



# ENVIRONMENTAL TAX LAW

## Is it possible to design a Universal Legal Model for Environmental Taxation?

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## **Abstract**

Taxation methods are increasingly being used as tools to achieve environmental objectives, though the risks of ill-conceived environmental taxes are severe. The thesis offers lawmakers and policymakers guidance as to choices of tax measures, and how such methods can be utilised effectively, by exploring the various issues and decisions facing policymakers in the introduction of such methods. It does this by investigating means by which environmental taxes can be effective in changing consumption choices and behaviour towards the environment, which requires an examination of a series of pertinent issues which any policymaker is advised to respond to before implementing such tax methods; such as how the environment can be valued and how to decide which taxpayers should bear the burden of environmental taxation.

The overarching objective for the thesis is to set out a design for a universal legal model for environmental taxation, and question whether this model can be utilised by policymakers to achieve environmental objectives in any jurisdiction. The findings of all chapters will contribute to the purposeful design of such a model. This initially requires a fundamental examination of the nature of tax itself, before considering the concept and utility of tax incentivisation. The thesis then questions whether a tax can philosophically be considered an ‘environmental tax’, and seeks to distinguish this from revenue-raising measures through its behaviour-changing functions. The design of such taxation is then considered, with the aim of achieving maximum benefits at minimum cost. In considering a variety of methods to achieve environmental policy, the thesis will identify methods to target environmental problems efficiently and in a manner which will prevent unintended consequences such as loss of competitiveness or other social ills. It is intended that the findings will be useful initially in contributing to the knowledge in this field, but further the answer to the overall thesis may help tackle the greatest challenge facing mankind in our time.

## **List of Abbreviations**

ATT:	Air Travel Tax (Eire)
BA:	British Airways plc
CCL:	Climate Change Levy
CFCs:	Controlled Foreign Companies
CO <sub>2</sub> :	Carbon dioxide
CUP:	Cambridge University Press
DC:	Developing Country
DECC:	Department for Energy and Climate Change (UK)
DfT :	Department for Transport (UK)
EAC:	Environmental Audit Committee
EC:	European Commission
ECJ:	European Court of Justice
EEA:	European Environment Agency
EPA:	US Environmental Protection Agency
ETS:	Emissions Trading Scheme
FA:	Finance Act (of a given year)
FAO:	Food and Agriculture Organization of the United Nations
FTO:	The Federation of Tour Operators
GATT:	General Agreement on Trade and Tariffs 1947
GDP:	Gross Domestic Product
HM Treasury:	Her Majesty's Treasury (UK)
HMRC:	Her Majesty's Revenue & Customs (UK)
HMSO:	Her Majesty's Stationery Office (UK)
ICTA 88:	Income and Corporation Taxes Act 1988
IEEP:	Institute for European Environmental Policy
IFS:	Institute for Fiscal Studies
IISD:	International Institute for Sustainable Development
IMF:	International Monetary Fund
IPCC:	Intergovernmental Panel on Climate Change
IRC:	Internal Revenue Code (USA)
ITA 2007:	Income Tax Act 2007
ITTOIA:	Income Tax (Trading and Other Income) Act 2005
ITEAP	Income Tax (Earnings and Pensions) Act 2003
JV:	Joint Venture
LTAP:	Long-range Trans-boundary Air Pollution
MNE:	Multi-National Enterprise
mpg:	miles per gallon
NHS:	National Health Service
NI:	National Insurance
NICs:	National Insurance Contributions
OECD:	Organisation for Economic Co-operation and Development
ONS:	Office of National Statistics (UK)
OUP:	Oxford University Press

PC(s):	Personal Computer(s)
R&D:	Research and Development activities
RCEP	Royal Commission on Environmental Pollution
Rio Declaration:	UN Conference on Environment and Development 1992
RQ:	Research Question
SDLT:	Stamp Duty Land Tax (UK)
SMEs:	Small and Medium Enterprises
SO <sub>2</sub> :	Sulphur Dioxide
TSO:	The Stationery Office Ltd (UK)
TFEU:	Treaty on the Functioning of the EU
UK:	United Kingdom of Great Britain and Northern Ireland
UN:	United Nations
UNEP:	United Nations Environment Programme
UNFCCC:	United Nations Framework Convention on Climate Change
USA / US:	United States of America
USC:	United State Code.
VED:	Vehicle Excise Duty (UK)

For legal journal abbreviations, refer to Cardiff Index to Legal Abbreviations. For non-legal journal abbreviations, refer to Journal of Economic Literature  
 <<http://www.aeaweb.org/jel/abbrev.html>>.

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# PART I

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# CHAPTER 1: INTRODUCTION, PURPOSE AND METHODOLOGY

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## 1.1 BACKGROUND

The IPCC (Intergovernmental Panel on Climate Change) have warned that environmental harm is a major threat to the planet and this research begins with an unconditional acceptance of the scientific need to encourage environmentally sustainable lifestyles and consumption behaviour.<sup>1</sup> Nevertheless, any adopted environmental policy is regarded herein as a decision for policymakers, and the thesis intends not to dictate policy or debate the science behind environmental policy, but instead to help facilitate implementation of such a policy by providing guidance to policymakers. Due to the continuing concerns over the environment, and heightened international environmental standards,<sup>2</sup> implementation of domestic environmental policy and international environmental principles via the tax system is increasingly<sup>3</sup> becoming a key tool of legislatures worldwide.<sup>4</sup> A range of methods is

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<sup>1</sup> Recognised by United Nations scientists, IPCC, *Climate Change 2007- Synthesis Report* (IPCC: Geneva, 2007).

<sup>2</sup> Kyoto Protocol to the UNFCCC, (adopted 11 December 1997, entered into force 16/2/2005 37 I.L.M. 22) (Kyoto Protocol). The Kyoto Treaty for the first time made countries sign up to a binding treaty with obligations to stabilise their greenhouse gas emissions.

<sup>3</sup> Whalley correctly predicted in 1998 that environmental considerations would increasingly affect tax policy in the decades ahead, Whalley J, 'Environmental Considerations in Tax Policy Design' (1998) 4 *Environmental and Development Economics* 111-124. Additionally, Etkins estimates that between 1987-1994 there was a 50% growth in the use of market-based instruments in achieving environmental policy: Etkins P, 'European Environmental Taxes and Charges' (1999) 31 *Ecolog. Econ.* 1, 39-62 at 39.

<sup>4</sup> For instance, since the Montreal Protocol on Substances That Deplete the Ozone Layer, (adopted 16/9/1987, entered into force 1/9/1989 v1522 U.N.T.S.) many nations have imposed taxes on ozone layer depleting

available, both within and outside the tax system, to policymakers and lawmakers to create incentives and disincentives for private citizens and organisations such as businesses to alter environmental behaviour.

Environmental taxation is however not guaranteed to meet policy objectives and may not be suitable in many circumstances.<sup>5</sup> An ill-considered environmental tax structure may not meet environmental objectives, and furthermore can have far-reaching consequences ranging from inciting negative substitution behaviour to seriously damaging the economy.<sup>6</sup> However certain methods are not only popular with taxpayers but reach desired policy goals at little cost, making them more attractive than alternative tools such as outright bans,<sup>7</sup> whilst existing taxes can be reformed to provide fiscal, social or environmental benefits. Due to the extensive use of this tool and its potential impact upon the everyday lives, choices and freedoms in all nations, it is crucial that policymakers are able to utilise such taxes in an informed and effective manner, in order to achieve environmental policy objectives as efficiently as possible.<sup>8</sup>

## 1.2 PURPOSE

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substances, such as the Republic of Armenia, Law on Substances that Deplete the Ozone Layer 2006, 1370 Art.8(5).

<sup>5</sup> Marshall CJ believed, “the power to tax is the power to destroy”, in *M’Culloch v State of Maryland et al* (1819) 17 U.S. 316 (Wheat.) at 431.

<sup>6</sup> Germany’s mandatory drinks can deposit cost thousands of packaging jobs. See <[www.aepal.org/Contents/Environment/200312\\_depositEN.pdf](http://www.aepal.org/Contents/Environment/200312_depositEN.pdf)> Accessed 15/1/2010.

<sup>7</sup> In Ireland, S.I. No. 605/2001 — Waste Management (Environmental Levy) (Plastic Bag) Regulations, 2001, Reg.4 imposed a EUR €0.15 tax on plastic bags in Ireland. This dramatically reduced plastic bag consumption in Ireland (<<http://www.environ.ie/en/Environment/Waste/PlasticBags/>> Accessed 15/2/2010) and has been hailed a success - see Convery F, McDonnell S and Ferreira S, ‘The Most Popular Tax in Europe? Lessons from the Irish plastic bags levy’ (2007) 38 *Environ. Resource Econ.* 1.

<sup>8</sup> Here, ‘efficient’ means an objective is achieved at the lowest possible overall cost. In this sense the outcome is achieved based on a ‘cost-benefit analysis’ between different options to achieve the same outcome. See Chakravarty S, ‘Cost-Benefit Analysis’ in Eatwell J *et al*, *The New Palgrave: A Dictionary of Economics* (USA: Palgrave Macmillan, 1987) 687-90.

The purpose of the thesis is to offer policymakers an extensive understanding of the various methods available within the tax system to implement environmental policy. Crucially this involves analysing whether a tax system can be designed to shape a society's environmental behaviour. It is vital that policymakers are able to utilise environmental taxation effectively in order that tax strategies are only implemented once their potential effects and alternatives have been fully considered. This requires an interdisciplinary analysis of the legal, economic and social justifications for and against certain methods of taxation, depending on the circumstances in which they will be used. It involves a comparative study of the potential benefits and problems involved in implementing the possible methods.

The Meade Report analysed taxation strategies available so future taxation policy could be well designed and meet long-term aims.<sup>9</sup> It deliberately set a background for future research as it did not substantially address non-neutral taxation issues including taxes to affect social behaviour relating to pollution.<sup>10</sup> Furthermore it recognised it was contrived from a national perspective only. The thesis aims to build on this and works completed since, to add to this field of knowledge by providing a fuller understanding of the methods available to policymakers to encourage environmentally sustainable lifestyles, as well as consider the transferability of tax systems between jurisdictions with different social and environmental structures.

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<sup>9</sup> IFS (Institute for Fiscal Studies), *The Structure and Reform of Direct Taxation* (London: George Allen & Unwin, 1978) (Report of the Meade Committee).

<sup>10</sup> 'Non-neutral taxation' is a term widely used but is elusive to define. Essentially a neutral tax does not distort market choices whilst it is the intention of non-neutral taxes to do so, as may be the case with environmental taxation. The precise differences are considered from an economic perspective in Lau LJ, 'When is a Tax Neutral?' (1978) 9 J. Public Econ. 319-339 who considers at 320 that in the case of a proportional income tax, the tax will be neutral if "...variations in the tax rate...do not affect the optimal composition of [the consumption commodities of a consumer]."

### 1.3 AIMS AND OBJECTIVES

The overarching aim is to understand whether it is possible to develop a Universal Model for implementing environmental taxes which can be applicable in different jurisdictions. This would involve a series of gateway questions which policymakers would answer to determine the appropriate circumstances in which to implement an environmental tax. Once such a model has been formulated and explained, it can then be examined using both hypothetical and factual situations. The results will determine whether it is indeed possible to design such a system. Such a model is intended to be an apolitical tool so that any Government wishing to implement an environmental policy via their tax system will have a method of doing so. The aim is to provide a broad model of environmental taxation that can be suitable for countries with different economic, environmental, and social circumstances.

In considering this Model a further question considers the extent to which a tax system can be effective in achieving domestic environmental policy objectives, by changing behaviour towards the environment, of both private individuals and organisations. The research will therefore examine the range of considerations which must be taken into account before opting to implement any given method of environmental taxation. This includes questioning the various justifications for using an environmental tax, the types of incentives and disincentives such a tax can provide, the wider utilities of a tax such as using it as an educational tool, identifying who should bear the cost of environmental tax, whether it is efficient to impose such a tax considering the administrative costs involved and the ease of avoidance, and possible negative substitution behaviour. The practical implementation or enforcement of green taxes by Governmental bodies will also be judged, as it is important to determine whether there are problems outside direct legislation which are hindering the purpose of the taxes.

## 1.4 TECHNIQUES

The research will involve a qualitative critique of both academic literature and existing evidence and experiences of environmental taxes in a range of jurisdictions. This will not only contribute to the overall understanding of this field but will assist policymakers when considering the transferability of certain tax systems. Such interdisciplinary findings are crucial to enable policymakers to create suitable tax structures with minimal negative consequences, and understand alternative techniques required to achieve the desired policy outcome.<sup>11</sup> Consequently this thesis will incorporate a range of examples from the UK and other jurisdictions to understand the means in which they have implemented their objectives and the consequences of doing so.

Various perspectives are required to determine a universal model; hence it must be examined from both a macro-economic and micro-economic perspective, and involves technical analysis of relevant taxes utilised for achieving environmental objectives. The main focus of the study is a legal one, though economic and other non-legal issues are necessarily included, and viewed from a legal standpoint.

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<sup>11</sup> Negative effects refers to consequences of a tax structure which are counter-productive, against the intention of the policy-maker when introducing the tax, or unforeseen events resulting from a tax. Such effects can vary considerably and have a range of seriousness. Actions particularly include negative substitution behaviour, where consumers will react to an increased cost by either changing their consumption to a choice unfavoured by the policy-maker, or by behaving in an anti-social way. For example, the unintended consequence of the UK's landfill tax has been an increase in fly-tipping as an act of avoiding the tax DEFRA, 'Fly-tipping: National database - Flycapture 2007-2008 data' <<http://www.defra.gov.uk/environment/localenv/flytipping/flycapture-data.htm#0708>> Accessed 13/9/2009. More serious consequences can be damage to an industry or economy, a reduction in international competitiveness, civil unrest or rebellion, or even war – such as the American war of independence was partly sparked from a tax on tea under the Tea Act 1773.

As environmental policy is a global issue, the research will appraise reform proposals and consider the advantages of international coordinated responses to environmental problems. It will further highlight any limitations preventing implementation of such strategies.

## 1.5 **BENEFICIARIES**

From a domestic perspective, the thesis offers policymakers guidance as to how taxation can be utilised to achieve environmental objectives without hindering competitiveness. The thesis will be relevant to social scientists, lawyers, economists and environmentalists, and those concerned with tax policy, tax reform, environmental taxation, use of taxation within social policy, and environmental protection, improvement, and enforcement. The potential beneficiaries of this thesis are the global community since proper implementation of environmental tax legislation can ultimately assist in achieving the objectives of the Kyoto Protocol and other such treaties in order to protect the environment.

## 1.6 **RESEARCH QUESTIONS (RQs)**

- i. Is it possible to design a universal legal model for environmental taxation that can be applicable within different jurisdictions?
- ii. How can environmental taxation promote environmentally sustainable lifestyles and consumption behaviour without unintended consequences?
  - a. How can policymakers determine who ought to bear the burden of environmental taxation?

- b. What are the legal, economic and social justifications for environmental taxation?
  
- iii. How can the law use taxation to achieve environmental policy considering
  - a. specific environmental problems;
  - b. other jurisdictions with varying social, economic and environment factors; and
  - c. certain economic climates such as a recession?

## 1.7 **STRUCTURE**

### PART I

The purpose of Part I is to introduce, explain and analyse the fundamental considerations which will be utilised throughout the thesis. This will form a basis of understanding with which to provide more complex and focused analysis in Parts II and III. Part I will invoke doctrinal research into the legal and environmental policy issues concerning green taxes. Chapter 2 will begin with a summary of the fundamental concepts and rationale behind taxation itself, including what constitutes ‘good’ taxation, before examining how taxes can be designed and drafted to create appropriate incentives. This will provide an overview of the essential economic and legal basis for tax incentivisation for individuals and organisations to achieve environmental policy objectives. Practical applications of such strategies will be utilised for demonstration purposes. Terminology and theorems used within Chapter 2 will be pervasive throughout the thesis.

Chapter 3 will consider whether philosophically there is such a concept as environmental taxation. It will look at non-neutral forms of taxation used to achieve policy objectives, and emphasise how distributional concerns impact in this field. The purpose is to seek to identify whether, and if so, how taxes can be used by policymakers in achieving environmental goals. Methods of overcoming scepticism that environmental taxation is merely a façade for revenue-raising will be discussed. Examples of experiences with such tax strategies will be analysed to demonstrate these advantages, and offer the policymaker guidance on tax design that will gain taxpayer support and approval, which can help improve compliance.

In order for a policymaker to design a tax-and-incentive system in the means advocated in Chapter 3, Chapter 4 will consider the potential benefits of tax ‘packages’ which ‘recycle’ revenue from environmental taxation into the economy or environmental projects. This assists the policymaker’s understanding of the justifications for adopting environmental taxation. The chapter will seek to provide guidance for policymakers as to how taxes can be designed to limit negative consequences and maximise positive gains within environmental objectives and wider policy goals. This will involve considering the possibility of a ‘double dividend’ of advantages, and how such strategies can be used to mitigate otherwise detrimental distributional impacts of environmental taxation. The chapter will analyse a range of academic debate on the subject of revenue-recycling and tax packages, and will reach a conclusion on whether such methods should be used by policymakers and are appropriate to the Universal Model.

In order for the market to take account of the environment as a factor of production cost, and for individuals to recognise the importance of environmental objectives to change their behaviour, environmental factors must be given an economic value. Chapter 5 will identify

the complexity of placing an economic value on environmental factors, and explain the debate as to which values can be included. The purpose is to provide guidance for policymakers so that they can question the type of values firstly held within their society, and secondly that are necessary to achieve the environmental objective. In doing so, the chapter will guide policymakers as to the decisions that must be made in order to set rates of environmental taxes or incentives. This requires consideration of both wider policy objectives and the extent to which a policymaker and their society are willing to sacrifice certain activities to achieve environmental targets. The chapter will propose and evaluate solutions towards overcoming the deemed inadequacy of having a purely economic analysis of environmental factors. The intention of this proposal is to highlight the possibility and desirability for policymakers of including social values in the valuation, and the challenges of doing so.

## PART II

The purpose of Part II is to provide a more in-depth analysis and guidance into specific decisions facing policymakers in introducing an environmental tax. The findings will be applied in Part III. Chapter 6 will examine methods of tax which can be utilised to achieve environmental policy objectives, focusing upon realising behavioural change. It will consider how effectively tax methods can be complemented by non-tax methods to convey a transformative message to impact upon environmental choices and consumption behaviour. The intention is to utilise demonstrations to provide guidance to policymakers as to tax methods available for various environmental policy objectives, allowing policymakers to make informed choices as to the appropriate taxes, incentives and wider social techniques suited to the objectives in question. This will examine past multi-jurisdictional experiences of environmental taxes so that it can be demonstrated how methods can be successful or lead

to unforeseen circumstances. The chapter analyses how taxes can influence decisions, and further how modern understandings of human psychology can be utilised to shape a tax structure with the intended outcome.

In order for the Universal Model to assist policymakers in introducing environmental taxes, it must be determined which taxpayers within an economy will bear the burden of such taxes. This is a crucial decision since the effects of ill-conceived tax burdens can be disastrous and can entail severe unforeseen consequences. Chapter 7 will guide policymakers as to the various considerations which must be made when deciding upon where a tax burden will fall and how this impacts upon the choice of method. It will emphasise the importance for policymakers in deciding from the outset who actually should bear the burden in given circumstances, and how to decide upon a party to charge to tax in order that the party intended to bear the burden will do so. The chapter will explain that such a decision is dependant upon economic efficiency, ethical and legal principles that are interrelated, and how policymakers will inevitably have to make value judgements about which members of society will be required to fund their environmental programme.<sup>12</sup>

Choices of tax methods involving their possible points of charge are discussed in Chapter 7 to demonstrate the various distributional considerations which must be taken into account when deciding upon a type of tax. The chapter will consider negative and unforeseen consequences to question the wider policy implications of the imposition of a tax and how negative impacts can be mitigated. Finally international considerations will be taken into account directing the chapter into considering the commercial realities of imposing higher costs upon one economy. This necessarily leads to Chapter 8 which takes an international perspective and

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<sup>12</sup> For example, Mann criticises the US Government for selecting those to be advantaged in its tax subsidies without due consideration, in Mann RF, 'Back to the Future: Recommendations and Predictions for Greener Tax Policy' (2009) 88 Or.L.Rev. 355, at 399.

analyses the purpose and potential use of border tax adjustments. The chapter will seek to describe how environmental taxes can be implemented without unilateral competitive disadvantages – a key concern for policymakers. The result of this chapter is to evaluate the possible options and propose the most suitable methods of facilitating this real-world scenario which would otherwise cause a considerable dilemma for many users of the Universal Model.

Chapter 9 will provide guidance for policymakers to ascertain how taxes can be targeted to create the necessary incentive for behavioural change. This will involve consideration of taxes which have proved ineffective in failing to target the source of an environmental problem, and will advise the policymaker as to the lessons that can be learnt from such experiences. The chapter will consider tax packages aimed at changing behaviour to demonstrate to the policymaker the considerations that must be made before introducing such tax reform. Further it will identify unforeseen negative consequences associated with tax reform policies due to design flaws which fail to target the source of an environmental problem. For such flaws the chapter will suggest solutions in order to demonstrate how a source can properly be targeted to achieve the desired outcome in an equitable and efficient fashion. The chapter will initially formulate and evaluate a case study. Aviation taxation will first be examined as an example of tax legislation which attempts to alter behaviour by targeting the source of the problem in encouraging alternative behaviour. The chapter then considers the subject of targeting taxes at the source of environmental harm in a general non-aviation context. It is intended that the lessons learnt through these examples can provide guidance as to how a tax reform can most effectively be targeted to achieve the environmental policy objectives.

Chapter 10 will summarise the findings of Part II and its recurring conclusions which can be of use to the Universal Model and guide the policymaker as to the most appropriate means of achieving certain environmental objectives. Further it will provide analysis into the potential impacts of environmental taxation methods, focusing on possible unforeseen consequences. This will be carried out in both a factual and a hypothetical manner which will demonstrate all the kinds of outcomes which should be considered. Finally, this chapter will seek to establish how the Universal Model will aim to recommend the most effective solution.

### PART III

The purpose of Chapter 11 is to propose a model which can be used by any nation to determine the most appropriate taxation method available to achieve a given environmental policy, and how to implement it. The intention of the Universal Model is to offer policymakers a series of gateway questions to respond to in order to ascertain the most effective solution for achieving a given policy. It will be emphasised that it is the duty of the policymaker to determine whether the costs (or benefits) are acceptable given pertinent issues within the jurisdiction. The framework of the Model brings into practice the findings of every chapter, and will seek to offer a balanced, well structured design to facilitate purposeful use of the Model. The chapter will explain how the Model should be used by policymakers and what information is required prior to its usage. Finally the chapter will provide an evaluation of the Universal Model, including its potential limitations, and conclude whether the Model can be utilised in practice. This leads the thesis to its overall conclusion in Chapter 12.

## 1.8 **THEME**

International law purports to prevent pollution and particularly make those responsible for pollution bear its cost. The Rio Declaration<sup>13</sup> (a ‘soft law’ declaration) set the international standard for dealing with pollution and environmental damage and paved the way for individual States to implement practical policies on the matter. The ‘preventative principle’ provides States with the right and responsibility to prevent activities within their jurisdiction which will cause environmental harm or pollution. The ‘precautionary principle’, as defined in Principle 15, places the scientific onus of proof on any party wishing to perform an activity which might cause environmental damage or pollution, in instances where the risk is plausible but there is insufficient scientific evidence to fully prove it.

These principles justify the ‘polluter pays’ principle of Principle 16 which is enshrined in TFEU (Treaty on the Functioning of the EU),<sup>14</sup> which states that “environmental damage should as a priority be rectified at source and...the polluter should pay”.<sup>15</sup> Principle 16 of the Rio Declaration also promotes use of the polluter-pays principle using both economic instruments and the internalisation of environmental costs. Taxation measures fall into both categories.

The thesis accepts as a starting point the international legal principle of the polluter-pays policy.<sup>16</sup> The theme will however pursue an additional principle that ‘improvers’ should be rewarded. This means that those helping an environmental objective to be met can be

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<sup>13</sup> Pursuant to UN Conference on Environment and Development 1992, UN Doc. A/CONF151/26/Rev.1.

<sup>14</sup> OJ 2008 C/115/47.

<sup>15</sup> Article 191(2).

<sup>16</sup> The polluter-pays principle has largely been promoted through works of the OECD. See OECD, Environment and Economics Guiding Principles Concerning International Economic Aspects of Environmental Policies, Recommendation of May 1972, C(72) 128; Recommendation of the OECD Council concerning the Application of the Polluter-Pays Principle to Accidental Pollution, C (89) 88 of 7 July 1989.

rewarded through the tax system, or pursuant to it through a wider fiscal programme. In this way it recognises that policymakers can design a tax system not just to create penalties for those limiting the progression towards an environmental objective, but to recognise and reward voluntary efforts to achieve the objective.<sup>17</sup>

*The thesis reflects the law as at New Year's Eve 2010.*

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<sup>17</sup> Meade emphasised that a tax structure in a mixed economy must provide “effective incentives for private enterprise”, which the Model will strive for in line with the theme. See n.9 at 20.

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# CHAPTER 2: THE NATURE OF TAXATION AND TAX INCENTIVES

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## 2. INTRODUCTION

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This chapter will form the basis of the understanding of relevant concepts of tax and incentivisation which will be utilised through the thesis. It will begin with a brief examination of the fundamental nature of taxation and purposeful design of non-neutral taxation, and go on to study how this is applied to understandings of the concept of environmental taxation. In this way, pure taxation theory can be applied in the context of

environmental taxation. The purpose is to provide policymakers with an understanding of the key issues surrounding environmental taxation and how they relate to theoretical tax concepts. Various tax incentive methods will finally be identified and their relative usefulness demonstrated in order that such concepts can be understood and justified throughout the thesis.

### 3. WHAT IS A TAX?

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In order to ascertain the most suitable form of tax it must first be established what constitutes a tax, which is a complex issue. The findings can then be applied in the context of environmental taxation. One definition given is that “a tax is any payment made to Government for which no direct benefit is provided in exchange.”<sup>1</sup> However taking into account Tiley’s examination of the exact nature of a tax, this definition would be regarded as too broad since it does not distinguish between a tax and other forms of Government income.<sup>2</sup>

A tax contributes to Government or public body revenue for public purposes only – not for any direct benefit to the taxpayer.<sup>3</sup> This distinguishes a tax from a charge for a Government service, or a toll for use of a Government-run facility – both of which allow the taxpayer

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<sup>1</sup> Tax Justice Network, ‘Tax us if you can’ (2005) <[http://www.taxjustice.net/cms/upload/pdf/tuiyc\\_-\\_eng\\_-\\_web\\_file.pdf](http://www.taxjustice.net/cms/upload/pdf/tuiyc_-_eng_-_web_file.pdf)> Accessed 16/6/2010.

<sup>2</sup> Tiley J, *Revenue Law* (Oxford: Hart Publishing, 2005) pp.3-26.

<sup>3</sup> The US Supreme Court of Wisconsin declared a tax void due to an absence of public interest in raising the funds, *Broadhead v. Milwaukee*, 19 Wis. 624, 652.

some benefit. It is also a compulsory measure, so optional contributions are not taxes.<sup>4</sup>

Optional contributions can however be distinguished from the situation where a taxpayer has the option to claim a tax relief and wipe out the tax liability. Even if the taxpayer chooses not to claim the relief, the tax is still regarded as compulsory, with a right to relief attached.

Applying this in the context of environmental taxation, the charge would be a compulsory one, specifically dependant on the quantitative detriment to the environment, and while there is no direct financial benefit to the taxpayer, the revenue is gathered for public purposes.

Whereas a voluntary contribution to offset one's carbon usage, for example, would not be a tax since there is no obligation to pay.<sup>5</sup>

Despite the requirement for revenue to be claimed for public purposes, this does not automatically mean that the only purpose of the tax is to claim the revenue for public purposes. Charging taxes can achieve many purposes such as to reduce harmful activity. Therefore 'public purposes' would be served if no tax was charged but a harmful activity (the object of the tax) ceased.

A tax is distinct from a fine fixed by Parliament, since courts have the power to amend the sum of a fine.<sup>6</sup> Furthermore, in the UK, fines<sup>7</sup> on traders are not allowable deductions,<sup>8</sup> as

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<sup>4</sup> As a compulsory measure it is enforced through the justice system. Offences against the public revenue are criminal pursuant to Theft Act 1968, s.32(1)(a).

<sup>5</sup> Individuals and traders have the option to off-set their specific carbon emissions for a fee to account for the detriment they cause to the environment, but this is not compulsory so therefore not a tax. See eg DECC, 'A short guide to Carbon Offsetting' (2010) <[www.decc.gov.uk](http://www.decc.gov.uk)> Accessed 16/6/2010.

<sup>6</sup> See Tiley, chapter 2, n.2, at 7.

they are not losses connecting with or arising out of their trade pursuant to the the Income and Corporation Taxes Act 1988 s.74(1)(e),<sup>9</sup> whereas some taxes can be deducted. Statutory wording here has manipulated these definitions to achieve this outcome. Nor would a fine be deductible when calculating losses under Part 4 of Income Tax Act 2007.

This is in line with the general rule against permitting those fined for breaching the law to be allowed to deduct the cost,<sup>10</sup> so as not to reward criminal activities.<sup>11</sup> This distinction is important in the field of environmental regulation as businesses or individuals acting according to their best financial interests may consider the difference to be valuable.<sup>12</sup>

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## 4. WHAT CONSTITUTES A GOOD TAX?

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### 4.1 MAXIMS OF GOOD TAXATION

Adam Smith famously set out four ‘maxims’ of what constitutes good taxation.<sup>13</sup> These can be summarised as follows:

- i. Equity: taxpayers should contribute proportionately based on their activities;

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<sup>7</sup> For example, HMRC charges a £100 penalty for late payment of tax returns <<http://www.hmrc.gov.uk/sa/dead-pen.htm>>, and interest on late payments <<http://www.hmrc.gov.uk/RATES/interest-late.htm>> Accessed 16/6/2010.

<sup>8</sup> *McKnight (Inspector of Taxes) v Sheppard* [1999] 1 WLR 1333.

<sup>9</sup> See also ITTOIA, s.34.

<sup>10</sup> Expenditure to be deducted must be ‘wholly and exclusively’ for the purposes of the trade, profession or vocation. The ruling in *Commissioners of Inland Revenue v E.C. Warnes & Co Ltd* [1919] TC 227 ruled that penalties were not losses connected with and arising out of a company's trade so therefore were not deductible.

<sup>11</sup> Lord Hoffmann explained that penalties were non-deductible as the “purpose is to punish the taxpayer and... the legislative policy would be diluted if the taxpayer were allowed to share the burden with the rest of the community...” See n.8.

<sup>12</sup> An assumption put forward in Smith A, *An Enquiry into the Nature and Causes of The Wealth of Nations* (London: W. Strahan and T Cadell, 1776).

<sup>13</sup> *Ibid*, Book V, Chapter II Part II.

- ii. Certainty: taxes must be certain and not arbitrary;
- iii. Convenience: taxes must be payable at a time most convenient for the taxpayer.
- iv. Economy: taxes must be economical to collect.

## 4.2 EQUITY

To achieve ‘equity’ in this sense, is generally a policy issue. The proportion of the contribution required from the taxpayer’s income will vary between different States depending upon what, if at all, they deem to be a necessary redistribution of wealth.

Applying this to environmental taxation, equity could arguably be achieved by taxing an amount to justifiably represent the quantity of environmental harm, such as on a taxpayer’s GhG (Greenhouse Gas) emissions.<sup>14</sup> Klein and Bankman describe alternative understandings of ‘equity’ for the purpose of a tax; ‘vertical’ equity can be achieved by taking into account a taxpayer’s ability to pay when introducing a tax, while ‘horizontal’ equity can be achieved if taxpayers in similar circumstances are taxed similarly.<sup>15</sup>

## 4.3 DRAFTING CLARITY

In order to achieve all of these maxims, particularly in terms of the ‘certainty’ maxim, the way the tax legislation is drafted is crucial. Developing clear legislation creates both

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<sup>14</sup> This adopts the definition given by Article 1 of The United Nations Framework Convention on Climate Change (1994) (the ‘UNFCCC’) “‘Greenhouse gases’ means those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation.” The ultimate objective of the UNFCCC is to achieve “... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.” (Article 2)  
<[http://unfccc.int/essential\\_background/convention/background/items/1349.php](http://unfccc.int/essential_background/convention/background/items/1349.php)> Accessed 5/3/2010.

<sup>15</sup> Klein WA & Bankman J, *Federal Income Taxation* 11 (New York: Wolters Kluwer Law & Business, 1997) 19.

certainty for the taxpayer, and makes revenue more economical to collect as there will be less litigation over unclear drafting. Clear drafting avoids differing interpretations so means it will be more straightforward to collect taxes. In the UK, HMRC (Her Majesty's Revenue and Customs) are attempting to redraft primary direct tax legislation so that it is clearer and easier to use; such rewriting has already saved the Revenue millions of pounds and they have predicted this will continue.<sup>16</sup> Sindico urges States when drafting climate taxes in particular to be "very clear and not leave any space for possible ambiguity."<sup>17</sup>

Precision in the text will also prevent undesired consequences. This was highlighted in HM Treasury's 1997 *Statement of Intent*, which set one 'general test of good taxation' to be "well designed, to meet objectives without undesirable side-effects".<sup>18</sup> An imprecise tax in this context could be too vague, broad or narrow,<sup>19</sup> leading to the development of many exceptions, various different interpretations,<sup>20</sup> or tax avoidance.<sup>21</sup>

#### 4.4 NEUTRALITY, PURPOSE AND UNFORESEEN CONSEQUENCES

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<sup>16</sup> HMRC, 'Tax Law Rewrite Report and Plans 2008 – 09' (2008) <<http://www.hmrc.gov.uk/rewrite/plans2008-09.htm>> Accessed 16/6/2010.

<sup>17</sup> Sindico F, 'Climate Taxes and the WTO: Is the Multilateral Trade Regime a further obstacle for efficient domestic climate policies?' (2006) 3 *Economic Policy and Law, Journal of Trade & Environmental Studies* 8.

<sup>18</sup> HM Treasury news release, 'Tax Measures to Help the Environment', 2/7/1997 <<http://archive.treasury.gov.uk/budget/1997/hmt4.html>> Accessed 3/2/2010.

<sup>19</sup> The availability of tax relief for constructors building on Brownfield sites has been criticised for being too narrow, British Property Federation, 'Brownfield relief 'too narrow' says BPF' 24/2/2008 <<http://www.bpf.org.uk/newsroom/pressreleases/document/23328/brownfield-relief-too-narrow-says-bpf>> Accessed 4/2/2010.

<sup>20</sup> See Vasconcellos RP, 'Vague Concepts and Uncertainty in Tax Law' (2007) <[http://works.bepress.com/roberto\\_vasconcellos/1](http://works.bepress.com/roberto_vasconcellos/1)> Accessed 17/6/2010.

<sup>21</sup> In 2006-7, almost a third of large businesses paid no corporation tax, National Audit Office, *Management of Large Business Corporation Tax* (London: TSO, 2007).

Tax may also be judged by how well it meets its given purpose. If a tax affects behaviour of the market or society, then generally it will be 'non-neutral'. The success of a tax may be judged by a policymaker according to the extent to which it has encouraged or discouraged an activity the policymaker intended.<sup>22</sup> Taxes which do not affect behaviour are 'neutral' taxes, and as such will be judged only by the extent to which they have succeeded in collecting the types of revenue the tax was intended to collect.<sup>23</sup> Davies explains that "the aim of those designing taxes is to create neutral taxes, unless policy requires a tax to be non-neutral."<sup>24</sup>

Furthermore both neutral and non-neutral taxes can be critiqued by the extent of their undesirable consequences.<sup>25</sup> Should a tax cause considerable problems that it did not set out to do, such as in altering human activity in a way which causes negative behaviour unforeseen by the legislature, then it will be deemed a failure. An example of this is the Landfill Tax,<sup>26</sup> which deliberately attempts to affect behaviour,<sup>27</sup> by encouraging businesses in particular to invest in waste treatment routes other than landfill sites. The unintended consequence of this has been an increase in fly-tipping<sup>28</sup> as people seek to avoid paying the costs of the landfill tax, which in turn has led to an increase in prosecutions for fly-tipping.<sup>29</sup> Consequently this tax has indirectly led to a range of the population becoming criminals, who otherwise would not have been. Hence a well-designed tax will minimise unintended consequences.

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<sup>22</sup> It is of course extremely difficult to express certainty about the intention of Parliament.

<sup>23</sup> Neutral taxes are often sought in order to achieve economic efficiency; see Surrey SS and McDaniel PR, *Tax Expenditures* (Harvard, USA: Harvard University Press, 1985).

<sup>24</sup> Morse G and Williams D, *Davies: Principles of Tax Law* 6 (London: Sweet & Maxwell, 2008) at 6.

<sup>25</sup> Discussed in context of the introduction of Stamp Duty Land Tax in Cannon P, 'More is Less' (2003) 6 BTR. 438-442.

<sup>26</sup> Introduced under FA 1996 s.40(1).

<sup>27</sup> Hansard HC vol 475: Col 1337W (12/5/2008).

<sup>28</sup> Hansard HC vol 475: Col 1337W (12/5/2008) shows Parliament's concerns over fly-tipping due to the imposition of the Landfill Tax.

<sup>29</sup> DEFRA, see chapter 1, n.11.

In some circumstances the entire function of the tax can be questioned as its operation may fail to meet the requirements of the policy. For example, the Landfill Tax operates by imposing an additional cost for use of landfill, in order to encourage recycling.<sup>30</sup> Recycling is economically feasible when there is a demand for recycled goods, but during the recession of 2009 demand for recycled goods collapsed. This led to large stockpiles<sup>31</sup> of waste goods that were unable to be recycled or sent to landfill<sup>32</sup> resulting in taxpayers having to fund storage until demand returned.<sup>33</sup> Hence such taxes are very much dependant on the market remaining buoyant and it is important to foresee such consequences when designing a tax. The theme of the thesis can be emphasised herein, as taxes and incentives may be able to create a market environment where positive environmental gains are financially beneficial, such as a tax which encourages recycling of waste paper and reliefs to encourage a recycling paper mill.

#### 4.5 COMPLIANCE COSTS AND DISTRIBUTION

The maxims and their contemporary counterparts are reflected in the 1997 *Statement of Intent* which set out principles of how green taxes should be designed, saying that “environmental taxation must meet the general tests of good taxation.”<sup>34</sup> These tests involved designing

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<sup>30</sup> Cabinet Office Strategy Unit, ‘Waste not, Want not’ (2002) at 5.

<sup>31</sup> Marzouk L, ‘Brighton and Hove's Recycling left in Storage after Waste Paper Market Collapse’ *The Argus* 12/1/2009 <[http://www.theargus.co.uk/news/4039014.Recycling\\_mountain\\_stored\\_in\\_warehouse/?action=complain&cid=744207](http://www.theargus.co.uk/news/4039014.Recycling_mountain_stored_in_warehouse/?action=complain&cid=744207)> Accessed 20/1/2010.

<sup>32</sup> Hope C & Gammell C, ‘Mountains of Recycled Rubbish spring up across UK as Market for Waste Collapses’ *The Telegraph* 29 Dec 2008 <<http://www.telegraph.co.uk/earth/environment/4015775/Mountains-of-recycled-rubbish-spring-up-across-UK-as-market-for-waste-collapses.html>> Accessed 10/3/2010.

<sup>33</sup> Townsend M, ‘Recycled waste could be stored on MoD bases’ *The Observer* 16/11/2008 <<http://www.guardian.co.uk/environment/2008/nov/16/recycling-waste-military>> Accessed 6/5/2010.

<sup>34</sup> See n.18.

legislation to minimise undesirable side-effects, minimising compliance costs, having an acceptable distributional impact and ensuring that taxation did not hinder international competitiveness.

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## 5. ENVIRONMENTAL TAXATION

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### 5.1 DEFINITION OF AN ENVIRONMENTAL TAX

Before going into any further detail on environmental taxation it is important to provide a working definition of this concept. An EU (European Union)<sup>35</sup> commissioned study by Jarass and Obermair defined an environmental tax as one whose “...tax base is a physical unit (or a proxy for it) of something that has a proven specific negative impact on the environment, when used or released.” It defines a negative impact on the environment as one which deteriorates “...hitherto free environmental goods or a reduction of the supply of such goods.”<sup>36</sup> The requirement of proof of a ‘specific negative impact’ in this definition would mean that a tax on an environmental factors whose effect had not been scientifically proven would not be regarded as an environmental tax. If this definition were to be used as a basis for establishing specific environmental taxes, the burden of proof could prevent many

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<sup>35</sup> References to the ‘EC’ will only be used within this thesis to refer to laws, treaties or caselaws requiring such a reference. Otherwise references to the ‘EC’ or ‘EU’ will be labelled ‘EU’, pursuant to changes made in the Lisbon Treaty: Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, signed at Lisbon, 13 December 2007, OJ C/306 of 17 December 2007, in force on 1 December 2009.

<sup>36</sup> Jarass L and Obermair GM, ‘Manual Statistics on Environmental Taxes’ (1996) ATW-Research <<http://www.atw-forschung.de/dat/pub/0000/ecommission.pdf>> Accessed 8/6/2010.

such taxes from being established.<sup>37</sup> Indeed it is at odds with the ‘precautionary principle’ set out in international law.<sup>38</sup>

This contradictory definition is avoided when the OECD use the alternative definition of ‘environmentally-related taxes’. This is defined as payments made to Governments on “tax bases deemed to be of particular environmental relevance.”<sup>39</sup> The use of the term ‘environmental tax’ henceforth consequently takes into account a potential reversal of the onus of scientific proof, and relates to taxes on what the policymaker considers to be environmentally relevant.

## 5.2 SUITABLE ENVIRONMENTAL TAXATION

### 5.2.1 ECONOMIC INSTRUMENTS: CAVEAT

It must be emphasised at this stage that much academic debate surrounds the issues summarised herein and it is not intended to further this debate. Classical economists believed that leaving a free market to solve market problems would achieve the most efficient outcome,<sup>40</sup> though other economists later argued that Government intervention may sometimes be necessary to avoid market failure.<sup>41</sup> Keynes advocated the idea that

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<sup>37</sup> It is vital here to refer to Fisher who explains in more details the implications of the burden of the proof requirements under the precautionary principle. See Fisher E (ed.), *Implementing the Precautionary Principle* (UK: Edward Elgar, 2006).

<sup>38</sup> See 1.8.

<sup>39</sup> OECD, *Environmentally Related Taxes in OECD Countries: Issue and Strategies* (Paris: OECD Publishing, 2001) at 18.

<sup>40</sup> The origins of this argument rest in Smith, see chapter 2, n.12. Coase further sought to prove that Government intervention was not required if private property rights could be clarified, in Coase RH, ‘The Problem of Social Cost’ (1960) *J. Law Econ.* 3, 1-44. Coase’s arguments were furthered in Cheung SNS, *The Myth of Social Cost* (London: Institute of Econ.Aff., 1978).

<sup>41</sup> Mill JS, *Principles of Political Economy with some of their Applications to Social Philosophy* (London: Longmans, Green and Co, 1871).

Governments can take responsibility for leading the economy and could use interventionist methods and spending to correct negative externalities in the market.<sup>42</sup>

The thesis accepts as a starting point the view that Government intervention may be necessary to overcome what is deemed to be a market failure, where the environment is not valued as a factor of production. However it is also accepted that intervention may not be appropriate in every case; sometimes it will be inefficient to intervene<sup>43</sup> and international law supports the notion that environmental interests must be reasonably balanced against socio-economic interests.<sup>44</sup> The stance taken within the thesis is that it is for the policymaker to determine the extent to which environmental interests will outweigh non-environmental interests. The purpose of the Universal Model is to provide a mechanism for policymakers to determine whether to, and how best to, intervene.

The policymaker will be faced with the challenge of extrapolating the most efficient solution. Buchanan explained that since all solutions have costs, the true choice available when faced with an economic problem is to decide between a range of inefficient solutions.<sup>45</sup> Various efficiency arguments are made to question whether it is efficient to intervene at all,<sup>46</sup> and if

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<sup>42</sup> Keynes JM, *The General Theory of Employment, Interest and Money* (London: Palgrave Macmillan, 1936).

<sup>43</sup> Prosser argues that society's need for industry means some individuals may have to suffer a "not unreasonable" private cost for the "general good", in Prosser WL, *Handbook on the Law of Torts* (St. Paul: West Publishing Co., 1955) 398-412, at 412.

<sup>44</sup> Principle 16 of the Rio Declaration requires national authorities when promoting the polluter-pays principle to have "due regard to the public interest...without distorting trade and investment". Article 191(2) of the TFEU, provides a 'Community inspection procedure' for environmental actions provisionally taken by any Member State.

<sup>45</sup> Brennan G and Buchanan JM, *The Power to Tax: Analytical Foundations of a Fiscal Constitution* (Indianapolis, IN: Liberty Fund, Inc., 1980).

<sup>46</sup> Meade JE, 'External Economies and Diseconomies in a Competitive Situation' (1952) 52 *Econ.J* 54 at 56-57; Cheung SNS, 'The Fable of the Bees: An Economic Investigation' (1973) 16 *J. Law Econ.* 11; Pigou AC, *The Economics of Welfare* (London: Macmillan & Co., 1920); Chen P, 'Complexity of Transaction Costs and Evolution of Corporate Governance' (2007) 76 *The Kyoto Economic Review* 2, 139-153; Chen P, 'Coase Fantasy of Zero Transaction Costs And Asymmetric Bargaining in Social Conflicts' (2008) *Cornell University*

so, whether taxation or regulation<sup>47</sup> is the most efficient measure – this will depend upon the type of problem.<sup>48</sup> The thesis operates on the premise that the policymaker has decided taxation is the most efficient in a given case, and attempts to guide the policymaker in determining which method of tax can most effectively achieve a given environmental objective.<sup>49</sup>

## 5.2.2

## ECONOMIC INSTRUMENTS

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*Law School*; Stigler GJ, 'The Economics of Information' (1961) 69 *J.Polit. Economy* 3 pp.213-225; Halpin A, 'Disproving the Coase Theorem?' (2007) *Econ. Philos.* 23 321–341; Helm D and Pearce D, 'Assessment: Economic Policy towards the Environment' (1990) 6 *Oxford Rev. Econ. Pol.* 1; Samuelson P, 'Some Uneasiness with the Coase Theorem' (1995) *Japan and the World Economy* 7 1-7. Arguments that intervention may be paternalistic are debated in Galbraith JK, *The Affluent Society* (London : Penguin, 1999); Friedman M, *Friedman on Galbraith, and on curing the British disease* (Vancouver: Fraser Institute, 1977); Knight FH, *Ethics of Competition* (Chicago: University of Chicago Press, 1935).

<sup>47</sup> Johnson explains that command and control regulation "provides no incentives to polluters to develop new strategies to reduce their pollution beyond the levels required by law." Johnson SM, 'Economics v. Equity: Do Market-Based Environmental Reforms Exacerbate Environmental Injustice?' (1999) 56 *Wash.& Lee L.Rev.* 111, p. 112. See criticism of command-and-control style regulation in Ackerman C and Stewart R, 'Reforming Environmental Law' (1985) 37 *Stan.L.Rev.* 1333, at 1343. Nash demonstrates how, even when policy-makers opt to use regulatory regimes rather than environmental taxes to achieve environmental objectives, the tax considerations cannot be ignored. Nash JR, 'Taxes and the Success of Non-Tax Market-Based Environmental Regulatory Regimes' (2008) *University of Chicago Law & Economics*, Olin Working Paper No. 412.

<sup>48</sup> For taxation versus regulation debates see: Turner K, Powell, J and Craighill A, 'Green Taxes, Waste Management and Political Economy' (1998) 53 *Journal of Environmental Management* 121–136, at 122-3; Smith S, *'Green' Taxes and Charges: Policy and Practice in Britain and Germany* (London: IFS, 1995) at 11; Krupnick AJ, 'Policies for controlling nitrogen dioxide in Baltimore' (1986) 13 *J. Environ. Econ. Manage.* 189-97. Negative consequences of non-compliance due to regulation can be seen with the USA's National Prohibition Act 1919 (P.L. 66-66, 41 Stat. 305), which attempted to prohibit alcohol consumption, leading to an enormous increase in organised crime to meet demand for alcohol, and mass corruption in the Police: See Solomon RL, 'Regulating the Regulators: Prohibition Enforcement in the Seventh Circuit', in Kyvig DE, *Law, Alcohol, and Order: Perspectives on National Prohibition* (Westport, CT: Greenwood, 1985). Following its repeal in 1933, the illicit black market collapsed as legal sales were priced lower and avoided the threat of arrest, though the licensing of alcohol remained strict and allowed the authorities control in limiting alcohol use as opposed to prohibiting it: Warburton C, *The Economics Results of Prohibition* (New York: Columbia Press, 1968). The tax code furthermore has been utilised to effectively regulate certain activities which go against Government policy. For example, in the tax year 1978-79, the left-wing British Government wanted to discourage unearned income, since they believed it unfair that a small number of the aristocracy did not need to work whilst much of the country was poor. Consequently they introduced a 15% surcharge on taxpayers with very high investment income, set above the maximum highest rate of income tax of 83%. This saw some taxpayers paying the extremely high rate of 98% of their income to HM Treasury, having similar consequences in reducing investments as regulation would have brought. Hence, whilst bans or regulations may be viewed by the public as a hindrance to freedoms, the continually changing rates of taxation can achieve the same affect of a ban without formally reducing the rights of the public. Adam S and Browne J, *A Survey of the UK Tax System* (London: IFS, 2006) Briefing Note No. 9, p. 27 and Table 14 <<http://www.ifs.org.uk/bns/bn09.pdf>> Accessed 22/6/2010.

<sup>49</sup> Latin felt that throughout the debate on economic instruments there has been "an excessive preoccupation with theoretical efficiency" in Latin H, 'Ideal Versus Real Regulatory Efficiency: Implementation of Uniform Standards and "Fine-Tuning" Regulatory Reforms' (1985) 37 *Stan.L.Rev.* 1267, pp. 1270-71.

In order to achieve the aims above, the *type* of legislation should be analysed to ascertain the way in which it will encourage taxpayer compliance.<sup>50</sup> The traditional form of ensuring compliance whilst minimising undesirable side-effects has been in the ‘command and control’ model of environmental legislation. This can involve simply creating a law to limit the use of a pollutant and ensuring it is complied with - a regulatory technique.

However the OECD has for some time promoted the use of economic instruments to achieve environmental policy.<sup>51</sup> The purpose of such instruments is to affect market costs in order to incentivise the use of non-pollutants over pollutants, for example, rather than simply forcing the change through regulation. These include techniques such as tax methods, grants and subsidies, and recently the area has developed the concept of carbon trading.<sup>52</sup> If environmental policy can be achieved via economic instruments in a less expensive manner than the command and control method, this is referred to by the OECD as ‘static efficiency’.<sup>53</sup> Indeed empirical studies have demonstrated that static efficiency benefits caused by economic instruments in the market can in some circumstances significantly minimise environmental protection costs.<sup>54</sup>

### 5.2.3

### PIGOVIAN TAX THEORY

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<sup>50</sup> Turner *et al* name six principles behind economic instruments such as environmental taxes, depending on the political economy in which the tax serves, in Turner *et al*, see n.48 at 125.

<sup>51</sup> “[Member countries should] make a greater and more consistent use of economic instruments as a complement or a substitute to other policy instruments...”; OECD, *Council Recommendation on the Use of Economic Instruments in Environmental Policy* (1991) [C(90)177/FINAL].

<sup>52</sup> Smith S, ‘Environmentally Related Taxes and Tradable Permit Systems in Practice’ (Paris: OECD Environment Directorate Centre for Tax Policy and Administration, 2008) COM/ENV/EPOC/CTPA/CFA(2007)31/FINAL

<sup>53</sup> OECD, *Environmental Taxes and Green Tax Reform* (Paris: OECD, 1997) at 7.

<sup>54</sup> Tietenberg TH, ‘Economic Instruments for Environmental Regulation’ in Helm D, *Economic Policy Towards the Environment* (Oxford: Blackwell Publishers, 1991).

The traditional method of using taxation to achieve environmental policy goals other than simply command and control legislation is to create a tax on a pollutant and ensure compliance. It is based on the Pigovian notion that a tax can correct negative externalities in a market.<sup>55</sup> It will discourage the use of a pollutant in a way that the market would not, and in doing so make the taxpayer take into account the cost of the pollution in financial terms before using the pollutant.<sup>56</sup> This is called external cost internalisation. The Stern Review describes that, “putting an appropriate price on carbon...through tax ...means that people are faced with the full social cost of their actions.”<sup>57</sup> The economic basis for this theory is accepted as a starting point, though it is acknowledged that there is academic debate in this area.<sup>58</sup>

The dictum that those who pollute should bear the cost of their pollution is enshrined in Article 191(2) of TFEU; the difficult question of identifying exactly who should bear the cost is dealt with in Chapter 7. However some industries must use pollutants anyway and will simply consider it as another tax with which they must comply. The incentive to comply in this case is to avoid any enforcement action such as further charges or even prosecution. Due to this the tax becomes a revenue-raising tax rather than a behaviour-changing tax.<sup>59</sup> An Asian Development Bank report acknowledges the weaknesses of achieving environmental policy through this ‘command’ approach since it only creates an incentive to comply with the

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<sup>55</sup> Pigou AC, *Wealth and Welfare* (London: Macmillan & Co., 1912).

<sup>56</sup> See Baumol, WJ ‘On Taxation and the Control of Externalities’ (1972) 3 *Amer. Econ. Rev.* 62 307-322.

<sup>57</sup> Stern NH, *Stern Review: The Economics of Climate Change* (London: CUP, 2007) p.xviii.

<sup>58</sup> Coase criticises the Pigovian logic which seeks to demonstrate how Government intervention can cause a nuisance in itself which then requires correction: see Coase, chapter 2, n.40, at 28. Where Pigou argued for internalisation of negative externalities, Coase contested that if somebody is using their land which produces an economic output but which causes some harm to their neighbour, it should not automatically be assumed that the use should be stopped in order to protect the neighbour. He argued that preventing the harm to the neighbour actually causes harm to the producer, and Coase believes that the required action depends on the balance between the private cost to the neighbour against the social gain from the production output.

<sup>59</sup> See the discussion in Soares CD, ‘An ‘Environmentally Related Tax’ is not necessarily an ‘Environmental Tax’ *London School of Economics* <<http://ecpr-sgeu.lboro.ac.uk/research/soares1.pdf>> Accessed 16/6/2010.

command, not go beyond it.<sup>60</sup> Furthermore, the method of introducing severe penalties for breaching environmental legislation has been criticised. South Africa's National Environmental Management Amendment Bill (B36B-2007) which increased sanctions for non-compliance to a ZAR R10-million fine and/or 10 years in jail, arguably had "little effect"<sup>61</sup> as the country still ranks lowly on an Environmental Performance Index.<sup>62</sup>

#### 5.2.4 TAX INCENTIVISATION

A contemporary approach to ensuring compliance is 'tax incentivisation'. The notion is to utilise taxation in order to give people an incentive to go beyond compliance. Put simply, a tax on a pollutant can encourage less use of the pollutant up to the point of compliance, where the tax will be minimal. Yet a tax credit or a significant reduction in taxation for going beyond compliance means that it is in the taxpayer's financial interest to go beyond compliance and actually reduce their overall pollution – and even invest in environmentally efficient technology.<sup>63</sup> This is an economic point, based on the financial practices of the way businesses are run. The OECD refers to this type of "continuous incentive for pollution abatement and technical innovation" as 'dynamic efficiency'.<sup>64</sup>

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<sup>60</sup> See eg. Asian Development Bank, 'Thailand: Capacity Building for Pollution Taxation and Resource Mobilization for Environmental and Natural Resources Sectors — Phase II' (2008) 4667 THA.

<sup>61</sup> Gunn A, 'On the right track? – South Africa' (2008) <<http://www.hg.org/article.asp?id=5628>> Accessed 16/6/2010.

<sup>62</sup> Produced from a study conducted by Yale and Columbia Universities; <<http://epi.yale.edu/Home>> Accessed 7/6/2010.

<sup>63</sup> 'Environmental efficiency' means an action (such as production) which causes the least damage to the environmental objective given the available options.

<sup>64</sup> OECD, see n.53 at 7.

If a business is subject to taxation then it has an interest in arranging its affairs to reduce its tax liability, and the right to do so.<sup>65</sup> By offering reliefs to reduce the liability, policymakers can encourage a certain form of positive activity. Hence, policymakers would not be forcing a business to do a certain activity and not do another. Instead they can charge the business an amount, justified as a necessary evil, but offer the business the option not to pay as much through certain schemes. As such, the business carries out a positive activity which the Government may have otherwise had to do, and is better off for it. The business chooses to do it and will likely be able to gain positive publicity from it. Equally the Government does not have to raise additional taxes to fund the positive activity. Thomas argues such measures can promote efficiency if activities with positive externalities are increased.<sup>66</sup>

Four models of tax incentivisation to achieve environmental objectives are considered below:-

#### 5.2.4.1 OUTPUT RELATED TAX

An example of such a tax in operation is identified in *First Principles of Economics*, in a discussion related to a tax on a hypothetical factory's pollution:

“If the pollution were related to the volume of factory output, for instance, a well targeted tax would be output-related, so that the incentive to reduce the amount of pollution was directly related to the tax burden. Such a tax would be more efficient than a tax on the profits of a

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<sup>65</sup> *Commissioners of Inland Revenue v. Duke of Westminster* (1936) App.Cas. 1, 19 T.C. 490.

<sup>66</sup> Thomas KP, *Investment Incentives: Growing use, Uncertain benefits, Uneven controls* (Geneva: IISD, 2007) at 11.

polluter, who might pollute no less. If a polluting firm was using the lowest cost methods of production before the tax, there is no reason why it should not continue to do so, being left merely with lower profits.”<sup>67</sup>

The notion here is that taxation can be targeted to fit in with the way that businesses operate. By making businesses take taxes on pollution output into the cost of production, the cost of production becomes higher and they have a vested interest in reducing such costs. This provides both an incentive to reduce pollution output *per se*, as well as an incentive to invest in environmentally efficient technology which creates less pollution and therefore brings less pollution output into charge for tax.

An example of this kind of tax is the Landfill Tax in the UK, which creates a charge per tonne on waste when delivered to landfill sites. A higher rate<sup>68</sup> applies to biodegradable waste than inactive waste, to further discourage landfill of the former.<sup>69</sup> The Department of the Environment (as it was named then) set the prices based on the estimated external costs related to landfill, with the purpose of making those intending to use landfill sites take account of, and become responsible for, their environmental cost.<sup>70</sup>

Nevertheless, this model of taxation is questioned by Fullerton *et al* who argue that such taxes are frequently targeted in an imprecise manner which consequently provides inefficient

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<sup>67</sup> Lipsey RG and Harbury C, *First Principles of Economics* (London: OUP, 1993) at 230.

<sup>68</sup> The rates are specified by FA 1996, s.42.

<sup>69</sup> Inactive waste includes: rocks and soil, ceramic or concrete materials, minerals, furnace slags, ash, low activity inorganic compounds, calcium sulphate, calcium hydroxide and brine, water; Cabinet Office Strategy Unit, see chapter 2, n.30 at fn.100.

<sup>70</sup> An explanation is given in Davies B and Doble M ‘The Development and Implementation of a Landfill Tax in the UK’ (2004) in OECD, *Addressing the Economics of Waste* (Paris: OECD 2004).

welfare benefits.<sup>71</sup> Indeed, the level of waste subject to the ‘standard rate’ of tax imposed on landfill in the UK was deemed to be static, signalling that this kind of output tax did not work successfully to reduce such levels of waste.<sup>72</sup> This is despite an increase in the tonnage tax from GBP £7 upon its introduction in 1996 to GBP £40 in 2009.

Nevertheless, the tax significantly reduced landfill of *inactive* waste by 60%,<sup>73</sup> despite a rate of only GBP £2 – much lower than the charge for active waste – being charged until 2008.<sup>74</sup> Hence an output tax can operate effectively but this is not guaranteed and it depends partly on the elasticity of demand of the subject of the tax.

#### 5.2.4.2 TAX REDUCTIONS AND DEDUCTIONS

Even with the above output-related tax in operation, businesses would still have to bear the capital cost of investing in environmentally efficient technology in order to achieve the necessary tax savings. Tax incentivisation can go further than this and assist businesses in investing in capital expenditure on this ‘clean’ technology in order to make it financially attractive to do so.

In the UK, the Capital Allowances Act 2001 allows businesses to claim a FYE (First Year Allowance) of 100% on allowable capital expenditure on new energy-saving plant or machinery. This is a substantial incentive as businesses can then write off the cost of such

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<sup>71</sup> Fullerton D, Hong I and Metcalf G, ‘A Tax on Output of the Polluting Industry is Not a Tax on Pollution: The Importance of Hitting the Target’ (1999) *National Bureau of Economic Research Working Paper No. W7259*.

<sup>72</sup> A Cabinet Office report called for an increased tax rate since the tax had been ineffective; see chapter 2, n.30 at para 6.54.

<sup>73</sup> *Ibid*, para 6.47.

<sup>74</sup> When it was increased to GBP £2.50.

expenditure against their tax liability. Furthermore it promotes a demand for energy-saving plant and machinery which can help to reduce production costs as economies of scale develop and the market for such technology matures, and consequently reduces the overall cost to businesses of purchasing them.<sup>75</sup> In doing so it encourages economic growth of businesses who both use or produce energy-saving plants or machinery in an environmentally efficient way. The limitation is that such allowances only create an incentive where a business produces sufficient chargeable profits to desire to lower its tax liability. Further a business would need to make other capital investments in the ordinary course of its business, which it would additionally need to create sufficient profits to fund.

Tax incentivisation in this manner can reduce undesirable side-effects, which could include, for example, a decrease in productivity, growth, or employment, or could make the industry less competitive internationally. By allowing environmentally efficient machinery to be tax deductible, there should be no financial disadvantage in investing in this machinery – only the advantage in reduced taxes. This is discussed by Ono, who concludes that there are:

“...two competing forces that [environmental taxation] exerts on economic growth. One is a negative force, which hampers production; the other is a positive force, which increases the level of environmental quality bequeathed to future generations...Environmental taxation is not necessarily harmful to economic growth.”<sup>76</sup>

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<sup>75</sup> The intention of the US Climate Change Technology Initiative during the Clinton Administration was to encourage “the penetration of [the development of environmentally efficient] technologies, reducing costs, and creating a more mature market”), Energy Information Administration, *Analysis of The Climate Change Technology Initiative: Fiscal Year 2001* (Washington D.C.: Energy Information Administration, 2000) at X.

<sup>76</sup> Ono T, ‘Environmental Tax Policy and Long-Run Economic Growth’ (2003) 54 Japanese Econ. Rev. 2, at 215.

Ono believes that these competing forces are balanced by a “critical level of tax” – depending on where this is set it can be beneficial or detrimental to economic growth.<sup>77</sup> However he identifies a crucial problem in that it is often unknown at what level this tax should be set, due to a lack of information or political constraints.<sup>78</sup> This will be discussed further in Chapter 5. Nevertheless if such a tax can be achieved then there can be both environmental improvement and economic growth.

Similarly certain economic activities which may not be financially viable under standard tax rules, but which are environmentally positive, can be promoted by reducing or exempting the activities from tax measures. For example the Chinese Cleaner Production Promotion Law<sup>79</sup> provides for potential exemption from VAT (Value Added Tax) of goods produced from wastes and materials reclaimed from wastes.<sup>80</sup>

#### 5.2.4.3 TAX CREDITS

A third strand of incentive is the tax credit model. Whereas tax deductibles and allowances decrease a taxpayer’s taxable income before applying a tax, tax credits directly reduce the tax bill pound for pound. This makes the tax credit considerably more valuable for a taxpayer and provides a substantial incentive to achieve the credit.

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<sup>77</sup> *Ibid.*

<sup>78</sup> *Ibid.*

<sup>79</sup> Approved by the Standing Committee of the National People's Congress (NPC) of the People's Republic of China in the 28th Session on 29/6/2002 <<http://www.chinacp.com/EN/PolicyDetail.aspx?id=39>> Accessed 22/2/2010.

<sup>80</sup> Article 35.

In the UK the scale of tax credits varies greatly. The Finance Act (FA) 1996 imposed a tax on landfill for operators of licensed landfill sites, in order to encourage recycling and reduce waste volumes. Later regulations brought in via the Landfill Tax Regulations 1996 introduced a tax credit against the Landfill Tax. Under the Landfill Tax Credit Scheme, donations of up to 6.5% (originally 20%)<sup>81</sup> of the landfill tax liability for the year could be made to approved Environmental Bodies for environmental projects.<sup>82</sup> A tax credit worth 90% of that contribution could then be claimed. This is to encourage what are referred to as 'positive externalities', where an action by a private individual confers benefits to others in society.<sup>83</sup> While this scheme does provide an incentive to contribute to such schemes, the advantages available to businesses are limited due to the low percentage of the tax which can be claimed, and the amount contributed to fund environmental projects is limited. Critics have warned that using this economic instrument alone cannot generate the revenue required to meet the UK's waste strategy objectives.<sup>84</sup> Again, such projects may be subject to market demand for them, though others may go ahead without any affect from market conditions.<sup>85</sup>

A considerably more attractive scheme to businesses was brought in under the Finance Act 2000. This allowed companies engaging in qualifying Research and Development activities (R&D) of technological innovation (provided certain criteria are met) to claim back significant amounts of their expenditure using tax credits. SMEs (small and medium

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<sup>81</sup> Amended pursuant to Landfill Tax (Amendment) Regulations 2003 s.3(a).

<sup>82</sup> Contributions to other approved social and community projects also qualify.

<sup>83</sup> Pigou used the example of the need of the public to subsidise a lighthouse in Pigou AC, *A Study in Public Finance* (London: Macmillan, 1947) at 94.

<sup>84</sup> CBI, 'CBI response to DEFRA/HM Treasury Consultation Paper 'Possible Changes to the Landfill Tax Credit Scheme'' (2001)

<[http://www.cbi.org.uk/ndbs/positiondoc.nsf/1f08ec61711f29768025672a0055f7a8/397C607BDC62DBE980256BF4004F4B97/\\$file/environmentltcs050702.pdf](http://www.cbi.org.uk/ndbs/positiondoc.nsf/1f08ec61711f29768025672a0055f7a8/397C607BDC62DBE980256BF4004F4B97/$file/environmentltcs050702.pdf)> Accessed 2/3/2010.

<sup>85</sup> Such as recycling schemes affected by the collapse in demand for recycled goods; see n.32.

enterprises) could claim<sup>86</sup> 175% relief, while large companies could<sup>87</sup> claim 130% relief.<sup>88</sup> Such high incentives provide significant attractions to invest in R&D of environmentally clean technology as they provide a great deal of assistance to offset innovation costs. The advantages of using such market-based incentives to encourage investment in clean technology can be considerable.<sup>89</sup> Indeed, California has for several decades used tax credits to promote renewable energy, with taxpayers being able to reduce both their federal and State tax payments through investment in renewable energy. The IISD (International Institute for Sustainable Development) claim this helped California lead the world in renewable energy generation.<sup>90</sup>

As tax credits are essentially subsidies, it is a reasonable expectation of policymakers that they should encourage businesses to go beyond what is required by law. In Oregon, USA, it was argued that the way tax credits operated meant that two businessmen were given a USD \$30 million tax credit for meeting tax credit requirements within that State – even though they had only complied with the basic requirements of federal law.<sup>91</sup> It is important therefore that tax credits and other incentives are so designed as to give the taxpayer an incentive to exceed the normal requirements of the law as much as possible, not just to comply, as is the case for Spanish companies to qualify for the Spanish Corporate Income Tax credit for environmental incentives.<sup>92</sup>

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<sup>86</sup> FA 2000, Sch. 20.

<sup>87</sup> *Ibid*, Sch. 12.

<sup>88</sup> Increased rates pursuant to FA 2008, Section 26 and Schedule 8.

<sup>89</sup> See Wiersma D, 'Static and Dynamic Efficiency of Pollution Control Strategies' (1991) 1 *Environ. Resource Econ.* 1 63-82.

<sup>90</sup> IISD, *Making Budgets Green* (Canada: IISD, 1994) pp. 6-7.

<sup>91</sup> See House Committee on Water and Environment, 8/2/1999, State of Oregon

<[http://www.sos.state.or.us/archives/legislative/legislativeminutes/1999/house/water\\_environment/hwe02081.html](http://www.sos.state.or.us/archives/legislative/legislativeminutes/1999/house/water_environment/hwe02081.html)> Accessed 22/6/2010.

<sup>92</sup> Art. 39.1 of Law 13/1996 of 30 December (Spain) (as amended).

An advantage of tax credits however is that they do not necessarily cause a drain on central Government funds.<sup>93</sup> The Recycling Credits Scheme introduced pursuant to the UK's Environmental Protection Act 1990<sup>94</sup> operated in such a way that payments were transferred to various levels of local Government, community organisations (such as charities) and private recycling companies (working in competition with local authorities' recycling operators).<sup>95</sup> Turner *et al* actually contend that recycling credits are “not a subsidy, but they do correct the market failure of the waste management system by reflecting the financial savings achieved by recycling.”<sup>96</sup>

#### 5.2.4.4 ACCELERATED DEPRECIATION

The annual accounts of a firm can depreciate the value of a fixed asset (such as plant or equipment) which is then regarded as an expense and reduces the firm's overall taxable income (known as 'depreciation'). Normally under accounting rules the annual level of depreciation must be relatively proportionate to the overall useful life of the asset, in order that the entire cost of the capital asset is claimed gradually over a number of accounting years (known as 'amortisation'). However where 'accelerated depreciation' is allowed, a firm may write-down the value of fixed assets at an increased rate so that the depreciation is higher in the first few years of the purchase of the asset. This creates the incentive for firms to purchase certain assets (such as environmentally efficient technology or renewable energy production facilities) in order that such assets can be quickly depreciated to reduce the total taxable income. For example the USA offers accelerated deductions at a federal level for

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<sup>93</sup> So are therefore 'Budget Neutral Instruments' as defined by the IISD, see n.90 at 2.

<sup>94</sup> S.52.

<sup>95</sup> For a detailed account see Ozdemiroglu ZE, Turner RK and Steele P, 'Recycling credits in the UK: Economic Incentives for Recycling Household Waste', in Green Budget Reform (London: IISD and Earthscan, 1995).

<sup>96</sup> Turner *et al*, see n.48 at 130.

renewable energy technology assets such as geothermal heat pumps and small wind property<sup>97</sup> and further ‘bonus’ depreciations to stimulate growth in renewable energy.<sup>98</sup>

### 5.3 SUMMARY OF INCENTIVES

To summarise the measures explained above, the following methods are commonly used to incentivise financial activities deemed to be helpful in achieving environmental goals:

1. **Output-related tax:** to encourage investments in improved technology or alternative production methods in order to reduce one’s tax liability (related to pollution output).
2. **Tax reductions:** tax deductions, rebates and exemptions.
3. **Tax credits:** personal; income; investment; production; corporate.
4. **Accelerated depreciation:** accelerated depreciation of plant and technology for firms investing in specified technologies.

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## 6. SUBSIDIES

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### 6.1 TAX SUBSIDIES

Certain tax incentives are classified as tax subsidies. Numbers 2-4 in 5.3 above are regarded as subsidies since they provide preferential tax treatment to benefit relevant taxpayers. Other measures providing financial benefits such as tax deferrals with no interest charges would

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<sup>97</sup> Pursuant to The Energy Improvement and Extension Act of 2008 (USA).

<sup>98</sup> Economic Stimulus Act of 2008 (USA), included a 50% bonus depreciation (26 USC § 168(k)).

also constitute a tax subsidy since they essentially constitute an interest-free loan from the State.<sup>99</sup> However since they are not direct expenditures (as with direct subsidies), such subsidies do not appear on national balance sheets as Government expenditure. As such they are referred to as ‘off-budget subsidies’<sup>100</sup> which incorporate indirect subsidies. They are still however accountable as public spending programmes;<sup>101</sup> for example EU law regards tax exemptions to be State Aid.<sup>102</sup> Number 1 (an output tax) is not a subsidy but a sliding scale of tax payments to encourage taxpayers to achieve the lowest possible tax payments.

As discussed such tax incentives can be used to achieve environmental goals which may not otherwise be achievable. On the reverse side, nations which fail to tax an environmentally harmful factor may be deemed to be indirectly subsidising the environmental harm by failing to internalise the cost and thereby providing the polluter with an indirect benefit for causing the harm.<sup>103</sup> The OECD refers to this type of failure to charge or tax exemption as ‘implicit subsidies’ which differ from the payment-side benefits known as ‘explicit subsidies’.<sup>104</sup> Further, tax subsidies may attempt to protect an industry by providing credits or other such benefits despite the industry being environmentally harmful. It is also questionable whether

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<sup>99</sup> McDaniel R, ‘Trade and Taxation’ (2000-2001) 26 *Brook.J.Int’l L* 4, at 1627.

<sup>100</sup> Distinguished from ‘on-budget subsidies’ which appear as expenditure on Government balance sheets in: EEA, *Energy Subsidies in the EU: a brief overview* (Technical report No 1/2004) (Luxembourg: Office for Official Publications of the European Communities, 2004) at 11.

<sup>101</sup> The EC publishes an annual ‘State Aid Scoreboard’ providing transparency on Member States’ subsidies available at <[http://ec.europa.eu/competition/state\\_aid/studies\\_reports/archive/scoreboard\\_arch.html](http://ec.europa.eu/competition/state_aid/studies_reports/archive/scoreboard_arch.html)> Accessed 2/6/2010. See for example the 2008 special focus on State Aid for Environmental Protection: EC, ‘State Aid Scoreboard Spring 2008 Update’ COM(2008) 304 final.

<sup>102</sup> Member States must seek EU approval to implement such measures: TFEU, Art. 107.

<sup>103</sup> Stiglitz argues that by the USA not addressing the issue of global warming by pricing global external costs, they made a de facto subsidy: Stiglitz JE, ‘A New Agenda for Global Warming’ (2006) 3 *The Economists’ Voice* 7, Art.3.

<sup>104</sup> OECD, *Environmentally Harmful Subsidies: Challenges for Reform* (Paris: OECD, 2005) at 45.

such subsidies are economically positive. If a subsidy is both harmful to the environment and the economy it is known as a ‘perverse subsidy’.<sup>105</sup>

There is no scholarly consensus that subsidies are the most effective means of achieving environmental goals, though they are in common use and have the potential to achieve such goals. Further analysis of tax subsidies is provided in 36.7.<sup>106</sup>

## 6.2 DIRECT SUBSIDIES

Direct subsidies in the form of capital grants from public funds can be utilised to encourage certain activities.<sup>107</sup> This type of reward can be used for example to promote positive externalities, encourage environmental innovation and research, or stimulate the market in a way that may otherwise be unfeasible at the present time (such as by subsidising large-scale production of presently expensive energy efficient goods in order that they become commonplace in the market due to mass production, reducing their manufacturing cost and purchase price). The US Climate Change Technology Initiative believed incentives and other environmental policies could “flip the clean technology from the low-production, high-cost state to a stable high-production, low-cost state, with corresponding benefit to the environment and the economy.”<sup>108</sup> Indeed many private bodies or individuals may be unable to improve their environmental behaviour without some degree of direct subsidy. In this

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<sup>105</sup> Kjellingbro PM and Skotte M, *Environmentally Harmful Subsidies: Linkages between subsidies, the environment and the economy* (Copenhagen: Environmental Assessment Institute, 2005) at 3 [REPORT] <[www.imv.dk](http://www.imv.dk)> Accessed 12/6/2010.

<sup>106</sup> Wiener states numerous reasons why such subsidies can create ‘perverse’ behaviour in: Wiener JB, ‘Global Environmental Regulation: Instrument Choice in Legal Context’ (1999) 108 Yale L.J. 677, at 726-7.

<sup>107</sup> The UK funds an ‘Offshore Wind Capital Grants Scheme’ to develop offshore wind farms <<http://www.berr.gov.uk/files/file23956.pdf>> Accessed 3/3/2010.

<sup>108</sup> See n.75 at 18.

way the EU justifies the *Community Guidelines on State aid for Environmental Protection*, acknowledging that SMEs may be unable to afford initial investments (such as in more efficient technology) to adapt to compulsory environmental standards.<sup>109</sup> Such subsidies may be funded by additional environmental taxes elsewhere which will also add to the incentive to improve environmental behaviour; this mitigates the taxpayer burden. Alternatively it could be funded through the removal of other subsidies which would counteract these measures.<sup>110</sup> However this type of State Aid is subject to close international and national scrutiny since it both distorts the market and can create unfair competitive advantages for certain businesses. This matter is discussed further in Chapter 6.

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## 7. CONCLUSION

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Tax incentives intended to alter behaviour encourage businesses to go beyond the legislative requirements of reducing their emissions to a certain point. Indeed, without them there may be little financial incentive for a business to do anything more than reach the point of compliance with environmental regulations. Schemes such as tax credits make it worthwhile for businesses to invest in innovative technology and therefore let Governments work in a co-operative manner with industry, rather than simply creating strict legislation that could discourage businesses from operating within the jurisdiction. Subsidies can be offered either directly or through the tax code, and can be utilised to achieve environmental objectives in a similar fashion. It may be necessary to offer such subsidies or to remove other subsidies which go against the environmental objective, in order to create the necessary market

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<sup>109</sup> OJ C 37, 02.02.2001, pp.3-15.

<sup>110</sup> As advocated in EC, 'Green Paper on Market-based Instruments for Environment and Related Policy Purposes' COM(2007) 140, at 5.

conditions for an environmental policy to succeed. These findings, particularly the need to offer incentives, support the theme and will be applied throughout the thesis.

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# CHAPTER 3: PHILOSOPHY OF ‘PURE TAXATION’

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## 8. INTRODUCTION

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The nature of environmental taxation depends upon an understanding not only that taxation can and should be used to achieve environmental policy, but crucially that it can and should be used to achieve any political objective. By evaluating these points, this chapter asks whether philosophically there is such a concept as ‘green taxation’. This is an important contribution to the understanding of environmental taxation and the legal, economic and social justifications for it RQ(ii). The wider benefits to a society in recycling revenue from environmental taxation back into the economy will then be analysed in Chapter 4.

The chapter will seek to identify whether, and if so how, taxes should be used to achieve policy objectives – as this is the whole purpose behind the Universal Model in RQ(i). This will consider taxpayer perspectives of environmental taxation and experiences of overcoming scepticism that such taxes are simply a revenue-raising measures and not a method of achieving behavioural change. This will further contribute to RQ(ii) in ascertaining how taxes can achieve changes in environmental behaviour required to reach environmental policy objectives. Multi-jurisdictional experiences of such methods will be drawn upon to demonstrate these points further.

## **9. SHOULD TAXATION BE USED FOR POLITICAL OBJECTIVES?**

### **9.1 DEVELOPMENT**

Historically the view in British tax policy was that to achieve public acceptance of income tax (deemed to be necessary for effective collection) the tax system must maintain an impartial and fair outlook. As such the 1955 Royal Commission on the Taxation of Profits and Incomes believed that the tax system should not be utilised to achieve an incumbent Government's economic policy.<sup>1</sup> Whilst this view stood, common acceptance of general income tax by the public grew alongside the popularity of economic theory displaying how taxation could serve public policy objectives in a cost-effective manner. Later in 1972, the RCEP (Royal Commission on Environmental Pollution) first promoted the idea of environmental taxation.<sup>2</sup> A 1990 *White Paper* helped bring this into Government policy by

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<sup>1</sup> See Royal Commission on the Taxation of Profits and Incomes, *Final Report* (London: HMSO, 1955) Cmd. 9474, para. 416.

<sup>2</sup> RCEP, *Pollution in some British Estuaries and Coastal Waters* (London: HMSO, 1972) Third Report, Cmnd. 5054.

supporting the economic theory of environmental cost internalisation and the idea that taxation would be less costly than regulation in achieving environmental objectives.<sup>3</sup> Consequently the grand notions of the ‘polluter-pays’ principle, of individuals taking responsibility for the harm they cause, could sceptically be seen to be a way of making reduced Government costs appear politically favourable.

## 9.2 DEMOCRACY AND WELFARE

Taking the environment out of the equation, Myddelton presents the debate of whether tax should be politically focused as two competing ideologies; one of the purist ‘liberal’ view that taxes should be impartial and treat everybody equally, against “the collectivist demand for the law to discriminate between people thought ‘deserving.’”<sup>4</sup> It must be recognised however that modern Governments generally take public welfare into consideration when deciding upon tax policies, if only to avoid its people falling into such poverty that they overthrow the Government. Whilst this is a worst case scenario, the idea has developed in many democratic societies that taxing the poor brings negative consequences, and even non-democratic Governments would likely take this into account to avoid unrest. As such, the concept of ‘regressive’ taxation (taxing everybody at the same level) has fallen out of favour (though it still exists) since it means the poor bear a proportionately higher burden of tax than those with higher incomes, and ‘progressive’ taxation (taxing those with higher incomes proportionately more than those with low incomes) has taken precedence.

## 9.3 DISTRIBUTIONAL FACTORS

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<sup>3</sup> Department of the Environment, *This Common Inheritance: Britain’s Environmental Strategy* (London: HMSO, 1990).

<sup>4</sup> Myddelton DR, *The Power to Destroy: A study of the British Tax System* (London: Johnson Publications, 1969) at 148.

This is not to say that alternative methods are unsuitable in achieving policy, but that welfare and distribution considerations should be taken into account. Felder and Schleiniger argue that “any tax reform gives – intended or not – rise to redistributive effects and therefore to political opposition.”<sup>5</sup> The notion of the wealthy contributing more to the Treasury than the poor is of course separate from the responsibility-based polluter-pays principle. The point is that it has become acceptable to consider who should bear the burden of a tax. This is in line with Adam Smith’s maxim that taxpayers in similar circumstances should be taxed similarly.<sup>6</sup> In terms of the environment, ensuring that all taxpayers contribute equally to environmental protection would mean that even those who actively do not cause environmental damage would have to pay the same amount as those who deliberately cause it, which would seem more inequitable. As such, the latter non-purist view of Myrdal’s debate appears to be politically more acceptable. Indeed, the 1997 *Statement of Intent* sets out to shift the tax burden from what are perceived to be social ‘goods’ (such as employment) to social ‘bads’ (such as environmental harm).<sup>7</sup> Chapter 7 will outline the difficulty in determining who will bear the burden of an environmental tax programme.

## **10. ACCEPTABILITY OF TAXATION TO ACHIEVE ENVIRONMENTAL OBJECTIVES VERSUS REVENUE RAISING**

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### **10.1 PUBLIC PERCEPTIONS**

Although the Marshall Report advocated that the effective use of economic instruments within a range of policies could be the most cost-effective and consequently efficient option

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<sup>5</sup> Felder S and Schleiniger R, ‘Environmental Tax Reform: Efficiency and Political Feasibility’ (2002) 42 *Ecolog. Econ.* 107–116.

<sup>6</sup> See 4.1.

<sup>7</sup> See chapter 2, n.18.

to reduce harmful emissions, it should still be asked whether the true purpose of such measures is actually to achieve set environmental objectives.<sup>8</sup> Whilst its stated purpose may be environmental, Driesen points out that any instrument can be adjusted “to change the allocation of benefits and try to influence equitable perception.”<sup>9</sup> For example hydrocarbon taxes, such as petrol and diesel rates, are now officially regarded as environmental taxes even though oil was subject to tax prior to any evidence of environmental damage. The UK’s ONS (Office of National Statistics) in 2007 counted hydrocarbon tax receipts as 64.5% of the total collection of environmental tax, making it the largest contributor - rebranding it an environmental tax made it more politically acceptable.<sup>10</sup>

## 10.2 COMPARISON WITH REGULATION: IRISH BAG TAX

Indeed, the Irish bag tax<sup>11</sup> is officially regarded as having been extremely successful.<sup>12</sup> By citing environmental justifications the Irish Government also managed to increase the tax in 2007 from €0.15 to €0.22<sup>13</sup> which raised millions extra in revenue.<sup>14</sup> An outright ban on plastic bags could have achieved a higher degree of compliance, however it would have brought in no receipts for the Exchequer, administration costs would have had to have been raised by general taxation, and it may have been politically unpopular if a ban was regarded as an infringement of liberties. A ban may therefore have been in line with the logic laid down by the 1955 Royal Commission, meaning everybody would have contributed equally to its enforcement. Though plastic bag taxes have not reduced usage as much as a ban could

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<sup>8</sup> HM Treasury, *Economic Instruments and the Business Use of Energy: a Report by Lord Marshall* (London: HM Treasury, 1998).

<sup>9</sup> Driesen DM, ‘Choosing Environmental Instruments in a Transnational Context (2000) 27 Ecology L.Q. 1-52, at 12.

<sup>10</sup> ONS, ‘Environmental Taxes: Taxes up 7.4% in 2007’ <<http://www.statistics.gov.uk/CCI/nugget.asp?ID=152>> Accessed 5/5/2010.

<sup>11</sup> See chapter 1, n.7.

<sup>12</sup> See <<http://www.environ.ie/en/Environment/Waste/PlasticBags/>> Accessed 16/7/2010.

<sup>13</sup> See chapter 1, n.7.

<sup>14</sup> See n.12.

have, they have raised much revenue whilst largely achieving the objective. This points to the idea that policymakers were willing to accept a lower degree of compliance in order that the policy was cost-effective. It could sceptically be argued however the tax was simply a politically popular means of raising revenue.

### 10.3 SCEPTICISM

Opschoor believes that in practice many environmental taxes have been introduced mainly to raise revenue for the Government, though usually it is related to environmental protection.<sup>15</sup>

The CCL (Climate Change Levy)<sup>16</sup> for example, was introduced as a business tax on energy consumption. The policy was publicised positively to businesses as it was explained that their overall tax contributions would not rise, since their employer NICs (National Insurance Contributions) would be cut by 0.3% to 'recycle' the revenue gained from the CCL.<sup>17</sup>

Support was also announced to be offered to businesses to promote 'energy efficiency and low carbon technologies.'<sup>18</sup> However Budget 2002 increased employers' (and employees') NICs by 1% which more than cancelled out the CCL reductions, raising scepticism about the true purpose of CCL.<sup>19</sup>

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<sup>15</sup> Opschoor JB and Vos HB, *Economic Instruments for Environmental Protection* (Paris: OECD,1989).

<sup>16</sup> Introduced pursuant to the FA 2000, Part II, clause 30 and in Schedules 6 and 7.

<sup>17</sup> HM Treasury, 'Pre-Budget Report 1999', Chapter 6 'Protecting the Environment', Para 6.32 <[http://www.hm-treasury.gov.uk/prebud\\_pbr99\\_rep06.htm](http://www.hm-treasury.gov.uk/prebud_pbr99_rep06.htm)> Accessed 7/2/2010.

<sup>18</sup> See eg. HMRC, 'What is Climate Change Levy?' at

<[http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?\\_nfpb=true&\\_pageLabel=pageExcise\\_InfoGuides&propertyType=document&id=HMCE\\_CL\\_001174](http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageExcise_InfoGuides&propertyType=document&id=HMCE_CL_001174)> Accessed 7/3/2010.

<sup>19</sup> National Insurance Contributions Act 2002, chapter 19.

The EAC (Environmental Audit Committee) recognised that green taxes must be properly advertised to the public and explained fully to Parliament, and that a failure to do so “...breeds suspicion about their objectives, increasing the perception of them as revenue raising measures with no environmental purpose.”<sup>20</sup> Explaining the message of behavioural change and their importance in combating climate change, the EAC argue, will increase people’s preparedness to pay.<sup>21</sup>

#### 10.4 DISTINGUISHING THROUGH USE OF REVENUE

Where the revenue is deployed appears to be crucial in determining whether the tax is an environmental tax – both in the perception of the public and in the philosophical perception of green taxation. Smith explains that in practice many such taxes are used primarily as revenue raising taxes, to fund environmental protection such as in clean-up operations.<sup>22</sup> This draws a philosophical distinction between taxes which are used primarily to change behaviour, and taxes used to fund environmental protection. The former arguably gives the true meaning to ‘environmental taxes’, whilst the latter should be referred to as ‘environmentally-related taxes’ since they do not directly prevent environmental damage and may only be used for environmental clean-up operations. Smith concurs with this, arguing that with some taxes, “...their link to the environment is solely through the use of their revenues.”<sup>23</sup>

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<sup>20</sup> House of Commons EAC, *Vehicle Excise Duty as an Environmental Tax: Tenth Report of Session 2007-8* (London: TSO Ltd, 2008) at 19 para. 52.

<sup>21</sup> *Ibid* at 24, para. 67.

<sup>22</sup> Smith, see chapter 2, n.52, at 18 para. 41.

<sup>23</sup> *Ibid*.

Moreover, some environmental enforcement institutions have been criticised for having misguided priorities. The OECD criticised the operation of the authorities in the Kyrgyz Republic for focusing on collecting pollution taxes and maximising revenues for their own operations, rather than concentrating on environmental improvements.<sup>24</sup> This further degrades the public perceptions of the objectives of environmental taxes and reduces willingness to pay. If a tax system becomes primarily no longer for environmental purposes, the tax itself cannot be regarded as an environmental tax.

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## 11. EARMARKING

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### 11.1 HYPOTHECATION

Research invoked by the EAC shows that where there is *hypothecation* (money designated for a particular purpose) of environmental tax revenues to a particular environmental cause or to reduce other taxes, public support for environmental taxation rises.<sup>25</sup> The CCL itself pledged part of the revenue raised to renewable energy initiatives including The Carbon Trust.<sup>26</sup> Research by Anderson suggests that The Netherlands' water charging system was more successful than other similar systems in Europe, because revenues were earmarked which led to polluters co-operating with regulators and the psychological incentive helped the public to become favourable to achieving lower levels of water pollution.<sup>27</sup>

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<sup>24</sup> OECD Environment Policy Committee, *Environmental Enforcement in the Kyrgyz Republic: Promoting Environmental Improvements and Enhancing Good Governance* (2005) at 16, para. 4.2.

<sup>25</sup> EAC, *The 2007 Pre-Budget Report and Comprehensive Spending Review: An Environmental Analysis*, Third Report of Session 2007-8, HC 149-I, para. 11.

<sup>26</sup> <<http://www.carbontrust.co.uk/>> Accessed 10/11/2009.

<sup>27</sup> Anderson MS, 'Governance by Green Taxes: Implementing Clean Water Policies in Europe 1970 – 1990' (1990) 2 *Environ. Econ. Pol. Stud.* 39-63.

In order for a tax to become classified as an environmental tax, from a philosophical perspective, by its very nature, it should include some environmental objective and not be purely to raise revenue. Earmarking tax revenue to particular environmental investments means that the purpose of the tax is environmental, not merely to raise revenue. Equally, using tax revenue from matters which cause environmental harm to lessen the tax burden elsewhere should also be considered within the environmental tax category. If the taxpayer burden does not increase, the Government are not increasing their tax revenue, and the primary purpose is to discourage the environmentally damaging activity. Of course there are different levels within this of how much the tax is focused on environmental objectives, and the possibilities remain for policymakers to partially earmark revenues as a façade for revenue-collection, but these two categories can *prima facie* be used to provide a philosophical distinction between environmental tax and revenue-raising tax.

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## 12. TAX NEUTRALITY

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### 12.1 REVENUE-NEUTRAL SCHEMES

If the general purpose of a tax policy is not to raise revenue but to achieve environmental objectives, the tax can be considered to be neutral. It is accepted however that there are instances where it may not be necessary to offset other taxes or hypothecate, in which case the tax will be non-neutral.<sup>28</sup>

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<sup>28</sup> For wider reading, Lau examines the conditions necessary to mathematically determine when a tax is neutral: see chapter 1, n.10.

Returning to Ireland's plastic bag tax, this was designed to be tax neutral. Its objective<sup>29</sup> was that after administration costs which were hoped to be kept at a minimum, all levies would be remitted to the Environment Fund.<sup>30</sup> Within Britain the concept of using revenue-neutral taxation to avert climate change was proposed by the Pearce Report 1989 so that the burden on taxpayers would not increase.<sup>31</sup> Whilst Dresner *et al*<sup>32</sup> identify that at the time of the introduction of the supposedly revenue-neutral Landfill Tax and since, "landfill tax attracted very little attention or protest", the use of revenue neutrality itself has been expressly criticised by the National Pensioners Convention (NPC).<sup>33</sup> The NPC argue that the National Insurance Fund should have been credited for its losses from the landfill taxes gained by the Treasury since cutting NICs in this way has cost the Fund at least GBP £13bn with an annual loss of around GBP £2bn in lost contributions.<sup>34</sup> HM Treasury therefore used Landfill Taxes within the overall budget rather than earmarking the revenue to replace the reduction in NICs, which could pose a long-term threat to the social security system. This however is a matter of Government accountability in this instance, and actual revenue neutrality should work to prevent additional burdens on taxpayers.

## 12.2 VEHICLE EXCISE DUTY

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<sup>29</sup> See n.12.

<sup>30</sup> Set up pursuant to The Waste Management (Amendment) Act 2001. Its objectives are described at <<http://www.environ.ie/en/Environment/Waste/EnvironmentFund/>> Accessed 15/3/2010.

<sup>31</sup> Pearce D, Barbier E and Markandta A, *Blueprint for a Green Economy* (London: Earthscan, 1989).

<sup>32</sup> Dresner S, Jackson T and Gilbert N, 'History and Social Responses to Environmental Tax Reform in the United Kingdom' (2006) 34 *Energy Policy* 930-939.

<sup>33</sup> *Ibid*, at 931.

<sup>34</sup> NPC 'The Facts about National Insurance' Briefing No. 34, <<http://www.npcuk.org/briefings/b34NInsurance.doc>> Accessed 16/6/2010.

In order to achieve public acceptability, the EAC advised that VED (Vehicle Excise Duty)<sup>35</sup> changes should be communicated to the public as green taxation by increasing rates for vehicles with high emissions and reducing rates for low-emission vehicles.<sup>36</sup> (This began to be implemented following the 1999 Budget.)<sup>37</sup> Formerly VED was charged on engine size which did not differentiate between emissions types. Whilst the duty raises non-hypothecated revenue, the means of raising it are done in a way which provides a real fiscal incentive to own a vehicle with low emissions and a disincentive to own a high-emissions vehicle. Taxing cars according to their CO<sub>2</sub><sup>38</sup> emissions rather than their engine size means that philosophically the tax has been changed to a green tax.

Furthermore, the overall charging strategy makes the system revenue-neutral. From 1 April 2009, there are 13 different VED tax bands for cars registered on or after 1 March 2001.<sup>39</sup> Cars registered before 1st March 2001 still pay according to their engine size so the incentive applies only to new car purchases. In 2010-11 the standard rates for cars registered on or after 1 March 2001 ranged from zero for the lowest emission cars (Band A) to GBP £435 for the highest emission (Band M) cars. However since at the time of the 2001 Budget there were no Band A vehicles on sale in the UK, it could be contended that it was merely a political move to popularise a new system which effectively increased the net revenue brought into HM Treasury. Nevertheless, it did create demand for Band A vehicles. The subsequent manufacturing of such vehicles somewhat alleviated such scepticism and confirmed the environmental status of the VED system.

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<sup>35</sup> An annual tax on ownership of a motor vehicle in the UK.

<sup>36</sup> See n.20 at 20 para. 56. The EAC had earlier strongly supported the use of VED as an environmental tax in EAC, *Reducing Carbon Emissions from Transport*, Ninth Report of Session 2005-6, HC 981-I.

<sup>37</sup> <[http://www.hm-treasury.gov.uk/bud99\\_pr\\_vehicle\\_excise\\_duty.htm](http://www.hm-treasury.gov.uk/bud99_pr_vehicle_excise_duty.htm)> Accessed 3/3/2010.

<sup>38</sup> Carbon dioxide.

<sup>39</sup> See <[http://www.direct.gov.uk/en/Motoring/OwningAVehicle/HowToTaxYourVehicle/DG\\_172916](http://www.direct.gov.uk/en/Motoring/OwningAVehicle/HowToTaxYourVehicle/DG_172916)> Accessed 7/3/2010.

As a signal to the motor industry and motorists that the manufacture of high-emission cars was against environmental policy, the standard rates for brand new cars in 2010-11 were set so that the highest emitting vehicles were charged more. Band M cars would be charged the significant sum of GBP £950, while the zero rate was extended so that the first four bands (A-D) were each charged GBP £0.<sup>40</sup> The fact that one can achieve the zero rate removes the contention that the duty is merely to raise revenue. It is a considerable incentive for technological improvements to make cars more energy efficient. Indeed, BMW gained much positive publicity when announcing the fuel-efficient BMW 118d which would attract only a Band B charge of GBP £35 in 2009-10 and GBP £20 in 2010-11.<sup>41</sup> Thus, the revenue-neutral system can have considerable benefits both as an attractive philosophical concept and as an incentive to improve technology to meet Government aims.

It should be noted however that although the VED bands discussed appear revenue-neutral, policymakers will be aware that many people will be unable to afford to purchase a new car so they have to continue paying the old duty at increasing rates – which does add some scepticism to the Government’s real purpose when claiming an environmental objective – even though the rating system itself is difficult to challenge. Furthermore if a buyer chooses an alternative energy vehicle the infrastructure in place to refuel the vehicle is at the time of writing insufficient which thus acts both as a disincentive for such purchases but also an incentive to improve the infrastructure. Ironically the scheme has somewhat been a victim of its own success: as VED rates caused demand for high-emissions to fall, manufactures had to

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<sup>40</sup> 2010 rates were brought in pursuant to FA 2009, s.14, which amended Schedule 1 to Vehicle Excise and Registration Act 1994.

<sup>41</sup> <[http://www.bmw.co.uk/bmwuk/offers/1Series\\_3\\_5/0,,1156\\_\\_\\_bs-MQ%3D%3D%40bb-S08wNw%3D%3D%40sit-bmwuk,00.html](http://www.bmw.co.uk/bmwuk/offers/1Series_3_5/0,,1156___bs-MQ%3D%3D%40bb-S08wNw%3D%3D%40sit-bmwuk,00.html)> Accessed 18/1/2010.

seek subsidies from the Government to avoid insolvency, thus imposing a higher burden on the taxpayer.

### 13. CONCLUSION

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The chapter concludes that taxation can be used for environmental taxation, as, philosophically, taxes are able to influence behaviour and such practices can be beneficial for wider social objectives. Crucially, the findings within this chapter point to revenue-neutral tax schemes which are earmarked for environmental purposes to be the most politically acceptable methods of introducing an environmental tax. The benefits or risks of hypothecation and recycling will be considered in Chapter 4. The outcome will help to shape the type of guidance advised within the Universal Model for RQ(i), and assists in the understanding of how environmental behaviour can be modified; this will form the starting point for further consideration in Chapter 6.

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# CHAPTER 4: REVENUE RECYCLING AND THE DOUBLE DIVIDEND

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## 14. INTRODUCTION

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### 14.1 PURPOSE AND METHODOLOGY

Following Chapter 3 which examined the concept of revenue neutrality and whether there is philosophically such a concept as ‘environmental taxation’, this chapter will consider the possible benefits of recycling revenue from environmental taxation back into the economy. Importantly, this contributes to the understanding RQ(ii)(b) of the legal, economic and social justifications for adopting environmental taxation. By gaining an essential understanding of the legal and economic concept of revenue recycling, the chapter will seek to provide guidance for policymakers as to how taxes can be designed to limit negative consequences and maximise positive gains upon environmental objectives and wider policy goals. The concept of a ‘package’ of environmental tax-and-compensation goals for incentivisation will further form an invaluable basis for further RQ(ii) and RQ(iii) and contribute to the structure

of the Universal Model itself, as it is in line with the theme that both costs and rewards must be offered to create the appropriate structure of achieving environmental objectives. To do this, the chapter will analyse a range of academic debate on the subject of revenue recycling and tax packages, and will reach a conclusion on whether such methods should be used by lawmakers and policymakers and are appropriate to the Universal Model, with the caveat that the relevant issues are regarded from a legal standpoint.

## 14.2 DEFINITIONS AND CONCEPTUAL UNDERSTANDING

There are a various methods available for ‘revenue recycling’. For example, the additional revenue can be used to reduce employers’ labour taxes – as happened in the UK when the landfill tax was brought in alongside a reduction in employers’ NICs.<sup>1</sup> There the overall tax burden can stay the same, the Treasury receiving approximately the same amount in revenue albeit from two different sources, instead of simply the original labour tax. When this happens, it has been suggested that there are two benefits to a society: the environmental benefit targeted by the tax, and the greater incentive to employers to take on new staff as labour is less expensive, so employment may rise.<sup>2</sup> This is referred to as the ‘double dividend’.

Environmental improvement is considered to be the first dividend. Economic improvements, regarded as the second dividend, may be an increase in employment or GDP. Depending on the method used, there are various potential economic benefits available. Should any general

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<sup>1</sup> See 12.

<sup>2</sup> Patuelli *et al* define the double dividend as “the joint occurrence of an environmental and economic improvement”, in Patuelli R, Nijkamp P and Pels E, ‘Environmental Tax Reform and the Double Dividend: A Meta-Analytical Performance Assessment’ (2005) *Ecolog. Econ.* 55, 564–583, at 565.

economic benefit accrue with a revenue-neutral approach, it should indicate that the economic costs of the tax system have been reduced since society has benefited at no additional cost - meaning the costless introduction of environmental benefits, as noted by André *et al.*<sup>3</sup> It is essentially a matter of shifting the tax burden to polluters not accounting for their environmental damage and away from those taxpayers who, with a reduced rate of tax, could cause a benefit to society. An economic model shown by Jouvét and Oueslati, for example, demonstrates how such methods to tackle an environmental externality can mean reduced welfare costs for the State.<sup>4</sup> Hence, the tax is raised in a less distortionary way, as illustrated by Oates<sup>5</sup> and Ulph.<sup>6</sup>

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## 15. EMPLOYMENT DOUBLE DIVIDEND

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The definition of double dividend given by Bovenburg and Van der Ploeg is specifically in terms of the potential for increased employment as the second dividend.<sup>7</sup> This refers to reducing employers' labour taxes (such as NICs) in order to increase employment. This notion has been favoured in the EU as a means of implementing environmental taxes since European labour taxes have commonly already been high relative to the USA; thus additional labour taxes would be unpopular in Europe. Indeed, the EU has strongly promoted

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<sup>3</sup> André FJ, Cardenete MA and Velázquez E, 'Performing an Environmental Tax Reform in a Regional Economy. A Computable General Equilibrium Approach' (2003) 39 *Ann. Reg. Sci.* 2, 375-392, at 376: "...if a double dividend exists, it is possible to improve the environmental quality without any cost in terms of non-environmental economic welfare."

<sup>4</sup> Jouvét PA and Oueslati W, 'Tax Reform and Public Spending Trade-offs in an Endogenous Growth Model with an Environmental Externality' (2002) *Fondazione Eni Enrico Mattei Working Paper* No. 103.2002, Economic Theory and Applications.

<sup>5</sup> Oates WE, 'Green Taxes: Can We Protect the Environment and Improve the Tax System at the Same Time?' (1995) 61 *Southern Econ. J.* 4, 915-922.

<sup>6</sup> Ulph D, 'A Note on the "Double Benefit" of Pollution Taxes' (1992) University of Bristol Discussion Paper No. 92-317.

<sup>7</sup> Bovenberg AL and Ploeg F, 'Green Policies in a Small Open Economy' (1993) *Centre for Economic Policy Research Discussion Paper* No. 785.

“...shifting the tax burden from welfare-negative taxes, (e.g. on labour), to welfare-positive taxes, (e.g. on environmentally damaging activities...)” amongst its Member States.<sup>8</sup> The concept is laudable since it moves the burden from the ‘positive’ part of the production process to the ‘negative’.

There are however a number of studies which attempt to clarify the economic conditions necessary for an employment double dividend to occur.<sup>9</sup> While there is much disagreement about the precise preconditions, there does appear to be common acceptance that an employment double dividend is possible. Barker’s models show that unemployment can fall alongside energy use<sup>10</sup> or with an improvement in environmental quality,<sup>11</sup> whilst Morris *et al* show through a cost-benefit analysis that there can be significant benefits in recycling pollution tax revenue to cut labour costs.<sup>12</sup> An OECD empirical study also demonstrates that there can be positive employment outcomes.<sup>13</sup> Pezzey<sup>14</sup> however casts doubt on the studies and Baranzini *et al* support this in arguing that the employment double dividend argument is

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<sup>8</sup> EC, see chapter 2, n.110, para. 2.3. This was encouraged by the EC as early as 1993 in ‘White Paper on Growth, Competitiveness and Employment’ (1993) COM(93) 700, Chapter 10.

<sup>9</sup> Since there is extensive writing in this area and it is primarily a debate for economists, it is intended that only a brief summary will be provided herein. For further reading see for example Heady CJ *et al*, *Study on the Relationship Between Environmental/Energy Taxation and Employment Creation* (Bath: University of Bath, 2000); Bovenberg AL and Goulder LH, ‘Environmental Taxation’, in Auerbach A and Feldstein M, 2.ed, *Handbook of Public Economics* (New York: North Holland, 1998); Kratena K, *Environmental Tax Reform and the Labour Market: The Double Dividend in Different Labour Market Regimes* (Cheltenham: Edward Elgar, 2002); Parry IWH & Oates WE, ‘Policy Analysis in the Presence of Distorting Taxes’ (2000) 19 J. Pol. Anal. Manage. 603-613; and Määttä K, *Environmental Taxes – From an Economic Idea to a Legal Institution* (Helsinki: Finnish Lawyers’ Publishing, 1997), Part II.

<sup>10</sup> Barker T and Gardiner B, ‘Employment, Wage Formation and Pricing in the EU: Empirical Modelling of Environmental Tax Reform’, in Cararro C and Siniscalco D, *Environmental Fiscal Reform and Unemployment* (Dordrecht: Kluwer Academic Publisher, 1996) Chapter 9.

<sup>11</sup> Barker T, ‘Taxing Pollution instead of Employment: Greenhouse Gas Abatement through Fiscal Policy in the UK’ (1995) 6 *Energy and Environment* 1, 1-28.

<sup>12</sup> Morris GE, Révész T, Zalai E, and Fucskó J, ‘Integrating Environmental Taxes on Local Air Pollutants with Fiscal Reform in Hungary: Simulations with a Computable General Equilibrium Model’ (1999) 4 *Environmental and Development Economics* 537-564. See also Tindale S & Holtham G, *Green Tax Reform: Pollution Payments and Labour Tax Cuts* (London: Institute for Public Policy Research: 1996).

<sup>13</sup> OECD, see chapter 2, n.53.

<sup>14</sup> Pezzey JV and Park A, ‘Reflections on the Double Dividend Debate’ (1998) 11 *Environmental Resource Economics* 3-4, 539-555.

“difficult to sustain”<sup>15</sup> albeit admitting that it can sometimes work.<sup>16</sup> Parry and Bento further argue that environmental taxes cause product prices to increase and consequently discourage investment and increase unemployment, which removes any efficiency benefit available.<sup>17</sup> Bonetti and Fitzroy however criticise those economic models that show only short-term benefits or even negative benefits, by illustrating that it is a frequent problem that they “make the unrealistic assumption of perfectly competitive equilibrium labour markets...” and ignore the reality of the market.<sup>18</sup> This problem of using theoretical economic models is pervasive in economics, models commonly only taking account of factors that are assumed within the model and not real-world.

Any conclusion to be drawn from the debate is that there can (but not automatically) be an employment double dividend depending on factors such as the economic conditions, prior level of Government expenditure, and employment rates. Ligthart’s research argues that in order to achieve a double dividend outcome, value must be given to the environment as a factor of production – which supports the assertion held herein.<sup>19</sup> Furthermore Patuelli *et al* show the necessity of revenue recycling - regardless of the extent of a double dividend – by illustrating the dangers of a Government retaining revenues from environmental tax and not recycling them back into the economy, in suggesting that in such circumstances there could be an economic depression.<sup>20</sup>

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<sup>15</sup> Baranzini A, Goldenberg J and Speck S, ‘A Future for Carbon Taxes’ (2000) 32 *Ecolog. Econ.* 395-412, at 401.

<sup>16</sup> *Ibid.*

<sup>17</sup> Parry IWH & Bento AM, ‘Tax Deductions, Environmental Policy and the “Double Dividend” Hypothesis’ (2000) 39 *J. Environ. Econ. Manage.* 1, 67-96, at 68.

<sup>18</sup> Bonetti S and Fitzroy F, ‘Environmental Tax Reform and Government Expenditure’ (1999) 13 *Environ. Resource Econ.* 289-308, at 307, Note 3.

<sup>19</sup> Ligthart JE, ‘The Macroeconomic Effects of Environmental Taxes: A Closer Look at the Feasibility of “Win-Win” Outcomes’ (1998) *International Monetary Fund*, Working Paper 98/75.

<sup>20</sup> Patuelli *et al*, see n.2, at 568.

## 16. COMPENSATORY MEASURES

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The EU have also favoured a double dividend in reducing employees' labour taxes in order to achieve a specific form of double dividend.<sup>21</sup> Reducing income tax means workers have more disposable income for consumption spending which can raise demand for goods and in turn lead to increased employment and rising GDP. This may not however be the case in an import-dependent country such as The Maldives, where it could lead to an increased flow of capital out of the country. This emphasises the importance of appreciating the economic conditions of a country in order to determine the most appropriate tax package.

Ono's model shows that a revenue-neutral reduction in social security tax funded by environmental tax revenue can achieve a desirable double dividend, under certain conditions.<sup>22</sup> This could alternatively be done through a lump-sum compensatory method. For instance, the French Government attempted to introduce a carbon tax for both individuals and businesses based upon their carbon usage, though the plans were dropped due to much opposition of the costs involved.<sup>23</sup> It was intended that the scheme would be completely revenue-neutral, with reductions in income taxes based upon location so that those living in the countryside where public transport options are more limited would receive a greater income tax reduction than urban dwellers.<sup>24</sup>

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<sup>21</sup> EC, see chapter 2, n.110, para. 2.3. This was encouraged by an EC White Paper as early as 1993, see n.8, at Chapter 10.

<sup>22</sup> Ono T, 'Environmental-tax financed Social Security Tax Cuts and the Double Dividend' (2005) 61 *FinanzArchiv* 2, 178-200.

<sup>23</sup> 'Nicolas Sarkozy under fire after carbon tax plan shelved' *The Guardian* 23/3/2010, <<http://www.guardian.co.uk/world/2010/mar/23/nicolas-sarkozy-carbon-tax-france>> Accessed 28/4/2010.

<sup>24</sup> 'France's solution to global warming? Tax citizens on the CO<sub>2</sub> they produce' *Daily Finance* 19/10/2009 <[http://www.dailyfinance.com/story/frances-solution-to-global-warming-tax-citizens-on-the-co2-the/19200729/?icid=sphere\\_copyright](http://www.dailyfinance.com/story/frances-solution-to-global-warming-tax-citizens-on-the-co2-the/19200729/?icid=sphere_copyright)> Accessed 28/4/2010.

One problem associated with this type of double dividend is that the extra disposable income achieved either through lower taxes or a lump-sum payment may increase demand for environmentally unfriendly goods which were previously unaffordable - even with environmental taxes in place to discourage such goods. This would counter the purpose of the environmental tax. For example, decreased income tax could mean a worker would not pay so much attention to keeping household energy bills low, or may decide to purchase a motor vehicle with high levels of pollution since in the past it was never affordable. Should this happen on a large-scale, the net environmental benefits may be negligible or negative. If the environmental tax was instead imposed at a greater level than the reduced income tax, in order to pre-emptively counter the increased demand for such environmentally inefficient goods, then the tax would not be revenue-neutral and could lead to a depression.<sup>25</sup>

Thus finding the correct method is problematic. In a study by André *et al* of the Andulcia region of Spain, it was found that no double dividend occurred when income tax was reduced as a compensatory measure for the environmental tax.<sup>26</sup> The study explains, "...reforms providing large economic improvements...will normally cause, as a by-product, rises in pollution which will dwindle the first dividend."<sup>27</sup> The study did however find that reducing employers' labour taxes produced a double dividend, which suggests this is a more favourable option. In The Netherlands, environmental taxes imposed on 'small energy consumers' are passed onto domestic households through cuts in social security contributions and income tax.<sup>28</sup> If employees were to be compensated for an environmental tax, Goulder's studies advise against compensating employees in a lump-sum fashion and instead advocate

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<sup>25</sup> Patuelli *et al*, see n.2 at 568.

<sup>26</sup> André *et al*, see n.3 at 376: "...if a double dividend exists, it is possible to improve the environmental quality without any cost in terms of non-environmental economic welfare."

<sup>27</sup> *Ibid*, at 388.

<sup>28</sup> Barde JP, 'Environmental Taxes in OECD Countries: An Overview', in OECD, *Environmental Taxes. Recent Developments in China and OECD countries* (Paris: OECD, 1999), 19-50, at 34.

cutting distortionary taxes.<sup>29</sup> This is supported by Timilsina, who argues that would be no revenue recycling effect with the lump-sum compensation method, but that use of the environmental tax revenue to fund reductions in employee's tax would have a "significant effect on economic welfare..."<sup>30</sup>

## **17. ENVIRONMENTAL DOUBLE DIVIDEND**

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It is also possible that the taxes can be recycled into energy conservation projects rather than in reducing labour taxes. This is referred to as 'earmarking'. This in itself could produce an environmental double dividend, and the project costs would likely provide economic benefits for an economy – though it cannot be stated whether such benefits would be equal to those achievable via an employment double dividend.<sup>31</sup> The environment would in this scenario be both the first and second dividend, though in different ways, and it would be hoped that economic improvements would create a third dividend. This was successfully achieved through the Irish plastic bag tax.

Indeed, in empirical research conducted by Dresner *et al* it was found that there was substantially more support amongst interviewees for recycling revenues into energy conservation than using it to decrease other taxes. This was put down to a suspicion of

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<sup>29</sup> Goulder LH, 'Environmental Taxation and the Double Dividend: A Reader's Guide' (1995) 2 Int. Tax Public Finance 157-83.

<sup>30</sup> Timilsina GR, 'The Role of Revenue Recycling Schemes in Environmental Tax Selection: A General Equilibrium Analysis' (2007) *World Bank Development Research Group*, Policy Research Working Paper 4388, at 33.

<sup>31</sup> The separate concepts of 'environmental double dividend' and 'economic double dividend' were explained in Hourcade JC, Richels R, and Robinson J, 'Estimating the Costs of Mitigating Greenhouse Gases', in IPCC, *Climate Change, 1995—Economic and Social Dimensions of Climate Change* (Cambridge: CUP, 1996).

Government motives – that the reduced taxes may later be increased, as happened in the UK with employers' NICs<sup>32</sup> - whereas a real environmental benefit could instead be achieved through a project.<sup>33</sup> Duff also argues that the 'transformative rationale' of eco-taxes require revenues to be earmarked for environmental purposes<sup>34</sup> - hence the overall environmental project can gain public support and be achieved via such methods.

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## 18. WELFARE DOUBLE DIVIDEND

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A further possible use of environmental tax revenues could be to fund cuts in other taxes to correct non-environmental market failures to improve overall social welfare. Parry looks at how using the revenue to fund deductions of consumption spending from personal income taxes can result in significant welfare gains.<sup>35</sup> For example, he examines how deductions could be made from such taxes for private healthcare spending. A welfare benefit is in this context regarded as the second dividend. He acknowledges however that this would be less appropriate to a country which already funds universal healthcare nationwide, such as the UK's National Health Service (NHS), than in a country such as the USA where most people rely on private health care.<sup>36</sup> Additionally, Timilsina demonstrates how tax deductions for non-energy goods can significantly improve welfare.<sup>37</sup> HM Treasury identified this method as beneficial, – though not all of the tax is applied in this way.<sup>38</sup>

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<sup>32</sup> See 10.3.

<sup>33</sup> Dresner *et al.*, see chapter 3, n.32 at 936.

<sup>34</sup> Duff DG, 'Tax Policy and Global Warming' (2003) 51 *Can.Tax.J.* 6, 2063-2118, at pp. 2070-2079.

<sup>35</sup> Parry & Bento, see n.17, at 67-96.

<sup>36</sup> *Ibid.*, at 91.

<sup>37</sup> Timilsina, see n.30, at 33; see also Schemes 2 & 3.

<sup>38</sup> HM Treasury, *Tax and the Environment: Using Economic Instruments* (London: HMSO, 2002), at 36, para 7.13.

## 19. REVENUE-NEGATIVE MEASURES

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Tax revenues may not necessarily be recycled back into the economy. A World Bank report recognises that finance ministries prefer the revenue-negative option since it helps them to balance the budget.<sup>39</sup> However it is thought that this is rare, primarily because it is unpopular to impose a new revenue-negative tax; Patuelli *et al* noted that only three countries had introduced revenue-negative taxes.<sup>40</sup> Indeed, Hsu argues that revenue raising should only be considered a secondary benefit – not the main argument – for environmental taxation, and shows that “revenue-raising and pollution reduction are inconsistent goals.”<sup>41</sup>

## 20. OVERALL ECONOMIC POLICY

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An environmental tax policy may be more effective when combined with a wider policy of economic reform. For example, between 1999–2005, Germany engaged a fiscal policy of ‘Green Budget Reform’ which encompassed eco-tax reform.<sup>42</sup> The wider fiscal reforms aimed at investing in growth of the environmental technology industry, subsidising renewable energy and new clean technologies whilst removing environmentally harmful subsidies, establishing emissions trading and introducing financial incentives in the economy to improve environmental behaviour. The tax-specific part of the programme aimed at affecting

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<sup>39</sup> The World Bank, *Environmental Fiscal Reform - What Should Be Done and How to Achieve It* (International Bank for Reconstruction and Development: USA, 2005) at 26.

<sup>40</sup> Patuelli *et al*, see n.2 at 566.

<sup>41</sup> Hsu SL, ‘Some Quasi-Behavioural Arguments for Environmental Taxation’, in Chalifour NJ, Milne JE, Ashiabor H, Deketelaere K and Kreiser L, *Critical Issues in Environmental Taxation: International and Comparative Perspectives Volume V* (Oxford: OUP, 2008) 29-52, at 33, para 2.09.

<sup>42</sup> For a detailed analysis of the initial tax reforms see Kolhass M, ‘Ecological Tax Reform in Germany: From Theory to Practice’ (2000) American Institute for Contemporary German Studies, volume 6 <<http://www.aicgs.org/documents/eco-tax.pdf>> Accessed 16/6/2010.

energy use by raising taxes on petroleum and electricity to reduce energy consumption.<sup>43</sup>

The tax rates were set to take account of environmental factors, and specifically aimed at promoting efficient energy production such as by excluding renewable energy sources from tax. Further a reduction in social security tax meant the eco-taxes were essentially revenue-neutral.<sup>44</sup> These combined methods were, according to Görres, not only extremely positive in achieving environmental goals (such as reduced energy consumption and emissions, reduced dependence on foreign oil, more car-sharing, increased energy efficiency and use of efficient technology) but also economically successful in that many jobs were created whilst industry and exports benefited – showing that in this case the fears for reduced competition were unfounded.<sup>45</sup>

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## 21. CONCLUSION

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### 21.1 CHOICE

The contentious choice must be made by policymakers depending on the outcome they intend, and Bonetti and Fitzroy explain that “...some distributional or goal conflict is inevitable for all but the smallest shifts in the burden of taxation.”<sup>46</sup> It is probable that the type of tax reform used will depend to some extent on how potentially efficient it is perceived to be; Timilsina illustrates this by explaining “the efficiency of a tax instrument is

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<sup>43</sup> Gesetz zum Einstieg in die ökologische Steuerreform, Bundesgesetzblatt I, p. 378. (1999) (*Act on the Introduction to the Ecological Tax Reform, Federal Law Gazette I, p. 378 (1999)*).

<sup>44</sup> Gesetz zu Korrekturen in der Sozialversicherung und zur Sicherung der Arbeitnehmerrechte, vom 19. Dezember 1998, Bundesgesetzblatt I, S. 3843. Artikel 5: Gesetz zur Bestimmung der Beitragssätze in der gesetzlichen Rentenversicherung für 1999 und zur Bestimmung weiterer Rechengrößen der Sozialversicherung für 1999.

<sup>45</sup> See Görres A, ‘The Tragic Paradox: Germany’s very successful but not very popular Green Budget Reform’ (2006) *Green Budget Germany, Green Budget Paper 2006/12*.

<sup>46</sup> Bonetti and Fitzroy, see n.18, at 290.

significantly influenced by the scheme of recycling tax revenue.”<sup>47</sup> Consequently countries will vary the type and intensity of their tax reforms depending on their specific circumstances,<sup>48</sup> making some methods more suitable for some countries than others. For instance, Felder and Schleiniger demonstrate how tax subsidies in specific market sectors could achieve higher efficiency gains than lump-sum compensatory refunds to households.<sup>49</sup>

## 21.2 FINDINGS

To conclude, it does appear that under certain circumstances it is possible to achieve a double dividend through an environmental tax recycling policy. There are a number of options available to recycle environmental tax revenue in order to achieve the double dividend (and possibly even a triple dividend). Largely these comprise options including fiscal methods (such as reducing tax distortions), compensating those who have lost out financially or environmentally, or those who can least afford the tax, or earmarking (setting aside the revenue for particular environmental projects). It is not an obligation of any policymaker to recycle the revenue, and budgetary constraints may prevent them from doing so, but politically they may need to and the economy may suffer if they do not. The benefits of such taxes vary depending on factors such as the existing economic circumstances of the country in question, the method that is chosen, and the intensity of the policy enacted. Largely the outcome depends on the economic efficiency of the chosen method. Whether to recycle environmental tax revenues, and the choice of methods, are decisions for policymakers who should be aware of the potential efficiency benefits and that these are not guaranteed. The

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<sup>47</sup> Timilsina, see n.30, at 32-33.

<sup>48</sup> Bosquet demonstrates this by showing a number of countries who had introduced tax reform policies with varying levels of intensity, with environmental taxation making up differing percentages of their total tax revenue. Bosquet B, ‘Environmental Tax Reform: Does it Work? A Survey of Empirical Evidence’ (2000) 34 *Ecolog. Econ.* 19-32.

<sup>49</sup> Felder and Schleiniger, see chapter 3, n.5.

decision should be taken depending on the particular circumstances of the place in question. Nevertheless, it makes environmental taxation an attractive solution for policymakers who have the means to transfer the burden of taxation from social 'goods' to social 'bads'.

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# CHAPTER 5: VALUATION OF ENVIRONMENTAL GOALS

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## 22. INTRODUCTION

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If an economic value is given to an environmental factor to reflect the cost of environmental harm, the market can take into account the actual effect of the harm caused by considering it a factor of production.<sup>1</sup> Depending on the value given to an environmental factor, the market may be discouraged from utilising it as a factor of production as more inexpensive options

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<sup>1</sup> A new system for placing a value on trees has been adopted by all UK local authorities in order that trees are not cut down unnecessarily where it is believed the tree causes subsistence. The 'capital asset value for amenity tree' accounts for size, health, historical significance and the amount of nearby residents who enjoy it: see London Tree Officer's Association formula at <<http://www.ltoa.org.uk/cavat.htm>>. The system valued one tree in Mayfair, London at GBP £750,000: Elliott V, 'Put that axe down - this is Britain's most valuable tree' *The Times* 22/4/2008 <<http://www.timesonline.co.uk/tol/news/environment/article3792556.ece>> Accessed 24/3/2010.

may be available. For example, if a factory chimney customarily emitted high levels of pollution into the air above it, value could be placed on air quality as a factor of production by taxing the pollution that damaged the air quality. This would make the polluting activity more expensive, and policymakers would intend that this would incentivise the factory to alter their method of production to a more environmentally efficient means or cease production, which could also involve a social loss.

This chapter seeks to provide guidance to policymakers on complex issues of valuing the environmental goals, focusing upon the difficulty of fixing economic values on non-economic factors.<sup>2</sup> Performed from a legal perspective, the purpose is to provide policymakers with a sufficient understanding to enlighten their decision as to how to set tax or incentive rates to best serve environmental objectives. Importantly this involves considering wider policy objectives, and will inevitably require the policymaker to seek to appreciate the extent to which its society is willing to sacrifice certain activities to achieve environmental targets. This is an important part of answering RQ(ii)(b) in understanding the legal, social and economic background to a highly complex issue of environmental valuation. In turn this affects RQ(ii)(a) as it contributes to the understanding of the sacrifices that must be made to achieve behavioural change. Crucially it will be used to advise policymakers within the Universal Model for RQ(i) as to how to set rates of taxes or incentives appropriate to a given environmental problem . The chapter will propose and evaluate solutions towards overcoming the deemed inadequacy of having a purely economic analysis of environmental factors. The intention of proposing solutions is to highlight the possibility and desirability for policymakers in including social values in the valuation, and the challenges of doing so.

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<sup>2</sup> Coase acknowledged that no adequate theory had been developed to account for the problem of harmful effects due to a “faulty concept of the factor of production”, in Coase, see chapter 2, n.40 at 43.

## 23. INADEQUACY OF AN EXCLUSIVELY ECONOMIC VALUE

Hodas refers to China's extensive policy in the 1980s of supplying inexpensive reconditioned refrigerators to Beijing households, pointing out that an alternative policy of supplying more efficient models would have saved over two-thirds of the total cost of the programme.<sup>3</sup> The high-energy needs of the inefficient appliances demonstrates how a good's actual cost can be much greater than any initial costs when its full life costs are accounted.

Economic measurements are clearly important to value the environment. Yet it is asserted that they should not be solely used to value it since such measurements cannot appreciate the true importance of environmental factors. The commercial value of an environmental factor is not enough; for example endangered species may only be measured by their potential income from tourists and not their importance as a species.<sup>4</sup> Posner admitted that economic analysis was unable to determine whether an 'efficient' allocation of resources was ethically sound or socially acceptable.<sup>5</sup> Hsiung goes further in arguing that economic analysis does not necessarily need to solely include economic phenomena, "but also social phenomena, the political process, as well as legal issues..." which need not include financial matters.<sup>6</sup> This paves the way for valuations to take account of issues based not exclusively on economic efficiency, which means that wider matters important to society can help in the valuation. Indeed, Malloy extends the meaning of economic analysis to include that which society considers to be relevant by advocating the notion that man is "the master of, rather than the

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<sup>3</sup> Hodas DR, 'Appliance Energy Efficiency Labels and Standards' (2007) 47-62, in UNEP, *UNEP Handbook for Drafting Laws on Energy Efficiency and Renewable Energy Resources* (Hertfordshire: UNEP/Earthprint, 2007), at 47-48.

<sup>4</sup> For example, in the American case of *Bartlett v Pickering* 92 A 1008, 1010 (Me. 1915) Maine's 'wild-lands' could only be valued according to the income that their trees could produce.

<sup>5</sup> Posner RA, *Economic Analysis of Law* (Boston: Little, Brown & Co, 1992) at 15.

<sup>6</sup> Hsiung B, 'Economic Analysis of Law: An Inquiry of its Underlying Logic' (2006) 2 *Erasmus Law and Economics Review* 1, 1-33, at 16.

servant to, the alleged scientific principles of economic analysis.”<sup>7</sup> Therefore when it comes to an endangered species or an area of natural beauty which may only be visited by a few tourists, the revenue they may bring in may be low and with a traditional economic approach would mean that they could be eliminated if a greater factor of production could take their place. As explained by Diamond and Hausman, a strict economic approach would only consider the economic choices of people and not their environmental concerns.<sup>8</sup> Pure economic analysis may then fail to protect the environment.

#### **24. INCLUDING NON-ECONOMIC FACTORS TO SET AN APPROPRIATE TAX RATE**

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Determining what level the tax should be set at is problematic. Several reports have attempted to value social costs of environmental factors. One school of thought argues that the policymaker’s environmental objective should take precedence over other considerations. Baumol and Oates argue that the level of environmental tax should be fixed to achieve whatever environmental objective the policymaker intends.<sup>9</sup> Hsu’s perception of the Pigovian tax is that it reduces the need for authorities to decide which activities should continue to exist after the imposition of the tax. He argues that the rationale means that “if a Pigovian tax completely erases profits, then the productive activity was not worth the pollution in the first place, from a societal point of view...”<sup>10</sup>

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<sup>7</sup> Malloy RP, ‘Is Law and Economics Moral? – Humanistic Economics and Classical Liberal Critique of Posner’s Economic Analysis’, in Malloy RP and Evensky J, *Adam Smith and the Philosophy of Law and Economics* (The Netherlands: Springer, 1994), 153-166, at p. 160.

<sup>8</sup> ‘On Contingent Valuation Measurement on Non-use Values’, in Diamond PA and Hausman JA, *Contingent Valuation: A Critical Assessment* (Amsterdam: Elsevier Science Publishers B.V., 1993).

<sup>9</sup> See for example, Baumol WJ and Oates W, *The Theory of Environmental Policy* (New York: CUP, 1988).

<sup>10</sup> Hsu, see chapter 4, n.41, at 50-1, para. 2.48.

Setting an environmental tax in this way could be attractive since in principle it means that those responsible for pollution will bear the burden of it and that environmental objectives can be achieved no matter what the consequences. On the other hand, the consequences are wide-ranging and can be enormous. In an effort to meet targets on reduced emissions under the EU Emissions Trading Scheme (ETS), Denmark and Ireland must reduce agriculture emissions by 10%. Proposals have been made for a cow flatulence tax since cows produce high levels of methane. *The Times* reports that the levels of taxes may be between EUR €13 - EUR €80 per animal, which could prove extremely expensive for farmers.<sup>11</sup> The tax would be nationally revenue-neutral since the tax revenues would be equal to the amount the country would be fined by the EU for failing to meet such targets.<sup>12</sup> This could have potentially conflicting interests with the EU's Common Agricultural Policy where taxpayers both subsidise farmers to meet production objectives and tax them to meet environmental objectives. Importantly it could mean farmers going out of business if they do not have enough cattle to make the farm profitable. Furthermore, it could also result in significant reductions in cattle stocks which could drive prices up for consumers. Applied globally, this type of tax – designed purely to meet an environmental objective – could cause huge reductions in food production. A reduction in livestock to reduce GhGs would cause supply-driven demand to rise, prices to increase, and consequently poor people in the world going without food.<sup>13</sup> A policymaker may have to decide whether the environmental-only objective goes so far that billions of the world's poorest people must die in order for the planet to be sustainable. This requires a determination of the acceptable 'social cost' to achieve

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<sup>11</sup> Mortished C, 'What do Cars and Cows have in Common? No, not horns' *The Times*, 10/3/2009 <<http://www.timesonline.co.uk/tol/news/environment/article5877416.ece>> Accessed 25/4/2010.

<sup>12</sup> Such a tax has also been proposed by a UN report at FAO, *The State of Food and Agriculture* (Rome: FAO, 2009) at 71-74.

<sup>13</sup> According to a UN study, livestock contributes 18% of the GhGs which cause global warming, Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, and de Haan C, *Livestock's Long Shadow: Environmental Issues and Opinions* (Rome: FAO, 2006), see eg. Executive Summary, p.xxi <<ftp://ftp.fao.org/docrep/fao/010/A0701E/A0701E01.pdf>> Accessed 25/3/2010.

environmental objectives. Indeed, a UK Government advisor has warned that the population of Britain must be at least halved in order to be environmentally sustainable.<sup>14</sup> How this would be carried out, whether by following China's one child policy, or whether it would be even more sinister with deportations or involuntary executions is another question. In summary, policymakers should be cautious of considering only environmental objectives when developing environmental tax policy, since the danger is that the policy can result in environmental fascism.<sup>15</sup>

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## 25. PROPOSAL

### 25.1 PROPOSED 'MIXED' SOLUTION

A more practical solution would be to take both factors into account and weigh up the magnitude of each threat, using economic, social and legal considerations. Helm and Pearce argue that it would need to be a special case to require production to cease entirely through a tax. They explain, "...the problem of the market is not the creation of pollution, but rather the wrong amount of it. The optimal level of pollution is only zero in the extreme case that the externality costs require a tax so great that the firm stops production altogether."<sup>16</sup>

Clearly this does not provide a clear-cut solution to valuing the environment as a factor of production, but it does illustrate that environmental reform can take place at a macro-

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<sup>14</sup> An environmental advisor to the British Prime Minister warned that the UK's population must fall to 30 million in order to be environmentally sustainable, Leake J and Montague B, 'UK population must fall to 30m, says Porritt' *The Times*, 22/3/2009, <<http://www.timesonline.co.uk/tol/news/politics/article5950442.ece>> Accessed 21/3/2010.

<sup>15</sup> Driessen warns against human lives becoming valued as necessary expenditure for environmental objectives, particularly in the developing world. Driessen P, *Eco-Imperialism: Green Power, Black Death* (New Delhi: Academic Foundation, 2005).

<sup>16</sup> See Helm and Pearce D, chapter 2, n.46, at 5. For more on this area, see Boswell J and Lee B, *Economics, Ethics and the Environment* (London: Cavendish, 2002), pp.1-9.

economic level considering production as a whole. Essentially the environment should be considered highly but alongside social and economic considerations.

## 25.2 EXCEPTIONAL CIRCUMSTANCES UNDER PROPOSED SOLUTION

It would require the valuation of social factors to be regarded as exceptionally high to take a no-tolerance approach in any particular case, as happened in the USA with the Clean Air Act 1990 (CAA).<sup>17</sup> The case of *Whitman v American Trucking Associations*<sup>18</sup> interpreted Section 109<sup>19</sup> of the CAA to forbid the US Environmental Protection Agency (EPA) from taking any non-environmental costs into account when determining standards of air quality.<sup>20</sup> The US Supreme Court interpreted the legislation in this way so that the EPA would only give consideration to what was necessary to protect the health of American citizens. Therefore in this case the potential social cost was deemed to be so high as to overrule economic considerations and became an 'extreme case'.

## 25.3 ESTABLISHING LONG-TERM BENEFITS

Arguably the potential long-term economic costs of healthcare in the US due to illnesses caused by poor air quality may have outweighed any short-term economic losses, which could have affected the Judges' rationale. Policymakers may be minded therefore to seek to

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<sup>17</sup> 42 USC §7409.

<sup>18</sup> 531 US 457 (2001).

<sup>19</sup> 42 USC §7409(b)(1).

<sup>20</sup> See 531 US 457 (2001), at 465: held that the EPA cannot use a cost-benefit analysis when implementing new quality standards for public health unless the statute expressly provides otherwise. The cost of implementing national air quality standards specifically could not be considered as the level had to be adequate to protect public health, §109, 42 USCA 7409(b).

establish long-term economic benefits in order to introduce a correct environmental valuation. This may be necessary to overcome the difficulties demonstrated by the EEA (European Environment Agency) who argue that it is frequently challenging to balance the advantages and disadvantages of taking preventative action since the apparent costs of taking it are usually short-term and clear, whilst the costs of not taking the action are “less tangible, less clearly distributed and usually longer term...”<sup>21</sup> The EEA itself advocates using both ethical and economic considerations when balancing action versus inaction.<sup>22</sup>

#### 25.4 APPROPRIATE LEVEL TO INDUCE BEHAVIOURAL CHANGE

If precise environmental costs prove burdensome or impractical to determine then it may not be possible to set a tax at such a rate which reflects the exact internalisation of negative environmental externalities. Fluctuating prices such as in energy costs may add further complication to the matter. Consequently, the Baumol-Oates<sup>23</sup> technique can be more practical;<sup>24</sup> this proposes that when imposing a tax to achieve an environmental objective, the level of taxation must be appropriate to induce the required behavioural change in taxpayers.<sup>25</sup> It may be difficult to convince the public to make changes in their lives.

Rachlinski argues that even with scientific evidence demonstrating the dangers of climate change, people may psychologically refuse to alter their lifestyle as they would see it as a

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<sup>21</sup> In EEA, *Late Lessons from Early Warnings: the Precautionary Principle 1896–2000*, Issue Report No. 22 (Luxembourg: Office for Official Publications of the European Communities, 2001) at 3-4. <[http://www.eea.europa.eu/publications/environmental\\_issue\\_report\\_2001\\_22/Issue\\_Report\\_No\\_22.pdf](http://www.eea.europa.eu/publications/environmental_issue_report_2001_22/Issue_Report_No_22.pdf)> Accessed 20/6/2010.

<sup>22</sup> *Ibid* at 4.

<sup>23</sup> See n.9.

<sup>24</sup> EEA, ‘Market-based Instruments for Environmental Policy in Europe’ (2005) *EEA Technical Report 8/2005*, at 46.

<sup>25</sup> UNEP and the WTO recognise that many countries have been ‘pragmatic’ in using this option: UNEP and WTO, *Trade and Climate Change: WTO-UNEP Report* (Geneva: WTO Secretariat, 2009) at 96.

reduction in their living standards.<sup>26</sup> He explains that “people become attached to their current level of prosperity.”<sup>27</sup> Psychologists refer to this as ‘loss aversion’<sup>28</sup> and this topic will be discussed further in Chapter 6.

Ascertaining the correct level of tax is therefore important, as low tax rates for those not prepared to change their lifestyles can be absorbed.<sup>29</sup> For example Turner explains that vehicle fuel tax rates in North America are “glaringly inadequate” since from an environmental standpoint they have been set too low, to the point where they have “failed to wean enough Canadian and US drivers from their preference for gas-guzzling vehicles...”<sup>30</sup>

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## 26. SOCIAL POLICY

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### 26.1 POVERTY CONSIDERATIONS

Nevertheless, policy makers should be minded that the tax can be set at a level that does not penalise the poor, as the danger is that it could drive the poor into increased poverty which would be a more severe social cost than the reduction in perceived living standards in the wealthy.<sup>31</sup> Wiener for example illustrates that common environmental taxes throughout the globe could prove extremely regressive, “taxing billions of poor people in China and India to

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<sup>26</sup> Rachlinski JJ, ‘The Psychology of Global Climate Change’ (2000) 1 U.Ill.L.Rev. 299-319.

<sup>27</sup> *Ibid*, at 303.

<sup>28</sup> See e.g. Tversky A & Kahneman D ‘Loss Aversion in Riskless Choice: A Reference-Dependent Model’ (1999) 4 Quart. J. Econ. 107, 1039-1061, at 1039.

<sup>29</sup> The challenges of finding an optimum rate are expressed in Slemrod J, ‘Optimal Taxation and Optimal Tax Systems’ (1990) 4 J. Econ. Perspect. 1, 157-178.

<sup>30</sup> Turner GS, ‘Gasoline Taxes as Environmental Policy – Time for a Common Canada-US Approach’ (2005) 39 *Tax Notes International* 8, 711-719, at 711.

<sup>31</sup> Distributional concerns will be addressed in Chapter 7.

confer benefits on wealthier people elsewhere.”<sup>32</sup> An energy tax, for example, can be particularly regressive since it is something the poor spend a proportionately high level of their income on.<sup>33</sup> Even in the UK, when the Conservative Government in the 1990s attempted to increase VAT on domestic energy from being zero-rated to a reduced rate of 8% followed by a full rate of 17.5%, there was strong public opposition arguing the tax would mostly increase poverty for pensioners and the poor. The incoming UK Labour Government in 1997 fulfilled their election pledge to reduce the VAT to 5%.<sup>34</sup> CCL also exempts domestic energy users due to such concerns. Clearly therefore there is a difficult balance to strike between protecting the poor and ensuring that behaviour is changed to the extent necessary to achieve environmental goals. This was recognised by HM Treasury who acknowledged the necessity, when weighing competing priorities concerning distributional impacts, to make “value judgements...about the relative values of costs and benefits falling on different groups.”<sup>35</sup>

Nevertheless, excluding low-income groups from a requirement to change their environmental behaviour can have serious negative consequences if it provides a perverse incentive for other income groups to desire to join the exempt group. For instance, those in low-income employment may wish to cease working if the unemployed are exempt and becoming unemployed provides a net economic benefit. This is returned to in Chapter 7, and a potential solution for policymakers is considered at 26.2.

## 26.2 BASIC NEEDS EXEMPTION

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<sup>32</sup> Wiener, see chapter 2, n.106, at 721.

<sup>33</sup> Recognised by Lighthart, see chapter 4, n.19, at 13.

<sup>34</sup> See discussion in Dresner *et al*, see chapter 3, n.33, at 931.

<sup>35</sup> HM Treasury, see chapter 4, n.38 at 16, para. 4.17.

To set the appropriate level therefore may require a common tax from which some users are excluded. Baranzini *et al*, in the case of energy use, proposes that the distributional problems can be contained by taxing only above a certain threshold of energy use.<sup>36</sup> This would allow some amount of energy to be considered tax-exempt for 'basic needs' whilst anything above that would be charged to tax. This would therefore protect those on low-incomes and provide an incentive for all users to keep energy use at a minimum. It would of course require some policy judgement as to what is classed as a 'basic need'. This system is already in place in The Netherlands with the 'regulatory tax regime'.<sup>37</sup>

### 26.3 FURTHER SOCIAL BENEFITS

By applying environmental tax policy in a more progressive way which attempts to include all polluters but not penalise, policymakers can achieve environmental objectives in a manner which minimises social cost and may even result in net social benefits. Indeed, Whalley explains that an environmental tax to reduce carbon emissions (a carbon tax), applied on a global scale with revenues recycled back to the poorest countries, could increase capital flows to developing countries by three times their current incomes in foreign aid and have huge impacts on development and trade.<sup>38</sup>

### 26.4 UNDERVALUATION

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<sup>36</sup> Baranzini *et al*, see chapter 4, n.15 at 405.

<sup>37</sup> See explanation in DEFRA, 'Greening the Tax System in the Netherlands' <<http://www.defra.gov.uk/environment/waste/thematicstrat/greeningtaxnetherlands.pdf>> Accessed 17/6/2010.

<sup>38</sup> Whalley, see chapter 1, n.3 at 122-3.

The Stern Review advocates the need to establish a price for carbon, either through tax, trading or regulation.<sup>39</sup> Governmental efforts to monetise the social cost of carbon performed a series of cost-benefit analyses to emphasise the precarious balance between protecting the environment and protecting the economy.<sup>40</sup> Reaching figures of between USD \$5-65 per CO<sub>2</sub> tonne,<sup>41</sup> the report importantly recognised the considerable uncertainties in making such valuations. Analysing the processes involved, Ackerman and Stanton however highlighted that the costs of carbon in the US Government report were consistently understated.<sup>42</sup> The Stern Review prices the cost of pollution, set within a range of published estimates, at the higher rate of \$85 per tonne of CO<sub>2</sub>.<sup>43</sup> This demonstrates the difficulty in ascertaining a monetary value.

Whilst the method discussed at 26.2 could prove extremely helpful in a range of environmental issues such as energy use, the problem remains with the undervaluation of many environmental factors. An early American case, *Bradstreet v Huntington*, regarded any natural wilderness as valueless ‘wasteland’ before it is adapted for use by humans.<sup>44</sup> In the past, many economic activities have followed this rationale and ignored environmental value. Phipps looks at this in the context of wildlife habitats or wetlands being converted for agriculture use and calls it a market failure.<sup>45</sup> His criticism is that the private costs to a farmer in converting land to cropland, for example does, “...not include the costs imposed on

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<sup>39</sup> Stern, see chapter 2, n.57, at 468-490.

<sup>40</sup> US Government Interagency Working Group on Social Cost of Carbon, ‘Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866’ (2010) Appendix 15A <[http://www2.eere.energy.gov/buildings/appliance\\_standards/commercial/pdfs/sem\\_finalrule\\_appendix15a.pdf](http://www2.eere.energy.gov/buildings/appliance_standards/commercial/pdfs/sem_finalrule_appendix15a.pdf)> Accessed 17/6/2010.

<sup>41</sup> At 34.

<sup>42</sup> Ackerman F and Stanton EA, ‘The Social Cost of Carbon’ (2010) <[http://www.e3network.org/papers/SocialCostOfCarbon\\_SEI\\_20100401.pdf](http://www.e3network.org/papers/SocialCostOfCarbon_SEI_20100401.pdf)> Accessed 17/6/2010.

<sup>43</sup> Stern, see chapter 2, n.57 p.xvi.

<sup>44</sup> (1831) 30 US (5 Pet.) 402, 448.

<sup>45</sup> Phipps TT, ‘Commercial Agriculture and the Environment: An Evolutionary Perspective’ (1991) 20 *Northeastern Journal of Agricultural and Resource Economics* 2, 143-150, at 147.

society of reduced wildlife populations and reduced ecological services provided by the land.”<sup>46</sup>

## **27. FACTORS TO INCLUDE IN VALUATION**

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Consequently environmental matters important to society which are not tradable can be given a relative value, such as a value for natural beauty and recreational value, even in an area with little tourist income. The value of trees for instance may not be measured purely by their timber value, but for the living species they protect, their watershed protection, carbon absorbing benefits and air purification facilities – necessary for human existence.<sup>47</sup>

Biodiversity is also extremely important for the planet and is undervalued by the market.

The Stern Review recognised that the wider benefits of placing values on the environment are significant, explaining benefits range from “reducing ill-health and mortality from air pollution...to preserving forests that contain a significant proportion of the world’s biodiversity.”<sup>48</sup> Financial estimates of the value of the Earth’s natural ecosystems that filter water and air and many other functions essential for human existence which counteract our activities, valued such ecosystem services to be worth at least, and likely more than, USD \$33 trillion.<sup>49</sup> A post-Stern UNEP report further argues that the value of biodiversity goods and services must be included in such costs.<sup>50</sup>

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<sup>46</sup> *Ibid*, at 147.

<sup>47</sup> The EPA estimated that between 1990-99 US forests and its additional ‘carbon sinks’ offset almost 18% of national environmentally harmful CO<sub>2</sub> emissions: US Energy Information Administration, Department of Energy, ‘Emissions of Greenhouse Gases in the United States 2000’ (2001) DOE/EIA-0573 at 69.

<sup>48</sup> Stern see chapter 2, n.57, at xvi.

<sup>49</sup> Costanza R, *et al*, ‘The Value of the World’s Ecosystem Services and National Capital’ (1997) 387 *Nature* 253-260, at 259.

<sup>50</sup> UNEP *et al*, ‘The Economics of Ecosystems and Biodiversity for National and International Policy Makers’ (2010) <<http://www.teebweb.org/LinkClick.aspx?fileticket=I4Y2nqqLiCg%3d&tabid=924&language=en-US>> Accessed 17/6/2010.

The difficulty for a policymaker is in ascertaining which factors should actually be included. This decision is dependent upon the type of values held by the society which the policymaker represents. Including only ‘instrumental value’ means that only the value one can gain from something is represented, whereas ‘existence value’ would include the value of something to humans. There may be no instrumental value, but humans may value the very existence of the subject even though they may never see it, such as with a polar bear. However this is anthropocentric as it refers only to what humans value. ‘Inherent value’ refers to the concept that a species has value without any human valuing it, as the natural environment holds a value on its own.<sup>51</sup> Further, environmental harm can be interpreted in an anthropocentric manner so that it only includes harm to humans. For example, an EU Directive defines pollution as being harmful to humans or human activity.<sup>52</sup> Alternatively, it can be interpreted to include harm to species which humans would recognise as valuable or beneficial to humans, which is again an anthropocentric perspective. Or it can include harm to any part of the eco-system, regardless of whether there is a benefit or loss to humans.<sup>53</sup> The type of environmental problems involved will determine how a policymaker will draft the legislation to interpret key phrases, which will necessarily involve questioning what values are intended to be protected.

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## 28. VALUE WITH SCIENTIFIC EVIDENCE

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As has earlier been stated, placing an appropriate level of tax can increase environmental value and serve to achieve environmental objectives. If such substantial wide-scale and long-term benefits are scientifically provable, or if there is some serious risk of environmental

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<sup>51</sup> Stone looks at means of giving legal protection rights to inanimate objects in Stone CD, ‘Should Trees have Standing? – Toward Legal Rights for Natural Objects’ (1972) 45 S.Cal.L.Rev. 450.

<sup>52</sup> Directive 2008/1/EC of the European Parliament and of the Council of 15/1/2008 concerning integrated pollution prevention and control (IPPC Directive) OJ L 24/8, Article 2(2).

<sup>53</sup> UNFCCC, Article 1(1)), defines “Adverse effects of climate change” in a manner that does not necessarily involve harm to humans, but which also includes economic harm.

damage such as health concerns, destruction of a forest, or a loss of a species, this will add weight to the value of an environmental factor when measured against a proposed economic activity. A White House report from 1965 called for the promotion of ‘public science’ in order to determine risks of pollution so that scientific need based on research could influence legislation exclusive of political influence; whether this is achievable is however outside the ambit of this thesis.<sup>54</sup>

How an environmental factor is valued is a matter for policy makers and will vary from time to time and between different societies. For example, if badgers are considered by policymakers – following precautionary scientific advice – to be too common and therefore a pest, then a low value could be given to them.<sup>55</sup> This would mean that if any are killed through an economic activity, little or no tax could be paid. A negative value could also mean tax subsidies for culling badgers, as an incentive to control the species. Such rates could be set for many environmental factors and reviewed periodically. Then if the badger population fell to an unacceptably low level and was endangered, the value could be increased to achieve an optimum population level. This would require value judgements being made and would entail high administration costs especially gathering the required information,<sup>56</sup> but would only be used when the status quo needed amending.<sup>57</sup>

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<sup>54</sup> US President's Science Advisory Committee, Environmental Pollution Panel, *Restoring the Quality of our Environment* (Report) (Washington, D.C.; White House, 1965) at 29-33.

<sup>55</sup> For example, UK policy on grey squirrels recognises the public value given to them but also the damage they cause to their environment and other species, which provides an optimum figure to control their population. See DEFRA, ‘Grey Squirrels and England’s Woodlands: Policy and Action’

[http://www.forestry.gov.uk/pdf/greysquirrel-policy.pdf/\\$FILE/greysquirrel-policy.pdf](http://www.forestry.gov.uk/pdf/greysquirrel-policy.pdf/$FILE/greysquirrel-policy.pdf) Accessed 15/6/2010.

<sup>56</sup> A report into VED rates for lorries invoked research into environmental impacts, which reduced overall rates by 50% whilst encouraging lorries that were more environmentally efficient. Dodgson J *et al*, *Lorry Track and Environmental Costs* (London: Department for the Environment, Transport and the Regions, 2000).

<sup>57</sup> To demonstrate this, a range of such economic and ecological risks specifically related to GhG pollution are set out in Cutting RH and Cahoon LB, ‘The “Gift” that keeps on giving: Global Warming meets the Common Law’ (2008) 10 VJEL.. 110.

Taxes can be used to create a market for environmental protection which would allow the market to balance the costs and benefits of an economic action in a place where more than one activity could take place. HM Treasury established a valuation mechanism in its *Green Book*<sup>58</sup> to appraise whether an action is worth taking and this includes methods for valuing non-market impacts,<sup>59</sup> distributional impacts,<sup>60</sup> how to assess risk in the long-term where there is uncertainty,<sup>61</sup> and crucially how to value undervalued costs and benefits.<sup>62</sup> These are, as mentioned, all important factors for a policymaker to consider. Techniques such as surveys are used to gauge public opinion in order to ascertain values; for example surveys could help decide whether the public consider a certain area to be of outstanding natural beauty which needs preserving. Such an approach is extremely useful and shows the desire to achieve environmental objectives alongside economic ones.

In Cambodia, a reform of forestry taxes was undertaken in a similar way upon the advice of the IMF.<sup>63</sup> An increase in forestry taxes to achieve protection of the forest was initially opposed by the logging industry, but the increase did not seriously damage the industry who managed to pay the additional revenues. This is despite a threefold increase in tax. Any modest decrease in logging was regarded as a balanced cost to achieve the environmental objective. Thus a tax set at the correct level using guided mechanisms can value the environment correctly and correct market failures. The OECD also endorse such a cost-benefit valuation, both generally and specifically to the issue of biodiversity.<sup>64</sup> As to the question of administration costs, they note that a cost-benefit analysis should also be applied

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<sup>58</sup> HM Treasury, *The Green Book - Appraisal and Evaluation in Central Government* (London: TSO, 2005) <[http://www.hm-treasury.gov.uk/d/green\\_book\\_complete.pdf](http://www.hm-treasury.gov.uk/d/green_book_complete.pdf)> Accessed 10/3/2010.

<sup>59</sup> *Ibid* at Annex 4.

<sup>60</sup> *Ibid* at Annex 5.

<sup>61</sup> *Ibid* at Chapter 5, p. 17-34.

<sup>62</sup> *Ibid* at 34.

<sup>63</sup> IMF, 'The IMF and Environmental Issues' (2000) *Issues Brief* <<https://www.imf.org/external/np/exr/ib/2000/041300.htm>> Accessed 10/3/2010.

<sup>64</sup> OECD, *Recommendation of the Council on the Use of Economic Instruments in Promoting the Conservation and Sustainable use of Biodiversity* (Paris: OECD, 2004) (Adopted by the OECD Council on 21/4/2004).

to the valuation study itself, so that it does not cost more to conduct the study than for the perceived benefits of conducting the study.<sup>65</sup> This will further be inputted into the Universal Model.

## 29. CONCLUSION

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The findings indicate that the imposition of an environmental tax does not have to be set at a level which will mean that an environmentally damaging activity ceases to exist partly or even wholly. The equation to determine the requisite level of the tax, adopted herein to advise policymakers, is explained by a Treasury report to be that which will limit the damaging activity to “a level where the marginal (private and social) costs of the environmental impacts are equal to the marginal benefits derived from undertaking the activities which cause them.”<sup>66</sup> The crucial part in this equation is that includes both private *and* social costs, so that it is not purely an economic analysis.

Determining the social costs is a matter for policymakers who have a number of techniques available to value such costs; if these techniques are realistic they can go some way towards achieving both sustainable development and a sustainable economy without pressing either beyond what is required. In doing this, it is important to consider where the burden should lie from a macro-economic perspective, taking into account various different environmentally damaging activities in order to determine how many should be permitted to survive in a society – rather than focusing on only one. This will involve further questions to determine

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<sup>65</sup> *Ibid* at Annex III.

<sup>66</sup> HM Treasury, see chapter 4, n.38 at 20, para. 5.19.

who ought to bear the burden of environmental taxation. Guidance for policymakers to decide this will be considered in Chapter 7.



# PART II

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# CHAPTER 6: METHODS TO CHANGE BEHAVIOUR

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### 30.1 INTENTION, PURPOSE & METHODOLOGY

The intention of this chapter is to explore methods of ensuring that a tax reform programme can have the desired impact of behavioural change. It will do this by examining means by which taxes, supported by non-tax measures, can be utilised to convey a message which can have an impact upon environmental choices and behaviour.

The purpose of this undertaking is to gain understandings of tax methods which can be of use to a policymaker intending to introduce an environmental tax. With such findings, a policymaker would be capable of making an informed choice as to the appropriate taxes, incentives and wider social techniques available, to determine the type suitable to meet the intended environmental objectives. Further, the purpose is to contribute to a response to the Research Question relevant to Part II. An understanding of available methods provides answers to both how environmental taxes can be utilised, and how unforeseen consequences can be avoided – by drawing upon lessons learnt from past experiences and using them for a policymaker to make an informed decision. In responding to this Research Question, the conclusions can also be utilised as guidance to form the basic framework of a Universal Model in response to the RQ(i).

The approach in this chapter initially involves analysing how taxes can influence human decisions, and further how modern understandings of human psychology can be utilised to shape a tax structure to have the intended outcome. This requires analysis as to gauge how

non-tax methods can complement tax methods in achieving environmental policy objectives.<sup>1</sup> It will invoke a variety of multi-disciplinary research and empirical findings in order to facilitate a multitude of responses explaining potential methods. This will be done by firstly exploring how in principle demand and behavioural attitudes can be affected by tax methods. Following this, the chapter will evaluate evidence to determine methods which should be embraced and avoided for a tax policy to be effective. Initially however it is prudent to explain further background to the issue of how a tax can theoretically work to influence social behaviour.<sup>2</sup>

## 30.2 BACKGROUND: TRANSFORMATIVE RATIONALE

It has been established that taxation can work to financially incentivise market behaviour in line with Government objectives. However taxes can also have an impact that goes beyond finances. Both the threat of being charged to tax – even if the rate is low – and the possibility of reducing one’s tax burden can have considerable psychological impacts upon behaviour of individuals and enterprises.<sup>3</sup> The aforementioned *Statement of Intent* of the British Government on tax policy recognised that what policymakers choose to tax “...sends clear

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<sup>1</sup> Duff points out that “environmental taxation can enhance regulatory measures, increasing the likelihood of effective enforcement and creating a dynamic incentive to reduce environmentally harmful activities beyond regulated levels.” Duff, see chapter 4, n.34 at 2070-2079. Landfill taxes may not work in practice, for example, without legislation to criminalise fly-tipping. Indeed, the Landfill Allowance Trading Scheme is enforced with the threat of a GBP £150 penalty: Landfill Allowances and Trading Scheme (England) Regulations 2004, regulation 20(1) (as amended by The Landfill Allowances and Trading Scheme (England)(Amendment) Regulations 2005), Regulation 2(2)).

<sup>2</sup> On behavioural aspects of related to the environment, see Martens P and Chang C (eds.), *The Social and Behavioural Aspects of Climate Change: Linking Vulnerability, Adaptation and Mitigation* (Sheffield: Greenleaf Publishing, 2010).

<sup>3</sup> England’s ‘window tax’ historically caused many homes to be constructed without windows, or with windows blocked up. The tax was introduced pursuant to: An Act for granting to His Majesty several Rates and Duties upon Houses, for making good the Deficiency of the clipped Money (1696) House of Lords Journal Volume 15: 10/4/1696, *Journal of the House of Lords: Volume 15: 1691-1696 (1771)*, pp.732-733, <<http://www.british-history.ac.uk/report.aspx?compid=12306>> Accessed: 21/4/2010.

signals about the economic activities they believe should be encouraged or discouraged, and the values they wish to entrench in society.”<sup>4</sup>

The notion that taxation can alter social behaviour was introduced at 17 where Duff developed the concept of the transformative rationale for environmental taxes.<sup>5</sup> The transformative rationale asserts that taxes can educate society as to the choices which should be encouraged, and can be reinforced with advertising and education. An information campaign coupled with environmental taxes for example can work together, to achieve behavioural change. Hoerner argues that such taxes do not need to prove expensive for the taxpayer, since the educational impact supported by even a low level of tax can often prove adequate to “induce significant environmental improvement”.<sup>6</sup> How this is done therefore is through a combination of incentives, taxes and education to affect choice by restricting certain selections and encouraging alternatives. Bemelmans-Videc *et al* refer to this combination as ‘carrots, sticks and sermons’.<sup>7</sup> Sermons are devised as informational tools to make the consumer aware of the implications of their choices. Within this it is argued that if a law is to be effective it must be publicised, explaining that “individuals within the target group must be made aware of its existence.”<sup>8</sup> Therefore this chapter will analyse how combined tax and non-tax methods can be used to supplement one another in the pursuit of environmental goals.

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## 31. DEMAND AND BEHAVIOUR

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<sup>4</sup> See chapter 2, n.18.

<sup>5</sup> Duff, see chapter 4, n.34, at pp. 2070-2079.

<sup>6</sup> Hoerner A, *Harnessing the Tax Code for Environmental Protection: A Survey of State Initiatives*, (Washington, D.C.: Center for a Sustainable Economy, 1998) at 15.

<sup>7</sup> In Bemelmans-Videc ML, Rist RC and Vedung E, *Carrots, Sticks and Sermons: Policy Instruments and their Evaluation* (New York: Transaction Publishers, 2003). See e.g. p. 51.

<sup>8</sup> *Ibid* at 48.

### 31.1 BACKGROUND

Environmental taxes work primarily to influence demand in the market, often by reducing demand for certain goods and encouraging demand for environmentally efficient alternatives. This in turn affects the supply of goods as it is intended that the market will react by producing more of the alternatives and less of the environmentally inefficient goods. This is known as ‘distortion’, which Kiekebeld defines as “...a noticeable influence on the market allocation of production and factors of production as a result of Government intervention.”<sup>9</sup> Taxes therefore work to change human behaviour and as such legal scholars and economists frequently favour demand-side tax policies.<sup>10</sup>

### 31.2 LOSS AVERSION AND DISCREDITING SCIENCE

Nevertheless altering demand is not straightforward, as an effective coherent strategy is required to change people’s decisions governing their environmental behaviour. The imposition of taxes without changing people’s minds may well be met with resistance, be politically unpopular and ultimately ineffective. The issue is a psychological one regarding the perception among people that their standard of living will deteriorate if they change the manner of living to which they are accustomed. It is possible that raising people’s awareness as to the dangers of environmental damage may in itself be insufficient to alter behaviour towards the environment.; the theory of ‘loss aversion’ was introduced in Chapter 5 and

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<sup>9</sup> Kiekebeld BJ, *Harmful Tax Competition in the European Union* (Rotterdam: Kluwer, 2004) at 64.

<sup>10</sup> See e.g. Mann R & Hymel ML, ‘Getting into the Act: Enticing the Consumer to Become “Green” Through Tax Incentives’ (2006) 36 *Environmental Law Institute* 10419-10428.

demonstrates how once people are used to a certain way of life they are unwilling to make sacrifices for future generations.<sup>11</sup>

Further, Jamieson<sup>12</sup> explains that since debate remains about the causes of environmental harms such as climate change, often people will in the first instance prefer the purported ‘scientific’ evidence of those disagreeing with the need to change since it supports their pre-conceived beliefs and means they do not have to alter their behaviour.<sup>13</sup> Commenting on a study<sup>14</sup> of Americans’ behaviour toward the environment, Mann and Hymel point out that only 15% of American consumers believed increasing petrol duty to be a good idea.<sup>15</sup> They conclude that American consumers “want to help the environment but they don’t want to change their lives to do so.”<sup>16</sup>

### 31.3 SUSPICION OF DECEIT

Another reason for public disapproval of environmental taxation is that people often believe it is a deception to raise revenue rather than for environmental improvement, particularly when the tax model cannot be easily understood.<sup>17</sup> This subject was explained in Chapter 4. Those required to change behaviour or fund extra costs should understand why they must suffer a detriment. Failure to do so in British Columbia meant attempts to change the weekly

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<sup>11</sup> Murkowski FH, ‘The Kyoto Protocol is not the answer to Climate Change’ (2000) 37 Harv.J.on Legis. 345 at 358. One potential means of overcoming this is where the sacrifices are brought down to a personal level, such as if a person considers that his actions in tree-planting may benefit future generations of a family estate.

<sup>12</sup> Jamieson D, ‘Uncertainty and Risk Assessment: Scientific Uncertainty and the Political Process’ (1996) 545 Ann.Amer.Acad.Polit Soc.Sci.35-43.

<sup>13</sup> A number of British Newspapers led a campaign attempting to find errors in the IPCC’s *Climate Change 2007- Synthesis Report* (see Chapter 1, n.1) and publicise a message that climate change science is not caused by humans. See ‘100 Reasons why Climate Change is Natural’ *Daily Express*, 15 December 2009, p.1.

<sup>14</sup> ‘Survey of American Attitudes on the Environment’ (2005) *Yale University School of Forestry and Environmental Studies* <<http://www.yale.edu/envirocenter/research.htm>> Accessed 28/4/2010.

<sup>15</sup> Mann & Hymel, see n.10, at 10422.

<sup>16</sup> *Ibid*, at 10422.

<sup>17</sup> See research findings by Dresner *et al*, see chapter 3, n.32, at 937-8.

waste collection to a biweekly collection were met with hostility.<sup>18</sup> Therefore the question of how to overcome unwillingness to alter one's behaviour towards the environment is sensitive, and it is advisable to get the public 'on board'.

#### 31.4 **FIRST-HAND EXPERIENCE**

It is more straightforward when the environmental issue actually affects the taxpayer directly. If the public can see firsthand the damage caused by environmental harm, they may be more likely to support measures to protect the environment. For example findings from surveys in Hong Kong show that residents perceive it to be suffering from environmental degradation and think their Government is not utilising eco-taxation to a satisfactory extent.<sup>19</sup> Therefore the difference between people's own experiences of the environment can impact significantly on what measures they are prepared to take to protect it.

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### 32. METHODS TO CHANGE BEHAVIOUR

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#### 32.1 **PURPOSE**

OECD researchers make an insistent call for further consideration into how Governments can most effectively target policies to affect individual and household decisions in order to achieve the appropriate change in sustainable consumption behaviour.<sup>20</sup> In particular it encourages analysis to be given to price signals affecting consumer preferences, as well as economic, social, demographic and other factors which affect consumption patterns – in order

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<sup>18</sup> See IISD, chapter 2, n.90 at 45.

<sup>19</sup> Cullen R, 'Tax Reform and Democratic Reform in Hong Kong: What do the People Think?' (2008) 6 BTR 667-690, at 680.

<sup>20</sup> Geyer-Allely E and Zacarias-Farah A, 'Policies and Instruments for Promoting Sustainable Household Consumption' (2003) 11 *Journal of Cleaner Production* 923–926.

to understand which policy can be the most environmentally effective, cost efficient and equitable.<sup>21</sup> This section considers such matters from a legal perspective but considers interdisciplinary material necessary to test these matters, such as economic studies and psychological research.

## 32.2 CHOICE

The right to choose means consumers are not acting upon instruction but upon their individual preference, giving the consumer freedom and individual responsibility.

Completely restricting consumer choice to the State-approved choice (such as by prohibiting certain goods) provides artificial demand for the approved good and resentment for the consumer. Further it can aid 'black market' goods which bring in no revenue and are costly to police. Taxes however can affect consumption choices by making an environmentally efficient good or service less expensive than alternatives and consequently creates a demand for the product without affecting individual freedoms to the same extent. Imposing a tax on a 'discouraged' good also sends a message about the sustainability of the good, which can help the consumer reach a more informed decision.

## 32.3 PRICING AND PSYCHOLOGY

### 32.3.1 PRICING POLICY

Næss-Schmidt *et al* identify that a problem of encouraging consumers to choose eco-friendly goods is that they may find it too time-consuming to choose the most efficient products –

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<sup>21</sup> *Ibid*, at 925.

relative to the savings they would make in energy costs.<sup>22</sup> As such it is suggested that reduced prices for environmentally efficient goods can affect purchase behaviour more directly than eco-labelling.<sup>23</sup> In Thailand, a purely pricing strategy was operated successfully to phase out leaded petrol using a scheme of tax subsidies and collaboration. The strategy affected choice by making unleaded petrol at least USD \$0.012 per litre less than leaded petrol.<sup>24</sup> This consistent pricing had the effect of making leaded petrol appear the more expensive option in the mind of consumers and empowered the market to choose to switch to unleaded petrol. This may not work in every country or situation, due in part to varying incomes and other economic factors. However by finding the appropriate incentive and message the policy can gain widespread public acceptance and understanding, helping it to succeed.

### 32.3.2 STATUS-SEEKING AND GREEN CONSUMERISM

#### 32.3.2.1 BACKGROUND: STATUS-SEEKING

The economist Wendner explains that in society the need to seek status leads to overconsumption which can be detrimental to the environment.<sup>25</sup> He therefore advises that when setting the rate of tax on consumption it is essential to consider people's desire to 'keep

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<sup>22</sup> Næss-Schmid St *et al*, *Reduced VAT for Environmentally Friendly Products* (Copenhagen: Copenhagen Economics: 2008) at 20.

<sup>23</sup> An information method affecting consumer choice by attaching a label on a product to qualify it as energy efficient.

<sup>24</sup> Sayeg P, 'Successful Conversion to Unleaded Gasoline in Thailand' (1998) *World Bank Technical Paper No. 410*.

<sup>25</sup> Wendner R, 'Status, Environmental Externality and Optimal Tax Programs' (2003) 8 *Economics Bulletin* 5, 1-10.

up with the Joneses'.<sup>26</sup> The tax design therefore should take this into account and whilst it is important to disincentivise environmentally harmful consumption through taxes and the message the tax sends out, it is also important to encourage alternatives.

#### 32.3.2.2 ATTACHING POSITIVE STATUS TO ENVIRONMENTAL EFFICIENCY

If there is a positive status element attached to eco-friendly consumption then demand can shift accordingly. In essence what is needed is for environmentally sustainable lifestyles and consumption behaviour to become 'fashionable'. Research by Kurani and Turrentine also suggests that currently there is a negative status attached to claims of good 'fuel economy'.<sup>27</sup> Consumers often perceive 'economical' vehicles to be inferior, a symbol of deprivation and inadequacy. Whereas the research found a much greater regard for claims of 'fuel efficiency' and the status of achieving it, since it is "...a term free from a cheap image and more closely associated to ideas of resource conservation, advanced engineering, and high technology and quality."<sup>28</sup> For example Audi have succeeded in portraying a desirable image of an economical vehicle range by utilising terms such as 'aerodynamics' alongside notions of 'fuel efficiency'.<sup>29</sup>

#### 32.3.2.3 ENDORSING GREEN CONSUMERISM

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<sup>26</sup> *Ibid.*, at pp.1,7.

<sup>27</sup> See Kurani KS and Turrentine TS, Automobile Buyer Decisions about Fuel Economy and Fuel Efficiency (2004) *University of California, Institute of Transportation Studies*, Report ITS-RR-04-31, at pp.1-2.

<sup>28</sup> *Ibid.*

<sup>29</sup> 'A5 Sportback: Saving you Fuel' <<http://www.audi.co.uk/new-cars/a5/a5-sportback/saving-you-fuel/aerodynamics.html>> Accessed 21/4/2010.

Taxes combined with the portrayal of a positive status image may therefore work more successfully in affecting consumer choice and behaviour. It is feasible that other conservationist or sustainable consumption behaviour could be promoted in this manner. Indeed, recent research indicates that consumer behaviour may be driven more for status-seeking than to protect the environment. The research suggests that consumers want to affirm their status in public by choosing certain environmental consumption goods. If the market can be driven to react to this psychological anomaly by promoting social-status-enhancing environmental goods, then consumerism could successfully serve the environmental interest.<sup>30</sup> Scott however questions whether such ‘positive’ consumerism is an appropriate method for the environmental interest, concluding that such a policy should be approached with caution, as the potential incompatibility of the two competing interests could be counter-productive in causing ecological degradation.<sup>31</sup> Nevertheless, a well-balanced policy – recognising the threat of over-production - could take advantage of such consumer attitudes to promote a change in consumption behaviour, phase out inefficient appliances and adapt people’s overall behaviour towards the environment.

### 32.3.3 APPROPRIATE RATE OF TAX

#### 32.3.3.1 REQUIRED IMPACT

Clearly taxes can send a message to change behaviour but pricing alone may be insufficient. Despite the changes in the UK’s VED banding system (see 12.2), early indications following research by the Energy Saving Trust<sup>32</sup> suggest that the new system has done “very little to

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<sup>30</sup> Griskevicius V *et al.*, ‘Going Green to be Seen: Status, Reputation, and Conspicuous Conservation’ (2010) 98 *Journal of Personality and Social Psychology* 3, 392-404.

<sup>31</sup> Scott A, ‘Keeping Up with the Greens: How Consumerism Hijacked Environmentalism and the Ideological Dilemma it Left Behind’ (2010) *University of Florida Working Series*. See eg. ‘How Consumerism Hijacked Environmentalism’ at 16.

<sup>32</sup> <[www.est.org.uk/](http://www.est.org.uk/)> Accessed 21/4/2010.

persuade car buyers to choose a lower-carbon model”.<sup>33</sup> It suggests that the initial reform did not go far enough since the rates of the taxes were not high enough to persuade motorists to buy more efficient vehicles.<sup>34</sup> It does admit however that more research is required before any meaningful conclusions can be drawn, and since the piece was written the rates for the highest emitting vehicles have risen. What can be learnt from this perhaps is that the rate of tax should be designed to make a more noticeable impact upon consumers’ income in order to achieve the desired change in consumption choice. Mann points out that record oil prices in 2008 “encouraged Americans to curtail driving and try public transportation”, showing that high costs can ensure a behavioural shift is achieved.<sup>35</sup> Rather than a penalty, this logic can also operate as an incentive, evident with the reform of the UK’s company car legislation, which in 2008-2011 allowed cyclists to claim GBP £0.20p per business mile for travelling by bicycle.<sup>36</sup> This substantial benefit for a virtually costless form of transport suggests that policymakers intended to offer a noticeable reward to encourage take-up.

### 32.3.3.2

### ACCOUNTING FOR FULL LIFE COSTS

Further the consumer should be made aware of how a tax will affect the annual costs of a good. Research on fuel economy<sup>37</sup> suggests that many consumers only consider the initial three years of fuel savings when making consumption decisions related to vehicle fuel

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<sup>33</sup> Energy Saving Trust, ‘Modelling the impact of VED: a new approach’ (2007) <<http://www.lowcvp.org.uk/assets/reports/EST%20Vehicle%20Excise%20Duty%20Study%202007%20FINAL.pdf>> Accessed 22/4/2010.

<sup>34</sup> It cites research by the RAC Foundation which estimates that in order to persuade private motorists to downgrade their engine size or use an alternative fuel source, annual running costs of a vehicle would need to increase by at a minimum of GBP £1,100. RAC Foundation, ‘Consumer attitudes to low carbon and fuel-efficient passenger cars’ (2005) *Low Carbon Vehicle Partnership*.

<sup>35</sup> See chapter 1, n.12, at 367.

<sup>36</sup> (ITEAP) (Income Tax (Earnings and Pensions) Act 2003), ss.229-232.

<sup>37</sup> National Research Council, *Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards* (Washington DC, National Academy Press, 2002), at 112.

economy, which strongly underestimates a vehicle's life spans.<sup>38</sup> For consumers considering the life-span of a vehicle, the understanding that increased annual running costs may severely diminish its second-hand value can also make an inefficient 'status' vehicle seem to be a poor choice.

Alerting consumers to the full life costs of a vehicle enables an informed choice, thus enabling decisions based upon environmental impact. High emissions can then appear expensive to the consumer and consequently unaffordable. In India where average incomes are relatively low, the impact of consumption price and annual running costs can have a profound effect upon consumption. The Tata Nano was launched in 2009 and advertised as the world's least expensive car. Not only was its new purchase price very low (USD \$2,500) but its engine was highly efficient, decreasing the annual running costs. These combined factors have targeted the Indian vehicle market and it is expected to become India's most popular car, with waiting lists exceeding annual production capacity so much that buyers were selected in a lottery.<sup>39</sup>

#### 32.3.3.3 SUMMARY

Consequently it is possible to target a market with an environmentally efficient consumption product and alter environmental behaviour, through a mixture of pricing strategies and publicity, which together can create demand. Price elasticity of demand should also therefore be considered before embarking upon a campaign to encourage alternatives in order to alter

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<sup>38</sup> By up to 60%, according to Greene *et al.*, 'Feebates, Rebates and Gas-Guzzler Taxes: a Study of Incentives for Increased Fuel Economy' (2005) 33 *Energy Policy* 757–775, at 758.

<sup>39</sup> Thottam J, 'The World's Cheapest Car Debuts in India' *Time Magazine* 23/3/2009 <<http://www.time.com/time/world/article/0,8599,1887070,00.html>> Accessed 28/4/2010.

behaviour, as highlighted by Duff.<sup>40</sup> On the other hand such strategies can be counter-productive since petrol consumption will rise considerably if millions of extra people are able to buy new cars every year – even if they are environmentally more efficient - thus adding to the environmental burden.<sup>41</sup>

## 32.4 ENCOURAGING ALTERNATIVES

### 32.4.1 INVESTMENT AND INFRASTRUCTURE FOR REAL ALTERNATIVES

These findings point to a need to offer further real alternatives to enable positive consumption choices. Despite the re-banding of VED in Britain, it will be difficult to increase demand for carbon-neutral cars without changing wider factors; taxes cannot be effective otherwise.

Electric cars for example, whilst encouraged officially and through the tax system, are currently difficult to operate since the infrastructure is not in place to run them properly. In 2009, Ireland's Government took a positive step towards this by agreeing with car manufacturers to produce 250,000 electric cars within 10 years so that 10% of the national fleet would be electrically run.<sup>42</sup> At the same time plans were made to provide recharging facilities nationally. In providing the infrastructure and shifting such a huge proportion of production to this method, the idea will be to make electric cars the 'norm' in Ireland and thus alter the market accordingly. China, which has particularly high levels of pollution has also been at the forefront of developing efficient vehicles and introduced recharging stations, in order to become a global leader in clean technology. China's BYD Autos released a

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<sup>40</sup> Duff, see chapter 4, n.34, at pp.2100-2101.

<sup>41</sup> 'Small car spells big trouble for Petro Firms' *The Hindustan Times* 10/1/2008 <<http://www.hindustantimes.com/StoryPage/StoryPage.aspx?sectionName=&id=c1503436-ee40-4795-9e23-d2ebf86bb045&ParentID=2d28012e-0cc1-4ac2-ad09-2b74a27953ac&Headline=Small+car%3a+big+trouble+for+petro+firms>> Accessed 28/4/2010.

<sup>42</sup> 'Government signs Electric Car Deal' *RTE* 3/4/2009 <<http://www.rte.ie/business/2009/0403/cars.html>> Accessed 28/4/2010.

vehicle which on a single charge can travel 400km and has a top speed of 160km/h.<sup>43</sup> Further China offers rebates on purchases of electric and hybrid cars of CNY ¥50,000 to encourage consumption, which is a considerable incentive to purchase such vehicles.<sup>44</sup>

#### 32.4.2

#### PRIVATE EFFORTS TO FILL THE SUPPLY GAP

Many Governments have been slow to invest in this change, thereby failing to send the correct message to motorists or provide real alternatives to support their environmental taxes. It may be, however, that private enterprise will itself adapt to consumer demand and offer such facilities. In Sweden, where environmental concerns have long been a public concern and the tax code has reflected this, the McDonalds restaurant chain have reacted to consumer demand by achieving almost 100% carbon neutrality within every branch in the country. It works within the Swedish Government's policy of creating multitudes of electric vehicles nationally by completing a pilot programme offering electric car recharging at some of its restaurants.<sup>45</sup> Whilst both a novelty and a publicity exercise, it shows that the market can react to consumer concerns should the correct message be portrayed.

#### 32.4.3

#### MARKET INCENTIVES FOR ENVIRONMENTAL IMPROVEMENTS

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<sup>43</sup> 'China's E6 electric car: 'We're not trying to save the world – we're trying to make money'' *The Guardian* 2/4/2009 <<http://www.guardian.co.uk/environment/2009/apr/02/china-e6-electric-car>> Accessed 28/4/2010.

<sup>44</sup> At the time of writing this was approximately GBP £5,000.

<sup>45</sup> 'Refuel electric cars at McDonald's' *TenBees* 20/2/2009 <<http://www.tenbees.co.uk/article/transport/20090220162911/Refuel-electric-cars-at-McDonald-s.htm>> Accessed 28/4/2010.

Governments intervening directly to encourage private investment in green initiatives can, as discussed, achieve environmental goals at less cost than direct investment. The Netherlands' 'Environmental Investment Allowance' (milieu-investeringsaftrek) offer citizens and corporate entities tax-free savings on eligible environmentally positive investments as an incentive to invest.<sup>46</sup> Consequently such projects offer "not just a sound environmental yield...[but] a sound financial return as well."<sup>47</sup>

In the UK, despite the additional levies on business to protect environmental interests, such as the CCL, the reliefs available on overall taxation direct businesses into improving their environmental standing. This can be beneficial to a business in terms of, for example, reduced energy costs and an improved public image. Further, the fact that HM Treasury is willing to bear part of the burden to improve the environmental efficiency of a business by encouraging alternatives should send a message to businesses about Governmental desire to change behaviour. For example, in the UK, a company carrying on a property rental business which installs an 'energy saving item' in a dwelling house<sup>48</sup> may deduct expenditure<sup>49</sup> on its purchase and installation costs.<sup>50</sup> This and similar incentives for landlords to improve the energy efficiencies of their properties, known as the 'Landlord's Energy Savings Allowance', show the willingness of Government to work with private enterprise to achieve

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<sup>46</sup> Pursuant to Personal Income Tax Act (Netherlands), Art.3.42a.

<sup>47</sup> DEFRA, see chapter 5, n.37.

<sup>48</sup> Or a building containing a dwelling house.

<sup>49</sup> Incurred wholly and exclusively for the purposes of the business prior to 1/4/2015. For restrictions see the explanation in Hamilton P, 'Finance Act notes: Environmental Tax changes – section 10 -24' (2007) 5 BTR 443-449, at 445.

<sup>50</sup> Pursuant to ICTA 1988, s. 31ZA.

environmental objectives.<sup>51</sup> Nevertheless, take-up by landlords has been less than expected – partly due to limited awareness of the incentive.<sup>52</sup>

## 32.5 CONSISTENT, CLEAR AND SUBSTANTIATED MESSAGE

### 32.5.1 CLEAR SIGNALS MATCHING INCENTIVES

What is needed therefore is a consistent message to create the necessary conditions for sustainable consumption behaviour to flourish. OECD research supports this proposition in calling for consumers to “receive a consistent set of signals about the sustainability of their consumption patterns.”<sup>53</sup> Mann and Hymel point out<sup>54</sup> that the USA’s Energy Tax Incentives Act 2005<sup>55</sup> gave more of an incentive to produce non-renewable energy than renewable energy which made consumers feel absolved in continuing to consume unsustainably. HM Treasury recognises the need to send such a consistent message in the long-term and suggests that continual increases in taxes can make it clear that an activity will only become more expensive in the future.<sup>56</sup> The Finance Act 2006 did this by linking the rate of the CCL to inflation as of 1 April 2007.<sup>57</sup> This is an important means of education while creating a psychological barrier against certain decisions. This consistency can create the appropriate

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<sup>51</sup> ICTA 1988, s.31ZA to 31ZC, and the Energy-Saving Items (Corporation Tax) Regulations 2008 (S.I. 2008/1520), cover Landlords within the charge to Corporation Tax. Landlords within the charge to income tax are covered in ITTOIA 2005, s.312-314 and the Energy-Saving Items Regulations 2007 (S.I. 2007/831).

<sup>52</sup> The Energy Saving Trust noted the lack of awareness at ‘Engaging Private Landlords with Energy Efficiency’ (2008) <<http://www.energysavingtrust.org.uk/>> Accessed 12/4/2010. The lack of take-up was noted by the Select Committee on Environmental Audit Tenth Report, ‘The Energy White Paper and the Action Plan’ (2004) Para. 69. <<http://www.parliament.the-stationery-office.co.uk/pa/cm200304/cmselect/cmenvaud/490/49006.htm>> Accessed 12/5/2010.

<sup>53</sup> Geyer-Allely and Zacarias-Farah, see n.20, at 923.

<sup>54</sup> Mann & Hymel, see n.10, at 10420-1.

<sup>55</sup> Energy Policy Act of 2005, HR 6, 109<sup>th</sup> Congr., Pub. L. No. 109-58 (2005), title XIII.

<sup>56</sup> HM Treasury, see chapter 4, n.38 at 35, para 7.7.

<sup>57</sup> FA 2006, s.171(2).

framework within which to make consumption decisions. The European Automobile Manufacturers Association<sup>58</sup> has called for consistency in the taxation of vehicles' CO<sub>2</sub> emissions to make the cost proportionate to the emissions, so that "every gramme of CO<sub>2</sub> is taxed the same."<sup>59</sup> Recognising the importance of sending a consistent message, the US Tax Extenders Act of 2009 extended the life of tax incentives programmes which were due to expire, such as incentives for renewable energy and alternative vehicles, in order that investments could be made with some certainty that incentives would continue.<sup>60</sup>

### 32.5.2

### EDUCATION

In Germany, the educational aspect of taxes was supported by advertising scientific educational slogans to ensure consumer support for environmental taxes and make people understand their purpose. Binswanger and Weizsäcker popularised phrases such as 'prices must tell the ecological truth' within Germany.<sup>61</sup> Dresner *et al* found through focus groups that German and Danish interviewees were generally more positive towards environmental taxation than other nationals due to having experienced greater education concerning environmental issues.<sup>62</sup> Education both directly through the media and indirectly through taxation and tax incentives can work collaboratively to maximise the behavioural impact of an environmental programme. Further, Baranzini *et al* highlight that carbon emissions are already taxed in every country, though perhaps not under the label of an environmental tax.<sup>63</sup>

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<sup>58</sup> <<http://www.acea.be>> Accessed 20/4/2010.

<sup>59</sup> ACEA, 'CO<sub>2</sub>-taxation shapes consumer demand' <[http://www.acea.be/index.php/news/news\\_detail/trend\\_towards\\_co2\\_related\\_car\\_taxation\\_continues](http://www.acea.be/index.php/news/news_detail/trend_towards_co2_related_car_taxation_continues)> Accessed 28/4/2010.

<sup>60</sup> H.R. 4213, 111<sup>th</sup> Cong.

<sup>61</sup> Wurzel RW, 'Innovating with 'New' 'Environmental Policy Instrument (NEPIs) in Germany' (2001) ECPR Joint Sessions of Workshops, Working Paper, at 11, <[http://www.uea.ac.uk/env/cserge/research/fut\\_governance/Wurzel\\_Germany.pdf](http://www.uea.ac.uk/env/cserge/research/fut_governance/Wurzel_Germany.pdf)> Accessed 28/4/2010.

<sup>62</sup> Dresner *et al*, see chapter 3, n.32 at 938.

<sup>63</sup> Baranzini *et al*, see chapter 4, n.15 at 397.

Since environmental taxes are already in place, Governments utilising educational techniques may find it more straightforward to convince the public of the need for environmental fiscal reform; the Meade Report thus quotes the relevant maxim ‘an old tax is a good tax’.<sup>64</sup>

### 32.5.3

#### CLEARLY DEFINED PURPOSE OF ENVIRONMENTAL FISCAL REFORM

Snape argues that whilst the British public are beginning to understand the effects of new environmental taxes, more support and education is needed through evidence, explaining the requirement for policymakers to “...substantiate the claims made for different levels of environmental levy.”<sup>65</sup> He illustrates this by pointing out that many issues are confused which prevents the message from getting across, such as a lack of understanding between the different purposes of congestion and emissions when implementing transport levies.<sup>66</sup> Educating people on environmental tax therefore means explaining how a tax works as well as its purpose. Further Snape argues that low-visibility taxes (such as the Landfill Tax, which only businesses and interested parties would be aware of) and ‘proxy’ taxes (such as fuel duties that are often, as discussed, disguised as environmental taxes in order to raise revenue) increase the problem further by clouding and confusing the issue with the public.<sup>67</sup>

### 32.5.4

#### DRASTIC MEASURES TO ELIMINATE MISINFORMATION

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<sup>64</sup> See chapter 1, n.9 at 14.

<sup>65</sup> Snape J, ‘Finance Act notes: Environmental Provisions – sections 59 and 170-172’ (2006) 5 BTR 542-544, at 544.

<sup>66</sup> *Ibid.*

<sup>67</sup> *Ibid.*

The EU has been proactive in response to the need to send out a consistent message, in legislating against television advertisements which encourage behaviour prejudicial to the environment. This EU-wide measure may have an important impact upon the way EU residents think and behave towards the environment.<sup>68</sup> Importantly it demonstrates how far the EU is prepared to go in seeking to protect the environment, as this type of measure infringes somewhat on public liberties and freedom of speech, as well as commercial interests. Without environmental justification, this may have been unjustifiable. Policymakers will need to determine the extent to which they are prepared to act to support environmental taxes.

#### 32.5.5

#### PERSONALISING THE MESSAGE

It is conceded, however, that Government intervention can only go so far, a point recognised by the House of Lords' Science and Technology Committee when discussing waste reduction strategies.<sup>69</sup> The committee encouraged the Government to address consumer behaviour through "a combination of education and encouragement"<sup>70</sup> and alter unsustainable market practices by promoting sustainable business models and policies surrounding them, but concluded that it was vital for consumers to play their part in their consumption choices on the wastefulness of products.<sup>71</sup> Perhaps then a drive towards educating people about what is happening at the present time may assist in supporting the impact of the taxation message, to make people realise that their actions will affect present generations and not just future ones.

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<sup>68</sup> Article 12(e) of Council Directive 89/552/EEC of 3/10/1989 on the coordination of certain provisions laid down by Law, Regulation or Administrative Action in Member States concerning the pursuit of television broadcasting activities, OJ L 298 , 17/10/1989.

<sup>69</sup> House of Lords' Science and Technology Committee, 'Report on "Waste Reduction" by the House of Lords' Science and Technology Committee' (2009) 1 *Journal of Planning and Environmental Law* 60.

<sup>70</sup> *Ibid*, at 62.

<sup>71</sup> *Ibid*.

For example on the Carteret Islands off Papua New Guinea, an entire community of thousands of native people have recently been evacuated due to rising sea levels which has destroyed their subsistence and way of life.<sup>72</sup> The plight of present-day ‘climate change refugees’ went largely unnoticed in the media, and it may be necessary through information campaigns to couple certain consumption actions or behaviour to present day events.

## 32.6 PSYCHOLOGICAL INCENTIVES

### 32.6.1 DESIRABILITY FOR INCENTIVES

Even small incentives can prove to be a psychological attraction to alter behaviour towards the environment. Research carried out by Dresner *et al* indicated that people wanted some form of reward and incentive to switch their behaviour, and not to be simply punished through extra taxes.<sup>73</sup> A review of the tax exemptions provided under German law<sup>74</sup> to promote the installation of catalytic converters in German vehicles found that “tax exemptions seem to have a psychological effect on taxpayers that is out of proportion to the benefits received.”<sup>75</sup> Incentives for tax deductions were found to work better than direct benefits, as the scheme had successfully encouraged motorists to install the converters.<sup>76</sup> In South Africa, one key criticism of national environmental legislation is that it lacked

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<sup>72</sup> Monbiot G, ‘Climate Change Displacement has Begun – but Hardly Anyone has Noticed’ *The Guardian* 7/5/2009 <<http://www.guardian.co.uk/environment/georgemonbiot/2009/may/07/monbiot-climate-change-evacuation>> accessed 22/6/2009.

<sup>73</sup> Dresner *et al*, see chapter 3, n.32, at 938.

<sup>74</sup> Following the 1985 amendment to Germany’s Federal Act on the Taxation of Fuels.

<sup>75</sup> IISD, see chapter 2, n.90 at 13.

<sup>76</sup> *Ibid.*

incentives for investment which was hindering its ability to succeed.<sup>77</sup> Thus tax incentives such as deductions – even if minimal - can have a considerable psychological impact on incentivising people to alter their behaviour – given that the public are aware of them.

### 32.6.2

### METHODS OF INCENTIVES

Various methods of incentives can be seen with vehicle purchase policy, where formidable incentives exist for purchasers of new cars. For example a ‘car scrappage scheme’ has operated in some countries to encourage motorists to scrap older vehicles and buy new ones. This serves the dual purpose of firstly incentivising sales in the motor industry but also means older, less efficient vehicles will be taken off the road and replaced with a more efficient, less polluting fleet. In Germany, a scheme which offers EUR €2,500 for buyers who scrap cars of more than 9 years old and buy new fuel-efficient types, has been hailed a success after year-on-year sales increased by 40% and demand soared.<sup>78</sup> Rather than this non-tax rebate option, there is also the option of a ‘feebate’ which imposes additional taxes on purchases of the most polluting vehicles and ring-fences them to subsidise purchases of the low carbon vehicles.<sup>79</sup>

The USA, which has for several years offered tax credits for purchases of hybrid vehicles,<sup>80</sup> operates an alternative scheme to encourage new car purchases by offering deductions in

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<sup>77</sup> Kock N, ‘Giving effect to the Kyoto Mechanisms: Implications for South African Policy and Legislation’ (2006) University of Cape Town, unpublished dissertation, at 41, available at <[http://lawspace.law.uct.ac.za:8080/dspace/bitstream/2165/246/1/deKockN\\_2005.pdf](http://lawspace.law.uct.ac.za:8080/dspace/bitstream/2165/246/1/deKockN_2005.pdf)> Accessed 28/4/2010.

<sup>78</sup> ‘German car scrappage scheme extended to meet demand’ *The Guardian* 7/4/2009 <<http://www.guardian.co.uk/business/2009/apr/07/automotive-industry-germany-scrappage>> Accessed 28/4/2010.

<sup>79</sup> For an evaluation of the various options see: Greene *et al*, see n.38.

<sup>80</sup> Pursuant to the Energy Policy Act, see n.55. See IRS, ‘Alternative Motor Vehicle Credit’ (2008) <<http://www.irs.gov/newsroom/article/0,,id=157632,00.html>> Accessed 28/4/2010.

federal income tax for buyers of new vehicles.<sup>81</sup> Whilst this new measure was designed to help America out of its recession, such measures can provide important incentives to replace inefficient vehicles with efficient ones. Tax cuts on car sales in Brazil for example led to a reported 36% increase in new car sales in March 2009.<sup>82</sup> Schemes simply to replace vehicles are, however, limited as they only benefit the environment because newer models are generally more efficient than older models. The more effective schemes for the environment are those offering incentives dependent upon the replacement of old vehicles with fuel-efficient vehicles – such as electric and hydro vehicles - as promoted with the French, German and first American schemes. Such schemes are arguably a more environmentally efficient use of tax income. Despite this a large proportion of a vehicle's emissions take place during manufacturing, which would lead to an overall rise in emissions despite the lower emissions during its use<sup>83</sup> - unless the replacement vehicles were low-emissions.<sup>84</sup> Little research however exists providing a cost-benefit analysis into the replacement of older vehicles' engines or components as opposed to the entire machine, or in the design of an engine which can be upgraded as technology advances. This could allow reduced emissions caused through manufacturing new vehicles whilst achieving environmental benefits, but could also prove an inefficient measure compared to the complete replacement of a vehicle.

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<sup>81</sup> 'Home and Car Buyers get Tax Breaks in Stimulus Package' *USA Today* 10/3/2009  
<[http://www.usatoday.com/money/perfi/columnist/block/2009-02-16-stimulus-home-car-buyers\\_N.htm](http://www.usatoday.com/money/perfi/columnist/block/2009-02-16-stimulus-home-car-buyers_N.htm)>  
Accessed 28/4/2010.

<sup>82</sup> 'UPDATE 2-Brazil Car Sales Jump 36 pct, best March on Record' *Reuters* 3/4/2009  
<<http://www.reuters.com/article/rbssConsumerGoodsAndRetailNews/idUSN0332521120090403>> Accessed  
28/4/2010.

<sup>83</sup> An OECD study concluded that scrappage schemes have "...high average cost per tonne of pollution avoided and they do not compare favourably with other alternative policy tools on purely environmental grounds": European Conference of Ministers of Transport, *Cleaner Cars: Fleet Renewal and Scrappage Schemes, Guide to Good Practice* (Paris: OECD Publishing, 1999) at 81.

<sup>84</sup> Research by 'Clean Green Cars' has shown that if the incentive was available for low-emitting vehicles only (under 130g/km of CO<sub>2</sub>) to replace cars over 10 years old, then the short-term increase in manufacturing emissions would be offset within six years by the new vehicles which would consequently produce a long-term net reduction in emissions: see 'Green Clean Cars' <[www.cleangreencars.co.uk/](http://www.cleangreencars.co.uk/)>; also see 'Scrappage scheme gains momentum' *The Telegraph* 11/3/2009  
<<http://www.telegraph.co.uk/motoring/environment/4974318/Scrappage-scheme-gains-momentum.html>>  
Accessed 28/4/2010.

Given the importance of car manufacturing to the German economy, it is likely that economic growth may have been the major rationale behind the decision to introduce such a scheme – but the environmental improvements do help justify such an investment. A similar scheme was introduced in Britain with the 2009 Budget,<sup>85</sup> with the scheme being hailed an initial success since 60,000 new car orders through the scheme were placed within the first few months alone.<sup>86</sup>

## 32.7 FAIRNESS AND RETROSPECTIVITY

### 32.7.1 INTRODUCTION: PUBLIC CONFIDENCE AND UNCERTAIN LEGALITY

Where an environmental tax is perceived as ‘fair’ it is more likely to gain public approval. Such support and lack of resistance can help it to succeed in its objectives in an economical manner. For instance certain types of taxes are more detrimental to low-income groups than other income groups, which can cause resistance and reduce compliance. In 1989, the UK legislature introduced a Community Charge known as a ‘Poll Tax’ to fund local amenities.<sup>87</sup> Its flat rate charge meant that everybody in employment paid the same amount regardless of property type, income, or wealth, which caused low-income groups to struggle to pay the charge. Its regressive form led to much resistance,<sup>88</sup> campaigns favouring anti-compliance, and ‘Poll Tax Riots’, leading to the charge being abandoned.<sup>89</sup> This concept of distributional

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<sup>85</sup> HM Treasury, *Building Britain's Future* (London: HMSO, 2009) at p. 75, para 4.1.6.

<sup>86</sup> Judge E, ‘UK Scrappage Scheme shifts 60,000 Cars’ *The Times* 15/6/2009  
<[http://business.timesonline.co.uk/tol/business/industry\\_sectors/industrials/article6502877.ece](http://business.timesonline.co.uk/tol/business/industry_sectors/industrials/article6502877.ece)> Accessed 18/6/2009.

<sup>87</sup> Pursuant to Local Government Finance Act 1988.

<sup>88</sup> Meadowcroft J, ‘The Failure of the Poll Tax and Classical Liberal Political Economy: Lessons for the Future’ (2006) 26 *Econ.Aff.* 1, 25-30.

<sup>89</sup> Community Charges (General Reduction) Act 1991.

fairness was held to be paramount amongst UK taxpayers, and demonstrates how understandings of fairness in a jurisdiction can determine the success or failure of a tax.

European principles of fairness aim to ensure a citizen knows his rights and is not discriminated against within the law, including tax law.<sup>90</sup> In terms of application of such principles to British tax law, Nolan J in *Yoga for Health Foundation v Customs and Excise Commissioners*, found<sup>91</sup> that UK courts must adopt European principles of construction when interpreting the Sixth VAT Directive.<sup>92</sup> Such principles guarantee concepts of fairness relevant to the introduction of a tax such as legal certainty<sup>93</sup> (as set out in *De Geus v. Bosch*), legitimate expectations<sup>94</sup> (as applied in the VAT cases of *Marks & Spencer v Commissioners of Customs & Excise*<sup>95</sup> and later *Grundig Italiana*)<sup>96</sup> and non-retrospectivity (*Kalsbeek v. Sociale Verzekeringsbank*).<sup>97</sup> Applying these principles to VAT creates expectations amongst the public that these principles should be applied in all areas of tax.

Whilst revenue recycling or earmarking receipts to specific environmental uses can add to concepts of fairness - allowing the public to find it easier to support the intent of the tax (discussed in Chapter 4) – a more antagonistic concept of unfairness is retrospective taxation. Adam Smith cemented this hostility into the public psyche in arguing that: “The certainty of what each individual ought to pay is, in taxation, a matter of so great importance that a very

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<sup>90</sup> For further analysis see Helminen M, *EU Tax Law: Direct Taxation* (Amsterdam: IBFD, 2009) at pp. 1-17; 55-56; 111.

<sup>91</sup> [1985] 1 C.M.L.R. 340, at 360.

<sup>92</sup> Sixth Council Directive 77/388/EEC of 17/5/1977 on the harmonization of the laws of the Member States relating to turnover taxes - Common system of value added tax: uniform basis of assessment OJ L 145, 13.6.1977, p. 1–40. See also Morse and Williams, chapter 2, n.24 at 416-420.

<sup>93</sup> Case 13/61, *De Geus v. Bosch* [1962] ECR 45.

<sup>94</sup> See Raitio J, *The Principle of Legal Certainty in EC Law* (Dordrecht: Kluwer Academic Publisher, 2003) at pp. 340-5.

<sup>95</sup> Case C-62/00, *Marks & Spencer plc and Commissioners of Customs & Excise* [2002] ECR I-6325.

<sup>96</sup> Case C-255/00, *Grundig Italiana SpA v Ministero delle Finanze* [2002] ECR I-8033.

<sup>97</sup> Case 100/63, *Kalsbeek v. Sociale Verzekeringsbank* [1964] ECR 56.

considerable degree of inequality ... is not near so great an evil as a very small degree of uncertainty.”<sup>98</sup>

People may consider it inequitable should they be taxed for choices they made in the past – before the environmental taxes came into force, and particularly before they were aware of the scientific evidence relating to environmental damage such as climate change, since this helps justify the purpose of the tax.<sup>99</sup> Retrospective taxation is deemed to undermine the credibility of a tax and can lead to reduced compliance rates<sup>100</sup> as well as affect investor confidence as it is regarded as a breach of the rule of law.<sup>101</sup> In the US State of North Carolina, retrospective taxation is expressly unconstitutional for “sales, purchases, or other acts previously done”<sup>102</sup> and under the US Constitution any retrospective legislation is illegal.<sup>103</sup> The Swedish Constitution<sup>104</sup> also expressly prohibits retroactive tax legislation.<sup>105</sup>

It is however not always completely certain whether such a measure constitutes retrospective taxation as the definition is not universal, which results in some arguably retrospective

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<sup>98</sup> See chapter 2, n.12, at 347.

<sup>99</sup> Willis J in *Phillips v Eyre* (1870) 6 QB 1, 23 stated that: ‘Retrospective laws are ... contrary to the general principle that legislation by which the conduct of mankind is to be regulated ought, when introduced for the first time, to deal with future acts, and ought not to change the character of past transactions carried on upon the faith of the then existing law.’

<sup>100</sup> See e.g. ‘Retrospective tax law ‘will undermine credibility’ *Accounting Web* <<http://www.accountingweb.co.uk/cgi-bin/item.cgi?id=137174&d=526&h=524&f=525>> Accessed 28/4/2010. ‘Tax law changes ‘unlawful’ *Cape Times* 23/8/2008 <<http://www.capetimes.co.za/index.php?fSectionId=3531&fArticleId=vn20080823105255506C493024>> Accessed 28/4/2010.

<sup>101</sup> See Sampford C, ‘Retrospective taxation law’ in Sampford C, ‘Retrospectivity and the Rule of Law’ (USA: OUP, 2006) 147-155.

<sup>102</sup> North Carolina State Constitution, Art I, §16.

<sup>103</sup> Article 1, § 10.

<sup>104</sup> Chapter 2, para 10 *Regeringsformen* (the Swedish Constitution).

<sup>105</sup> However once a proposal for legislation has been submitted by the Swedish Government to her Parliament detailing planned changes to a tax statute, the changes can be effective from the date of that proposal if it is later enacted. Thereby the circumstances constituting a taxable transaction do not always occur at the date the statute is enacted but can be at the date the proposal to change them is made. A thorough account of this is given in Hultqvist A, ‘Taxpayers’ Rights in Sweden’ (1997) 7 *Revenue LJ* 1, 43-57 at 45. Corkery demonstrates that in Canada and Australia there has increasingly been a practice of making laws effective from the date they are announced in Parliament rather than the date on which they are enacted, even though this can be months later; Corkery JF, *Starting Law*, (Queensland: Scribblers Publishing, 2002) at 153.

taxation being officially regarded as legitimate.<sup>106</sup> Australia in 1982 passed the Taxation (Unpaid Company Tax) Assessment Act 1982 in reaction to a large-scale tax fraud<sup>107</sup> which allowed it to recover tax that had been avoided at a time when the scheme leading to it being avoided was not expressly illegal. Retrospectivity of this kind prevents certainty for the taxpayer; the then Australian Senator Chipp argued against the 1982 Act saying: “One of the few protections that the ordinary citizen has is that he knows the law.”<sup>108</sup> Indeed Blackstone wrote that retrospective laws, whilst valid due to the sovereignty of Parliament,<sup>109</sup> were morally wrong as they had not been prospectively prescribed.<sup>110</sup>

### 32.7.2

#### UK EXPERIENCE: QUESTIONABLE LEGALITY AND REDUCED CREDIBILITY

In the UK environmental taxation has arguably been applied retrospectively on a number of controversial occasions, causing uncertainty and public disapproval of such measures. The 2006 Pre-Budget Report announced<sup>111</sup> a proposed doubling in APD (Air Passenger Duty).<sup>112</sup> Before it was brought into force, the airline industry complained that it would mean millions of people who had booked and paid for future flights before the tax had increased, but had not yet taken them, would now have to pay more which they argued constituted a retrospective

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<sup>106</sup> For further reading on retrospectivity see Sampford, see n.101; Corkery J & Anthea G, ‘Retrospectivity’ (2007) 17 Revenue LJ 1; Fuller LL, *The Morality of Law* (New Haven: Yale University Press, 1969).

<sup>107</sup> The Painters and Dockers’ Union had partaken in an avoidance scheme known as ‘bottom of the harbour tax avoidance’. For details see Jay T, ‘Retro-Active Tax Legislation: A ‘Deaf Leopard’ And His Spots’ (2007) 17 Revenue LJ 1, at 4-5.

<sup>108</sup> Australian Senate Hansard: 19/11/1982, at 2592.

<sup>109</sup> Blackstone W, *Commentaries on the Laws of England. In Four Books.* 17 (London: Richard Taylor, 1830) Volume 1, p. 91, highlighting that the judiciary could not disallow a statute if it was thought to be unreasonable since it would raise judicial power above the Government.

<sup>110</sup> “All laws should be therefore made to commence in futuro, and be notified before their commencement, which is implied in the term ‘prescribed.’” Blackstone W, *Commentaries on the Laws of England* (Philadelphia: Par, Birch & Small, 1803) 46.

<sup>111</sup> HM Treasury, ‘Pre-Budget Report 2006: Investing in Britain's potential: Building our long-term future’ (HM Treasury: HMSO, 2006) Cm 6984, at 176, Para 7.82.

<sup>112</sup> Introduced pursuant to FA 1994, s. 28.

tax.<sup>113</sup> The Federation of Tour Operators (FTO) also formally notified the Treasury of the problem. Nevertheless, the increase came into force<sup>114</sup> under the Finance Act 2007<sup>115</sup> and the airlines had to respond by either asking passengers for extra money or covering the costs themselves.<sup>116</sup> Her Majesty's Opposition at the time, the Conservative Party, argued that since it had been brought into force within eight weeks of the announcement in the Pre-Budget Report, and had not been discussed by Parliament, it was an illegal measure.<sup>117</sup> The controversy continued further when FTO challenged the legality of the increased duty with an application for judicial review of the decision, which failed when the English High Court refused the application.<sup>118</sup> Despite this, the duty has proved an embarrassment for the Government since it was regarded as a revenue-raising measure only. The continued increases<sup>119</sup> in the rates of APD have repeatedly been branded unfair, with airlines publicly claiming that there is no environmental justification for them.<sup>120</sup> Furthermore the EU indicated it would review the APD rises.<sup>121</sup> The controversy over retrospective application of environmental taxes, added to the perception that the taxes were not for environmental use,

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<sup>113</sup> 'EasyJet Demands Clarity over APD Tax Trap' *Travelmole* 11 December 2006 <<http://www.travelmole.com/stories/1114569.php>> Accessed 28/4/2010.

<sup>114</sup> For travel from 1/2/2007.

<sup>115</sup> Section 12 amended the rates under FA 1994, s.30.

<sup>116</sup> Whilst the low-fare airlines including easyJet and Ryanair passed the cost onto customers, BA absorbed the cost at an expense of around GBP £11 million: 'BA absorbs APD costs for passengers' *The Telegraph* 22/1/2007, <<http://www.telegraph.co.uk/travel/739933/BA-absorbs-APD-costs-for-passengers.html>> Accessed 28/4/2010.

<sup>117</sup> 'Air Tax Increase comes into Force' *BBC News* 1/2/2007 <<http://news.bbc.co.uk/1/hi/business/6317131.stm>> Accessed 28/4/2010.

<sup>118</sup> See n.99. The court held that APD were not within the scope of Art. 15 of the 1944 Chicago Convention on International Civil Aviation, and was outside the ambit of Regulation 549/2004/EC (Single European Sky Framework) Arts 1 and 2. Further it was not a breach of Art.1 of Protocol 1 to the Convention for the Protection of Human Rights and Fundamental Freedoms 1950 or Art.49 of the EC Treaty (Treaty Establishing the European Community; OJ C 321 E/3).

<sup>119</sup> The increases were announced in the 2008 Pre-Budget Report which further increase APD in 2009 and 2010. HM Treasury, see Chapter 9, n.67, p.139, para.7.56 <[http://www.hm-treasury.gov.uk/d/pbr08\\_chapter7\\_159.pdf](http://www.hm-treasury.gov.uk/d/pbr08_chapter7_159.pdf)> Accessed 21/4/2010. The rates are contained in FA 1994 (as amended).

<sup>120</sup> 'Sharp rise in Air Passenger Duty announced' *Reuters UK* 24/11/2008 <<http://uk.reuters.com/article/businessNews/idUKTRE4AN6K920081124>> Accessed 28/4/2010.

<sup>121</sup> 'EC to Review latest Air Passenger Duty rise' *Travel Weekly* 4/3/2009 <<http://www.travelweekly.co.uk/Articles/2009/03/04/30399/ec-to-review-latest-air-passenger-duty-rise.html>> Accessed 28/4/2010.

causes a failure to persuade travellers to change their behaviour as the taxes became regarded as increased prices rather than environmentally beneficial.

### 32.7.3

### UK EXPERIENCE: IMPACT ON FUTURE CHOICES

A similar sort of retrospectivity argument has been made over the rebanding of VED in the UK. Whilst the changes appear fair for new cars bought after the date of rebanding, they still impact on the second hand market as private owners will see their vehicles move into a more expensive bracket. This is recognised by the EAC, who accept that a criticism of the change is that it will not alter behaviour since “...the decision to buy a more or less carbon-efficient car – is in the past.”<sup>122</sup> The justification for this is that it will affect the decision for those buying cars in the future. Further, it does go some way to making those who actually pollute pay for the pollution, though the scheme does not apply to cars bought before 2001. Thus it is a different type of retrospectivity than APD charges, but those who bought high emissions vehicles after 2001 may feel that they are being penalised retrospectively which will decrease the support for VED rates since they are deemed unfair.<sup>123</sup> Arguably this brings the notion of environmental taxes into disrepute.

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## 33. CONCLUSION

This chapter has identified a range of relevant methods of influencing human behaviour through both tax methods and supporting measures. A variety of interdisciplinary evidence

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<sup>122</sup> See chapter 3, n.20 at 12, para. 24.

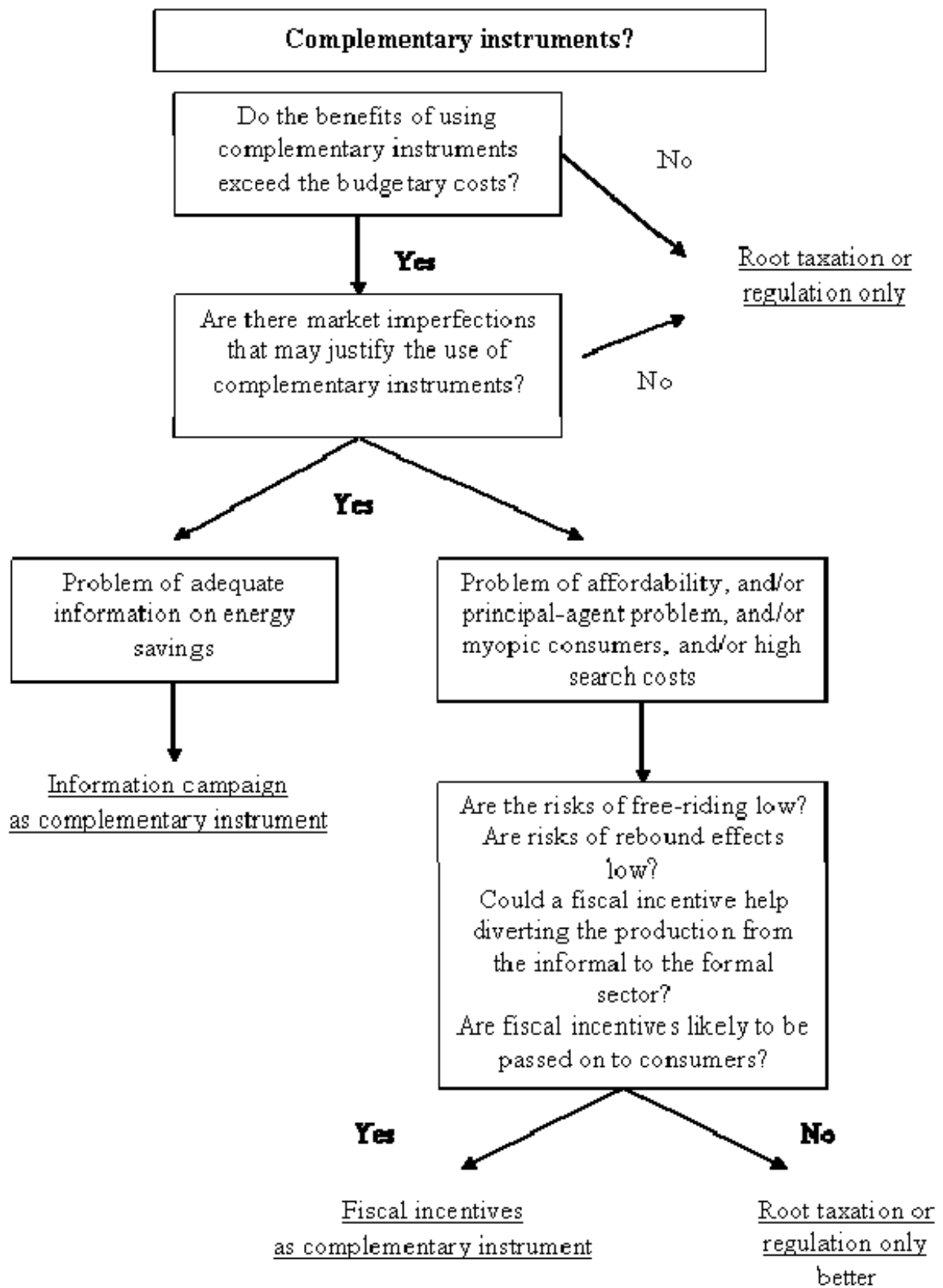
<sup>123</sup> The decision has been controversial even within the Government, with some arguing that the impact of the recession means the highest rates should be scrapped: ‘Government challenged over tax rise for big cars’ *The Times* 27/5/2008 <<http://www.timesonline.co.uk/tol/news/politics/article4009690.ece>> Accessed 28/4/2010.

and academic discussion has been analysed throughout to support and explain the conclusions, learning from the mistakes and experiences of previous policies. Such findings are of essential importance to policymakers in deciding appropriate means of influencing consumption choices and environmental behaviour.

The findings point to interesting trends in human decision-making which can determine the potential success of a tax method. A recurring feature stressed the importance of supporting the introduction of any tax or incentive package with a wider campaign of education, public information, a convincing explanation of the science and the purpose of the package, and in leading by example. Education included ensuring that decisions could be made with an understanding of the full private and social costs of the choice. Kosonen and Nicodème have attempted to identify when it is appropriate to use instruments to complement tax measures, and establish the kind of instrument to use, as the following flowchart demonstrates:<sup>124</sup>

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<sup>124</sup> Kosonen K and Nicodème G, 'The Role of Fiscal Instruments in Environmental Policy' in *Taxation Papers* (Luxembourg: Office for Official Publications of the EC, 2009) at 13.



As people do not react well to feeling forced into making a decision, it was found to be important that choices remained within the market – but that pricing policies could be utilised

to ensure that the 'best option' would be the option endorsed through the tax code. This could be done via taxes and subsidies. Equally it was found that people react well to consumption choices with positive status attached to them, as well as to consumption choices promoted with upmarket rather than 'cheap' images, and that these human anomalies could be taken advantage of in order to promote sustainable consumption choices and environmental behaviour. This can change people's perceptions from thinking they are making a sacrifice to thinking they were making an improvement.

It was found that people wanted to be rewarded for changing their environmental behaviour rather than simply paying more if they did not, and even small incentives could satisfy this demand. This is in line with the theme which promotes the concept of rewarding improvers and ensuring the polluter pays. As political resistance could hinder the effectiveness of a tax package, it was thought to be important to design a tax model which the public would not oppose. Fairness and equity in the tax system were found to be fundamental expectations of the public. This involved providing certainty of the system, such as whether taxes would continue to rise, so that people would be certain of the need to adapt behaviour and make their choices accordingly. For this to happen, it was found that legal uncertainty and retrospective application could undermine confidence in the system.

Whilst sending the intended message of behavioural change to the market in a personalised and reasoned manner, it was found also to be vital that real alternatives were available, to avoid simply penalising people for making a decision when they have no other choice. Therefore it was found that market-based incentives must be supported by investment in

infrastructure - whether private or public– to offer real alternatives so that a person can either alter his behaviour or bear a greater financial burden.

With such findings, policymakers can make an informed decision as to the type of tax package to introduce to have the desired effect upon decisions towards the environment.

What this chapter does not answer however is how the policymaker should decide which parties are to be charged to tax or offered incentives to change their behaviour. To do this, the policymaker needs to decide:

- (a) Who ought to bear the burden of environmental taxation; and subsequently,
- (b) How to target those parties intended to be taxed or offered incentives.

This Part will deal with these questions, not in offering policy solutions but in offering the policymaker informed choices as to the outcomes of potential decisions. Chapter 7 will look at how a policymaker can decide upon the parties to include in their environmental fiscal reform, considering questions such as how the burden of tax can be shared without aggravating poverty issues or causing unforeseen consequences. Chapter 9 then analyses tax methods to target taxes in the most efficient manner, again to provide the policymaker with an educated choice as to tax policy options available.

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# CHAPTER 7: DETERMINING WHO OUGHT TO BEAR THE BURDEN OF ENVIRONMENTAL TAXATION

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## 34. INTRODUCTION AND PURPOSE

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Where the burden of taxation lies is, as indicated in Chapter 1, a precarious question due to the various competing arguments related to it. The purpose of this chapter is not to dictate who should be responsible for contributing to any environmental programme, as this will differ depending upon the nature of the environmental problem and the type of potential taxpayers. Rather, its purpose is to set out the various matters to be considered by policymakers and lawmakers when deciding what sort of tax to introduce – as any chosen tax method can impact in a range of ways upon taxpayers, with a number of potentially counter-productive side-effects for the economy, the taxpayer and the environmental objectives. The chapter will explain why it is vital for a policymaker to understand who will actually bear the burden of an environmental tax, and why it may not be the party the policymaker intends, depending upon the given circumstances.<sup>1</sup>

The findings within are of vital importance to any policymaker seeking to introduce a workable tax to achieve their desired objectives. Further the purpose of this chapter relates to RQ(i) regarding the formation of a Universal Model. For such a model cannot achieve its objectives if the impact of any tax policy are not understood.

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<sup>1</sup> For examples, Mann criticises the US Government for selecting beneficiaries of its tax subsidies without due consideration: see chapter 1, n.12 at 399.

Policymakers have to make value judgements about which members of society will be required to fund their environmental programme, and this also involves analysing where and how to tax, raising various interrelated economic efficiency, ethical and legal principles.

This chapter will examine the options available to policymakers in determining which party should bear the burden of environmental taxation, and in which circumstances. In doing so it explores the legal, practical and philosophical consequences of selecting alternative parties to bear the burden, and identifies multi-jurisdictional comparative evidence to exemplify and resolve the complexities. The choices of tax methods involving their possible points of charge are discussed to demonstrate the various distributional considerations which must be taken into account when deciding upon a type of tax. A pervasive concern looks at the impact of the imposition of a tax burden on a party, which is frequently relevant if that party is a business. This focus on consequences further requires the chapter to question the wider policy implications of the imposition of a tax and how negative impacts can be mitigated. It is explained that for any environmental tax to be workable the costs of compliance both upon the taxpayer and the tax collector must be minimal. Finally international considerations are taken into account which leads the chapter into considering the commercial realities of imposing higher costs upon one nation, which is a starting point for considering means of protecting the environment whilst remaining competitive – a focal point which is fully analysed in Chapter 8.

Firstly however it is prudent to identify persistent terminology used throughout this chapter.

### 34.1      **TERMINOLOGY**

The following terminology is commonly used to describe the various questions of who bears the burden.

## INCIDENCE

Incidence of tax refers to the party who ultimately pays a tax, which is not necessarily the party who is charged to tax. A tax may be charged upon an employer but if this is passed on to an employee in the form of lower wages, then final incidence falls upon the employee. Similarly a retailer may be responsible for paying a sales tax but the consumer may bear the final incidence with higher purchase prices (such as with VAT). Determining the party who bears final incidence involves considering the economic reality of the relationship between the parties. It is largely dependent upon supply and demand. If demand for a good is inelastic (such as petrol) then the consumer has less choice as to whether to buy the good and therefore pay the tax; the reverse is true where demand is elastic.

## BURDEN

The tax burden refers to the actual change to a taxpayer's net position once all economic adjustments have been made in an economy. Therefore it is the actual net-of-tax change in a person's economic situation.<sup>2</sup>

## TAX BASE

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<sup>2</sup> U.S. Department of the Treasury, *Report of the Department of the Treasury on Integration of the Individual and Corporate Tax Systems: Taxing Business Income Once* (Washington, DC: US. Government Printing Office; 1992) at 146.

The question of what in particular is taxed, such as carbon emissions, is referred to as the 'tax base'. Which tax base is used and the rates at which it is applied can have distributive effects which can make certain groups of society financially better or worse off. Identifying the tax base and the incidence and burden of the tax are distinct but inseparable issues.

## ACCOUNTABILITY

Organisations responsible for taxation should be accountable to those it is taxing, to ensure good governance. This requires transparency of information regarding objectives and how they will be achieved.

## DIRECT AND INDIRECT TAXES

The distinction between these two tax methods involves asking whether a tax paid by one party is directly paid to the Treasury, or whether it is first collected by an intermediary.

Direct taxes are those imposed upon and collected from one party. For instance, a manufacturer may be responsible for paying a corporation tax.

By contrast, indirect taxes are those which are not paid by one party directly to the Treasury, but are collected by an intermediary. For example upon purchasing a good, a consumer will pay a tax as part of the purchase price, but this will be collected by the intermediary retailer

and passed onto the Treasury. Such indirect taxes can themselves be imposed directly or indirectly on goods or services.<sup>3</sup>

## **35. CHOICE OF PRINCIPLE**

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Finding the correct taxpayer to charge to environmental tax involves many questions about the nature of a society, to which a policymaker must respond. This section will explain what is understood by two distinct principles: the beneficiary pays principle, and the polluter pays principle. In doing so their advantages and shortcomings can be established, and crucially it can be explained why the polluter pays principle is the adopted philosophy in environmental law. Once this is understood, it will be possible to apply this to the subject of determining who in practice would and should be responsible for environmental taxation, and what method of tax would most feasibly ensure that final incidence rests with the intended party.

### **35.1 BENEFICIARY PAYS**

The Meade Report explains that when the State is going to make some expenditure and it is obvious who will benefit from it, it is “appropriate to tax those particular members of society who will benefit...”<sup>4</sup> For example this is implemented in local planning rules, where the UK Department for Communities and Local Government requires developers themselves to fund

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<sup>3</sup> The WTO Secretariat made this distinction in WTO Committee on Trade and Environment ‘Taxes and Charges for Environmental Purposes – Border Tax Adjustment’ (1997), Note by the Secretariat, WT/CTE/W/47, 2/5/1997, para 31.

<sup>4</sup> See chapter 1, n.9 at 12.

the assessment and mitigation of the impact of their development plans on the historic environment.<sup>5</sup>

Expenditure for environmental protection poses a more complex problem since it may be the public at large who are the deemed beneficiaries, for instance by not enduring the disastrous consequences of climate change scenarios. Even though the public may invariably benefit, they may not in such cases be responsible as primary contributors (such as by way of a tax per citizen) since this would not differentiate between those responsible and those not responsible for such environmental damage. Furthermore, it would provide no individual incentive to discourage environmentally damaging activities, as the costs of one party's negative activities would be borne by the general public. This would fail to assist in the achievement of environmental policy objectives.

### 35.1.1 CRITICISMS OF BENEFICIARY PAYS DOCTRINE

The following subsections aim to summarise various criticisms of the concept of beneficiary pays from an environmental perspective.

#### 35.1.1.1 GENERAL TAXATION AND VICTIM PAYS

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<sup>5</sup> DCLG, 'Consultation paper on a new Planning Policy Statement 15: Planning for the Historic Environment' (2009) at 40, paragraph 26.  
<<http://www.communities.gov.uk/documents/planningandbuilding/pdf/consultationhistoricpps.pdf>> Accessed 2/11/2009.

Certain environmental damage might constitute a threat to all citizens, such as climate change, meaning prevention would benefit all parties. A beneficiary pays policy would mean that everybody would contribute to its prevention which could have considerable negative distributional effects if such a tax was regressive, driving persons into poverty or further poverty.

Other threats are more localised, such as air pollution. Introducing a general tax on all people within a city, for example, on the basis that all citizens would benefit from lower air pollution, could be unpopular as many may not contribute (such as if the tax was means tested) and some may feel that those responsible for the pollution would be benefiting at the expense of all citizens.

LTAP (Long-range Trans-boundary Air Pollution) can cause environmental problems in a completely different part of the globe to where it begins. It would be extremely difficult to prevent LTAP through a beneficiary pays policy since it could never be determined where the problem would fall. Furthermore, it would seem extremely unjust that the victims of LTAP may have to make payments – such as to subsidise pollution mitigation in a company responsible for causing their harm. Even without victims having to pay taxes to mitigate damage, in many cases the victim already bears the burden of environmental damage through uncompensated losses. For example, the Chernobyl power plant disaster caused a nuclear fall-out in many regions outside of the former USSR. Many years later, sheep farmers in Cumbria suffered damaged lambs due to the fall-out making them unfairly bear the burden of that damage.<sup>6</sup>

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<sup>6</sup> Food Standards Agency (UK), Post-Chernobyl Monitoring and Controls Survey Report (2005) <<http://www.food.gov.uk/multimedia/pdfs/Chernobyluk05.pdf>> Accessed 10/5/2010.

HM Treasury regards it a market failure that environmental externalities can lead to those not responsible for causing the externalities bearing the cost.<sup>7</sup> It points out that it is frequently those on low incomes who suffer from environmental externalities they are not responsible for, and in particular the most adverse affects, such as climate change, can fall on the poorest countries.<sup>8</sup> Thus general income taxes to raise revenue for environmental purposes may not be favoured by the policymaker. Indeed the rationale is no longer justifiable for NICs. NI (National Insurance) was extended to self-employed despite their exclusion from benefiting from the ‘unemployed’ benefits of the insurance.<sup>9</sup>

#### 35.1.1.2 UNCERTAIN BENEFICIARIES

In the case of a woodland species endangered by logging, it is not clear who would directly benefit from their protection other than those who work in local tourism, who may then have to contribute to protecting the species. Evidently beneficiary-pays is not a particularly workable solution, which Meade points out in explaining that frequently “...it is difficult or impossible to attribute different amounts of the benefits of the public expenditure to particular individuals or groups...”<sup>10</sup> In the UK, all taxpayers contribute to the running of the NHS even though some may never use it, but this is justified on the basis that the majority of the population can benefit from it. Further, it is regarded as a lesser evil than a pay-per-use system which could mean some people not being able to afford basic healthcare. One part of its justification is that nobody knows when they will fall ill and there may be nobody to blame for it, whereas in principle if somebody causes harm to another, such as in a road

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<sup>7</sup> HM Treasury, see chapter 4, n.38 at 15, para.4.14.

<sup>8</sup> *Ibid.*, para.4.15.

<sup>9</sup> Self-employed persons pay ‘Class 2’ NICs entitling them to certain benefits but are excluded from paying ‘Class 1’ NICs entitling them to Job-Seeker’s Allowance. <<http://www.hmrc.gov.uk/ni/intro/benefits.htm>> Accessed 10/5/2010.

<sup>10</sup> See chapter 1, n.9 at 12.

traffic accident, then they are liable in tort to pay the cost of their victim's healthcare. The distinguishing factor therefore may be, to some extent, the element of blame.

## 35.2 POLLUTER PAYS PRINCIPLE

As claimed in Chapter 1, this principle requires that those responsible for environmental damage should bear the burden of the tax. This differs from the beneficiary pays principle since the party causing the negative externality would bear the cost regardless of whether it accrues any benefit.

In theory, this seems fair and in line with general principles of tort law and general taxation principles; as such it has been adopted by Governments worldwide as a philosophically and politically favourable form of environmental taxation. The IISD (International Institute for Sustainable Development) found that the polluter-pays principle operating<sup>11</sup> within France's water charging system<sup>12</sup> has "enjoyed both wide acceptance and impressive results."<sup>13</sup> The polluter pays principle has important legal consequences since the payments redefine property rights to pollute from being owned by polluters to being owned by the Government or society as a whole.<sup>14</sup> The difficulty can lie in ascertaining who the polluter is, and, if there are many polluters, which of them should pay.

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<sup>11</sup> France's Decree No. 66/700 of 1966 set out the basis of charges for water pollution.

<sup>12</sup> Pursuant to the French Water Act 1964, No. 64/1245.

<sup>13</sup> 'The System of Water Charges in France', in IISD, *Making Budgets Green: Leading Practices in Taxation and Subsidy Reform* (Canada: IISD, 1994) at Chapter 14, p. 30.

<sup>14</sup> As recognised in Buchanan JM & Tullock G, 'Polluter's Profits and Political Response: Direct Control Versus Taxes' (1975) 65 *Amer. Econ. Rev.* 1, 139-147.

In identifying a polluter or polluting activity, it is necessary for a policymaker to ascertain what sort of tax that polluter will be charged to. Various methods are consequently discussed below.

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## 36. METHODS

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### 36.1 INTRODUCTION

A policymaker should determine from the outset which parties are intended to bear the burden of environmental taxation, in order to design tax methods to facilitate this.<sup>15</sup> This section considers a range of methods determining how a tax can be implemented so that the burden rests with the intended party. It invokes a range of comparative evidence alongside theoretical debate to ascertain whether a type of tax is suited to the anticipated arrangement.

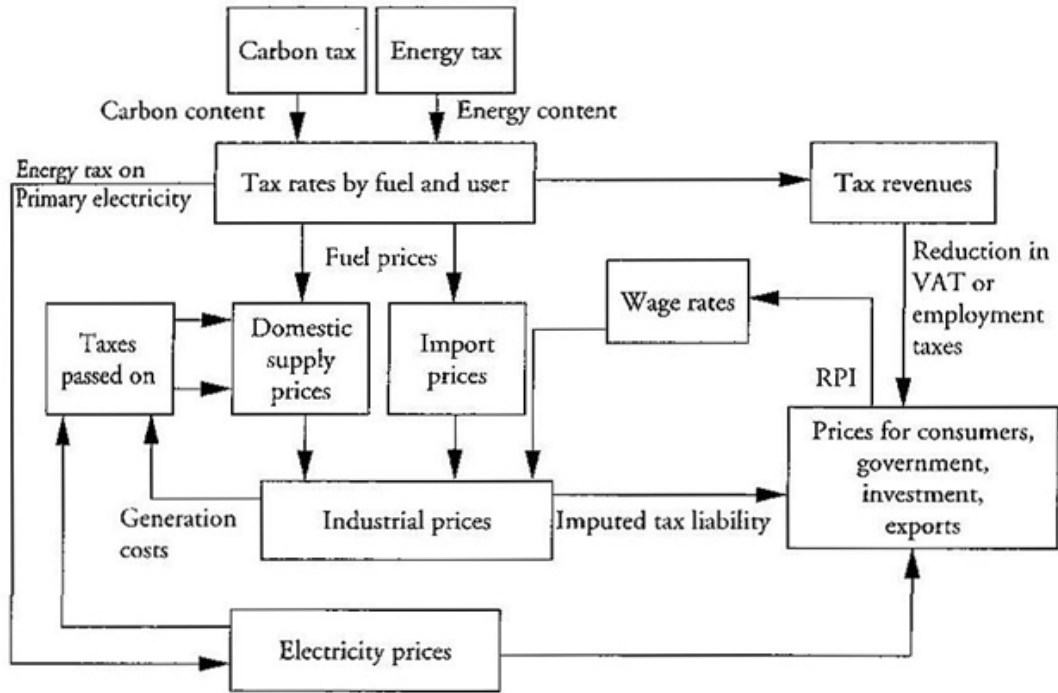
As identified in 34.1 Terminology, the type of tax (or incentive) chosen can impact significantly upon the party bearing the actual tax burden. Much can depend upon the realities of the economic structure in place. A useful example in demonstrating this can be taken from Barker *et al*'s application to a European model as repeated below,<sup>16</sup> showing the varying impacts of carbon and energy taxation upon prices:<sup>17</sup>

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<sup>15</sup> The importance to policy makers in knowing the distributional effects of environmental taxes is stressed in Heutel G and Fullerton D, 'The General Equilibrium Incidence of Environmental Taxes' (2007) 91 J. Public Econ., 571–591, at 572.

<sup>16</sup> Econometric model E3ME - An Energy-Environment-Economy Model of Europe, see <[http://www.camecon.com/ModellingTraining/suite\\_economic\\_models/E3ME.aspx](http://www.camecon.com/ModellingTraining/suite_economic_models/E3ME.aspx)> Accessed 11/5/2010.

<sup>17</sup> Barker *et al*, 'The Macroeconomic Effects of Unilateral Environmental Tax Reforms in Europe, 1995 to 2012' in Cottrell J *et al*, *Critical Issues in Environmental Taxation: International and Comparative Perspectives, Volume VI* (Oxford: OUP, 2009) 73-100, at 77.



### 36.2 CONSUMPTION TAXES AND USER CHARGES

Taxes on the sale (or purchase) of environmentally damaging goods or on the use of similar services can be referred to as consumption taxes.<sup>18</sup> Such taxes increase the cost of purchasing goods harmful to the environment which can reduce the incentive to purchase them. This can work when there is a feasible alternative good or service that can be encouraged as less environmentally damaging (a 'positive substitute'). The positive substitute would not attract the tax and it would be intended that the price difference would alter consumer behaviour so that the positive substitute is preferred over the harmful one. Reducing the market for harmful goods or services which are elastic limits their production and encourages production of positive substitutes. Even if goods themselves are not environmentally damaging, their production process might be, so this method can be suitable

<sup>18</sup> Though 'consumption taxes' are not necessarily related to any environmental issue or negative externality.

in both instances. Another advantage is that the administration costs of implementing consumption taxes can be very low, as it may just be a case of altering its VAT rate. This does, however, pass the cost of the implementation onto the seller who will have to amend their prices.

Consumption taxes on inelastic goods such as oil can bring in a valuable source of revenue and can involve only minimal administration costs.<sup>19</sup> Whether this means they are truly an environmental tax or just a revenue-raiser is another question, considered in Chapter 3.

### 36.3 BROAD TAX BASE: CONSUMPTION

On the question of where to tax, the Hong Kong Government in 2006 opened a public discussion on how to broaden its tax base.<sup>20</sup> It found that taxes on goods and services were the most appropriate method of expanding its tax base for a number of reasons. Part of the justification was that the user-pays principle was considered both fair and difficult to avoid. Further, the broad nature of such taxes means they do not have to be set at a high rate in order to bring in sufficient revenue, and could increase in line with economic growth. It was also the preferred option in terms of competitiveness since it made other taxes unnecessary.<sup>21</sup>

Whilst the Hong Kong Government thought this could be imposed instead of specific eco-taxes, the justification for introducing such broad taxes can be applied to the environmental

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<sup>19</sup> See e.g. OECD, chapter 2, n.39.

<sup>20</sup> Government of the Hong Kong SAR, 'Public Consultation on Tax Reform Final Report' (2007) <<http://www.taxreform.gov.hk/eng/pdf/finalreport.pdf>> Accessed 10/5/2010.

<sup>21</sup> This is further discussed in VanderWolk J, 'Green Tax Measures for Hong Kong: A Policy Proposal' (2010) *Paper Presented at The 2nd International Conference of the Taxation Law Research Program, 29/1/2010* at 2.

question since it shows that consumption taxes on goods and services have advantages over other taxation. However this was politically unpopular in Hong Kong and plans for such taxes were shelved, as the public regarded it as regressive, and would undermine the island's competitiveness for tourist-shoppers.<sup>22</sup> In the case of publicly financed goods and services – such as landfill sites - Leape argues that user charges for publicly financed goods and services are favourable since they are both fair and efficient. He shows that without such charges, there is in fact an implicit public subsidy of the user.<sup>23</sup>

#### 36.4 DISTRIBUTIONAL IMPACT

With a consumption tax any user is initially responsible for paying the tax.<sup>24</sup> Philosophically this is in line with the polluter-pays principle since anybody who decides to damage the environment has to bear the responsibility by paying.<sup>25</sup>

In terms of vehicle energy taxes such as petrol duty, every user has to pay the same amount of tax upon purchase.<sup>26</sup> While this is regressive as it means the wealthy can afford to drive further than the poor, it means that all users pay the same amount for each mile they drive and encourages more people to use public transport. Turner argues that the regressive nature of this consumption tax does not matter, explaining that a “poor person does as much damage to the environment by driving his car as a rich person.”<sup>27</sup> McDaniel<sup>28</sup> argues, however that a

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<sup>22</sup> See n.20 at para.56-7.

<sup>23</sup> Leape J, ‘User Charges – a Reassessment’ in Wales *C et al.*, *Fair Tax: Towards a Modern Tax System* (London: The Smith Institute, 2008).

<sup>24</sup> Though frequently the burden will not be borne by business consumers who can often offset the tax, and instead will be borne by the ultimate consumer who is not a taxable person for business purposes – see ‘Business Exemptions at 36.5.

<sup>25</sup> Though final incidence may not rest with the person paying initially.

<sup>26</sup> There are exceptions such as reduced rates for agriculture vehicles, which are policy exemptions.

<sup>27</sup> Turner GS, see chapter 5, n.30, at 718.

shift from a progressive income based taxation to consumption based taxation, which will have a single rate of tax and therefore be regressive, would mean that upper income individuals would proportionately enjoy substantial tax decreases whilst the poorest would endure the highest increases – and consequently this could mean further tax reform is required to redistribute income from the wealthy to the poor.<sup>29</sup> There are means of compensation in an environmental fiscal reform to prevent counter-productive outcomes for wider policy areas, such as inflicting harm upon low-income groups, as elaborated in 36.9.4.

## 36.5 BUSINESS EXEMPTIONS

### 36.5.1 TAX DESIGN

In reality saying that all consumers pay the same amount of consumption tax and therefore have equal disincentives to pay for a particular product or service is not always true.

Businesses can frequently claim back consumption expenses which are tax-deductible.<sup>30</sup> For example in the EU, VAT expenditure can frequently be claimed back for VAT-registered businesses. A taxable person pays VAT upon a purchase but regards it as an ‘input tax’.

This can be offset against ‘output tax’, the VAT that the taxable person charges its customers.<sup>31</sup> Therefore the businessperson bears only the initial charge, not the burden. This reduces any financial incentive to limit environmentally damaging consumption behaviour and passes the burden of environmental taxation onto private individuals – making the ‘ultimate consumer’ who is not a taxable person bear the burden. Therefore consumption

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<sup>28</sup> McDaniel PR, ‘Taxing Consumption Only: Identifying the Issues’ (1995) 47 *The Tax Executive* 6, 442-4.

<sup>29</sup> *Ibid* at 444.

<sup>30</sup> Comparison of consumption taxes in terms of broadening a tax system are analysed in Schenk A and Oldman O, *Value Added Tax: A Comparative Approach* (New York, CUP, 2007) at 2; 13.

<sup>31</sup> See HMRC, ‘The VAT Guide’ (2002) Notice 700

<[http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?\\_nfpb=true&\\_pageLabel=pageVAT\\_ShowContent&propertyType=document&columns=1&id=HMCE\\_CL\\_001596#P865\\_71819](http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageVAT_ShowContent&propertyType=document&columns=1&id=HMCE_CL_001596#P865_71819)>  
Accessed 10/5/2010.

taxes must be implemented with consideration to the wider tax framework to prevent this distributive inequity.

Prior to 2002, UK businesses had a tax incentive to do extra business miles in their company cars.<sup>32</sup> Drivers reaching a higher threshold of business miles could claim a larger tax discount, which was estimated to cause up to 300 million extra business miles being driven annually.<sup>33</sup> This was abolished in 2002 when the charge became linked with the car's CO<sub>2</sub> emissions and there became no incentive to do more business miles.<sup>34</sup> For company cars doing business miles, the statutory rate from 2002/3 onwards allows GBP £0.40 for the first 10,000 business miles and thereafter a lower rate of GBP £0.25.<sup>35</sup> Such measures have been deemed a success as they have led to both a significant reduction in emissions and lower tax revenues, demonstrating that the tax system has been effective in incentivising lower mileages of company cars.<sup>36</sup> This reduces the extent to which businesses are exempt from bearing the tax burden, whilst protecting competitiveness by allowing a 'necessary' degree of travel.

Fullerton *et al* note that various EU Member States have lower rates of tax for diesel than petrol. The suggestion is that this may be designed as a partial exemption for business taxpayers since diesel engines are commonly used in commercial vehicles.<sup>37</sup> Though the

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<sup>32</sup> HM Treasury, 'Protecting the Environment: Reform of Company Car Taxation' (2000) <[http://www.hm-treasury.gov.uk/bud\\_bud00\\_pressrev6.htm](http://www.hm-treasury.gov.uk/bud_bud00_pressrev6.htm)> Accessed 10/5/2010.

<sup>33</sup> *Ibid.*

<sup>34</sup> <<http://archive.treasury.gov.uk/financebill/1999/c44.html>> Accessed 10/5/2010.

<sup>35</sup> See HMRC guidance at <<http://www.hmrc.gov.uk/manuals/eimanual/EIM31240.htm>> Accessed 10/5/2010.

<sup>36</sup> HMRC's 2006 report suggested the environmental impact was equivalent to 0.5% of CO<sub>2</sub> emissions from all road transport; see HMRC, 'Report on the Evaluation of the Company Car Tax Reform: Stage 2' (2006) Appendix II <<http://www.hmrc.gov.uk/budget2006/company-car-evaluation.pdf>> Accessed 10/5/2010. See also HMRC's 2008 report for tax revenue figures and further improvements in HMRC, 'Report on the Interaction between Company Cars, Employee Car Ownership Scheme Cars and Mileage Allowance Payments' (2008) <<http://www.hmrc.gov.uk/pbr2008/comp-car-tax-805.pdf>> Accessed 10/5/2010.

<sup>37</sup> Fullerton, D, Leicester, A and Smith, S, 'Environmental Taxes' in IFS, *Dimensions of Tax Design: The Mirrlees Review* (Oxford: OUP; 2010) at 484.

lower rates are also available to non-commercial diesel vehicles, potentially leading to a distorting situation of inadvertently encouraging non-commercial consumption of diesel vehicles,<sup>38</sup> this reality demonstrates how both tax rates and tax types can be manipulated to partially reduce the tax burden for business taxpayers.

Recognising where final incidence falls in a given situation can assist a policymaker in designing a tax to cause private individuals to bear the burden without negative public opposition which could hinder the effectiveness of the tax. Loewenstein *et al* recognise the psychology where many taxpayers are uncertain as to where final incidence of some taxes will fall and may assume it is not them.<sup>39</sup> Since, for example, a corporate taxpayer can be nominally responsible for payment of a tax, the public may assume that they have been exempted from the burden (such as with CCL) whereas in reality the effects of elasticity and relationships (such as between retailer and consumer) cause final incidence to rest with non-corporate taxpayers. Such a method is available to the policymaker, though may not always work in practice if the public recognise the extent of such ‘stealth taxes’.<sup>40</sup>

### 36.5.2

### CONCLUSION

The decisions as to both whether, and how far, a policymaker intends business taxpayers to be included as burden-bearing parties in an environmental programme, can dictate the type of tax utilised. A policymaker may have good reasons for wishing to reduce the extent to which business taxpayers bear a tax burden thereby protecting the competitiveness and prosperity of

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<sup>38</sup> A point recognised in Fullerton *et al*, *Ibid* at 484.

<sup>39</sup> Loewenstein G, Small DA, & Strad J, ‘Statistical, Identifiable, and Iconic Victims’, in McCaffery EJ & Slemrod J, *Behavioural Public Finance* (New York: Russell Sage Foundation Press, 2006), pp. 32–46, at 38-39.

<sup>40</sup> Macnaughton A, Matthews TA and Pittman J, ‘Stealth Tax Rates’: Effective Versus Statutory Personal Marginal Tax Rates’ (1998) 46 *Can.Tax.J.* 5, 1029-1066, at 1031-1033. See also Rupert TJ and Fischer C, ‘An Empirical Investigation of Taxpayer Awareness of Marginal Tax Rates’ (1995) 17, supplement, *Journal of the American Taxation Association* 36-59.

the business economy. It is shown to be possible to provide an incentive for business taxpayers to reduce their environmental impact. However, a policymaker may also design a tax which inadvertently exempts businesses, even though it may have been intended that businesses would share the burden. If a policymaker wishes business taxpayers to bear some or the entire burden, then taxes such as VAT should be avoided and instead taxes such as excise duties can be used. If not, then it may be private individuals who end up bearing a disproportionate burden of an environmental programme.

### 36.6 ELASTICITY CONSIDERATIONS AND INCIDENCE

If a product or service is inelastic and is subject to a consumption tax, final incidence tends to fall upon the consumer in the form of higher purchase prices. In passing on the cost, the producer has no incentive to alter any production techniques, and the status quo can lead to potential environmental harm.

If the harm takes place during production, a consumption tax on an inelastic good or service (representing the harm caused during production) may therefore be ineffective in reducing the damage. The only benefit will be to raise revenue (whether or not earmarked for environmental projects) at the expense of consumers. Even if the producer is charged to tax to represent the harm caused during production, the additional cost is often passed on and final incidence rests with the consumer. Indeed Turner *et al* argue that the decision of where to place the tax is not a straightforward issue of distributional fairness since, particularly if there is a monopoly, “it is households which ultimately bear the burden of the tax, regardless

of who makes the tax payments...”<sup>41</sup> The OECD estimate that most environmentally-related taxes in reality are sales taxes related to emissions or pollutions.<sup>42</sup> As such the burden can frequently fall on the consumer which incites distributive concerns.

Turner *et al*'s statement is not invariably true. Consumers tend to bear the highest burden when there is high price elasticity of supply and low price elasticity of demand. Where there is low price elasticity of supply and high price elasticity of demand then it is producers who bear the tax burden, potentially via a reduced return on their investment. Incidence of a tax on production can also fall partially on production workers who may receive lower wages.<sup>43</sup>

## 36.7 SUBSIDIES

### 36.7.1 INTRODUCTION

Tax subsidies can provide considerable incentives to private individuals or enterprises to become more environmentally efficient. This can be the most efficient means of achieving environmental goals depending on the circumstances. Notionally, however, it is the Treasury who loses revenue from doing so, and therefore means that the burden for environmental protection falls upon the taxpayer. On the other hand, if environmental objectives can be achieved through private means rather than Government spending then this does not cost the taxpayer. In essence, tax subsidies can be a more efficient expenditure for the taxpayer than direct Government spending, if the environmental objective can be achieved at a lower cost through private enterprise via tax incentives.

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<sup>41</sup> Turner *et al*, see chapter 2, n.48 at 123.

<sup>42</sup> See chapter 2, n.52, at 18, para. 39.

<sup>43</sup> See EC, *Commission Staff Working Document accompanying the Green Paper on Market-Based Instruments for Environment and related Policy Purposes* (2007) {SEC(2007)388} at 3.

The EU makes considerable use of tax exemptions and deferrals as a form of aid to various sectors. Between 2002-2004, tax exemptions made up over 32% of EU aid instruments for the manufacturing and services sectors, with tax deferrals adding another 3%.<sup>44</sup> State aid is discouraged by the EU by virtue of Article 92(1), and the EU generally<sup>45</sup> discourages use of State aid to align domestic companies with Community standards.<sup>46</sup> This is in line with the polluter-pays principle since it goes against the idea that the public at large should be made to bear the cost for achieving private companies' environmental standards.

However not all measures to protect the environment are classified by the EU as State aid,<sup>47</sup> including tax measures designed to promote environmental objectives which is classed as a 'general measure'.<sup>48</sup> Thus around 80% of environmental and energy saving aid to businesses was granted by EU Member States in 2004 through tax exemptions.<sup>49</sup> The justification given is that "such exemptions are only allowed where the taxes themselves are intended to make a significant contribution to protecting the environment and the exemptions should not undermine the general objectives pursued."<sup>50</sup>

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<sup>44</sup> EC, *State Aid Scoreboard* (Brussels: Commission of the European Communities, 2005) COM(2005)624, at 26, Graph 2.

<sup>45</sup> Allowances are made for SMEs who the EC regard may have 'special difficulties' in achieving environmental standards: Regulation (EC) No 70/2001.

<sup>46</sup> EC, 'Community Guidelines on State Aid for Environmental Protection' (2001) OJ C/37 of 03.02.2001.

<sup>47</sup> EC, see n.44, at 37, para. 2.1.5.

<sup>48</sup> Commission Notice on the Application of the State Aid Rules to Measures relating to Direct Business Taxation (98/C 384/03), Rule 13.

<sup>49</sup> EC, see n.44, at 39.

<sup>50</sup> *Ibid*, at 39.

This guideline, applied generally, could serve the environmental interest substantially since it would prevent any aid being given to a company which would cancel out the incentive to avoid environmental taxation. Furthermore it would require a high onus of justification; it would need to be shown that the environment could benefit significantly through the tax relief. Making provisions less onerous than this would make it difficult to justify a cost to the taxpayer. The World Bank supports this and warns against using tax subsidies on energy suppliers which would undermine their incentive to produce electricity in an efficient manner.<sup>51</sup> Otherwise it would be inequitable for taxpayers to be required to fund an activity from which they will not benefit.<sup>52</sup>

### 36.7.3 PURPOSEFUL DISTRIBUTION

McDaniel considers the equity of tax subsidies and argues that for a tax subsidy of this sort to be equitable, it must be fair to distribute it, which involves identifying whether there is an externality of public importance which the tax expenditure can correct.<sup>53</sup> It must also be distributed fairly among deserving recipients which requires ensuring that all of the benefit reaches the desired recipients. This reasserts the principle that the public must benefit from anything they subsidise and consequently they must receive value for money.

### 36.7.4 CONTRADICTORY SUBSIDIES

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<sup>51</sup> The World Bank, see chapter 4, n.39 at 95.

<sup>52</sup> Research by the GSI (Global Subsidies Initiative) of the ISSD calls for increased transparency in order to identify and remove subsidies for fossil fuel producers which would cancel out incentives for renewable energy: Laan T, 'Untold Billions: Fossil Fuel Subsidies, their Impacts, and the path to Reform' (2010) <[http://www.globalsubsidies.org/files/assets/transparency\\_ffs.pdf](http://www.globalsubsidies.org/files/assets/transparency_ffs.pdf)> Accessed 10/5/2010.

<sup>53</sup> McDaniel PR, 'Tax and Spend' (2002) Unpublished manuscript cited in Mann R, 'Waiting to Exhale: Global Warming and Tax Policy' (2002) 51 Am.U.L.Rev. 1135-1222, at 1206, fn. 503.

The USA has had differing experiences of tax subsidies in this respect, where they have been used as incentives for the domestic energy policy. The US Energy Policy Act 1992<sup>54</sup> provides production tax credits for qualifying facilities to produce renewable electricity, in order to subsidise and consequently reduce the price of renewable electricity. This is in the public's financial and environmental interest and as such it can be argued that such tax expenditure can be justified given the guidelines above.

Mann<sup>55</sup> demonstrates however that the US revenue code allows considerable deductions for investments in oil and gas to the point that such investments can “yield greater proportionate tax benefits than investment in any other type of property.”<sup>56</sup> This treatment may be regarded as of national importance as it has benefits for energy independence, employment, and can work to minimise energy prices for consumers. Yet it undermines environmental efforts by favouring non-renewable energy as an investment as well as reducing the cost of non-renewable energy which distorts efforts to reduce the costs of renewable energy.<sup>57</sup>

#### 36.7.5

#### SUMMARY

As shown, subsidies can work as economically-efficient tax expenditures to achieve environmental policy objectives. However, since it means that the public bear the tax burden, it is crucial that subsidies are directed to where they can have most effect. This means

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<sup>54</sup> PL 102-486.

<sup>55</sup> Mann, see n.53.

<sup>56</sup> *Ibid*, at 1164-5.

<sup>57</sup> GSI research argues for the removal of subsidies for non-renewable energy subsidies, citing grounds of economic, social and environmental interest. See eg. Ellis J, ‘The Effects of Fossil-Fuel Subsidy Reform: A Review of Modelling and Empirical Studies’ (IISD, 2010) <[http://www.globalsubsidies.org/files/assets/effects\\_ffs.pdf](http://www.globalsubsidies.org/files/assets/effects_ffs.pdf)> Accessed 11/5/2010.

ensuring that non-environmental subsidies do not conflict with the environmental purpose of the tax expenditure, and it targets those recipients who will put it into use beneficial to the environmental interest.

## 36.8 TAXES ON INDUSTRY

### 36.8.1 INTRODUCTION

As has been mentioned, taxes on producers of goods need to be targeted so that they have the desired impact in making production methods more efficient rather than simply passing the additional cost onto the consumer. Equally it is important that the taxes provide the correct incentive for producers to minimise their tax liability by meeting environmental objectives. In this way the tax system does not inflict harm on industry by over-burdening it, and can actually benefit it by making it more efficient and rewarding industries which are proactive in reducing their negative environmental impact.

### 36.8.2 VOLUNTARY AGREEMENTS

Various methods have been employed to agree voluntary agreements to achieve environmental policy. A Swiss CO<sub>2</sub> law<sup>58</sup> imposed a tax on large-scale polluters but provided an exemption for those entering an undertaking with the authorities to reach negotiated targets.<sup>59</sup> In the UK, energy intensive businesses can<sup>60</sup> pay a reduced rate<sup>61</sup> of

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<sup>58</sup> Federal Act on the Reduction of CO<sub>2</sub> Emissions (1999) (Bundesgesetz vom 8. Oktober 1999 über die Reduktion der CO<sub>2</sub>-Emissionen.

<sup>59</sup> Pursuant to Article 9.

<sup>60</sup> Pursuant to FA 2000, para.44, Schedule 6.

<sup>61</sup> 20%.

CCL if they make a supply to a facility covered by a Climate Change Agreement.<sup>62</sup> The EU's Energy Taxation Directive recognises the use of voluntary agreements for tax reduction as legitimate, in order to gradually introduce environmental taxes.<sup>63</sup>

The opportunity to make a voluntary agreement provides a significant incentive and essentially works similarly to a command-and-control system with the threat of financial penalties, though implies greater freedom of choice. If the correct level of taxation is not threatened, then it could mean the cost of implementing the improved environmental standards is lower than the cost of the tax. If industry is prepared to bear the burden of the tax, this indicates industry has not fully accounted for its environmental impact. Generally, however, environmental taxes are unpopular with businesses who are keen to avoid them, as argued by Snape.<sup>64</sup>

With the threat of tax set at a level which makes industry achieve the voluntary agreement's standards, this means that the method ensures industry bears the cost of achieving the environmental objective. Nevertheless, should the voluntary targets be achieved there are no incentives in this method to go beyond what is required by the targets.<sup>65</sup> Incentives beyond the voluntary targets such as further tax deductions could provide a significant incentive to meet environmental goals.

### 36.8.3

### CHOICE OF TAXABLE PART OF PRODUCTION PROCESS

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<sup>62</sup> Given that the Agreement has been certified by DEFRA.

<sup>63</sup> Council Directive 2003/96/EC of 27/10/2003 restructuring the Community framework for the taxation of energy products and electricity, OJ L/283, 31/10/2003 P. 0051 – 0070. Art.29 permits exemptions for businesses entering into agreements to significantly enhance environmental protection and energy efficiency deserve attention.

<sup>64</sup> Snape, see chapter 6, n.65, at 543.

<sup>65</sup> This is recognised by the OECD, see chapter 2, n.39 at 41-42.

What part of the production process to tax depends on the type of industry involved and polluters tend to disagree that their part of the process should bear any burden. The World Bank for examples discourages (particularly in the developing World) the burden of energy price subsidies falling on generators of electricity since it could have wider impacts, such as hindering a reliable source of energy.<sup>66</sup> A Canadian Government report advises that abatement opportunities at the end of the production process are limited which reduces the scope for 'end-of-pipe' taxes.<sup>67</sup> An EU Directive<sup>68</sup> requires Member States to exempt from tax, electricity and energy products used to produce electricity, and electricity used to maintain the ability to produce electricity.<sup>69</sup> This has been ruled to have direct effect in national courts, and shows that the EU are prepared to limit the scope of taxation where it is in the interests of the community.<sup>70</sup> Placing taxes on the production of electricity is deemed to produce greater social ills by providing a disincentive to generate electricity which is regarded as a vital social utility, and would only serve to increase consumer energy prices. Taxes are instead focused on reducing consumption rather than reducing generation, so as to affect the demand side rather than the supply side in order to avoid electricity shortages. Consequently the choice of the taxable part of a production process, and therefore who bears the burden, will differ depending upon the circumstances in question.

## 36.9 WIDER POLICY ISSUES

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<sup>66</sup> The World Bank, see chapter 4, n.39, at 95.

<sup>67</sup> Government of Canada, *Economic Instruments for Environmental Protection: Discussion Paper* (Ottawa: Supply and Services Canada, 1992) at 57.

<sup>68</sup> Council Directive 2003/96, Art. 14(1)(a) on taxation of energy products and electricity (OJ L283/51)

<sup>69</sup> See comment by Edwards V, 'Case Comment: Taxation' (2009) 21(1) JEL 157.

<sup>70</sup> Case C-226/07 *Flughafen Köln/Bonn GmbH v Hauptzollamt Köln* (judgment of 17/7/2008) (ECJ (Third Chamber)) (OJ C 155, 7.7.2007).

Political sensitivities can prevent entire groups or sectors from being charged to tax which means they are not required to contribute to environmental protection. The CCL in Britain applied only to business energy, thereby removing domestic energy users from the requirement to contribute. Furthermore, by taxing business energy rather than carbon emissions, the CCL avoided bringing the coal industry into charge as this would have been politically unpopular for the Government at the time.<sup>71</sup> Thus parts of the decision on who bears the tax burden of environmental reform can depend not only on the economic realities of a business but on the political circumstances related to an incumbent Government.

Other exemptions are designed to protect or encourage environmental interests as well as the economy of the industry to which they are related. For example, the Hydrocarbon Oil Duties Act 1979 imposes fuel duty on different types of oil, and the rates are regularly increased which impacts upon both industry and consumers.<sup>72</sup> However, repayments are allowed for certain industries which policymakers want to encourage if it serves an environmental interest. Horticultural producers in the UK are able to claim repayment<sup>73</sup> of the excise duty for the heavy oil used through production, subject to set conditions, which encourages production in an industry that may otherwise not be able to survive.<sup>74</sup> The rates of available repayment were increased in 2007 to reflect the increased duties, showing that it is not merely

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<sup>71</sup> Dresner *et al*, see chapter 3, n.32 at 933.

<sup>72</sup> FA 2007, s.10 increased the rate of fuel duty from 1/10/2007.

<sup>73</sup> By virtue of Hydrocarbon Oil Duties Act 1979, s.17 (as amended).

<sup>74</sup> The Hydrocarbon Oil (Amendment) Regulations 1981 (SI 1981/1134) lays down conditions governing repayment.

a revenue-raising measure.<sup>75</sup> This, however, means that other taxpayers who cannot claim this allowance must bear the tax burden.

Nevertheless, should the horticultural industry fold then long-distance transport may be required to get substituted produce to the consumer. This justifies the tax subsidies to this industry both economically and environmentally. Economically it is in the national interest to protect such production which reduces the need to import goods and produces domestic income. Environmentally, the result of increased long-haul transport would be damaging - potentially to a much greater extent than the use of heavy oil in horticultural production. The withdrawal of this subsidy would not mean a reduction in net heavy oil in horticultural production, since there is no guarantee that the products will be produced in a country without such subsidies. This mindfulness towards international competitiveness and the consideration of the global net environmental harm caused by subsidies or taxes is returned to in Chapter 8. However the point has been emphasised that the policymaker may need to consider such exemptions due to wider policy implications.

### 36.9.3

### WELFARE AND DISTRIBUTIVE CONCERNS

The concept of revenue recycling has been analysed in Chapter 4 and it is accepted that it is important to change social behaviour towards the environment without increasing poverty. Therefore taxes can be targeted towards particular groups in order that those on the lowest incomes do not bear the majority burden of environmental taxation. Indeed, Baranzini *et al*

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<sup>75</sup> FA 2007, s.10 increased the rates of rebate.

suggest that revenue recycling can be used to cancel out any regressive impacts on environmental taxes.<sup>76</sup>

The type of tax used will vary depending on the economic and social circumstances of each particular country. In the Republic of Turkey, for example, taxes on vehicle fuel have not been considered to be regressive and have actually resulted in progressive income distribution. This is because in Turkey it is the wealthier households who generally own vehicles and not the poor, so the wealthy end up paying more in tax than the poor which means a progressive sharing of the burden.<sup>77</sup> Generally however environmental taxes are regarded as being directly regressive on income distribution, particularly with energy taxes.<sup>78</sup> Different types of goods or services also have varying distributional impacts. For example passenger taxes on public transport such as bus tickets are regressive while passenger transport taxes such as on air travel or fuel duty are progressive, because of the incomes of those who use each type.<sup>79</sup>

#### 36.9.4 COMPENSATORY MEASURES

##### 36.9.4.1 TAX-AND-COMPENSATION PACKAGES

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<sup>76</sup> Baranzini *et al*, see chapter 4, n.15 at 405.

<sup>77</sup> OECD, 'An OECD Framework for Effective and Efficient Environmental Policies: Overview' (2008) [ENV/EPOC(2008)6/FINAL] at 4.

<sup>78</sup> OECD, 'Policy Brief: The Political Economy of Environmentally Related Taxes' (2007) at 4, <[www.oecd.org/env/taxes/politicaconomy/](http://www.oecd.org/env/taxes/politicaconomy/)> Accessed 11/5/2010.

<sup>79</sup> EC, see n.43 at 3. It should also be noted however that much food is flown into the UK because it can be efficient to fill the aircraft holds. The air passengers effectively subsidise the cost of importing food which could otherwise be more expensive, having regressive effects on those with low incomes.

Consequently compensatory measures may be used to rectify these distributional concerns, and the OECD advise that this should be done through income compensation (through the social security or income tax system) rather than through exemptions from tax, so as to prevent the effectiveness of the tax being diminished.<sup>80</sup> This is not, however, how the British Government sought to assist elderly citizens with fuel payments when direct ‘Winter Fuel Payments’ were introduced for old-age pensioners.<sup>81</sup> However, this was not introduced in response to an increased energy tax, but rather to increased energy prices and to prevent energy poverty causing unnecessary deaths among the elderly. It was also done in a non-means tested manner so that anybody of State Pension age could claim it regardless of personal income or wealth.

The Fabian Society, the UK Government’s oldest policy think-tank, believe that moving to zero-carbon energy sources will increase energy prices, at least in the short term, and consequently advise the Government to protect the poorest consumers in order to achieve the desired objective.<sup>82</sup> Consequently, if this policy is to be used generally, it is important that compensation is provided in a way which does not undermine compliance with environmental objectives. The Meade Report criticises the combined use of income tax, NICs and social benefits as being a complicated and “uncoordinated system of tax and subsidy on personal incomes...not fully effective in the relief of poverty.”<sup>83</sup> Coordinated compensation policies working within wider reform of the tax system are therefore necessary to avoid further distortion and over-complication. They can also be more politically acceptable than simply imposing a new eco-tax, as advocated by Ligthart, who proposes the

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<sup>80</sup> OECD, see n.78 at 4.

<sup>81</sup> See The Pensions Service, ‘Winter Fuel Payment’ <<http://www.thepensionservice.gov.uk/winterfuel/home.asp>> Accessed 11/5/2010.

<sup>82</sup> <<http://fabians.org.uk/index.php/20090108756/Publications/Publications-News/cheap-energy-harman-independent.html>> Accessed 11/5/2010.

<sup>83</sup> See chapter 1, n.9 at 86.

solution for policymakers can be to market environmental tax-and-compensation 'package deals'.<sup>84</sup> Again such compensation methods mean that the burden is a progressive one based on consumption.

#### 36.9.4.2

#### LEVEL OF SACRIFICES OF LOW INCOME GROUPS

Chapter 5 emphasises the importance of finding the correct rate of taxation so as not to intensify poverty and penalise the poor. When considering compensatory measures it is necessary also to determine how to avoid undesirable side-effects related to low-income groups. As eluded, if low-income groups are protected from environmental taxation, they may equally not suffer the same incentive to modify their environmental behaviour. This would increase the burden on higher-income groups, who may themselves have to make sacrifices (such as driving less) whilst low-income groups do not. It is necessary therefore to consider the level of disposable income available to low-income groups, and what sacrifices individuals would need to make if they are to share a proportion of the burden. For instance if a low-income group was required to pay an environmental tax, it would be appropriate to identify what type of sacrifices the individuals would need to make. If the disposable incomes were so low that essential consumption goods such as food would need to be sacrificed, then some sort of tax protection or compensation may be required to avoid further poverty. However, if the disposable incomes allowed the consumption of luxury goods such as cigarettes, then the policymaker would have more flexibility in determining whether to allow any sort of compensatory package, as low-income individuals would have a choice of whether to sacrifice luxury goods or essential goods. Again, this assumes that the policymaker considers welfare objectives as well as environmental ones.

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<sup>84</sup> Ligthart, see chapter 4, n.19 at 28.

The danger of increasing the 'poverty trap' exists through compensatory measures to low-income groups as part of package where, for example, the unemployed are compensated due to rising levels of environmental taxation. For example a welfare system may already offer an incentive to the unemployed to seek employment. However, if levels of compensation for an environmental tax to the unemployed were set too high, this may alleviate the incentive to seek employment – as it may become less economically worthwhile working than remaining unemployed and claiming the compensation. Any salary would necessarily need to be larger than the compensation available for the unemployed. Therefore prior to introducing a package of tax and compensation, a policymaker should evaluate how rates would affect existing incentives and various income groups.

A further pertinent issue is that it may be entirely fruitless to impose environmental taxes on those who can least afford it. Taxes on the poorest in society may simply be unaffordable, particularly in deprived regions of developing countries. An income tax for example may be simply ignored and any attempts to enforce compliance could only lead to the criminalisation of groups already below the poverty line, thus increasing the burden on the State to fund prison places for those who were never going to be able to afford the burden. Consumption taxes on items essential for basic needs could leave people unable to afford other essentials such as food, housing or heating, leading to increased poverty and death and thus reversing efforts aimed at assisting such groups. For those in any society who are dependent on State

benefits, some environmental taxes would be counter-productive if they led not to people changing their environmental behaviour but to increased poverty. Indeed, it could only mean that State benefits have to increase in order to offset the threat of poverty which would result in the State having to raise revenue by taxing other groups.

An example of this type of change can be given in the UK's income tax code. Prior to 2008 there were three income tax bands: the 'lower rate' of 10%, the 'basic rate' of 22% and the 'higher rate' of 40%.<sup>85</sup> However, the Finance Act 2008 abolished the 10% rate, leaving only a basic rate of 20% and a higher rate of 40%.<sup>86</sup> Since most taxpayers were paying the basic rate previously, the decision was popular amongst the electorate as it was thought to represent a 2% reduction in income tax.<sup>87</sup> Yet the decision meant that millions of people on the lowest incomes who previously paid 10% tax then had to pay double that, hurting them the most.<sup>88</sup> Due to political revolt within the Government's own party, HM Treasury then had to compensate those who were losing out from the new rates by increasing the personal allowance on anybody not subject to the higher rate<sup>89</sup> and providing lump-sum payments in affected taxpayers' pre-amendment wages. This effectively was a tax allowance worth GBP £120 to most – but not all – of those who had lost out, and meant HM Treasury had to borrow an additional GBP £2.7 billion to fund the change.<sup>90</sup> Hence the policymaker is advised that welfare considerations should always be made before such severe changes are carried out, as the effects can result in the need for further embarrassing changes to the tax code.

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<sup>85</sup> See <<http://www.hmrc.gov.uk/rates/it.htm>> Accessed 11/5/2010.

<sup>86</sup> FA 2008, s.1.

<sup>87</sup> Described as "the lowest for 75 years." 'Gord help us' *The Sun* 22/3/2007  
<[http://www.thesun.co.uk/sol/homepage/news/sun\\_says/article6152.ece](http://www.thesun.co.uk/sol/homepage/news/sun_says/article6152.ece)> Accessed 1/11/2009.

<sup>88</sup> Thought to be 5.3 million people: 'Darling unveils £120-a-year tax giveaway' *Daily Mail, This is Money* 14/5/2008, <[http://www.thisismoney.co.uk/news/article.html?in\\_article\\_id=441545&in\\_page\\_id=2](http://www.thisismoney.co.uk/news/article.html?in_article_id=441545&in_page_id=2)> Accessed 11/3/2010.

<sup>89</sup> FA 2008, s.2.

<sup>90</sup> 'Gordon Brown pays £2.7 billion to end 10p tax crisis' *The Times* 14/5/2008  
<<http://www.timesonline.co.uk/tol/news/politics/article3927280.ece>> Accessed 11/3/2010.

Much of this points to taxes being focused instead on those who can afford it, though this can lead to another form of injustice. Those who have a job are then put under increased pressure to contribute, further risking the poverty trap. Increased taxes can also disincentivise those who have greater mobility from working (or operating in the case of a company) within the jurisdiction, leading to legal persons (often with the highest incomes) leaving the jurisdiction to work and pay taxes abroad. Indeed, in the UK in 2009, only 48% of the adult population had a job and it was predicted that, following the recession and rising numbers of pensioners, the burden of taxation would continue falling on fewer taxpayers<sup>91</sup> in a context where the overall tax burden had risen by 10% in 12 years.<sup>92</sup> Thus the problem of deciding where the burden should fall within the jurisdiction arises for the policymaker who must scrutinise the welfare situation of the economy before any decision is made, as well as the effects on workers at large.

## 36.10 ADMINISTRATION AND COMPLIANCE COSTS

### 36.10.1 INTRODUCTION

An additional burden for a taxpayer will be any costs of ensuring they have complied with and paid a tax. If a tax system is complex then a specialist tax advisor may be required to ensure compliance. Attempts at compliance may also lead to disputes or litigation with the

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<sup>91</sup> 'Weight of the national debt will fall on fewer shoulders' *The Times* 14/4/2009.

<sup>92</sup> 'Budget 2009: Family tax up by 10pc since Labour came to power in 1997 and it could get worse' *The Telegraph* 16/4/2009 <<http://www.telegraph.co.uk/finance/financetopics/budget/5162430/Budget-2009-Family-tax-up-by-10pc-since-Labour-came-to-power-in-1997-and-it-could-get-worse.html>> Accessed 11/5/2010.

tax authorities, requiring specialist professional advice or representation. Any such costs would lead to compliance costs being considered high. These costs, whilst indirect, add to the overall burden of tax and can be seen to make the system less economically efficient. This section aims to identify how compliance and enforcement costs can be minimised for private parties and the Treasury.

### 36.10.2

### DISTRIBUTION OF COMPLIANCE COSTS

A nation's Treasury would generally prefer such costs to fall on the taxpayer than on the Treasury itself. If enforcement of a tax is expensive, then it is regarded as administratively inefficient.<sup>93</sup> Further, if the tax distorts the market by causing undesirable market conditions, causing additional indirect economic costs then it can be regarded as fiscally inefficient.<sup>94</sup> Therefore there are private, social and mixed costs associated with various types of taxes, and these costs vary depending upon who the taxpayer is and the rate of tax payable. Even if private costs of compliance are tax deductible this is of net cost to the Treasury and therefore makes the general taxpayer bear the burden.

Nevertheless, the Meade Report illustrates that private compliance costs can be significantly higher than any administration costs<sup>95</sup> and be regressive and resented by taxpayers who can

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<sup>93</sup> The administrative costs of compliance with environmental taxes can be compared with parallel costs for non-environmental taxation to determine whether they are proportionately efficient. Research into environmental tax reform in the Czech Republic found that an average 1.3% proportion of tax revenues in administrative costs was economical. Pavel J and Vitek L, 'Administrative Costs of the Czech System of Environmental Charges' in Cottrell J *et al*, see chapter 7, n.17 at pp.258-9.

<sup>94</sup> On Compliance Theory see Curry PA, Hill C, and Parisi P, 'Creating Failures in the Market for Tax Planning' (2007) 26 Va. Tax Rev, at 943.

<sup>95</sup> See chapter 1, n.9 at 20.

go to considerable effort and expense to prove minimal tax liability.<sup>96</sup> Further, administration costs are open to public scrutiny and easily definable since they are met from public funds whereas compliance costs are non-transparent and difficult to quantify since they fall on private parties.<sup>97</sup>

### 36.10.3

### LEGAL CERTAINTY

Clear legislation can serve to minimise compliance costs by making it less expensive for tax returns to be completed. Certainty created by clear legislation means private taxpayers do not have to risk costs through litigation, nor do tax authorities need to spend public money enforcing their interpretation of the law.<sup>98</sup> The Meade Report urges that a tax system should make it “clear to the taxpayer what is and what is not taxable”,<sup>99</sup> and should be coherent and precise.<sup>100</sup> Further it advises for certainty as to the amount that is payable pursuant to a tax.<sup>101</sup>

The limited resources available to the tax authorities are more justifiably spent on enforcing a high level of compliance with the tax than in funding litigation or investigations caused by ambiguous or imprecise legislation. Higher compliance means a wider tax base. This is more equitable per taxpayer because more parties share the burden as opposed to ‘honest’ taxpayers taking responsibility for dishonest parties. Glachant recognises that “...in reality

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<sup>96</sup> *Ibid* at 21.

<sup>97</sup> *Ibid*.

<sup>98</sup> See chapter 2, n.23.

<sup>99</sup> See chapter 1, n.9 at 18.

<sup>100</sup> *Ibid*.

<sup>101</sup> *Ibid* at 19.

full compliance is far from being frequent due to limited administrative resources...”<sup>102</sup> This makes clear drafting crucial.<sup>103</sup>

#### 36.10.4

#### UTILISING THE EXISTING TAX CODE

To minimise both types of costs, and particularly administration costs, there is a case for ascertaining the feasibility of incorporating the new tax into the present tax code. Inclusions within the VAT code, while not costless, would mean there is an existing and accepted system within which the tax can operate. The Irish plastic bag tax is a good example of this since it enjoyed low administration costs both initially and annually.<sup>104</sup> Further, it was not privately onerous since retailers were able to incorporate their collection and reporting of revenue within their pre-existing VAT collection procedures.<sup>105</sup>

The UK altered an existing functioning system of VED so that it was based on emissions rather than vehicle value, which meant that it was not just ‘piggy-backing’ on a tax system but restructuring an entire tax operation for environmental purposes. This changed an arbitrary though arguably progressive tax system into a polluter-pays code.<sup>106</sup> As the

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<sup>102</sup> Glachant M, ‘The Political Economy of Emission Tax Design in Environmental Policy’ (2002) *Fondazione Eni Enrico Mattei Working Paper No. 96.2002*, at 25.

<sup>103</sup> Cockfield explains that tax planning takes value away from other economic activities without adding real value, and as such is a waste of resources which reduces economic growth, in Cockfield A, ‘Optimal Climate Change Tax Policy for Small Open Economies’ in Cullen R and Vanderwolk JD, *Green Taxation in East Asia* (Cheltenham: Edward Elgar, 2011).

<sup>104</sup> According to the personal communications between Convery *et al* and Ireland’s Revenue Commissioners Ireland’s, and Ireland’s Department of the Environment, Heritage and Local Government in 2002 the initial set-up costs were EUR €1.2 million whilst annual administration costs stood at EUR €350,000. See Convery *et al*, chapter 1, n.7 at 6.

<sup>105</sup> See Convery *et al*, *Ibid* at 6-7.

<sup>106</sup> It is arguable however that the VED rates do represent a progressive based system since frequently the highest emitting vehicles are those that are the most expensive to buy outright, such as 4 x 4 vehicles with large engine capacities.

emission charging only took place on newly purchased vehicles, it meant that the issue of progressive taxation was irrelevant.

Whilst it may be economically favourable to piggy-back on existing tax systems, the problem is that the pursuit of lower administration costs can lead taxes not necessarily being placed where they would have most effect. It can also mean that those who are 'easiest' to tax, such as consumers, end up bearing the majority of the burden.<sup>107</sup> Hufbauer notes that in terms of administration "...it is relatively easy to tax human residents on their wages or consumption, and relatively hard to tax paper entities on their income."<sup>108</sup> It is advisable therefore that taxes include those who are more complex to charge to tax in order that the burden of the environmental programme can be shared not just amongst those who are easiest to tax but all those who share responsibility for environmental damage.

It can also prove expensive either for the tax authorities or private parties to measure the scale of the taxable subject. Smith explains that if the measurements are especially technical and require scientific skills – such as to monitor emissions – the costs will likely be high until suitable technology is developed.<sup>109</sup> Further, if there are many sources to measure this can add to the cost. Thus it would be an attractive option to relate the taxes to items that are already measured for commercial purposes unrelated to tax, which would limit the cost significantly. Smith recognises this would also likely prove more accurate if the

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<sup>107</sup> Smith notes that the large majority of existing taxes are on transactions (such as income tax and sales tax).

<sup>108</sup> Hufbauer GC, 'Income vs. Consumption Taxation: Domestic and International Reforms' (2000-2001) 26 *Brook.J.Int'l L* 4, 1555-1563, at 1557, quoting Rosenbloom in Rosenbloom DH, 'From the Bottom Up: Taxing the Income of Foreign Controlled Corporations (2001) 26 *Brook.J.Int'l L*, 1525.

<sup>109</sup> Smith S, 'Green Tax Reforms and Road Transport in Britain and Germany' (1997) 3 *Environmental Taxation and Accounting*, 21-37, at 20.

measurements are already taken for non-tax purposes since the incentive to avoid taxes would not have been a factor.<sup>110</sup>

## 36.11 FOREIGN INCOME

### 36.11.1 INTRODUCTION

As discussed, the type of tax imposed determines where the burden falls. Income tax falls immediately upon national residents and enterprises. Taxes imposed on consumption within a jurisdiction bring in revenue from national consumers.<sup>111</sup> However it is possible to bring in revenue from outside the jurisdiction so that residents are not bearing the sole burden for a nation's environmental programme. The various methods are analysed below.

### 36.11.2 EXPORT TAX

One method is to tax exports. This additional price of the exported goods or services could be borne by foreign consumers who will therefore fund the nation's environmental tax revenue. This could represent the environmental cost in producing or transporting the export abroad.

This is an especially dangerous method since, unless it is a highly inelastic export, it will likely reduce foreign demand for the export, which will be detrimental to national business

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<sup>110</sup> *Ibid*, at 20.

<sup>111</sup> Non-national tourists also bear some responsibility, though higher consumption taxes can lead to fewer overall tourist consumers which can be damaging to national business. Non-EU residents can however claim VAT refunds for some purchases – see HMRC, 'VAT refunds for visitors to the UK' <<http://www.hmrc.gov.uk/VAT/sectors/consumers/overseas-visitors.htm>> Accessed 11/5/2010.

interests, and final incidence may fall upon employees in the form of lost jobs. Alternatively, it could mean the exporter or producer reducing the cost to maintain demand for the export, which would cause final incidence to fall upon the national exporter or producer. This should therefore be avoided in most cases, though could be used if there is a particular policy interest in keeping the item within the jurisdiction. It could be a national treasure or there may be a shortage of a particular item within the country which would mean there is an interest in avoiding its export – though the environmental justification would in such cases be a façade for other national interests.

### 36.11.3 BORDER TAX ADJUSTMENTS

Import taxes *per se* can be impermissible under global free trade rules as they are deemed to be anti-competitive. An alternative method is to tax imports in the same way that nationally-produced goods or services are taxed. This may be justifiable if the foreign nation has not taxed their exports to take account of environmental costs, as it would otherwise be a disadvantage for the importing nation since locally produced goods or services would be subject to higher costs due to internal environmental taxation. Such taxes are referred to as ‘border tax adjustments’. There are specific rules of international trade and competition law necessary to impose border tax adjustments which will be analysed in Chapter 8.

When one nation has already harmonised taxes with another nation, then this will not be necessary. When it is done it effectively works as a tax on environmentally inefficient production methods albeit in a foreign jurisdiction. Without such adjustments, the foreign nation would be producing goods at a non-internalised environmental cost and benefiting

from this by selling them to a country whose own products have been so produced, thus placing them at significant advantage.

Thus there are strong concepts of equity and competitiveness to justify the adjustments. Metcalf and Weisbach<sup>112</sup> further point out that border tax adjustments provide a further robust advantage by incentivising the countries without tax harmonisations to harmonise their taxes. Since the adjustments mean they would no longer enjoy a trade advantage, the result is that the importing nation receives the tax revenues which the exporting nation forgoes. Therefore by imposing such a tax the revenues can be collected internally. Political opposition to the tax could be mitigated through a revenue-neutral approach. A country imposing border tax adjustments can consequently achieve environmental improvements domestically and in foreign countries who wish to trade with them, as well as making those responsible for environmentally inefficient production techniques bear the cost.

#### 36.11.4

#### TRANSPORTATION TAX ADVANTAGES

If the environmental costs of transporting a product are taken into account as a border tax adjustment, this could have serious impacts on fuel duties. It has only been in recent years that fuel duties have been regarded as environmental costs. If a country with high fuel duties, charges foreign-registered lorries wishing to import goods, for example, into a country then a border tax adjustment could ensure that the foreign lorry's fuel is charged at the same rates as within the country. It may be regarded as an abuse of tax codes for a transporter purchasing low-tax fuel in one jurisdiction to compete in another jurisdiction where fuel taxes are much higher.

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<sup>112</sup> Metcalf G and Weisbach D, 'The Design of a Carbon Tax' (2009) 33 *Harvard Environmental Law Review* 499-556, at 546.

Adjustments could be achieved for environmental reasons though it is likely that competitiveness would impact strongly upon the decision to impose the charge. Whether this is legally permissible is a question to be considered in Chapter 8. Nevertheless, the same environmental and competitiveness justifications as shown above could potentially be used to legitimise this sort of adjustment. In a country such as Britain, where retailers encourage consumers to consider the ‘carbon footprint’ of imported goods, this could be advantageous to local producers. It would likely however prove extremely controversial outside the UK and could seriously damage trade in developing countries as well as drive up prices of goods domestically and fuel prices abroad.<sup>113</sup>

### 37. CONCLUSION

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This chapter has identified and explained the importance of a policymaker understanding and deciding who will bear the burden of a chosen tax method in achieving environmental policy objectives. It has been emphasised that the policymaker must determine in advance who should be ultimately responsible for the cost, and design a tax method to achieve that outcome, understanding the market realities in any given context of who will inevitably bear the burden. The implications of failing to do so can be severe both in achieving policy objectives and in the wider context of a society and its economy. The findings are of importance to policymakers and answer RQ(ii) and RQ(iii) in part by enabling an understanding of how environmental objectives can be achieved via taxation. These findings

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<sup>113</sup> The EU has already considered some fuel tax harmonisation which has proved controversial; <<http://www.euractiv.com/en/energy/commission-proposes-harmonised-tax-diesel/article-115985>> Accessed 11/5/2010.

will be inputted in each stage of the Universal Model as they impact upon every policy question.

The chapter began by critiquing the various principles of international law establishing which parties should be responsible for environmental taxes in theory. It concluded that the polluter-pays principle was advantageous and equitable, and this worked alongside the theme of advocating that polluters should pay and ‘improvers’ (those helping to meet environmental objectives) should be rewarded.

The chapter went on to analyse a range of tax methods available which can be designed to meet the intended contributors to the tax. This considered whether it would be appropriate to limit the distributional impact of such methods upon low-income groups, and advised policymakers specifically upon how taxes can be designed if business taxpayers are intended to be contributors, due to competitiveness implications. It was pointed out that a policymaker must understand how elasticity impacts upon tax incidence, which is further to be highlighted in Chapter 11.

Subsidies are explored to advise policymakers both as to their legitimate usage and as to how they affect who bears their burden, including how they can negate the impact of tax incentives. As taxes on industry bring in large receipts but can equally cause much harm to the economy, methods of ensuring that industry meets environmental objectives without overburdening it were considered.

The question of who shares the burden of environmental taxation was subsequently considered in light of wider social, political and policy objectives. Questions of political

feasibility in introducing burden-sharing legislation were examined, and importantly the chapter focused on the appropriate means of ensuring that all intended groups, including low-income groups, could bear the burden without worsening poverty. Methods of tax-and-compensation packages were examined, in line with the theme, and the chapter explored the dangers of over-burdening various groups such as ordinary workers.

Methods of ensuring administrative efficiency to limit the burden on the general taxpayer were considered in the penultimate section, which focused on minimising compliance and enforcement costs. This advocated reducing administrative costs via methods such as ensuring drafting certainty and utilising the existing tax code.

Finally, an international aspect was broached, with the chapter looking at how it can be advantageous and feasible for foreign taxpayers to share part of the burden. This also looked at inequities for domestic taxpayers to bear a responsibility which foreign taxpayers may avoid, despite their contribution to the pollution itself. This led the chapter to identify the usefulness of utilising Border Tax Adjustments in achieving environmental objectives, which will be analysed in Chapter 8.

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# CHAPTER 8: BORDER TAX ADJUSTMENTS

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## 38. INTRODUCTION

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The Universal Model proposes the use of BTAs (border tax adjustments) in circumstances where other jurisdictions fail to implement similar environmental standards or taxes, and where it may otherwise disadvantage the implementing nation. However by introducing unilateral environmental policies, potentially using tax methods discussed, a nation can put itself at competitive disadvantage – and it is recognised that this may prevent policymakers from using such measures. Following the introduction of this subject in Chapter 7, the purpose of this chapter is to explain the potential and purpose of BTAs, and demonstrate means by which environmental taxes can be implemented without unilateral disadvantages.

The objective is to offer policymakers viable methods to offset any competitiveness concerns, in order that their tax methods – and those suggested in the Universal Model – can be introduced without undue detriment to the economy.

### 39. INTERNATIONAL BACKGROUND

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Resolving international environmental problems usually requires coordinated global action. With sources located around the world, necessary action could be taken where required without the obstacle of political and boundary limitations. At the time of writing, this concept is politically unfeasible; Wiener explains it would require “...universal or nearly universal coverage of present and potential source locations.”<sup>1</sup> Even with issues of global environmental and political importance, all countries may not agree – such as with the USA’s refusal to ratify the Kyoto Protocol.

In the absence of any international consensus not only upon the most appropriate means of achieving environmental goals, but significantly upon whether certain environmental harms exist in the first place, it can be argued that unilateral actions are necessary.<sup>2</sup> Advocates justify this by reasoning that action to protect the environment cannot be postponed pending

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<sup>1</sup> Wiener, see chapter 2, n.106 at 696-7.

<sup>2</sup> With climate change there has been general international consensus amongst Governments about the existence of the problem. However the possibility of non-agreement on the Copenhagen Protocol would have meant countries pursuing differing policies to tackle climate change, as identified in Sheldon I, ‘Climate Policy and Border Tax Adjustments: Some New Wine Mixed with Old Wine in New Green Bottles?’ (2009) <<http://aede.osu.edu/programs/Anderson/trade/Climate%20Policy%20and%20Border%20Tax%20Adjustments.pdf>> Accessed 9/12/2009, at 6.

international consensus.<sup>3</sup> Others believe that where such consensus has been reached in the form of an international agreement, then non-signatories can be incentivised to ratify the agreement if signatories take trade measures against them.<sup>4</sup>

These justifications are particularly relevant to environmental taxes, since countries may be wary of introducing them within their own jurisdictions if similar measures are not to be introduced abroad. The rationale for this is that countries do not wish to put their own national industries at a disadvantage to foreign goods produced without such taxes with consequently lower costs.<sup>5</sup> For instance, President Sarkozy has called for BTAs to represent carbon on imports into the EU to create a fair playing field.<sup>6</sup> Furthermore, should mobile taxpaying industries relocate to 'pollution haven' countries offering little environmental regulation or taxation,<sup>7</sup> then an environmentally conscientious country can lose valuable industries and their receipts, whilst there is no overall environmental benefit since the industry may continue or even increase levels of pollution overseas. This is known as 'leakage' and often involves a polluting company relocating to a DC (developing country) in need of revenue even at the expense of the environment.

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<sup>3</sup> Voon T, 'Sizing up the WTO: Trade-Environment Conflict and the Kyoto Protocol' (2000) 10 *J. Transnat'l L. & Pol'y* 1, 71-108, at 78

<sup>4</sup> This issue is examined in Weber CL and Peters GP, 'Climate change policy and international trade: Policy considerations in the US' (2009) 37 *Energy Policy* 2, 432-440, at 437-439

<sup>5</sup> This is known in Game Theory as the 'Prisoners' Dilemma', a paradoxical scenario where two parties can benefit by co-operating but may instead try to preserve their own interests perhaps due to mistrust that the other will cooperate. See Poundstone W, *Prisoner's Dilemma* (New York: Anchor; 1993).

<sup>6</sup> Parashar S, 'France wants a 'carbon tax' on EU imports' *The Times of India* 30/11/2009 <<http://timesofindia.indiatimes.com/india/France-wants-a-carbon-tax-on-EU-imports/articleshow/5282146.cms>> Accessed 9/12/2009.

<sup>7</sup> Foreign direct investment in developing countries was found to be "relative to the stringency of their environmental regulations" in Elliott RJR and Shimamoto K, 'Are ASEAN Countries Havens for Japanese Pollution-Intensive Industry?' (2008) 31 *The World Economy* 2, 236-254, at 250.

The legality of BTAs for environmental purposes under WTO law has been debated in considerable depth and it is not intended to repeat this herein.<sup>8</sup> The author accepts the considerable consensus that such measures are legitimate under certain circumstances,<sup>9</sup> and the law is expressed herein as it is commonly understood. However the caveat is that there remains some uncertainty in the extent to which various applications of BTAs are permissible under WTO law.

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#### 40. WHAT IS A BTA?

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Any environmental tax which increases costs to domestic businesses may put them at a disadvantage against foreign produced goods not subjected to similar taxes. Environmental taxes designed to disincentivise environmental harm or internalise negative externalities may come in the form of non-refundable taxes on businesses, such as excise taxes. Such taxation can increase costs of production and consequently increase the sale price of a good relative to overseas goods (given that final incidence of the additional cost falls upon the consumer). A country can operate an internal environmental policy and prevent over-exposure of its market to foreign-produced, less expensive but environmentally unfriendly goods through the use of BTAs.

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<sup>8</sup> See eg. Sindico F, 'The EU and Carbon Leakage: How to Reconcile Border Adjustments with the WTO?' (2008) 17 E.E.E.L.R. 6, 328; Goh G, 'The World Trade Organisation, Kyoto and Energy Tax Adjustments at the Border' (2004) 38 J.W.T. 3, 295-423; Demaret P and Stewardson R, 'BTAs under GATT and EC law and General Implications for Environmental Taxes' (1994) 28 J.W.T. 4, 5-65; Bernstein S and Hannah E, 'Non-State Global Setting and the WTO: Legitimacy and the Need for Regulatory Space' (2008) 11 *Journal of International Law* 3, 575-608, at 590.

<sup>9</sup> Switzer S, 'International Trade Law and the Environment: Designing a Legal Framework to curtail the Import of Unsustainably Produced Biofuels' (2007) 6 *Journal of International Trade Law and Policy* 1, 30-44; Ismer R and Neuhoff K, 'Border Tax Adjustment: a Feasible way to support Stringent Emission Trading' (2007) 24 *European J. Law Econ.* 2, 137-164; Veel P, 'Carbon Tarriffs and the WTO: An Evaluation of Feasible Policies' (2009) 12 *J. Int. Econ. Law* 3, 749; UNEP and WTO, see chapter 5, at n.25 at 103-109; Kemp J, 'Trade Law no block to Carbon Tariffs' *The Guardian* 26/6/2009 <<http://www.carbonoffsetsdaily.com/uk-carbonmarketnews/trade-law-no-block-to-carbon-tariffs-john-kemp-9280.htm>> Accessed 24/11/2009.

A BTA is a fiscal measure which adopts the ‘destination principle’ which allows:

- i. exported products to be relieved of some or all of the tax charged in the exporting country in respect of similar domestic products sold to consumers on the home market; and/or
- ii. imported products sold to consumers to be charged with some or all of the tax charged in the importing country in respect of similar domestic products.<sup>10</sup>

Therefore both exports and imports may be adjusted. An example can be displayed as follows:

Fiji intends to reduce consumption of sugar nationwide for environmental purposes. It introduces an excise tax on producers of sugar cane. This is passed onto the consumer in the form of an increased selling price, making Fijian-grown sugar sell at \$10 per bag more than before the tax. This increases the price per bag at sale in Fiji from \$100 to \$110.

However sugar cane produced in Samoa is not subject to any excise tax on production. When Samoa exports sugar to Fiji, Samoan sugar would sell at \$100 per bag which would undercut the Fijian-produced sugar. This would increase demand for Samoan sugar and decrease demand for Fijian sugar. The consequence would be that Samoan sugar producers, whilst ignoring the environmental damage caused in the production of sugar, would benefit at the

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<sup>10</sup> As per the OECD’s definition adopted by GATT: Working Party Report, *Border Tax Adjustments*, BISD 18 Supp. 97, adopted on 2 December 1970, para. 4 <[www.worldtradelaw.net](http://www.worldtradelaw.net)> Accessed 19/11/2009.

expense of Fijian producers. Fiji's policy would be a failure since demand would not fall for sugar consumption in Fiji, whilst its sugar industry would have lost out competitively.

Fiji realises this and puts a BTA of \$10 on imports of Samoan sugar, so that both imported and domestically-produced sugar sell at \$110 per bag. Therefore the playing field is level and Samoan sugar is charged as if it had been produced with the Fijian excise tax.

Samoan-produced sugar also sells in Samoa at \$100 per bag. Fijian sugar exported to Samoa would sell at \$110 as it is still subjected to the excise tax on production within Fiji, putting it a disadvantage against Samoan-produced sugar. In order to protect the competitiveness of Fijian sugar producers, Fiji offers producers who export sugar a \$10 rebate on the Fijian excise tax when the sugar is exported. Therefore Fijian sugar can also sell at \$100 in Samoa.

This serves as an example of how no advantage is gained by either country by introducing the BTAs, though Fiji is able to protect the environment. In reality the situation is much more complex than this since there is a range of taxes to consider and transaction costs complicate matters further.

The rationale of the destination principle is that goods ought to be taxed in the country where they are consumed, so that the burden of indirect taxes is borne by the user. This differs from the 'origin principle,' not accepted in WTO law, which requires that products be taxed in the country where they are produced. Taxation of a good in both jurisdictions would result in

‘double taxation’ and could cause “serious economic distortions.”<sup>11</sup> BTAs are only necessary in the absence of the origin principle and tax harmonisation,<sup>12</sup> and can consequently be justified somewhat on the basis that the omission to tax at source constitutes an indirect subsidy. A common environmental tax policy would render BTAs obsolete, since if all products were taxed in the same way at source, any border adjustment would be nil.

It is only possible under international trade rules to use BTAs on imports where the equivalent taxes apply to internally produced goods.<sup>13</sup> Similarly if a regulatory system (or cap-and-trade system) imposes costs upon a domestic producer to improve environmental standards, but the same regulations do not apply in an imported good’s country of origin, it is possible to use BTAs to reflect these non-tax costs upon a producer. Thus there should be no protectionist effect contradicting WTO rules.

Pursuant to WTO rules, BTAs may be applicable to internal indirect taxes on products (whether applied directly or indirectly) such as an excise duty, consumption tax, sales tax, or VAT. However, they are not applicable to internal direct taxes on the factors of production, such as corporate income taxes on producers.<sup>14</sup> BTAs are thought to be not normally made for ‘tax occultes’,<sup>15</sup> which are defined<sup>16</sup> to include “...consumption taxes on capital

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<sup>11</sup> Vehorn C, ‘Border Tax Adjustments’ in Cordes JC, Ebel RD and Gravelle J, *Encyclopaedia of Taxation and Tax Policy* (The Urban Institute: USA, 2005) at 25.

<sup>12</sup> Droge S, Harald T, Biermann F, Bohm F and Brohm R, ‘National Climate Change policies and WTO law: a case study of Germany’s New Policies’ (2004) 2 WTR 2, 161-187, at 176.

<sup>13</sup> GATT Panel: *United States – Taxes on Petroleum and Certain Imported Substances*, 1987. Report of the Panel, 17/6/1987, GATT Doc. L/6175. BISD 34S/136, para.5.2.7

<sup>14</sup> The distinctions are analysed in Phillips JC, ‘Border Tax Adjustments in International Trade’ (1976) 9 UQLJ 2, 151-166, at 153-159

<sup>15</sup> Literally meaning ‘hidden taxes’, it refers to taxes on goods or services which partially input into a product but could only be included by averaging the extent to which a range of such taxes proportionately contribute to the total taxes on a final product. This was the situation which had occurred in countries such as India with cascade tax systems, see McNamara JA, ‘Tax Adjustments in International Trade: The Border Tax Dispute’ (1972) 3 J.Mar.L.& Com. 2 339-362, at 345.

equipment, auxiliary materials and services used in the transportation and production of other taxable goods.”<sup>17</sup> The hidden nature of these taxes meant that for those countries using them, applying them precisely was so difficult that a system of averaging developed instead - which caused numerous disputes concerning under-compensating and over-compensating adjustments.<sup>18</sup> Nor are they thought to be made for payroll or social security taxes<sup>19</sup> or ad valorem taxes such as stamp duty, property taxes or registration taxes.<sup>20</sup>

The legitimate purpose of using BTAs is not to limit imports per se, but to provide a level playing field for national producers. The net result of using BTAs on trade should be neutral.<sup>21</sup> One advantage of using BTAs is that countries would not need to offer exemptions to environmental taxes which could be detrimental to their purpose.<sup>22</sup>

Refunding internal taxes on export of a good would normally be an infringement of WTO rules<sup>23</sup> since it would be considered a subsidy, but it is permitted under certain circumstances via a BTA.<sup>24</sup> Milne argues that environmental objectives may not be most effectively served by reducing the cost of exports to importing countries who themselves do not charge environmental taxes.<sup>25</sup> However, regarding adjustments for exports as illegal subsidies would provide a disincentive for countries to introduce domestic taxes due to the belief that it

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<sup>16</sup> The adopted meaning was originally defined in OECD, *Border Tax Adjustments and Tax Structures in OECD Member Countries* (Paris: OECD Publications, 1968)

<sup>17</sup> GATT, see n.10.

<sup>18</sup> Vehorn C, see n.11 at 25.

<sup>19</sup> GATT, see n.10.

<sup>20</sup> *Ibid.*

<sup>21</sup> However it may not be depending upon market conditions, see: McCorrison S and Sheldon IM, ‘Market Access and WTO Border Tax Adjustments for Environmental Excise Taxes under Imperfect Condition’ (2005) 7 J. Public Econ. Theory 4, 579-592, at 591.

<sup>22</sup> Highlighted by Goh, see n.8 at 400; Fischlowitz-Roberts B, ‘Restructuring Taxes to Protect the Environment’ (2002) *Earth Policy Institute, Eco-Economy Update*.

<sup>23</sup> GATT Article XVI:4

<sup>24</sup> See explanation in Pitschas C, ‘GATT/WTO Rules for Border Tax Adjustment and the Proposed European Directive Introducing a Tax on Carbon Dioxide Emissions and Energy’ (1995) 24 Ga.J.Int’l.& Comp.L. 3, 479-500, pp. 489-492, 497-498

<sup>25</sup> Milne JE, ‘Carbon Taxes in the United States: The Context for the Future’ (2008) 10 VJEL. 1, at 12.

would create a competitive disadvantage for exporters – since their goods could be unfavourably priced in the international market. As such, the ASCM (Agreement on Subsidies and Countervailing Measures)<sup>26</sup> declares that exemptions or remissions of internal duties or taxes for exports are not classed as subsidies for the purposes of GATT (General Agreement on Trade and Tariffs 1947), Article XVI. The rationale is that they are not subsidies and do not distort trade; they simply level the playing field whilst allowing internal permitted policies to succeed.

Exemptions or remissions designed specifically to provide an advantage to internal producers would include any form of subsidy aimed at promoting domestically-produced goods over imported ones. They could also take the form of deductions from internal taxes based upon export performance, so that the more goods domestic producers export, the more taxes they are refunded – providing an incentive to export such goods. Since both these objectives would distort trade by providing an advantage to national producers, the ASCM prohibits such practices.<sup>27</sup>

#### **41. RATIONALE FOR USING BORDER TAX ADJUSTMENTS TO ENABLE ENVIRONMENTAL TAXATION**

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##### **41.1 COMPETITION ISSUES<sup>28</sup>**

Since concerns about competitiveness have previously caused Australia, the USA and the EU to cancel planned eco-taxes,<sup>29</sup> it is crucial that countries can introduce environmental

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<sup>26</sup> <[http://www.wto.org/english/tratop\\_e/scm\\_e/scm\\_e.htm](http://www.wto.org/english/tratop_e/scm_e/scm_e.htm)> Accessed 24/11/2009.

<sup>27</sup> Article 3.

<sup>28</sup> Note that this issue was introduced in chapter 7.

measures without significantly increasing production costs of its goods against foreign goods. The feared disadvantage for a country intending to introduce internal eco-taxes is that consumption may shift to pollution-intensive imports.<sup>30</sup> Though some have suggested there is no benefit to be gained in practice for a country offering lax environmental regimes,<sup>31</sup> the economics are uncertain<sup>32</sup> and the prospect of a possible competitive disadvantage may itself discourage countries from utilising eco-taxes. Any tax situation which would allow nations to benefit from their omission to internalise environmental negativities would go against the theme, which aims to include all sources in an environmental policy. Using BTAs can remove any potential benefit for a country in reducing environmental standards<sup>33</sup> or lowering its taxes to attract mobile taxpayers,<sup>34</sup> and therefore enable nations to impose environmental taxes without fear of a competitive loss.

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<sup>29</sup> Hoerner A and Muller F, 'Carbon Taxes for Climate Protection in a Competitive World' (1996) *Paper Prepared for the Swiss Federal Office for Foreign Econ.Aff.*, at 7-12  
<[http://www.rprogress.org/publications/1996/swiss\\_1996.pdf](http://www.rprogress.org/publications/1996/swiss_1996.pdf)> Accessed 10/12/2009. On the technical reasons explaining the failure of USA's tax, see Milne, see n.25, pp.10-18.

<sup>30</sup> 'Pollution-intensive imports' refers to goods produced using environmental standards falling below, and causing more negative environmental externalities than, similar goods produced in an importing country. In this respect the term "carbon-intensive" is used to demonstrate a potential shift in consumption in Lockwood B and Whalley J, 'Climate Change-Related Border Tax Adjustments' (2008) *The Centre for International Governance Innovation, Policy Brief No. 4*, at 2.

<sup>31</sup> Dowell *et al* argue that multi-national corporations adopting poor environmental standards of host countries do not increase their net worth and are generally valued financially lower than environmentally proactive companies - for a number of reasons including not utilising innovative technology, lower morale amongst workers disaffected by the environmental standing of their country, and negative reputation and costs caused by protesters: Dowell G, Hart S, and Yeung B, 'Do Corporate Global Environmental Standards Create or Destroy Market Value' (2000) 46 *Management Science* 8, 1059-1074. Porter argues that environmental standards in a country can actually increase innovation which would be beneficial to an economy, in Porter ME and Van Der Linde C, 'Toward a new conception of the Environment-Competitiveness Relationship' (1995) 9 *J. Econ. Perspect.* 97, at 101. There is also the prospect of the exchange rate mechanism operating to negate any advantage, and the balance of payments cancelling out such benefits: see eg. Grossman GM, 'Border Tax Adjustments: Do they Distort Trade?' (1980) 10 *J. Int. Econ.* 1, 117-128. On comparative advantages see eg. Johnson H and Krauss M, 'Border Taxes, Border Tax Adjustments, Comparative Advantage, and the Balance of Payments' (1970) 3 *The Canadian Journal of Economics* 4, 595-602.

<sup>32</sup> OECD studies have found little evidence of environmental taxes causing competitive disadvantages for industries, this concessions made to industry could explain this: COMETR is a European research project which studies the competitive effects of eco-taxes by sector, see: COMETR, 'Competitiveness Effects of Environmental Tax Reforms' <<http://www2.dmu.dk/cometr/>> Accessed 18/11/2009. See also OECD Policy Brief, 'Environmentally related taxes: Issues and strategies' (2001) at 4.

<sup>33</sup> Korten warned of a 'race to the bottom' in environmental standards for countries seeking to attract new industries, in Korten D, *When Corporations Rule the World* (San Francisco: Berrett-Koehler Publishers, 1995)

<sup>34</sup> Harmful tax competition including a "tax race to the bottom" would serve no environmental benefit: Kiekebeld, see chapter 6, n.9 at 13.

## 41.2 ENVIRONMENTAL OBJECTIVES

Furthermore, the three main purposes of using environmental taxes are applicable as follows. Pollution havens can remove nations' ability to internalise negative environmental externalities if leakage occurs, whereas BTAs can correct this insofar as imported goods are concerned. By imposing additional costs on the import, the consumer can become more aware of the external costs involved, and the good will be sold at a higher price than if there was no BTA.

In terms of revenue-raising for environmental purposes, a BTA ensures that revenue is gained from both domestic producers as well as imported goods. For example, in *USA/Superfund*,<sup>35</sup> the purpose of taxing sales of domestic and imported chemicals and oils was to raise contributions towards a 'Superfund' for the recovery of contaminated sites. Given that there is a clear environmental goal, it is irrelevant under WTO law that the tax is for the purposes of revenue-raising since this argument was rejected in *US-Taxes on Automobiles*, where the goal of conservation justified the measure to raise revenue for domestic objectives.<sup>36</sup>

A crucial aspect of BTAs is their use to achieve behavioural change. From the point of view of domestic consumers, the increased price provides greater information as to production costs, and importantly may lower demand for such products. This allows a country to reduce the extent to which an environmentally unsound product is produced internally and externally. This is important because it impacts upon behaviour outside the jurisdiction.

Theoretically, producers may be less willing to make high-pollution products if there is lower

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<sup>35</sup> See n.13.

<sup>36</sup> GATT Panel Report, *United States – Taxes on Automobiles*, DS31/R, ii October 1994, unadopted, at para.3.201.

demand for them, so production may need to shift to less damaging products to access the importing market without any BTA. If production decreases in the exporting country, the BTA will have been used to achieve extra-territorial behavioural change which it would otherwise not have been able to do given sovereign rights over taxation. Even if there is no behavioural change at home or abroad, a country may wish to send a message in protest over environmental policies to the source nation, and may want "...to ensure its own consumption does not contribute to what it regards as a great evil."<sup>37</sup> For Bagwell and Staiger, this is an issue of sovereignty that allows a nation to achieve environmental protection without damaging its industry.<sup>38</sup>

An example of this is Belgium's 1993 Ecotax Law,<sup>39</sup> which sought behavioural change by aiming to eliminate environmentally negative production and consumption choice, namely in reducing waste, limiting pollution and conserving resources.<sup>40</sup> The tax fell on sales of disposable products,<sup>41</sup> where there was a sustainable alternative available. Importers of such products assumed liability for the tax upon retail, whilst exports were refunded. Being similar to an excise tax meant that all covered products were charged to the same level of tax immediately, regardless of their origin.

Current thought has moved on from the idea that taxes should be placed solely upon environmentally unsound products – despite the relative administrative ease this allows. Taxing a final product based upon its expected negative externalities in order to internalise the environmental cost, fails to account for two concerns. The first is that a good may be

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<sup>37</sup> Howse R and Regan D, 'The Product/Process Distinction – An Illusory Basis for Disciplining. 'Unilateralism' in Trade Policy (2000) 11 EJIL 2, 249-289, at 275. These arguments are explained further at 274-5.

<sup>38</sup> Bagwell K and Staiger RW, 'An Economic Theory of GATT' (1999) Amer. Econ. Rev. 89, 779-795.

<sup>39</sup> Articles 369 to 401 of the Law of 16/7/1993 completing the Federal Structure of the State (Moniteur Belge, 20/7/1993, p. 17013.

<sup>40</sup> *Chambre des Représentants de Belgique*, 1992, 1-2.

<sup>41</sup> Article 369(7).

domestically produced or imported which is not itself environmentally damaging, but which has been produced in an environmentally damaging manner. Since the end-use of such a good is not damaging, it would not ordinarily be charged to tax. Therefore it may be necessary to consider the production and process methods (PPMs) used to produce a good.<sup>42</sup> This can be done by charging the PPM to tax, or charging the end product to tax to reflect to the fact that it was produced using a damaging PPM. The option to tax the end-use of the good remains as a separate charge from the charge based upon its PPMs . For example, a motor vehicle could be charged to tax to represent its pollution-intensive production method. However, this tax does not exclude the option for policymakers to charge road user tax or vehicle excise duty, which aim at different objectives such as incentivising consumers to purchase vehicles with more efficient engines.

The second concern is the unsatisfactory result of considering only the qualities of a final product. Inputs into a final good may themselves be damaging or have been produced in an environmentally damaging manner. Component parts (known as ‘intermediary goods’) must be accounted for – both intermediary goods which are imported, and those which are used in the assembly of final goods before import.<sup>43</sup> The PPMs of intermediary goods must also be identified otherwise the full environmental attributes of a good will be ignored. For example, an imported car may be capable of outstanding fuel efficiency and its foreign production plant may assemble the vehicle in an energy efficient manner with all waste recycled. However, this does not take into account that many intermediary goods may have been imported from a number of countries, some of which are produced using unsound PPMs that

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<sup>42</sup> Whalley, see chapter 1, n.3 at 120.

<sup>43</sup> Intermediate goods are the subject of the majority of environmental excise taxes: McCorrison and Sheldon see n.21, at 579.

resulted in much pollution or environmental destruction.<sup>44</sup> As such, intermediary goods ought to be considered to be charged to tax either individually or based upon their input into a final product.

Indeed, the EU advocated the further step of looking at the full life cycle of a product to ascertain where efficiencies can be improved.<sup>45</sup> This would involve considering a range of processes including how all of a product's intermediary goods are sourced - from their most basic form such as the environmental impact of mining minerals to produce each intermediary good, to the expected overall impact of a final product during its average life-span. Only by accounting for a good's net environmental impact can its external costs be established.

This will be considered at 42.

### 41.3 AVOIDING LEAKAGE AND ENVIRONMENTAL DUMPING

The problem of leakage has largely been focused upon the specific problem of carbon leakage,<sup>46</sup> though the same principle applies to any environmental problem which continues to have an impact upon the country losing the taxpayer. High mobility taxpayers – particularly enterprises - may relocate to another jurisdiction to avoid any form of environmental taxation (or regulation), and the problem lies where the taxpayer continues to cause the negative externalities in the new jurisdiction which has a trans-boundary impact.

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<sup>44</sup> Poterba JM and Rotemberg JM, 'Environmental Taxes on Intermediate and Final Goods when both can be Imported' (1995) 2 Int. Tax Public Finance 2, 221-228.

<sup>45</sup> Communication from the Commission to the Council and the European Parliament of 18/6/2003 - *Integrated Product Policy - Building on Environmental Life-Cycle Thinking* [COM(2003) 302; EC, *Green Paper on Integrated Product Policy* COM (2001) 68.

<sup>46</sup> See eg. Babiker MH, 'Climate Change Policy, Market Structure, and Carbon Leakage' (2005) 2 J. Int. Econ. 421, at 422.

Consequently this analysis will consider the issue of leakage within its context as a pollution that causes continuing environmental problems globally or at least for the original country.

The problem of leakage is real and worsened by the opportunity for enterprises such as MNEs (Multi-National Enterprises) to sell goods at low prices to countries with stringent environmental policies. The actual consequences of leakage will differ depending upon the industry sector involved and may not apply to every sector; a study into the cement industry for example showed that there was a significant danger of leakage causing a rise in global emissions without BTAs.<sup>47</sup> Imposing BTAs removes the ability of imported inexpensive, high-pollution goods to undercut domestically produced goods on grounds of imposed environmental costs, known as ‘environmental dumping’.<sup>48</sup>

#### 41.4      **PERSUASIVE TOOL**

The EU recognised the risk of leakage as potentially undermining “...the environmental integrity and benefit of actions by the Community.”<sup>49</sup> As such it may be possible to act communally by imposing EU-wide BTA measures on trading nations who attempt to sell goods which are not compatible with EU environmental standards. With such an enormous market this is likely to have a strong incentive for trading partners to make changes within their own jurisdictions and harmonise with EU standards.<sup>50</sup>

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<sup>47</sup> Demailly D and Quirion P, ‘Leakage from Climate Policies and Border Tax Adjustment: Lessons for a Geographic Model of the Cement Industry’ (2006) Working Papers halshs-00009337\_v1, HAL <[http://halshs.archives-ouvertes.fr/docs/00/06/01/89/PDF/cement\\_industry.pdf](http://halshs.archives-ouvertes.fr/docs/00/06/01/89/PDF/cement_industry.pdf)> Accessed 23/11/2009.

<sup>48</sup> UNEP and WTO, see chapter 5, n.25 at 101.

<sup>49</sup> EC, ‘Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading system of the Community’ Brussels, 23.1.2008 COM(2008) 16 final, at 8.

<sup>50</sup> EC, see chapter 2, n.110, at 9.

It is also possible to utilise BTAs to further the remit of any ETS (Emissions Trading Scheme).<sup>51</sup> Non-participants in any global or even EU ETS may be subjected to BTAs – either from the EU alone or from the global community generally. Barrett displays how ‘free-riding’ countries and those not cooperating with global targets in order to benefit, can lose out through communal international measures.<sup>52</sup> Thus the international community can utilise BTAs as a deterrent to encourage participation in global treaties on the environment. Indeed this has been considered at Community level in the EU to combat carbon leakage,<sup>53</sup> and may be useful for any customs union.<sup>54</sup> Further it has been proposed to encourage non-participants of any global treaty on climate change into participating.<sup>55</sup>

The technical difficulty in introducing any BTA is that countries being subjected to such measures on their exports would need to view them as a trade-neutral measure. Countries feeling coerced into changing their environmental policies may react badly and the result could be counter-productive on the environment and trade, whereas expressing that the measure is to level the playing field would do no such harm. BTAs were suggested to be placed on imports from the USA for failure to ratify the Kyoto Protocol, in order to represent any lower environmental standards resulting in lower costs.<sup>56</sup> However, the US itself proposed introducing BTAs on non-participants of any cap-and-trade measure in the

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<sup>51</sup> Cendra J, ‘Can Emissions Trading Schemes be Coupled with Border Tax Adjustments? An Analysis vis-à-vis WTO Law’ (2006) 15 *RECIEL* 2, 131 – 145.

<sup>52</sup> Barrett S, ‘A Theory of Full International Cooperation’ (1999) 11 *Journal of Theoretical Politics* 4, 519-541, at 533-537.

<sup>53</sup> EC, see n.49, at 8.

<sup>54</sup> Shadikhodjaev discusses the potential of BTAs for the Commonwealth of Independent States in Shadikhodjaev S, ‘Trade Integration in the CIS Region: A Thorny Path Towards a Customs Union’ (2009) 12 *J. Int. Econ. Law* 3, 555- 578.

<sup>55</sup> See Ismer R and Neuhoff K, ‘Border Tax Adjustments: A Feasible way to Address Nonparticipation in Emission Trading’ (2004 ) *Cambridge Working Papers in Economics CWPE 0409*.

<sup>56</sup> Bhagwati J and Mavroidis PC, ‘Is Action against US Exports for Failure to Sign Kyoto Protocol WTO-Legal?’ (2007) 6 *WTR* 2, 299–310; Biermann F and Brohm R, ‘Implementing the Kyoto Protocol without the USA: the Strategic Role of Energy Tax Adjustments at the Border’ (2005) 4 *Climate Policy* 3, 289-302.

Copenhagen Accord,<sup>57</sup> pursuant to the Waxman-Markley Bill<sup>58</sup> which caused an outcry<sup>59</sup> from emerging economies. The Senate's version of that Bill, the Kerry-Boxer Bill,<sup>60</sup> proposed imposing BTAs on imports from countries not facing emissions limits, whilst the Lieberman-Warner Bill<sup>61</sup> proposed action for countries not taking 'comparable action' to America.<sup>62</sup>

If the political situation suggests that countermeasures may arise from using BTAs it would be inappropriate to consider this tool.<sup>63</sup> Further, Wiener lists a range of potential risks of using this tool, including the possibility of hindering poverty reduction targets and the chance that the measures may be an empty threat if needed against a major global power such as China.<sup>64</sup>

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## 42. PRODUCTION AND PROCESS METHODS

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### 42.1 UNILATERALISM

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<sup>57</sup> Draft decision -/CP.15 (1999) FCCC/CP/2009/L.7 <<http://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf>> Accessed 26/4/2010.

<sup>58</sup> American Clean Energy and Security Act of 2009, H.R. 2454, 111th Congress.

<sup>59</sup> 'UN climate expert warns against carbon tariffs' *Times of India*, 22/7/2009 <<http://timesofindia.indiatimes.com/NEWS/Environment/Developmental-Issues/UN-climate-expert-warns-against-carbon-tariffs-/articleshow/4807957.cms>> Accessed 24/11/2009.

<sup>60</sup> Clean Energy Jobs and American Power Act, S.1733, §.765.

<sup>61</sup> Lieberman-Warner Climate Security Act of 2008, S. 3036, 110<sup>th</sup> Cong. (2008), Amendment in the Nature of a Substitute Intended to be Proposed by Mrs. Boxer.

<sup>62</sup> *Ibid* at §1306(b)(2).

<sup>63</sup> Chang HF, 'An Economic Analysis of Trade Measures to Protect the Global Environment' (1995) 83 *The Georgetown Law Journal* 2131, at 2162-3.

<sup>64</sup> Wiener, see chapter 2, n.106, at 757-760.

Many scholars have debated the legality under WTO law of using PPMs as a basis for any unilateral trade measures.<sup>65</sup> Unilateral trade measures based upon PPMs were regarded as legitimate<sup>66</sup> in *Shrimp/Turtle*,<sup>67</sup> where shrimp trawlers were required under US law<sup>68</sup> to use special nets when fishing in areas known to include endangered sea turtles. Since this regulation applied domestically, it was permissible under GATT Article XX to prohibit imports where such nets had not been used in areas where sea turtles were known, or where a similar regulatory system was not in place. Article XX(b) provides justifications for distorting imports, including measures to protect ‘human, animal or plant life or health’ and ‘measures relating to the conservation of exhaustible natural resources’ given that such measures are also applicable internally.<sup>69</sup> The *Shrimp/Turtle* case extended the ability to use PPMs, where *Tuna/Dolphin*<sup>70</sup> had previously limited the ability of WTO Members to take such unilateral action despite the relevant provisions in GATT, by indicating that Members must first attempt multilateral action.<sup>71</sup>

At a philosophical level, there is a conflict of sovereignties between the right of the exporter to gain access to an importer’s markets without hindrance pursuant to the principle of free trade, and the right of the importing country to limit imports of undesirable goods. One view

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<sup>65</sup> Cheyne I, 'Environmental Unilateralism and the WTO/GATT System' (1995) 24 Ga.J.Int'l.& Comp.L. 3, 433-465; Howse R and Regan D, 'The Product/Process Distinction – An Illusory Basis for Disciplining 'Unilateralism' in Trade Policy (2000) 11 EJIL 2, 249-289; Kennedy KC, 'Illegality of Unilateral Trade Measures to Resolve Trade-Environmental Disputes' (1997-1998) 22 *William and Mary Environmental Law and Policy Review* 375.

<sup>66</sup> However the fact that the measures had discriminated between WTO members rendered the system illegal.

<sup>67</sup> *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, Report of the Appellate Body, 12/10/1998, WT/DS58/AB/R.

<sup>68</sup> US Endangered Species Act of 1973, 87 Stat. 884 (1973),§609.

<sup>69</sup> Article XX(g).

<sup>70</sup> GATT Panel Report, *United States –Restrictions on the Import of Tuna*, DS29/R, 16/6/1994

<sup>71</sup> For further reading on the extent of PPMs see eg. Ahn D 'Environmental Disputes In The GATT/WTO: Before And After US-Shrimp Case' (1999) 20 Mich.J.Int'l L. 819; Grosko B, 'Just When Is It That A Unilateral Trade Ban Satisfies The GATT?: The WTO Shrimp And Shrimp Products Case' (1999) 5 *Environmental Law* 817; Cheyne I, 'Trade and the Environment: The Future of Extraterritorial Unilateral Measures After the Shrimp Appellate Body' (2000) 5 Web JCLI.

is that PPM-based measures are a form of “paternalistic intervention”<sup>72</sup> into the exporting State’s sovereignty.<sup>73</sup> However the author concurs with Howse and Regan that to deny a country the right to impose restrictions on imports produced using practices it does not even allow in its own jurisdiction would be an infringement of its sovereignty.<sup>74</sup> The *Shrimp/Turtle* decision thus allows countries to impose measures on imports that it applies internally.

Regardless, Biermann warns of PPMs being used to coerce smaller countries into changing their environmental practices in order to continue trading with larger trading nations, which may inflict high costs upon smaller countries,<sup>75</sup> and the practices may be primarily influenced by (and in the interests of) wealthy countries in the Northern Hemisphere.<sup>76</sup> However, this fear is reduced somewhat by the requirement for WTO Members to show that their restriction under Article XX(b) is ‘necessary’ which means that the availability of alternative measures which could produce the same results in less restrictive ways should normally be utilised instead of more restrictive measures. Further, *Korea-Beef* establishes<sup>77</sup> that it is more straightforward for a WTO Member to justify their actions when the common interest to be protected is one of high importance.<sup>78</sup>

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<sup>72</sup> Winter G, ‘The GATT and Environmental Protection: Problems of Construction’ (2003) 15 JEL 113-140, at 130.

<sup>73</sup> For further reading see Sarooshi D, ‘Sovereignty, Economic Autonomy, the United States, and the International Trading System: Representations of a Relationship’ (2004) 15 EJIL 4, 651.

<sup>74</sup> Howse and Regan, see n.65, at 275

<sup>75</sup> Biermann F, ‘The Rising Tide of Green Unilateralism in World Trade Law’ (2001) 35 J.W.T. 3, 421-448, at 433.

<sup>76</sup> Tussie D, ‘The Environment and International Trade Negotiations: Open Loops in the Developing World’ (1999) 22 *The World Economy* 535-545, at 544.

<sup>77</sup> Appellate Body Report, *Korea - Measures Affecting Imports of Fresh, Chilled and Frozen Beef*, WT/DS161/AB/R, 11 December 2000, para. 162ff. This argument was made on the basis of France’s goal of protecting health being perceived as of extremely vital and therefore permissible in Appellate Body Report, *European Communities - Measures Affecting Asbestos and Asbestos-Containing Products*, WT/DS/135/R, adopted 5/4/2001, DSR 2001:VII, 3243, at para.172.

<sup>78</sup> Highlighted in Ismer and Neuhoff, see n.9, at 150.

A unilateral approach may not recognise the ability of exporting nations to take different types of measures to the importing nation which achieve similar results. Goh suggests that mutual recognition of alternative strategies to achieve similar environmental policies may be more appropriate and have less extra-territorial consequences than simply demanding harmonisation with the importing nation's tax system.<sup>79</sup> He cites the USA's Cuban Liberty and Democratic Solidarity (Libertad) Act of 1996<sup>80</sup> as an example of such extra-territorialism. It fails to recognise not only possible alternative trade policies between any nation and Cuba, but also any alternative strategies for dealing with Cuba at all, by placing sanctions on any non-US company that trades with Cuba – forcing companies to choose between the Cuban and American markets. This goes against the normal practice of mutual recognition of alternative policies or strategies for dealing with similar issues.

In terms of the environment, a unilateral approach may importantly not recognise nations' 'Common but Differentiated Responsibilities' as recognised in the UNFCCC.<sup>81</sup> This practice enables States to work together towards achieving the same environmental goal, but allows some States to take on more or alternative responsibilities. This recognises the varied stages of States' economies, their varied capacities to affect the environment, and differing contributions to an environmental problem – in this case climate change.<sup>82</sup> A unilateral requirement may instead impose the same burdens upon all nations regardless of their international agreements and ability to adapt to harmonised goals.

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<sup>79</sup> Goh, see n.8 at 421.

<sup>80</sup> Pub. L. No. 104-114, 110 Stat. 785 (1996).

<sup>81</sup> UNFCCC, Art. 3:1.

<sup>82</sup> See explanation in: Centre for International Sustainable Development Law, 'The Principle of Common But Differentiated Responsibilities: Origins and Scope' (2002) <[http://www.cisd.org/pdf/brief\\_common.pdf](http://www.cisd.org/pdf/brief_common.pdf)> Accessed 9/12/2009.

## 42.2 LEGALITY

Since the purpose of BTAs is to be trade-neutral, States are not permitted to manipulate them to protect their own economies by creating unnecessary obstacles to free trade. This is endorsed in the TBT Agreement<sup>83</sup> which prevents States using mandatory regulations or non-mandatory standards to limit trade. However standards based upon PPMs related to the characteristics of a product are permissible under the Agreement<sup>84</sup> provided they are transparent,<sup>85</sup> used for legitimate objectives<sup>86</sup> and do not create restrictions beyond what is appropriate to achieve those objectives.<sup>87</sup>

These rules apply to taxes as well as regulatory standards. It has been confirmed in *USA/Superfund* that BTAs can apply to imported intermediary goods when a State's internal tax applies to upstream producers.<sup>88</sup> This must be the equivalent charge to internal charges for "...like domestic products or in respect of an article from which the imported product has been manufactured or produced in whole or in part".<sup>89</sup> This allows PPM measures given that the BTA does not raise tariffs above the bound tariff rates,<sup>90</sup> and the comparison<sup>91</sup> should be done based upon the 'actual tax burdens' as suggested in *Argentina – Hides and Leathers*<sup>92</sup> so that the burdens would be equal in reality. This is in line with the 'National Treatment'<sup>93</sup>

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<sup>83</sup> Agreement on Technical Barriers to Trade <[http://www.wto.org/english/docs\\_e/legal\\_e/17-tbt.pdf](http://www.wto.org/english/docs_e/legal_e/17-tbt.pdf)> Accessed 24/12/2009.

<sup>84</sup> G/TBT/W/11 29/8/1995, para.3(c) <[http://www.wto.org/gatt\\_docs/English/HTM/M50.WPF.HTM](http://www.wto.org/gatt_docs/English/HTM/M50.WPF.HTM)> Accessed 24/12/2009.

<sup>85</sup> Lopez-Hurtado C, 'Social Labelling and WTO Law' (2002) 5 *Journal of International and Economic Law* 3, 719-746, at 737.

<sup>86</sup> Article 2.2 stipulates this includes the prevention of deceptive standards, and the protection of human health and safety, animal or planet life health, and the environment. <[http://www.wto.org/english/docs\\_e/legal\\_e/17-tbt.pdf](http://www.wto.org/english/docs_e/legal_e/17-tbt.pdf)> Accessed 24/11/2009.

<sup>87</sup> Article 2.2.

<sup>88</sup> GATT, see n.13; McCorrison and Sheldon, see n.21, at 581.

<sup>89</sup> See n.13, para.5.2.7.

<sup>90</sup> GATT Article II.

<sup>91</sup> In Article III(2).

<sup>92</sup> Panel Report, *Argentina – Measures Affecting the Export of Bovine Hides and the Imports of Finished Leather*, WT/DS155/R, 2000, adopted 16/2/2001. DSR 2001:V, 1779.

<sup>93</sup> GATT Article III.

principle which requires that WTO members do not discriminate against imported goods in terms of internal laws and regulations, including domestic taxes. The Bangladesh Customs Act (1969) for instance charges an Advance Income Tax on imports which can later be credited, but Daly points out that for importers operating at a loss such a tax can amount to a surcharge; given that it only applies to imported goods it could be a violation of the National Treatment principle.<sup>94</sup>

What is regarded as a 'like product' is a subject of debate<sup>95</sup> and the test established in *Japan – Alcoholic Beverages* for the purposes of GATT Article III:2 requires an analysis in a market of consumer preferences, the product's end-uses, as well as the product's properties, nature and quality and similar tariff classifications – done on a case-by-case basis.<sup>96</sup> As identified by Quick, PPMs can differentiate between products which are physically identical and used for the same purposes.<sup>97</sup> Differentiation based upon PPMs has been done for many years using eco-labelling as a basis. Germany uses a labelling scheme based upon energy efficiency used in the production of products to empower consumers to differentiate between products based upon energy.<sup>98</sup> Given that such schemes do not discriminate against imports they will be 'origin-neutral' and will comply with GATT Article III:4.<sup>99</sup>

A further requirement is that countries offering special trade privileges to some WTO Members must offer them to all. The MFN (Most Favoured Nation) principle requires that

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<sup>94</sup> Daly M, 'WTO Rules on Direct Taxation' (2006) 29 *The World Economy* 5, 527-557, at 527.

<sup>95</sup> For further discussion and explanation of the complexities see: Cheyne, see n.65, pp.437-443; Veel see n.9, pp.778-784; Quick R and Lau C, 'Environmentally Motivated Tax Distinctions and WTO Law—The European Commission's Green Paper on Integrated Product Policy in light of 'Like Product' and 'PPM –Debates'' (2003) 6 *J. Int. Econ. Law* 2, 419–458; Goh, see n.8, pp.402-413.

<sup>96</sup> WTO Appellate Body Report on *Japan – Taxes on Alcoholic Beverages*, WT/DS8/AB/R, adopted 1/11/1996, para.18.

<sup>97</sup> Quick and Lau, see n.95, at 149.

<sup>98</sup> Energy Consumption Labelling Act (Energieverbrauchskennzeichnungsgesetz, *Federal Law Gazette*, BGBl I, P. 1632) of 1/7/1997.

<sup>99</sup> This conclusion was also reached in Lopez-Hurtado, see n.85 at 746.

any advantage granted to one country shall apply to all countries, in order to prevent a country from discriminating between different foreign producers.<sup>100</sup> In terms of taxes, *Belgian Family Allowances* confirmed that countries cannot use domestic taxation to discriminate between foreign producers, in the same way that they cannot use it to protect their own competitive standing.<sup>101</sup> Similarly this provision prohibits the advantages being dependant upon certain conditions, such as countries having to adopt certain policies unrelated to the imported product.<sup>102</sup> In this way there is free trade and countries cannot manipulate the system to offer different countries special treatment since this may be reciprocated and inevitably be of benefit to those countries.

#### 42.3 BEST AVAILABLE TECHNOLOGY

The difficulty in using PPMs as a basis for BTAs is in determining what standard should be set for both domestic and imported goods. If the good is non-essential, a nation may decide it can do without it entirely, and impose prohibitively high taxes to discourage production and reflect this in BTAs.<sup>103</sup> If the good is essential or the nation decides to continue consuming a non-essential good, one standard proposed by Ismer and Neuhoff is based upon the use of ‘Best Available Technology’ (BAT).<sup>104</sup> Their proposal, made to limit leakage within an ETS but which can also be applicable without an ETS, is that adjustments should be determined upon the basis of costs “...corresponding to production with BAT rather than average

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<sup>100</sup> GATT Article I:1.

<sup>101</sup> Report of the Panel, *Belgian Family Allowances*, G/32 – 1S/59, adopted 7/11/1952.

<sup>102</sup> Panel Report, *Indonesia – Certain Measures Affecting the Automotive Industry*, WT/DS54R, WT/DS55/S, WT/DS59R, WT/DS64/R, adopted 23/7/1998, para.14.143.

<sup>103</sup> Whether such a restrictive measure would be legal under WTO law would depend upon it being regarded as “necessary to protect human, animal and plant life and health” (GATT Art.XX(b)) or “related to the protection of exhaustible natural resources.” (GATT Art.XX(g)). For a discussion of what would constitute ‘necessary’ or ‘related to’, see Young A, ‘WTO and Integrated Product Policy (IPP): Trade Law Implications for the Use of Product Policy Instruments to Reduce the Risk of Exposure and Harm from Hazardous Substances in the Life Cycle of Personal Computers’ (2001) 9 *Journal of Cleaner Production* 297-311, at 299.

<sup>104</sup> Ismer and Neuhoff, see n.9, 137-164.

technology.”<sup>105</sup> This has similarities with America’s proposed economic incentives for retailers selling ‘Best-in-Class Appliances’ to improve household efficiency, pursuant to the American Clean Energy and Security Act of 2009.<sup>106</sup>

If such technology is commercially available<sup>107</sup> on the market and can be produced in the most efficient manner possible at any one time, producers will only be able to get BTA reimbursements if they use it. This could create demand for clean technology and provide a continuing incentive to innovate, which consequently may lead to a technology-driven response to environmental protection.<sup>108</sup> Even Dowell, Hart and Yeung, who argue against the risk of leakage, advocate innovative clean technology as being able to “...achieve simultaneously world-class cost, quality, and environmental performance.”<sup>109</sup> Though difficulties have been highlighted in requiring BAT, the ‘BAT-BTA’ method will be considered henceforth as a basis for exempting imports from BTAs to exemplify the ‘leakage loophole’ problem.<sup>110</sup>

The BTA-BAT method was contemplated to be relatively straightforward to implement and ensure compliance,<sup>111</sup> with the onus being on producers to specify whether BAT was used in production.<sup>112</sup> This would involve a self-certification process monitored by importing authorities, or an international body if the system was accepted multilaterally. EU law

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<sup>105</sup> *Ibid*, at 140.

<sup>106</sup> H.R. 2454, 111th Congress, §214.

<sup>107</sup> In practice this means being available to buy on the open market, preferably from a range of competitive sellers as opposed to only being available in countries requiring its use, since this could cause a country to exploit its ability to offer trade concessions in order to increase sales of its domestically produced technology.

<sup>108</sup> The potential for BAT requirements to incite innovation is recognised in Ismer and Neuhoff, see n.9, at 155.

<sup>109</sup> Dowell *et al*, see n.31 at 1060.

<sup>110</sup> Difficulties related to requiring BAT as a basis for BTAs are considered in Bernstein and Hannah, see n.8, at 65-68; Quick and Lau, see n.95, at 432-433.

<sup>111</sup> Ismer and Neuhoff, see n.9, at 156.

<sup>112</sup> *Ibid*, at 153.

already requires proof of origin certificates for traded electricity<sup>113</sup> amongst other items, and have previously proposed to reduce VAT for products showing an EU eco-label.<sup>114</sup>

Therefore the method would not be novel, and indeed Demaret and Stewardson believe<sup>115</sup> that this approach was permitted in *USA/Superfund*, where the Panel did not consider the USA's BTAs to be a violation of Art III:2, when it charged an amount to represent the 'predominant' PPM where no information was available on a product's substances.<sup>116</sup> A key advantage of requiring BAT is that it limits the extent of the administrative burden of quantifying inputs into a product and collating all such complex data.

An example of how BAT would work within the BTA framework follows the Fiji-Samoa sugar example as used at 40. In this case the sugar processing plants waste high levels of water. Fiji regards this process method as environmentally damaging. It places an excise tax on sugar processing to represent the wasted water. However technology is available on the market which reduces the level of water wastage in sugar processing. The BAT is that which wastes the least water. Fiji exempts processors from tax who can show they have used this BAT.

To make the same apply to imports, all imports are subjected to the same level of excise tax, except those imports which can show they have been produced using the same BAT. In reality, this process would be more complex since reduced levels of the excise tax could be

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<sup>113</sup> Directive 2001/77/EC, *OJ* 27.10.2001, L 283/33.

<sup>114</sup> Regulation EC/1980/2000 on a Revised Community Eco-label Scheme of 17/7/2000, *OJL* 237 of 21/92000, at 1 and the Commission decisions adopted thereunder.

<sup>115</sup> Demaret P and Stewardson R, 'BTAs under GATT and EC Law, and general Implications for Environmental Taxes' (1994) 28 *J.W.T.* 4, 5-65, at 33.

<sup>116</sup> GATT, see n.13, paras. 5-2.9-10.

available to processors depending upon the quantity of water wastage as another incentive, and this would need to be reflected as a BAT for imports to level the playing field for them.

A number of challenges counter the acceptability of the BAT-BTA method. Bernstein explains that for some environmental problems it is not certain which is the ‘best’ PPM.<sup>117</sup> If there are a range of potential production methods, any technology used to achieve a given method will only be the BAT for one PPM, which itself may not be the most suitable for the environmental problem. Bernstein cites the instance where the World Bank considered a specific tool to assess forest certification. It was argued that the chosen tool, if used, would have favoured one system of forest management over others, which would have imposed that system on anybody aiming to gain forestry certification.<sup>118</sup> Applying this to the present case, a State imposing environmental standards internally may need to recognise alternative methods used by other States to achieve the same standard, using a principle of mutual recognition. Therefore in order to minimise taxation internally and at the border, a range of PPMs may be available given that their capacity to achieve the environmental goal can be proven. The onus could be on the producer, if they wish their PPM to be recognised alongside the officially recognised PPMs. Similarly, each PPM may have a selection of BATs which could also be recognised as being applicable to one type of PPM. Each type of BAT would need to be capable of reaching a similar threshold of improvement required by a selected PPM. This system draws similarities with the EU’s environmental Framework Directives, which provide a particular environmental target for all Member States, but allow each Member State autonomy in determining their own method of achieving that target.<sup>119</sup>

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<sup>117</sup> Bernstein and Hannah, see n.8 at 600-601.

<sup>118</sup> *Ibid*, at 600-601.

<sup>119</sup> See eg. EU Water Framework Directive, Directive 2000/60/EC of the European Parliament and of the Council of 23/10/2000 establishing a framework for Community action in the field of water policy.

A further problem suggested by Quick and Lau is that a country may invent the BAT but patent it, so that either importing countries would have to buy that technology – which it could restrict or sell at high prices – and if they fail to use it then national industries would be put at a competitive advantage.<sup>120</sup> However, this protectionism could be avoided using Ismer and Neuhoff’s ‘commercially available’ qualification.

#### 42.4 DUTY DRAWBACK

The ‘Duty Drawback’ mechanism, permitted by the ASCM, allows imported intermediary goods which are never sold in the domestic market but are instead used to manufacture primary products, to be exempted from import duty.<sup>121</sup> Such a system is in place in the EU, the aim being to enable manufacturers to produce competitively.<sup>122</sup>

This mechanism could potentially be manipulated as an alternative to BTAs to limit the use of any imported intermediary goods which have not been produced using BAT. Any duty drawback scheme could be amended to make the drawback conditional upon the intermediary good being produced using BAT, where such goods are commercially available. This incentive for domestic manufacturers to import only BAT-produced goods could have a large impact upon foreign PPMs who would likely become incentivised to produce more efficiently using BAT in order to sell to importing manufacturers.

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### 43. CONCLUSION

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<sup>120</sup> Quick and Lau, see n.95, at 432-433.

<sup>121</sup> See n.26, ASCM, Annex 1(i).

<sup>122</sup> Arts 114-129 of Council Regulation (EEC) 2913/92 of 12/10/1992 establishing the Community Customs Code [1992] O.J. L302/1 (and as implemented and amended by subsequent Regulations).

BTAs should not be assumed to be straightforward to apply. They are a highly complex solution to a difficult global situation, with goals that are controversial, and their treatment is subject to ongoing international legal debate, creating uncertainty. Further they are politically dangerous since their perception as protectionist measures can lead to trade wars which could imbalance global trade, whilst their intention could be interpreted as imposing their user's national values upon smaller trading partners.<sup>123</sup>

Despite this, they are an enormously useful tool to achieve environmental protection at a unilateral (or potentially multi-lateral) level due to their influential ability and their means of reducing fears of competitive disadvantages amongst national businesses. Their ability to ensure that negative externalities are internalised into the cost of goods means that consumers can make informed choices and this removes demand for low-cost, high-pollution goods. It incentivises innovation in the market for more efficient production capabilities, which will further economic growth at the same time as benefiting the environment.

Though BTAs are administratively difficult, a self-certification requirement would place the onus upon producers and costs would fall once this became the norm. If States can utilise BTAs without sparking retaliatory trade measures, they can be useful in achieving environmental objectives. Therefore policymakers will be able to utilise the solutions proposed within the Universal Model and introduce BTAs to mitigate any possible competitiveness disadvantages.

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<sup>123</sup> Biermann calls for WTO law to be reformed to restrict influence on PPMs overseas where there has been no attempt at multilateral agreement. See n.75, at 434.

Two further issues associated with BTAs are discussed by this author elsewhere, with the intention of offering solutions to overcome the concerns raised therein. The first is the risk of commercial abuse of export tax remissions available to exporters who, it is shown, may be able to unduly claim back a tax on production even though they continue to cause environmental damage. The second is an original evaluation of the exploitation of a loophole aimed to protect DCs from the disadvantages to their development caused by unilateral environmental production standards. Both seek to offer policy-makers the ability to introduce unilateral environmental taxes to achieve environmental objectives, without hindering wider policy goals.<sup>124</sup>

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<sup>124</sup> Truby J, 'Towards overcoming the conflict between Environmental Tax Leakage and Border Tax Adjustment Concessions for Developing Countries' (2010) 12 VJEL.

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# CHAPTER 9: HOW CAN POLICYMAKERS USE TAXATION TO TARGET THE SOURCE OF AN ENVIRONMENTAL PROBLEM?

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#### **44. INTRODUCTION: PURPOSE & METHODOLOGY**

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In responding to the Research Questions for Part II, means have been explored in Chapter 6 providing policymakers with informed choices as to tax methods and wider supportive social measures available to influence behaviour towards the environment without the unintended consequences of potentially ruinous taxpayer opposition. Chapter 7 has explored issues available to policymakers in determining which parties would be appropriate to bear the burden of environmental taxation depending upon the circumstances in hand. Together such guidance allows a policymaker to make an informed choice as to both the incidence of any environmental taxation and methods to enhance its success.

The purpose of this chapter is to provide guidance for a policymaker to ascertain how taxes can most effectively be targeted to create the necessary incentive for behavioural change. The most economically or environmentally efficient solution is regarded in this chapter to be the most effective, depending upon the context. Environmental taxes targeted at specific environmental issues can deliver the appropriate message and achieve the desired changes,

and the chapter will aim to identify how a policymaker can do this. The chapter will consider where some taxes have proved inefficient in failing to target the source of an environmental problem, and what lessons can be learnt from this.<sup>1</sup>

Further, it may not be possible to alter environmental behaviour without offering realistic alternatives. If behavioural change is required, then targeting the source in practice means changing behaviour from one choice to another choice. Without an alternative sustainable choice, change may not be possible and the source of the problem may not have been successfully targeted. Hence this chapter will consider tax packages as both penalties and incentives to change decisions, in order to demonstrate to the policymaker the considerations to have in mind before introducing such tax reform. Further it will identify unforeseen negative consequences associated with tax reform policies due to design flaws which fail to target the source in a fair and economical manner. For such flaws the chapter will suggest reform solutions demonstrating how a source can properly be targeted. With such knowledge a policymaker should be able to design the most effective means of targeting the source of an environmental problem in order to achieve the required improvements and outcome.

The chapter will initially formulate and evaluate a case study. Aviation taxation can be examined at this stage as an example of tax legislation which attempts to alter behaviour by targeting the source of the problem in encouraging alternative behaviour. This first section will consist of a case study into the UK's APD (Air Passenger Duty) as part of an overall policy of changing transportation behaviour, and compare it with other European jurisdictions. It will note where the incentives and burdens falls. The chapter then considers the subject of targeting taxes at the source of environmental harm in a general non-aviation

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<sup>1</sup> Echoed in Geyer-Allely and Zacarias-Farah, see chapter 6, n.20 at 925.

context. It is intended that the lessons learnt through these examples can provide guidance as to how a tax reform can most effectively be targeted to an environmental problem's source.

## **45. CASE STUDY: ANALYSIS OF AIR PASSENGER DUTY**

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### **45.1 INTRODUCTION: INTENTION OF APD BANDING**

APD from 1 November 2009<sup>2</sup> charged a fixed rate of tax<sup>3</sup> for each passenger based on their destination country, with destinations categorised into four different regions allowing four different tax bands (Bands A-D).<sup>4</sup> The rationale behind the distance-based banding structure was to ensure that the longer the flight, the higher the tax - in order that the environmental impact of a flight could be internalised, and as final incidence normally fell upon the passenger there was an incentive to avoid both unnecessary flights and long flights.<sup>5</sup>

### **45.2 PERVERSE INCENTIVES: SHORT HAUL**

Næss-Schmid *et al* have criticised the design of some targeted indirect taxes (as opposed to taxing at root). They are argued to be crude in offering uniform rates which do not take account of variations between different models to reflect different efficiencies. They are also argued to be arbitrary by using average estimations of factors such as usage and fuel efficiency, which may not be appropriate to many given circumstances. This is shown to lead to a failure to provide appropriate incentives to change behaviour, and these arguments are

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<sup>2</sup> Pursuant to FA 1994, s.30, as amended by FA 2010, s.14.

<sup>3</sup> From 1 November 2009, pursuant to FA 1994, s.30, as amended by FA 2010, s.14.

<sup>4</sup> See the rates in HMRC, '2008 Pre-Budget Report: Air Passenger Duty' at para. 8, <<http://www.hmrc.gov.uk/pbr2008/pbrn20.pdf>> Accessed 28 April 2010.

<sup>5</sup> A DfT White Paper set out the intention to reduce demand, DfT, 'The Future of Air Transport' (2003) Cm 6046.

applicable to APD rates.<sup>6</sup> Arguably the broad rates were somewhat arbitrary and unfair on passengers because of the banding formats. For example Band A charged the same rate on destinations with capitals between 0 - 2,000 approximate miles from London. Therefore a passenger on a flight to Jersey bore the same tax liability as a passenger flying significantly further to Western Sahara. The banding's justification may have been to reduce short-haul and unnecessary flights where alternative sustainable means were available.<sup>7</sup> However a negative consequence was the incentive for airlines to offer flights as far as possible within the 2,000 mile zone.

Furthermore, since the distance was always measured from London and not the actual airport of departure, a passenger on a flight from London to Paris paid the same rate as a passenger flying from Glasgow to Paris regardless of the significant differences in distance and alternative transport methods. This may have succeeded in incentivising a passenger departing from London to use alternative means of transport to Paris, enabling a policy of discouraging short-haul flights from London. However a passenger departing from Glasgow would have been at a comparative tax advantage compared to a passenger departing London given the additional 350 approximate miles that the former could travel for the same amount of tax.

### 45.3 INCOMPATIBILITY WITH DOMESTIC TRANSPORT POLICY

Given that the GBP £12 rate applied<sup>8</sup> (on top of other standard charges such as airport fees and the fuel surcharge) to both, a passenger departing Glasgow using an Economy ticket would still normally have found it more economical to fly to Paris than use public transport.

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<sup>6</sup> Næss-Schmid *et al*, see chapter 6, n.22 at 18.

<sup>7</sup> Over 40% of the recent growth in UK leisure air travel was generated by fare reductions, according to Dargay J and Hanly M, 'The Determinants of the Demand for International Air Travel to and from the UK.' (2001) *ESRC Transport Studies Unit working paper*.

<sup>8</sup> The reduced rate for the lowest class of travel in 2010-11.

A train or coach would take many times longer than a flight, and a train would almost certainly cost much more and involve a number of changes to different rail operators. A basic search for Economy tickets at the time of writing found that it was frequently possible to fly directly from Glasgow to Paris for circa GBP £20-£40 return including all charges and APD, taking around 2 hours each way. At the same time it was possible to buy a return train ticket for circa GBP £120-£160 which took 8-9 hours each way with at least one change, or to travel by coach for circa GBP £70 return in 22 hours with 2 changes. However, from London the fares were not significantly different, and train travel was generally faster when the commute to the airport and check-in times were included. Seemingly the incentive applied more to departures from London than elsewhere.

With air travel continually being significantly cheaper and quicker for domestic or European travel than alternative sustainable transport, it is difficult to argue that APD had appreciable impact on travel behaviour. Therefore the incentive within Britain was not completely effective in achieving the environmental objective – targeting the source of pollution, in this case the demand for flying short-haul – though this is largely to do with the lack of alternative sustainable transport options. It is accepted, however, that the rates were categorised for administrative efficiency as it would be onerous to link the tax charge with the exact distance flown. At the same time, the tax was not working to its full effect in reducing short-haul flights, and appeared to be simply raising revenue rather than achieving the objective of behavioural change.

#### **45.4        THEME APPLIED TO DOMESTIC TRAVEL**

##### **45.4.1                    APD REVENUE RECYCLING INTO RAIL TRAVEL**

In order to promote a *White Paper*<sup>9</sup> objective of replacing short-haul flights with train travel, it may have been sensible to continue collecting APD so that a message could be sent about the environmental cost of air travel, but to make further efforts to alter behaviour by earmarking APD revenue to subsidise alternative domestic transport.<sup>10</sup> Today, this could be done in a way that makes alternative transport better value than flying – including subsidising rail tickets to directly bring down their prices. Price-related demand would allow train travel to compete more successfully with air travel. This follows the theme of polluters paying combined with environmental improvers being rewarded.

Price changes could also be coupled with improvements in train services, with APD revenue earmarked to invest in improvements in order to make train travel a real alternative and increase demand. Presently, many parts of the UK are poorly connected to the rail network, with slow and/or infrequent services, making trains struggle to compete with air transport on longer journeys.<sup>11</sup> It is difficult to justify increased costs of air tickets if passengers have little other option to travel – otherwise it feasibly becomes a revenue-raising charge with no behavioural impact.

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<sup>9</sup> DfT, 'High Speed Rail' (London: TSO, 2010) *White Paper No. Cm 7827*.

<sup>10</sup> Businesses, passengers, the aviation industry and the media have initiated campaigns against APD. A main concern is that the revenue goes to HM Treasury and not to environmental projects, showing the rationale of internalising negative externalities has not been accepted by the public. See eg. The Telegraph's campaign 'Budget 2010: Air Passenger Duty and the rising cost of flying for British families' *The Telegraph*, 24/3/2010, <<http://www.telegraph.co.uk/travel/travelnews/air-passenger-duty/7513091/Budget-2010-Air-Passenger-Duty-and-the-rising-cost-of-flying-for-British-families.html>> Accessed 22/4/2010.

<sup>11</sup> DfT, see n.5, at 58.

Regular, comfortable and inexpensive services funded by APD earmarked revenues could help make rail travel the norm.<sup>12</sup> It would send a better environmental message than the situation where the purposes of APD rate increases are questioned. High speed, electric rail service especially around hub airports were key recommendations of the Royal Commission report on Environmental Pollution which recognised that short-haul flights have a much larger impact than rail transport over the same point-to-point journey.<sup>13</sup>

#### 45.4.2 COMPARISON: SPANISH DEVELOPMENTS

Spain has been at the forefront of changing transport behaviour, where large public investments in the industry have meant new train routes making long-distance travel by rail become inexpensive and fast. The high speed 410-mile Barcelona-Madrid route takes 2.5 hours and at the time of writing a ticket can cost only GBP £40. In 2007, 72% of long-distance domestic travellers chose air travel over rail, but increased investments in new high-speed trains combined with low prices reduced this to 60% in 2008.<sup>14</sup> This change of behaviour led to 20% less passengers on domestic flights and a corresponding decrease in carbon emissions.<sup>15</sup> The Spanish Government planned investments of EUR €108 billion in the rail industry by 2020, with an extensive network of ‘bullet’ trains covering both long distance routes and connecting rural parts of the country, so that 90% of the country could live within 31 miles of a high speed rail station.<sup>16</sup> Such commitment provides real alternatives for people to be capable of altering their environmental behaviour – though

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<sup>12</sup> Such passenger requirements are recognised in DfT, 'Delivering a Sustainable Railway' (London: TSO, 2007) *White Paper No. Cm 7176*, at pp. 92-110.

<sup>13</sup> RCEP, *The Environmental Effects of Civil Aircraft in Flight* (London: RCEP, 2002) Special Report, at 37, para. 6.4.

<sup>14</sup> 'Spain's high-speed trains win over fed-up flyers' *The Guardian* 13/1/2009  
<<http://www.guardian.co.uk/world/2009/jan/13/spain-trains>> Accessed 28/1/2010.

<sup>15</sup> *Ibid.*

<sup>16</sup> 'Spain's Bullet Train Changes Nation -- and Fast' *The Wall Street Journal* 20/4/2009  
<<http://online.wsj.com/article/SB124018395386633143.html>> Accessed 28/1/2010.

whether this project remains affordable given Spain's national economic crisis remains to be seen.

#### 45.4.3

#### INCENTIVES FOR DOMESTIC RAIL OPERATORS

The UK's general policy on encouraging rail transport is developing but has often been fragmented and badly targeted. Train operators must run trains on the track provided for them and have little control over the type of track they use. Electric trains are around 35% less expensive to operate and typically emit 20-35% lower emissions per passenger than diesel trains.<sup>17</sup> Much of the UK network (at the time of writing) is not electrified so train operators must use diesel powered trains whilst having an obligation in their franchise agreements to provide a certain number of services.<sup>18</sup> Nevertheless operators still must pay fuel duty. While this tax may provide the desire to have electrified tracks offering lower emissions and greater energy efficiency,<sup>19</sup> it is not in the power of the operators to alter the tracks, thus it creates an impossible incentive. The duty only provides an incentive to improve the fuel efficiency of train engines.

Duty on biofuels for trains fell considerably following the 2006 Budget providing a substantial incentive to convert train engines.<sup>20</sup> Yet Government intervention was necessary

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<sup>17</sup> DfT, 'Britain's Transport Infrastructure: Rail Electrification' (London: DfT Publications, 2009) at 8, paras.13-15, <<http://www.dft.gov.uk/pgr/rail/pi/rail-electrification.pdf>> Accessed 21/4/2010.

<sup>18</sup> Approximately 60% of passenger journeys are made on electric trains: *Ibid*, at 6, para.8, <<http://www.dft.gov.uk/pgr/rail/pi/rail-electrification.pdf>> Accessed 28/1/2010.

<sup>19</sup> In terms of carbon emissions "...all the electric trains [operating in the UK's rail network] are better than any diesel train"; Kemp RJ, Engineering - Traction Energy Metrics (London: Rail Safety and Standards Board, 2007) at 28, <[http://www.rssb.co.uk/pdf/reports/research/T618\\_traction-energy-metrics\\_final.pdf](http://www.rssb.co.uk/pdf/reports/research/T618_traction-energy-metrics_final.pdf)> Accessed 21/1/2010.

<sup>20</sup> ATOC, 'Train Operators Welcome Chancellor's Cut In Biofuel Duty' 6th December 2006 <<http://www.atoc-comms.org/dynamic/atocpress-story.php?atoc=997790>> Accessed 1/8/2009.

for a much greater impact; the announcement of a GBP £1.1 billion investment in electrifying the Great Western Main Line to create an alternative system of rail services.<sup>21</sup> In 2010, the DfT announced ambitious plans to invest heavily in domestic rail services to such an extent that it would eliminate the need for short-haul domestic flights.<sup>22</sup> The investment in such infrastructure could provide such an alternative and for the first time the British Government explicitly committed to the demise of short-haul flights. However, this public investment may no longer be feasible following the recession, and Network Rail have indicated that large infrastructure projects may need to be cancelled or postponed following a decreased budget.<sup>23</sup> The point remains, however, that forcing passengers away from vehicles or air travel should only be popularised if public transport is a real and attractive alternative.<sup>24</sup>

#### 45.5 DISTANCES TO CAPITAL CITIES: LONG-HAUL

Moscow fell within Band A since it is less than 2,000 miles from London. However, the majority of Russia is more than 2,000 miles from London and an exception was made to the way that the country was categorised. Any destination airport west of the Urals was classed as Band A, whereas any destination airport east of the Urals was classed as Band B<sup>25</sup> which brought most of Russia into a higher charge. *Prima facie* this would appear to have been designed to recognise the environmental impact of the considerable additional miles after the Urals. A cynical view however may be that it was decided to make an exception for Russia

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<sup>21</sup> ATOC, 'Electrification announcement is excellent news for passengers and the environment' 23/7/2009 <<http://www.atoc-comms.org/dynamic/atoc-press-story/997919/electrification-announcement-is-excellent-news-for-passengers-and-the-environment>> Accessed 1/8/2009.

<sup>22</sup> DfT, see n.9.

<sup>23</sup> 'Rail fares will rise as investment falls' *The Times*, 4/6/2010, <[http://business.timesonline.co.uk/tol/business/industry\\_sectors/transport/article7143817.ece](http://business.timesonline.co.uk/tol/business/industry_sectors/transport/article7143817.ece)> Accessed 7/6/2010.

<sup>24</sup> A point reinforced in Fedrigo D and Tucker A, 'Blueprint for European Sustainable Consumption and Production' (2009) *EEB Publication No. 2009/07* at 12, <[http://www.eeb.org/publication/2009/0905\\_SCPBlueprint\\_FINAL.pdf](http://www.eeb.org/publication/2009/0905_SCPBlueprint_FINAL.pdf)> Accessed 28/4/2010.

<sup>25</sup> Approximately 2001–4000 miles from London.

in order to gain the additional tax revenue as most of the country is further away from London than the capital. While Russia was divided in two since the capital city was inconveniently close to London for the purposes of APD, the same rationale did not apply to another geographically large country, China, where the capital city is in the east – passing the 4,001 miles barrier which placed the whole of China in Band C. This meant that many Chinese airports located below the 4,001 mile barrier could have fallen within Band B had the capital been in the west of the country, or if the country had been divided for the purposes of APD banding as with Russia.<sup>26</sup> Contrarily, Russia is by far the geographically largest country in the world<sup>27</sup> covering several continents and perhaps it was decided to only make an exception with this one country given its exceptional landmass.

#### 45.6 USA TAX BREAK

It may have been sensible nevertheless to apply the logic used for Russia to flights departing for other countries such as the USA, to avoid arbitrary consequences undermining the tax's environmental rationale. Washington, D.C. is on the east of America and being 3,674<sup>28</sup> miles from London it allows the USA to narrowly fall under the 4,001 mile limit to be classed as Band B. Despite this, the vast majority of US airports are considerably over 4,001 miles from London. California – a popular destination for British tourists but on the Pacific coast of America – could have been classified as Band C since it is 5,314 miles from London.<sup>29</sup> At

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<sup>26</sup> Urumqi in Xinjiang (west China) for example is under 4,000 miles from China  
<<http://www86.wolframalpha.com/input/?i=Urumqi+to+london>> 28/4/2010.

<sup>27</sup> By land mass. Russia's land mass covers 6.593 million square miles, while the next largest country, Canada, only covers approximately half of that with 3.855 million square miles.  
<<http://www23.wolframalpha.com/input/?i=largest%20country&t=ff3tb01>> 28/4/2010.

<sup>28</sup> <<http://www93.wolframalpha.com/input/?i=washington+dc+to+london>> 28/4/2010.

<sup>29</sup> <<http://www93.wolframalpha.com/input/?i=california+to+london>> 28/4/2010.

7,315<sup>30</sup> miles from London, Hawaii would have been well within the highest band, Band D – but instead a 13.5 hour flight to Hawaii was taxed at same rate as a 4 hour flight to Cairo.

Whilst this seemed environmentally disproportionate, it was also detrimental towards certain tourist-dependent regions such as the Caribbean who were unnecessarily put at a competitive disadvantage with no environmental justification.<sup>31</sup> A 7.5 hour flight to Barbados<sup>32</sup> was taxed at a higher rate than a flight to Hawaii. The Caribbean Tourism Organisation complained this was discriminatory since it damaged its tourist industry and attracted higher charges for dual nationals making the trip.<sup>33</sup> Such anomalies were seen consistently throughout the APD system caused by the uniform method of selecting capital cities as the means of banding. Despite the administrative burden, it would be possible in principle to calculate the actual distance from the airport of departure (which will frequently not be a London airport) to the actual airport of destination. This would have been a fairer system and the environmental message could be conveyed in a more effective manner, though may again have led to some airports unduly benefiting. The environmental effectiveness will be analysed below.

#### 45.7 ENVIRONMENTAL EFFECTIVENESS OF DISTANCE-BASED AVIATION TAXATION

Taxing for distance travelled brings the additional fuel used for longer flights into charge.

The message with distance-based charging is simple and effective, even if it does not fully

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<sup>30</sup> <<http://www.wolframalpha.com/input/?i=hawaii+to+london>> 28/4/2010.

<sup>31</sup> Falling numbers of tourists were reported by Civil Aviation Authority, 'Recent trends in growth of UK air passenger demand' (2008) <[http://www.caa.co.uk/docs/589/erg\\_recent\\_trends\\_final\\_v2.pdf](http://www.caa.co.uk/docs/589/erg_recent_trends_final_v2.pdf)> Accessed 22/4/2010.

<sup>32</sup> Barbados' capital Bridgetown is estimated to be 4,213 miles from London <<http://www93.wolframalpha.com/input/?i=bridgetown+distance+to+london>> 28/4/2010.

<sup>33</sup> <<http://www.onecaribbean.org/traveltrade/tradenews/newsandfeatures/apd.aspx>> Accessed 22/4/2010.

explain the correct environmental situation. The Civil Aviation Authority found it advantageous to use distance to meet environmental objectives.<sup>34</sup> They argue that distance should be measured by function rather than purely geographical distance, in order to avoid hub-changes which would increase emissions.<sup>35</sup>

However Calder believes that fuel use depending on the distance travelled is only marginal compared to the fuel used during the first phase of the flight.<sup>36</sup> This makes short flights use a “disproportionate” amount of fuel.<sup>37</sup> As such, he argues that it would be more environmentally effective to introduce a high tax for every flight and marginal increases for the distance travelled – whereas APD did the opposite.<sup>38</sup> Nevertheless, this reversed tax proposal would make UK industry less competitive due to increased short-haul costs, and encourage flying outside of Europe. A tax that discriminates between EU Member States, could fall foul of the right to freedom of movement within the EU<sup>39</sup> or be regarded as too restrictive a measure since a basic freedom is at stake.<sup>40</sup> If a message on environmental change – although technically incorrect as to the exact environmental impact – manages to achieve a given policy of reducing aviation emissions, then the (somewhat distorted) tax system will have been largely successful and therefore the flaws may be excusable. However

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<sup>34</sup> ‘Civil Aviation Authority Response to HM Treasury Consultation on Aviation Duty’ 24/04/08, at para.42, <<http://www.caa.co.uk/docs/5/20080424CAAResponseOnAviationDutyFinal.pdf>> Accessed 28/4/2010.

<sup>35</sup> *Ibid.*

<sup>36</sup> Calder S, ‘Air Passenger Duty is still in a hopeless mess’ *The Independent* 29/11/2008, <<http://www.independent.co.uk/travel/simon-calder/simon-calder-air-passenger-duty-is-still-in-a-hopeless-mess-1039849.html>> accessed 2/6/2009.

<sup>37</sup> RCEP, see n.13 at 23, para.4.11.

<sup>38</sup> Calder, see n.36.

<sup>39</sup> Within Europe this is protected by Council Directive 2004/38/EC of 29/4/2004, and Article 18(1) of the EC Treaty.

<sup>40</sup> Fiscal measures with the EU must be the least restrictive measure available when a basic freedom is at stake: Case C-320/03 *Commission of the European Communities v Republic of Austria* [2005] ECR I-09871. It a tax is incompatible with freedoms guaranteed within the EC, the tax is unjustifiable; Anido MAC *et al*, *Jurisprudencia tributaria del Tribunal de Justicia de las Comunidades Europeas: vol II, 1996-1999* (Madrid: La Ley, 2001) at 297.

if the tax system does not achieve the environmental policy then it will be deemed ineffective, and much worse if it ends up causing damaging substitutional behaviour.

In fact Calder is incorrect to assert that take-offs and landings are the “most damaging part of the flight...”<sup>41</sup> It is true that this initial phase uses a disproportionate amount of fuel, which encourages the argument for a high initial level of tax to discourage short-haul flights.<sup>42</sup>

However the Royal Commission recognise that “take-off and landing become less significant as the flight distance increases...”<sup>43</sup> and in particular very long haul flights vastly increase the fuel usage per passenger because a large quantity of fuel must be carried during the early stages of the flight.<sup>44</sup> Therefore the marginal increases for distance proposed by Calder may need to be set at significant rates. Combined with a high initial rate, the tax could be competitively unworkable as a unilateral measure.

Since APD’s highest banding was 6,000 miles, some very long-haul flights were charged at a proportionately much higher rate of APD than others flying over 6,000 miles. For example Cambodia is just over the 6,000 mile mark<sup>45</sup> whilst New Zealand is over 11,000 miles<sup>46</sup>. If this impacted upon passenger behaviour at all, it would surely have been to make passengers fly further. This perverse incentive meant it would have only cost an extra GBP £10 in APD to take a 24-hour flight to New Zealand over a 7-hour flight to New Delhi which was unlikely to provide a disincentive to any average passenger in taking very-long haul flights.<sup>47</sup> Such realities of the system distorted the behavioural message of APD and could negative substitutional behaviour. Even between bands, the limited increases in the rates also caused

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<sup>41</sup> Calder, see n.36.

<sup>42</sup> RCEP, see n.13 at 23, para.4.11.

<sup>43</sup> *Ibid* at 23, paras.4.13.

<sup>44</sup> *Ibid*.

<sup>45</sup> <<http://www28.wolframalpha.com/input/?i=london+to+cambodia>> Accessed 28/4/2010.

<sup>46</sup> <<http://www28.wolframalpha.com/input/?i=london+to+cook+islands>> Accessed 28/4/2010.

<sup>47</sup> On a reduced-rate flight in 2010-11.

perverse incentives. A Business class passenger flying just outside the 2000 mile band was charged GBP £120, yet after that it was only an additional GBP £50 to fly over 6,000 miles, meaning it would only cost a Business class passenger £50 more in APD to fly to New Zealand than to fly to Egypt.

#### 45.7.1 ALTERNATIVE REFORM PROPOSALS

Aviation tax in the form of APD as described above is not regarded to have had a significant impact upon overall passenger behaviour, as in many cases rates were relatively small proportionate to the ticket cost. However, some areas such as the Caribbean reported falling numbers of tourists. There are a number of drawbacks to the system and it generally provided a hap-hazard approach to affecting behaviour. Depending on the environmental policy, a policymaker may find a reformed tax more effective in targeting the differing problems and sources of harm.

Alternatives to APD are discussed below to determine which option in principle could produce a more desirable situation than the initial proposal. These options concentrate solely on achieving the environmental goal of reduced aviation emissions and not on achieving reductions in matters such as noise or air congestion.<sup>48</sup> The options are explained and evaluated in order to highlight why any method is preferable.

##### 45.7.1.1 TAX ON AVIATION FUEL

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<sup>48</sup> Alternative types of Aviation Taxes for other environmental and non-environmental are reviewed in Keen M and Strand J, 'Indirect Taxes on International Aviation' (2007) 28 *Fiscal Studies* 1, 1-41, See eg. pp.7-21.

An aviation fuel tax could disincentivise airlines operating inefficient flights. This would therefore not penalise passengers travelling to destinations for which the aircraft uses an ‘optimum’ amount of fuel. For the present day average aircraft the most fuel-efficient flight distance is approximately 2,700 miles, which would make a flight from Europe to the east coast of North America the optimum level.<sup>49</sup> An aviation fuel tax could reflect this in the price offered to passengers since it would make such flights the most economical for the airline. This could make such optimum level flights the best value and may increase demand for such flights.

Whilst in principal there would be environmental benefits to this, it would send a confusing message to passengers who may not understand the reasons for some flights being the most fuel-efficient and therefore less expensive.<sup>50</sup> This could lead to a mixed environmental message being sent to consumers who may believe that long-haul flights are always more environmentally efficient and alter their behaviour accordingly which would not be the desired behavioural change.

Such fuel duty would nevertheless provide a significant incentive for airlines to invest in more fuel-efficient aircraft in order to lower their tax liability. This would be the main attraction for introducing such taxation as it could work similarly to VAT on vehicle fuel, which artificially increases the price and encourages the motor industry to invest in producing more fuel-efficient vehicles to meet consumer demand.

IMF research suggests that the optimum aviation tax would be a combined system whereby:<sup>51</sup>

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<sup>49</sup> RCEP, see n.13 at 23, paras.4.13.

<sup>50</sup> See concept of ‘transformative rationale’ in 30.2 and n.34.

<sup>51</sup> Keen and Strand, see n.48, at 37-38.

- i. an aviation fuel excise duty is charged. This would mean incidence is fixed between taxpayers and is intended as a polluter-pays aspect to account for the cost of environmental harm; and
- ii. a VAT on ticket sales. This would be designed primarily to raise revenue but there would deliberately be no business incidence so as not to provide disincentives for business travellers in this part (though they contribute in the fuel excise duty).

Despite this, any tax on aviation fuel for international flights is currently a moot point.

Article 24 of the Chicago Convention prohibits any signatory nation from levying a tax on fuel for international aviation, either as a fuel duty or VAT.<sup>52</sup> International aviation ticket taxes are consequently generally zero-rated for VAT purposes.<sup>53</sup> Effectively this exemption subsidises international air travel over other transport means and therefore goes against global environmental objectives of reduced carbon emissions – a point highlighted in the *Stern Review*.<sup>54</sup> Since APD is not a tax on fuel but on passengers, it does not breach the Chicago Convention which may partly explain why it was implemented.

It is both common and legal under the Chicago Convention to charge domestic aviation fuel to VAT.<sup>55</sup> However this means any VAT-registered business may be credited for their VAT expenditure and there will be no behavioural impact for such businesses. An excise tax may then work more effectively, though this would create distortions between domestic and international flight costs with international flights becoming proportionately less expensive.

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<sup>52</sup> Convention on International Civil Aviation, Chicago, 7/12/1944; TS 8 (1953); Cmd 8742.

<sup>53</sup> The ICAO (International Civil Aviation Organisation) continue to recommend reciprocal tax exemption of fuel for international flights: ICAO, 'ICAO's Policies on Taxation in the Field of International Air Transport' (2000) Doc 8632 <[http://www.icao.int/icaonet/dcs/8632/8632\\_cons\\_en.pdf](http://www.icao.int/icaonet/dcs/8632/8632_cons_en.pdf)> Accessed 26/5/2010.

<sup>54</sup> Stern, see chapter 2, n.57 at 485-486.

<sup>55</sup> See Tables 2 and 3 in Keen and Strand, see n.48, at 6-8.

It is also legitimate under the Convention to tax fuel bought for international flights in a country's own jurisdiction, so long as it is not bought abroad. Yet this solution could create distortions by incentivising 'tanking' – the purchase of fuel in jurisdictions not charging tax – which could also be environmentally undesirable since it can mean aircraft landing unnecessarily to avoid tax.

#### 45.7.1.2 AVIATION EMISSIONS TAX

A tax on aircraft emissions would have similar consequences to an aviation fuel tax in terms of encouraging the most efficient flights. However an emissions-based tax would provide a much greater incentive to reduce emissions than either APD or an aviation fuel duty as the aviation industry would have a specific incentive to invest in low-emissions aircraft. If this is a policymaker's environmental objective (there may be other environmentally damaging parts of a flight which may need addressing over and above the emissions), the tax could work similarly to VED.

One main criticism of APD was that it failed to differentiate between environmentally efficient and inefficient aircraft – instead the tax was the same on all commercial aircraft models. Fixed APD rates combined with an exemption of aviation fuel duty provided no incentive for airlines to become more fuel-efficient. It was only in the airlines' interests to increase efficiency in order to decrease ordinary fuel costs and limit negative publicity related to flying. EasyJet advocated replacing APD with an emissions-based tax to act as a financial incentive for passengers to choose cleaner aircraft, as well as an incentive for airlines to invest in cleaner aircraft and a disincentive for airlines to run older more polluting aircraft.<sup>56</sup>

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<sup>56</sup> Harrison A, 'If you want cleaner skies, then ban old, dirty aircraft' 26/4/2007, <[http://www.easyjet.com/common/img/Andy\\_Times\\_ban\\_old\\_aircraft.pdf](http://www.easyjet.com/common/img/Andy_Times_ban_old_aircraft.pdf)> Accessed 3/6/2009.

A combined international response to bring aviation emissions into charge could work to create the necessary incentives to invest in low-emissions aircraft without unilateral competitive disbenefits.<sup>57</sup> However, there is little pressure to do so particularly as the obligation to reduce overall emissions of GhGs under the Kyoto Protocol excluded aviation emissions.<sup>58</sup> The International Civil Aviation Authority was given the task of regulating emissions but no enforcement powers.<sup>59</sup> The only pressure to reduce aviation emissions is for domestic aviation which was included in Kyoto's targets – though the Royal Commission argues that this obligation does not go far enough since it only includes CO<sub>2</sub> emissions and not other forms of aviation emissions.<sup>60</sup> The Copenhagen Accord<sup>61</sup> made no reference to aviation, partly due to the industry collectively setting its own targets to reduce emissions.<sup>62</sup>

As a coordinated international response is not feasible, countries can continue to implement unilateral measures. An 'aircraft excise duty' based upon emissions would make the annual running costs of an aircraft dependent upon its efficiency, as with vehicles in the UK. Combined with incentives such as tax reductions for replacing older aircraft, and R&D tax incentives to develop clean aircraft, this system could provide the appropriate model for reducing emissions. Indeed, older aircraft are recognised as being considerably more inefficient than modern ones so replacement can be highly beneficial for environmental objectives. An IPCC report predicts there could be a 40-50% increase in aircraft's fuel efficiency from 1997-2050, citing a 70% increase from 1950-1997.<sup>63</sup> It would not prevent

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<sup>57</sup> Methods to reduce such a risk are analysed by this author elsewhere, see chapter 8, n.124.

<sup>58</sup> Pursuant to Article 2.2.

<sup>59</sup> Pursuant to Article 2.2.

<sup>60</sup> RCEP, see n.13 at para.2.26.

<sup>61</sup> Draft decision -/CP.15 (1999) FCCC/CP/2009/L.7 <<http://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf>> Accessed 26/4/2010.

<sup>62</sup> IATA, Copenhagen Agreement Step in Right Direction - Aviation Strengthens Commitment to Tough Targets (2009) <<http://www.iata.org/pressroom/pr/Pages/2009-12-20-01.aspx>> Accessed 27/4/2010.

<sup>63</sup> Penner JE *et al*, *Aviation and the Global Atmosphere* (London: CUP, 1999) at para 7.2.4.

other taxes aimed at creating similar incentives from working alongside it, so long as the total tax liabilities did not make operating uncompetitive.

Emission taxes could however prove difficult to collect. Lack of available monitoring technology to quantify emissions may cause administration and compliance costs to be higher than per passenger, per-plane or per fuel use.<sup>64</sup> However, if the emissions tax was categorised based upon provable average emissions as with VED, it could be chargeable based upon the quantity of flights taken by an aircraft. This could prove more effective than an annual charge, which provides no incentive for an aircraft to fly less; quite the reverse as airlines would be keen to spread the cost of an annual tax across as many flights as possible. An 'aircraft excise duty' based on quantity of flights is therefore the advocated solution and will be inputted into the final proposal.

#### 45.7.1.3 TAX PER PLANE

Thus far, the discussion has referred to improved fuel efficiency, but McCarthy highlights that efficiency improvements can also refer to improved load factors – the capacity of seats occupied.<sup>65</sup> The British Government announced in the 2007 Pre-Budget Report that it proposed to replace APD with a duty payable per plane rather than per passenger as of 1 November 2009.<sup>66</sup> However, with the onset of a recession it was decided that it would be more advantageous for airlines to have a reformed APD than introducing a replacement duty

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<sup>64</sup> The varying costs related to different monitoring and verification methods offering a range of accuracy levels, are discussed in Kruger J and Egenhofer C, 'Confidence Through Compliance in Emissions Trading' (2006) 6 *Sustainable Development Law & Policy* 2, at pp.8-9.

<sup>65</sup> McCarthy JE, 'Aviation and Climate Change' in Blumenthal GT, *Aviation and Climate Change* (USA: Nova Science Publishers., 2010).

<sup>66</sup> HM Treasury, '2007 Pre-Budget Report: Meeting the Aspirations of the British People' (London: TSO, 2007), Cm 7227, at para.7.56.

which was expected to bring in a greater amount of tax receipts.<sup>67</sup> The 2008 Pre-Budget Report consequently abandoned plans to replace APD.<sup>68</sup> From a business-behaviour perspective it was deemed that a per-flight tax would discourage the opening of new routes during times of financial hardship, so taxes were not targeted at entire aircraft.<sup>69</sup> In fact, airlines actually cancelled planned routes due to APD.<sup>70</sup> The UK's 2010 Coalition Government decided to replace APD with a per-plane tax.<sup>71</sup>

From an environmental perspective, it is preferable to have one aeroplane taking off and polluting with many passengers on board, than multiple aircraft taking off with fewer passengers on board and emitting several times more pollution. Though aircraft with fewer passengers use less fuel than full aircraft, this is negligible compared to fuel used with additional aircraft taking off.<sup>72</sup> The ordinary incentive for an airline to fill a plane is to gain greater income which in particular spreads the costs of the fuel and running the flight.<sup>73</sup> APD offered no additional incentive to improve load factors as airlines do not pay more per passenger under circumstances where passengers bear final incidence. Perversely, an aircraft

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<sup>67</sup> HM Treasury, '2008 Pre-Budget Report: Facing Global Challenges: Supporting People through Difficult Times' (London: TSO, 2008) Cm 7484, at para.7.55.

<sup>68</sup> Green Air Online cited reports suggesting the amount raised under the reformed APD could be GBP £270 million less than the amount that could be gained from a tax per plane policy: Green Air Online, 'UK Government decides against change to a plane tax and instead opts for increases on passenger duty' <<http://www.greenaironline.com/news.php?viewStory=321>> Accessed 4/6/2009.

<sup>69</sup> HMRC, 'Changes to Air Passenger Duty' (2009) <<http://www.hmrc.gov.uk/ria/apd-reform-ia/pdf>> Accessed on 8/6/2009, at p.8.

<sup>70</sup> 'Recession and APD forces airlines to cancel routes' *The Telegraph*, 4/7/2009 <<http://www.telegraph.co.uk/travel/travelnews/air-passenger-duty/5731618/Recession-and-APD-forces-airlines-to-cancel-routes.html>> Accessed 26/4/2010.

<sup>71</sup> HM Government, 'The Coalition: Our Programme for Government' (2010) at 30, <[http://www.direct.gov.uk/prod\\_consum\\_dg/groups/dg\\_digitalassets/@dg/@en/documents/digitalasset/dg\\_187876.pdf](http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/documents/digitalasset/dg_187876.pdf)> Accessed 25/5/2010.

<sup>72</sup> See Green JE, 'Civil Aviation and the Environment – the Next Frontier for the Aerodynamicist' (2006) 110 *The Aeronautical Journal*, pp.469-486; Hileman JI *et al*, 'Payload Fuel Energy Efficiency as a Metric for Aviation Environmental Performance' (2008) Proceedings of the 26th International Congress of the Aeronautical Sciences; U.S. Department of Transportation, *Air Carrier Summary Data, Form 41 Schedule T-2 for 1991-2008* (As of 17/7/2008) <<http://www.transtats.bts.gov/>> Accessed 26/4/2010.

<sup>73</sup> Fuel costs make up 30% of Direct Operating Cost on long-haul flights, and 10% on short-haul flights, according to DfT 'Aviation and Global Warming' (2004) at para.3.2.2, <<http://webarchive.nationalarchives.gov.uk/+http://www.dft.gov.uk/about/strategy/whitepapers/air/docs/aviationandglobalwarmingreport>> Accessed 14/6/2010.

flying one passenger attracted a charge to APD based upon only that passenger which was clearly an environmental inefficiency.

A per-plane tax is environmentally more favourable than a per-passenger tax because it taxes the flight, and therefore internalises the cost, regardless of load factors. An airline's incentive is to reach maximum seat capacity to cover the tax. It is likely that fewer planes would operate but with improved load factors and lower emissions-per-passenger.<sup>74</sup> As such, the notion of a per-plane tax will be inputted into this chapter's final APD reform proposal.

#### 45.7.2

#### FINAL AVIATION TAX REFORM PROPOSAL AND EVALUATION

It is argued herein that the per-plane tax is particularly favourable compared with APD as it is a more effective means of achieving an environmental objective of reduced emissions.<sup>75</sup> One downside is that this tax also fails to differentiate between high emissions and low emissions aircraft. Further, a per-plane tax could lead to the undesirable consequence of increased numbers of smaller aircraft in operation since it would be easier to reach passenger capacity.<sup>76</sup> This could produce a net environmental disbenefit if many small aircraft produce emissions. Clearly it is important to take account of emissions as part of the charge.

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<sup>74</sup> See e.g findings in Morrell P, 'The Potential for European Aviation CO<sub>2</sub> Emissions Reduction through the Use of Larger Jet Aircraft' (2009) 15 *Journal of Air Transport Management* 4, 151–157; Jardine CN, 'Calculating The Carbon Dioxide Emissions Of Flights' (2009) *Oxford University Environmental Change Institute* <<http://www.eci.ox.ac.uk/research/energy/downloads/jardine09-carboninflights.pdf>> Accessed 26/4/2010.

<sup>75</sup> These arguments are echoed by the IFS in Leicester A, *The UK Tax System and the Environment* (London: IFS; 2006) at 43.

<sup>76</sup> A point recognised in Fullerton *et al*, see chapter 7, n.37 at 491.

Therefore the most advantageous system proposed herein would be for a charge which taxes the airline:

- i. Per aircraft for each flight taken; and
- ii. Taxes low-emissions aircraft at a lesser rate than high-emissions aircraft.

This would send a clear signal to airlines that it is necessary to invest in cleaner technology.<sup>77</sup>

A prudent use of the substantial revenues raised from flight taxes would be to offer airlines tax deductions for upgrading their aircraft.<sup>78</sup> Since it is the airlines who will be responsible for paying such taxes, this could be a revenue-neutral scheme to reduce the negative economic effect on the airline industry.<sup>79</sup> Given that airlines may not be able to claim tax deductions if they have reported no taxable profit, it could further be worth offering an aircraft ‘scrapage’ scheme similar to that seen with cars but as an integral part of claiming any future tax deduction. This would be environmentally attractive since it would prevent airlines simply selling such aircraft overseas (possibly at a discount) to countries without such a tax system, where their continued use would produce no net reduction in emissions.

Therefore the reform proposal envisages that aircraft would be chargeable as follows:

- i. An ‘aviation excise duty’ payable based upon the certified emissions of an aircraft. As with VED this would be divided into bands whereby lower emissions

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<sup>77</sup> The IPCC recognise that “...environmental levies have the potential to reduce aircraft emissions by providing further incentives to develop and purchase low-emission technology, improve operational efficiency, and reduce demand via higher fares.” Penner *et al*, see n.63 at para.10.4.3.1.

<sup>78</sup> Alternatively the incentive could be offered to manufacturers, as proposed in AEA’s report for DfT, ‘Report on International Aviation and Maritime Emissions’ (2009) AEA/ED46526/Issue 1, at 87. <<http://www.dft.gov.uk/about/eibr/int/intcopenhagenagreement.pdf>> Accessed 14/6/2009.

<sup>79</sup> Notably the UK Coalition Government’s APD reform was not intended to be revenue-neutral but instead would attempt to recycle revenues to increase tax allowances, potentially in order to initiate a welfare double dividend. HM Government, see n.71 at 30.

aircraft pay the least (possibly zero) and the highest emissions aircraft pay the most.<sup>80</sup> Like VED, charges would rise periodically for the highest emission bands so as to send a message that emissions charges will never fall.<sup>81</sup> This part of the proposal would provide the incentive to invest in modern, more efficient aircraft.

- ii. Unlike VED, the duty is not proposed to be chargeable as a fixed annual fee but instead to be chargeable on an aircraft per flight taken.<sup>82</sup> This can be based upon estimated emissions for the flight taking into account the type of aircraft and distance travelled. The charge would be calculated each period as follows:

$$\text{Rate of Excise Duty} \times \left( \frac{\text{Number of Flights}}{\text{Estimated total emissions of all flights}} \right)$$

- iii. The aviation excise duty must be set at a rate low enough to be commercially viable for airlines to take numerous flights throughout the aircraft's chargeable period, whilst providing a noticeable impact upon operating costs. This charge would be particularly noticeable for the least efficient aircraft since the duty payable would be the highest.<sup>83</sup> This part of the proposal would provide the incentive for airlines to reduce the number of flights flown, in order to reduce unnecessary flights with low load factors.
- iv. The revenue from the duties would be earmarked partly or wholly to provide tax credits for airlines renewing older aircraft with the most efficient new aircraft, and for R&D of more efficient aircraft. The availability of such credits would be

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<sup>80</sup> Pearce and Pearce argue that taxes should differ depending upon the aircraft type, in Pearce B and Pearce D, 'Setting Environmental Taxes for Aircraft: A Case Study of the UK' (2000) GEC-2000-26, at 23-25.

<sup>81</sup> As per the policy advocated by HM Treasury discussed in 32.5.1.

<sup>82</sup> Though may be payable to HMRC periodically in bulk.

<sup>83</sup> In the context of feebates, Greene *et al* identify that distinct schedules can be used to for distinct vehicle classes, see chapter 6, n.38, at 758.

dependent upon the policymaker's desired quota of total aircraft, in order to allow control over the extent of total emitters in the national fleet.

Final incidence would likely fall upon passengers as part of their ticket price.<sup>84</sup> Crucially the expected result would be that tickets for the most efficient aircraft would be consistently less expensive than the least efficient. This is important as demand for low emissions flights would affect the services on offer and airlines would consequently phase out the most polluting aircraft. The IIED echo this, explaining that "With informed choice based on aircraft and airline emissions efficiency, passengers can encourage the adoption of better aircraft technology."<sup>85</sup> The informed choice would be reflected in the price. Whilst differing duties dependent upon aircraft type may prove administratively onerous, if models were categorised in a similar format to VED bands (which themselves are imperfect), a more effective environmental incentive could be provided for passengers and consequently airlines.

To send a comprehensive message to passengers about the environmental cost of their air travel, this system would need to be reasonably clear to passengers when choosing their tickets so that the message is not confused. Providing an analogy with VED may be useful since the public are familiar with this concept and its purposes. This could also increase support for such taxation as consumers would feel able to make an environmental choice by choosing airlines operating efficient aircraft. It could prevent the view that APD is simply a tourist tax.

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<sup>84</sup> Cairns and Newson note that it is "...normal commercial practice for airlines to pass on the APD charge directly to their passengers." Cairns S and Newson C, 'Predict and Decide: Aviation, Climate Change and UK Policy' (2006) *Report, University of Oxford Environmental Change Institute*, at 95; 45-50.

<sup>85</sup> 'Flight plan: Taking Responsibility for Aviation Emissions' (2007) <<http://www.iied.org/pubs/pdfs/17019IIED.pdf>> Accessed 26/4/2010. Pearce and Pearce reach a similar proposal, and demonstrate that different aircraft types pollute in different ways, see n.80, at 16-25.

It is worth noting the potential environmental drawbacks of improved aviation efficiency is a subsequent increase in demand for low-emission flights which could increase net emissions. Research at the Australia National University points out that, while future patterns are unknown, historically “...demand growth generally outstrips emission intensity gains...” and explains that the “...chances of stabilising aviation emissions without restricting demand are diminutive.”<sup>86</sup> Once emissions have reduced generally in line with emissions-based taxes, it may be the case that tax bands can be reformed to further incentivise emissions reductions so that there is a continuing process of restricting demand for the highest emission flights and encouraging cleaner technology, whilst utilising the tax system to stabilise passenger numbers.<sup>87</sup> Such a concept has been advocated by Langer, who argues<sup>88</sup> for a ‘pivot system’ of incentives where rates can be set high enough to encourage a certain level of positive consumption, and once this is achieved the rate can be changed so that there is a continuing incentive to achieve even greater fuel efficiency.<sup>89</sup> Gordon and Levenson further argue<sup>90</sup> for rates set to provide continuing incentives to improve fuel efficiency with the rolling arrival of improved technology.<sup>91</sup>

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<sup>86</sup> Macintosh A and Wallace L, ‘International Aviation Emissions to 2025: Can Emissions be Stabilised without Restricting Demand?’ (Canberra: Australia National University Centre for Climate Law and Policy, 2008) at 15. <[http://www.aef.org.uk/uploads/International\\_aviation\\_emissions\\_to\\_2025\\_\\_\\_Macintosh\\_1.pdf](http://www.aef.org.uk/uploads/International_aviation_emissions_to_2025___Macintosh_1.pdf)> Accessed 28/4/2010.

<sup>87</sup> Cockfield discusses the interaction between tax policy and technology change in Cockfield AJ, ‘Towards a Law and Technology Theory’ (2004) 30 *Manitoba L.J.*, pp.383; 391-395. For instance it may be possible for Britain’s year 2050 aviation emission levels to return to 2000 levels through technology advances and alternative fuel usage: According to Sustainable Aviation, ‘Progress Report ’09’ (2009) at 18, Figure 5, <<http://www.sustainableaviation.co.uk/images/stories/key%20documents/sa%20second%20review%20final.pdf>> Accessed 27/4/2010.

<sup>88</sup> The argument is made in terms of feebates to improve vehicle efficiency incentive rates, but the concept is applicable to this context.

<sup>89</sup> Langer T, *Vehicle Efficiency Incentives: An Update on Feebates for States* (2005) *American Council for an Energy-Efficiency Economy*, Report No.T051, at 2 <<http://www.aceee.org/transportation/T051.pdf>> Accessed 18/6/2009.]

<sup>90</sup> In the context of feebates but applicable here.

<sup>91</sup> Gordon D and Levenson L, *Drive+: A Proposal for California to use Consumer Fees and Feebates to Reduce New Motor Vehicle Emissions and Fuel Consumption* (Berkeley, California: Applied Science Division, Lawrence Berkeley Laboratory, 1989) at 131.

Drafters of tax legislation would find it advantageous to separate the charge from the rates, such as by attaching a rates schedule in a separate section of the legislation, so that rates can be modified periodically without the need to continually amend the actual charging section. For instance this is done with VED, where annual Finance Acts are able to replace the rates Schedule attached to the charge in the Vehicle Excise and Registration Act 1994.

### 45.7.3

### LEGAL CHALLENGES AND THE CHICAGO CONVENTION

A potential flaw of the proposal is that it may breach the USA-EC Air Transport Agreement<sup>92</sup> and/or the Chicago Convention,<sup>93</sup> which the USA claimed would happen when the UK planned to introduce a per-plane tax.<sup>94</sup> The Dutch Ticket Tax<sup>95</sup> was challenged domestically on the basis that it contravened Article 15 of the Chicago Convention, which prohibits “fees, dues or other charges” from being charged on the right of air transit into a territory. The Dutch Supreme Court, in *Board of Airline Representatives in The Netherlands v. The State of The Netherlands (Ministry of Finance)*,<sup>96</sup> refused to declare that the charging statute was incompatible with the Chicago Convention, on the basis that there was no manifest breach of the Convention. Its interpretation of “charges” within the meaning of Article 15 was that it referred to charges levied in order for an aircraft to enter the territory. Since its duty was only levied upon chargeable passengers, it meant that aircraft could enter or depart the territory without charge, such as if they entered to refuel or only carried transfer passengers

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<sup>92</sup> Adopted in the EU pursuant to Decision of the Council and the Representatives of the Governments of the Member States of the European Union, meeting within the Council of 25/4/2007 on the signature and provisional application of the Air Transport Agreement between the European Community and its Member States, on the one hand, and the United States of America, on the other hand, OJ L 134, 2007/339/EC.

<sup>93</sup> Article 15.

<sup>94</sup> O’Connell D, ‘United States says Air tax is Illegal’ *The Times*, 11/5/2008.

<sup>95</sup> See 45.11.1.2.

<sup>96</sup> (2009) Supreme Court, Civil Chamber, 10/7/2009, 08/04121, NJ ; 2009, 563; MR Mok (The Netherlands).

who were not chargeable.<sup>97</sup> Therefore aircraft of any State would technically not be prohibited from entering or departing Dutch territory without paying a tax.<sup>98</sup>

A similar case in the UK failed in *R (on the application of the Federation of Tour Operators and others) v. Her Majesty's Treasury*,<sup>99</sup> where the applicants sought judicial review of APD on the basis that it was unlawful.<sup>100</sup> The High Court held that Article 15 of the Chicago Convention did not apply to APD because it considered that the prohibition on charging “dues” did not intend to prohibit taxes – otherwise, the argument went, it would have specifically referred to taxes in the Convention text. Instead, the court decided that the prohibition on charging “fees, dues or other charges” was actually a most favoured nation or anti-discrimination provision.<sup>101</sup> Since the tax charged all aircraft regardless of State origin, and charged even domestic flights, it did not advantage its national carriers or disadvantage any particular State’s carriers. This rather unconvincing interpretation came alongside the rejection of a host of challenges based upon international law.<sup>102</sup>

Despite the rejected application in the English High Court with reference to APD, the Air Transport Association of America have issued proceedings in England’s Administrative Court against the inclusion of aviation in the EU ETS,<sup>103</sup> on the basis that it breaches sovereign regulatory rights pursuant to the Chicago Convention, the Kyoto Protocol, and the

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<sup>97</sup> At para.2.1.1.

<sup>98</sup> For analysis of the legal challenges see Havel BF and Antwerpen NV, ‘The Dutch Ticket Tax and Article 15 of the Chicago Convention’ 141 (2009) 34 *Air & Space Law*; Kernkamp H, ‘BARIN v. The State of The Netherlands’ (2009) *Kernkamp's Netherlands Civil Court Case Summaries*.

<sup>99</sup> [2007] EWHC 2062 (Admin); [2008] Env. L.R. 22; [2008] STC 547.

<sup>100</sup> APD was introduced pursuant to FA 1994, s.28.

<sup>101</sup> GATT Article I:1. Requires any preferential trade advantage offered to one nation to be offered to all nations, so that foreign producers can compete on a level platform without discrimination. See chapter 8.

<sup>102</sup> It was deemed outside the ambit of Regulation 549/2004/EC (Single European Sky Framework) Arts 1 and 2. Further it was not a breach of Art.1 of Protocol 1 to the Convention for the Protection of Human Rights and Fundamental Freedoms 1950 or Art.49 of the EC Treaty.

<sup>103</sup> Emissions Trading Scheme, based upon Directive 2009/29/EC of the European Parliament and of the Council of 23/4/2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community, OJ L 140/63.

USA-EC Air Transport Agreement.<sup>104</sup> In *R (on the application of Air Transport Association Of America Inc). v Secretary Of State For Energy And Climate Change*,<sup>105</sup> the High Court referred the case to the ECJ (European Court of Justice) for a ruling on the validity of the EU law in this instance.<sup>106</sup> The outcome may have implications not only for ETS but for the legality of APD itself.<sup>107</sup>

## 45.8 CLASS INCIDENCE

The following sections critique the rationale and effect of perceived inadequacies in the APD system (as existed in 2010), and in doing so will also test the robustness of the proposal in 45.7.2.

### 45.8.1 INADEQUACY AND REFORM OF APD SYSTEM

A per-flight tax as proposed at 45.7.2 would allow airlines to decide how to distribute the charge between passengers, if they opt not to bear it themselves, and it is unlikely this distribution would follow APD which bluntly distinguished all types of premium passengers from economy passengers – regardless of the considerable differences in environmental impact within the different premium seats. APD imposed double the tax on passengers in any premium class than the lowest class of travel (known as the reduced rate). A passenger flying

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<sup>104</sup>[http://ec.europa.eu/transport/air\\_portal/international/pillars/global\\_partners/doc/us/ec\\_us\\_open\\_skies\\_agreement\\_24\\_4\\_07.pdf](http://ec.europa.eu/transport/air_portal/international/pillars/global_partners/doc/us/ec_us_open_skies_agreement_24_4_07.pdf) Accessed 28/5/2010.

<sup>105</sup> (2009) EWHC (Admin); See also Leon P, 'ATA and others v. the UK Secretary of State for Energy and Climate Change (2009)' 2010 25 *Air & Space Law* 2, 199.

<sup>106</sup> 'English High Court Permits ATA Legal Challenge to EU Emissions Trading Scheme to Proceed' *International Airport Review*, 27/5/2010,

<http://www.internationalairportreview.com/airport-news/english-high-court-permits-ata-legal-challenge-to-eu-emissions-trading-scheme-to-proceed/> Accessed 28/5/2010.

<sup>107</sup> At the time of writing, the case had not yet been heard.

Premium Economy, Business or First class would therefore all be charged the same ‘standard rate’ despite differing seat sizes and baggage entitlement which impact upon emissions-per-passenger rates.<sup>108</sup> For instance, a BA (British Airways) First class seat offers over double the space of its Premium Economy seat, though both charge identical APD rates.<sup>109</sup> This is economically and environmentally disproportionate as it means ‘lower’ premium passengers effectively subsidise ‘higher’ premium passengers. This confused message may have been intended to broadly convey the message on the impact of premium passengers, though in a simplistic and inaccurate manner.

Furthermore, the incentive for business travellers to fly in economy class and reduce their emissions, is limited by the tax-deductibility of flights taken for business purposes.<sup>110</sup>

Despite being only around 10% of total passenger traffic, Keen and Strand found that First and Business class passengers in 2003 counted on average for 30% of airline revenues.<sup>111</sup>

Consequently the high rates which discourage premium class travel were particularly damaging for airlines’ profits and ability to compete, particularly during a recession. BA for example relies on premium class customers for over 50% of its revenues and saw a sizeable slump in Business class sales following the recession and the introduction of APD.<sup>112</sup> On average, transatlantic flights Business class sales allow higher profit margins than any other class.<sup>113</sup> Whilst APD rates may have been in line with the policy to encourage as many passengers on a flight as possible, if an airline is unable to operate a competitive business,

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<sup>108</sup> A long-haul first class passenger can produce four times the CO<sub>2</sub> emissions per kilometre than an Economy passenger: See ‘Table 4: Seating class based CO<sub>2</sub> emission factors for passenger flights’ in DEFRA, ‘2008 Guidelines to Defra’s GHG Conversion Factors: Methodology Paper for Transport Emission Factors’ at 10 <<http://www.defra.gov.uk/environment/business/reporting/pdf/passenger-transport.pdf>> Accessed 28 April 2010.

<sup>109</sup> See comparison charts on <<http://www.seatguru.com/>> Accessed 27/04/2010.

<sup>110</sup> Conditions for deductions of business travel for employees are found in ITEAP, Part 5, Chapter 1.

<sup>111</sup> Keen and Strand, see n.48, at 35, Table 12.

<sup>112</sup> Milmo D, ‘British Airways ditch first class in new planes as age of austerity bites’ *The Guardian*, 22/5/2009 <<http://www.guardian.co.uk/business/2009/may/22/british-airways-first-class-loss>> Accessed 28/4/2010.

<sup>113</sup> The Travel Insider, ‘Who Flies First Class Anymore?’ 20/5/2009 <<http://thetravelinsider.info/airlines/flyingfirstclass.htm>> Accessed 8/6/2009.

then a tax combined with poor economic conditions could drive the airline out of business.<sup>114</sup> A poorly competitive UK air industry could be undercut by foreign competitors aiming to increase their market share, thus causing the environmental policy merely to harm domestic companies. This point emphasises that such a tax may not necessarily be appropriate in times of an economic slow-down, and that it could work much more effectively if there is a common international strategy which would eliminate competitiveness concerns.<sup>115</sup>

#### 45.8.2

#### LIMITED BEHAVIOURAL IMPACT UPON BUSINESS

In the UK, under circumstances where a business or self-employed person makes a taxable profit, flights taken for business purposes<sup>116</sup> may be tax-deductible.<sup>117</sup> There may then be no incentive for a business or self-employed person to reduce their travel costs, which makes the behavioural impact apply mainly to private leisure passengers. Further, Strand suggests that as far as Business class seats are purchased for business passengers and Economy class seats are purchased for leisure passengers (as is generally the norm), the deductibility of the charge for business travel is effectively an implicit tax subsidy for business travellers.<sup>118</sup> The result is that non-business passengers, normally flying in Economy class, bear a higher burden of tax than businesses whose passengers fly in premium cabins. If a policymaker intends businesses to bear a greater proportion of the tax burden and consequently to alter their

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<sup>114</sup> In 2009 airlines around the world saw a slump in sales – particularly business class sales - and heavy profit losses: Mostrous A, ‘Airlines to lose \$9bn as recession bites’ *The Times*, 8/6/2009) <[http://business.timesonline.co.uk/tol/business/industry\\_sectors/article6454529.ece](http://business.timesonline.co.uk/tol/business/industry_sectors/article6454529.ece)> Accessed 8/6/2009.

<sup>115</sup> See Truby, chapter 8, n.124.

<sup>116</sup> Which are wholly and exclusively for the purposes of the business.

<sup>117</sup> Conditions for deductions of business travel for employees are found in ITEPA, Part 5, Chapter 1.

<sup>118</sup> Strand J, ‘Optimal Aviation Taxes with Distortive Taxation and Endogenous Labor Supply’ (2005) unpublished, *International Monetary Fund*; Keen and Strand, see n.48, at 22.

environmental behaviour in the skies, then it may be necessary for businesses to be charged a non-deductible excise tax.<sup>119</sup>

If it was desired that businesses should share a greater proportion of the burden then the proposal in 45.7.2 would not suffice as the charge is a per flight tax payable by the operator of the aircraft. It would be necessary to amend the proposal so that the per-flight tax made up only a large proportion of the intended tax receipts, and that a ‘ticket tax’ was introduced for the remaining proportion. The ticket tax would necessarily be a non-refundable excise tax, either on a standard rate based upon the class of seat, or ad valorem based upon the ticket price.<sup>120</sup> Business passengers would consequently bear a share of the burden, and would pay a higher rate for using business seats. This would allow both an incentive for airlines to run an efficient and full aircraft, and an incentive for both business and leisure passengers.

However, there may be wider policy purposes to continue with the implicit subsidy to business flyers. Businesses often rely on employee travel to generate revenue both in carrying out work and securing new work; incentives to reduce such travel may then be counter-productive in hindering the competitiveness of business by forcing up costs. Keen and Strand point out that by ensuring business travel is non-deductible, other receipts can suffer such as corporation tax on both airlines’ business customers and airlines themselves in lost income.<sup>121</sup> The environmental aim of the class-based APD may simply have been to encourage business travellers to travel in economy-class rather than to stop travelling altogether – which would protect business interests as well as serving an environmental purpose.

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<sup>119</sup> The Meade Report highlighted that policy-makers should determine their intended tax base before introducing a tax by considering the various choices: See chapter 1, n.9.

<sup>120</sup> A non-creditable ticket tax is advocated in Keen and Strand, see n.48: See eg. 37-38.

<sup>121</sup> Keen and Strand, see n.48 at 22.

The situation differs under circumstances where little or no taxable profit is being made for which business travel expenses may be deducted. There would be a much greater incentive to avoid business travel costs and therefore a high rate of APD for business passengers would have provided a further disincentive to take business flights. Therefore the extent to which APD could affect business behaviour can depend more upon the state of the economy than the existence of aviation tax.

Nevertheless, this raises the further point introduced in 31.2, regarding which rate of tax would work to make somebody accustomed to flying Business class change their behaviour by taking an Economy ticket<sup>122</sup> – which they may perceive as a reduction in their standard of living or a hindrance to their productivity.<sup>123</sup> There is a risk that removing perks from business travellers, such as Business class seats or First class rail travel, could decrease the likelihood that such groups use public transport at all for short journeys. An undesirable consequence may be that business travellers opt to use private cars and claim mileage if they cannot travel in the comfort to which they are accustomed, which could increase net emissions.<sup>124</sup> It may, however, work to encourage businesses to invest in better communication technology such as video-conferencing than to physically travel.<sup>125</sup>

## 45.9 EXEMPTIONS FROM APD

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<sup>122</sup> This is referred to as ‘loss aversion’ in Murkowski, see chapter 6, n.11 at 358.

<sup>123</sup> ‘BBC’s Alan Yentob: I can’t do my job if I can’t fly business class’ *The Guardian*, 28/4/2010, <<http://www.guardian.co.uk/media/2010/apr/28/bbc-alan-yentob-job-business-class>> Accessed 7/6/2010.

<sup>124</sup> ITEPA 2003 allows employees to claim business mileage in company cars.

<sup>125</sup> When aircraft were grounded in Europe due to volcanic ash in 2010, businesses increasingly used video-conferencing, demonstrating its ability to replace unnecessary travel. ‘Stranded Travelers Turn to Videoconferencing’ *New York Times*, 19/4/2010, <<http://www.nytimes.com/2010/04/20/technology/20video.html>> Accessed 7/6/2010.

A number of exemptions further distorted the behavioural impact of passengers. Aircraft permitted to seat fewer than 20 passengers<sup>126</sup> (flight crew, cabin attendants and other airline staff were not defined as passengers for the purpose of APD)<sup>127</sup> or weighing less than 10 tonnes<sup>128</sup> were exempt from APD.<sup>129</sup> This therefore excluded private jets, corporate jets, helicopters and air-taxi services. On the one-hand policy reasons may have justified these exemptions to protect small industries, as it protects small or growing industries such as operators of micro-flights, small air-taxi services and private-hire jets for the individual “who builds and flies his own aircraft as a hobby.”<sup>130</sup>

Absurdly it also means that a private jet for a wealthy person who refuses to travel in a commercial aircraft was exempt from paying any APD. This is grossly unfair for commercial passengers who have to bear the burden of the environmental impact of a person enjoying the luxuries of a private flight who can likely most afford to pay the duty. More so, it is grossly disproportionate since the emissions-per-passenger rate on an aircraft with perhaps only one passenger would be extremely high in comparison with virtually any other form of flying. No impact could be made upon such sectors. It sent a confusing and frustrating message of behavioural change to commercial aircraft passengers who may have regarded it as socially, morally and environmentally unfair that they effectively subsidised private-jet travellers when queuing at the airport and sitting in a seat with under 1.016 metres (40 inches) pitch.<sup>131</sup>

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<sup>126</sup> FA 1994, s.29(1)(b).

<sup>127</sup> FA 1994, s.43(1).

<sup>128</sup> FA 1994, s.29(1)(a).

<sup>129</sup> Such aircraft are not chargeable aircraft for the purposes of APD pursuant to FA 1994, s.29(1).

<sup>130</sup> HMRC, see n.69 at 7.

<sup>131</sup> FA 1994, s.30(11) classified seats above 1.016 metres in pitch as ‘standard rate’ after 1/11/2008. S.30(12) defined ‘pitch’ for this purpose as the distance between a seat and the seat in front of it.

An emissions-based, per-flight tax or aviation fuel tax would work to resolve these issues without large complications in reclassifying aircraft sizes. If a policymaker requires such businesses to share the burden of environmental taxation then it would be advisable not to allow such taxes to be deductible by businesses - though the remainder of their flight travel expenses could be tax-deductible in order to protect their competitiveness. Therefore this could be made as an excise tax rather than as a VAT-type tax in order that it is non-creditable. Policy grounds would likely permit essential operators such as military aircraft and air ambulances to claim back the tax or be exempt from it entirely.<sup>132</sup>

#### 45.10 TRANSIT PASSENGERS

Passengers who change aircraft at connecting stops are known as ‘transfer passengers’ while those who remain on board an aircraft at the connecting stop are ‘transit passengers’.<sup>133</sup> Both types of passengers were exempt from APD in order to protect the position of the UK as a hub for international-to-international airports.<sup>134</sup> It was officially recognised that subjecting such passengers to tax would only cause aircraft to transfer at alternative European hubs, thus harming UK industry whilst producing no net reduction in emissions.<sup>135</sup> This justification only increases the requirement for greater international cooperation – initially within the EU

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<sup>132</sup> Military flights and passengers became exempt from APD: see HMRC, ‘Air Passenger Duty’ Notice 550 (12/2009) para.3.9

<[http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?\\_nfpb=true&\\_pageLabel=pageExcise\\_ShowContent&propertyType=document&id=HMCE\\_CL\\_000505#P303\\_17674](http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageExcise_ShowContent&propertyType=document&id=HMCE_CL_000505#P303_17674)> Accessed 27/4/2010.

<sup>133</sup> HMRC, see n.69 at footnote 5 on p.6..

<sup>134</sup> FA 1994, s.31(3).

<sup>135</sup> HMRC, see n.69 at 7.

– to achieve the required behavioural change so that the 13%<sup>136</sup> of UK passengers who are exempt as transit and transfer passengers can be included without losing business overseas.

#### 45.10.1 FREIGHT

##### 45.10.1.1 JUSTIFICATION FOR LACK OF INCENTIVE

Planes carrying freight were only charged APD based on the number of actual passengers carried. Freight flights often carry no passengers, so emissions of freight flights were not taken into account and were instead borne by commercial airline passengers. If APD achieved its required behavioural change of reducing passenger numbers, there would still have been a great many planes in operation given that they have no tax incentive to alter their behaviour. One justification for this may have been that it protected UK business and consumers by preventing prices being increased on imports and exports. Particularly it aided commercial exports.

Frequently it may have been more fiscally economical for freight to be carried domestically via aircraft than by train – given the exemptions from both APD and aviation fuel duty – which distorted the behavioural impact of the APD system. It also meant that those sending and receiving freight by air caused a negative externality which was not internalised, whereas transport by road and rail attracted duties. This meant that recurrently it was businesses who were exempt from a tax that private individuals were not. The fact that freight was exempt meant that it could be artificially inexpensive to import or export goods. For example the UK

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<sup>136</sup> *Ibid* at 6.

and Australia exchange 20 tonnes of bottled water every year at an uncompensated environmental cost.<sup>137</sup>

#### 45.10.1.2 TAXE DE L'AVIATION CIVILE

In France there is a *taxe de l'aviation civile* (civil aviation duty) which imposes a charge both on the number of passengers and on the weight of freight and mail.<sup>138</sup> It is the obligation of the airline to declare and pay this duty. It operates similarly to the original system of APD in charging one rate for passengers flying within the EU and a higher rate for flights outside the EU – though the rates are significantly lower than APD rates.<sup>139</sup> There is only one rate for freight regardless of distance which is lower than the passenger rate and thus protects business competitiveness whilst ensuring it bears some burden.<sup>140</sup> While the French system is not primarily designed for environmental purposes, a reformed UK APD system could operate similarly and ensure that both freight and passengers are accountable to environmental tax if policymakers seek a system which shares the tax burden between passengers and freight.<sup>141</sup>

#### 45.10.1.3 FREIGHT: REFORM AND EXEMPTIONS

Imposing a tax on freight based on emissions would encourage operators to either increase the environmental efficiency of their aircraft or persuade freight-carriers to switch to land-

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<sup>137</sup> Rosenthal E, 'Environmental Cost of Shipping Groceries Around the World' *The New York Times* 26/4/2008 <<http://www.nytimes.com/2008/04/26/business/worldbusiness/26food.html?pagewanted=all>> Accessed 27/4/2010.

<sup>138</sup> Pursuant to Article 302 bis K of the General Tax Code (Code général des impôts).

<sup>139</sup> Between 2006-2009 the rates for passengers travelling within and outside the EU were €3.92 and €7.04 respectively. Article.37 of FA 2007 No. 2006-1666 of 21/12/2006 (France).

<sup>140</sup> Between 2006-2009 the rate was €1.17 per tonne of cargo and/or mail. *Ibid.*

<sup>141</sup> FA 2009 (France) fixed a quota allocation of the proceeds of the fee, allocating 82.14% for the budget's "control and air operations" and 17.86% for the general state budget.

based transport.<sup>142</sup> So that transport by sea is not unfairly advantaged by this charge (fuel used in international maritime transport is also exempt under the Chicago Convention), changes may need to be made to shipping tax incentives to encourage a shift to lower emissions. A per-plane tax would ordinarily include freight flights. However, freight carriers have protested strongly that a per-plane tax would be extremely damaging for their businesses, putting UK business at a competitive disadvantage.<sup>143</sup>

Exemptions may, however, need to be made for aircraft carrying essential perishable goods which must be carried by air; otherwise carriage to certain remote locations in particular may become unprofitable. On the other hand, many perishable goods could be grown domestically which would cause such a tax to benefit both local farmers and reduce the amount of goods flown into the country at a high cost to the environment. If certain goods which cannot be grown locally were singled out for exemption this would limit the extent to which other taxpayers bear the burden for exemptions from environmental taxes.

It can actually be environmentally superior to import some goods depending on the nature of the country in question. For example shipping apples from New Zealand may produce fewer emissions than having to produce apples in Europe and refrigerate them for months in storage.<sup>144</sup> The problem is in ascertaining the true environmental cost which involves the onus of finding precise non-contentious information to support this (importing and exporting legislatures tend to disagree about the environmental advantages and disadvantages of importing produce).

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<sup>142</sup> The CAA recognise that: “Typically, pure freight aircraft operating to the UK are older aircraft, often converted passenger aircraft (e.g. B757, A300, MD11 all of which are 15-25 years old). These aircraft are likely to have higher emissions than more modern models...” CAA, see n.34 at para.83.

<sup>143</sup> Freight Transport Association, ‘Per plane tax will make UK business less competitive’ Press release, 14/5/2010, <<http://www.fta.co.uk/news/item/per-plane-tax-will-make-uk-business-less-competitive>> Accessed 9/6/2010.

<sup>144</sup> Rosenthal, see n.137.

As indicated above, some remote locations depend upon air connections to sustain their livelihoods. Airports in regions where the population density was not more than 12.5 persons per square kilometre could be exempt<sup>145</sup> from APD by order of HM Treasury.<sup>146</sup> The only qualifying exemptions in 2010 were airports in the Scottish Highlands and Islands where departing flights were exempt. The policy behind this was to recognise the regions' remoteness and dependence upon air transport.<sup>147</sup> Regional campaigners argued APD would put a "life-threatening constraint" upon air services in those regions.<sup>148</sup>

This demonstrates that taxes can both be targeted to affect behaviour, whilst at the same time protecting services that may be negatively affected to a disproportionate extent. The impact of increasing rates of APD may well have served the environmental purpose of reducing or even eliminating flight services. However, in this instance policymakers deemed it a greater social cost if such remote areas became cut off from the rest of the country or if it caused reductions in the lifestyles of residents so severe that the negative impact would have been worse than the environmental gain.

Pearce and Pearce's proposal could, however, allow these exemptions to continue or for flights departing from remote locations to only attract a nominal rate of tax. Their proposal

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<sup>145</sup> Pursuant to FA 1994, s.31(4B), as amended by FA 2000, s.19(1), (3).

<sup>146</sup> Air Passenger Duty (Designated Region of the United Kingdom) Order 2001, SI 2001/808.

<sup>147</sup> Explained by HM Customs & Excise (as it then was) alongside the introduction of Clause 19 of Finance Bill 2000, at para.10, <<http://archive.treasury.gov.uk/financebill/2000/Clause19.html>> Accessed 9/6/2009.

<sup>148</sup> The Scottish Council Development and Industry: Highlands & Islands Area Committee, Air Passenger Duty: A Case for Exemption in all Scottish Highlands and Islands Flights' (1999) at para.24, <<http://www.scdi.org.uk/pi/1999/1330.doc>> Accessed 9/6/2009.

intends for tax rates to reflect the marginal damages caused in any particular locality. The rate to which an aircraft flight would attract tax would vary by location, reflecting localised conditions and population density. The purpose is to account for more than one type of environmental harm, in an attempt to internalise a number of negative externalities such as air pollution and noise pollution to local residents. Airports in densely populated areas such as Heathrow, or those in areas with already high levels of pollution, may cause higher marginal damage and subsequently attract higher rates of tax than more remote airports.<sup>149</sup>

#### 45.10.3 SUMMARY OF EXEMPTIONS

Exemptions from APD were mostly utilised where policy made it desirable to do so, mainly where the social costs of non-exemptions were regarded as greater than the environmental benefit. These exemptions were targeted to induce or maintain the behaviour of those involved – both individuals and enterprises, in order to avoid distortion where policy required.

As shown however the consequences of exemptions do not always justify their existence. In particular some exemptions which were targeted to protect particular kinds of behaviour ended up also exempting environmentally damaging behaviour. The replacement of APD could be manipulated to target behaviour that is environmentally unjustified – such as private jets – in order that, if policy requires, this behaviour is both discouraged and brought into charge akin to the polluter-pays principle.

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<sup>149</sup> Pearce and Pearce, see n.80, at 8-13.

## 45.11 COMPETITION ASPECTS OF APD

The point about how airlines can compete internationally whilst unilaterally charging an aviation duty to target behaviour has already been introduced and will be expanded herein.

### 45.11.1 EUROPEAN COMPETITION

#### 45.11.1.1 UK AND IRELAND

Unilaterally introducing increasing levels of APD in a time of economic instability can harm industry. In 2009, Ryanair blamed APD for having to reduce staff and services at Liverpool airport, arguing that airlines operating from European airports were put at a competitive advantage since they did not have to pay such a tax.<sup>150</sup> As customers were unable to avoid paying the fee by taking an alternative airline or route out of the UK, the tax may therefore have discouraged customers from taking short-haul flights in which case the environmental objectives may have succeeded - at a cost to airlines.

Ireland also introduced an equivalent to APD called Air Travel Tax (ATT) applying to departures on or after 30 March 2009.<sup>151</sup> ATT similarly provides exemptions for aircraft carrying below 20 passengers and for small airports, in order to protect remote locations. The fact that this was introduced during a recession and very much mirrors APD, shows that both the UK and Ireland were willing to sacrifice some growth in air traffic. Whilst this may have been partially or mainly intended to increase tax revenues to counter high Government debts

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<sup>150</sup> Ryanair, 'Flight and job cuts at Liverpool Airport' 18/2/2009

<<http://www.ryanair.com/site/EN/news.php?yr=09&month=feb&story=gen-en-180209>> Accessed 28/4/2010.

<sup>151</sup> ATT is governed by s.55 of Finance (No. 2) Act 2008, as amended by section 18 of FA 2009, and Air Travel Tax Regulations 2009 (SI. No.134 of 2009).

during the recession, it also served the environmental purpose (to some extent) of controlling passenger demand.

Nevertheless airlines operating in the UK and Ireland suffered heavy losses during the recession in 2009. Ryanair posted a EUR €169m loss<sup>152</sup> and BA posted a GBP £401m loss.<sup>153</sup> It is unclear who the policymaker intended to bear the tax burden in these cases. On the presupposition that this was partially the fault of APD which reduced sales and profits, then it was the airlines who were made to bear the cost of aviation emissions. However, if the losses are carried over and deducted against future profits, then airlines would share the burden with the general taxpayer. Governments may be prepared to fund behavioural change in this way as it may be less politically sensitive to make this tax expenditure than to make a direct Government expenditure. Essentially, however, it may be the individual taxpayers and not enterprise who bear the greater burden of APD – putting a greater strain on taxpayers who may not themselves fly.

#### 45.11.1.2 CONTINENTAL EUROPEAN COUNTRIES

The Netherlands introduced a levy on air tickets in 2008 into their Environmental Tax Act<sup>154</sup> to control the growth in aviation traffic, but zero-rated this Ticket in 2009<sup>155</sup> since it was

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<sup>152</sup> 'Ryanair reports first annual loss' *BBC News* 2/6/2009 <<http://news.bbc.co.uk/1/hi/business/8078349.stm>> Accessed 9/6/2009.

<sup>153</sup> 'High costs fuel record loss at BA' *BBC News* 22/5/2009 <<http://news.bbc.co.uk/1/hi/business/8062844.stm>> Accessed 9/6/2009.

<sup>154</sup> Wet van 23 december 1994, houdende vaststelling van de Wet belastingen op milieugrondslag (The Netherlands) (*Environmental Tax Act*), Section VB, Articles 36R to 36RG (subsequently Articles 72-79), as amended pursuant to (Belastingplan 2008) (*Tax Plan 2008*), 31205 STB 2007 562, Wet van 20/12/2007, houdende wijzigingen van enkele belastingwetten, Kamerstuk 31 205, (Staatsblad 2007, 562). (*Law of 20/12/2007, amending certain tax laws*) (*Gazette*, 2007, 562).

<sup>155</sup> Besluit van 1/6/2009 tot vaststelling van het tijdstip van inwerkingtreding van artikel X van de Wet fiscaal stimuleringspakket en overige fiscale maatregelen (Staatsblad, 2009 281). (*Royal Decree of 1/7/2009 fixing the date of implementation of Article X of the Fiscal Stimulus Package and Other Tax Measures Act*) (*Gazette*), 2009, 291).

regarded as harming its economy and tourist trade during the global recession.<sup>156</sup> The behavioural impact was therefore deemed too great for the economic circumstances. The levy raised a reported EUR €12 million for the Dutch treasury but cost an estimated EUR €1.2 billion in lost revenue from travellers.<sup>157</sup> If this economic calculation is applicable in other countries, it may well be decided that it is better to avoid introducing aviation tax in order to use the current revenue from tourism for environmental purposes, as hoped in the Netherlands.

Spain also used its tax system as an incentive to encourage aviation growth during the recession. It announced that it would waive taxes for airports that carried more passengers in the second half of 2009 than in the first half of 2008 – clearly putting economic recovery above environmental goals and creating a perverse incentive that could undermine demand for its rail projects (see 45.4.2). It also announced similar assistance<sup>158</sup> for the Canary Islands by subsidising 30% of tickets to the islands for island residents.<sup>159</sup> Greece similarly reduced its regional airport charges to zero for 2009 and Belgium announced it would scrap its air passenger duty.<sup>160</sup> Denmark abolished<sup>161</sup> its air transportation tax<sup>162</sup> which was an environmental tax, and a single rate for all passengers regardless of distance, except for a

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<sup>156</sup> Plans were put in place to abolish the tax altogether for the prosperity of the industry. Act Abolishing Flight Tax was proposed via the official Belastingplan 2010 (*Tax Plan 2010*) and a private member's motion in and Leijnse cs, Kamerstukken I 2008/09, 31 301, D, No Reprint, Wet afschaffing vliegbelasting. (*Motion 'Leijnse cs' for the Act Abolishing Flight Tax*).

<sup>157</sup> IATA, 'Load Factors Drop as Passenger Demand Falls - Freight Stabilises' 28/4/2009 <<http://www.iata.org/pressroom/pr/2009-04-28-01.htm>> Accessed 10/6/2009.

<sup>158</sup> Royal Decree 1316/2001, dated 30/11. Modified by Royal Decree 1340/2007, dated 11/10.

<sup>159</sup> 'Rivals hit out at Canaries' Ryanair 'subsidy' *The Telegraph*, 4/4/2010, <<http://www.telegraph.co.uk/travel/travelnews/7545529/Rivals-hit-out-at-Canaries-Ryanair-subsidy.html>> Accessed 8/6/2010. A previous measure which offered the discount only to Spanish residents was declared incompatible with Article 90 (1) of the EEC Treaty: 87/359/EEC: Commission Decision of 22/6/1987 concerning reductions in air and sea transport fares available only to Spanish nationals resident in the Canary Islands and the Balearic Islands, OJ L 194, 15/07/1987 P. 0028 – 0029.

<sup>160</sup> 'Ryanair: Irish Traffic and Tourism Collapses' *FinChannel* 15/5/2009 <[http://www.finchannel.com/index.php?option=com\\_content&task=view&id=37342&Itemid=1](http://www.finchannel.com/index.php?option=com_content&task=view&id=37342&Itemid=1)> Accessed 10/6/2009.

<sup>161</sup> Abolished by Law No 1415 of 21/12/2005 (Denmark).

<sup>162</sup> Named the Tax on certain types of flights (transportation tax) or *Afgift af visse flyrejser* (*Passagerafgift*), introduced pursuant to Statutory Notice No 566 of 3/8/1998 (Denmark).

reduced rate for light aircraft. Malta had an airport passenger service charge<sup>163</sup> which constituted an environmental transport tax on passengers<sup>164</sup> leaving Malta by aircraft but this was abolished in 2008.<sup>165</sup>

#### 45.11.1.3 COMPARISON

Britain and Ireland put their tourist and aviation industries at risk by continuing to introduce increasing rates of aviation taxes despite the global recession. To some extent, the purpose of this may have been concerned with balancing budgets, though from an EU environmental and economic perspective the practice of some Member States unilaterally charging aviation taxes whilst others did not is an inefficient distortion. Recognising OECD advice that tax competition can be damaging,<sup>166</sup> the EU have agreed on a Code of Conduct against such practices.<sup>167</sup> However, for a tax measure to be considered harmful under this voluntary Code, it must both be significantly lower than those which generally apply across other Member States,<sup>168</sup> and significantly influence the location where business activities in the Community occur.<sup>169</sup> Since the Anglo-Irish aviation tax rates are uncommonly high amongst Member States, it cannot be argued that other Member States are falling below a benchmark and pursuing competitive tax policies to attract business. As such, EU abilities to correct this market distorting structure are wanting.<sup>170</sup>

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<sup>163</sup> *Dritt ta' Hlas ta' l'Ajruport ghal Servizz lill-Passiggieri*. Pursuant to Airport (Passenger Service Charge) Regulations, 1997 (Malta).

<sup>164</sup> Other than the air crew and infants under two years of age, and passengers returning on the same day as the day of departure.

<sup>165</sup> By 1/11/2008.

<sup>166</sup> As explained in OECD, 'Harmful Tax Competition: An Emerging Global Issue' (Paris: OECD, 1998).

<sup>167</sup> Conclusions of the Ecofin council meeting on 1/12/1997 concerning taxation policy, OJ (98/C 2/01).

<sup>168</sup> Code of Conduct: B.

<sup>169</sup> Code of Conduct: A.

<sup>170</sup> For an explanation of this area see Kiekbeld, see chapter 6, n.9 at 33.

A European macro-environmental view would regard the overall policy as confused and inefficient, with some countries aiming to reduce air traffic and passenger numbers and others aiming to increase both. Similarly a European macro-economic perspective would indicate that UK passengers are at a comparative benefit somewhat since they are not subject to equivalent taxes overseas whereas foreign residents contribute to HM Treasury. Shifting part of the burden onto foreign residents (known as ‘tax exporting’) can be beneficial to UK passengers who will be responsible for a smaller proportion of the tax burden.<sup>171</sup> However, this may be at the expense of UK tourism and aviation which will share the burden, though both would suffer more if there was equivalent foreign taxation which would increase the cost of travelling to Britain above the increases brought through APD. Perhaps the difference, at least for Britain, is that its economy is not as dependant on tourism as its European neighbours – and therefore aviation tax may not be suitable for every type of economy.

All of this points to the pressing need for a common European policy on aviation taxation. A consistent policy across Europe would put all European airlines on an equal footing and provide no competitive advantage or environmental inequities. Indeed if the problem of national sovereignty to tax was set aside, the European Parliament could in principle introduce a general aviation tax across the Union which would contribute to its overall budget or could be used for environmental purposes. Alternatively an EU Aviation Tax Treaty could ensure that all Member States apply a minimum duty, as with the VAT Directive.

This is vastly favourable to the present system given the inequities and inefficiencies involved and the inconsistent tax incidences. Indeed, the EU have gone some way towards this by enacting a Directive permitting Member States to introduce kerosene tax for air

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<sup>171</sup> Keen and Strand, see n.48, at 23.

navigation. Taxes can be introduced nationally (in line with the Chicago Convention) and internationally (potentially breaching the Convention) pursuant to a bilateral agreement.<sup>172</sup> However, until this is more commonly adopted and further measures are introduced, the pressures to meet European and global environmental targets may cause the reintroduction of such unilateral taxes, particularly if countries calculate that they are losing foreign income, or when growth returns.

#### 45.11.1.4            THEME

Returning to the theme, the lack of any European or global cooperation on aviation tax means that, from the UK's perspective, the present system allows it to effectively tax foreign aircraft which do not themselves have aviation taxes.<sup>173</sup> Since the rates of APD were not linked with any environmental issue per se, it is feasible that their high rate essentially included foreign flights to the UK and not just UK departures, under the façade of only taxing UK departures. In the absence of any international cooperation, the UK is therefore to some extent accounting for the polluting impact from both the outward and return legs of a trip through such taxation.

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## 46. TARGETING THE SOURCE (NON-AVIATION)

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<sup>172</sup> See chapter 7, n.63, Art.14.

<sup>173</sup> Rudolph examines the political difficulties and various interest groups involved in the introduction of any aviation taxation or ETS, in Rudolph S, 'The Sky is the Limit or Limits to the Sky? A Political Economy Perspective on Market-Based Environmental Policy Instruments in EU Aviation' in Cottrell *et al*, see chapter 7, n.17 at 265-282.

Outside of the aviation case-study, a similar strategy can be applied to find the source of environmental harm in order that taxes can be also targeted where they can be most effective in achieving the overall environmental objective. Further if incentives are to be provided, the type of tax and its design ought to be evaluated in order that the tax can be targeted in its most effective manner.

## 46.1 RESIDENTIAL PROPERTY: CONSTRUCTION PHASE

### 46.1.1 STAMP DUTY LAND TAX RELIEF

Recognising that one of the UK's key sources of energy inefficiency is buildings including private households, tax legislation has been targeted to encourage improved efficiency levels for homes.<sup>174</sup> For example relief from SDLT (Stamp Duty Land Tax) can (subject to conditions) be granted to the first acquisition of a newly built 'zero-carbon'<sup>175</sup> dwelling.<sup>176</sup> Under circumstances of economic growth, this provides an incentive for home-buyers to purchase carbon-neutral properties since it offers a reduced price and limited energy bills, which consequently encourages property developers to construct such properties to meet demand. However, in circumstances of economic recession this may not be a sufficient incentive. For instance during the recession, SDLT was temporarily suspended<sup>177</sup> on the

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<sup>174</sup> Law C, 'Energy efficiency for existing homes' *The Times* 15/2/2009

<<http://www.timesonline.co.uk/tol/news/environment/article5732920.ece>> Accessed 28/4/2010.

<sup>175</sup> It is uncertain what would constitute a zero-carbon building. For further discussion on this point see Hamilton P, 'Finance Act notes: environmental tax changes – sections 10-24' (2007) 5 BTR 443-449, at 446.

<sup>176</sup> Pursuant to ss.58(B) and ss.58(C) of FA 2003 (as amended).

<sup>177</sup> Pursuant to Stamp Duty Land Tax (Variation of Part 4 of FA 2003) Regulations 2008 (SI 2008/2338), and Stamp Duty Land Tax (Exemption of Certain Acquisitions of Residential Property) Regulations 2008 (SI 2008/2339).

acquisition of residential properties up to the value of GBP £175,000.<sup>178</sup> This reduces the impact of the zero-carbon incentive, until the end of the SDLT ‘holiday’.<sup>179</sup> This may mean that tax incentives in some circumstances only effectively target consumption decisions in times of economic growth.

#### 46.1.2

#### THE PRINCIPAL AGENT PROBLEM

Such incentives are required particularly if the developer or purchaser of a residential property is not the end user. A developer or landlord for example may otherwise have little interest in constructing the building in order to achieve maximum energy efficiency in the long-term, or installing the most energy efficient appliances such as boilers which can be expensive to replace. Researchers referring to this scenario identify it as the ‘principal agent problem’ and consider that it inappropriate to offer reduced VAT rates on energy-efficient appliances purchased, as the incentive to reduce energy costs is to attract tenants.<sup>180</sup>

Nevertheless, it should be noted that in many instances this is not the case. For instance tenants (particularly short-term tenants) may frequently only consider the actual rental price and only look at energy efficiency levels as a secondary factor. In areas of high demand-to-supply ratio the landlord knowing the property will easily let will have a reduced incentive to spend additional time and money searching for the most efficient construction methods or appliances. To ensure newly built residential properties will have a lifetime of energy efficiency, policymakers must target incentives according to market reality. The zero-carbon

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<sup>178</sup> S.55 of FA 2003 (as amended) provides for a 0% SDLT rate on acquisitions of residential property up to the threshold of GBP £125,000; this threshold was temporarily extended to GBP £175,000 for acquisitions between 3/9/2008 and 2/9/2009 inclusive.

<sup>179</sup> The planned expiry date for SDLT is 1/10/2012 under The Stamp Duty Land Tax (Zero-Carbon Homes Relief) Regulations 2007 (SI 2007/3437), Regulation 1(2)(b). HM Treasury may subsequently substitute the expiry date by a new regulatory order.

<sup>180</sup> Næss-Schmid *et al.*, see chapter 6, n.22 at 20.

SDLT method is attractive and its impact upon the purchase price makes it self-publicising. Tax methods could instead work to alter construction and appliance consumption behaviour by applying non-deductible excise taxes on the most inefficient products, in order to artificially increase their prices to affect developers' and landlords' consumption behaviour. By recognising the reality of such relationships it can be possible to target the appropriate decision-maker.

#### 46.1.3

#### AMERICAN RECOVERY AND REINVESTMENT ACT

The USA made federal tax credits available to homebuilders constructing new energy efficient residential houses which satisfy specified energy savings targets.<sup>181</sup> The credits are aimed at improving energy efficiency through replacement of items such as windows, doors and roofs, additional insulation, new water heaters and biomass stoves. The American Recovery and Reinvestment Act of 2009 added to and extended the credits available following the Energy Policy Act of 2005 (which had previously been extended to 2009 by virtue of the Emergency Economic Stabilization Act of 2008). Tax deductions were also made available<sup>182</sup> for commercial buildings for owners or designers of new or existing commercial buildings saving 50% or more of a building's heating and cooling energy.<sup>183</sup> These incentives were designed to reduce energy waste in buildings and incentivise growth in energy efficient construction in the hope of making it the 'norm'.

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<sup>181</sup> In order to be considered an 'energy efficient home' the dwelling must satisfy §45L(c)(1)(A) and (B) of the Internal Revenue Code (IRC) (USA). If the credit is for a 'manufactured home' the requirements to be satisfied are provided within §45L(c)(2) or (3) of IRC.

<sup>182</sup> Pursuant to § 179D of IRC (USA).

<sup>183</sup> See Energy Star (EPA), 'Federal Tax Credits for Energy Efficiency' <[http://www.energystar.gov/index.cfm?c=products.pr\\_tax\\_credits#c3](http://www.energystar.gov/index.cfm?c=products.pr_tax_credits#c3)> Accessed 18/6/2009.

## 46.2 HOUSEHOLD ENERGY CONSUMPTION

### 46.2.1 MICRO-GENERATION

In Britain, domestic premises<sup>184</sup> may produce electricity at or near<sup>185</sup> the home using a ‘microgeneration’ system<sup>186</sup> such as a solar panel or wind turbine. So long as the amount produced does not significantly exceed the level of consumption in the household, the electricity generated can be sold and the income from the sale is exempt from income tax under ITTOIA.<sup>187</sup> This provides some incentive to invest in such technology, though it will still take much time to earn back the initial investment. Perhaps a greater incentive would have been direct subsidies for the purchase of microgeneration technology, or even tax credits on employment income as an incentive which more people could relate to as they may not have considered that such generation would be subject to tax in any case. Such tax credits were made available in the USA for solar panel and water heaters, fuel cells, solar water heaters and geothermal heat pumps.<sup>188</sup> Consumers installing these in both existing homes and newly built properties were made eligible to claim 30% of the cost through tax credits, with no maximum amount claimable.<sup>189</sup> This became a considerable incentive which consumers were readily able to understand, making them a potentially attractive purchase. The UK Government has supported its microgeneration tax incentives by cooperating with energy companies through a ‘Feed-in Tariff’ scheme whereby households can produce renewable energy and sell any surplus back to the National Grid at a profit, thus justifying their investment in the technology.<sup>190</sup>

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<sup>184</sup> “Domestic premises” means premises used wholly or mainly as a separate private dwelling: Income Tax (Trading and Other Income) Act 2005, s.782A(2).

<sup>185</sup> There is no indication in the Act of the necessary proximity to the domestic premises.

<sup>186</sup> Given the same meaning as given in Climate Change and Sustainable Energy Act 2006, s.4.

<sup>187</sup> See n.184, s.782A.

<sup>188</sup> Following the Energy Policy Act, see chapter 6, n.55.

<sup>189</sup> Currently this is available until 2016.

<sup>190</sup> <<http://www.energysavingtrust.org.uk/Generate-your-own-energy/Sell-your-own-energy/Feed-in-Tariff-Clean-Energy-Cashback-scheme>> Accessed 21/4/2010.

The incentive to improve household energy efficiency will likely increase in the UK with improved measurement abilities. The British Government announced plans<sup>191</sup> to install compulsory ‘smart’ meters in all UK homes by 2020 in order to provide real-time information on household’s actual (as opposed to estimated) usage of gas and electricity.<sup>192</sup> The DECC (Department for Energy and Climate Change) aim to change consumers’ energy habits through this<sup>193</sup> by making energy users more aware of their energy usage. This non-tax measure which is both an educational tool and a measurement device will reinforce both the message sent through energy taxes and the desire to become more energy efficient domestically. Consequently taxes and tax incentives which are clear and achievable may well work to an increased extent given the increased demand to save costs and improve personal environmental behaviour.

#### 46.2.2

#### CONSUMPTION OF ENERGY-INEFFICIENT APPLIANCES

Depending on the structure and type of tax used, some incentives may not be enough to alter the consumption decisions of consumers and consequently would be a wasted tax expenditure. An example given by researchers is utilising the VAT system to encourage purchases of the most energy-efficient appliances, such as a PC (personal computer), where energy saving can amount to only a small fraction of the total cost of the PC.<sup>194</sup> It may cost a substantial amount in lost VAT to incentivise the purchase of efficient PCs, whereas the

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<sup>191</sup> House of Lords Hansard, 28/10/2008, Column 1516.

<sup>192</sup> The Secretary of State has statutory powers under Energy Act 2008 to roll-out smart meters to certain customers.

<sup>193</sup> DECC, Energy Metering: A Consultation on Smart Metering for Electricity and Gas (2009) p.13 at 1.1, <<http://bis.ecgroup.net/Publications/EnergyClimateChangeDECC/EnergyMetering.aspx>> Accessed 28/4/2010.

<sup>194</sup> Næss-Schmid *et al*, see chapter 6, n.22 at 20.

annual saving made can be nominal.<sup>195</sup> This can do little to alter the consumption decision but prove costly for the Treasury. The design and type of the tax therefore is important, and in such situations alternative methods may better serve the environmental (and economic) objective.

The example suggests regulation such as prohibitions on certain high-energy use PCs, which could work to achieve the objective. Instead of regulation, a tax solution could be to impose disproportionately high levels of VAT (or an alternative tax) on appliances using the most energy in order to reduce or eliminate demand for them, thus encouraging efficient alternatives. This could prove a more economical method for taxpayers since regulation requires taxpayer funding, whilst this proposed system could bring in revenue and require the compliance costs to be covered by the retailer. Further, an EU study found that for appliances, subsidies were generally less cost effective than energy taxes in changing consumption behaviour.<sup>196</sup> The problem then however is that the increased cost of an appliance (due to an energy tax) creates the image that such products are luxury goods for which a higher premium is worthwhile, therefore in some circumstances a tax on manufacturers may be more appropriate to alter the sort of goods they produce. Additionally, if tax reductions are available for energy-efficient appliances regardless of cost, then this could be applied to the most expensive goods and be regarded as subsidies for luxury goods, which is neither fiscally practical nor likely to be politically acceptable.<sup>197</sup>

#### 46.2.3

#### MANUFACTURING

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<sup>195</sup> The example suggests VAT revenue losses on EUR €1,000 PCs, for annual energy savings of EUR €10.

<sup>196</sup> Mudgal S, *et al*, 'A Study on the Costs and Benefits associated with the use of Tax Incentives to Promote the Manufacturing of More and Better Energy-efficient Appliances and Equipment and the Consumer Purchasing these Products' (2008) TAXUD/2007/DE/330, at 254.

<sup>197</sup> Næss-Schmid *et al*, see n.194 at 625.

Indeed, an EU study analysing the various tax methods available to promote the manufacturing of more and better energy-efficient appliances and equipment found that different appliances required different tax techniques.<sup>198</sup> In terms of use of incentives including tax credits and direct subsidies, the study found it to be generally more cost effective to target these at consumers than manufacturers. The specific differences are noteworthy. With refrigerators and washing machines it was found to be possible to successfully increase sales of the most energy-efficient models if tax incentives were directed at sales prices or in another form where the consumer specifically benefited. It is likely that manufacturers tended to absorb the benefit which reduced the cost-effectiveness of the tax incentive. However other appliances required alternative benefits to consumer-focused benefits, and this differed between countries. All of this reinforces the need for policymakers to consider the impact of the introduction of taxes depending upon the particular economic (and other) circumstances of the country in question. It also shows that taxes can alter consumption behaviour if they are well targeted, so matching the type of tax or incentive to the problem is crucial.

#### 46.2.4 IDENTIFYING THE SOURCE

It is necessary therefore for policymakers to use an economic and possibly scientific approach to identify the ‘root’ of the environmental problem. In doing so it will be possible to align an appropriate tax method to ‘target’ the problem at source, if the solution is then regarded as the most effective and socially acceptable type. For example research into domestic energy consumption has found that items including household electrical appliances,

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<sup>198</sup> Mudgal *et al*, see n.196.

boilers and consumer electronics are valued at only 3% of household consumption when purchased (perhaps due to their low purchase cost) but cost approximately 60% of the total household consumption.<sup>199</sup> Consequently if the policymaker's objective is to reduce household energy consumption, then discovering this root of the problem will allow policymakers to consider the most appropriate tax method to target it. In this instance it could be to make consumers of electrical goods realise the efficiency levels of their purchases, and policymakers would need to consider which type of tax incentive, perhaps combined with supplementary techniques such as informational campaigns or subsidies, are suitable, or whether non-tax incentives would work more effectively.

#### 46.2.5 GROUP-TARGETING

It is also pertinent to assess whether certain groups of society can be most easily targeted to change their consumption behaviour and lifestyles. This can be useful if the environmental objective is to alter the behaviour of as many people as possible. For instance a tax designed to discourage as many people as possible from buying or using a certain good would need to be set at a level that affected the incomes of most people. This would depend entirely upon national economic circumstances. If most people in society had low-incomes then the rate could be set at a low level, as most people would be targeted effectively. However, if there was a large middle class of higher-income workers then the tax would need to be set higher to make it appropriate to them. This would also raise distributional concerns since the poorest in society would lose out even more by a higher rate of tax – which again raises the question of how to compensate the poor (if necessary) whilst providing enough of an incentive to change their behaviour. Ghayad sums up this situation with specific reference to cars, but the

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<sup>199</sup> Næss-Schmid *et al*, see n.194 at 6.

message can be applied generally, in explaining that “everybody has a price that they are willing to pay in order to use their cars versus public transportation. Governments need to find ways to sway those drivers whose price is relatively low.”<sup>200</sup>

It may instead be that it is a small number of people or enterprises who consume the most energy, and in this case taxes can be better targeted at them rather than being introduced generally. For example if a small number of the highest earners were able to afford energy-intensive goods or appliances which use a disproportionately high amount of energy then the tax could be targeted at them, but would need to be significant to affect their behaviour as a modest tax may be easily absorbed. This is increasingly becoming the case with the highest band of VED which aims to target drivers of fuel-intensive vehicles. The VED rate for such vehicles must continually rise so that it is not negligible compared to the vehicle’s purchase price or the average income of such vehicle proprietors.

Furthermore, incentive-side tax methods may need to be targeted depending on the income group that would have the largest impact, if that is the intention of the policymaker. For instance domestic solar panels may be readily affordable for high-income groups but such groups may neither count for a significant percentage of a country’s energy consumption or they may not value the energy savings available through microgeneration. Consequently smaller incentives may be needed to attract low-income families who may make up a higher amount of energy consumption and appreciate the savings available. Research highlights that low-income families may be unable to afford the purchase of energy-saving appliances even though they would appreciate the savings – and in this case energy-generating devices – so tax incentives or even direct subsidies may be necessary to reduce the one-off purchase

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<sup>200</sup> Ghayad P, ‘Creative Taxing can save the Environment’ (2006) *Canadian Politics from Canada's Centre Bulletin* <<http://centrerion.blogspot.com/2006/06/creative-taxing-can-save-environment.html>> Accessed 28/4/2010.

price.<sup>201</sup> Feed-in tariffs can be a means of providing social benefits to the poor, and could be economically beneficial as surplus energy could be sold abroad if such improvements allowed a country to meet its energy requirements.

Kurani and Turrentine study different groups of society in order to identify groups with particular behaviour towards energy cost savings. While the study was arguably not wide enough to reach concrete answers, further research could be extremely useful when attempting to identify which groups require behavioural change or alterations in their consumption patterns. For instance many students were found to make fuel economy a priority in their consumption decisions, having increased awareness of environmental matters and limited incomes, and fuel costs often being the only item paid directly by themselves in contrast to a car completely funded by their parents.<sup>202</sup> As Greene *et al* contend, there is little incentive for manufacturers to improve fuel economy levels if consumers do not value such improvements.<sup>203</sup>

## 46.3 VEHICLE FUEL ECONOMY

### 46.3.1 TARGETING PARTIES WITH CHOICE OF RATE

There are a variety of issues concerning how to ensure vehicle drivers become fuel-economic. Næss-Schmid *et al* make the argument for equal abatement costs amongst all users of energy;<sup>204</sup> applied to the case of vehicles this means charging everybody the same rate of vehicle fuel duty. The rationale behind this is that there should be an equal incentive

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<sup>201</sup> Næss-Schmid *et al*, see n.194 at pp.20-21.

<sup>202</sup> See Kurani and Turrentine, see chapter 6, n.27, at 17.

<sup>203</sup> Greene *et al*, see chapter 6, n.38 at 768.

<sup>204</sup> Næss-Schmid *et al*, see n.194 at 18.

amongst all drivers to reduce their fuel consumption – otherwise some drivers would have less of an incentive than others. It could be argued that this is not true in reality since those on higher incomes have proportionally less of an incentive to achieve an efficient fuel economy than others.<sup>205</sup> However any method of means-testing fuel tax would provide the poor with a reduced incentive to achieve fuel economy which would be counter-productive from a policy perspective, and would be extremely difficult to administer. Even though those on higher incomes are able to afford to use more fuel, the focus should perhaps instead be on how much one can save. High-earners are able to save the same amount by achieving fuel economy as low-earners, and from this perspective there is an equal incentive. Despite the additional income, high-earners do not necessarily have the inclination to waste their income and in reality would look to achieve cost savings at a similar level as low-income earners.<sup>206</sup> Furthermore a means-tested method would negate efforts to encourage use of public transport and the purchase of fuel-efficient vehicles. Even if the equal abatement method does not discourage high-earners from travelling long distances in their vehicles to the same extent as low-earners, it at least encourages all parties to invest in fuel-efficient vehicles or take public transport in order to achieve cost savings.

The one-rate method is distinct from taxes targeted at specific groups; rather it is a universal tax-at-root system. The UK's fuel duty follows this by taxing at root with standard rates for all users - though there are concessionary rates for 'red diesel'<sup>207</sup> and for 'excepted vehicles' which mainly includes vehicles used in agriculture, construction and fishing.<sup>208</sup> UK vehicle

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<sup>205</sup> The IFS note that VED is highly regressive on car-owners in Leicester, see n.75 at 29. See also findings of Blow L and Crawford I, 'The Distributional Effects of Taxes on Private Motoring, Commentary no. 65', (London: IFS; 1997).

<sup>206</sup> This may not be as true for very-high net worth individuals as for earners generally in one of the top earnings brackets.

<sup>207</sup> 'Rebated gas oil' is commonly referred to as 'red diesel' because red colouring is added for tax purposes to distinguish it from non-exempt fuel.

<sup>208</sup> Rebated gas oil is permitted in excepted vehicles as defined by Schedule 1 of Hydrocarbon Oil Duties Act 1979.

fuel prices are made up of both a fuel duty<sup>209</sup> and VAT (charged on both the cost of fuel and the duty) which creates a significantly higher price upon purchase than the actual cost of the fuel without any duties;<sup>210</sup> thus there is a considerable incentive for most users to limit their fuel consumption.

#### 46.3.2 DESIGN OF TAX

More targeted indirect taxes have been criticised for being crude and poorly designed. The USA implemented a ‘Gas Guzzler Tax’<sup>211</sup> on manufacturers or importers selling passenger vehicles which failed to meet statutory fuel economy levels. As of 1991, the minimum fuel economy level was 22.5 mpg (miles per US Gallon) and the maximum charge was USD \$7,700 for vehicles managing less than 12.5 mpg,<sup>212</sup> providing an incentive to avoid selling vehicles with poor fuel economies. However, the tax did not apply to light trucks which at the time of enactment were not in wide use; this meant that minivans, sports utility vehicles and pick-up trucks were exempt despite their often very poor fuel economies, and such vehicles subsequently became more popular.

Other targeted indirect taxes may also be too broad. VED has been criticised as it fails to take account of drivers’ actual car use, and uses arbitrary measurements of fuel efficiency which do not account for the specifics of the vehicle such as tyre types.<sup>213</sup> This does not therefore provide incentives to modify such vehicles to make them more economical.

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<sup>209</sup> Pursuant to Hydrocarbon Oils Duties Act 1979.

<sup>210</sup> <<http://www.whatprice.co.uk/petrol-prices/cost-litre-breakdown.html>> Accessed 28/4/2010.

<sup>211</sup> Pursuant to Energy Tax Act of 1978 (USA).

<sup>212</sup> See Tax Schedule in EPA, ‘Gas Guzzler Tax: Program Overview’ (2006)  
<<http://www.epa.gov/fueleconomy/guzzler/420f06042.htm>> Accessed 28/4/2010.

<sup>213</sup> Næss-Schmid *et al*, see n.194 at 18.

Additionally, the IFS highlight that VED provides no incentive for motorists to drive less;<sup>214</sup> and the point can be made that since it is a fixed cost those who drive less pay proportionately more per mile used than those who drive more. These criticisms can be applied to the UK's VED banding, though it should be recognised that VED provides a general disincentive to purchase such vehicles and the incentive to drive more economically and modify such a vehicle would be to reduce the cost of fuel consumption as opposed to VED.<sup>215</sup>

An alternative approach is to set various rates to target the specific marginal external costs of road use identified by Sanson *et al.*<sup>216</sup> These costs cover externalities wider than environmental costs, but the principle of targeting external costs applies. Fullerton *et al* suggest targeting external costs of road transport by designing a road pricing system based upon the actual use of a road. This relates to specific use of a road and aims to send a targeted message to motorists of their actual marginal cost of road usage at any one time by charging based upon factors such as the time of use (to reduce congestion), distance travelled (to reduce fuel consumption and emissions) and location (to account for specific locality issues such as air pollution and noise).<sup>217</sup> Nevertheless, a DfT feasibility study showed that the costs of setting up such a road pricing scheme (beginning with an initial cost of up to GBP £62 billion) could outweigh the benefits – due to the need for monitoring technology in every vehicle and a national system of road monitoring and enforcement.<sup>218</sup>

### 46.3.3

### FEEBATES

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<sup>214</sup> Leicester, see n.75 at 29.

<sup>215</sup> The IFS note this in Leicester, *Ibid.*

<sup>216</sup> Sansom *et al.* 'Surface Transport Costs and Charges: Great Britain 1998' *Final Report for the Department of Environment, Transport and the Regions* (2001).

<sup>217</sup> Fullerton *et al.*, see chapter 7, n.37 at 478-481.

<sup>218</sup> DfT, *Feasibility Study of Road Pricing in the UK* (London: TSO, 2004) at 174.

An alternative tax method of promoting sustainable lifestyles and consumption behaviour can be referred to as implementing ‘feebates’. The concept is to charge a fee on the purchase of a good or service which policymakers wish to discourage and use this to finance rebates to encourage alternative purchases. The rationale is to use a revenue-neutral system where the price of negative externalities falls upon those who would use them.<sup>219</sup> In the present instance, this would penalise purchasers of vehicles with low fuel economy in line with the polluter-pays principle, and reward those who purchase vehicles with high fuel economy in line with the theme. Further, consumption patterns are intended to be amended by increasing the price of the most polluting purchases and subsequently offering rebates for environmentally positive purchases. This is important given that research suggests many consumers mostly fail to account for fuel economy savings when purchasing a vehicle.<sup>220</sup> The feebate can additionally work to affect manufacturer behaviour by encouraging more efficient models.

The most simple design of a vehicle feebate scheme is to set the fee or rebate at a proportionate level to the per-mile level of fuel consumption.<sup>221</sup> This can be easily understood by motorists and, combined with the cost differences, it may have the most effective impact upon consumption choices. One criticism of feebate schemes raised by Greene *et al* is that they can confer differing costs and benefits on different manufacturers. This can be overcome by introducing distinct feebate schedules for distinct vehicle classes.<sup>222</sup> Though the system may be unpopular if it is regarded as a tax, a fully revenue-neutral system

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<sup>219</sup> Though the system may not always be revenue-neutral.

<sup>220</sup> Kurani and Turrentine, see chapter 6, n.27, at 13.

<sup>221</sup> Langer, see n.89, at 2.

<sup>222</sup> Greene *et al*, see chapter 6, n.38 at 758.

may alleviate such concerns and drive the correct message on sustainable consumption.<sup>223</sup> A feebate system to discourage low fuel-efficient vehicles was enacted in Ontario, Canada in 1990<sup>224</sup> and has been proposed in the USA to help achieve oil independence.<sup>225</sup>

## 47. CONCLUSION AND UNFORESEEN CONSEQUENCES

Aviation tax experience demonstrates how policymakers have attempted to target the source of one environmental externality. It was shown that while APD was designed in a simplistic and thoughtful manner, having given consideration to where final incidence should fall and how to incentivise reduced air travel, there were a number of flaws.<sup>226</sup> By highlighting these flaws it could be expressed to a policymaker how a system can fail to target the source of an environmental issue, which prevents the environmental objective being reached in an economical manner. Without creating the most economically efficient tax reform, finite resources are wasted and an environmental policy is destined to fail. Therefore reform solutions were suggested and evaluated to illustrate how taxes and incentives can be targeted in the most effective manner to achieve an environmental policy objective. A final reform proposal incorporated the key aspects of each of the reform solutions and suggested a possible version of per-plane tax.

The aviation case study found uneven distribution of the tax burden, incentives which were disproportionate and led to negative unforeseen consequences, and exemptions which

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<sup>223</sup> UNEP have suggested extending the feebate system to vehicles presently on the road by charging a fee on inefficient vehicles, to fund a rebate on the purchase of a new efficient vehicle upon the older vehicle's scrappage: Bradbrook AJ, 'Energy Efficiency in Road Transport', in UNEP, see chapter 5, n.3, pp.86-105, at 96.

<sup>224</sup> Retail Sales Tax Act, RSO 1990, c R.31 (Ontario, Canada) introduced the 'Tax for Fuel Conservation'.

<sup>225</sup> Lovins *et al*, *Winning the Oil Endgame* (Colorado: Rocky Mountain Institute, 2004).

<sup>226</sup> These are further examined by this author elsewhere in Truby J, 'Reforming the Air Passenger Duty as an Environmental Tax' (2010) 12 *Environmental Law Review* 3 94-104.

distorted the environmental effectiveness of the tax programme. Various aspects of the tax design could be justified for reasons of industry competitiveness but demonstrated in themselves the need for wider international reform as the status quo was shown to be inefficient and unfair. Negative consequences were also shown to have been in the form of detrimental impacts on a wider level than were foreseen, such as in damaging much-needed tourism in the Caribbean due to an uneven punitive technicality. Further, comparisons were made with European models to draw on such experiences, showing the importance of learning lessons from other jurisdictions before introducing any reform.

Generic lessons pointed to technological improvements being a key factor in achieving such environmental objectives. Findings stressed the importance of investing in or creating the incentives for, practical and desirable alternatives (such as train travel over aviation) in order for a person to have realistic substitution choices, and for it to be in their financial interest to reach the choice of using the substitute. A strong case was also made for a coordinated international response to overcome the status quo which is fraught with problems.

The chapter followed with non-aviation to show the complex nature of deciding upon where to target an incentive. It was found that this very much depended not only upon demand and supply, but on relationships between parties in practice which must be understood in order for an incentive to have its desired effect. It was shown that the structure of a tax can be designed so that the point of taxation (or incentive), rate, and method of tax have the most impact on the desired parties. Further, it was demonstrated how consideration can be given to how specific groups to be targeted. For instance income levels of a group can be assessed so that a tax can impact upon most parties, or it can be questioned whether it is appropriate to offer incentives broadly or narrowly in order that resources are utilised the most efficiently.

By considering how to design methods of targeted taxes and how to avoid unintended consequences, the understanding of how a policymaker may utilise tax reform to achieve environmental objectives is furthered. Guidance from this chapter as well as Chapters 6-8 allows a detailed response to the RQ(ii) and contributes to the design of a framework model relevant to RQ(i). The relevance of policymakers understanding economic and market realities prior to introducing such taxes has been emphasised. This contributes to answering RQ(iii)(c).

Further analysis however should be given to RQ(ii) in explaining how to determine what unintended consequences might be of a tax reform. This is a prudent question for a policymaker as the answer may not be clear cut – there may be an obvious consequence, but detailed evaluation can assist with a deeper understanding of how to assess other unexpected consequences. This final important part of RQ(ii) will be considered in Chapter 10, along with further evaluation of this subject.

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# CHAPTER 10: ANALYSIS

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## 48. INTRODUCTION: PURPOSE & METHODOLOGY

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Part II thus far has focused upon distinct aspects of guiding a policymaker as to how to model an environmental tax reform which can have the desired effect of changing behaviour to achieve an environmental objective. As part of their analysis, the chapters within Part II have each considered how to avoid unintended consequences of an environmental tax reform. It is important to understand why unforeseen consequences may impact negatively upon both environmental objectives and wider fiscal and social policy.

However only the foremost consequences of such a reform – those related to the objective itself - have been covered. There may however be a range of other indirect or more remote consequences which a policymaker ought to consider prior to introducing such taxes.

Providing a wider gauge of such consequences allows a policymaker to make an informed

decision on the long-term impacts of a tax reform, outside of the primary consequences. It is intended therefore in this chapter to analyse potential impacts in both a factual and a hypothetical manner which will demonstrate to a policymaker the kind of outcomes which should be considered. This will enable a fuller response to RQ(ii).

The second section also intends to provide more in-depth analysis into the findings made through research into this Part. This will attempt to piece together recurring conclusions from existing policies as to the most appropriate means of achieving certain environmental objectives, in order to input such common policymaker responses when designing a tax reform. Finally, this chapter will seek to distinguish how the Universal Model will aim to recommend the most effective solution.

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## 49. UNINTENDED CONSEQUENCES

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### 49.1 INTRODUCTION

Merton explained and popularised the concept of unintended consequences of purposive social actions – the idea being that Government intervention may result in negative, consequences for society, which can prove costly.<sup>1</sup> Compton *et al* describe that whilst policy interventions are normally evaluated by whether they managed to achieve the desired result, it must also be recognised that frequently “...people respond to incentives in unexpected, perverse, and costly ways. By overlooking these unintended consequences, both during the

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<sup>1</sup> Merton RK, ‘The Unanticipated Consequences of Purposive Social Action’ (1936) 1 *American Sociological Review* 6, 894-904.

design phase and evaluation phase, policy makers are left with an incomplete picture of the effect of their intervention.”<sup>2</sup>

Failure to appreciate the impact of a chosen tax model upon the context in which it is implemented can, as mentioned, mean the model is ineffective or cause consequences which policymakers do not desire. Further not all tax models have been tested – particularly not in varying economies – and may not work if the same conditions do not exist as proposed in theory. Merton recognised this and explained that intervening parties should not simply repeat past successes but acknowledge that “procedures which have been successful in certain circumstances need not be so under any and all conditions.”<sup>3</sup>

## 49.2      **EXAMPLES OF UNFORESEEN CONSEQUENCES**

Serious consequences of taxes or incentives can be demonstrated in the fiscal policy to promote biofuels. Concerned about energy independence and the environmental impact of fossil fuel usage, a number of countries introduced fiscal reforms and regulations – including taxes and incentives such as subsidies – to ensure biofuels partially replaced fossil fuels to power vehicles.<sup>4</sup> For example the USA announced a target of replacing 20% of petrol consumption largely with ethanol produced from corn.<sup>5</sup> This increased demand for corn

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<sup>2</sup> Compton *et al*, ‘Backdating, Tax Evasion, and the Unintended Consequences of Canadian Tax Reform’ (2010) <<http://ssrn.com/abstract=1586987>> Accessed 18/5/2010.

<sup>3</sup> Merton, see n.1, at 901.

<sup>4</sup> Food and Agriculture Organization of the United Nations (FAO), *The State of Food and Agriculture 2008 - Biofuels: Prospects, Risks and Opportunities* (Rome: FAO, 2008) at 23-24.

<sup>5</sup> Aldhous P, ‘Bush’s address tackles energy and climate’ *New Scientist* 24/1/2007 <<http://www.newscientist.com/article/dn11020-bushs-address-tackles-energy-and-climate.html>> Accessed 18/5/2010.

considerably, driving up prices and led to grave warnings from the UN that it could risk food security and cause starvation in hundreds of millions of the world's poorest.<sup>6</sup>

A number of experts warn of possible dangers of ill-considered consequences of 'purposive social actions', while past experiences demonstrate flawed policy and implementation. For example several Eastern bloc States including Armenia, Moldova and Ukraine have been criticised by the OECD for imposing charges on environmentally harmful products which offer no incentive to alter consumption behaviour, because of a lack of viable less harmful alternatives on the market and due to the rates of taxes being set at a level too low to have any significant impact.<sup>7</sup>

Equally, alternatives to paying a tax may themselves be harmful. Sandmo explains Norway's attempt to reduce plastic bag usage by imposing a user charge on refuse sacks collected by refuse collectors.<sup>8</sup> Users would limit the number of sacks used by not wrapping up waste before disposing of it in garbage bins which caused severely bad odours. Further study found that households would overfill bags to limit their use, and resort to fly-tipping to avoid paying the tax; this substitutional behaviour caused alternative environmental problems.<sup>9</sup> Smith argues it is important when deciding whether to impose a tax to consider 'linkage', which involves identifying whether taxpayers will try to reduce their tax burden by "...reducing the processes or activities that give rise to polluting emissions, or...find ways to reduce their tax payments that do not change their level of pollution."<sup>10</sup>

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<sup>6</sup> FAO, see n.4 at 72-86.

<sup>7</sup> OECD, 'Environmental Policy' (2007) ENV/EPOC/EAP/POL(2007)1, at p.6, paras.17-21.

<sup>8</sup> Sandmo A, 'Direct versus Indirect Pigouvian Taxation' (1976) 7 *Europ. Econ. Rev.* 337-49, at 339.

<sup>9</sup> Smith, see chapter 2, n.48 at 22.

<sup>10</sup> *Ibid* at 21.

### 49.3 BEHAVIOURAL ATTITUDES OF DIFFERENT SOCIETIES

Clearly therefore it is important to research behavioural attitudes towards the environment and taxation in the population in question in order to determine how effective the taxes can be. Countries and regions will likely differ in the way their environmental behaviour is affected by taxation. The World Bank recommend that countries use fuel taxes since they are a “reliable, high volume source of revenue, essentially because demand is relatively inelastic and the tax base is relatively large.”<sup>11</sup> Whilst this is true, it fails to consider that such models may not be transferable to every country. For instance the UK has one of the highest levels of taxes on vehicle fuel in the world and increases are a highly political issue which in the past have led to mass protests.<sup>12</sup>

### 49.4 JURISDICTIONAL CONSTRAINTS

There may also be reasons of domestic importance which hinder a tax solution from being suitable within a particular jurisdiction. For instance, the EU discourage Member States from lowering energy taxes from their present levels in order that all parties continue to pursue environmental goals, whilst if one State reduced energy taxes then single market rules would allow consumers to cross the border to purchase energy at a decreased cost thereby unfairly favouring trade in States with lower taxes. From a centralised perspective, a reduction in energy duty (such as VAT on petrol) may not decrease prices; the total price may remain the same and funds could transfer outside of the Member State and therefore the EU to countries

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<sup>11</sup> The World Bank, *Environmental Fiscal Reform* (Washington DC, The World Bank, 2005) at 87.

<sup>12</sup> As explained in Dresner *et al*, see chapter 3, n.32, at 931.

exporting energy such as in the Middle East. Aside from achieving any domestic political goals, this would merely raise the overall cost of importing energy into the EU.

## 49.5 HYPOTHETICAL ANALYSIS

### 49.5.1 PURPOSE AND METHODOLOGY

The purpose of this section is to provide a demonstration of how a policymaker must consider unforeseen consequences aside from the most direct or primary consequences. Failure to consider the more remote or indirect consequences of a chosen tax method could lead to considerable adverse impacts either upon the environmental objective in question, or upon other social, economic or policy goals. This section will therefore attempt to hypothesise potential unforeseen consequences utilising facts from the case study on aviation taxation reform in Chapter 9. The hypothetical analysis will proceed by first ascertaining the outcome of the policy before explaining various possible consequences – some negative and some positive.

### 49.5.2 SCENARIO

**Scenario:** The policy of reducing short-haul flights through increased taxes succeeds in the UK.

**Consequences:**

Passengers needing to commute domestically and to Europe have resorted to alternative transport.

Demand for train travel increases above available supply, so train ticket prices increased considerably and many trains become overcrowded.

This has priced out some passengers who previously used trains, and have themselves resorted to alternative transport. Demand for coach travel increases leading to an increase in the coach fleet. A considerably increased number of vehicles enter the roads, leading to overcapacity of the road network; traffic jams cause decreased productivity of workers and businesses, reducing GDP, and higher rates of traffic accidents and casualties. Passengers commuting to Ireland and Continental Europe also travel by ferry, whose fuel is exempt from tax pursuant to the Chicago Convention. Net UK carbon emissions increase due to increased transport.

With a boom in transport by sea and road, and with a lack of electrified trains, demand for oil increases and oil prices soar. This leads to an increased gap in the UK balance of payments and a fall in the value of the Pound Sterling. British airlines who operated a large proportion of domestic flights see their market shares drop and value drop. Oil-rich nations in the Middle East who benefited from increased oil prices, aid their national airlines in funding buy-outs of British airlines, causing profits to leave the UK. However, UK brands popular in the Middle East benefit from increased Middle Eastern wealth and the decrease in the value of the Pound Sterling, causing an increase in UK manufacturing and exports, though such exports only add to the over-capacity of the transport network.

Fewer flights mean food cannot be transported as frequently to various parts of the UK. Daily shipments become weekly shipments, and consumers in some areas can only purchase groceries once a week at a higher cost. Alongside the increased cost of importing food due to the low value of the currency, food shortages in remote areas become a problem. Food poverty leads to increased public spending on welfare, funded through higher taxation which had already risen due to falling levels of aviation tax revenue. People living in remote areas with food shortages migrate to other areas with ready supplies, causing overcrowding in some cities but ruining the economy in other areas. Demand for domestically produced food both causes high increases in farm prices but fewer exports, widening the balance of payments deficit further.

The impact is also seen on passengers who do not need to commute such distances. Tourism to Spain (a popular destination for British holiday-makers) falls, due to higher aviation costs and the time taken to travel by train during the short annual leave available to many workers. Remaining tourists visiting Spain largely include those on higher incomes and retired British tourists who have time to travel by road. Much of the lower-income groups were associated with high crime rates and excessive alcohol consumption in parts of Spain. As holidaying in Spain becomes too expensive for many, low-income groups increasingly holiday in UK resorts. Higher alcohol consumption and other consumption cause VAT and excise tax receipts to increase, and increased employment in UK tourism results in increased income tax receipts.<sup>13</sup> However this is countered by increased levels of crime and alcohol-related hospital admissions in British resorts, causing increased public spending on police and

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<sup>13</sup> Cairns and Newson highlight that decreased numbers of passengers on international flights from the UK means a net benefit in tourism since UK domestic tourists spend more on tourism in the UK than foreign tourists. Therefore reduced air travel can mean increased expenditure of tourism in the UK (despite fewer foreign tourists). Cairns and Newson, see chapter 9, n.84, at 5.

nurses. Many resorts which traditionally were frequented by high-income tourists, see decreased custom from higher-income tourists who dislike lower-income tourists. This leads to decreased average tourist expenditure in UK resorts, whilst higher-income tourists increasingly holiday overseas. This causes reduced consumption of luxury goods and premium accommodation in the UK, and increased average tourist expenditure outside of the UK.

### 49.5.3 SUMMARY

The scenarios in this chapter are speculative and over-stated, to provide extreme examples of the types of consequences that can arise. Whilst some of the benefits may be deemed to be positive, the range of both negative results and market-distorting results should alert a policymaker to the potential side-effects of a tax policy introduced without fully contemplating the consequences. In this case, whilst the shift in transport behaviour worked with some success, the overall environmental outcome was negative – causing a direct negative consequence for the overall environmental objective of the policy. Changing society's behaviour resulted indirectly in severe impacts upon the economy and wider tax policy, both from a domestic and international perspective. Negative and positive consequences were seen for the economy, but overall the shift in market behaviour left the UK economy less competitive than before. It also had profound impact upon everyday lives, from limiting access to food to having migratory effects upon residents. Clearly, such behaviour was never intended and it has been demonstrated that contemplating side-effects of a policy is crucial for it to have the desired effect.

## 50. ANALYSIS CONCLUSION

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This conclusion seeks to bring together the key findings of Parts I and II for brief analysis. These inputs can determine means by which a policymaker will be advised of a recommended solution to achieve an environmental objective.

### 50.1 FOCAL ISSUES

This study is primarily concerned with offering informed guidance for a policymaker to decide how to achieve any given environmental policy. The study has gathered evidence to ensure that such policy decisions can be made in line with general tax principles such as fairness and efficiency, and can be made in the most effective way of achieving the environmental objective, without impacting upon wider policies. It has sought to ensure that such decisions can be made which are appropriate to the context of the jurisdiction, economy and society within which they are made. Decisions can be thus be made with a more complete picture, but it is the choice of a policymaker as to the extent to which they intend to follow such guidance.

For instance, the findings allow a policymaker to determine the optimum distributive impacts upon their society, depending upon the realities within that society. It can be possible, depending upon area-specific circumstances, to target taxes or incentives and design tax methods to suit both the environmental objective and ensure that the policy is affordable to members of society with varying incomes. However, wider political issues such as losses of

jobs or industries can, depending upon the circumstances, be considered a necessary cost with policymakers being the judge of the extent to which they wish to accept recommendations on the most effective means of implementing their policy.

The importance of considering the international and competitive impact of any decisions has been stressed. It was shown to be futile in making costs (such as reductions in trade) be borne domestically if foreign actions will cancel out any environmental gain such as in increasing the level of harmful trade to fill the gap. Equally all of the costs do not necessarily need to be domestic – nor do the benefits. If the most effective way is to legally cause harm to an overseas entity then it will be the recommended action.

## 50.2 RECURRING SOLUTIONS

Recurring solutions from research cited in Parts I and II point to environmental targets largely being achieved with a technology-driven response. This is frequently regarded as a practical means of meeting environmental targets. However it is also recognised that improved technology alone is insufficient and environmental goals can only be fully met with behavioural changes. A Government-led programme is commonly regarded herein as a means of achieving the wider social and economic reform necessary to allow both technological and behavioural change. Such a programme would model the market so that improved technology is economically efficient and demanded over environmentally inefficient equivalents, by offering a mixture of tax incentives, taxes and subsidies. The impact of costs would largely be effective, but would need to be supported by a consistent educational message to enable society to support the purpose of such change. For instance, the UK's DfT introduced a programme to both incentive Ultra-Low Carbon

Vehicles and provide the infrastructure for their usage.<sup>14</sup> This was a technology-driven programme with targets over 50 years. The changes in VED and continuous message about climate change in other parts of the Government and legislature were aimed to support the programme by altering attitudes and consumption choices. Hence, a combined, proactive and forward-thinking programme mixing both technological improvements with behavioural change would appear to be a key recommendation from this chapter's findings.

### 50.3 SUMMARY OF FINDINGS

To summarise the findings of Part II, when an environmental problem is discovered which policymakers consider needs addressing, it seems important to conduct economic, social or scientific research to discover the main cause(s) of the problem. The main cause(s) can include a large number of factors and may be anything from a particular group of society to the pricing of an appliance which does not account for its externalities. Once the source of the problem has been found, it is necessary to consider what methods can be used to target the source. This will involve evaluation of the costs and benefits of taking any action over other actions, and which one is the most practical. If a tax method is decided upon it is important that it is the most suitable one, so consideration will need to be given to whether it can be used 'effectively'. Part of this will consider who the tax is targeted at in order to achieve the desired behavioural change, including how easily the target will be able to absorb the costs (or benefits) or the tax or tax incentive. The importance of ensuring that both the polluter pays, and improvers are rewarded, has been stressed as part of the theme.

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<sup>14</sup> See particularly Box 3, 'High-Level Technology Roadmap for the UK's Decarbonisation of Road Transport' DfT, 'Ultra-Low Carbon Vehicles in the UK' (2009) at 11, <<http://www.dft.gov.uk/adobepdf/187604/ultralowcarbonvehicle.pdf>> Accessed 28/4/2010.

#### 50.4 **BASIS FOR RECOMMENDING MOST EFFECTIVE SOLUTION**

Every potential solution for achieving environmental policy will likely have costs and benefits. The purpose of designing a framework model for environmental taxation is to propose a solution deemed to be the most effective for achieving the environmental policy. This will be designed to be suitable for any given jurisdiction. The most effective solution may not however be the most popular solution and may even result in severe costs falling upon a particular sector or group. These will be regarded as potential costs or political issues and it will be for the policymaker to determine whether to implement the recommended solution, which will depend upon their judgement of the extent to which they wish to achieve the environmental policy against the costs of implementing the policy. This understanding is the basis for Chapter 11.

# PART III

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# CHAPTER 11: IS IT POSSIBLE TO DESIGN A UNIVERSAL LEGAL MODEL FOR ENVIRONMENTAL TAXATION THAT CAN BE APPLICABLE WITHIN DIFFERENT JURISDICTIONS?

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## 51. PURPOSE

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The purpose of this chapter is not to illustrate how taxes can be harmonised between nations or to propose policies to achieve environmental goals, or to determine the goals themselves.<sup>1</sup> Instead the purpose is to propose a model which can be used by any policymaker to determine the most appropriate taxation method available to achieve a given environmental policy.

The basis is to offer policymakers a series of *gateway questions* to answer in order to ascertain the most effective solution for achieving a given policy. The caveat of any solution, as explained in 33 is that the solution will be to effectively achieve the environmental policy at any cost;<sup>2</sup> it is the duty of the policymaker to determine whether the costs (or benefits) are acceptable given pertinent issues within the jurisdiction. This is in line with recommendations made in Chapter 5 and it is anticipated that policymakers will consider wider issues as part of the decision-making process in determining whether and to what extent to endorse the deemed appropriate action to achieve an environmental policy. Both the recommended solution and decision-making process consequently are *apolitical* and it is

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<sup>1</sup> In the 1990s all Scandinavian countries introduced carbon taxes but were unable to harmonise them: See Metcalf and Weisbach, see chapter 7, n.112, at 508.

<sup>2</sup> In line with the Baumol-Oates approach explained at 24.

acknowledged that certain political or influential factors may prevent the implementation of any given solution or dilute its impact through amendments.<sup>3</sup>

Abbreviations within the Model are available in the Glossary at 57.

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## 52. PRINCIPLES AND ASSUMPTIONS

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### 52.1 THEME

The model will follow the theme of this thesis so that any tax system will aim to both ensure that, where possible:

- (a) the ‘Polluter’ pays; and
- (b) the ‘Improver’ is rewarded.<sup>4</sup>

Part (a) will ensure that negative external costs are internalised and the correct environmental message is delivered, to provide the necessary incentive to limit negative externalities. This is in line with the ‘polluter-pays’ principle. The principle considers that a party taking insufficient action to limit such externalities should be made to bear the external cost. For the purposes of this model a “Polluter” is any party who causes a negative externality according to the relevant environmental policy.

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<sup>3</sup> Milne cites the example of the Clinton Administration’s attempt to introduce an energy tax and have the collection point at the point of production, but pressure from influential industry groups resulted in the tax being placed upon the end-user; a far less satisfactory result in terms of both administrative ease of collection and the ability to influence production choices. See chapter 8, n.25 at 13.

<sup>4</sup> Meade emphasised that a tax structure in a mixed economy must provide “effective incentives for private enterprise”, which the Model will strive for in line with the theme. See chapter 1, n.9 at 20.

Part (b) is considered to be a necessary extension of the polluter-pays principle. For the purposes of this Model an “Improver” is any party (or potential party) who takes action to reduce a negative environmental externality or to cause a positive environmental externality, according to the relevant environmental policy. This principle is developed to ensure there is some private benefit to a party taking such actions which is regarded as both essential in incentivising a party to take an action, and equitable given that the party would otherwise make a private loss. This is not to imply that the entire private cost ought to be borne by the taxpayer, but that the Improver should expect some contribution.

For example the American Clean Energy and Security Act of 2009 offers rewards for the retirement of low-efficiency products.<sup>5</sup> Green suggests the use of subsidies to incentivise reduced emissions, alongside the removal of subsidies which reward polluters.<sup>6</sup> Taxes and tax incentives can work in a similar manner, especially where no subsidy exists which would work adversely to the tax. A two-pronged solution such as this is in line with Buchanan and Tullock’s reasoning that: “...a two-sided tax subsidy arrangement can remove the industry source of opposition while still ensuring efficient results.”<sup>7</sup>

## APPLICATION EVERYWHERE

A further qualification is that these principles should apply *everywhere where there is a relevant environmental impact*. If the policymaker considers it important that the burden of an environmental problem is not borne by a country at the expense of their economic

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<sup>5</sup> H.R. 2454, 111th Congress, §214.

<sup>6</sup> Green A, ‘Trade Rules and Climate Change Subsidies’ (2006) 5 WTR 3, 377-414, pp.381-383.

<sup>7</sup> Buchanan and Tullock, see chapter 7, n.14 at 143.

competitiveness, the Model will seek to accommodate this, with reference to findings in Chapter 8.

## PROPORTIONALITY

A fixed limitation of the Model is that it will follow the EU principle of ‘Proportionality’ so that any action recommended will be limited to that which is necessary to achieve the environmental objective of the policymaker.<sup>8</sup> This will be in line with ECJ conditions on fiscal instruments such as environmental taxes, which requires them to be shown to be necessary and proportionate to the objective.<sup>9</sup>

### 52.2 TARGETED TAXES AND INCENTIVES

As far as possible the Model will aim for targeted taxes so that the source of the problem is dealt with, in order to fully comply with the ‘polluter-pays’ principle. In order to do this the taxes will be specific rather than broad and aim to differentiate between specific environmental impacts. Broad-based or uniform taxes are regarded as inadequate to achieve this and may be inefficient.<sup>10</sup> In line with Whalley’s argument, the taxes (and incentives) will focus on altering specific parts of processes which cause specific environmental harm, such as production methods with high energy use.<sup>11</sup> Further, the externalities caused by specific goods (and services) will be targeted individually according to their impact, rather

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<sup>8</sup> Proportionality is enshrined in EU primary law pursuant to Article 5 of the Consolidated Version of the Treaty Establishing the European Community, 2010 O.J. (C 83/13).

<sup>9</sup> Case 302/86 *Commission of the European Communities v Kingdom of Denmark* [1988] ECR 4607; and Case C-314/98 *Snellers Auto’s* [2000] ECR I-08633.

<sup>10</sup> See ‘A Possible Landfill Levy in the UK: Economic Incentives for Reducing Waste to Landfill’ in IISD, see chapter 7, n.13 at 40-41.

<sup>11</sup> Whalley, see chapter 1, n.3, at 120.

than broadly. Whalley refers to these concepts as ‘product-based’ and ‘process-based taxes’.<sup>12</sup>

Offering suitable incentives to achieve the environmental goal may involve offering subsidies. Such subsidies will be used only where necessary in order to achieve the goal. For example Dresner and Ekins identify that to improve energy efficiency in UK households, alterations to the council tax and SDLT systems could be used to incentivise homeowners to make improvements in a set time. This would involve offering loans and grants to low-income households so that all households would be able to make the required improvements, funded through ring-fenced charges for those not making the improvements.<sup>13</sup>

### 52.3 EXISTING SYSTEM

The existing tax system will be utilised and reformed as much as possible as opposed to introducing a new tax. The benefits of this are:

- greater public acceptance of the changes;<sup>14</sup>
- administrative savings of not having to introduce a new tax;
- shifting the burden of a tax system to protect the environment.

### 52.4 SIMPLICITY

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<sup>12</sup> Whalley *Ibid.*

<sup>13</sup> Dresner S and Ekins P, ‘Economic Instruments to Improve UK Home Energy Efficiency without Negative Social Impacts’ (2006) 27 *Fiscal Studies* 1, 47-74.

<sup>14</sup> Public resistance to a new tax can undermine its effectiveness as with France’s failed carbon tax (see 16), whilst amending an existing tax to reflect environmental concerns can increase its acceptability and effectiveness as with VED reforms.

The Model aims to be as user-friendly as possible to ensure clarity of application and ease of use. Once the policymaker states their environmental objectives the Model aims to coherently offer viable solutions. Before offering solutions, the Model categorises taxpayers into two bands: private individuals and businesses. It is recognised however that some taxpayers may not fall into either category. For instance organisations within the voluntary sector or public sector are not commonly regarded as businesses.<sup>15</sup> For the purpose of the Model any such organisation will be regarded as a business since it is important to provide continuing incentives to all, though there may be policy exclusions as provided.

#### 52.5 MANOEUVRABILITY FOR POLICYMAKERS

The Model is not intended to be inflexible as this could prevent it from being appropriate in a given context. The framework questions will therefore deliberately refrain from defining certain meanings such as what constitutes a ‘high risk’, except where stated. It is intended that the policymaker can use the information available to decide if for example a certain probability constitutes a high risk, since an exact percentile definition (such as a 51% chance or 75% chance) could prove arbitrary in some circumstances. However it is anticipated that common use of this Model will develop non-binding guideline meanings based on categories; for example a 25% chance risk of human death may constitute a high risk, whereas a 25% chance of an old building collapsing may not. Used responsibly, this provides the policymaker with the flexibility to respond on a case-by-case basis depending on the individual circumstances.<sup>16</sup> It is however important that policymakers can defend their given

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<sup>15</sup> Stroud’s definition of ‘business’ extends the ordinary meaning to include some public sector activities for legal purposes, such as under the Landlord and Tenant Act 1965, in Greenberg D, *Stroud's Judicial Dictionary of Words and Phrases* (London: Sweet & Maxwell; 2009) at 334.

<sup>16</sup> Meade stressed that a “good tax structure must be flexible” to manage both demand and the political policy of the day: see chapter 1, n.9 at 21.

interpretations and understandings, based on any evidence available to them at the time of making the decision.

## 52.6 SINGULAR POLICY FOCUS

Since the Model is designed to enable the policy to be carried out rather than creating the policy itself, is it essential for the policymaker to determine the policy. This will be based upon evidence of need. Its definition of the environmental objective will determine its “practical implementation, design and fiscal revenue uses” as well as its final impact.<sup>17</sup> The *OECD Framework for Effective and Efficient Environmental Policies* provides guidance for policymakers to ask appropriate questions about both their environmental institutions and policies in order to achieve the most effective and efficient outcome.<sup>18</sup> It is expected that this is done prior to use of the Model, whereupon the Model will aim to accommodate this as far as possible.

### 52.6.1 DOUBLE TAXATION AND TAX DISTORTIONS

Any recommended taxation solution of the Model must not be allowed to be distorted by present environmental tax policies or taxes which would dampen the impact of any new taxes proposed by the Model. The Model therefore works on the assumption that the areas where the environmental policy is to apply are currently subject to:

- (a) no environmental taxation; or

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<sup>17</sup> Baranzini *et al*, see chapter 4, n.15, at 410.

<sup>18</sup> [ENV/EPOC(2008)6/FINAL] at 2.

(b) taxation which will be removed or reformed so as not to distort the impact of any tax introduced pursuant to this Model.

This does not rule out the possibility of several different types of environmental taxes operating comprehensively to achieve an overall objective. Indeed such possibilities can work well, as in Sweden where four differing taxes work collaboratively.<sup>19</sup>

## 52.6.2

### CAP-AND-TRADE SCHEMES OR REGULATION

Similarly whilst the Model can potentially work alongside cap-and-trade schemes it may be economically harmful to engage both to achieve the same targets. If there is an overlap between a tax and another instrument then the polluter may end up having to bear the cost more than once and may need to continue paying even after the environmental target has been met, which makes part of the tax a non-environmental tax and could trigger deflation.

The Model focuses on using taxation to achieve an environmental target. Consequently if there are policies in place which are not to be removed or reformed, then the Model can only be used to target an area over and above the area presently covered by the existing policy. For example if regulation is presently used to reduce industrial water consumption by 20% then the tax should not focus on that 20% since it is already covered and expenditures are already being made to achieve that binding target. Instead the tax should only be used for an additional policy of incentivising a further reduction. Otherwise a taxpayer could end up

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<sup>19</sup> See Speck S, 'The Design of Carbon and broad-based Energy taxes' (2008) 10 VJEL. 31-59, at 50.

paying both a fine and a tax for the same consumption which together amounts to a sum which is more than the requisite level of taxation to achieve the target.

Where there are already non-tax policies in place, it may be harmful to instantly remove them and replace them with tax policies. For instance Anderson identifies that the removal of an ETS may cause a price crash which could lower prices of pollutants in the short term.<sup>20</sup> An ETS may have established a relatively stable cost of a pollutant such as carbon, so without the need for companies to purchase a quantitative trading permit the prices of carbon could suddenly drop – which may result in more carbon being emitted until it becomes more expensive to use again. In such circumstances – or in other circumstances where the removal of the status quo could damage the environmental interest - it may then be necessary to gradually change the system from a non-tax to a tax system in order to provide stability.

### 52.6.3

### VOLUNTARY AGREEMENTS

It is perceivable that policymakers may utilise the threat of a tax formed through this Model to reach voluntary agreements with taxpayers to achieve certain targets.<sup>21</sup> Whilst this may work to an extent it must be noted that a revenue-recycling result proposed by the Model cannot be achieved through a voluntary agreement. This is because the voluntary agreement will bring in no revenue to be used for purposes considered within the Model. This will render the Model's results incomplete since certain positive externalities may not be created to offset the negative externalities – meaning that the targets to reduce the negative

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<sup>20</sup> Andersen MS, 'Environmental and Economic Implications of Taxing and Trading Carbon: Some European Experiences' (2008) 10 VJEL.. 1, 61-84, at 83.

<sup>21</sup> See the experience of Switzerland in Felder and Schleiniger, see chapter 3, n.5, at 109.

externalities would have been necessarily higher. Thus the voluntary agreement's targets will not go far enough in achieving the environmental goals. Even if the voluntary agreement included payments to create the proposed positive externalities, the actual predicted effects may be distorted whilst any double dividend created through proposed revenue recycling possibilities will not operate. The system of exempting large polluters from taxation if they agreed binding emissions targets was introduced in Switzerland,<sup>22</sup> but has been criticised for being an inefficient solution since all parties will have varying costs particularly if all parties within an industry do not sign up to the agreement.<sup>23</sup>

#### 52.6.4

#### ABSENCE OF TREATY

Many environmental problems exist on an international scale and therefore require an international response. This may be in the form of a global treaty or pact such as the Bali Action Plan.<sup>24</sup> However whilst such treaties may be desirable or necessary in achieving an environmental goal, they may not be politically feasible in the short term. In the absence of such an international agreement it may be necessary for one nation to take unilateral action using its tax code to achieve the goals within its borders, and, as far as possible outside of them. This may be in coordination with other nations taking similar action.

The Model is designed to have the potential to operate on an international scale on the basis that there is no applicable international law or treaty currently in place which would render the Model unnecessary.

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<sup>22</sup> Article 9 of the Federal Act on Reducing CO<sub>2</sub> Emissions (CO<sub>2</sub> Act; SR 641.71).

<sup>23</sup> Felder and Schleining, see chapter 3, n.5 at 109-110.

<sup>24</sup> Agreed at the UNFCCC Conference of the Parties meeting in Bali, Indonesia, 2007.

## 52.7 LEGALITY

The Model is designed to work within prevailing international law and assumes that no international treaty already applies to the areas targeted by the Model. There is an assumption that national sovereignty continues to apply to tax law and that one jurisdiction cannot directly tax within another jurisdiction.

It is also assumed that international trade rules (such as WTO rules and EU Competition Law) continue to apply to limit the ability of Governments to subsidise private enterprises. Any recommended subsidies must be approved by relevant authorities and considered legitimate. Within the EU for example certain subsidies are permissible given that they qualify as being in the environmental interest.<sup>25</sup> WTO rules also importantly prohibit internal taxes which discriminate against imported products.<sup>26</sup>

## 52.8 ADMINISTRATIVE FRAMEWORK

It is assumed that there is a competent administrative framework to manage the tax system,<sup>27</sup> providing “equity, economic efficiency, and ease of administration”.<sup>28</sup> This crucially involves horizontal and vertical tax equity,<sup>29</sup> which the Model aims to provide.<sup>30</sup> Further it requires

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<sup>25</sup> The Community Guidelines on State Aid for Environmental Protection 2008 OJ C/82 1, governs this area and determines when special tax provisions are allowed.

<sup>26</sup> See chapter 9.

<sup>27</sup> The need for this was recognised in ‘Water Taxes in Germany’ in IISD, see chapter 2, n.90 at pp.36-37.

<sup>28</sup> See chapter 2, n.23 at 70-98.

<sup>29</sup> As explained in Klein *et al*, *Federal Income Tax* (2005) at 3-4 <[www.ilrg.com/.../FederalIncomeTax-Georgetown-Pearlman-Fall2005.doc](http://www.ilrg.com/.../FederalIncomeTax-Georgetown-Pearlman-Fall2005.doc)> Accessed 5/5/2005.

coordination between local and national authorities to ensure information is complete and tax incentives are correctly applied.<sup>31</sup>

The administration must also ensure the rules and policies are enforceable and enforced. The means of doing this will vary between jurisdictions depending on local laws and customs. Legislation in British Columbia ensures carbon tax revenues are recycled in full according with tax provisions by penalising the Minister of Finance personally with a 15% salary cut for failure to carry this out.<sup>32</sup> This ensures the administration satisfies its duties related to the environmental tax reform, where otherwise a Government may only be accountable to itself.

## 52.9 PRE-REQUISITE TO USE OF THE MODEL

Following from Chapter 5, as a pre-requisite to use of the model, it is necessary that an EAS ('Environmental Assessment Study') must be carried out. The EAS would be carried out by a team composing some or all of professional environmental engineers, scientists, ecologists, economists and accountants to produce results in a similar manner and along similar lines to both the *Green Book* (see 28) and UNEP's description of environmental assessments required by many legislatures.<sup>33</sup> It is anticipated that where required to identify anything within the EAS, the entire category will be included so that the list is as exhaustive as possible. However the examples below are inevitably over-simplified, contrived and incomplete as they are for demonstration purposes only.

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<sup>30</sup> See Mann, chapter 7, n.53 at 1206.

<sup>31</sup> As noted in Mann & Hymel, see chapter 6, n.10 at 10428.

<sup>32</sup> Carbon Tax Act 2008, S.B.C, ch.40 § 5(3) (Canada).

<sup>33</sup> UNEP, see chapter 5, n.3 at pp. 6; 10-17.

The EAS must perform the following:

1. Identify an overall environmental problem to be addressed (known as the “EP”).

This will require a scientific or other professional explanation of the perceived problem. Where there is doubt as to the existence of the problem or its causes, the precautionary principle applies (see Chapter 1, 1.8).

2. Identify the geographical location within which the EP exists.

The examples given to demonstrate the EAS are that the EP is either:

- i. Global GhGs are too high to be sustainable;
- ii. A local area is overpopulated with badgers;
- iii. A region is in danger of being flooded; or
- iv. An historic building is in a state of disrepair.

3. Identify one or more contributing factor(s) causing the EP (known as “CF”(s)).

The purpose is to set out the categories of the overall problems causing the EP.

In the above examples these could be:

- i. CO<sub>2</sub> emissions are too high; nitrous oxide emissions are too high.
- ii. Badgers are reproducing in an area with no natural predators.
- iii. A region has too much deforestation and insufficient flood defences.

- iv. Nobody has repaired the building in 100 years and it is unlikely that anybody will do so.

This description should specifically indicate the gravity at which the CF is contributing to cause the EP, such as by attributing it with a percentage of the cause.

4. Identify one or more causes of the CF(s) known as the “Pollutant”(s).<sup>34</sup>

The purpose is to set out the use of any commodity, service, activity or other factor which specifically contributes to the CF in question and to what extent. Any one of these may contribute in various ways to the CF and the intention is to identify the varying causes for this.

The rationale for this is to properly account for the varying reasons for the Pollutant’s contribution to the CF in order that externalities may properly be internalised and/or the correct incentive to amend behaviour can be established.

This involves separating out the various stages in the polluting activity and identifying the precise (if possible) factor(s) resulting in the CF, including the processes or methods involved in creating it in the first place (where possible).

In the case of a good for example there will be two measures of its contribution to the CF:

- (a) that resulting from its usage; and

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<sup>34</sup> Lighthart recognises that there can be multiple ‘nonpoint’ causes of an environmental externality, in Lighthart, see chapter 4, n.19 at 8.

(b) that resulting from the processes of its production.

Both must be counted. Further, rather than counting the entire production process as one, the purpose is to ascertain each specific process's contribution. Only by doing this can the unsustainable parts of its production be accounted for and then altered. Similarly in the case of an industry or sector, rather than counting the entire industry or sector together, it must be differentiated by counting the processes of production individually.<sup>35</sup> Therefore the component parts of any given product will be identified and the processes of their production accounted for, in order that the full polluting output of that product is known.

In such cases the onus of proof that a process is sustainable will be on the Polluter (see below).

In the above examples these could be:

- i. Causes of CO<sub>2</sub> emissions include: commercial aircraft engines produce 10% by using fuel (showing bands of efficiency depending on engine type); coal combustion produces 8%; TVs produce 3% whilst switched on and 1% whilst on standby; cows produce 2% through flatulence; machinery used in manufacturing of stationery produces 5%; machinery producing aerosol caps produces 1%; aerosols produce 1%; there are too few trees to absorb CO<sub>2</sub> emissions. (Nitrous oxide emissions dealt with separately).
- ii. Causes include: there are no natural predators for badgers in the area and badgers are able to reproduce.

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<sup>35</sup> Whalley, see chapter 1. n.3, at 120.

- iii. Causes of deforestation include: 2% of the rainforest is being depleted every year. Causes of the insufficient flood defences include: trees are not being planted; no investment in flood defences.
  - iv. Causes include: there is no private benefit to be accrued from repairing the building since it has no commercial value.
5. Identify one or more parties responsible for causing the Pollutant(s), known as the “Polluter”(s).

The purpose is to analyse the chain of responsibility so that any party causing or influencing the cause of a Pollutant is considered. This is not to indicate that the ‘beneficiary pays’ principle will replace the ‘polluter pays’ (see Chapter 7) but to have a list of parties who can be influenced at varying levels.

In the above examples these could be:

- i. Causers of aircraft engine emissions: owner of airline; passengers; senders of freight by aircraft. Causers of coal combustion: coal mining company; coal power plants; energy companies; consumers of electricity to the proportion that it is produced through coal. Causes of TV emissions: manufacturers; importers/exporters; sellers; consumers. (Others dealt with separately).
- ii. Badgers themselves by reproducing.
- iii. Loggers cutting down trees; sellers of wood; manufacturers of wood products; consumers purchasing products made from wood.
- iv. The depredation of the building.

6. Identify one or more factors which could reduce or reverse the impact of CF(s), known as the “Improvement”(s).

In the above examples these could be:

- i. More trees could absorb a greater amount of CO<sub>2</sub>; improved aviation technology can reduce aviation CO<sub>2</sub> emissions; availability of alternative sustainable transport for passengers can reduce number of flights to reduce CO<sub>2</sub> emissions. Education of consumers can shift demand from non-renewable to renewable resources.
- ii. Foxes can kill badgers; badgers can be neutered.
- iii. Trees can be planted; existing trees can be prevented from being cut down if there is no commercial benefit or suitable alternatives; flood defences can be built. Education of logging communities can encourage sustainability.
- iv. The building can be repaired periodically.

7. Identify one or more party able to carry out Improvements, known as the “Improver”(s).

In the above examples these could be:

- i. Private forest owners could authorise logging reductions and/or tree-planting programmes; airlines can replace old aircraft with more efficient versions; manufacturers of airline engines can design and produce more efficient versions; passengers can use alternative sustainable transport.
- ii. Animal organisations can neuter badgers.

- iii. Private enterprises could invest in tree planting programmes; alternative products can be researched or manufactured; companies can invest in flood defence systems;
  - iv. Local building firms can carry out repairs; private companies can fund repairs.
8. Where possible, identify the elasticity of demand and supply of each Pollutant and each Improvement.
9. Identify the financial capacity of any Polluter(s) or Improver(s).

This attempts to estimate the income levels of each in order to understand their ability to pay taxes. This information can be gained from the nation's tax collection agency. In the case of a group within society, estimates of average per capita income would suffice.

10. Estimate short-term and long-term costs of:
- i. the EP;
  - ii. the CF(s);
  - iii. the consequences if the EP is left unchecked (known as the "Threat");
  - iv. the consequences if the EP is reduced to various more sustainable levels (known as the "Reduced Threat"(s);
  - v. the private benefits to the Polluters of allowing the EP to be left unchecked; and
  - vi. any social benefits derived from continued use of the Pollutants.

The costs above must value both private and social costs, (unless otherwise indicated) along similar lines to that indicated in the *Green Book*<sup>36</sup> and in Chapter 5. It may be necessary for example to conduct surveys to understand how greatly the public value a certain environmental factor. Alternatively an area may be of considerable ecological importance so both private and social costs would need to be included. It is anticipated that such valuations would be carried out independent of Government. This is an area requiring further interdisciplinary study however if policymakers decided to omit certain factors from the valuation then this would not represent the actual costs and the use of the Model would be flawed.

11. Not financially cost more to carry out the cost of the Threat as in 10(iii) above.<sup>37</sup>

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<sup>36</sup> HM Treasury, *The Green Book - Appraisal and Evaluation in Central Government* (London: TSO) <[http://www.hm-treasury.gov.uk/d/green\\_book\\_complete.pdf](http://www.hm-treasury.gov.uk/d/green_book_complete.pdf)> Accessed 5/5/2010.

<sup>37</sup> The Model adopts the principle that with Government intervention, it should not cost more to correct a market failure than the cost of the failure itself. Friedman refers to this type of failure as 'Government failure' (as opposed from 'market failure,' in Friedman M and Schwartz AJ, *A Monetary History of the United States 1867-1960* (USA: Princeton University Press, 1963).

## 53. THE UNIVERSAL MODEL

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The information provided by the EAS should be sufficiently complete to allow the policymaker to utilise the Model below.

### 53.1 WHAT DOES THE POLICYMAKER WISH TO ACHIEVE?

The policymaker must specify:

53.1.1 The “Policy”. This must be an overall target determining the extent to which the EP will be affected to limit the scope of the Threat.

For example this could be to reduce climate change to only a 2°C increase from a 1990 level. This therefore would not entirely avoid the Threat but could reduce it to a more sustainable level – a Reduced Threat option. The policymaker therefore has the option to decide what level of change (if any) is desired and can use the EAS to make an informed decision based upon the various implications of each Reduced Threat option.

53.1.2 The “Policy Objective(s)”. The policymaker must select the CF(s):

- a. to be affected in order to achieve the Policy; and
- b. the level to which any CF will be affected.

If there is only one CF there will be no choice because the CF must be affected to a level that will achieve the Policy.

If there is more than one CF, the policymaker has the choice of selecting one or more CFs and can affect them in a combined way to achieve the Policy.

For example it may be decided that CO<sub>2</sub> emissions should be reduced by 10% and tree levels are required to rise by 15%, but that nitrous oxide emissions are not to be affected.

Importantly, the Policy Objective will differ depending upon the type of CF. For instance, Bell and McGillivray divide all environmental policy between two definitions: pollution and conservation.<sup>38</sup> If this is accepted then considerably different approaches would be appropriate for reducing pollution than conserving an environmental factor.

### 53.2      **HOW FORESEEABLE IS IT THAT THE FREE MARKET WILL ACHIEVE THE POLICY WITH NO GOVERNMENT INTERVENTION?**

It is important that the tax system allows free enterprise to solve market problems, or allows room for it to do so.<sup>39</sup>

Where possible, Government economists will respond to this question with an estimated percentage chance. Policymakers will decide whether to intervene based upon the likelihood of a satisfactory market intervention in sufficient time to achieve the Policy.

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<sup>38</sup> See Bell S and McGillivray D, *Environmental Law* (Oxford: OUP, 2008) at pp.4-10.

<sup>39</sup> See 5.2.1. As the entire use of fiscal instruments is dependent upon the need to correct market failures in meeting environmental policy, if the market can solve the problem with no intervention then there will be no need to consider using taxes.

The policymaker's requirement for a high degree of probability increases as the severity of the Threat increases.

Given that intervention is selected, the policymaker must move onto the next question.

If it is decided that private enterprise will achieve a proportion of the Policy, but not all, then the Model can be utilised to achieve the remainder of the Policy.

### 53.3 HOW ARE THE POLLUTANT(S) AND IMPROVEMENT(S) DEFINED AND MEASURED?

#### DEFINITION

Prior to determining which Pollutant(s) and Improvement(s) are to be involved in the Model, it is necessary for the policymaker to determine how any tax base will be defined. The definition will differ depending on the type of tax base involved. The policymaker's choice must depend on the nature of the Policy Objective(s).

For example Milne explains that if the objective is to reduce *carbon emissions* then this limits the base to fossil-based fuels.<sup>40</sup> Whereas if the objective is to reduce *energy consumption* then the base is wider including renewable energy or nuclear power.<sup>41</sup>

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<sup>40</sup> Andersen explains that Slovenia focused its energy taxes onto fossil fuels and measured it by carbon content, in Andersen MS and Speck S, 'The Environmental Tax Reforms in Europe: Stabilisation, Mitigation Compensation, and CO<sub>2</sub> Stabilisation' in Cottrell J *et al*, see chapter 7, n.17 at 520.

<sup>41</sup> Milne, see chapter 8, n.25, at 4.

## MEASUREMENT

The means of measurement also relate to the Policy Objective(s). For example a goal of reducing *energy consumption* may define its base in terms of either its:

- market price per unit of energy;
- volume of fuel; or
- energy content.<sup>42</sup>

In this instance a measurement using the ‘market price per energy unit’ may not be appropriate for a goal of encouraging renewable energy if the unit price for renewable energy was higher than that of fossil fuels. The latter two could be more preferable in this case since the ‘energy content’ may reflect the efficiencies of renewable energy and the ‘volume of fuel’ may exclude renewable energy altogether.

Therefore how widely the tax base is defined and measured depends upon the most appropriate means of achieving the Policy Objective(s).

### 53.4      **HOW DOES THE POLICYMAKER WISH TO ACHIEVE THE POLICY OBJECTIVES?**

This is decided as follows:-

#### 53.4.1              WHICH POLLUTANT(S) (IF ANY) WILL BE TARGETED?

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<sup>42</sup> Milne, see chapter 8, n.25, at 4.

This is ascertained by answering the following:

53.4.1.1 How many Pollutants are there?

53.4.1.1.1 Multiple Pollutants:

Ascertaining which of the multiple Pollutants to target will determine what will be included in the tax base. The policymaker has the option of choosing:

- (a) None of the Pollutants: (4.4.1.1.3) below will apply;
- (b) One of the Pollutants: (4.4.1.1.2) below will apply;
- (c) Several of the Pollutants; or
- (d) All of the Pollutants.

The policymaker has several considerations when making this choice.

### MOST DIRECT LINK

Milne explains (in the context of designing an energy tax) that it is advantageous for the tax base to be the factor which has the most direct link to the environmental problem.<sup>43</sup> For example since CO<sub>2</sub> causes 85% of USA's GhGs, most policies aim at reducing CO<sub>2</sub> emissions as opposed to other emissions.

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<sup>43</sup> Milne, see chapter 8, n.25, at 4.

This can be applied herein so that the policymaker may determine which of the multiple Pollutants most directly causes the CF(s) and make this Pollutant the tax base. This will be particularly appropriate when the selected Pollutants together make up the over-whelming majority of the CFs. In the above example this may lead to the base being a single Pollutant.

In terms of achieving the Policy Objectives the ‘most direct link’ rationale can provide a straightforward focus point, and can work well as an educational tool if the concentration focuses upon fewer rather than many Pollutants (see distributional impacts in 36.4). For example many households now commonly understand the concept of decreasing one’s ‘carbon footprint’ and the need to do so, whereas they may not appreciate the other non-carbon factors causing the environmental problem of GhGs such as methane or nitrous oxide, and may not be aware of methods to reduce their non-carbon impact.

## WIDER FOCUS

Depending on the scope of the tax base which a new tax has the ability to influence, the policymaker may instead decide to spread the focus amongst all or most of the Pollutants, even if several are only minor in scale, in order to get to the root of the problem.

### 53.4.1.1.2 One Pollutant or only one selected:

If there is only one Pollutant then this will be targeted in the tax base. However if the Pollutant becomes excluded then 54.4.1.1.3 below applies.

#### 53.4.1.1.3 No Pollutant:

These circumstances will apply when:

- (a) there is no Pollutant;
- (b) no Pollutant is selected by the policymaker; or
- (c) any selected Pollutants are excluded pursuant to 53.4.1.2.

Under these circumstances the tax base must be redirected in order to fund any Improvement(s). The first option is to target an alternative Pollutant to a different CF (even if not related to the present EP) in order that the tax is still raised to achieve an environmental goal. If this is not available the tax base will need to be non-environmental which makes it a tax ‘for environmental purposes’ (without an environmental tax base, but to achieve an environmental goal, rather than an ‘environmental tax’, as explained in 5.1). This may not be necessary if there is some other Government funding available in lieu of raising taxes on a non-environmental tax base.

#### 53.4.1.1.4 Is any Pollutant subject to a *continuing* environmental tax within the jurisdiction’s tax code?

Any such Pollutant must be exempt from the Model’s potential tax targets if:

- (a) the environmental and economic impact of the continuing tax on the Pollutant would be adversely affected by the introduction of an additional tax on the same Pollutant;
- (b) the perceived impact of a new environmental tax may be adversely affected by the continuing tax;

- (c) there would likely be so serious an adverse impact upon a selected Polluter whose activities are of significant social, economic or environmental importance, that it would be more detrimental to the public interest to include than to exclude the Pollutant.

The word 'continuing' qualifies the requirements of 53.4.1.2, so that 53.4.1.2 does not apply if the existing tax will be:

- a. revoked; or
- b. reformed to an extent that will not interfere with an environmental tax perceived by the Model.

#### 53.4.2 WHICH IMPROVEMENT(S) (IF ANY) WILL BE TARGETED?

The policymaker must determine any Improvement(s) necessary to either:

- (a) off-set the impact of any Pollutant(s) in achieving the Policy Objective(s); or
- (b) achieve the Policy Objective(s) in any case.

##### 53.4.2.1 How many potential Improvements are available?

###### 53.4.2.1.1 Multiple Improvements:

Ascertaining which of the multiple Improvement types to target will determine where incentives are aimed. The policymaker has the option of choosing:

- (a) None of the Improvements: 54.4.2.1.3 below will apply;
- (b) One of the Improvements: 53.4.2.1.2 below will apply;
- (c) Several of the Improvements; or
- (d) All of the Improvements.

The policymaker should decide on this based upon which Improvements are perceived to be capable of having:

- (a) the most direct effects in achieving the Policy Objectives;
- (b) where relevant, the least negative side-effects and the most positive side-effects.

In this context “side-effects” refers to any impact the Improvement may have outside of achieving the Policy Objective itself. For example if an organisation is encouraged to neuter badgers, a negative side-effect could be the extinction of badgers or a predator species. The positive side-effects of this may be the reduction in the spread of tuberculosis.

#### 53.4.2.1.2 One Improvement or only one selected:

If there is only one Improvement then this will be where any incentives must be aimed.

#### 53.4.2.1.3 No Improvement:

These circumstances will apply when:

- (a) there is no possible Improvement;
- (b) no Improvement is selected by the policymaker; or

(c) any selected Improvement may reduce or counteract the impact of existing Improvement programmes.

53.4.3 THE LEVEL(S) OF CHANGE REQUIRED IN (4.4.1) AND/OR (4.4.2) IN ORDER TO ACHIEVE THE POLICY OBJECTIVE(S).

Once the above has been determined there may be options (if more than one) as to the level(s) of change required in either the Pollutant(s) or the Improvement(s). The policymaker should calculate a realistic and practical combination of reducing the Pollutant(s) and/or increasing the Improvement(s) in order to achieve the Policy Objective(s): the result is referred as the “RC” (required change(s)). It is essential that any target or combined target of change amounts to that required by the Policy Objective(s) and is capable of fulfilling this.

Where more than one, any combination should be based on a balance to determine those which can most directly achieve the Policy Objective(s). It may not be necessary to include all or any Pollutant(s) or Improvement(s) if the Policy Objective(s) can be achieved more directly without any. The balance is determined by deciding whether the Policy Objective(s) can be most achieved by one of:<sup>44</sup>

- a. Internalisation of external environmental costs;

The RC will primarily consider all Pollutants before any Improvements.

The preference is for revenue to be recycled in order to maximise the overall benefit – a double dividend scenario may be achievable.<sup>45</sup> Revenue could therefore be used for

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<sup>44</sup> These are not mutually exclusive.

<sup>45</sup> See chapter 4.

environmental projects to increase the overall dividend, or for another policy area such as in decreasing payroll taxes to boost employment, or in providing technical assistance for organisations to improve production methods so they are more environmentally positive.

b. The necessity of achieving a certain degree of behavioural change;

The RC will consider both Pollutants and Improvements. The overall burden on taxpayers can be limited if Improvements can be achieved as much as possible so that Pollutants are taxed as little as possible. Whether this is achievable will depend upon the circumstances. The preference is for revenue gained from Pollutants to be recycled into Improvements as far as is efficiently possible. If the revenue recycled (or even directed from Government funds) into Improvements can have a greater impact upon achieving the Policy Objectives than if more Pollutants were taxed and fewer Improvements were targeted, then this will be the preference. However if Improvements only have a modest impact upon the Policy Objectives and it would require higher levels of taxes on Pollutants to fund those Improvements, than if less Pollutants were taxed but fewer Improvements were made, then this will be the most efficient situation for the taxpayer.

c. Utilisation of Government revenue to achieve the benefit in the Policy Objective(s).<sup>46</sup>

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<sup>46</sup> These categories are referred to in Milne, see chapter 8, n.25, at 5.

The RC will solely include Pollutants (in order to fund the required Improvement(s)). Primarily the Pollutants will be related to the CF. If not they will be related to another CF for the same or another EP, otherwise the tax base may be a non-environmental issue. If the issue is not a negative externality the tax base should be as broad as possible to minimise its impact.

By considering the Pollutant(s) and Improvement(s) necessary before considering any Polluter(s) or Improver(s), the method is fairer towards taxpayers since it is not assumed that any taxpayer needs to change their behaviour, and therefore there is no discrimination towards any one taxpayer or group thereof. If the policymaker can show that this is not feasible then both considerations may be made together in order to answer the above. For instance it may be important to know where many emissions are coming from first to understand whether it is practical to achieve such targets.

The overall goal for this part is:

- 53.4.3.1.1 Identify the combination of change in level(s) of Pollutant(s) or the Improvement(s).
- 53.4.3.1.2 If there are no Pollutants or no changes required to the Pollutants, move to 53.4.7.
- 53.4.3.1.3 If the Polluter is not a human or owned or directly controlled by a human then that Polluter will be excluded from 53.4.4, therefore move to 53.4.7.

For instance if the party responsible as the Polluter is an animal then they will be excluded since they are not taxable.

An example of the balance in RC is as follows. In 2009 the Committee on Climate Change considered carbon as a pollutant and advised the British Government that if they wanted the aviation industry to grow, then emissions from households may need to fall by 90%.<sup>47</sup> This includes expected ‘improvements’ based upon greater carbon efficiency in aviation technology. There are of course other options for lowering carbon emissions depending on different levels of growth and different parties able to change their behaviour. However this exemplifies the balance of priorities with which it is necessary for the policymaker to decide upon given a range of options.

## LEVEL

According to the type and location of Pollutant and/or Improvement (both of which can be gauged from the EAS) the policymaker must ascertain whether the Model will be implemented at a local, national, or international level. For instance congestion-charging in a city centre would be considered local, though the powers to introduce the charge may need to be secured at a national level.

## REMOVAL OF SUBSIDIES

Philosophically the purpose of internalising the cost of a negative externality through taxation is to remove the indirect implicit subsidy created by non-taxation of the externality. Aside

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<sup>47</sup> Committee on Climate Change, ‘Meeting the UK Aviation Target – options for Reducing Emissions to 2050’ (2009) See eg. p.36 <<http://www.theccc.org.uk/reports/aviation-report>> Accessed 19/2/2010.

from this the Model requires the removal of any perverse subsidies<sup>48</sup> which would counter or hinder the effects of the Model.<sup>49</sup> This will prevent revenue from being wasted, serve the environmental purpose more efficiently, be fairer on taxpayers and abide with international laws on creating an even competitive playing field.<sup>50</sup>

Therefore any tax and non-tax implicit and explicit subsidies must be removed. This includes not only direct fiscal policies such as preferential tax treatments, but also wider fiscal policies such as trade restrictions and protection of markets contributing to the negative externality. Exemptions should be removed, and any explicit subsidies such as grants or low-interest loans should be removed.

The OECD provide the following checklist to enable environmentally harmful subsidies to be removed:<sup>51</sup>

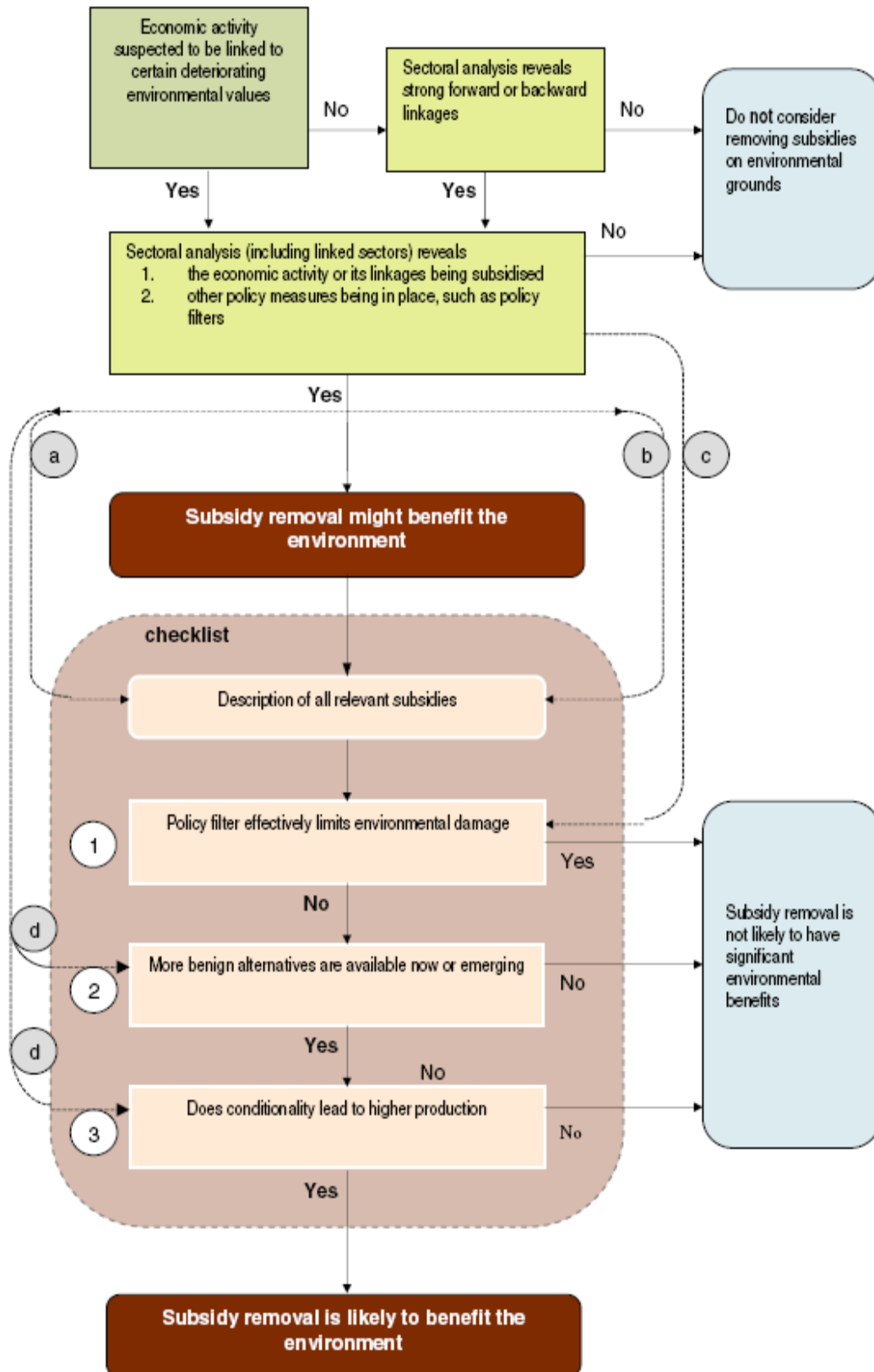
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<sup>48</sup> See 6.1.

<sup>49</sup> See 4.4.

<sup>50</sup> See Pieters J, 'When Removing Subsidies Benefits the Environment: Developing a Checklist based on the Conditionality of Subsidies in OECD' (2003) in OECD, *Environmentally Harmful Subsidies: Policy Issues and Challenges* (Paris: OECD, 2003) at 35; EEA, see chapter 2, n.100.

<sup>51</sup> OECD, see chapter 2, n.104 at 92.



If 53.4.3.1.1 results in a target reduction level in one or more Pollutant it is necessary to ascertain which Polluter(s) will be targeted, if any. If there is only one Polluter then move onto 53.4.5.

#### WHERE FINAL INCIDENCE SHOULD FALL

53.4.4.1.1 For each Pollutant, the policymaker must consider the list of Polluters to ascertain where the final incidence should fall. This should be the Polluter(s) most able to alter their behaviour in such ways that the RC can be achieved.<sup>52</sup>

This will depend upon where a tax could have most effect in achieving the environmental goal stated in the RC, which requires an economic and practical analysis. It may be that final incidence is needed to fall on one party in order to influence another party. For instance it could fall on consumers (as ends users of a polluting good or service) in order to affect their consumption choice; which in turn may influence producers to change the products they produce. Alternatively it could be on producers (or service providers) in order that they produce different products (or services) which can affect consumer choice.<sup>53</sup>

Yet if the manufacturing process of a consumer product produced high emissions, then targeting the consumer with higher purchase costs will have some impact since demand may

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<sup>52</sup> Milne, see chapter 8, n.25, at 5.

<sup>53</sup> For the sake of conciseness, descriptions henceforth will refer to goods, producers and manufacturers, but are taken to include services and service providers.

fall, depending on the elasticity of the good. However if the good is inelastic then the fall in demand may be insufficient to achieve the RC. In this case or in any case where the reduction in demand is insufficient to affect the manufacturing process in such a way that the RC is achieved, then targeting consumers will fail. It may be that the manufacturer is prepared to take a loss of sales or simply amends the selling price to continue the same level of demand. In such circumstances an economic analysis will allow the policymaker to determine that the most effective targeting is focused upon the manufacturer to alter the manufacturing process.

Therefore 53.4.4.1.1 is completed in two steps.

**The first is by identifying:**

53.4.4.1.2 any Polluter whose behaviour *directly* contributes to the Pollutant (referred to as the “Direct Polluter”); and

53.4.4.1.3 any other Polluter whose behaviour has direct or indirect influence over the behaviour of any Direct Polluter in relation to the Pollutant (referred to as the “Influencing Polluter”).

For example the Direct Polluter may be the end user of a good while the Influencing Polluter may be the good’s producer. This is based on the premise that a good causes a pollutant through its production or its end use.

**The second is by identifying:**

53.4.4.1.4 the extent to which a change in the behaviour of the Direct Polluter could achieve the RC;

53.4.4.1.5 the extent to which a change in the behaviour of any Influencing Polluter can affect the behaviour of the Direct Polluter in relation to the Pollutant to achieve the RC.

By determining whichever of 53.4.4.1.4 or 53.4.4.1.5 can produce a change to the greatest extent, the result becomes the Polluter where the final incidence should fall.

To ascertain which change can have the greater extent involves evaluating the ability of the Direct Polluter to control their contribution to the Pollutant, and comparing this to the level of influence the Influencing Polluter has over the direct Polluter. This is a practical and economic evaluation looking at the reality of each party's situation and the processes behind it.

The Direct Polluter's level of control depends upon:

- (a) their level of demand for the Pollutant;
- (b) the availability of sustainable alternatives to the Pollutant; and
- (c) whether the Direct Polluter has the option to change their usage of the Pollutant.

If the Direct Polluter has no option but to use the Pollutant, then their behaviour cannot realistically be altered by a tax and this can only be used to raise revenue for an Improvement. However if the Pollutant is non-essential then their use can be altered given that there are alternatives to the Pollutant available – such as low-energy light bulbs or public

transport. However this will only apply if the choice of changing from the Pollutant is within the control of the Direct Polluter.

The Influencing Polluter's level of influence depends upon their:

- (a) elasticity of demand; and
- (b) ability to offer alternatives to the Pollutant.

If the Influencing Polluter is able to offer an alternative to the Pollutant and even remove the option of using the Pollutant, their influence will be high. However if there are no alternatives to the Pollutant and/or the demand for the Pollutant is such that any action of the Influencing Polluter would have negligible consequences upon the Polluter's behaviour in relation to the Pollutant, their influence is regarded as low.

## FINAL INCIDENCE

The need to ensure that the final incidence falls upon the targeted Polluters in 53.4.4.1.1 will dictate where the tax will lie.

For instance if a tax falls upstream in order to influence production choices (such as on a manufacturer), it may simply be passed onto the consumer in terms of higher costs, meaning final incidence will ultimately fall upon the consumer. Similarly if a tax falls upon an employer then it may be passed onto employees in terms of lower wages, meaning final incidence falls upon the employees (see Chapter 7).

The ability to tax upstream therefore depends upon the:

- (a) elasticity of demand and supply of the Pollutant; and
- (b) availability of substitutes to the Pollutant.

If the Pollutant is easily substituted with a sustainable alternative then the tax will largely fall upstream (such as on producers) since consumers are able to change consumption habits.

However if the consumer will demand the Pollutant regardless of cost (such as with petroleum) then tax incidence will eventually rest upon consumers since upstream costs will be passed on.<sup>54</sup>

The levels of elasticity can be gauged from the EAS.

- a. If the Pollutant has *inelastic supply* and *elastic demand*:

Imposing the tax upstream will affect the behaviour of the Influencing Polluter.

It will mean that the producer or service-provider (for example) bears the tax burden. This will be the most direct means of influencing both process and consumption behaviour because the producer or service-provider will have an incentive to alter production methods or provisions methods in order to minimise their tax liability, which will affect the type of product or service available on the market. Consumer behaviour will then be determined by the availability of

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<sup>54</sup> The ultimate user may however not be the consumer, but persons dependent upon the actual consumer. For instance, if the petroleum is for transport then the provisions of essential services may be affected – such as public transport and emergency services – which could lead to increased fares or decreased services – thus indirectly affecting the ultimate consumer.

choice, which will have been affected at an upstream level. The expected result is one or more of the following:

- i. the Pollutant good or service is replaced by sustainable goods or services (since there has been a shift in the type of good produced or service provided);
- ii. the Pollutant good or service becomes more expensive to consume than sustainable alternatives (since the cost of producing or providing rises); or
- iii. the Pollutant as a process of producing or providing goods or services is replaced by sustainable processes (since there is a shift in the process method of production or provision).

b. If the Pollutant has *elastic supply* and *inelastic demand*:

Imposing the tax upstream will mean final incidence will fall on consumers and demand will not shift significantly.

#### APPLICATION TO RATIONALE

Given the level of control and final incidence choices, to achieve the RC, the policymaker should respond to the market circumstances to ascertain which Polluter is most able achieve it. This is done by considering which purpose allows which level of influence as follows:

a. Purpose: **Internalisation of external environmental costs;**

Imposing a tax upon the Polluter who stands to benefit from use of the Pollutant can achieve this. Therefore the policymaker must first ascertain the party who will benefit and find the most appropriate circumstances below accordingly:

**Market conditions:**

*Inelastic supply and elastic demand*

Final incidence will fall upon the Influencing Polluter. The increased costs may decrease demand of the Pollutant and ensure the producer bears the environmental cost.

*Elastic supply and elastic demand*

Imposing a tax upon either party should decrease demand and consequently supply of the Pollutant and so final incidence should fall upon the Influencing Polluter.

*Inelastic supply and inelastic demand*

Imposing a tax on either party should not reduce demand of the Pollutant and so will almost certainly fall upon the Direct Polluter who may be a consumer.

*Elastic supply and inelastic demand*

Imposing a tax on either party should not reduce demand of the Pollutant and so will mostly fall upon the Direct Polluter.

b. Purpose: **The necessity of achieving a certain degree of behavioural change;**

**Market conditions:**

*Inelastic supply and elastic demand*

Imposing a tax on either the Direct Polluter or the Influencing Polluter will decrease demand for the Pollutant and so impact upon the behaviour of both the Direct and Influencing Polluter. Therefore this is recommended to achieve behavioural change.

*Elastic supply and elastic demand*

Imposing a tax on either party will impact upon the behaviour of either party since the supply levels of the Pollutant will react to demand.

*Inelastic supply and inelastic demand, or, elastic supply and inelastic demand*

Imposing a tax on either the Direct Polluter or the Influencing Polluter is not recommended under such circumstances since there will be no behavioural change.

- c. Purpose: **Utilisation of Government revenue to achieve the benefit in the Policy Objective(s).**

**Market conditions:**

*Inelastic supply and elastic demand, or, elastic supply and elastic demand*

Imposing a tax on the Direct Polluter will only allow short-term revenue to fund any Improvement(s) since use of the Pollutant will alter sharply.

*Elastic supply and inelastic demand, or, inelastic supply and inelastic demand*

The ultimate burden of a tax imposed upon either party will fall upon the Direct Polluter who will demand the same level of use of the Pollutant despite the price. Revenue can be gained in the long-term by taxing the Direct Polluter for use of the Pollutant, and used to fund any Improvement(s) whilst sending out a message on the environmental Policy. Therefore this is recommended for this purpose.

**EXEMPTIONS AND SPECIAL CONSIDERATIONS**

For policy reasons certain Polluters may be exempted from tax targeting, such as the military for reasons of national security.<sup>55</sup> However it is still possible to influence behaviour by targeting those who are not included in the policy but can still have an impact. For instance targeting suppliers to the military may result in the military purchasing more efficient equipment.

Though the policymaker may have certain policy reasons for making exemptions, it is recommended that IEEP (Institute for European Environmental Policy) guidance is followed.

This includes only allowing exemptions (to eco-taxes) which:

- are necessary, adequate and proportional to public interests;
- are conditional upon the beneficiary taking efficient mitigation measures;
- use tax reductions rather than exemptions thereby not fully covering the polluter's costs; and
- last for a determined and limited time period which is reviewed periodically.<sup>56</sup>

Allowing too many exemptions or unjustified exemptions reduces the effectiveness of the environmental tax.<sup>57</sup> This can be limited by implementing exemption or rebate ceilings<sup>58</sup> though this may prevent some potentially justified public interests from being exempted in order that the environmental goal is reached. Exemptions may mainly be focused upon whether the lower level of polluting activity will have any detrimental effects upon the

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<sup>55</sup> This does not necessarily exclude sectors such as the military from any environmental programme. A Government can take direct action to shift the behaviour of public bodies within its control. For instance, the USA's National Defence Authorization Act for Fiscal Year 2008, P.L. 110–81, Section 951(a) (2007), requires the military in future missions to reduce its impact upon climate change.

<sup>56</sup> IEEP *et al*, *Reforming Environmentally Harmful Subsidies: Final Report to the European Commission's DG Environment* (2007) at 61.

<sup>57</sup> See OECD, chapter 2, n.39 at 105.

<sup>58</sup> As discussed in Baranzini *et al*, see chapter 4, .n.15 at 405.

economy or society. Reasons for deserving exemptions on grounds of being within the public interest may therefore include choices of:

- *Social Utility*: avoiding severe losses or securing substantial gains;
- *Humanity*: avoiding an inhumane choice;
- *Social Welfare*: limiting the burden on those who can least afford it where it will make their living conditions worse;
- *Equity*: sharing the burden equally amongst similar taxpayers. Physical or economic conditions may mean that some taxpayers will suffer disproportionately with the same levels of tax. For example residents of the countryside may suffer unduly from higher fuel taxes;
- *Mobility*: whilst all taxpayers should share the burden, losing those with high mobility to foreign jurisdictions may result in those with the least mobility having to pay more. Further it removes the ability of the jurisdiction to influence the environmental behaviour of those with high mobility.
- *Competitiveness*: avoiding hindering national competitiveness by imposing greater burdens upon domestic businesses than those abroad. For instance, though BTAs may charge tax on inefficiently produced imports, exporters may need tax refunds to compete in jurisdictions without the same standards.
- *Political achievability*.

The above choices will depend entirely upon the policy and philosophy of the jurisdiction and are meant only as illustrative guidance. Furthermore, there should be sufficient taxpayers outside of the exemptions to be able to bear the burden without undue harm.

To achieve any of the three rationales above requires taxes focused on re-pricing. This can internalise the negative externalities, achieve behavioural change and bring in revenue for Improvements. It is necessary therefore to re-price the Pollutants through taxation. The appropriate method for re-pricing depends upon the RC and can be broken down as shown below.

The policymaker will determine the element of the Pollutant to be affected in order to finalise the type of tax to be implemented. Depending upon the requirements of the RC, an element of a Pollutant may be targeted by either encouraging or discouraging that element.

The choice of type of tax depends upon the decisions made in the previous questions on:

- the type of Pollutant involved;
- where final incidence will fall; and
- the purpose in the RC.

Using those results the policymaker can find the most appropriate element to target the tax upon from the options below.

*Jurisdictional point:*

Note that unless non-jurisdictional issues are dealt with, the type of tax is only to be introduced domestically. However if the Polluter is foreign then it will be appropriate in each case (unless where specified) to target that Polluter with the corresponding Improvement as

in 53.4.8 unless a Tax Treaty will allow the foreign Government to charge the same type of tax.

*Element of Pollutant to target:*

### **Extraction choices**

This includes mining or otherwise extracting any natural resource regarded as a Pollutant such as forestry, energy or mineral Pollutants. For those Pollutants where extraction is to be discouraged the tax to be applied is an 'extraction tax'. This can be applicable to businesses or individuals.

In the case of targeting an extractor this may be:

- Severance tax. This can be charged upon any taxpayer responsible for extracting specified natural resources regardless of whether a profit is made on this investment.
- Specific Pollutant-related Income tax such as a logging tax, charged on any taxpayer who has income from extracting the Pollutant.
- Licence fees. This charges for the right to use the Pollutant, such as on fishing stocks.

These taxes can increase the overall cost of extraction which, depending on market conditions determined above, may reduce demand. Further some extractors may decide it is not worth the cost and cease such extraction. The tax should be progressive in that any extraction done above the optimum rate is taxed at rates which increase as the level of extraction increases, so as to dissuade the extractor from offsetting the costs of the tax by increasing supply.

A further option in a price-elastic context is to increase the cost of purchasing the extracted Pollutants to reduce supply and thereby impact upon the extractor's behaviour. This can be done via a consumption tax or VAT (see Q.5.1.2).

### **Process choices**

This is mainly applicable to businesses where the process of production or the performance of a service causes a Pollutant.

#### ***To discourage a part of a process involving or resulting in a Pollutant:***

- A tax on the use of the Pollutant in the producing/servicing process.
- A tax on the output levels of the Pollutant resulting from the producing/servicing process. The tax base is the resulting Pollutant. For instance, a carbon tax if the part of the process has high energy usage causing carbon.
- Licence fees. This charges for the right to use the Pollutant, such as on operators of fishing vessels.

#### ***To encourage recycling or discourage waste:***

- Waste disposal taxes

### **Production output choices**

If a product or service is regarded as a Pollutant then the level of its production or servicing can be affected through:

- An output-related tax on the final product or service
- A consumption tax or excise tax on the product (see Purchase choices at Q.5.1.2).

## **Purchase choices**

The type of tax is determined by where final incidence has been chosen to fall upon:

(a) Within the jurisdiction:

### *Private individual consumers*

- Consumption tax

This can be in the form of a VAT or sales tax. Business users may be able to claim a refund for the tax.

### *All consumers: private individuals and business consumers*

- Excise tax

Charged on production or sale of goods (or services) produced within the jurisdiction. It can be made non-refundable to business users.

### *Either type of consumers*

- Registration taxes

This is payable to register a good or service for use within the jurisdiction. It can be made chargeable for private consumers and/or business consumers. For instance a vehicle registration tax may apply to both, whilst the registration of a polluting business asset will apply to only business users.

- Feebate: this charges a fee on purchases of Pollutant goods or services to subsidise sustainable alternatives (Improvements).

(b) Outside the jurisdiction

Any of (a) plus:

- Customs duty, tariff or BTA<sup>59</sup>

This is chargeable on importers of goods containing or made using Pollutants so that imports are treated equally to domestically produced goods for tax purposes.

It is designed to protect the competitiveness of local businesses which could be harmed if national tax costs and standards are set above those of imports. This is done by reflecting the charge for the tax types on domestic consumers shown above; for instance the equivalent of excise taxes can be charged on imported goods to the level that those goods are not taxed to the same extent in their country of origin. This will make the imported goods taxed as if they were domestically produced goods.

### **Use or activity choices**

Mainly applicable to private individuals, the use of or activity involving a Pollutant can be affected by:

*To discourage access to a protected area*

- Toll

A charge for each use can discourage usage, such as a charge for access to a conserved area, or a congestion charge.

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<sup>59</sup> See chapter 8.

*To discourage use or activity of a Pollutant*

- Licence fees

The end-user bears the cost, such as on fishing in an area.

*To encourage recycling or reduce waste:*

- Waste disposal taxes

*To increase the price of the usage or activity*

- User fees: A tax on the Pollutant resulting from the usage or activity factors in the cost of usage. For instance increased fuel costs can reduce overuse of heating.

### **Improvement choices**

*To encourage Improvements on land*

- Site value taxes. These can be measured on the unimproved value of land or plant.

*To encourage Research and Design / Innovation*

- Tax overall technologies or services mostly related with causing the Pollutant.  
For instance high-energy use computers can be taxed.

*To encourage replacement of technology*

- Tax overall technologies or services mostly related with causing the Pollutant.  
For instance high-energy use computers can be taxed.

## **Investment choices**

*To discourage investments and entrepreneurship that will enable the growth of Pollutants*

‘Enable’ is used here rather than ‘cause’, in order to include investment activities which have the potential to cause growth of Pollutants, rather than only those currently causing such growth. By being proactive rather than reactive, financial activities which have the potential to cause growth in Pollutants can be discouraged at the planning stage, so that the cost of causing Pollutants becomes a factor in deciding whether a project is viable and thus the cost of causing the Pollutants is internalised. The EC Nitrates Directive works in a similar precautionary fashion, by attempting to mitigate harm from the outset rather than coming into operation only after the harm has materialised.<sup>60</sup>

This proactive response can be achieved by categorising certain types of business activities as Pollutant activities. For example, if coal combustion was classed as a Pollutant, and a company sought investment to build a coal-fired power station, then potential investors would be dissuaded from investing due to higher levels of taxation being charged upon either their investment, or the business’ profits. The decreased profitability of such a venture could cause its attractiveness to be lost compared to alternative investment opportunities, or could simply ensure that such activities only go ahead if they are able to internalise Pollutant costs.

### *Personal*

- Investment and savings tax on investment in Pollutant-categorised businesses.

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<sup>60</sup> Council Directive 91/676/EEC of 12/12/1991 (OJ L135 30.5.91) concerning the protection of waters against pollution caused by nitrates from agricultural sources.

## *Business*

- Corporate taxes – corporation taxes on investment in Pollutant-categorised businesses
- Income taxes on enterprises encouraging the growth of Pollutants.

## **Funding Improvements only**

Broad-based taxes can ensure regular income. The primary option is to consider taxes on Pollutants as above, and options to tax non-environmental issues go against the polluter pays principle but may be necessary to raise funds to pay for an Improvement. These can be in the form of non-environmental taxes on bases such as:

- Consumption tax
- Tax for use of local services
- Income tax
- Corporation tax
- Poll tax
- Property tax
- Capital gains tax
- Inheritance tax
- Transfer tax
- Wealth tax.

In order to avoid harming industry or individuals, ensuring any non-environmental tax base is as broad as possible can spread the cost of funding the Improvement. For example having a nominal fee on certain goods or services which would not significantly affect demand or

supply can achieve this. This may not however be suitable for every economy, and in particular DCs may find this more harmful than positive and may need to focus on narrower tax bases.<sup>61</sup>

#### 53.4.6 RATE OF TAX

Once the tax base has been decided upon, the required rate of tax can be determined. At Chapter 5 is shown that the requisite level is where the damaging activity (the Pollutant) is limited to “a level where the marginal (private and social) costs of the environmental impacts are equal to the marginal benefits derived from undertaking the activities which cause them.”<sup>62</sup> Therefore whether the tax is set at a high or low rate will depend upon the costs involved.

However in the Model the purpose is to achieve the RC, so the tax rate must instead be set at such a level to do this. Since the RC is based upon a rationale, the following will be applicable to Milne’s assertions:<sup>63</sup>

*Rationale of RC:*<sup>64</sup>

- a. Internalisation of external environmental costs;

The rate is determined by the external costs. From the EAS the costs (at 52.9) of any Pollutant for which the Polluter is responsible for can be reflected in the tax rate. This should

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<sup>61</sup> The World Bank argues against broad VAT systems in DCs. See Whalley, chapter 1, n.3, at 121.

<sup>62</sup> HM Treasury, see chapter 4, n.38 at 20, para.5.19.

<sup>63</sup> Milne, see chapter 8, n.25, at 5.

<sup>64</sup> Again these are not mutually exclusive.

ensure final incidence falls upon the required Polluter. The revenue may be utilised to fund Improvements to achieve the RC.

- b. The necessity of achieving a certain degree of behavioural change;

The rate will be determined by the level necessary to achieve the RC.

Where there are both Pollutants and Improvements to be affected, the rate will be set at such a level as will reduce the Pollutants to the required level and use the revenue to fund the Improvements.

Where there are only Pollutants the rate will be set to reduce these to the level in the RC.

Where there are only Improvements, (c) below applies.

- c. Utilisation of Government revenue to achieve the benefit in the Policy Objective(s).

Since the purpose is to gain revenue to apply to any Improvement(s), the rate is determined as follows:

$$\text{Tax revenue} = \text{tax base} \times \text{tax rate}^{65}$$

$$\text{Therefore tax rate} = \text{tax revenue} \div \text{tax base}$$

As a result, the revenue required to fund the Improvement should be divided by the tax base to determine the tax rate.

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<sup>65</sup> Milne, see chapter 8, n.25, at 6.

If the tax base is a non-environmental issue and is not on another negative externality, it should ideally be a low tax on as broad a tax base as possible in order to minimise its impact.

Educational and advertising costs should also be factored into all tax rates.

## THEME

However as the theme is to ensure the Polluter pays and the Improver is rewarded, the tax rate should be set to re-price, in order to:

- a. Make polluting undesirable, and
- b. Provide an incentive to improve.

Where possible the rate of tax should be ad valorem based not upon the market value, but on the quantity of Pollutants, so that it reflects the environmental cost of the Pollutant – as with an excise tax. This will not always be possible.

## IMPROVEMENTS

Improvements may reduce the level of revenue brought in. The rate should be set to take account of this depending upon the rationale of the RC. For instance, tax deductions may reduce the amount of revenue brought in. If the purpose is to change behaviour, even deductions to make net tax revenue reach zero may be acceptable given that the RC is achieved. However zero net revenue may not be acceptable if the purpose is to gain revenue to use on Improvements.

## GRADUAL INCREASE AND LONG-TERM MESSAGE

If the Pollutant is a long-term issue then the tax rate can be set to send a long-term message to provide certainty about where it is going. Duff cites the example in British Columbia where a CO<sub>2</sub> emissions tax was set at a low rate with increasing rates over five years. This was designed both to allow businesses time to readjust and to respect decisions made before the introduction of the tax, whilst providing certainty over five years that the tax would stay in place and continue to increase, thereby encouraging consistent behavioural change.<sup>66</sup>

## INCOME LEVELS

The extent to which the Polluter can be influenced depends partly upon income levels and it is important that the tax rate will be set at a rate where it can have the required behavioural impact upon the Polluter or a sufficient number of Polluters to achieve the RC. If the rate is set too low considering the Polluter's income then there may be minimal behavioural change since the tax may be too insignificant to warrant a behavioural change.<sup>67</sup> However if the tax rate is set too high there may be significant negative side-effects. Taxing those with little economic power or those below the poverty line may have only negative side-effects and so using an incentive to Improve may have a greater overall effect. However such members of society should be not excused from the disincentive to pollute.

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<sup>66</sup> Duff DG, 'Carbon Taxes in British Columbia' (2008) 10 VJEL.. 1, 87-103, at 96.

<sup>67</sup> A standard rate or percentile rate may not suffice depending upon the varying incomes of the taxpayers. For example in 2009, the top 1% of US taxpayers paid more in taxes than the bottom 95%: 'Tax Foundation, Income Tax Payment of Top 1% of Filers Exceeds that of Bottom 95%' 30/7/2009 <<http://www.taxfoundation.org/news/show/24953.html>> Accessed 1/10/2009.

Depending upon the differing income groups and the corresponding ability to influence them, it may be appropriate to set a progressive tax rate, so that the rate increases as the quantity of use of the Pollutant increases. The justification for doing this rather than having a uniform rate, would be so that minimal Polluters and those in low-income groups would only bear a relatively small burden which could be set to be sufficiently affordable to prevent suffering, yet noticeable enough to encourage behavioural change. Heavy Polluters, who may be industrial or in high-income groups, may be able to more easily afford a uniform rate, paid at the same rate as those on low-incomes. Therefore to provide a greater disincentive for heavy Polluters to change their behaviour, a progressive rate could be set which could, at least, encourage such Polluters to make Improvements so that their tax rate falls below a threshold which charges a lesser rate of tax.

#### MOBILITY OF TAXPAYER

Whilst there are means of ensuring that imports of foreign Pollutants are taxed to the same standard as domestically produced Pollutants, it is still the case that domestic taxpayers may leave the jurisdiction if the tax rate is too high. Immobile tax bases are the least able to move abroad and this is less of a concern. However it is often the case that the most mobile taxpayers are those with the highest incomes and this tax base may be lost to another jurisdiction with lower taxes.<sup>68</sup> This includes both businesses and individuals, who may continue to utilise the Pollutant but pay less tax. However it will be necessary to include them in the tax programme therefore it may be possible to utilise Improvement incentives to do this, so that the RC can still be achieved.

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<sup>68</sup> See Bhagwati JN, *Income Taxation and International Mobility* (USA: MIT; 1989).

## CAP-AND-TRADE OR REGULATIONS

If there are any regulations or a cap-and-trade system in place, the rate should be set to achieve the excess – that over and above what the regulations or cap-and-trade systems do not aim to achieve. This will prevent any double taxation whilst serving the purpose of achieving the RC. Therefore the tax rate may need to be zero-rated until the excess amount is targeted. If the regulations or cap-and-trade only apply to certain Polluters or on certain Pollutants, and taxing them would cause unnecessary double-taxation in achieving the RC, then those Polluters or Pollutants may be exempted from the tax which would then only apply where the former do not apply.

## CONTINUING CHANGE

The rate may need to be flexible in order that it continually changes to adapt to any necessary changes in the RC which may be amended if the Policy is altered. For example the rate may be set to increase over time in order to continue sending out the correct message, and to be imposed on previously exempted products so that any potential rebound effect is countered.

### 53.4.7 WHICH IMPROVER(S) WILL BE TARGETED?

If 54.4.3.1.1 results in a target of one or more Improvements it is necessary to ascertain which Improver(s) will be targeted, if any. If there is only one Improver then move onto 53.4.8.

53.4.7.1.1 For each Improvement, the policymaker must consider the list of Improvers to ascertain the types of Improvers to be included. This should be the Improvers(s) most able to alter their behaviour in such ways that the RC can be achieved.

This will depend upon where an incentive could have most effect in achieving the environmental goal stated in the RC, which requires an economic and practical analysis. It may be that the tax revenue should be aimed at one party in order to influence another party. For instance it could fall on consumers in order to affect their consumption choice which in turn may influence producers to change the products they produce. Alternatively it could be on producers in order that they produce different products which can affect consumer choice. In the example in 53.4.4 an incentive aimed at installing individual energy meters in apartments could work by aiming the incentive at the property owner.

The process of identifying the appropriate Improver to target will mimic the system in 53.4.4 so that there will be a “Direct Improver” and an “Influencing Improver” and the same points apply to these Improvers as apply to Polluters. The purpose of finding the appropriate Improver is so the tax incentive can target the Improver where the incentive to achieve Improvements can have the most impact.

The practical and economic analysis to determine the level of control of Direct Improvers and Influencing Improvers will apply the same logic as in 53.4.4.1.1. Goldstein considers the example of encouraging the installation of energy meters in residential flats to reduce wasted heating.<sup>69</sup> If the building is master-metered and the owner pays the bill then targeting the

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<sup>69</sup> Goldstein DB, ‘Energy Efficiency in the Building Sector’ in UNEP, see chapter 5, n.3, pp.63-85, at 74.

owner to install meters would work efficiently since the owner would make cost savings. However if each flat has its own meter then targeting the owner will not work as efficiently since the owner will have to bear the cost of installing the meters whilst the residents will benefit from lower heating bills. Alternatively, each tenant may be obliged to pay a service charge which varies as necessary to meet all of the landlord's obligations, which could mean that targeting the landlord would then become more effective. Hence it will depend upon the specific factual circumstances at the time of applying the Model relating to the levels of control over Improvements.

The level of influence may be determined by analysis of the existing relationships between the Direct and Influencing Polluter. An example provided by UNEP is the relationship between utility companies and their customers.<sup>70</sup> A utility company's existing arrangements with customers mean it would be the most influential in offering incentive programmes to customers to promote energy savings and/or efficiency. If the reality is that the utility company are unlikely to sponsor such a programme since it would reduce its profits, then this makes the utility company the most appropriate to target with incentives since it would be most able to achieve the Improvement. Such analysis is therefore important to establish the Polluter with the most control and the most potential influence.

53.4.8

#### WHAT KIND OF INCENTIVES WILL BE USED?

As well as any incentive to reduce Pollutant levels which therefore can create an Improvement, tax incentives can also be used to reward Improvements. The type to be used depends upon a range of factors as explored in the questions below.

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<sup>70</sup> *Ibid*, pp.63-85.

Where possible, incentives should relate to the tax to which the Pollutant relates so that the Improver can see a direct connection. If a tax is created through the Pollutant tax, the incentives can be to reduce that level of tax. For instance this is the case with VED where there is total or partial exemptions from the full amount for energy efficient vehicles (see Chapter 3). Where there is already a tax system in place, it may be possible to reform this system in order to relate it to the Pollutant and Improvement, as was seen with the reform of UK road Tax. Alternatively where there are feebates in place the fees will subsidise the rebates to incentivise the Improvement. However where there is no Pollutant tax to reduce, the incentive must be aimed at alternative taxes such as income tax, to provide a benefit.

Identify the Improver most able to carry out the Improvement.

**Q1. Is the Improver based within the jurisdiction?**<sup>71</sup>

- **Yes:** Go to Q.3
- **No:** Continue to Q2.

**Q.2 Is the Foreign Improver a Direct or Influencing Improver?**

- **Direct:**

**Q.2(a): Is there an Influencing Improver more appropriate to target?**

- **No:** Go to Q.6
- **Yes:** go to Q.2(b)

- **Influencing:**

**Q.2(b) Is the Influencing Improver based within the jurisdiction?**

- **Yes:** Go to Q.4
- **No:** Go to Q.6

**Q.3 Is the Domestic Improver a Direct or Influencing Improver?**

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<sup>71</sup> If the Improver is multi-jurisdictional but has an entity within the jurisdiction of sufficient size in order to influence the Improvement, then it can be classed as being within the jurisdiction.

➤ **Direct:**

**Q.3(a): Is there an Influencing Improver more appropriate to target?**

- **No:** Go to Q.4
- **Yes:** go to Q.3(b)

➤ **Influencing:**

**Q.3(b) Is the Influencing Improver based within the jurisdiction?**

- **Yes:** Go to Q.4
- **No:** Go to Q.6

**Q.4 Based upon the Domestic Improver's level of income (gauged from the EAS), would a tax incentive be sufficient to affect the Improver's behaviour?<sup>72</sup>**

- **No:** An explicit subsidy through earmarked revenues is necessary. Refer to part (b) in the appropriate answer to Q.5
- **Yes:** Refer first to part (a) in the appropriate answer to Q.5

**Q.5 Which decision type(s) of the Improver most directly impacts upon achieving the required Improvement? Select and determine the appropriate incentive to achieve the RC Improvement target based upon the details provided within.**

**Q.5.1.1 Extraction choices**

Causing the optimum extraction level qualifies as the required Improvement.

Private individuals:

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<sup>72</sup> For example a farmer who makes a negligible sum of taxable profit may not be motivated by the chance to reclaim part of this. The policy-maker must analyse the Improver's income levels versus the required effort to reclaim part of their taxation.

a. Is the Improver being charged a related Pollutant tax?

- **Yes:** The incentive provides full or partial exemption from Pollutant tax dependent upon the extent to which the optimum extraction level was met.
- **No:** Personal income tax credit dependent upon the extent to which the optimum extraction level was met.

b. Cash grant for individual dependent upon the extent to which the optimum extraction level was met.<sup>73</sup>

### Business

a. Is the Improver being charged a related Pollutant tax?

- **Yes:** Full or partial exemption from Pollutant tax dependant upon the extent to which the optimum extraction level was met.
- **No:** Income tax credit or corporate tax credit (as appropriate) dependant upon the extent to which the optimum extraction level was met.

b. Cash grant or investment dependant upon the extent to which the optimum extraction level was met and which is most suitable.

### **Q.5.1.2 Purchase choices**

a. Is there a registration tax related to the Pollutant?

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<sup>73</sup> For instructions on how to use part (b) of each question, see Q.4.

- **Yes:** Offer reduced rates from the registration tax for Improvements with the possibility of zero-rating the best Improvement.
- **No:** What type of consumer is it?

Private individual consumers

a. Is there a related Pollutant tax on consumption?

- **Yes:** The type of incentive depends upon the level of revenue gained from the Pollutant tax and the economic circumstances related to the Improver and Improvement. Select from the most appropriate option:
  - Introduce a feebate system; or
  - Offer lower rates of sales or service tax / VAT / other duty for Improvements, funded by corresponding higher rates for Pollutants.

For instance APD could be reduced for passengers of the most-efficient aircraft.

- **No:** Is there an existing tax with which the consumption of the Improvement can relate?
  - **Yes:** Reduce the tax rate (or offer exemption) for the consumption of the Improvement to an extent that will create the appropriate economic incentive.

For instance if the consumption of an efficient TV is regarded as an Improvement, the TV licence fee could be reduced. Even though the current

tax is not a Pollutant tax, the fact they are in the same category allows a corresponding incentive and message to be sent. Similarly property tax could be reduced for consumption of Improvements related to the home.

b.

- **No:** Can the consumer afford the consumption of the Improvement?
  - **Yes:** Offer income tax credits following consumption.
  - **No:** Would a reduced consumption price allow the Improver to afford the consumption of the Improvement?
    - **Yes:** Use tax subsidies focused on reducing the production or selling cost of Improvement.
    - **No:** Offer free Improvement.

### Business consumers

a. Is there a related Pollutant tax on consumption?

- **Yes:** The type of incentive depends upon the level of revenue gained from the Pollutant tax and the economic circumstances related to the Improver and Improvement. Select from the most appropriate option:
  - Introduce a feebate system; or
  - Offer rebate or lower duty of sales or service tax / VAT / other duty for Improvements.
- **No:** Does the Improver have sufficient taxable profits to afford the consumption of the Improvement?

- **Yes:** Offer accelerated depreciation for Improvement plant or technology.
- b.
- **No:** Would a reduced consumption price allow the Improver to afford the consumption of the Improvement?
  - **Yes:** Reduce price of Improvement consumption by offering tax subsidies to producers or sellers.
  - **No:** Offer grant for purchase.

### Q.5.1.3 Process choices

Applying primarily to business, the Improvement is the improved part or whole of the process of production or provision of a service.

- a. Is the Improver being charged a related Pollutant tax?
  - **Yes:** Offer rebate or refund from that tax to reflect the Improvement cost. This may be in the form of a Pollutant tax credit.

For example, refundable fees from waste disposal taxes OR rebate for installation of windmill to improve energy efficiency. A Pollution tax credit may be in the form a recycling credit.<sup>74</sup>

Is the Improver being charged an end-of-pipe tax or output tax? (such as a production tax)

- **Yes:** Offer production tax credits for implementing desired Improvement process
- **No:** Offer income tax credits for implementing desired Improvement process

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<sup>74</sup> See 'Recycling Credits in the UK: Economic Incentives for Recycling Household Waste' in IISD, see chapter 7, n.13 at 42-43.

- **No:** Does the Improver have sufficient taxable profits to afford the consumption of the Improvement?
  - **Yes:** Offer production tax credits for implementing desired Improvement process and/or offer accelerated depreciation for Improvement plant or technology.
- b.
  - **No:** would reduced consumption cost lead to Improvement in process?
    - **Yes:** Is there a VAT or sales or service tax?
      - **Yes:** Zero-rate VAT or sales or service tax
      - **No:** Reduce consumption price through consumption-focused tax subsidies where appropriate. If not appropriate, see below:
    - **No:** Offer investment or grant to fund new processes.

#### **Q.5.1.4 Production output choices**

Applying primarily to business, the Improvement refers to achieving the optimum production output of certain goods or provision of certain services. In this context the terms ‘producer’ and ‘production’ may be used to cover service provision meanings also. For example this could be to increase production of more efficient goods at the expense of less efficient Pollutant goods. Alternatively it may be to reduce the provision of certain services to a sustainable level. The desired good or service is referred to as the ‘Improvement Good’ or ‘Improvement Service’ as opposed to the ‘Pollutant Good’ or the ‘Pollutant Service’.

- a. Is the producer subject to production taxes?
  - **Yes:** offer production tax credits for achieving Improvement.

- **No:** Does the Improver have sufficient taxable profits to afford to achieve the Improvement?
  - **Yes:** Are there any related Pollutant taxes?
    - **Yes:** Offer tax rebates to reflect the cost of achieving Improvements.
    - **No:** Offer reduced income or corporate tax for achieving Improvements.
- b.
  - **No:** Would reduced costs of achieving the Improvement allow the Improver to achieve the Improvement?
    - **Yes:** Subsidise costs through exempting Improvement costs from sales taxes / VAT.
    - **No:** Offer grant or investment to fund Improvement costs.

#### **Q.5.1.5 Use or activity choices**

In this context the Improvement occurs when the Improver partakes in an activity regarded as an Improvement or uses an Improvement as opposed to a Pollutant. For instance, an Improvement activity for an individual could be taking public transport over a private car or exterminating an animal regarded as a pet.

#### Individuals

- a. Does the Improver have a sufficient taxable income to make a tax incentive worthwhile?
  - **Yes:** Offer a personal tax credit.

- **No:** Can the Improver afford to carry out the Improvement?
  - **Yes:** Would a reduced cost encourage the Improver to carry out the Improvement?
    - **Yes:** subsidise cost by focusing tax subsidies on the main Improvement costs. This can be via the Influencing Improver.
    - For example a bus service operator can reduce their tax through targeted tax subsidies.
  - b.
    - **No:** Offer a cash payment / grant / award
- **No:** Offer a cash payment / grant / award

### Businesses

- a. Does the Improver have a sufficient taxable income to make a tax incentive worthwhile?
  - **Yes:** Allow taxes to be deferred or reduce business taxes such as payroll taxes.
  - **No:** Can the Improver afford to carry out the Improvement?
    - **Yes:** Would a reduced cost encourage the Improver to carry out the Improvement?
    - b.
      - **Yes:** offer partial grant or low interest loan
      - **No:** Offer a business grant to help carry out the Improvement.
    - **No:** Offer a business grant to help carry out the Improvement.

### Q.5.1.6 Improvement choices

Improvement choices relate to decisions such as to replace technology, upgrade property, plant or equipment, carry out research into improvements and install new devices.

#### Individuals

a. Would a tax deduction encourage the Improver to carry out the Improvement?

➤ **Yes:** Is the Improvement within the home?

For instance the installation of energy savings devices

- **Yes:** offer property tax deduction / energy tax credit where appropriate
- **No:** local tax credit OR income tax credit if no local tax

b.

➤ **No:** Offer grant to fund or achieve Improvement

#### Businesses

a. Is the Improver being charged a related Pollutant tax?

➤ **Yes:** Would a tax incentive encourage the Improver to carry out the Improvement?

- **Yes:** offer tax rebate for cost of carrying out the Improvement and reduced overall Pollutant tax. This may be available through accelerated depreciation or deferred tax payments, where the Pollutant is the unimproved site.

For example a site valuation tax rebate followed by deferred site valuation fees.

- **No:** Answer next question.
- **No:** Would a tax incentive encourage the Improver to carry out the Improvement?
  - **Yes:** offer tax credit related to alternative Improver tax (such as corporate tax)
  - **No:** would reduced costs of achieving the Improvement encourage the Improver to carry out the Improvement?
    - **Yes:** Subsidise the cost by reducing any purchase or installation taxes and/or offering grant or low interest loan

### **Investment choices**

In this context a qualifying Improvement would be to invest either directly or indirectly in such a way that the RC can be achieved. Indirect investment refers to one party investing in the business of another party, whilst direct investment refers to one party investing in its own business such as for R&D.

- a. Would a tax incentive encourage the Improver to carry out the Improvement?
  - **Yes:** Is the investment a direct or indirect investment?
    - **Direct:** Offer tax credits for expenditures on R&D or other investment regarded as an Improvement. Also possible to offer tax deferrals for enterprises promoting Improvement.
    - **Indirect:** Qualifying investments can be investments or enterprises which enable the Improvements to be carried out. Tax rates for qualifying

investments can be reduced, or investment tax credits for qualifying investments can be offered.

b.

- **No:** Offer direct investment in Improvement enterprise.

## Q6. Non-jurisdictional Improver

a. Is it possible to provide a tax incentive to the Improver via a Tax Treaty with the outside jurisdiction?<sup>75</sup>

- **Yes:** conclude Tax Treaty arrangements and offer appropriate incentive to Improver as in Q.5 via Improver's Government
- **No:** select an appropriate non-tax incentive to offer based upon the circumstances from:
  - Direct investment
  - Interest free or low-interest loan
  - Grant
  - Foreign aid

53.4.9

### RATES OF INCENTIVES

The rate of incentive must be offered to such an extent that the RC can be achieved and therefore depend upon the financial capacity of the taxpayer and market conditions. The rate can be altered as the policy changes, so that if a relevant Policy Objective is achieved and a

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<sup>75</sup> Whether it is possible is based upon whether any present treaty allows this or whether one can feasibly be concluded.

new RC is set, the rate can be fixed at such a level that can push for further change.

Alternatively if the RC is not met the rate may be altered to achieve it.

As an example, the DfT considered it necessary to offer a high level of subsidy to consumers of ultra-low carbon vehicles, in order to achieve the desired mass market sales of them. It was proposed that subsidies of between GBP £2,000-£5,000 would be necessary to incentivise this consumption change.<sup>76</sup> An example of a system where the incentive is for an exemption from the related tax is in Sweden. Environmental tax rates are set at high rates, though available exemptions from such taxes provide incentives to meet environmental targets through improvements.<sup>77</sup> From an environmental perspective it would seem prudent to have rates that can adapt according to the objective at any one time.

53.4.10

WIDER FISCAL POLICY

Prior to imposing any tax and incentive policy, it must be determined that no taxes or expenditures will conflict with the Model's solutions. Unless such matters are removed, the Model should not be imposed.

For instance, State expenditure such as that incurred for the car scrappage scheme to encourage the purchase of new 'clean' cars could be countered in Denmark by competing tax policies. Danish registration taxes for imported vehicles ("registreringsafgift på

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<sup>76</sup> See n.14 at 9.

<sup>77</sup> EC, see chapter 7, n.44, at 36; Sterner T, 'Environmental Tax Reform: The Swedish Experience' (1994) 4 *Environmental Policy and Governance* 6, 20-25.

motorkøretøj”) ranges from 105-180% of dutiable value;<sup>78</sup> a considerable disincentive to purchase an imported vehicle, unless exemptions for clean vehicles apply.

53.4.11 CAN NON-TAX METHODS SATISFACTORILY ACHIEVE THE POLICY MORE EFFICIENTLY THAN THE ABOVE?

The Policy may be best achieved, not by any tax solution, but by regulatory changes or other perhaps radical alternatives, such as Hughes suggested changes to investment rules to incentivise investments.<sup>79</sup> But this final question would involve a further examination of methods such as regulation and/or trading schemes which would require examination beyond the scope of this thesis.

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## 54. WORKED EXAMPLE

### 54.1 HYPOTHETICAL IMPLEMENTATION

The following worked example is a hypothetical situation where a coal power plant in Amsterdam is damaging the local air quality. This is the only environmental issue at hand in this scenario as the combustion of coal is not known here to cause other environmental problems. The answers deliberately simplify what in reality would require much detail.

#### **EAS**

**EP:** Air Quality in Amsterdam is causing serious harm to local residents.

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<sup>78</sup> See <<http://www.skm.dk/foreign/english/taxindenmark2008/6649/>> Accessed 6/5/2010.

<sup>79</sup> Hughes H, ‘Enabling Investment in Environmental Sustainability’ (2010) 85 Ind.L.J. 2, 597-651.

**CF(s):** SO<sub>2</sub> (Sulphur Dioxide) emissions are the sole contributing factor to the EP.

**Pollutant(s):** Coal combustion within Amsterdam causes 100% of the SO<sub>2</sub> emissions.

**Polluter(s):** Causers of coal combustion due to power station:

- a. A local coal mining company provides coal to a coal power station.
- b. A coal power plant in Amsterdam combusts the coal and emits the SO<sub>2</sub>.
- c. An energy company buys the electricity produced by the coal power plant in Amsterdam and sells it to consumers in Amsterdam.
- d. Consumers in Amsterdam buy electricity that is produced solely through coal.

**Improvement(s):**

- a. Chimneys at the coal power plant could be replaced with improved technology which reduces the level of SO<sub>2</sub> emissions.
- b. Less coal could be combusted.

**Improver(s):**

- a. The owners of the power plant could implement the new technology.
- b. Consumers could demand less electricity resulting in less coal being combusted.

**Elasticity of demand:**

- a. Coal demand is inelastic so raising the price of coal will not reduce demand.
- b. Lower costs of new chimneys would not significantly increase demand under present market conditions.

**Income levels:**

- a. Mining company reported modest profits last year.
- b. Power plant turned a small profit last year.
- c. Energy company is running at a loss.

d. Consumers in Amsterdam are generally on low-to-middle incomes.

**Costs:** The short-term costs of medical treatment for residents was relatively small, however the long-term costs were substantial and would continue to rise sharply. A reduction in SO<sub>2</sub> emissions below a level causing serious harm to residents would see significantly reduced medical costs in the long-term. The Polluters benefit by not internalising this negative externality, leading to lower electricity costs and coal costs than if there was internalisation. The coal power station and the mining plant both employ many local residents which is regarded as socially beneficial.

The costs of carrying out the EAS falls below the cost of the perceived Threat.

**Application to Model:**

**Policy:** to restore Air Quality in Amsterdam to levels of only minor harm.

**Policy Objective(s):** to reduce levels of SO<sub>2</sub> emissions by 75%.

**Free market achievement?** Achieving the policy objectives without Government intervention would cost any Polluter – as such there is no financial incentive to do so.

**Method of achieving Policy Objectives:**

**Pollutant:** There is only one Pollutant which will be targeted. Currently this is not subject to tax.

**Improvement:** Demand for electricity cannot be reduced due to inelasticity. The sole Improvement will be to implement new technology.

**Required Change:** The level of change required is to firstly internalise the external costs of the SO<sub>2</sub>, and to achieve a degree of behavioural change in causing the Improvement.

There are no subsidies which could distort any incentives.

**Which Polluter will be targeted:**

The only Direct Polluter is the power plant. The other Polluters are Influencing Polluters.

Targeting an Influencing Polluter may have some impact, but an economic analysis considering elasticity suggests that targeting the Direct Polluter can achieve the Policy Objectives at the least cost. The Influencing Polluters have little other option but to supply to or consume from the Direct Polluter. It would cause less harm to the business of the Direct Polluter to change the chimneys than for the Influencing Polluters to offer incentives to the Direct Polluter to change the chimneys. The Direct Polluter is most able to offer an alternative to the Pollutant.

No other relevant considerations.

**Type of tax**

An emissions tax placed upon the SO<sub>2</sub> emissions was considered but rejected as the inelasticity of demand from consumers would mean that the tax would simply be passed on and no change would occur. The most effective means of ensuring that the power plant owners would bear the burden would be via a corporation tax surcharge for the externality. This surcharge could be reduced to zero if the chimneys are replaced to meet the RC. The power plant business can depreciate the cost of the replacement at a higher rate in the first three years in order to reduce taxable earnings and recoup the cost.

Therefore the tax system is revenue-neutral.

The rate of tax is set at between 1% and 5% depending upon the quantity of SO<sub>2</sub> emissions, in order to have a noticeable impact upon the factory owners. This is reviewed annually, and will rise each year that the RC is not met.

This outcome should ensure that the RC is met in the most economical manner with a fair incidence targeting the taxpayer most able to achieve the RC.

## 54.2 EXAMPLE IN PRACTICE: MONTGOMERY COUNTY COUNCIL, MARYLAND

An example of a local level implementation not dissimilar to the Universal Model took place in the US State of Maryland, where a local county council, Montgomery, introduced a Bill implementing a carbon excise tax on major emitters of CO<sub>2</sub>.<sup>80</sup> The processes involved in implementation were performed in a similar fashion to the Universal Model and work as a practical example of how legislature can introduce a tax. By going through the stages of the Montgomery Bill in terms of the Model, it is possible to understand in practice how a policymaker can evaluate the introduction of a tax.

### **EAS**

**EP:** The Bill cites US EPA (Environmental Protection Agency) evidence which recognises that “greenhouse gases in the atmosphere endanger both the public health and the environment for current and future generations.”<sup>81</sup>

This EP therefore is the cited danger to health and environment.

**CF(s):** Based on the same clause, GhGs would be the contributing factor to the EP.

**Pollutant(s):** A perhaps oversimplified justification of only taxing CO<sub>2</sub> as a contributor to GhGs, simply points out that “Carbon Dioxide is a greenhouse gas.”<sup>82</sup> CO<sub>2</sub> in the County would therefore be the only Pollutant.

**Polluter(s):** Causers of coal combustion due to power station:

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<sup>80</sup> Montgomery County Code, Chapter 52, Taxation Article XIII, Excise Tax on Major Emitters of Carbon Dioxide, Sections 52-95 through 52-99, Bill No. 29-10 of 19/5/2010.

<sup>81</sup> *Ibid*, Article XIII, ss.52-95. Finding (a).

<sup>82</sup> Bill 29-10E, Introduction Packet 4/27/10, Circle No.7, Carbon Tax fact, ‘A Carbon Tax for Montgomery County’.

The County uses EPA evidence to identify that a local coal power plant, the Mirant Dickerson Plant, causes 25% of CO<sub>2</sub> emissions in the county. The remaining 75% comes from other sources in the County.<sup>83</sup>

**Improvement(s):**

- a. Reduced emissions from the coal power plant.<sup>84</sup>
- b. The Bill’s preamble names “GhG reduction programs” as the intended improvements, but is not specific about which programs.<sup>85</sup> The Improvements are listed in a supporting document to the introduction of the Bill as including the “Home Energy Loan Program, Clean Energy Rewards, and transit.”<sup>86</sup> The Bill states that 50% of revenues must be utilised for GhG reduction programs including mass transit.<sup>87</sup>

**Improver(s):**

- a. The Mirant Dickerson Plant would be able to reduce its emissions.
- b. The Councils’ Finance Department at the Department of Environmental Protection is listed as responsible for coordinators.<sup>88</sup> This department would be responsible for the GhG reduction programs apart from the reduced emissions in the power plant.

**Elasticity of demand:**

The proposed tax is not expected to be passed on to ratepayers since the electricity produced is sold at an auction. A supplementary report identifies

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<sup>83</sup> Bill 29-10E, Public Hearing Packet 5/18/10, No.18, ‘Mirant Dickerson Plant Carbon Dioxide Emissions (CO<sub>2</sub>)’.

<sup>84</sup> As an emissions-based tax, the intended Improvement is designed to reduce emissions. Bill 29-10E, Action Packet 5/19/10, Circle No.6, ‘Memo from lead sponsor’, states the tax would “incentivize Mirant to reduce its emissions.”

<sup>85</sup> Preamble, para.1.

<sup>86</sup> See n.83.

<sup>87</sup> See n.81, Article XIII, ss.52-59.

<sup>88</sup> See n.83, Circle No.5, Legislative Request Report.

that if the power plant's cost of selling electricity "is not competitive, it will not be purchased; and Mirant does not have enough 'market power' to raise the price of power unilaterally."<sup>89</sup> Therefore the tax is expected to have an impact directly upon costs at the power plant rather than being passed on, which should allow the tax to be targeted effectively.

**Income levels:**

- a. Mirant, the company owning the power plant, is noted as having USD \$2 billion in cash and power plants.<sup>90</sup>
- b. The Council reported an operating loss of USD \$1 billion.<sup>91</sup>

**Costs:** Significant health and environmental costs have been reported by the EPA but are not specific to the County.<sup>92</sup> Without internalising environmental costs, they fall below the true social cost.

**Application to Model:**

**Policy:** To reduce County CO<sub>2</sub> emissions by 80% by 2050.<sup>93</sup>

**Policy Objective(s):** To tax the major producers of CO<sub>2</sub> emissions, defined as "any person who owns or operates any stationary source of carbon dioxide located in the County that emits more than 1 million tons of carbon dioxide in any calendar year."<sup>94</sup>

**Free market achievement?** As there is no financial incentive to achieve the policy objective without intervention, it is assumed that it would not happen.

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<sup>89</sup> See n.82.

<sup>90</sup> *Ibid.*

<sup>91</sup> 'Montgomery County Council Approves \$4.3 Billion Total Operating Budget for FY11' Montgomery County Council Press Release, 27/5/2010,

<[http://www.montgomerycountymd.gov/Apps/Council/PressRelease/PR\\_details.asp?PrID=6640](http://www.montgomerycountymd.gov/Apps/Council/PressRelease/PR_details.asp?PrID=6640)> Accessed 1/6/2010.

<sup>92</sup> <<http://www.epa.gov/>> Accessed 1/6/2010.

<sup>93</sup> See n.81 Article XIII, ss.52-95. Finding (b).

<sup>94</sup> *Ibid*, s.52-96.Tax levied; rates, clause (b).

### **Method of achieving Policy Objectives:**

Pollutant: There is only one Pollutant which will be targeted, CO<sub>2</sub>. Currently this is not subject to tax.

Improvement: The Improvements will be (a) reduced emissions, and (b) County environmental programmes.

**Required Change:** Internalise the external costs of the CO<sub>2</sub>; raise revenue earmarked 50% for environmental programmes, and 50% for the Council budget; to achieve a degree of behavioural change in causing the Improvement.

There are no subsidies reported which could distort any incentives.

### **Which Polluter will be targeted:**

The only Direct Polluter is the power plant. As the Power Plant will not be able to pass on the cost of the tax, it is thought to be the most appropriate target.<sup>95</sup>

### **Type of tax**

This will be an excise tax based on levels of emissions.<sup>96</sup>

A tax credit will be available to the Polluter for reduced emissions via the County environmental programmes.<sup>97</sup>

### **Rate**

The rate of tax is set at USD \$5 per ton of CO<sub>2</sub> emissions.<sup>98</sup> It is estimated this would raise revenues of USD \$11.7 - \$17.6 million annually.<sup>99</sup>

## **Principles of Model**

### **Legitimacy**

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<sup>95</sup> See n.82.

<sup>96</sup> See n.93, s.52-96.Tax levied; rates, clause (a).

<sup>97</sup> *Ibid*, 52-97, Credit (a).

<sup>98</sup> *Ibid*, s.52-96.Tax levied; rates, clause (c).

<sup>99</sup> See n.82, Circle No.15, 'Fiscal impact statement'.

The legislature took legal advice to ensure that the tax would not contradict the CAA and there was the authority to introduce the tax into Montgomery County Code §52-17.

### **Subsidiarity**

It was believed that the tax would complement an existing regional cap-and-trade scheme and was necessary since there was no federal tax in place to achieve the same objective.<sup>100</sup>

### **Conclusion**

The information within was taken from a variety of sources but shows the necessary processes that take place prior to the introduction of a tax. Whilst it is considered that there are significant differences in actual approach, and the Universal Model will require more in-depth analysis, the consultative process used and the methods to justify and necessitate the introduction of the tax in the County demonstrate that the Model could work in practice.

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<sup>100</sup> See n.82.

## 55. EVALUATION

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This section attempts to identify potential problems with the Model and evaluate whether such challenges can be overcome.

### 55.1 PROBLEMS WITH EAS

The EAS is fundamental to the Model since the information it reports is necessary for the Model to be used. Its theoretical conception faces a range of practical difficulties. The main criticisms are summarised herein in order to ascertain whether it could work in practice.

#### 55.1.1 INFORMATION PROBLEMS

Gathering all of the required information could be extremely onerous and contentious. Lack of scientific or other specialist skills or resources to satisfy the evidential burden may result in one or more of the stages of the Model seeming impossible to complete. This is especially the case where the problem is a previously unknown one, or one similar to climate change where there still remains uncertainty about the exact causes or likely effects, as many of the predictions are based on models and necessarily require much estimation. Further, inadequate or unreliable monitoring or assessment technology can prevent effective evaluation of both the scope of the problem and the allocation of responsibility – such as with emissions monitoring technology.<sup>101</sup> This is not a problem isolated to the EAS, but can be relevant to conducting an EIA and other Government decisions; as Green highlights (in relation to subsidies), Government decisions sometimes are based on “incomplete

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<sup>101</sup> See Drury RT *et al*, ‘Pollution Trading and Environmental Injustice: Los Angeles’ Failed Experiment in Air Quality Policy’ (1999) 9 *Duke Environmental Law & Policy Forum* 231-289, at pp. 259-60; McAllister LK, ‘The Enforcement Challenge of Cap-and-Trade Regulation’ (2010) *University of San Diego School of Law, Research Paper No. 10-017*.

information and value judgements.”<sup>102</sup> There will however be many cases where sufficient information can be acquired. The degree of scientific certainty required for a reliable EAS will be an issue for the policymaker to determine. Given that the precautionary principle is an internationally accepted onus of proof, imposing it within the EAS would make the policymaker more likely to accept convincing findings rather than do nothing.<sup>103</sup>

#### 55.1.2 SCALE OF PROBLEM

The type and scale of the problem may also determine whether the EAS will be completed. For a minor environmental problem, it may not be economically efficient to fund an EAS involving specialist advice and monitoring. Arguably this could prevent the entire Model from being utilised, as part of the Model indicates that the costs of the EAS should not be disproportionate to the environmental problem. That said, in reality the Model envisages that the extent of the EAS report will be proportionate to the environmental problem. This means that a minor environmental problem will normally require a minimal EAS involving few costs and sufficient advice to justify the procedure. A large-scale EAS involving numerous surveys, reports and estimations would in practice be more necessary for environmental problems on a scale justifying such expenditure – most likely to be regional, national or international environmental issues.

#### 55.1.3 VALUATION

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<sup>102</sup> Green, see chapter 11, at n.2, at 386.

<sup>103</sup> For the complexity of what ‘proof’ means in this context, see Fisher E, ‘Precaution, Precaution Everywhere: Developing a ‘Common Understanding’ of the Precautionary Principle in the European Community’ (2002) 9 *Maastricht Journal of European and Comparative Law* 21; Fisher E, ‘Is the Precautionary Principle Justiciable?’ (2001) 13(3) *JEL* 315-334; Fisher, see chapter 2, n.37.

A further informational problem is ascertaining the correct values to determine firstly whether the EAS should go ahead, and later what the rate of taxation or incentive should be. This follows problems highlighted in Chapter 5, and again will be a matter of judgement.

#### *Availability of information in varying jurisdictions*

In developed economies where information on national wealth and incomes is more readily available, it may be more straightforward to collate the information required for the EAS. For instance in the UK there are a range of existing public bodies who could provide the bulk of the necessary information for the EAS. HMRC would be able to provide largely accurate information on income levels and assets, whilst the ONS would be able to provide further information on population trends and other statistics required to undertake the behavioural changes. Other agencies could provide specific information depending upon the particular issue at hand. For instance the DVLA could provide information relating to motor vehicles, the Civil Aviation Authority could assist on air passenger numbers, whilst the Environment Agency would be able to assist with providing environmental reports. The National Audit Office could later help determine whether the programme operates efficiently. Utilising existing public departments could save costs of implementing the Model. It is submitted however that even by using these existing departments, the information may never be fully complete. For instance HMRC may not have accurate information on a number of very high net worth individuals or MNEs who are able to exploit tax loopholes to conceal the full extent of their wealth. This can be of significant importance as such legal persons may be the very Polluter or Improver whom the Model would need to address, and without their behavioural change it may be impossible to achieve the desired environmental objectives.

In countries without publicly held information, for instance tax havens such as Switzerland where banking secrecy is legally paramount,<sup>104</sup> Greece where tax evasion is allegedly rife,<sup>105</sup> or DCs where Governments may not have the resources to record such information, it may be even more onerous and expensive to complete the EAS.<sup>106</sup> Further research is therefore invited in this area to question whether the Model is more suited to certain types of economies, as this would determine whether it is truly universal.<sup>107</sup> In practice, policymakers may have to rely upon the most informed estimates, use available information, or undertake a potentially large and expensive task of assessment akin to the *Domesday Book*.<sup>108</sup> If a country only has information on certain matters and that information is utilised within the Model, it could lead to some taxpayers bearing an unfair burden or incentives being targeted inefficiently. For example if a country does not know about local incomes as it does not have a general system of income tax, but it does have sales taxes, then it may result in sales taxes becoming oppressively high. Therefore in forming the EAS it is important to gather as much information as possible. Whilst it may not be practical or economical to assess every citizen in the jurisdiction, it may be feasible to gain a general picture through surveys and case studies, or other research.

#### 55.1.4

#### ETHICS

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<sup>104</sup> Art.47 of Swiss Federal Banking Act of 8/11/1934 imposes a duty of confidence between Swiss bankers and their clients.

<sup>105</sup> 'Greek Wealth Is Everywhere but Tax Forms' *New York Times* 1/5/2010, <<http://www.nytimes.com/2010/05/02/world/europe/02evasion.html?scp=1&sq=greek%20wealth&st=cse>> Accessed 5/5/2010.

<sup>106</sup> Bair RR and Torrey BB, 'The Challenge of Census-Taking in Developing Countries' (1985) 2 *Government Information Quarterly* 4, 433-452.

<sup>107</sup> Such vital research can continue on the lines of Cottrell J, Oleraius A and Lorek S, 'Environmental Fiscal Reform in Developing, Emerging and Transition Economies' in Cottrell J *et al*, see chapter 7, n.17 at 793-804.

<sup>108</sup> A detailed survey and valuation of all the land and resources held by the new King William in late 11th century England <<http://www.nationalarchives.gov.uk/domesday/>> Accessed 5/5/2010.

A thorough debate into environmental ethics is outside the ambit of this thesis. However it is important to note that some ethical issues may be relevant in the EAS. DesJardins argues that relying upon science alone to resolve environmental issues is not only undemocratic, but means individuals relinquish their authority to determine what sort of world they want to live in. Scientists have their own values which are based on reason but not always entirely objective.<sup>109</sup> A counter-argument regarding the make-up of the EAS is that it is not purely scientific but can include, where necessary, input from other professionals such as economists, engineers, accountants and environmentalists – which can help to provide a range of perspectives to make the EAS as objective as possible. When the EAS is actually used within the Model, it is a crucial factor in the policymaker's decision-making process, yet it is envisaged that the policymaker will be able to exercise some discretion.<sup>110</sup> Whether the process is democratic would depend entirely upon the type of decision-maker.<sup>111</sup> This may be an elected official such as a Minister, an elected body such as a Parliament or regional Government, or may be the result of a process of consultation such as exists within EIAs. Therefore democratic input is foreseen to exist within the use of the EAS. Even if the policymaker is unelected it is anticipated that the reasoned inputs from professions in creating the EAS would enable a rational decision to be made which is in the environmental interest.

## 55.2 PROBLEMS WITH THE MODEL

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<sup>109</sup> DesJardins JR, *Environmental ethics: an Introduction to Environmental Philosophy* (California: Thomson Wadsworth, 2006), chapters 1-2. See also Benson J, *Environmental Ethics: an Introduction with Readings* (London: Routledge; 2000).

<sup>110</sup> Kaplow and Shavell make the case that economic analysis alone is insufficient for an important decision to be made, and that policy decisions will be political based on social welfare as otherwise decisions could make everybody worse off in some instances: Kaplow L and Shavell S, 'Notions of Fairness versus the Pareto Principle: On the Role of Logical Consistency' (2000) 110 Yale L.J. 237; Kaplow L and Shavell S, 'Any Non-Welfarist Method of Policy Assessment Violates the Pareto Principle' (2001) 109 J.Polit. Economy 281.

<sup>111</sup> For an analysis of how democracy links to different areas of environmental policy see Duwel A, 'Democracy and the Environment: The Visibility Factor' (2010) *University of California Working Paper*.

It is possible that the structure offered by the Model may be incompatible with a nation's tax structure. For instance for a State to join the EU it must adapt its tax structure to comply with EU requirements such as the EU Tax Directive and State aid rules. Hypothetically such a State may find that it is unable to implement the Model if the rules of the customs union or trading bloc it intends to join are incompatible with the Model. In practice this is unlikely to be an issue as the Model is capable of being compliant with WTO law, and can respect commonly applied rules of competition law and State aid law.

It may not be legally possible under competition laws to offer subsidies to the suggested Improvers. Under EU law and international trade law it is regarded as discriminatory and anti-competitive for a Government to subsidise national industries, and it is impermissible to subsidise domestic consumers.<sup>112</sup> However as identified in Chapter 8 mainly in the context of WTO law, there are exceptions available such as where the purpose is environmental and not to provide a trade advantage.<sup>113</sup> It is crucial therefore that when the Model identifies an Improver to incentivise, the policymaker takes sufficient legal advice to ensure the incentive is legitimate.

Importantly, the Model does not discriminate between nationalities as it offers incentives for those outside of the jurisdiction in order to influence Improvers in the most effective manner.

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<sup>112</sup> See Sykes A, 'The Economics of WTO Rules on Subsidies and Countervailing Measures', in Appleton A, Macrory P, and Plummer M, *The World Trade Organization: Legal, Economic and Political Analysis*, (USA: Springer-Verlag, 2005).

<sup>113</sup> GATT, Article XX(g).

This prevents it from being regarded as anti-competitive, so long as it is impartial and non-discriminatory. Incentives to countries outside the jurisdiction may be most effective in poorer countries where the funds could go further.<sup>114</sup> Such ‘side payments’ may be beneficial in redistributing wealth to DCs, which could not only improve the environment but could go far in helping to achieve social goals.<sup>115</sup> Furthermore, this is aligned with the theme.

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## 56. CONCLUSION

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Whilst the function of the Model works in theory, there are a range of practical implementation issues which must be addressed for it to operate effectively. The foremost difficulty is in finding the necessary information required for the EAS – without this the Model will be unable to function. However it is considered that in many circumstances it will be practically possible to fulfil both the informational requirements to a sufficient extent and apply this to the Model to achieve an outcome.

The Model and EAS are designed to be sufficiently flexible to be capable of adapting to varying national legislatures, who may themselves have differing environmental values. It is possible also that such a Model can operate at local or regional levels as well as larger-scale macro levels.

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<sup>114</sup> Russett and Sullivan argue that developed nations will need to fund the costs of developing countries’ participation in global environmental protection, in Russett BM and Sullivan JD, ‘Collective Goods and International Organisations’ (1971) 25 Int. Organ. 4, 845-65, at pp.863-65.

<sup>115</sup> Indeed, the Copenhagen Accord commits to a USD \$100 billion annual fund which would largely be used to help developing countries adapt to the threat of climate change. Draft decision -/CP.15 (1999) FCCC/CP/2009/L.7, para.8<<http://unfccc.int/resource/docs/2009/cop15/eng/107.pdf>> Accessed 3/5/2010.

Further research is required in order to determine whether the Model is indeed ‘universal’, as it remains questionable whether it can operate effectively in each jurisdiction. There may be varying degrees of success. However a feature of the Model is to enable account to be taken of actual economic, social and environmental factors within a country, to allow it to consider who it can target to achieve behavioural change without causing disproportionate harm. As such it does not provide a uniform answer to each environmental problem, but one that is based upon the most feasible solution given the realities in a country. In this way, if the required information can be inputted into the Model, the offered solution should be suited to the needs of the country adopting the Model. While it is impossible to fully test the hypothesis before it is put into practice; its ability to achieve its objective at any cost considered acceptable to the policymaker makes it a potentially powerful tool.

## 57. GLOSSARY

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<b>EAS:</b>	Environmental Assessment Study
<b>EP:</b>	the environmental problem to be addressed
<b>CF(s):</b>	one or more identified contributing factor(s) causing the EP
<b>Pollutant(s):</b>	one or more identified causes of the CF(s)
<b>Polluter(s):</b>	one or more identified parties responsible for causing the Pollutant(s)
<b>Improvement(s):</b>	one or more identified factor which could reduce or reverse the impact CF(s).
<b>Improver(s):</b>	one or more identified party able to carry out Improvements.
<b>Threat:</b>	estimate of the short-term and long-term costs of the consequences if the EP is left unchecked.
<b>Reduced Threat:</b>	estimate of the short-term and long-term costs of the consequences if the consequences of the EP are reduced to various more sustainable levels.
<b>Side-effects:</b>	refers to any impact the Improvement may have outside of achieving the Policy Objective itself.
<b>RC:</b>	required change(s). The policymaker calculates a realistic and practical combination of reducing the Pollutant(s) and/or increasing the Improvement(s) in order to achieve the Policy Objective(s).
<b>Policy:</b>	an overall target determining the extent to which the EP will be affected to limit the scope of the Threat.
<b>Policy Objective(s):</b>	the policymaker selects: <ul style="list-style-type: none"><li>• the CF(s):to be affected in order to achieve the Policy;</li><li>• and the level to which any CF will be affected.</li></ul>

**Direct Polluter:** any Polluter whose behaviour *directly* contributes to the Pollutant.

**Influencing Polluter:** any other Polluter whose behaviour has direct or indirect influence over the behaviour of any Direct Polluter in relation to the Pollutant.

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## CHAPTER 12: CONCLUSION

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The thesis has provided extensive guidance on the purpose and ability of using environmental taxation measures to achieve environmental policy objectives – all of which contributed to the design of a final Universal Model. The intention throughout has been to provide policymakers with a framework available to introduce tax measures which can meet environmental policy objectives without causing undue detriment to wider policy goals. It was considered that this could be carried out with both informed choices and a Model available to suggest suitable tax methods.

In order to do this it has been necessary to analyse, up until the design of the Model, how taxes can affect behaviour to sufficiently cause the change required by an environmental policy. This has required input from various legal disciplines and understanding of non-legal concepts, comparative evaluation of empirical findings and academic thought from many jurisdictions, and the design and testing of a Model within the thesis itself. A qualitative exercise throughout has critiqued and compared relevant academic literature as a basis of understanding of the subject, before utilising the findings and conclusions to provide guidance to policymakers and contribute to the overall comprehension of the advisable usage of environmental taxes.

Part I of the thesis introduced, explained and provided guidance into pervasive concepts which formed a basis of understanding for Part II. Part II then offered a critical analysis into

more complex issues necessary to design the Model effectively and established informed guidance for policymakers. The findings and guidance from both Parts were directly applicable to Part III and the design of the Universal Model, which was expressly set out, demonstrated through examples, and tested, before being evaluated.

In order to appreciate how far the thesis has met its original objectives, the Research Questions will be returned to.

**i. Is it possible to design a universal legal model for environmental taxation that can be applicable within different jurisdictions?**

As indicated, the findings of every chapter were directly applicable to responding to RQ(i) in providing guidance to aid its design and testing. By forming guidance as to tax methods available, a policy-maker has the ability to introduce tax measures appropriate to the context and their economy.

Findings in Part I guided the design of a Model, by advising upon appropriate means of tax methods, dependent upon economic realities and the situation in hand. The potential usage and benefits of hypothecation, revenue recycling and tax-and-incentive packages were explored, with the guidance from the findings inputted into the Model. Further this provided guidance as to how to value environmental goals – a necessary part of the Model. The scope and ability of environmental taxation to achieve its objectives was a continuing issue within

this Part, with methods being shown to be practically, legally and politically feasible depending upon given circumstances.

The conclusions of Part II also contributed to the design of the Model. Various methods suitable for the Model were evaluated, and by demonstrating how taxes can be appropriately targeted to ensure those intended to bear their burden do so, such methods were able to be utilised within the Model. BTAs were considered to be a vital tool to ensure international factors did not hinder the environmental effect of any given Model solution. This Part was able to establish how to efficiently target environmental factors, so that the Model could achieve its objectives at the lowest social cost.

It was also deemed prudent to determine potential unintended or undesirable consequences of some environmental tax methods, and this guidance was directed towards the Model.

Findings of Part II offer policymakers the ability to achieve environmental objectives within the Model at any cost, though policymakers were guided throughout towards making value judgements based upon both environmental and wider social issues, in order to avoid any form of environmental fascism. It was emphasised that the perceived winners and losers of an environmental tax programme should be determined from the outset.

Part II concluded by stipulating how it would recommend the most beneficial solution to policymakers within the Universal Model. It was stated that when an environmental problem is discovered which policymakers consider needs addressing, it is important to conduct economic, social or scientific research to discover the main cause(s) of the problem. The

main cause(s) can include a large number of factors and may be anything from a particular group of society to the pricing of an appliance which does not account for its externalities. Once a problem's source has been found, it was found necessary to consider what methods could be used to target the source. This involved evaluation of the costs and benefits of taking any action over other actions, and which one is the most practical. If a tax method is decided upon it is important that it is the most suitable one, so consideration would need to be given to whether it could be used effectively. Part of this considered who the tax is targeted at in order to achieve the desired behavioural change, including how easily the target would be able to absorb the costs (or benefits) or the tax or tax incentive.

The purpose of designing a framework model for environmental taxation was to propose a solution deemed to be the most effective for achieving a given environmental policy, and the Model was expected to be suitable for any given jurisdiction. Following all of the input from Parts I and II, a Universal Model was then designed and set out in Part III. It explained the various questions which must be answered before the Model could be utilised, and the information required for its usage. The intent of the design was to offer a series of gateway questions, which any policymaker could answer based upon their given circumstances and objectives, in order to offer a solution for the environmental problem in question. Chapter 11 thus set out all of the principles and assumptions made prior to use of the Model, in order that policymakers would not use it if these were not satisfied. It set out the information required as a pre-requisite to the Model, including a professional evaluation of the environmental problem to be applied, and the costs and risks associated with it. It then set out a series of questions with multiple possible answers, and sought to provide responsive solutions. These were demonstrated throughout with hypothetical, basic examples, and the Model was then

exemplified further using both artificial and real-world scenarios. The design of the entire Model took into account significant consideration of its implications, its correct use, and with the need to avoid undue consequences.

The overall evaluation in Chapter 11 concluded that the Universal Model had the potential to work, thus answering RQ(i). However its limitations were also pointed out. It was recognised that there were a range of practical implementation issues which needed addressing for it to operate effectively. The foremost difficulty was in finding the necessary information required for the EAS – without this the Model could not function. However it was considered that in many circumstances it would be practically possible to fulfil both the informational requirements to a sufficient extent and apply this to the Model to achieve an outcome. The Model and survey required as a pre-requisite to the Model's usage were designed to be sufficiently flexible to be capable of adapting to varying national legislatures, who may have differing environmental values. It was found to be possible also that such a Model could operate at local or regional levels as well as larger-scale macro-levels.

Further limitations and uncertainties showed the difficulty in valuation – an issue that has been raised within the thesis, and the evaluation sought to alleviate fears that this could not be done, by explaining its practical implementation. Ethical issues were raised, though it was reasserted that as the Model was intended to be used for environmental purposes in any given jurisdiction, there may not always be fairness or democratic input as intended, though the proper usage of the Model would not facilitate its abuse for political purposes. The evaluation further pointed to the need to remove subsidies which would contradict the

effectiveness of the solutions given, though it is recognised that this is a principle of the Model itself.

The scope and ability of the Model to both achieve its objectives and cause wider benefits have been set out, and it is considered that the Model could be put into use. However the evaluation concluded that further research was required in order to determine whether the Model is indeed 'universal', as it remains questionable whether it could operate effectively in each jurisdiction. This would require an empirical testing, perhaps at a local level to begin with. However the purpose of the Model is to enable it to take account of actual economic, social and environmental factors within a country, to allow it to consider who it can target to achieve behavioural change without causing disproportionate harm. As such it does not provide a uniform answer to each environmental problem, but one that is based upon the most feasible solution given the realities in a country. In this way, if the required information can be inputted into the Model, the offered solution should be suited to the needs of the country adopting the Model.

- ii. How can environmental taxation promote environmentally sustainable lifestyles and consumption behaviour without unintended consequences?**
  - a. How can policymakers determine who ought to bear the burden of environmental taxation?**
  - b. What are the legal, economic and social justifications for environmental taxation?**

As perhaps the most necessary ability of environmental taxation in achieving many objectives, behavioural change has been a subject considered in every chapter. With the theme focusing upon means of offering both incentives and penalties to achieve behavioural change, the thesis has sought to provide guidance on appropriate means of achieving environmental targets without causing unforeseen or negative behavioural consequences such as negative substitutional consumption, environmental choices going against the policy, or criminal actions. This has been considered from both an individual and business perspective.

Chapter 2 began this by explaining how the availability and design of tax incentives is crucial to establishing a situation encouraging persons going beyond compliance and actually innovating to achieve environmental objectives as far as possible – in order to efficiently meet environmental policy. This was shown to be possible using both tax liabilities which a taxpayer would seek to minimise, and instruments such as tax credits and deductions for incentivisation. By offering tax expenditures such as subsidies, and removing subsidies which would negate the effect of such measures, it was shown to be able to complement these market conditions. Such packages were shown to be in line with the theme, and provided a basis for purposeful design throughout. This satisfied in part the economic justifications of environmental taxation attributable to RQ(ii)(b).

The question of whether taxes should and could be utilised for such purposes was evaluated in Chapter 3, which concluded that taxes can influence human behaviour and using taxation as an instrument for achieving behavioural reform could be beneficial for society. This

conclusion was studied further in Chapter 4, which showed how a tax package could be designed to be both politically acceptable, in line with Chapter 3, and achieve double benefits of economic and/or environmental improvements. These chapters concluded that the most suitable methods for achieving social acceptability and economic improvements were revenue-neutral tax measures which recycled revenue from environmental taxation into either further environmental projects or to boost the economy, and that public desire for hypothecation could improve chances of the tax being successful. This offered policymakers an opportunity to introduce tax measures which could be economically beneficial, politically acceptable, and achieve environmental policy objectives. Both chapters contributed to answering RQ(ii)(b) in explaining political, social and economic justifications for using taxes as instruments for achieving environmental policy.

Chapter 5 further contributed to answering RQ(ii) in guiding policymakers as to the necessary value judgements which they must make in order to achieve the required behavioural change. As such valuation is essential for any tax measures to be introduced, a range of quantifying techniques were explained and evaluated, with any shortcomings exposed. Valuation solutions were critiqued and it was explored how taxes could be introduced without causing undue detriment to wider policy targets. Chapter 5 emphasised that crucially, both private and social costs should be used, due to limitations of a purely economic analysis.

Chapter 6 proved critical in answering RQ(ii), by exploring a variety of methods available to influence human behaviour – including both tax methods, and non-tax methods to complement the impact of tax methods. This required invoking interdisciplinary findings to

understand the psychology of human and business behaviour. The need to support the introduction of any tax package was shown to be possible with a wider campaign of education, public information, a convincing explanation of the science and the purpose of the package, and in leading by example. The freedom to make a choice on consumption or behaviour was advised to be protected to avoid undue consequences, though it was shown to be possible to influence such choices through pricing policies via taxes and tax expenditures, as well as by promoting positive environmental consumerism to change perceptions. The answer to this RQ and the theme were answered in part by the finding that people wanted to be rewarded for changing their environmental behaviour rather than simply paying more if they did not, and even small incentives could satisfy this demand. Fairness and equity in the tax system were found to be fundamental public expectations required for the tax to be supported and complied with. This involved providing certainty of the system, such as whether taxes would continue to rise, so that people would be certain of the need to adapt behaviour and make their choices accordingly. It was found that legal uncertainty and retrospective application could undermine confidence in the system. The chapter also stressed that, in order to change behaviour, realistic alternatives must be available, to avoid simply penalising people for making a decision when they have no other choice.

In order to change behaviour it was found in Chapter 7 to be necessary to determine where a burden of environmental taxation would fall, and the possibility of severe negative implications was explained for failing to design a tax measure which would take into account the economic reality of directing a tax to impact upon incidence. This chapter gave an in-depth response to RQ(ii). Methods were analysed and shown to do this, and it was stressed that market realities must be taken into account both for policymakers to decide who should bear the burden, and how. To do this, the chapter looked first at principles of responsibility,

and showed that the polluter-pays principle facilitated the theme and international law. In evaluating possible methods, the chapter gave due consideration to distributional concerns in order that policymakers could understand implications on various income groups. This meant that tax methods could be implemented to both ensure final incidence rested with intended parties and that policymakers could avoid causing undue damage to any income group. It analysed means of ensuring business taxpayers bore the liability intended by the policymaker, and concluded means of ensuring different sectors of the economy could be included in an environmental programme, without bearing so much of the burden that there could be undesirable consequences. This gave consideration also to the legitimate use of subsidies.

The chapter explored burden-sharing within the context of wider social, political and policy objectives, including political feasibility and administrative efficiency to limit the burden on the general taxpayer. This advocated reducing administrative costs via methods such as ensuring drafting certainty and utilising the existing tax code. Finally an international aspect looked at how it can be advantageous and feasible for foreign taxpayers to share part of the burden. This also looked at inequities for domestic taxpayers to bear a responsibility which foreign taxpayers may avoid, despite their contribution to the pollution itself. This led the chapter to identify the usefulness of utilising border tax adjustments in achieving environmental objectives, as per Chapter 8. This chapter was essential as it explained how taxes could be utilised without causing unilateral competitive disadvantages – a key concern for policymakers introducing environmental taxes. It was demonstrated that their ability to ensure negative externalities are internalised into the cost of goods means consumers can

make informed choices – a necessary means of meeting environmental objectives, thus responding to RQ(ii). Means were suggested and critiqued to achieve this.

Chapter 9 responded to RQ(ii) by providing guidance to policymakers as to how taxes can most effectively be targeted at the source of an environmental problem, in order to achieve the required degree of behavioural change. By utilising a case-study of aviation taxation, followed by non-aviation examples looking at incentives for property, vehicle and energy policy, the chapter was able to demonstrate both how taxes can be flawed and therefore inadequately effective in achieving their policy objectives, and how consideration of market realities allowed incentives and taxes to be appropriately targeted. The aviation case study allowed the chapter to demonstrate the inefficiency of badly-targeted incentives, and how they prevented the required behavioural change from being achieved. It was demonstrated how policymakers can evaluate means by which specific groups can be targeted. For instance income levels of a group can be assessed so that a tax can impact upon most parties, or it can be questioned whether it is appropriate to offer incentives broadly or narrowly in order that resources are utilised the most efficiently. The chapter also stressed the importance of investing in or creating the incentives for, practical and desirable alternatives in order for a taxpayer to have realistic substitution choices, and for it to be in their financial interest to reach the choice of using the substitute, and technological advancements were advocated. These findings further answered RQ(ii).

- iii. How can taxation be used to achieve environmental policy considering**
  - a. specific environmental problems;**

- b. other jurisdictions with varying social, economic and environment factors; and**
- c. certain economic climates such as a recession?**

Environmental problems differ in every jurisdiction, but so do other factors such as preparedness to change behaviour and financial ability to pay. Methods that may be suitable in an environmentally educated, developed nation such as Sweden, may not be appropriate to a less environmentally educated county such as the USA, a less financially able country such as Zimbabwe, or a country with very different environmental challenges such as South Africa.

Economic, legal, social and political realities have been emphasised throughout the thesis to be essential considerations within every chapter. It has been repeatedly concluded that the practical realities of specific circumstances must be determined before any tax method can be implemented. For instance, Chapter 4 strongly indicated that the possibility of a double dividend from revenue recycling is entirely dependent upon economic circumstances, and may not be available in many cases, whilst Chapter 5 showed that the valuation of environmental factors will differ between jurisdictions based upon national priorities. The success of methods of taxation and complementary tools explored in Chapter 6, such as pricing strategies and education, were shown to be dependent upon the economic and social circumstances within which they are used. Demand, supply and elasticity were shown in a range of chapters and the Universal Model to very much determine what type of method to use. The thesis has aimed to concern itself with distributional factors and consider how policymakers can mitigate harm to low-income groups, for instance, without preventing any

behavioural impact upon such groups. Determining how to direct taxes towards an appropriate taxpayer in order that the intended party directly or indirectly bears final incidence, is a matter explored in Chapter 7 and utilised in the Universal Model – thus emphasising the importance of understanding a jurisdiction’s specific economic and social relationships prior to the introduction of such taxes.

Chapter 8 proved also to be critical to answering RQ(iii), by providing means of overcoming economic influences which could hinder the effectiveness of unilateral environmental problems. The BTA chapter also explored means of making environmental taxation methods suitable to the economic and environmental interests of a nation in question – making a distinction between developed and developing economies. Chapter 9 also gives due consideration to the risk of imposing taxes in times of recession, while Chapter 10 follows this up by examining the wider economic, social and environmental implications of losing business competitiveness. Chapter 9 further examines economic relationships in areas such as transport policy, providing a clear-cut answer to part of RQ(iii), emphasising that specific environmental problems cannot be affected without providing adequate sustainable alternatives.

Chapter 5 also aided in answering RQ(iii), by demonstrating the difficulty of deciding which factors to include in a valuation for the purposes of setting a tax rate. Policymakers were advised against the risk of undervaluation due to non-inclusion of relevant costs, but it was also explained that a tax does not need to be set so high that it prevents an activity from happening at all. The chapter considered a range of conceptual values as well as practical ones, to guide policymakers to understand the values held by their society, and to

pragmatically assert a value dependent upon the environmental problem in question. It was found that including scientific requirements of environmental change, alongside any economic, social and possibly ethical considerations deemed necessary to be included, could achieve a valuation appropriate to the environmental problem in question – though the actual rate of tax may need to vary periodically to reflect the continuing environmental change. Various official valuation techniques were summarised to learn from their methods, and it was shown to be possible for policymakers to utilise surveys and consultations to gain an understanding of both public perceptions and the environmental problem, as well as to exploit professional expertise on these matters. These findings were inputted into the Universal Model, which required an extensive analysis including an ‘environmental assessment survey’ to gauge the full extent of an environmental problem. The method utilised within this identified the possibility of determining a valuation, whilst the Universal Model’s structure went further in actually providing a means of using taxation to achieve environmental policy considering the varying factors within RQ(iii). As such, the Universal Model was very much able to respond to overall RQ in a practical manner, while earlier chapters contributed to the response more generally.

The thesis has been written during times of economic boom and bust. As such it is explained throughout that policymakers may not find it appropriate to introduce certain measures during times of recession, and that impacts upon business and the wider economy go hand-in-hand with environmental impacts. This can be seen in Chapters 7 and 9, which aim to reflect the importance of understanding economic reality in determining how taxes should be used. The Universal Model takes account of this, and targets incentives at where they can be afforded –

though it allows policy exceptions for matters where appropriate, such as for industries with essential social importance.

It is submitted however that further research could be useful in this area, such as in ascertaining the level of taxable profits at which a taxpayer considers it not worthwhile to seek incentives. Equally, it can be shown that extreme economic circumstances can themselves go further in meeting environmental objectives than fiscal measures, such as the fall in UK emissions during a global slowdown.<sup>116</sup> This can further explain how a Model can be suitable for application in countries of varying economies, an area itself where further research is needed. Further research could also meaningfully be carried out into drafting styles of the Universal Mode, to ensure its methods can be implemented unambiguously and effectively within a variety of jurisdictions.

## SUMMARY

Overall the thesis has followed the intentions proposed in the introduction, and has pursued its theme throughout by explaining the purpose and possibility of tax-and-incentive packages, and in creating a Model which can offer both reward and penalty-incentives to achieve environmental objectives. By building on both early and recent academic thought, empirical findings, and using comparative evidence from a range of jurisdictions, the thesis has conducted a qualitative assessment of critical work in this area. Importantly the author submits that the thesis has gone further, in adding to the knowledge in this area and proposing

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<sup>116</sup> Climate Change Committee, 'Meeting Carbon Budgets – ensuring a low-carbon recovery' (2010) at 3 <[http://downloads.theccc.org.uk.s3.amazonaws.com/0610/pr\\_meeting\\_carbon\\_budgets\\_full\\_report.pdf](http://downloads.theccc.org.uk.s3.amazonaws.com/0610/pr_meeting_carbon_budgets_full_report.pdf)> Accessed 5/07/2010.

a Model which could prove considerably versatile. The methods, guidance and findings provided throughout bring together a range of arguments and can be used to introduce informed tax measures suitable to the jurisdiction. It is concluded that the Model itself has the ability to be utilised throughout a range of jurisdictions, providing efficient methods of environmental taxation to be introduced dependent upon the specific circumstances in which it is adopted. The limitations of the Model, and the various restrictions of the findings within, have been identified, and it is intended that further research can test the Model's use in a practical sense, and whether it is truly universal.



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