278.7</b>	<b>2 841.7</b>	<b>6 247.1</b>

*1. Amount reflected cannot be categorised in the groupings above*

**Note:** \* The growth in 2013/14 is as a result of the inclusion of diesel set offs

(Source: SA Department of National Treasury & SARS 2014: 229)

The impact on farmers of a decrease in the value of available diesel rebates or an increase in the fuel eco-levy (which in both instances equates to a higher fuel price), can be deduced from feedback received from economists, farmers and unions regarding normal fuel price increases. AgriSA calculated SA farmers annually saved a R100 million for every 10 cents domestic fuel prices decrease (Business Report 2015). Therefore, for each 10 cent incremental increase in the fuel price or associated taxes (such as an eco-levy) or a decrease in the diesel rebate of 10 cents (assuming all farmers received diesel rebates), farmers would lose around a R100 million per annum. The Transvaal Agricultural Union (TAU) stated that fuel price increases were negative for farmers and could seriously affect food security (Mail & Guardian 2013a).

The TAU president, Louis Meintjies, stated, "... farmers remain price takers, meaning that they cannot recover higher input costs and taxes." He added that the agricultural sector implored the government to modify the diesel rebate system to help farms stay profitable, due to food security concerns. These reasonable requests were ignored. Meintjies noted that if the SA authorities were not prepared to listen to farmers' reasonable requests concerning the "total package" of price hikes and tax increases, they should be aware that it could be catastrophic for the agricultural economy and food security (Mail & Guardian 2013a). Diesel is the energy source most frequently used by South-African agriculture (Farmer's Weekly 2015) and as such, its affordability is of vital importance.

### **5.6.3 Central Themes**

From the discussion in this section, and information provided in previous chapters relating to the Australian carbon tax on fuel, the following central themes can be identified:

1. Adjustments to initial eco-tax plan / structure
2. Alternatives available
3. Cost absorption and/or food inflation issues
4. Decline in international competitiveness
5. Discrimination issues
6. Earmarking issues
7. Farmers may go out of business
8. Food security concerns
9. General unhappiness in the agricultural community
10. Input cost increase
11. Job loss possibility
12. Negotiations with government
13. Objections (protests, petitions etc.)
14. Organised agriculture (unions) becomes involved
15. Poor planning from government institutions
16. Poor public participation process

### **5.6.4 Summary**

The effects of a carbon eco-tax on fuel on the SA agricultural sector were investigated. The SA agricultural community agrees that an increase in fuel or fuel related expenses could be detrimental and put food security at risk. Government should provide more subsidies or rebates to decrease fuel prices for the agricultural sector. Fuel prices should not be increased by terminating rebates or levying additional fuel taxes (including an eco-levy or tax). A central theme list is included at the end of the section.

## **5.7 AUSTRALIA: CARBON TAX ON CARBON EMISSIONS**

The purpose of this eco-tax was to reduce the carbon footprint from Australian energy consumers by placing a money value on carbon in the form of an eco-tax. Large carbon emitters were thus encouraged to decrease the amount of carbon released into the atmosphere.

### **5.7.1 Current Comparable Taxes in South Africa**

There is no effective all-encompassing carbon tax in SA, comparable to the large-scale carbon emission tax that was briefly enacted on the largest Australian polluters and repealed shortly thereafter. There is, however, an extensive carbon eco-tax in the pipeline, which will be discussed in more depth below.

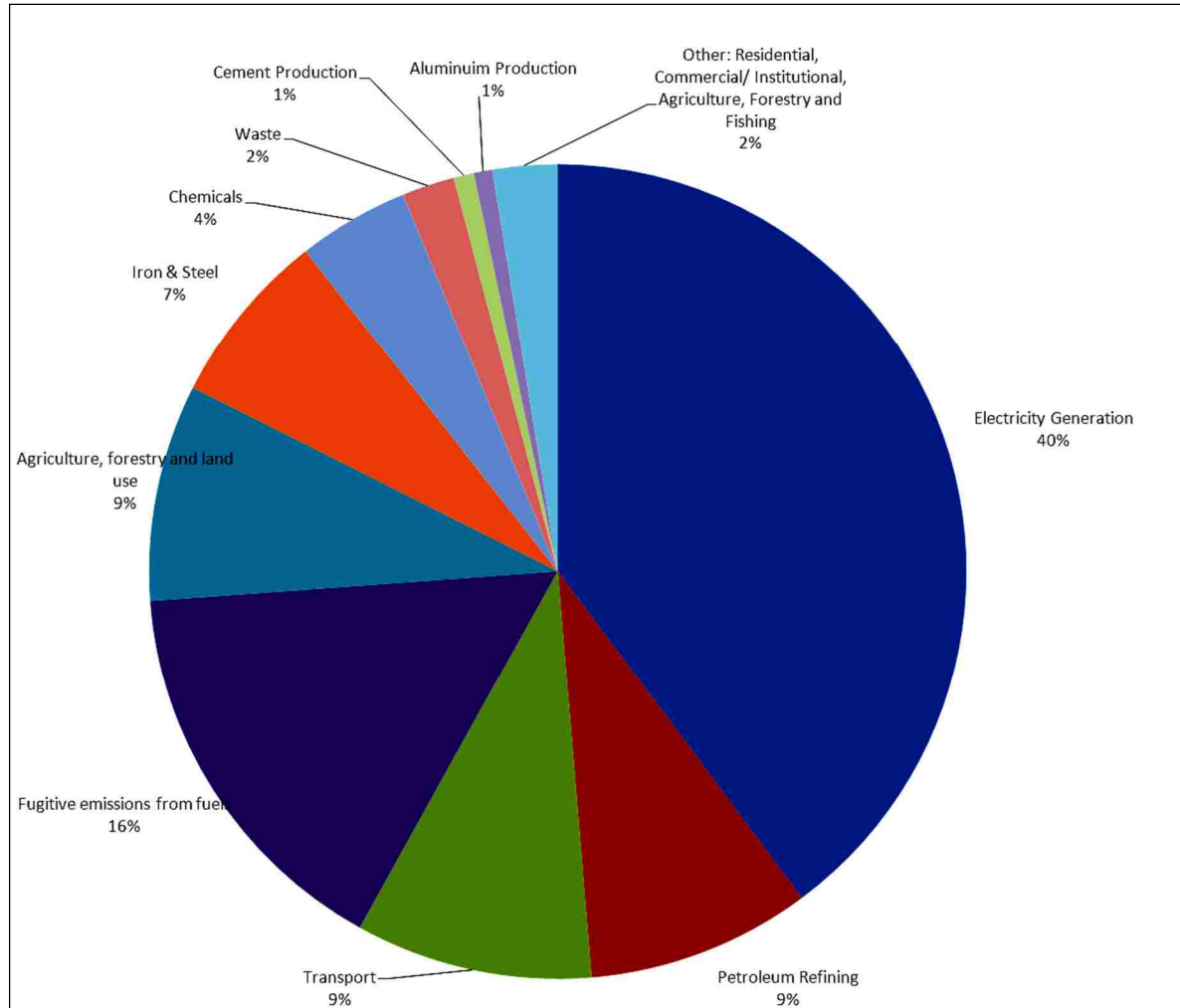
#### ***Historical development***

In April 2006 National Treasury released a draft policy paper called, “A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa”, which was a high-level policy document dealing with eco-taxes (SA Department of National Treasury 2006: 1). In December 2010 a discussion paper specifically dealing with GHG pollution, “Reducing Greenhouse Gas Emissions: The Carbon Tax Option”, was released for public comment (Global Carbon Exchange 2013). In May 2013 the carbon tax policy paper, “Reducing Greenhouse Gas Emissions and Facilitating the Transition to a Green Economy” (SA Department of National Treasury 2013b: 1, 4) was released which incorporated comments received in response to the 2010 paper (Sustainability South Africa 2013).

In April 2015, the Davis Tax Committee (DTC) announced that it would be investigating the proposed National Treasury carbon tax, in response to requests from numerous stakeholders that the design and scope be reviewed. The carbon tax’s aim was to guide SA in moving towards a low carbon economy and fulfil its international commitment to curb GHGs. The DTC would also investigate probable negative effects of such a transition on the economy and social fabric in the short-term. The need for a phased-in approach and linkage to the National Development Plan would also be considered (The Davis Tax Committee 2015: 1-2). During November 2015, the draft Carbon Tax Bill was introduced for public comment (SA Department of National Treasury 2015: 1) and in June 2016 the “Draft Regulations on the Carbon Offset in terms of the draft Carbon Tax Bill” was released (SA Department of National Treasury 2016: 1). The then Finance Minister,

Pravin Gordhan, reported in the 2014 budget speech, enactment would take place on 1 January 2016 (Business Day Live 2014). It was however, postponed and a possible implementation date of 1 January 2017 was given as an alternative (Deloitte 2016; Blue North 2016).

**Figure 5.1: Breakdown of South Africa’s GHG emissions by sector**



(Source: SA Department of National Treasury 2013a: 52)

Per the chart above agricultural activities, along with forestry and land use produces about 9% of the total GHGs in SA. Furthermore agriculture, forestry and fishing alongside the residential, commercial and institutional sectors in SA, account for 2% of other emissions, not specifically grouped under an applicable industry (SA Department of National Treasury 2013a: 63).

## ***Representations to the Davis Tax Committee (DTC)***

Various parties submitted presentations to the DTC, in which relevant and interesting points were voiced. Business Unity South Africa (BUSA), representing companies and organisations, which contribute more than 75% to the SA GDP, supports a holistic climate change policy. They are against a singular carbon tax outside a holistic approach, as per the current carbon tax proposal. BUSA stated:

- There was limited opportunity for SA industry to decrease emissions due to the characteristics of the economy, specifically the large contribution to GHGs by the electricity sector.
- Emissions would be lower than originally forecasted because of slow economic growth and restricted electrical supply. This situation might change once the Medupi and Kusile power plants become fully operational in 2021.
- The current electricity crisis should be considered thoroughly. Higher electricity tariffs, due to carbon taxes being passed on to businesses and consumers, could spell the end for many businesses already struggling due to profit loss caused by power outages.
- A significant carbon tax was already present in the form of the electricity levy.
- There was no need for a comprehensive carbon tax to reduce emissions because of an already lower emission trajectory than originally forecasted.
- Economic growth, which was already far too low to reduce unemployment, would be stifled further by this unnecessary tax.
- It was highly doubtful that the carbon tax would spur on investment in green technology, with specific reference to the electricity generating segment, which was responsible for most carbon emissions (Business Unity South Africa 2015: 2, 4, 8-9).

Sasol, a SA company active in the energy industry (Sasol 2017), made its voice heard by a formal representation to the DTC. Sasol's position is that a comprehensive carbon tax would not be beneficial to SA, due to the following factors:

- It is not in line with the latest international climate change negotiations. Normally a country's climate change policy is developed in accordance with international policies. Under current international convention, developing countries such as SA are not required to commit themselves to fixed emission reductions. SA also qualifies for technology, capacity building

and international financial support from developed countries. A carbon tax is therefore unnecessary in SA.

- SA's carbon emissions are at this stage lower than the targets agreed upon in its international commitments.
- The carbon tax is not in line with the energy policies of the Department of Environmental Affairs for the Department of Energy's policies.
- The sudden increases in electricity prices the past couple of years had a negative impact on the economy, which will be compounded by the introduction of this tax.

(Sasol 2015: 5, 7)

The Chamber of Mines does not support the proposed carbon tax as they argue it will have a detrimental effect on numerous economic sectors. They state:

- The price of electricity has surged with nearly 300% in seven years, while Eskom requested a 25% increase for 2015 with expected increases of 12% per annum from 2016. A carbon eco-tax will cause a further price hike in electricity over and above inflation beating increases in previous years.
- Load shedding, higher electricity prices and energy saving initiatives brought about a decrease in usage, causing emissions to be lower than the projected targets.
- The current electricity price already includes renewable energy finance.
- An eco-tax will not reduce GHGs due to current power supply constraints.
- A reduction in international competitiveness led Australia to repeal their carbon tax and the same circumstances apply to SA.
- SA's contributions to global GHGs are negligible in comparison to those of China, India and the USA. Even if the proposed carbon tax is effective in reducing emissions, the effect on global emissions will be insignificantly small.

(Chamber of Mines of South Africa 2015: 21-22)

From representations made to the Davis Tax Committee by BUSA, Sasol and the SA Chamber of Mines it is evident that the proposed carbon tax, in its current format, is not welcomed by the SA business fraternity. There is doubt that the eco-tax will have any real effect on lowering SA GHG emissions. There is, however, a consensus that the carbon tax will lower SA businesses' survival rate, will not promote job creation and will harm the SA economy.

## 5.7.2 Possible Consequences for South African Agriculture

With implementation of this eco-tax, agriculture, forestry and land use sectors will be exempt for the initial 5-year phase, mainly because of administrative challenges to accurately measure and audit GHG emissions. National Treasury intends to review this concession after the initial phase. They state that the tax-exempt percentage and absolute emission threshold amendments must be “aligned with other initiatives” (SA Department of National Treasury 2013a: 14) but did not expand on this statement in the 2013 discussion document. It could be interpreted to indicate that other government initiatives, such as the National Development Plan, other proposed taxes (including eco-taxes) and the government’s primary responsibility to ensure food security, should all be considered when thresholds are determined. As rollout might possibly take place on 1 January 2017, the carbon tax would only be directly levied on agriculture from 1 January 2022, after the initial 5-year exemption period.

Although agriculture will initially be exempt, it will still be affected indirectly during the first phase. This is due to an increase in input costs relating to farm products purchased upon which carbon tax is levied and filtered down to the farmer (Moneywebtax 2013). When the initial carbon tax exemption period expires, the agricultural sector will be taxed on GHG emissions including carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) which falls under the Scope 1 classification of the 2013 Policy Paper, being direct GHG emissions from sources controlled or owned by the polluting taxpayer (SA Department of National Treasury 2013a: 47, 54). Therefore, the proposed carbon tax can more aptly be described as a GHG tax.

Agricultural related emissions from manure management, enteric fermentation and cropland and forest utilisation will be taxed. It is difficult to measure these emissions accurately, because of the lengthy processes producing it. Manure management and enteric fermentation propels GHG emissions of livestock. In 2000, it was estimated that enteric fermentation (mostly in the form of methane gas) contributed about 19 million tons of CO<sub>2</sub>-eq emissions in SA. Variables determining emission volumes include the number and type of animals and management practices of farmers. Likewise, the volume of N<sub>2</sub>O and CH<sub>4</sub> emissions originating from manure are dependent on management practices. Indirect N<sub>2</sub>O emissions are determined by the amount of fertiliser and manure used as well as the effect of N<sub>2</sub>O fixing crops. At that stage, the Department of Agriculture was researching improved methodology and data collection techniques (SA Department of National Treasury 2013a: 63).



**Table 5.3: Absolute GHG emissions for South Africa (2000 GHG inventory)**

No.	Sectors/activities	Carbon dioxide (CO <sub>2</sub> )	Methane (CH <sub>4</sub> )	Nitrous oxide (N <sub>2</sub> O)	Total GHG emissions, 2000 (MtCO <sub>2</sub> -eq)	Percentage contribution	Cumulative contribution
<b>1.</b>	<b>Fuel combustion</b>	<b>263,574.20</b>	<b>210.85</b>	<b>1,459.70</b>	<b>265,245</b>		
1.1	Electricity generation	178,534.94	38.95	862.53	179,436	39%	39%
1.2	Petroleum refining	39,777.89	10.89	176.29	39,965	9%	48%
1.3	Chemicals	17,393.36	3.98	82.78	17,480	4%	51%
1.4	Iron and steel	15,956.63	0.43	0.17	15,957	3%	55%
1.5	Residential	5,547.25	122.25	258.90	5,928	1%	56%
1.6	Agriculture; forestry; fishing	3,705.54	3.06	9.74	3,718	1%	57%
1.7	Commercial; institutional	1,901.60	0.43	9.28	1,911	0%	57%
1.8	Other mining and quarrying	317.91	0.11	1.41	319	0%	57%
1.9	Non-metallic metals	161.62	29.67	58.40	250	0%	57%
1.10	Food processing; beverage; tobacco	55.55	0.03	0.04	56	0%	57%
1.11	Non-ferrous metals energy	100.17	0.99	0.07	101	0%	57%
1.12	Pulp, paper and print	131.74	0.06	0.09	122	0%	58%
<b>2.</b>	<b>Fugitive emissions from fuels</b>	<b>26,297.37</b>	<b>44,879.71</b>	<b>-</b>	<b>71,177</b>		<b>58%</b>
2.1	Oil and natural gas	26,273.04	4,513.46	-	30,787	7%	64%
2.2	Coal mining	24.33	40,366.25	-	40,391	9%	73%
<b>3.</b>	<b>Transport</b>	<b>41,252.53</b>	<b>259.21</b>	<b>720.15</b>	<b>42,232</b>		<b>73%</b>
3.1	Civil aviation	2,014.91	0.30	17.49	2,033	0%	73%
3.2	Road transport	38,623.88	258.19	629.23	39,511	9%	82%
3.3	Railways	613.74	0.72	73.43	688	0%	82%
<b>4.</b>	<b>Agriculture, forestry and land use</b>	<b>(20,279.67)</b>	<b>22,136.94</b>	<b>18,636.00</b>	<b>20,493</b>		<b>82%</b>
4.1	Aggregate sources and non-CO <sub>2</sub>	471.00	1,072.26	18,220.60	19,764		82%
4.1.1	GHG emissions from biomass burning	471.00	1,072.26	793.60	2,337	1%	83%
4.1.2	Indirect nitrous oxide emissions from managed soils	-	-	17,427.00	17,427	4%	86%
4.2	Land	(20,750.67)	190.89	-	(20,560)		86%
4.2.1	Forest land	(13,020.52)	-	-	(13,021)		86%
4.2.2	Cropland	(7,730.15)	-	-	(7,730)		86%
4.2.3	Wetlands	-	190.89	-	191		86%
4.3	Livestock	-	20,873.79	415.40	21,289		86%
4.3.1	Enteric fermentation	-	18,969.09	-	18,969	4%	91%
4.3.2	Manure management	-	1,904.70	415.40	2,320	1%	91%
<b>5.</b>	<b>Industrial processes and product use</b>	<b>30,557.53</b>	<b>304.38</b>	<b>1,217.42</b>	<b>32,079</b>		<b>91%</b>
5.1	Mineral products	5,877.96	-	-	5,878		91%
5.1.1	Cement production	3,604.96	-	-	3,605	1%	92%
5.1.2	Limestone and dolomite use	2,273.00	-	-	2,273	0%	92%
5.2	Chemical industry	851.22	302.38	1,217.42	2,371		92%
5.2.1	Ammonia production	435.64	-	-	436	0%	92%
5.2.2	Carbide production	64.58	-	-	65	0%	92%
5.2.3	Nitric acid production	-	-	1,079.42	1,079	0%	93%
5.2.4	Others	351.00	155.38	138.00	644	0%	93%
5.2.5	Soda ash production and use	-	147.00	-	147	0%	93%
5.3	Metal production	23,828.35	2.00	-	23,830		93%
5.3.1	Aluminium production	3,306.00	-	-	3,306	1%	94%
5.3.2	Ferroalloys production	5,009.00	2.00	-	5,011	1%	95%
5.3.3	Iron and steel	15,513.35	-	-	15,513	3%	98%

(Source: SA Department of National Treasury 2013a: 50)

From the table above it is clear that the agricultural, forestry and land use sectors are responsible for net emissions of about 20 493 million tons of CO<sub>2</sub>-eq. Indirect N<sub>2</sub>O emissions from managed soils and GHG emissions from biomass burning contributed to 19 764 million tons of CO<sub>2</sub>-eq while livestock contributed 21 289 million tons of CO<sub>2</sub>-eq. Land reduced this figure with 20 560 million

tons of CO<sub>2</sub>-eq emissions as it acts as a carbon sink (SA Department of National Treasury 2013a: 50).

According to Marijke Vermaak, a resource economist at KPMG audit and consulting firm, the carbon tax will increase the input costs of SA farmers due to higher energy (electricity and fuel) and fertiliser prices. This will raise food prices, which will negatively affect the competitiveness of locally produced commodities on the global market. To alleviate the carbon tax's effect on international competitiveness, Treasury proposed the implementation of a border tax adjustment (BTA). This will involve levying an additional tax on goods imported from foreign countries where no carbon tax is charged. This additional tax will align foreign prices with those of local producers, thereby enhancing the competitiveness of local producers. Ultimately, carbon tax could prove beneficial for food exporters, of which farmers form an integral part. Countries SA export to will implement a similar tax on imported food products from those countries without an emissions tax. Should such a tax already be levied in SA, exporters will not have to pay the foreign tax, as SA produce would now carry a carbon tax component within its price structure, when entering the borders of a foreign country. This will negate the need for a BTA adjustment to align the SA product's price with that of its foreign competitors (Farmer's Weekly 2011b).

According to Dr John Purchase, CEO of the Agricultural Business Chamber, the mooted carbon tax might damage SA agriculture, as farmers will be forced to increase prices due to higher input costs. This implies that SA produce prices will be uncompetitive on the international market, as rivaling foreign producers might not necessarily be exposed to similar taxes. According to Johannes Möller, president of AgriSA, the agricultural sector differs from other sectors with regard to carbon emissions. He states, "Farmers shouldn't be held accountable for emissions produced while making food and can't be penalised for emissions that are beyond human control. Agriculture can't compete with other sectors in cost efficiency in reducing carbon emissions" (Farmer's Weekly 2011a).

A possible consequence of a carbon tax might be that SA farmers relocate their operations to other African countries where no carbon tax is levied, which lowers the cost of doing business. If BTAs are implemented in both SA and in other exporting destination countries, any financial gain businesses attempt to obtain in this manner, might be nullified.

### **5.7.3 Central Themes**

From the discussion in this section, and information provided in previous chapters relating to the Australian carbon tax on carbon emissions, the following central themes can be identified:

1. Adjustments to initial eco-tax plan / structure
2. Alternatives available
3. Cost absorption and/or food inflation issues
4. Decline in international competitiveness
5. Discrimination issues
6. Earmarking issues
7. Farmers may go out of business
8. Food security concerns
9. General unhappiness in the agricultural community
10. Input cost increase
11. Job loss possibility
12. Negotiations with government
13. Objections (protests, petitions etc.)
14. Organised agriculture (unions) becomes involved
15. Poor planning from government institutions
16. Poor public participation process
17. Research & development issues

### **5.7.4 Summary**

This section investigated the possible consequences of a general carbon tax on SA agriculture. The main concerns are an increase in input costs caused by the eco-tax, rendering farming economically unviable, with resulting food security concerns. Should foreign exporters produce at a lower cost in jurisdictions not subscribing to a carbon tax, both the international and local competitiveness of SA producers may be hampered. Ultimately, either the farmer or the end consumer will have to bear the resulting price increases. Various additional issues were also identified as per the central theme list.

## **5.8 AUSTRALIA: CARBON FARMING INITIATIVE**

This is a programme whereby farmers offset carbon on a voluntary basis. As explained in chapter 3, this entitles them to carbon credits tradable on carbon markets. The carbon credits can be procured by storing carbon in agricultural soil and trees, decreasing livestock emissions and using low carbon fertilisers.

### **5.8.1 Current Comparable Taxes in South Africa**

Currently there is not yet a comparable promulgated fiscal incentive in SA, specifically aimed at SA farmers. If the comprehensive carbon tax discussed in the previous section is implemented in SA, the situation might change. This is due to recently released draft legislation, in which regulations pertaining to a “Carbon Offset” scheme is provided, that will come into force if the proposed carbon tax bill is eventually implemented. These concepts are further investigated below.

#### ***Historical development***

In 2013, National Treasury’s Carbon Tax Policy Paper alluded to the possibility of an initiative similar to the CFI initiative. It stated that government aimed to take advantage of the abatement opportunities of land used for forestry and agricultural purposes. It also mentioned that support would be offered to increase the affordability of new developing technologies and to create economies to utilise the abatement potential of forestry and agriculture. The paper continued to mention that:

- 1) land-use and forestry acted as a net sink
- 2) the way in which land was used either added or removed carbon from the air
- 3) the possibility of agricultural land owners partaking in a carbon scheme by utilising carbon offsets

(SA Department of National Treasury 2013a: 63, 67)

In April 2014, the “Carbon Offsets Paper” was released which expands on National Treasury’s plan of introducing carbon sequestration initiatives into the SA tax system, once a carbon tax have been initiated. This paper deals with various sectors in the SA economy, including agriculture, as

well as concepts such as carbon-offset principles, standards, objectives, policies and project methodologies. It also examines other concepts such as eligible and ineligible project types, potential carbon modelling supply and demand, offset standards, current projects in SA, scheme administration, accreditation and standards bodies, independent verification bodies, offset registries and trading platforms (SA Department of National Treasury 2014: 1-2; SA Department of National Treasury 2015: 1). During June 2016, the “Draft Regulations on the Carbon Offset in terms of the draft Carbon Tax Bill” was published for public comment that reinforced the 2014 paper and the 2015 draft Carbon Tax Bill (SA Department of National Treasury 2016: 1).

### ***Other incentives***

Currently section 12K of the Income Tax Act (ITA) provides a carbon credit sale incentive, but it does not form part of a more comprehensive programme to assist farmers specifically, as is the case in Australia. Section 12K(2) (South Africa. Income Tax Act 58 of 1962) states that:

There must be exempt from normal tax any amount received by or accrued to or in favour of any person in respect of the disposal by that person of any certified emission reduction derived by that person in the furtherance of a qualifying CDM project carried on by that person.

The definition of a qualifying CDM project is contained in section 12K(1) of the ITA. This section states that:

‘qualifying CDM project’ means a Clean Development Mechanism project-

- a) in respect of which a letter of approval as contemplated in regulations 3(1)(a) and 7(3) of the Regulations has been issued by the Designated National Authority; and
- b) that has been registered as contemplated in paragraph 36 of the Modalities on or before 31 December 2020;

The term “Modalities” is also defined in section 12K(1) and refers to: “Modalities and procedures for a clean development mechanism under the Kyoto Protocol,” (South Africa. Income Tax Act 58 of 1962). Income from the sale of qualifying carbon credits will therefore be exempt from income tax.

## 5.8.2 Possible Consequences for South African Agriculture

If SA farmers are subjected to either a voluntary or a compulsory CFI scheme, it stands to reason that participants will attempt to lower their carbon emissions or maximise abatement activities within a framework of accepted and verifiable SA measurement methodologies. Several methods of reducing or capturing carbon emissions exist and the effects on SA agriculture may be noteworthy.

### *General*

According to National Treasury 3 718 million tons of CO<sub>2</sub>-eq emissions are released in SA during the combustion of fuel in agricultural activities. Furthermore, enteric fermentation of livestock accounts for 18 969 million tCO<sub>2</sub>-eq of emissions, while manure management contributes 2 320 million tCO<sub>2</sub>-eq. Biomass burning accounts for 2 337 million tCO<sub>2</sub>-eq of emissions pertaining to the agricultural, forestry and land management sector, while indirect N<sub>2</sub>O emissions from soil management are approximately 17 427 million tCO<sub>2</sub>-eq. If the agricultural sector was taxed on all of these emissions at the proposed initial rate of R120 per tCO<sub>2</sub>-eq, the financial impact on agriculture would be enormous (SA Department of National Treasury 2013a: 50-51).

Even with agriculture being temporarily, or possibly, permanently exempt from a carbon tax, a general increase in farming input costs will occur (due to other business entities paying carbon tax). SA agriculture's redeeming quality might be the carbon sequestration ability of agricultural land. Theoretically, SA cropland has the ability to remove 7 730 million tCO<sub>2</sub>-eq from the atmosphere (SA Department of National Treasury 2013a: 50). If vacant farmland used for livestock is converted to carbon sinks, agriculture's ability to remove carbon from the atmosphere should increase even more. If implemented, increased costs (more costly inputs and carbon taxes) could be offset against extra scheme income.

As explained above, the implementation of a carbon offset scheme is in an advance stage. National Treasury aims to implement it simultaneously with the planned comprehensive carbon tax discussed in section 5.7. In certain circumstances, international carbon offset credits issued prior to the implementation of the SA carbon tax, should be eligible for the scheme. National Treasury is of opinion that many opportunities exist in the agricultural sector, as it is a large industry with various sub-sectors (SA Department of National Treasury 2014: 21, 26).

According to Treasury's 2016 draft regulations, companies will be able to decrease their total carbon tax liability by utilising carbon offset credits with a ceiling of 5 to 10 per cent of their overall GHG emissions. The main requirements for carbon offset projects are that projects must be located in SA. To avoid double counting, projects must take place separately from activities normally subject to the proposed carbon tax. Agricultural, forest and land use projects that should qualify, include:

- Anaerobic biogas digesters;
- Biomass energy;
- Reduced tillage;
- Restoration and management of grassland;
- Restoration of sub-tropical thicket, forests and woodlands;
- Restoration and management of grassland;
- Small scale afforestation

(SA Department of National Treasury 2016: 1-2)

Two of these project types, selected on a sample basis, and taking into account its relevance and importance in a SA agricultural context, are discussed in more depth below.

### ***Farmers implementing no-tillage to unlock advantages of a CFI tax scheme (reduced tillage)***

To decrease their carbon footprint and qualify for CFI credits, SA farmers may increasingly utilise no-tillage techniques. No-tillage management methods help to decrease carbon and water loss from soil. It is estimated that conservation agriculture, including no-tillage, could eventually become the only agricultural method able to provide in the world's future food demand. As such, it will be increasingly used in future. According to Dr Johan Strauss, the key principles of no-till include:

- Keeping soil disturbance to a minimum - ploughing destroys the soil structure, which assists in carbon and water retention as well as the habitat of microorganisms.
- Rotating crops and maximum crop variety - biodiversity below the soil is ensured by maximum biodiversity above the soil.
- Maximum cover above the soil - living and dead plant material protects soil against rain and sunshine damage. In summer the ground is kept cool and in the winter warm. Organic

material is consumed by organisms that captures carbon in the soil. Every extra 1% of carbon in the soil doubles water retention capacity.

- Bio diverse friendly composition and structure of soil - ensure soil is appealing and inviting to microorganisms that disappeared while conventional farming methods were practised.

(Farmer's Weekly 2014)

No-till is only practiced on about 1% of arable land in Africa. A strong no-tillage movement exists in the Western Cape and KwaZulu-Natal and it was first practised some thirty years ago in SA. It is gaining further popularity as farmers realise the advantages thereof, especially during low rainfall periods. Due to water and arable land being in short supply, it is compatible to SA conditions. No-till assists in the sequestration of carbon, decreases carbon and water loss from the soil, and prevents large-scale erosion. Soil health improves which aid higher and sustainable yield over time. In SA, current improvements in local no-till technology include designing and building no-till machines, which increases competitiveness in comparison to imported machines (Farmer's Weekly 2014).

According to Dr Strauss, trials conducted in the Western Cape showed no-tillage to cut input costs while promoting stable and larger crop yield. Moreover, it is sustainable as proven by trials done in SA over 19 years. Studies concluded that conservation agriculture improves soil carbon sequestration, where 70 tons of carbon were captured in soil over a 13-year trial period. Thus, no-tillage assists in decreasing the carbon footprint of farming activities. Both commercial and developing farmers can successfully practise no-till. The Western Cape government provided research assistance relating to no-till. In KwaZulu-Natal, the KZN Department of Agriculture proved vital to no-till projects and initiated training projects for small and large-scale farmers. The National Department of Agriculture currently do not reward farmers for practising conservation agriculture, which is an obstacle for the no-till movement (Farmer's Weekly 2014).

Considering that many SA farmers are on the verge of a full-scale implementation of no-till, the introduction of a CFI similar scheme (when the draft carbon-offset regulations are ratified), which rewards carbon mitigation techniques by means of carbon credits, may be the final "push" required for farmers to embrace no-till as a main technique to manage the land. It could furthermore address the current problem of government not rewarding conservation agriculture.



### ***Farmers utilising Spekboom to unlock advantages of a CFI tax scheme (restoration of subtropical thicket, forests and woodlands)***

Spekboom (Latin name: *Portulacaria afra*) is indigenous to the Eastern Cape and specifically to the Addo Elephant Park. It can store in excess of four tons of carbon per hectare, in other words, 10 hectares of Spekboom can absorb the yearly emissions of 26 cars. What makes Spekboom exceptional and adaptable is its unique ability to shift its photosynthetic processes from that of a wet rainforest plant to one of a semi-arid desert cactus. A plant of 2.5 meters high only needs 250-350 mm of annual rainfall to survive. Spekboom counters erosion, helps restore biodiversity and assist soil quality (Times Live 2011). Once the carbon is absorbed, it stays stored within the plant-structure, which acts as a carbon sink until it dies or is destroyed. This process is known as carbon sequestration. Under the Australian CFI scheme a farmer is normally not penalised if a plant dies or is destroyed (resulting in carbon loss) due to circumstances beyond the farmer's control (drought, bushfires, plagues etc.). This is because the vegetation will normally recover by itself. If this is not the case, the farmer will have to take rehabilitation steps (see section 3.7.2).

Various projects were launched in SA to take advantage of the Spekboom's carbon storing capabilities. One such project is the "subtropical thicket restoration project" of the Eastern Cape Parks and Tourism Agency, with the aim to restore a substantial area of the original 1.4 million hectares of Spekboom thicket, which was destroyed in the Eastern Cape over the past 100 years. Currently only 200 000 hectares of strong, healthy bush remain. This can mostly be ascribed to over-exploitation by ill-advised Angora goat farming practices. In the 2010/2011 and 2011/2012 book years, government spent approximately R42 million on this project. By registering it at the Verified Carbon Standard (VCS) programme and the Climate, Community and Biodiversity Alliance (CCBA), about R250 million voluntary carbon credits will be unlocked that can be sold on carbon credit markets. The VCS programme is an international quality assurance system used to account for the decrease in GHGs. It is one of the most popular systems currently in use in the US\$424 million international carbon market. The CCBA is an international partnership of research institutions as well non-governmental organisations (Business Day Live 2011).

As explained previously, a "carbon credit" is a general term for the legal right to discharge one ton of CO<sub>2</sub> into the atmosphere (or the corresponding mass of any other GHG), which is represented by a permit or a certificate. The project is labour intensive and can assist in job creation of between 55 000 to 70 000 person days (in other words between 28 to 36 permanent jobs per year, if one person works 40 hours per week for 48 weeks per year). After implementing

the Spekboom project, the Eastern Cape Parks and Tourism Agency increased their income by 300% in nine months earning carbon credit income. Other additional pilot projects have been initiated and are creating business models for the future. Some critics argue that carbon trading provides corporations with a façade of progress, while emission pollution actually still continues (Business Day Live 2011).

Possible negatives for farmers planting Spekboom, as part of a CFI scheme, may include expenses (R42 million for a large-scale project over two book years in the Eastern Cape). Approximately 10 hectares of Spekboom is required to absorb the carbon emissions of 26 cars per annum and large regions of farmland will have to be sacrificed, which could have been used for food production. Some people deem carbon credits ineffective, as it merely provides a smokescreen for corporations to continue with emission pollution. However, if managed correctly, Spekboom could provide an indigenous solution to global warming. It can be cultivated on a large scale by farmers within a CFI programme, when a carbon tax is introduced and business models created during pilot projects could act as road maps. It is labour intensive and can create farm worker jobs while substantially increasing farming profits.

### **5.8.3 Central Themes**

From the discussion in this section, and information provided in previous chapters relating to the Australian CFI, the following central themes can be identified:

1. Food security concerns
2. Organised agriculture (unions) becomes involved
3. Research & development issues

### **5.8.4 Summary**

There are many positive effects a CFI tax scheme can have on SA agriculture. It is important to note that even though the Australian government exempt farmers from the carbon eco-tax, they still intended to provide assistance through the CFI scheme. This is because they recognised that price increases trickling down the supply chain, would notably increase farmers' input costs. The proposed general SA carbon tax should therefore immediately incorporate a CFI component accessible to farmers, who could tap into the scheme by adopting no-till farming techniques or by planting Spekboom plantations on dormant land. Tax-free carbon credit proceeds from these

activities could then be used to supplement income where demand for the farmer's primary products decrease due to eco-taxes (such as a meat tax, which suppresses demand).

## **5.9 SWEDEN: MEAT CONSUMPTION TAX**

The Swedish Board of Agriculture proposed that a tax on meat should be applied at different scales. The carbon footprint of each type of meat determines the value of the proposed eco-tax. The purpose is to reduce meat consumption in Sweden, thereby decreasing the negative impact of meat production on the environment.

### **5.9.1 Current Comparable Taxes in South Africa**

There is currently no meat consumption tax charged on meat sold by retailers and butcheries to the end-consumer in SA. The meat and livestock industry pay a statutory meat levy, in accordance with legislation signed into law by the SA Minister of Agriculture and administered by the Red Meat Industry Forum. It applies to processed meat products from cattle, sheep, goat and pork, including their skins and hides. The money is spent on research and development, consumer communication, production enhancement, legislation compliance, administration and transformation of the industry (Farmer's Weekly 2010).

The levy is rather an internal fee paid by meat producers to advance the meat industry. It therefore differs from the proposed Swedish meat tax, which the final consumer would pay at consumption level such as an indirect tax. In other words, it is not charged directly to the end-consumer by means of an additional amount calculated on weight or another basis. Furthermore, the main purpose of the levy is not to increase prices for purposes of decreasing demand or consumption. Nor is the purpose to decrease production with an eventual reduction of harmful livestock rearing effects on the environment, as the case is with the proposed Swedish meat consumption eco-tax. It can therefore not be classified as an eco-tax.

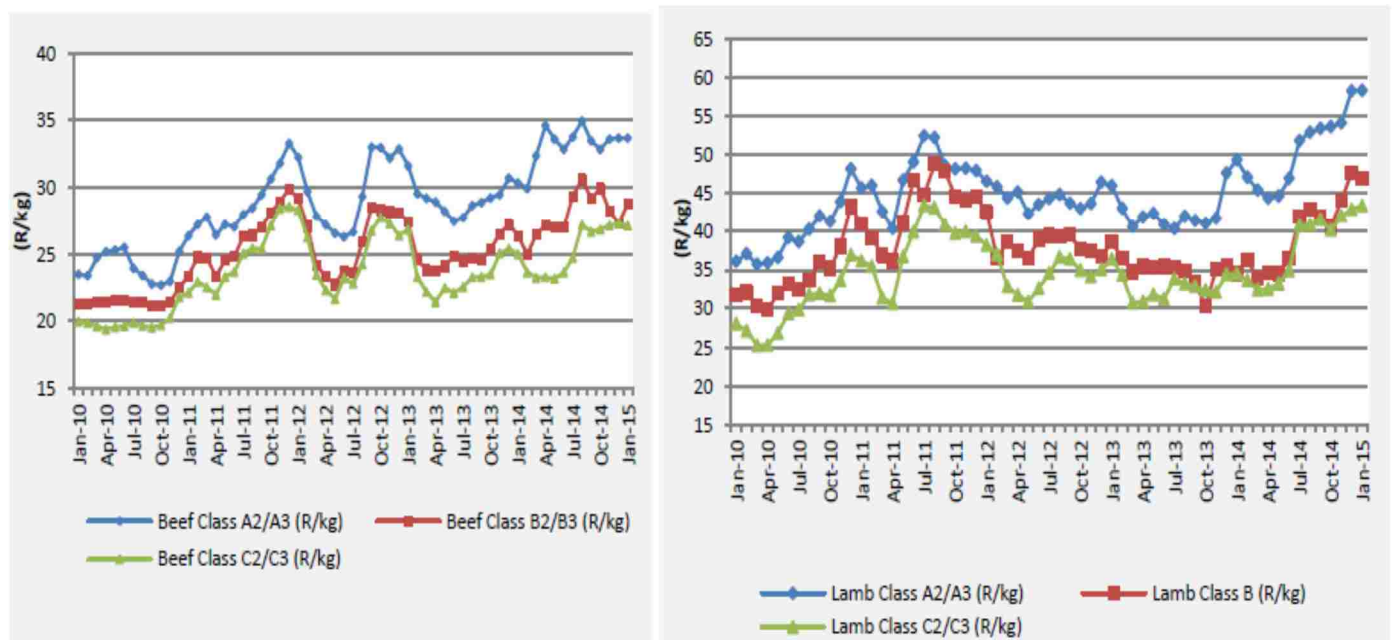
### **5.9.2 Possible Consequences for South African Agriculture**

Meat consumption has grown significantly over the past two decades in SA. According to the Department of Agriculture, Forestry and Fisheries, the average SA consumed approximately 35.8 kg white meat per annum in 2012. In 1992 it was 15.8 kg, which means a 126.58% increase over

twenty years from 1992 to 2012. Egg consumption displayed similar trends, where the average South African consumed 5.9 kg of eggs per annum in 1992 versus 9.3 kg of eggs in 2012 (a rise of 57.62%). The consumption of red meat also increased, but to a lesser degree than white meat. From 2002 to 2012, red meat consumption grew on average from 19.6 kg to 24 kg per person per year. According to the CEO of SA Poultry, Kevin Lovell, the slower growth in red meat consumption was most likely due to high prices (Mail & Guardian 2013b).

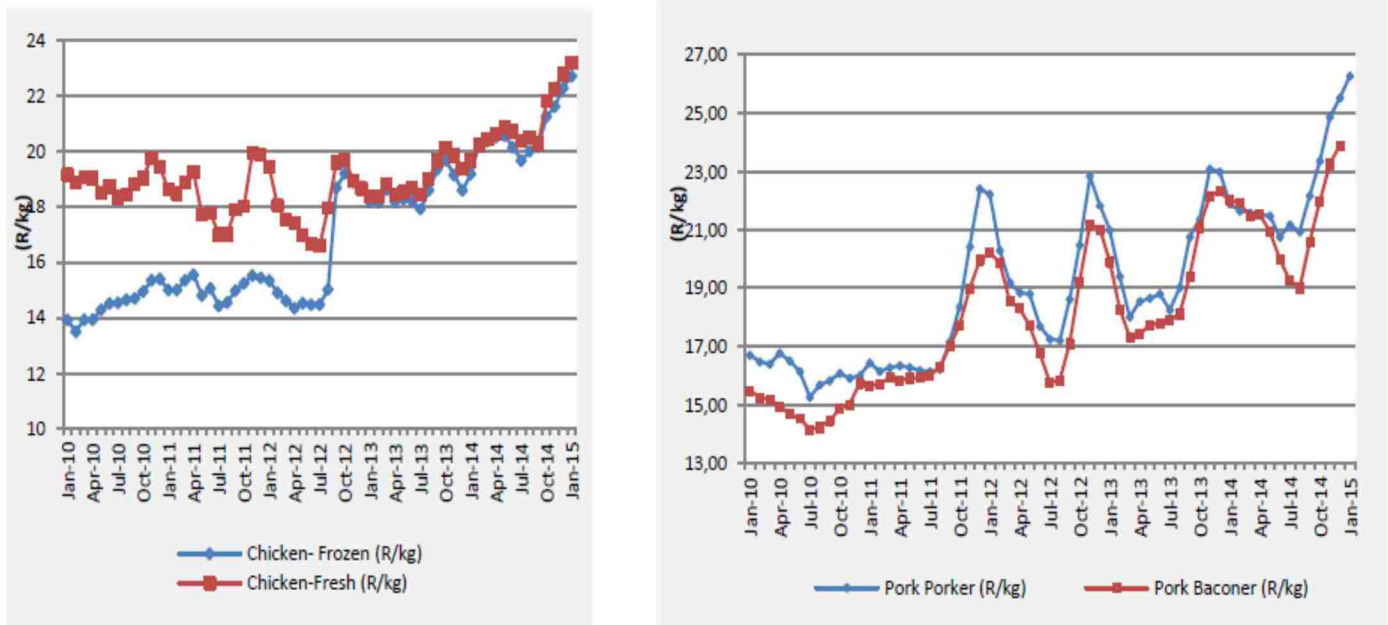
In SA, the price of meat has increased over the years. This is evident from the graphs below relating to the producer price of all four major meat types (beef, chicken, lamb and pork) from January 2010 to January 2015. For instance, the producer price for class A2/A3 beef increased from R20 to about R27 per kg in this period. Similarly, class A2/A3 lamb increased from about R36 to R58 per kg, chicken from R19 to R23 per kg and baconer pork from R15 to R24 per kg (National Agricultural Marketing Council 2014:22). A meat tax at retail level will accelerate price increases in the supply chain, driving down demand, which may negatively affect meat farmers.

**Figure 5.2: Producer prices of beef and lamb in South Africa**



(Source: AMT as quoted by the National Agricultural Marketing Council 2014: 22)

**Figure 5.3: Producer prices of chicken and pork in South Africa**

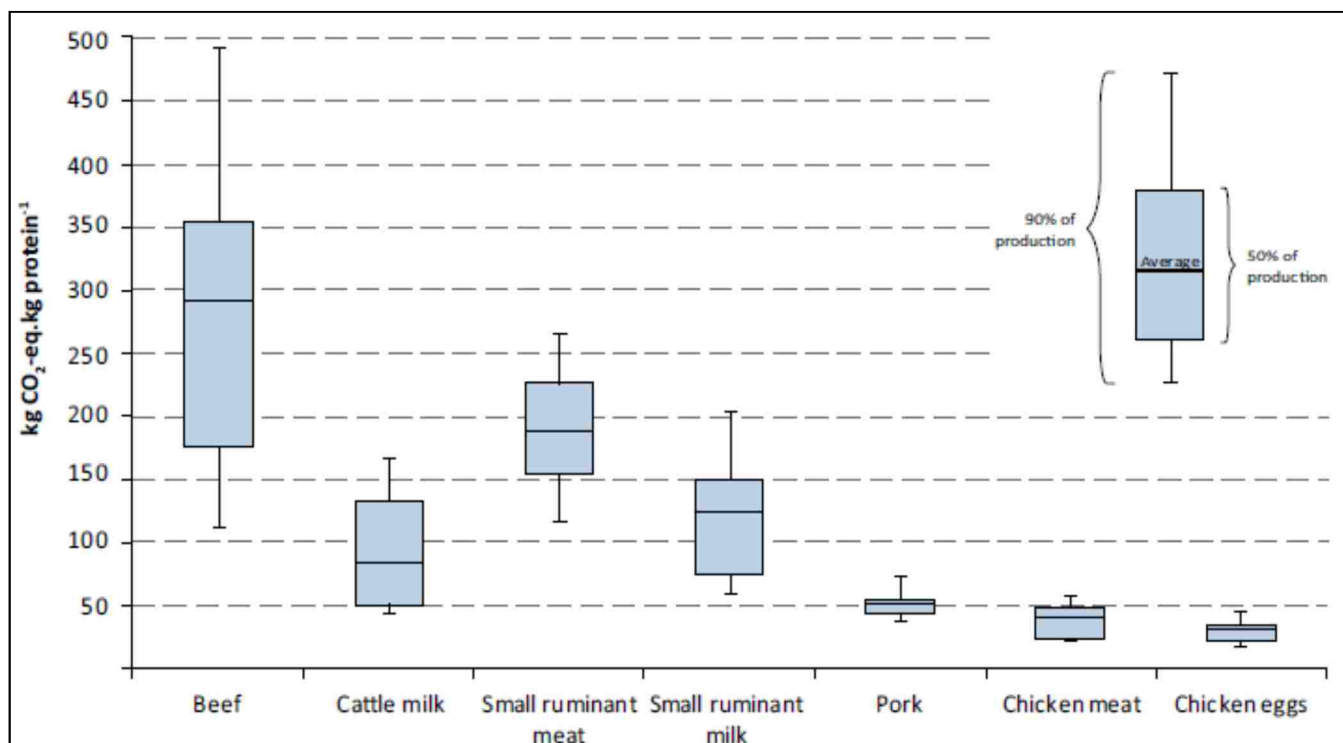


(Source: AMT as quoted by the National Agricultural Marketing Council 2014: 22)

To infer what the possible consequences of a meat consumption eco-tax will have on SA meat farmers, the proposed value of the tax should be determined. Beef is the commodity with the highest emission factor, when emissions are stated on a per protein basis (quantity of GHGs released for each unit of production output). Beef's average emission factor is nearly 300 kg CO<sub>2</sub>-eq per kg of protein as figure 5.4 below indicates. Beef is followed by small ruminant meat with an average of 165 kg CO<sub>2</sub>-eq per kg of protein, followed by milk from small ruminants with an average of 112 kg CO<sub>2</sub>-eq per kg of protein. The global average emissions factors of cows' milk, as well as pork and chicken products are less than 100 kg CO<sub>2</sub>-eq per kg of protein (see figure 5.4 below) (Gerber *et al.* 2013: 17).

Considering National Treasury's proposed carbon tax of R120 per ton of CO<sub>2</sub>-eq emissions, a possible value of an eco-tax on meat and other protein commodities, levied at retail level, can be calculated. Taking the average emission factor of 300 kg CO<sub>2</sub>-eq per kg of beef in consideration, such a tax would be equal to R36 ( $R120/1\ 000\ \text{kg} \times 300\ \text{kg}$ ) for each kg of beef sold in the supermarket or at the butcher. If the same principle is applied on meat from sheep and goats, an eco-tax of R19,80 would apply on each kg sold and R6 per kg of pork. Cows' milk will have a meat consumption eco-tax of approximately R9 per kg (or litre).

**Figure 5.4: Global emission intensities by commodity**



(Source: GLEAM as cited in Gerber *et al.* 2013: 16).

Modelling done in Switzerland (see section 4.8.1) suggests that if an additional meat consumption tax is simultaneously introduced and charged at 26% on pork, 28% on beef and 40% on poultry, the demand will subsequently drop respectively with 25%, 27% and 47.4%. This provides a rough indication what could happen with SA demand. The calculated Rand values for a SA eco-tax could easily be changed where, for instance, R60 per ton of CO<sub>2</sub>-eq emissions are used instead of R120. More research and financial modelling is required to ascertain the exact percentage change in demand in SA. There is also the possibility, as per the scenario contemplated by Wirsenius *et al.* (2010: 9, 17) (see section 4.8.3), that farmland becoming vacant due to reduced meat production, could be converted to produce bio-energy crops, which would augment income of meat farmers. To allow for adjustment, a change in product mix would most probably have to be phased in over time.

### 5.9.3 Central Themes

From the discussion in this section, and information provided in previous chapters relating to the Swedish meat consumption tax, the following central themes can be identified:

1. Alternatives available
2. Cost absorption and/or food inflation issues
3. Decline in international competitiveness
4. Earmarking issues
5. Farmers may go out of business
6. Food security concerns
7. Job loss possibility
8. Objections (protests, petitions etc.)
9. Research & development issues

#### **5.9.4 Summary**

The potential impact of a meat consumption eco-tax on SA meat farming was investigated. Considering an estimated drop in demand, it seems that this eco-tax will not be viable, except if it is gradually introduced at low values and steadily increased over time. This will slowly steer the market to a low meat consuming economy, without bankrupting the industry and risking food security. By funds raised from this eco-tax, meat farmers can be assisted to invest in bio-energy crop production on land becoming available due to lower meat production (earmarking).

#### **5.10 UNITED NATIONS: COW FLATULENT TAX**

This tax entails taxing farmers being on GHG emissions originating from their livestock for purposes of placing a price on environmentally destructive practises pertaining to livestock production, ultimately to curb said practises.

##### **5.10.1 Current Comparable Taxes in South Africa**

In SA, there is currently no cow flatulent tax levied on a per-head-of-cattle basis to try to curb methane gases released by cattle. This may change in the future when an overall general carbon tax is introduced, depending on the exact manner in which it will be applied to SA livestock farmers.

## 5.10.2 Possible Consequences for South African Agriculture

Variables which will have a bearing on the quantum of such an eco-tax is the amount of cattle in SA, the amount of CO<sub>2</sub> equivalent emissions released per head of cattle and finally the tax value for each ton of CO<sub>2</sub> equivalent of emissions. As on 31 August 2012, there were approximately 13.9 million cattle in SA (South Africa - Department of Agriculture, Forestry & Fisheries 2013:56). On average, it is estimated that western cattle breeds produces around 120 kg of methane per cow per year. This figure is lower for non-western cattle breeds, which is about 60 kg of methane per cow per year. Western cattle breeds are larger than their non-western counterparts and include breeds reared in North America and Europe for dairy purposes. Non-western breeds are normally bred for other purposes, such as working on the fields (see figure 5.5 below) (BBC News 2009). In South Africa there are at least six breeds of cattle that are considered to be dairy breeds. This includes Ayrshire, Dairy Shorthorn, Guernsey, Holstein-Friesland, Jersey and Swiss (Brown-and Dairy-) breeds (SA Department of Agriculture & Rural Development – Province of KwaZulu-Natal [s.a.]). With regard to global warming potential, it is estimated that methane is about 25 times more powerful than CO<sub>2</sub> (Climate Change Connection 2015). One western bred cow therefore releases about 3 000 kg (120 kg \* 25) of CO<sub>2</sub> equivalent emissions per year.

A value of R120 per tCO<sub>2</sub>-eq emissions can be used, being the value envisaged in the carbon tax mooted by SA's Treasury (SA Department of National Treasury 2013a: 15). As a very rough estimate a total yearly tax revenue of about R5 billion (3 tons of CO<sub>2</sub> per cow per year x R120 per ton of CO<sub>2</sub> equivalent x 13.9 million cattle) can be collected by the SA government just by taxing each head of cattle. The same principle for additional tax revenue can be applied to sheep, pigs and chickens. This tax will either have to be fully absorbed by SA cattle farmers or otherwise partially or completely borne by the consumer, which will lead to higher meat prices and food inflation. In turn, living standards will be even lower for the already struggling poor. Higher meat prices may lead to consumer resistance, less sales and smaller cattle farmers unable to continue farming, as they cannot absorb the additional tax when operating on lower sales volumes.

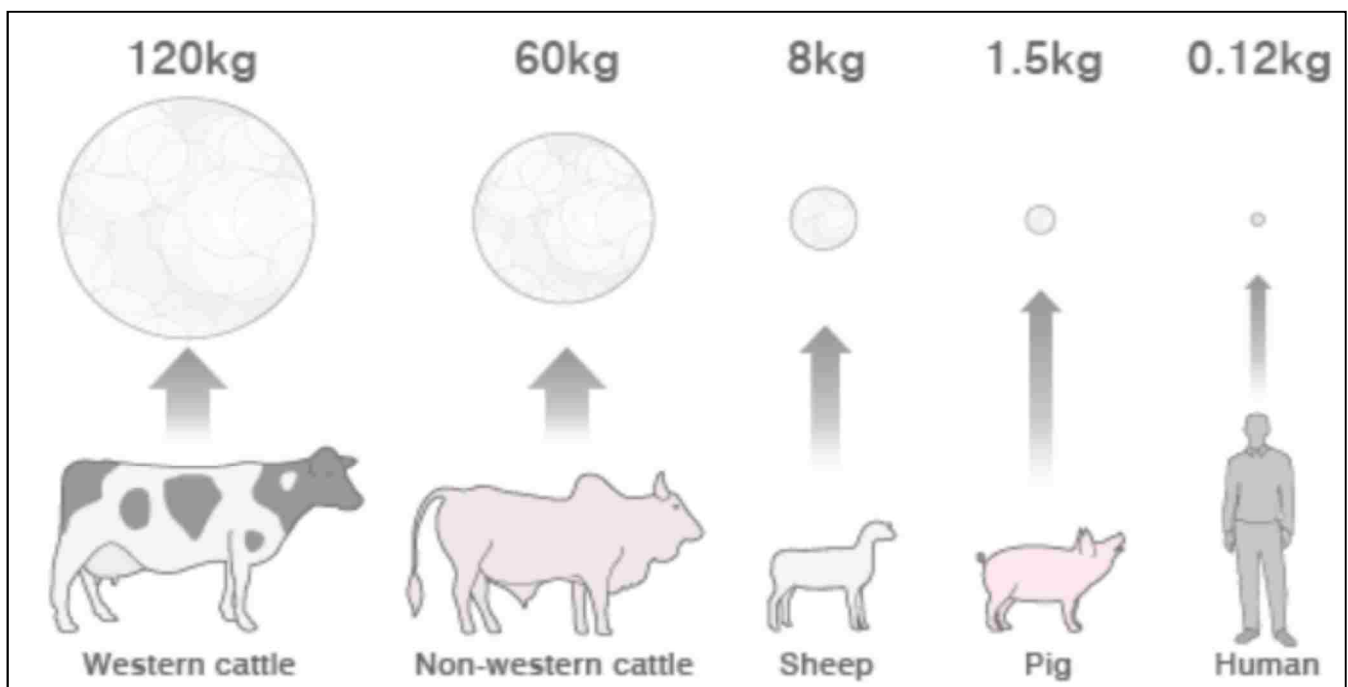
According to the CEO of the SA Agricultural Business Chamber, Dr John Purchase, cow flatulent tax may be detrimental to the country's agriculture, considering that other taxes, such as an overall carbon tax on carbon emissions, may in future be levied in conjunction with this tax. The extra cost will force farmers to increase sale prices, leading to higher cattle meat prices in SA compared to their foreign counterparts not subjected to this tax. With regard to carbon emissions, farmers should be treated differently than most other SA businesses, as they are unable to



contend with other sectors in relation to cost efficient carbon reducing measures. According to AgriSA, farmers cannot be held responsible or be punished for emissions emanating from creating food, as these emissions are “beyond human control” (Farmer’s Weekly 2011a).

As discussed in section 4.9.3, soybeans may be considered as an alternative source of protein with a much smaller GHG emission footprint than meat. Furthermore SA is one of the top soy producers in the world (FAOSTAT 2013), which positions SA farmers perfectly to cultivate soybeans more aggressively, should the demand for traditional meat related products decrease due to this tax. However, recent new developments in New Zealand with regard to lovastatin mixed into animal feed, indicates that it is possible to reduce methane emissions deriving from animals, rendering the above AgriSA statement partially incorrect. As discussed earlier, National Treasury is furthermore of the opinion that sound management practices applied by the farmer, might reduce the amount of N<sub>2</sub>O and CH<sub>4</sub> emissions from manure. N<sub>2</sub>O fixing crops may further reduce emissions from fertilisers and manure according to National Treasury (SA Department of National Treasury 2013a: 63). Other possible effects may include consumers switching to alternative protein sources with a lower emission footprint such as soybeans (Wellesley *et al.* 2015: 13), thereby reducing the demand for meat.

**Figure 5.5: Methane emissions per animal/human per year**



(Source: NASA’s Goddard Institute for Space Sciences as cited by the BBC News 2009)

#### **5.10.4 Central Themes**

From the discussion in this section, and information provided in previous chapters relating to the UN cow flatulent tax, the following central themes can be identified:

1. Adjustments to initial eco-tax plan / structure
2. Alternatives available
3. Cost absorption and/or food inflation issues
4. Decline in international competitiveness
5. Earmarking issues
6. Farmers may go out of business
7. Food security concerns
8. General unhappiness in the agricultural community
9. Input cost increase
10. Job loss possibility
11. Objections (protests, petitions etc.)
12. Organised agriculture (unions) becomes involved
13. Poor planning from government institutions
14. Research & development issues

#### **5.10.3 Summary**

The possible impact that a cow flatulent eco-tax will have on SA agriculture and the broader public were briefly investigated, as SA currently do not levy such a tax. If implemented, the government may be able to extract up to an estimated R5 billion additional tax, with reference to the estimated calculation provided. This may lead to higher meat prices, food inflation, lower sales volumes and farmers going out of business. At least three countries (SA, USA and NZ) have consensus that this eco-tax will affect agriculture negatively. Various central themes relating to this eco-tax were also provided in the section.

#### **5.11 CHAPTER SUMMARY**

The possible effects that the selected eight foreign eco-taxes might have on SA agriculture, if implemented here, were explored. In most instances, application of these eco-taxes will have a

negative impact on SA agriculture, when considering commentary from role-players in the industry. The Carbon Farming Initiative was discussed as an example of a positive incentive. In each section of this chapter, a list of central themes applicable to each eco-tax was provided and a total of 17 recurring central themes were identified. Eco-taxes per central theme can be summarised as follows:

- 1. Adjustments to initial eco-tax plan / structure:** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, UN cow flatulent tax
- 2. Alternatives available:** French HGV road tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, Swedish meat tax, UN cow flatulent tax
- 3. Cost absorption and/or food inflation issues:** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, Swedish meat tax, UN cow flatulent tax
- 4. Decline in international competitiveness:** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, Swedish meat tax, UN cow flatulent tax
- 5. Discrimination issues:** French HGV road tax, Canadian tyre tax, Australian carbon fuel tax, Australian carbon emissions tax
- 6. Earmarking issues:** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, Swedish meat tax, UN cow flatulent tax
- 7. Farmers may go out of business:** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, Swedish meat tax, UN cow flatulent tax
- 8. Food security concerns:** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, Australian CFI, Swedish meat tax, UN cow flatulent tax

9. **General unhappiness in the agricultural community:** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, UN cow flatulent tax
10. **Input cost increase:** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, UN cow flatulent tax
11. **Job loss possibility:** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, Swedish meat tax, UN cow flatulent tax
12. **Negotiations with government:** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax
13. **Objections (protests, petitions etc.):** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, Swedish meat tax, UN cow flatulent tax
14. **Organised agriculture (unions) becomes involved:** French HGV road tax, Canadian tyre tax, British CCL/CCA, Australian carbon fuel tax, Australian carbon emissions tax, Australian CFI, UN cow flatulent tax
15. **Poor planning from government institutions:** French HGV road tax, Canadian tyre tax, Australian carbon fuel tax, Australian carbon emissions tax, UN cow flatulent tax
16. **Poor public participation process:** French HGV road tax, Canadian tyre tax, Australian carbon fuel tax, Australian carbon emissions tax
17. **Research & development issue:** Canadian tyre tax, British CCL/CCA, Australian carbon emissions tax, Australian CFI, Swedish meat tax, UN cow flatulent tax

In the next chapter the central themes applicable to each of the identified agri-eco-taxes are summarised in a theme matrix. A discussion then follows for each of the eco-taxes regarding the appropriateness of implementation in SA.

# CHAPTER 6

## SUMMARY OF ECOLOGICAL TAXES, FINDINGS AND RECOMMENDATIONS

### 6.1 INTRODUCTION

The previous chapters investigated various international eco-taxes that affect agriculture. The purpose, background and historical development of each eco-tax were discussed in chapter 3. Certain characteristics of said eco-taxes were also provided, in the light of theory discussed in chapter 2. Chapter 4 considered the impact on agriculture in those countries where the eco-taxes are already levied, or where the possibility of the tax was mooted. In some instances other related effects were also briefly discussed. Certain important eco-tax concepts and theory provided in chapter 2 (principles of an effective tax policy, earmarking of proceeds, etc.) were applied to the eco-taxes in chapter 4 and discussed in more depth, in conjunction with information pertaining to each tax.

In chapter 5 current challenges which confronts SA agriculture were firstly investigated. A discussion was then pursued whether a comparable tax already exists in SA for the identified foreign eco-taxes. The implementation of a carbon tax system in SA, similar to that of Australia is, for example, eminent. A scheme similar to the Australian CFI is also in the pipeline. For every eco-tax, the possible consequences on South-African agriculture were investigated. Important central themes were also identified and listed in chapter 5, for each of the identified eight eco-taxes.

In this chapter, the central themes applicable to each of the identified agri-eco-taxes are summarised by way of a central theme matrix, for the 17 most prominent themes. A discussion then follows for each of the eco-taxes regarding the appropriateness of implementation in SA. For ease of reference, the term “agri-eco-tax” is coined and used below to refer to these eco-taxes as they relate to agriculture. The discussion consists of three elements namely arguments in favour of implementation, arguments against implementation and a recommendation based on these arguments. The current state of the local agricultural sector (see section 5.2) is considered, as well as the possible effects on SA agriculture, as explored previously. The chapter concludes with a final summary and an agri-eco-tax implementation matrix.

## 6.2 CENTRAL THEMES IDENTIFIED

Chapter 5 identified various recurring “central themes” relating to the identified foreign eco-taxes. The SA government as well as other decision makers must take into account these central themes, when considering the possible implementation of agri-eco-taxes. The 17 most prominent central themes, as provided in the chapter 5 summary, can be summarised for each eco-tax in the following matrix:

**Table 6.1: Central Theme Matrix (for 17 Most Prominent Themes)**

Central themes	French HGV road tax	Canadian tyre tax	British CCL/CCA	Australian carbon fuel tax	Australian carbon emissions tax	Australian CFI	Swedish meat tax	UN cow flatulent tax
1) Adjustments to initial eco-tax plan / structure	X	X	X	X	X			X
2) Alternatives available	X		X	X	X		X	X
3) Cost absorption and/or food inflation issues	X	X	X	X	X		X	X
4) Decline international competitiveness	X	X	X	X	X		X	X
5) Discrimination issues	X	X		X	X			
6) Earmarking issues	X	X	X	X	X		X	X
7) Farmers may go out of business	X	X	X	X	X		X	X
8) Food security concerns	X	X	X	X	X	X	X	X
9) General unhappiness in the agricultural community	X	X	X	X	X			X
10) Input cost increase	X	X	X	X	X			X
11) Job loss possibility	X	X	X	X	X		X	X
12) Negotiations with government	X	X	X	X	X			
13) Objections (protests, petitions etc.)	X	X	X	X	X		X	X
14) Organised agriculture (unions) becomes involved	X	X	X	X	X	X		X
15) Poor planning from government institutions	X	X		X	X			X
16) Poor public participation process	X	X		X	X			
17) Research & development issues		X	X		X	X	X	X

(Source: Information compiled by the author)

Furthermore, as discussed under section 5.2, SA farmers currently face a barrage of SA specific challenges threatening to destabilise the industry. These SA agricultural “central theme” challenges should also be kept in mind when deciding whether an agri-eco-tax should be implemented or not. To recap, these challenges include:

1. Eskom and unreliable electricity supply
2. High electricity tariffs
3. Current and long term electricity generating structural problems
4. Uncertainty regarding expropriation of land
5. Drought and El Nino
6. Violent crime
7. Exchange rate fluctuations and other economic factors
8. Interest rate hikes and access to finance
9. Lack of local farming subsidies
10. Food price increases affecting the poor
11. Trade unions, labour unrest and minimum wages

### **6.3 RECOMMENDATIONS: AGRI-ECO-TAXES IN SOUTH AFRICA**

Various recommendations are made below, regarding the question whether or not the identified foreign eco-taxes should be implemented in SA. These recommendations are made in light of arguments for and against the eco-taxes, based on the central themes identified above as well as other relevant factors discussed in previous chapters.

#### **6.3.1 France: Heavy Goods Vehicle Road Tax**

##### ***Arguments in favour of implementation in South Africa***

- The additional income generated by this tax could be used by the SA authorities in the same manner as was intended in France (see section 3.2.1). It can be utilised to pay for the upkeep of road infrastructure and to invest in research, technology and infrastructure to aid greener modes of transport. Proceeds will however have to be earmarked.

## ***Arguments against implementation in South Africa***

- As indicated in the central theme matrix, the eco-tax was characterised by violent protests and public discourse in the farming communities of France. If SA farm and labour unions should disagree with the mooting of such a tax, it may lead to similar unrest. Per section 5.2.11, labour unrest is a common occurrence in the agricultural sector.
- Similar problems cited by SA agriculture, relating to the Gauteng and Western Cape toll projects will be applicable, if all 16 200 km of national roads in SA are taxed. Problems include that SA farmers are price takers, it will restrict seasonal workers' mobility and that the very poor will experience financial difficulty. The poor already struggle and cannot afford price increases (see section 5.2.10).
- In SA, there are no real alternatives available for the transport of agricultural produce by road. Unlike France, SA does not possess an inland waterway infrastructure. SA does have an extensive railway network, but the railway system is currently experiencing many problems and is unreliable (see section 5.3.2).
- Enforcement and monitoring in France would have taken place by way of GPS units installed in trucks as well as with the aid of fixed and mobile monitoring devices (see section 3.2.2). It will thus be a very technical and expensive exercise to put the necessary infrastructure in place in SA and to administer the system in the long run.
- The French Minister of Ecology admitted that the eco-tax was a complicated tax "because it's hard to levy a tax per kilometre". It was later altogether scrapped, where the difficulty of levying such a tax was cited as one of the reasons.
- Road-tolls are an expensive manner to collect money for the fiscus. In France, the operating cost was estimated to be more than 20% of the revenue collected. In Gauteng, it was estimated to be close to 25% of anticipated revenue.
- In France and in the Western Cape, there were indications of possible irregularities. This necessitated investigations in France and court action in the Western Cape. It seems that toll road projects are especially prone to manipulation and high-level corruption.



- The largest agricultural union in France stated that it was not a suitable time to implement the tax due to negative economic conditions and growth. This also apply to SA as there are currently economic challenges such as exchange rate fluctuations (section 5.2.7), interest rate hikes (section 5.2.8), local farming operations not being subsidised (section 5.2.9) and food price affordability (section 5.2.10), which confronts agriculture.
- Per section 4.2.4, the tax did not comply with several of the characteristics of an effective eco-tax. It furthermore only partially complied with the double dividend hypothesis.
- Other concerns raised, which may also be applicable in SA, include issues relating to input cost increases, international competitiveness, cost absorption and/or food inflation issues, the loss of jobs and food security, as per the central theme matrix (see table 6.1).

### ***Recommendation***

Considering above arguments, it follows that a HGV eco-tax should not be levied on SA roads. However, if it is implemented, trucks transporting agricultural products should be exempt as was eventually also the case in France.

### **6.3.2 Ontario, Canada: Eco-fee or Eco-tax on Tyres**

#### ***Arguments in favour of implementation in South Africa***

- These eco-tax proceeds can be used to develop practical applications for recycled tyres. It can also be used to build rubber recycling and processing plants and can assist with the development of recycled tyre markets (see section 4.3.3).

#### ***Arguments against implementation in South Africa***

- Ontario commentators stated that the hike in fees would affect every Ontario citizen, because input price increases would filter down to the consumer. This same reasoning will apply in a SA context. Higher prices will negatively affect millions of poor South Africans who are already unable to afford proper nutrition (see section 5.2.10).

- If the eco-levy or eco-tax is collected by private intermediate organisations such as Ontario Tire Stewardship or Redisa, the system is open for corruption and misappropriation of funds
- According to Grain SA, the implemented levy imposes a large additional cost burden on farmers, especially when using over-sized tyres.
- The eco-tax did not comply with all of the principles of an effective tax policy. It also did not comply with the double dividend hypothesis (see section 4.3.4 for more).
- Other fears expressed by the Canadian farming community, reflected in the central theme matrix above, related to international competitiveness issues, job losses and food security. This must be carefully considered as SA agriculture already face many other problems.

### ***Recommendation***

Considering above arguments and the fact that a formal customs and excise tyre-tax was officially implemented on 1 February 2017, the question regarding implementation is somewhat “after the fact”. However, with reference to the Canadian Ontario saga it still remains extremely relevant for the SA revenue authorities to understand that any future increases should be implemented at realistic levels (for example avoid to increase the levy with up to 2 289% as was the case in Ontario). This will ensure that the tax does not become yet another challenge confronting SA farmers.

### **6.3.3 Britain: Climate Change Levy and Climate Change Agreements**

#### ***Arguments in favour of implementation in South Africa***

- The scheme is working well in the UK, with specific reference to farmers involved in one or more of the 17 agricultural activities qualifying for relief, if the applicable criteria are met (see section 3.4.2). The CCA part of the scheme specifically appeases the UK agricultural community.

- The current energy regime in SA is somewhat fragmented. There is the general fuel levy, environmental levy pertaining to electricity generation, section 12L allowance, as well as diesel rebates. Arguably, the fragmented SA energy tax and incentive system could be consolidated into one efficient legislative package mirroring the UK's CCL/CCA scheme.
- In the UK, many farmers obtained energy saving overachievements due to the CCL/CCA scheme. There was the potential for even greater energy savings via precision farming and investment in energy efficient technologies. In SA, it is possible to achieve similar energy and relating cost savings (see for example grain farmers – section 5.5.2).
- The CCL/CCA scheme, which “takes and gives”, assists in providing an element of choice to the scheme (or at least the illusion thereof) which makes the system more acceptable to the taxpayer.
- The scheme does comply with the double dividend hypothesis (see section 4.4.3).

### ***Arguments against implementation in South Africa***

- In SA, electricity and fuel (diesel) is critical for the agricultural sector's continued existence. If the cost of energy spiral out of control due to additional energy related expenses such as a CCL, farming operations in SA may decrease. This may lead to job losses and unemployment.
- The impact on entities involved in the 17 listed agricultural activities (see section 3.4.2), could be detrimental if the CCL side of the scheme are implemented without a CCA option. This is evident from the long list of concerns raised by the UK NFU when the CCL was first considered without a mitigating CCA component. The same would apply in SA.
- The scheme's nett effect will be that money leaves SA farmers' pockets, even if a mitigating CCA option is available, as CCAs only provides partial exemption. Considering the challenges faced by farmers such as exchange rate fluctuations, interest rate hikes and a lack of subsidies, this does not seem to be a prudent course of action.
- Cost to partake in the scheme is high. Annual administration fees may amount to as much as £4 075 in the UK (at an exchange rate of R16 per £1, this will equate to R65 200 in SA). The

time and costs relating to compliance must be reasonable. Many SA farmers are already struggling to adhere to record-keeping requirements of the current diesel rebate scheme.

- The NFU noted that farmers already optimise the use of energy to reduce their energy bills as they operate in very competitive markets. No farmer will therefore unnecessarily consume energy such as electricity or diesel as it costs money. It therefore seems unnecessary to “coerce” farmers to save more energy by way of a tax. The same principle will also be applicable in SA.
- In an attempt to reduce energy costs, a farmer unable to participate in CCA’s and who must therefore pay higher energy tariffs, may advertently or inadvertently scale down on certain crucial energy-consuming farming processes. This, for example, could lead to a decrease in indoor animals’ welfare standards, which rely on energy for their wellbeing, with an accompanying drop in product quality (see section 4.4.1).
- If the SA authorities should decide to implement a CCL/CCA scheme over and above existing energy taxes and incentives, this will mean that businesses will effectively be taxed twice in terms of the current and new system. This will lead to duplication in costs.
- A similar scheme in SA will be less effective if the scheme does not cater for a CCL exemption on energy from renewable sources (as the case was after the UK government’s decision in 2015 to revoke the exemption). This will water-down the environmental benefits of the scheme, as investment in green technology will decline (see section 4.4.1).
- This eco-tax does not comply with several principles of a good tax policy as indicated under section 4.4.3.
- Other possible negative effects raised by UK and SA agricultural stakeholders, as documented in the central theme matrix (see table 6.1), include higher input costs, international competitiveness concerns, additional costs that can’t be passed on, job losses and food security issues.
- Farmers already suffer electricity-related problems as outlined under section 5.2 (unreliable electricity supply, high electricity tariffs and electricity-generating structural problems).

## ***Recommendation***

Based on the above arguments the implementation of a CCL/CCA scheme in SA may be considered, provided that it replaces (not complement) the old fragmented energy tax and incentive regime and that the CCA side of the scheme is also implemented (and not only the CCL part) thereby enabling farmers to mitigate the CCL's negative impact.

### **6.3.4 Australia: Carbon Tax on Fuel**

#### ***Arguments in favour of implementation in South Africa***

- It could be argued that if this eco-tax is implemented by way of an additional levy on fuel or by decreasing diesel rebates available to farmers, earmarked proceeds could be used to research and develop biodiesel alternatives. The SA National Treasury is however not in favour of earmarking (see section 2.5).

#### ***Arguments against implementation in South Africa***

- If an effective carbon tax on fuel is introduced in SA, for example, by increasing the fuel price or decreasing diesel rebates available to farmers, it will have substantial negative consequences for agriculture. For every increase of 10 cents in the price of diesel, SA farmers lose an estimated R100 million per annum (see section 5.6.2).
- There are no real large-scale alternatives available to substitute diesel utilised by farmers for agricultural purposes.
- Diesel is extremely important for SA agriculture as it is the energy source most used by farmers (see section 5.5.2). From the sheer amount of agricultural activities which qualify for diesel rebates (as per SARS's diesel rebate guide), its importance is also evident. Any increase in price will therefore have a direct financial impact on the farmer.
- According to the TAU farmers are price takers and will therefore find it extremely difficult to recoup additional costs of such an eco-tax from their clients.

- Currently farmers receive no subsidies from the government (see section 5.2.9), except in the form of the diesel rebate scheme. The International Labour Organisation advised that the SA government should subsidise its farmers, thereby assisting them in competing on international markets. If a carbon tax on fuel is levied where the diesel rebate is reduced, it will contradict this recommendation.
- From the central theme matrix (see table 6.1), it can be seen that other possible negative effects associated with this tax include input cost increases, job losses, financial hardship for farmers, food inflation and food security.
- The eco-tax does not comply with all the principles of a good tax policy. It also did not fully comply with the double dividend hypothesis (see section 4.5.2).
- This eco-tax was abolished by the Australian authorities as it was deemed unnecessary and damaging to the economy (see section 3.5.2 and also 3.6.2). Therefore, it would seem unwise to try to implement it in SA.

### ***Recommendation***

From above for and against arguments, it seems evident that implementing a fuel related eco-tax in SA, similar to the one in Australia, will be ill-conceived.

### **6.3.5 Australia: Carbon Tax on Carbon Emissions**

#### ***Arguments in favour of implementation in South Africa***

- If proceeds are earmarked for eco-related purposes, it could be utilised to finance research, development, investment and implementation of cleaner energy alternatives in SA. It could also assist in effective energy use and provide opportunities for the land sector to reduce GHGs (by for instance funding carbon credit payments to farmers). See section 3.6.1.
- The SA revenue authorities are more transparent than the Australian government. The Australian Prime Minister went ahead and promulgated the carbon tax, even though she promised not to do so before she was elected to office. On the other hand, SA National

Treasury released various documents over the years for comment to prepare South Africans for the looming tax. Public hearings were also held by the Davis Tax Committee (see section 5.7.1).

- Ultimately, carbon tax could prove beneficial for SA food exporters. Countries to which SA export, will implement a similar tax on food products imported from countries without such an emissions tax. Should such a tax already be levied in SA, SA exporters would not need to pay the foreign tax (section 5.7.2).
- The agricultural sector will be exempt from the tax for the first five-year initial implementation phase, which provides time for the sector to try to adapt, before they become liable.

### ***Arguments against implementation in South Africa***

- This eco-tax did not succeed in Australia and was abolished within two years after promulgation. If it did not succeed in a first world country such as Australia, chances are slim that it will effectively work in a less developed country such as SA.
- The Australian government admitted, in its own words, that the carbon tax is an “unnecessary tax, which hurts businesses and families”. There is no reason why this statement will not hold true for SA.
- Australian opposition parties remarked that the Australian carbon tax would “make every job less secure but it won't help the environment” (see section 4.6.2). Therefore, there was great uncertainty whether the tax would promote any real ecological advantages.
- Other advantages cited by the Australian government with the repeal of the tax include that it will lower the living costs of households, decrease electricity and gas prices, save 90 million Australian Dollars per annum in compliance costs and remove more than a thousand pages of unnecessary documentation. Again, these points will hold true for SA.
- Although SA farmers will be excluded from directly paying the tax in the first five years of implementation, they will still indirectly pay by way of higher electricity prices charged by power utility companies such as Eskom, keeping in mind that higher electricity tariffs are already

causing farmers to struggle (see section 5.2.2). Electricity is, after diesel, also the most important energy source for farmers (see section 5.5.2).

- If a border tax adjustment is not implemented, SA farmers' competitiveness will be adversely affected locally as SA farmers' produce will be more expensive than those of their foreign counterparts (see section 5.7.2).
- Considering other agricultural related problems cited by Australian and SA commentators, as summarised in the central theme matrix (table 6.1) above, this tax does not seem to promote sustainable agriculture and food security as well as job security in the agricultural sector.
- The fact that National Treasury will exempt agriculture for the first five years after implementation provides further motivation that the SA agricultural sector is different from other sectors and should arguably be permanently exempt.
- The Australian version of the carbon tax failed various principles of a good tax policy. In Australia, it could be argued that the eco-tax only partially complied with the double dividend hypothesis.

### ***Recommendation***

The carbon tax is an "unnecessary tax, which hurts businesses and families" (Australia - Department of the Environment 2014). From this official statement of the Australian government as well as the other arguments provided above, it is clear that this tax should not be implemented in SA. If carbon tax legislation is however promulgated, then the agricultural sector should be permanently excluded and not only for the first five years. Special subsidies should also be considered to assist SA farmers with higher input costs, due to inflation brought on by the carbon tax.



### 6.3.6 Australia: Carbon Farming Initiative

#### *Arguments in favour of implementation in South Africa*

- Numerous success stories already exist in Australia, which can be reproduced in SA. In Australia, the planting of vegetation as part of the CFI scheme, assisted in the repair of damaged kraals, contributed to a decrease in lamb losses and helped biodiverse vegetation restoration (see section 4.7.2).
- In SA, the correct blend of indigenous trees planted in a “shelter belt” on farmland can also be implemented to increase lambing quantities and improve soil quality, as was the case in Australia. It is furthermore beneficial for native SA wildlife, as it would increase their habitat (see section 4.7.2).
- In addition, SA farmers can financially benefit from such a scheme like their Australian counterparts did. They can, for example, earn additional income by performing verified carbon abatement activities, which will earn them carbon credits. These credits can then be sold on carbon markets.
- If the value of a carbon credit is set at R120 per tCO<sub>2</sub>-eq in SA (being the value envisaged by National Treasury for a proposed carbon tax), the potential income for agriculture can be substantial and assist farmers to alleviate financial problems, which they currently face (see specifically sections 5.2.6, 5.2.7 and 5.2.8).
- A CFI scheme will motivate SA farmers to plant Spekboom, which has environmental advantages in relation to carbon sequestration (carbon sink) and is labour intensive (job creation). It will also promote more eco-friendly methods of farming such as no-tillage (see section 5.8.2).
- The eco-incentive can help SA to reduce its carbon footprint and meet international carbon obligations and targets, by creating large-scale carbon sinks to mitigate for high atmospheric carbon release by other industries, such as the electricity industry (Eskom).

- SA farmers may obtain further advantages from this scheme with the aid of technology. Emissions from effluent lagoons may, for example, be captured to earn carbon credits and then be used to generate electricity on the farm. This will decrease the farmer's dependency on Eskom's sub-standard electricity supply and will also help circumvent high tariffs (see sections 5.2.1, 5.2.2 and 5.2.3).
- The CFI does comply with certain provisions of a good tax policy (see section 4.7.3).

### ***Arguments against implementation in South Africa***

- Establishing a local carbon credit market may be an expensive exercise for the government. Similarly, if the SA government reward SA farmers who achieve significant carbon abatement, with a rebate per unit of abatement, it will channel funds away from the fiscus.
- A possible disadvantage of planting Spekboom, as part of a CFI scheme, may include that it is expensive (a large project over two years cost R42 million in the Eastern Cape).

### ***Recommendation***

From the overwhelming amount of arguments in favour of the CFI scheme, it follows that implementing a similar scheme in SA should be considered. As discussed in chapter 5, the possible implementation of such a scheme is well under way with a draft set of regulations recently published by National Treasury.

### **6.3.7 Sweden: Meat Consumption Tax**

#### ***Arguments in favour of implementation in South Africa***

- The Swedish meat consumption tax would alleviate the pressure that meat-producing livestock puts on forests (deforestation for grazing) and water resources (see section 3.8.2). SA is currently experiencing one of the worst droughts in its history (refer to section 5.2.5) and this will assist in preserving water reserves.

- According to Swedish authorities, this eco-tax will also decrease GHG equivalent emissions originating from livestock breeding, rearing and subsequent processing.
- This eco-tax will therefore address the most important SA ecological issues of concern or “tipping points” (see section 1.1.1), including (in order of importance) water, land degradation and greenhouse emissions, if it is implemented in SA.
- The tax will assist in decreasing meat demand, but could simultaneously spur on more vegetable and fruit consumption that will financially support SA farmers who cultivate fruit and vegetables (see section 4.8.3). The cultivation of alternative organic proteins such as soybeans is, for example, a viable option in SA as it is the 12<sup>th</sup> largest soybeans producer in the world (see section 1.1.3).
- The possibility exists that land opening up due to less livestock rearing, as a result of the decline in meat product demand, may be utilised for biofuel and other energy production (as per Wirsenius *et al.* (2010: 9, 17)). This will assist meat farmers financially if they convert from cattle farming to biofuel crop production.
- Consumers will be able to make informed decisions (behavioural changes and the availability of alternatives are key to a good eco-tax policy – refer to chapter 2) by charging the meat consumption tax at consumer level and in conjunction with effective labelling.
- The economic impact of the eco-tax will be spread more evenly throughout the whole supply chain, compared to the cow flatulent tax that farmers will primarily bear. In other words, the financial consequences will not only be carried by the farmer at the beginning of the supply chain, but will be spread throughout the whole supply chain.
- Proceeds could also be earmarked and utilised for research and development in finding more innovative ways to produce meat, but with less damage to the environment.
- Less animosity will be aimed towards the meat consumption tax by the agricultural sector and/or farming community than towards the cow flatulent tax. This is because SA farmers will not pay the tax directly.

- The eco-tax complies with various characteristics of a good tax policy (see section 4.8.4). If implemented it could also be designed in such a manner that it complies with the double dividend hypothesis.

### ***Arguments against implementation in South Africa***

- The eco-tax could be applied not only to beef products, but also to chicken, pork, dairy and sheep products. If applied on all types of meat, the financial effect will be harsher on consumers (higher prices) and producers (drop in demand). This was confirmed by the 2012 Swedish study done by Säll and Gren, where the demand for beef, pork and poultry drastically decreased when all of these products were taxed simultaneously.
- As can be seen from the central theme matrix (see table 6.1) there is the possibility of a decline in international competitiveness, job losses, food security and food inflation.

### ***Recommendation***

This tax can be levied in SA, but it should not be levied on all meat products simultaneously. It could possibly only be levied on luxury meat products such as beef and veal. This will ensure that there are affordable alternatives available for the poor, such as white meat. Proceeds should be earmarked and be utilised in developing new technologies and promote alternative low carbon food products such as vegetables with high plant protein attributes. Subsidies by the Department of Agriculture may be granted to assist cattle farmers in establishing bio-energy crops as envisaged by Wirsenius *et al* (2010: 9, 17).

### **6.3.8 United Nations: Cow Flatulent Tax**

#### ***Arguments in favour of implementation in South Africa***

- The UN Food and Agriculture Organisation (FAO) updated report estimated that approximately 14.5% of global GHG emissions originate from farm livestock, which makes a strong case for such an eco-tax in SA and the rest of the world (see section 3.9.2)

- As was the case in New Zealand with research into lovastatin (see section 4.9.3), it might be that implementing the eco-tax in SA may lead to research and innovation in areas such as new livestock feed and other livestock mitigation techniques. This may be favourable for SA farmers, if international eco-regulations become more stringent.
- Alternatives are available in the form of more fruit and vegetables being consumed (which according to Swedish studies is a healthier food source with a smaller harmful effect on the environment). The consumption of more soy-related products is also a possible alternative.

### ***Arguments against implementation in South Africa***

- A negative, sarcastic stigma clings to the so called “fart tax”. In both New Zealand and the USA the suggestion of this eco-tax was met with severe contempt by the agricultural sector (see section 4.9.2). The SA farming community will most likely receive the tax in the same manner as their overseas counterparts.
- In SA there is a perception that farmers will be punished for emissions that is “beyond human control”, emanating from producing food for the populace, which will add to its rejection by the SA farming community.
- Emissions relating to livestock do not only originate from the farmer’s activities, but are also attributed to other sections in the management and processing value-chain. For instance feed processing and production activities account for 45% of emissions (see section 3.9.2). This is not activities performed by farmers themselves, but rather by their suppliers. It would thus be unfair to expect farmers to pay and absorb the eco-tax per head of animal in full, if their livestock activities only partly contribute to GHG emissions in the supply chain.
- If a portion of the additional costs are transferred down the supply chain to the final consumer, it would increase the price they pay for all products. As mentioned in section 5.2.10, SA’s poor are already struggling to absorb food price increases.
- This eco-tax do not adhere to various principles of a good tax policy, although some principles are complied with (see section 4.9.4)

- It is doubtful that if this eco-tax is ever implemented SA, authorities will earmark proceeds for research to decrease livestock emissions as National Treasury is, in principle, against earmarking of tax revenue.
- Other negative points, as per the central theme matrix (see table 6.1) include, amongst others, a decline in international competitiveness, higher input costs, farmers possibly going out of business (see section 4.9.1) and food security risks.

### ***Recommendation***

From above it is clear that there are more arguments opposing the cow flatulent tax than arguments in favour thereof. This is also possibly why it has not yet been implemented in countries where it was proposed and why it remains confined to UN discussion documents. It is advised that the Swedish meat consumption tax should rather be considered as a substitute for the cow flatulent tax option.

## **6.4 CONCLUSION**

### **6.4.1 End Discussion**

Considering the recent interest in eco-taxes as a means to address current ecological challenges confronting the international and SA community, as well as the importance of SA agriculture, this study endeavoured to answer the research question, namely “How will the introduction of new ecological taxes impact the South African agricultural sector?”. To do this, the study commenced with a brief discussion of the ecological problems the international community as well as SA face. Eco-taxes and the SA agricultural sector were then introduced and it was explained why these two concepts are so important. The research question (problem statement), research objectives, research method and reasons why the specific set of eight eco-taxes were chosen, were provided. Furthermore, chapter 1 discussed delimitations, the importance and benefits of the study and underlying assumptions. Chapter 2 provided a literature review of relevant tax concepts to impart background knowledge required to better understand the content, arguments and explanations in further chapters.

Eight international agri-eco-taxes were then investigated. Chapter 3 considered the purpose, workings, historical development and characteristics of each eco-tax. Chapter 4 investigated the effects or possible effects the eco-taxes would have on agriculture, in each of the respective foreign countries where it was implemented or proposed. Certain chapter 2 eco-tax concepts were also applied to the selected eco-taxes in chapter 4, including good tax policy principles, effective eco-tax characteristics, proceed earmarking and the double dividend hypothesis. Chapter 5 postulated the possible effects the eco-taxes could have on SA agriculture, mindful of current challenges SA agriculture already face. Recurring central themes were also identified and listed. In chapter 6 central themes were summarised and recommendations were then made, based on findings. The recommendations considered which of the eco-taxes could be implemented in SA, that will not endanger the survival of the agricultural sector, whilst still providing the government with a fiscal tool to curb environmental destructive practises.

#### 6.4.2 Agri-Eco-Tax Implementation Matrix

Based on the recommendations provided in the discussion above, the following matrix is provided to summarise findings regarding possible implementation of the eight identified agri-eco-taxes in SA.

**Table 6.2: Agri-Eco-Tax Implementation Matrix**

Description	COUNTRY							
	France	Canada	Britain	Australia	Australia	Australia	Sweden	United Nations
Tax	Heavy Goods Vehicle road tax	Ontario: Eco-fee or eco-tax on tyres	Climate Change Levy (CCL) and Climate Change Agreements (CCA)	Carbon tax on fuel	Carbon tax on carbon emissions	Carbon farming initiative	Meat consumption tax	Cow flatulent tax
Tax - type	Direct tax (user-charge)	Indirect tax	CCL: Indirect tax ; CCA: Tax incentive	Indirect tax	Direct tax	Tax Incentive	Indirect tax	Direct tax
Implement in SA	No	Yes	Yes	No	No	Yes	Yes	No

Notes	If however implemented agri-trucks should be excluded	Future increases must be realistic	CCA part of scheme must be present	If however implemented fuel used for all agricultural activities should be exempt	If however implemented farmers should be permanently excluded. Also consider subsidies.	A local carbon credit market will have to be established	Not levied on all meat types simultaneously. Consider subsidies	Rather consider Swedish tax
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(Source: Information compiled by the author)

Of the eight foreign eco-taxes investigated, the British CCL/CCA scheme, the Australian CFI and the Swedish meat consumption tax are suitable for possible implementation in SA. The Canadian eco-tax on tyres is also suited for SA and on 1 February 2017 a similar eco-tax was indeed officially incorporated into the SA tax system in terms of the Customs and Excise Act. This was four months after this study's cut-off date (30 September 2016), as per the delimitation section in chapter 1. Furthermore, the provisos provided under the notes in the matrix should be applied with relation to the three suitable eco-taxes identified. Future increases in the SA tyre levy, for example, must be realistic. If a CCL is implemented, CCA's must be available. If a CFI scheme is applied, the SA government should investigate the establishment of a local carbon credit market. A meat consumption tax could be applied on luxury meats, but not on all meat types simultaneously.

The French HGV tax, Australian carbon fuel tax, Australian carbon tax on emissions and UN cow flatulent tax are not recommended for implementation, due to the possible negative impact on the SA agricultural sector. If, however, a HGV eco-tax or a carbon tax on fuel is applied, agricultural vehicles or agricultural fuel should be excluded from this tax. Similarly, farmers should be permanently exempt from the proposed SA carbon tax and not only for the initial 5-year phase. A meat consumption eco-tax should rather be considered than a cow flatulent tax. The possible replacement of current energy taxes and incentives applicable on SA agriculture by a more elegant system such as the CCL/CCA scheme in the UK is identified as a tentative possibility, which requires extensive further research.



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