

**The University Of Strathclyde**  
**Thesis In Part Fulfilment of The Degree of Master of**  
**Science in Energy Systems and the**  
**Environment**

**The UK Climate Change Programme**  
**and Small Businesses**

**By**

**Patrick Honnor**

**Department of Mechanical Engineering**

**Energy Systems Division**

**University of Strathclyde**

**Glasgow**

**2003**

## **Abstract**

The government's climate change programme was set up in order to initiate the reduction of carbon dioxide emissions to the environment. The climate change levy (CCL) introduced on April 2001 is central to this programme and is a tax on the business use of energy. The tax was designed to be neutral and is recycled back to business primarily via a reduction in employer's national insurance contributions (NICs), as paid for each employee. Fifty million pounds of the 1.75 billion generated annually from the climate change levy is allotted to enhanced capital allowances for the purchase of energy efficient equipment. Other features of the climate change programme include the creation of action energy, which provides free advice on energy efficiency as well as providing interest free loans for small businesses investing in energy efficient equipment on the government's energy technology list.

This report has established that the climate change levy is not neutral for individual businesses and certain businesses gain from reduction in NICs payments although many small businesses are unaware of this fact. Several other sectors lose out with increased net financial cost and many small businesses are unaware of the mechanisms designed to recycle revenue generated from the climate change levy back to businesses.

This research focuses on the pub sector of small businesses and illustrates that the CCL represents an increased financial cost to this sector. Furthermore lack of awareness for the climate change programme and how it can benefit them through Enhanced Capital Allowances (ECAs), interest free loans and energy efficiency advice shows that this sector is at an even greater loss. If a tax is required to decrease energy consumption then it should not discriminate against certain sectors. Therefore businesses should be made aware of available support and subsidies if they are to benefit and fundamentally they should understand the primary mechanisms of the tax, which as this report shows is not the case within the pub sector of small businesses amongst others.

## **Acknowledgements**

I would like firstly to thank my immediate family (my dad Tim, my mum Janet and my two sisters Henri and George) who have been no less than fantastic in supporting and directing me academically or otherwise during my life in education. Secondly I would like to thank my course mates, Rod, Bea and Siva for making the majority of this year an enjoyable learning experience. Finally I thank my supervisor, Dr Kelly.

## List of Abbreviations

|       |   |
|-------|---|
| CCL   | Climate Change Levy                                   |
| ECA   | Enhanced Capital Allowance                            |
| CCA   | Climate Change Agreements                             |
| SME   | Small And Medium Sized Enterprise                     |
| NIC   | National Insurance Contribution                       |
| IPPC  | Intergovernmental Panel on Pollution Control          |
| UNFCC | United Nations Framework Convention on Climate Change |
| PPC   | Pollution Prevention and Control                      |
| EMS   | Environmental Management System                       |
| FSB   | Federation of Small Businesses                        |
| SLTA  | Scottish Licensed Trade Association                   |
| NI    | National Insurance                                    |
| ESCOs | Energy Service Companies                              |
| GDP   | Gross Domestic Product                                |
| VAT   | Value Added Tax                                       |
| EEA   | European Economic Area                                |
| DTI   | Department of Trade and Industry                      |

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# **Chapter One**

## **Introduction**



## 1.1 Climate Change

According to most of the world's climate scientists, the Earth's surface temperature has risen by about 0.6 °C in the past century, with accelerated warming during the past two decades. There is new and stronger evidence that most of the warming over the past 50 years is attributable to human activities. Human activities have altered the chemical composition of the atmosphere through the build up of greenhouse gases – primarily carbon dioxide because of the quantity released (there are gases such as methane, nitrous oxide and sulphur hexafluoride which have higher global warming potential but are emitted in far less quantities than carbon dioxide). The heat trapping property of greenhouse gases is undisputed although uncertainties exist as to how exactly the earth will respond to continued indiscriminate emission of these gases into the atmosphere.

## 1.2 Changing Atmosphere

Energy from the sun drives the earth's weather and climate, and heats the earth's surface. In turn, the earth radiates energy back into space. Atmospheric greenhouse gases trap some of the outgoing energy. In particular the massive quantities of CO<sub>2</sub> absorb radiation at frequencies in the infra red which arise after incoming light has hit the Earth's surface shifted slightly in frequency, due to radiation absorbed by the earth's surface, and bounced back towards space. This causes heat to be retained in a similar fashion to the glass panels of a greenhouse and is displayed in figure 1 (right). Indeed this greenhouse effect cannot be questioned and it is exactly this well understood phenomenon, which delivers the planet warmth and the biodiversity we experience today. Without this effect life would be completely different and around 34°C colder than at present. The earth's atmosphere is naturally balanced and major changes in concentrations of certain gases will likely result in changes in climate and weather patterns. The

atmosphere can be considered as one massive chemical reactor and as we know with all large scale chemical manufacturing processes today the incorrect chemicals, incorrect quantities of chemical or the incorrect input of heat will result in a different product or different quantity of heat released or absorbed by the reaction. The only differences are the massive scale and the large number of parameters to be considered, making it a little less sensitive than those reactions we have tailored in industry and far more difficult to model and make predictions around.

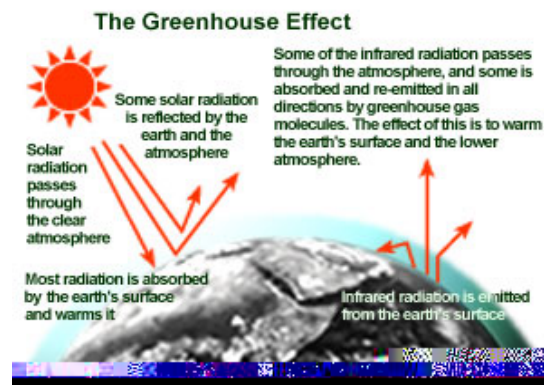


Figure 1: The Greenhouse Effect [3].

The increase in greenhouse gasses emitted has been largely attributed to the combustion of fossil fuels amongst other human activities. Although Plant respiration and the decomposition of organic matter release more than ten times the CO<sub>2</sub> released by human activities these releases have generally been in balance during the centuries leading up to the industrial revolution with carbon dioxide being cycled through absorption by terrestrial vegetation and the oceans which act as sinks for this gas.

In the last few hundred years the additional release of carbon dioxide has been by humans, combusting fossil fuels to produce energy in order to run automotive vehicles, to heat homes and businesses and power our variety of industries through production of electrical power. The annual release of CO<sub>2</sub> emissions for different countries is shown below in figure 2.

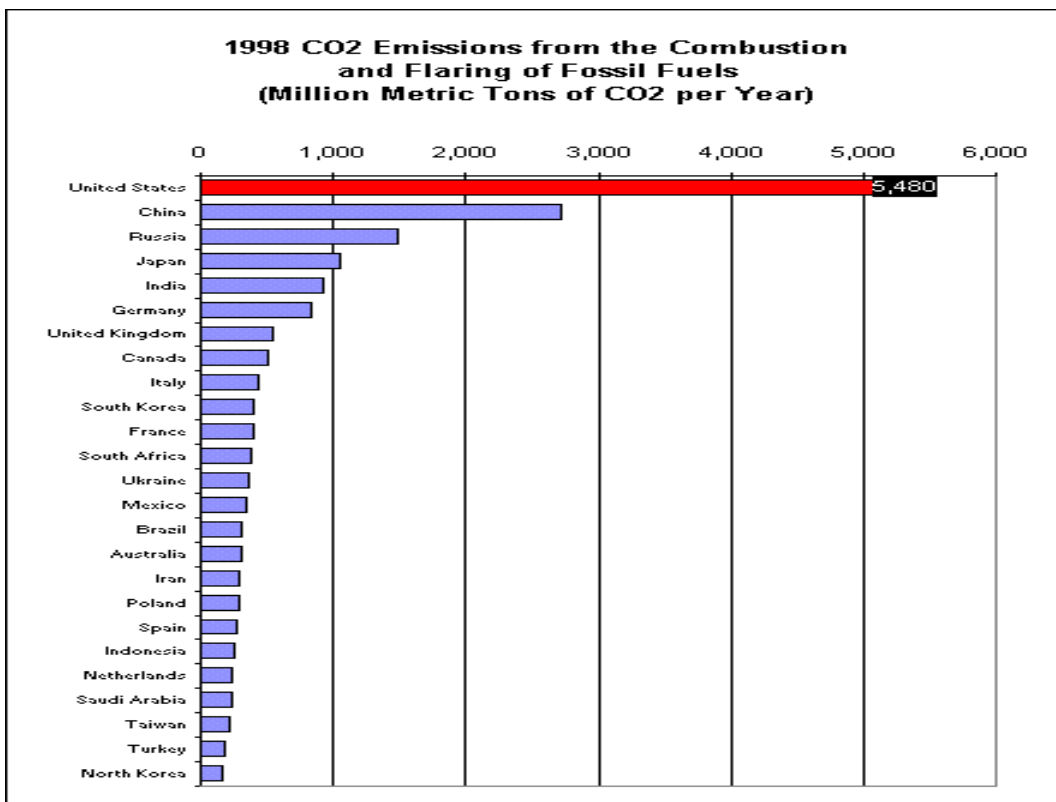


Figure 2: Annual release of CO<sub>2</sub>.

Estimating future emissions is difficult, because it depends on demographic, economic, technological, policy and institutional developments. Several emissions scenarios have been developed based on differing projections of these underlying factors. For example, by 2100, in the absence of emissions control policies and practices carbon dioxide concentrations are projected to be between 30% and 150% higher than today's levels. There has been a mean global warming of around 0.6 °C since the 19<sup>th</sup> century and many scientists believe that at the present rate of emissions mean global temperature could rise up to 6 °C in the next century [1].

### 1.3 Evidence of Climate Change

Further to the mean global temperature rise of  $0.6^{\circ}\text{C}$  sea levels have risen by 10 to 25cm mainly due to melted ice caps at the poles, mountain glaciers have visibly retreated, there has been a reduction of northern hemisphere snow cover (1773 to present), increasing sub surface ground temperatures and the four warmest years recorded since 1860 have occurred since 1990. Warming has been greatest at night and over land in the mid to high latitudes of the northern hemisphere. Although some areas have in fact cooled such as the southern Mississippi Valley in Northern America. These facts, which are hard to argue with, are inferred from data derived from measurements of tree rings, shallow ice cores and corals amongst other sound methods, which suggest that global surface temperatures are now warmer than at any time in the past 600 years. Projections made by the Intergovernmental panel on Climate Change (IPCC), which is made up of over 2000 scientific experts, have provided the measured global surface temperatures relative to the average for the 130-year period 1861 to 1990 as shown in figure 3 below [2].

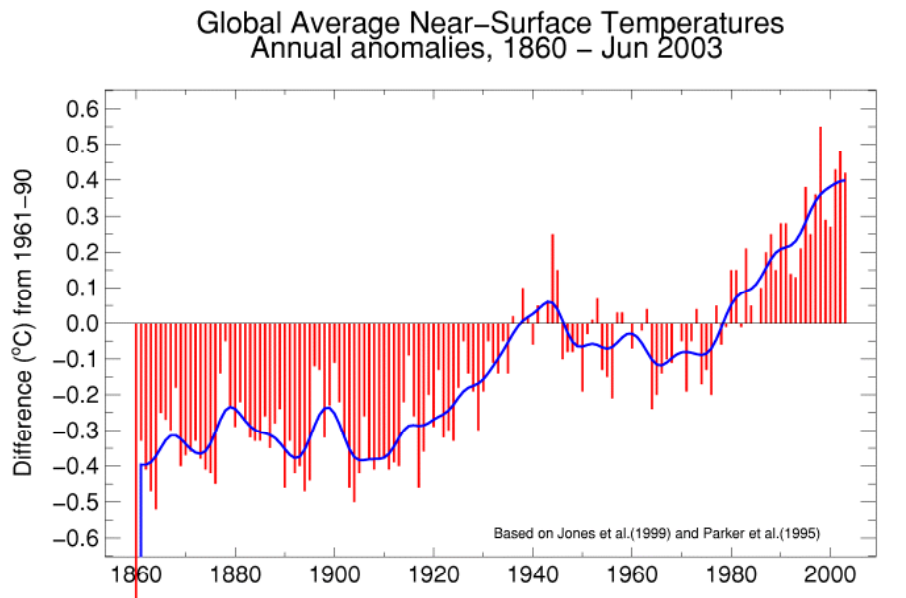


Figure 3: Mean global surface temperatures relative to the average 1861-1990.

### 1.4 Implications of Climate Change

Disregard of the inaccuracy of future predictions and the inability to predict local climate changes of the future it is speculated with a certain confidence that severe in-balance of greenhouse gases could catastrophically affect the human race and biodiversity of the planet as we know it. Possible outcomes include a rise in sea water due to melted ice and expansion with heat, this in turn could increase the 46 million coastal population of today that are in danger of flooding to 118 million (not including likely population growth) [2]. Flooding and increased local temperatures could expand today's malaria zone into temperate areas such as Europe, United States and Asia which were previously malaria free. By the end of the 21<sup>st</sup> century malaria could be rampant over lands containing up to 60% of the worlds population, resulting in

50-80 million additional cases per year [2]. More rapid spring melts will likely cause flooding and render a great deal of agricultural land unmanageable and disappearance of glaciers would mean loss of fresh water supplies for certain communities such as the 10 million people in Lima, Peru who depend entirely on the now rapidly retreating glacier for their water supply. Other likely consequences of global warming include increased mortality due to heat exhaustion and other freak weather such as cyclones, hurricanes and droughts.

Overall the outcome of climate change can not be known simply because if it happens it will be in the future and it is likely that regions of the world will be affected differently, while the possible result of continued and indiscriminate burning of fossil fuels has been enough to establish the Kyoto protocol and implement strategies to begin reducing global emissions of greenhouse gases. Although the greenhouse effect and associated climate change is the main driving force for new energy policy and practice it is also important to recognise that fossil fuels are a finite resource and will eventually have to be replaced by alternative sources simply because they will run out. Further more we depend greatly on this resource for a great deal more than energy and we would be wise to keep resources available for the millions of manufactured materials and chemicals, which cannot be synthesised in the quantities we require, without oil reserves.

### **1.5 Global Climate Change Policy**

The case for climate change and likely outcomes as discussed above was first officially recognised by the international community around 1990 which led to the signature of the United Nations framework Convention on Climate Change (UNFCCC) in 1992[4]. This included a legally non-binding, voluntary pledge that major industrialized countries would reduce their greenhouse gas emissions by 2000. This was the first step towards an international treaty on how the world should deal with the increasing problem of greenhouse gas emission. More than 150 countries came together to sign the UNFCCC at the earth summit in Rio. This included an agreement that the developed nations would reduce emissions to 1990 levels by the year 2000. Soon after it was clear that this “pledge” was not going to enforce the desired reductions and so parties to the treaty decided in 1995 to convene in order to establish a protocol that would be binding for the developed nations. This in turn led to the meeting in Kyoto, Japan, December 1<sup>st</sup>, 1997, which produced the Kyoto protocol. Many issues still remained unresolved and a two-year action plan was assembled with a deadline of end of 2000. The protocol would not come into force until 55 nations had ratified it and these were to include developed nations sufficient for 55% of the global carbon dioxide emissions. This required the compliance of countries such as Japan (8.5 % emissions) and Russia (17% emissions) since the US (25% to 36% emissions) was clear that it did not consider the treaty reasonable and thus would not comply [5].

### **1.5.1 International Emissions Trading**

The Kyoto protocol was set up as an international trading scheme. There are several means of trading and joint action where for example one nation may reduce their emissions beyond the required limit and then sell the surplus as a credit to another nation who has not met the target. Also one nation might fund a project, such as planting forests, in another country. However the treaty makes it clear that a nation cannot solely satisfy its commitment by trading or joint implementation or even by creating carbon sinks. A nation which reduces its carbon emissions beyond the target, may have done so by lack of prosperity rather than for having implemented carbon reducing policy/strategy. This may simply be due to decline of a nations economy such as happened in Eastern European countries recently. Generally the more prosperous an economy is the more carbon emissions there are. This is often associated with car use encouraged by low prices of petrol and the indulgence in energy demanding home comforts. Thus it is not surprising that the US has sought to avoid radical reductions in emissions and seek loopholes in the agreement as well as an over reliance on carbon sinking.

As it stands today several issues remain. These include establishing rules to govern the Kyoto mechanisms which are principally emissions trading among industrialized countries and the clean development mechanism whereby industrialized nations could finance greenhouse gas reducing projects in developing countries. Research shows that little concrete action has been taken to reduce emission levels to the new 2008-2012 targets of 5.2% below 1990 levels. Reductions have occurred in central Europe, the former Soviet Union and Eastern Europe but this decline has been largely due to economic decline as opposed to energy efficiency.

### **1.5.2 The UK- Reductions and Targets**

As a result of the Kyoto treaty the UK has agreed to the target of reducing emissions by 12.5% below 1990 levels by 2012. At present only 3% of electricity generated in the UK comes from renewable sources and the government has a target to increase that proportion to 10% by 2010.

### **1.5.3 Methods of CO<sub>2</sub> Reduction**

Targets set by the government of the United Kingdom will be met by a number of different means. These will include the promotion of renewable energies such as wind power and solar power while 50% of UK CO<sub>2</sub> reductions by 2050 are expected to come from increased energy efficiency in both the domestic and business sectors. This report is concerned with the recent policy issued in the form of the government's climate change programme, which has been introduced in order to provide incentive for energy efficiency in the business sector.

### **1.5.4 Policy for Energy Efficiency in the Business Sector**

The government's climate change programme has delivered new policy to the business sector. In the budget statement on 9<sup>th</sup> March 1999 the chancellor proposed the introduction of a **Climate Change Levy** (CCL) on the commercial and industrial use of energy. This announcement was made in advance of its effect in April 2001 in order to give businesses time to adjust [6]. The new environmental tax is central to the climate change programme and requires all businesses consuming more than 1000 kWh/month of energy to pay a tax per unit energy consumed. The tax is intended to provide incentive to reduce energy consumption through increased energy efficiency. The levy is designed to be neutral with all revenues raised recycled through a 0.3 percentage point cut in employers National Insurance Contributions (NICs) along with the creation of a £150 million energy efficiency fund.

The fund is split between a 100 percent first year **enhanced capital allowances** (ECAs) scheme for firms making energy saving investments, allocated £100 million, and an "energy efficiency" fund of £50 million intended to provide energy efficiency advice and audits to small and medium sized enterprises (SMEs), and promote research and development into low carbon technologies. This scheme operates under the name of **action energy** which is a sub section of the governments **carbon trust programme**.

The levy is imposed on taxable energy supplied to almost all non-domestic users. Therefore suppliers of energy products are required to register and pay the levy. Domestic users are defined as those paying the lower rate of 5 percent VAT (business users pay 17.5 percent VAT) therefore businesses in this lower category of energy consumption are exempt from the levy, although they still receive reductions in NICs contributions and can benefit from ECAs.

Other exemptions apply to energy supplied from "green" sources and a discounted rate, charged at 20 percent of the levy, is available for those businesses listed under "part A" headings in Schedule 1 of the pollution prevention and control regulations 2000, for example steel, chemicals and cement.

The government has negotiated with over 43 trade organisations which are now able to offer their members "**climate change agreements**" where targets for reduced CO<sub>2</sub> emissions are agreed and if these targets are met then respective businesses are eligible for an 80 percent discount on the climate change levy.

The policy outlined briefly above and given in detail in chapter 2 has very different implications for different sectors and size bands of the business world.

As discussed certain companies, which are energy intensive can benefit from climate change agreements provided by their respective trade organisations leading to 80 percent discounts on the CCL. This discount is not appropriate to all businesses because the investment made in increasing efficiency, joining a trade organisation and administration time, in filling out forms, will in

many cases not be outweighed by the saving made on reduced CCL. Companies studied in this report were not eligible for CCAs.

ECAs are available to all business sectors in theory however in reality they are only available to those businesses whom have been made aware of their existence or whom can expend the time to administrate the time consuming forms required for claims.

Small and medium sized enterprises (SMEs) can benefit from interest free loans and free advice/auditing services from the governments action energy programme, but again this depends on the level of awareness which will likely differ in different areas of the UK as well as different business sectors. The take up of such loans to small businesses is also likely to depend on the ease of the application procedures since many low-staffed companies simply cannot expend personnel and time for non-essential tasks.

Given that the primary method of recycling revenue generated by the CCL is through reductions in employers NICs different sectors are set to make net gains or loses. It is obvious that more energy intensive companies with few employees will stand to lose, while those companies, which use little energy and have many staff, will stand to gain since the reduction in NICs will be greater than the tax paid on energy consumption. Finally 66 percent of all organisations stand to gain before any of these considerations since their energy consumption is below the CCL threshold but they will still benefit from the 0.3 percent reductions in employers NICs and are eligible to benefit from other recycled revenue such as the action energy programme and enhanced capital allowances.

This report is concerned with small businesses and focuses on micro businesses (0-9 employees). Definitions of businesses by size are given in chapter three. Aims and specific objectives relative to the points discussed above are outlined below. Given the restraints of time and resources it would be impossible to research all small business sectors and so for the purpose of gathering representative quantities of information the pub sector of small businesses has been the focus of this study. This sector tends to be in high abundance in inner city areas and therefore represents an easy target zone and a sector which can deliver reasonable feedback on which to base conclusions.

Finally it should be made clear that the Highlands of Scotland and in particular Inverness have been the target area for this study. The primary researcher for this study has long established contacts with businesses in this area and given the sensitive nature of some business figures involved it was only possible to carry out certain elements of this study by utilising pre-existing relationships with businesses. In economic case studies carried out the annual wage bills for businesses are required, these have been used in calculation of reduction in national insurance contributions in this work, but for the protection of businesses that have participated have not been reported.

## 1.6 Project Aims

As discussed above the government's climate change programme will affect different business sectors and sizes differently. This research focuses on the impacts relative to small businesses (less than 49 employees) in the Highlands of Scotland with a focus on the sector of public houses comprising of mainly micro enterprises (0-9 employees).

This project was split into three parts each of which had specific objectives.

Establish the financial impact of the Climate Change Levy for different businesses. The objective here was to carry out a direct economic analysis on four different companies comparing the climate change levy paid on energy with the returns received by the 0.3 percent reduction in employers national insurance contributions for employees as well as unquantifiable returns via utilisation of government funds taken from revenue generated by the climate change levy.

Establish the financial impact of the Climate Change Levy for the pub sector. The objective here was to carry a direct economic analysis on five different pubs comparing the climate change levy paid on energy consumption with the returns received by the 0.3 percent reduction in employers national insurance contributions for employees as well as unquantifiable returns via utilisation of government funds taken from revenue generated by the climate change levy.

Establish a level of awareness in the pub sector for the UK climate change programme including climate change levy and revenue recycling mechanisms such as reductions in NICs contributions, enhanced capital allowances and the action energy programme. Also establish efforts made in the pub sector to improve energy efficiency and opinion on the best methods for investing revenue generated by the Climate Change Levy. A questionnaire was constructed and handed out to all pubs in Inverness in order to collect this information.



# **CHAPTER 2**

## **UK Climate Change Policy and the Business Sector**

## 2.1 The Climate Change Levy

The climate change levy is a tax on the use of energy in industry, commerce and the public sector and was introduced on the 1<sup>st</sup> April 2001. Rates of levy are specific to types of energy with electricity being the most taxed due to its higher relative impact on the environment (high proportions are produced via the combustion of fossil fuels in generating electricity). The levy has been established to respond to global warming. Under the 1997 Kyoto protocol the government agreed to reduce emissions of greenhouse gases to 12.5% below 1990 levels by 2012. The levy is designed to stimulate increased energy efficiency across businesses in turn reducing the UK's emissions of greenhouse gases. This new tax on energy forms a key part of the governments overall climate change programme and it follows the recommendations made in Lord Marshall's report "Economic Instruments and the Business Use of Energy" published in 1998 [7]. The main strategic objective of the levy is to reduce carbon emissions by taxing the end users of energy sources that create the harmful emissions.

In designing the levy the government took into account Lord Marshall's recommendation that any tax needs to be designed in such a way that the competitiveness of UK firms is protected. Therefore of the estimated £1.75 billion revenue generated all but 150 million is recycled back to those paying the tax in the form of reductions in employer national insurance contributions. This remainder is reserved and allotted to energy efficiency schemes which will benefit businesses and stimulate the take up of renewables such as wind and solar power. Further more there is a scheme of 100% first year capital allowances for certain energy saving investments, which was worth £70 million in the first year (2001/2) [5]. The levy is expected to lead to reductions in carbon emissions of at least 2.5 million tonnes of carbon per year by 2010.

Legislation implementing the Levy is contained in the Finance Act 2000, which received Royal Ascent on 28<sup>th</sup> July 2000. Section 30 and schedules 6 and 7 refer to the climate change levy [8].

### 2.1.1 Taxes and Exemptions to Climate Change Levy

The taxes on respective energy sources and approximate increases in price of energy are outlined in the table below [8]:

| <b>Fuel</b>        | <b>Levy Rate</b> | <b>Approximate Increase in Price</b> |
|--------------------|------------------|--------------------------------------|
| <b>Electricity</b> | <b>0.43p/kWh</b> | <b>10%</b>                           |
| <b>Gas</b>         | <b>0.15p/kWh</b> | <b>20%</b>                           |
| <b>Coal</b>        | <b>1.17p/kg</b>  | <b>20%</b>                           |
| <b>LPG</b>         | <b>0.96p/kg</b>  | <b>10%</b>                           |

The levy applies to industry, commerce, agriculture, public administration and other services.

The levy does not apply to fuels used by the domestic or transport sector, or fuels used for the production of other forms of energy (e.g. electricity generation) although office consumption in registering and delivering electrical power does come under this taxation. The levy also does not apply to energy used by registered charities for non-business uses, and energy used by very small firms (under 1000kWh/month, domestic quantities). Oils which are already subject to excise duties, are also exempt from the levy.

Other exemptions include:

- Electricity generated from renewable energy (e.g. solar and wind power)
- Fuel used by good quality combined heat and power schemes (“good quality CHP – certified via the CHP quality assurance programme, CHPQA)
- Electricity used in electrolysis processes, for example, the chlor-alkali process, or aluminium smelting.
- Natural gas in Northern Ireland is also exempt to help develop the emerging gas market.
- Horticulture (growers of fruit, certain vegetables, flowers, shrubs, trees, and certain seeds) This sector is relatively energy intensive, contains a large number of smaller companies and is exposed to significant international competition. As a result this sector receives special treatment. Special assistance includes: site specific advice from the energy efficiency fund, inclusions of thermal screens in the list of technologies qualifying for enhanced capital allowances (thermal screens are panels used to reduce the volume of a building to be heated during cold periods and are used in greenhouses), a temporary 50% discount on the levy for a period of up to five years (intended to give the sector relief while anticipated energy efficiency measures take place) [9].

The levy is added to bills before VAT and is shown as a separate item on energy bills. This is shown for a standard electricity bill below.

Example of bill layouts for illustration purposes only

| ELECTRICITY BILL |               |          |                      |                  |        |
|------------------|---------------|----------|----------------------|------------------|--------|
| Date of Reading  | Meter Reading |          | Electricity Supplied |                  | Total  |
| 06 June 01       | Present       | Previous | kWh                  |                  |        |
|                  | 11,000        | 5,000    | 6,000                | @ 6.15p per kWh  | 369.00 |
|                  |               |          |                      | Standing Charge  | 9.74   |
|                  |               |          | 6,000                | @ 0.43p per unit | 25.80  |
|                  |               |          |                      |                  | 404.54 |
|                  |               |          |                      | VAT @ 17.5%      | 70.79  |
|                  |               |          |                      | TOTAL AMOUNT DUE | 475.3  |

| GAS BILL        |               |          |              |                  |        |
|-----------------|---------------|----------|--------------|------------------|--------|
| Date of Reading | Meter Reading |          | Gas supplied |                  | Total  |
| 06 June 01      | Present       | Previous | kWh          |                  |        |
|                 | 11,600        | 3,500    | 7,500        | @ 1.213p per kWh | 90.97  |
|                 |               |          |              | Standing Charge  | 37.50  |
|                 |               |          | 7,500        | @ 0.15p per unit | 11.25  |
|                 |               |          |              |                  | 139.72 |
|                 |               |          |              | VAT @ 17.5%      | 24.45  |
|                 |               |          |              | TOTAL AMOUNT DUE | 164.17 |

Figure 4: CCL on standard energy bill

Some previous studies have shown that there was poor awareness of this levy and the mechanisms related to it. The work carried out in this study shows that many businesses are still unaware of the environmental tax they pay on their energy consumption and very much unaware of the mechanisms, which govern the use of revenue generated by this tax. The tax is not neutral for individual businesses, but only for the business sector as a whole. This report shows both positive and negative financial implications exist for different businesses and gives evidence that the tax is primarily negative financially for the pub sector.

### **2.1.2 Recycling Revenue from the Climate Change Levy**

The revenue generated will be recycled in exact terms as follows;

- 1. Reductions in national insurance contributions.** Every employer is required to pay a national insurance contribution for each staff member employed. This payment has been cut by 0.3% for each employee in the entire business sector in an attempt to make the climate change levy a neutral tax meaning there is no gross revenue for the government from the levy.
- 2. Enhanced Capital Allowances.** ECAs allow a tax break for purchase of energy efficient technologies, this means that if a certain technology such as energy efficient lighting or heating, refrigeration or energy efficient motors are certified by the government as being energy efficient then they can be purchased by a business and written off against taxable profits. A list of approved technologies under the following headings is on the **UK Energy Technology List** [10].

**MOTORS  
GOOD QUALITY CHP  
BOILERS  
LIGHTING SYSTEMS  
VARIABLE SPEED DRIVES  
REFIGERATION  
PIPEWORK INSULATION  
THERMAL SCREENS  
HEAT PUMPS FOR SPACE HEATING  
RADIANT AND WARM AIR HEATERS  
SOLAR THEMAL SYSTEMS  
COMPRESSED AIR EQUIPMENT**

Approved lists are dynamic and new technologies are added to the lists as they are proven. Technologies, are expected to be withdrawn from lists as they become “standard practice”[5]. The carbon trust is responsible for managing, promoting and monitoring the government ECA scheme. This includes assessing new technologies to expand the energy technology list on a monthly basis.

**3. Action Energy** (formerly the Energy Efficiency Best Practice Programme). This scheme provides free advice via telephone help lines and web sites. Trained advisers can arrange free energy audits for companies with an energy bill of over £5,000 and as well as interest free loans for investment in energy efficient technology. A wide range of best practice publications are available free by post from simple design of efficient outdoor lighting to extensive and technical briefings on energy efficiency for individual business sectors such as printing or leisure centres.

Details of the mechanisms for recycling revenue generated from the climate change levy, and associated programmes, which have been developed, are given in the following sub sections. This report concerns the level of neutrality of the climate change levy for different businesses and assesses the level of awareness for enhanced capital allowances and services/loans offered by the action energy programme. If business owners are not aware of incentives and subsidies for increasing energy efficiency then they are less likely to act and more importantly they cannot benefit from tax they pay. The level of awareness in the pub sector for financial and other help available is poor and this is outlined in the results section.

### **2.1.3 Alternative Investment for Climate Change Levy Revenue**

The major recycling mechanisms for levy generated by the CCL are outlined above and discussed in greater detail below. This is the situation as it stands, however there could have been alternative mechanisms for investment of revenue generated by the CCL.

Before the conception of the CCL the electricity industry preferred the option of emissions trading over taxation, visualising this approach as providing greater reductions for less cost. As it stands today both are a reality.

The table below shows the business as usual forecast for emissions taken from the UK climate change programme consultation paper [11]. This accounts only for measures already agreed.

CO2 Emissions (MtC)

| <i>End-Use Sector</i> | <i>1990</i> | <i>2010</i> | <i>Change</i> |
|-----------------------|-------------|-------------|---------------|
| Domestic              | 43          | 38          | -12%          |
| Business              | 87          | 85          | -2%           |
| Transport             | 38          | 40          | +5%           |
| Total                 | 168         | 163         | -3%           |

One interesting study commissioned by the electricity association [12] revealed that if the UK pursues 20% of CO<sub>2</sub> reductions in each sector savings beyond the business as usual forecast will be required.

For the business sector:

|                                    |           |            |
|------------------------------------|-----------|------------|
| 1990 CO <sub>2</sub> emission      |           | = 87 MtC   |
| Target in 2010                     | = 87-20%  | = 69.6 MtC |
| Business as usual emission in 2010 |           | = 85 MtC   |
| Further reduction needed           | = 85-69.6 | = 15.4 MtC |

The electricity association produced estimations that in the business sector a 4.4 MtC reduction could be achieved by cost-effective measures. The climate change consultation paper gave CO<sub>2</sub> reductions for government proposed CHP and renewables targets. Allocating the business sectors share of these two meant the three together could deliver to 8.6MtC reductions. This left 6.8 MtC reduction required from the business sector over the longer term.

#### *Business Sector: Emissions Reductions*

---

|   |          |
|---|----------|
| 20 per cent emissions reduction         | 15.4 MtC |
| Potential savings available             |          |
| Cost effective energy efficiency        | 4.4 MtC  |
| CHP (10 Gwe installed)                  | 2.4 MtC  |
| Renewables (10 per cent target)         | 1.8 MtC  |
|   | 8.6 MtC  |
| Further savings required = 15.4 – 8.6 = | 6.8 MtC  |

---

Estimates of capital investment required to induce this reduction is given below.

#### *Capital Costs of Business Sector Measures*

|                                  |  |
|----------------------------------|--|
| Capital cost of measures         |  |
| Most cost-effective (8.6 MtC)    | £1,000/tC                                    |
| Further measures (6.8 MtC)       | £1,500 to £2,500/tC                          |
| Capital cost to deliver measures | 8.6M x 1,000 = £8.6 bn                       |
|                                  | + 6.8M x (1,500 to 2,500) = £10.2 to 17.0 bn |
|                                  | <i>Total cost = £18.8 to 25.6 bn</i>         |

The total capital to deliver both the cost-effective and longer-term measures would be in the range of £18.8 to £25.6 billion. The Climate Change Levy is designed to raise £1.75 billion per year, or £17.5 billion over the ten years to 2010. This is an amount approaching that of the total capital cost for measures delivering a 20 per cent CO<sub>2</sub> reduction by 2010 in the business sector.

Given that the government chose to reduce NICs with revenue from the CCL this plausible option seems almost impossible to achieve.

One alternative for investment could have been to use CCL revenue to provide 50% of funding to energy saving projects. This could easily have been achieved even with a lower levy than that introduced. Direct grants could have been issued via energy services companies (ESCOs). This proposal would have been particularly beneficial to SMEs given that CCAs are not an option for most SMEs. Distribution of funding could have been overseen by a special body similar to the way in which the energy saving trust oversees domestic energy efficiency projects undertaken by public electricity suppliers.

This measure alongside the set up of CCAs for larger energy intensive companies may have delivered greater carbon reductions to the business sector as a whole inclusive of SMEs which as this work reports represent businesses which are not provided the incentive to increase energy efficiency.

#### **2.1.4 Benefits of Alternative Revenue Recycling**

An approach, which recycles most or all of the revenues in this way, provides a number of benefits:

- It delivers a much higher level of CO<sub>2</sub> reduction from the business sector.
- It creates less of a divide between different companies in terms of benefits since SMEs and low energy consuming enterprises can gain up front subsidies for projects. Energy efficiency measures arising from the CCL and CCAs alone generally provide most benefits to higher energy users. The existing mechanism for reduced NICs clearly rewards companies of high energy to staff ratio's.
- It helps to maintain UK industries' competitiveness and it stimulates business and employment opportunities in areas such as energy efficiency services.

#### **2.2 Enhanced Capital Allowances (ECAs)**

As discussed in section 1.5.4, £100 million of revenue generated from the levy has been allotted to enhanced capital allowances. Enhanced capital allowances allow businesses of all sizes to claim capital allowances on plant and machinery. This will allow 100% first year allowances on selected plant and machinery that meet energy efficiency criteria. Businesses will be able to

write off the whole cost of their investment against their taxable profits of the period during which they make the investment.

The enhanced allowances scheme is intended to encourage businesses to invest in energy saving equipment. Under the scheme, expenditure on technologies and products on the energy technology product list (already contains over 4000 products) can qualify for a 100% first year allowance if:

- For a business in the charge to corporation tax – it is incurred on or after 1 April 2001.
- For a business in the charge to income tax – it is incurred on or after 1 April 2001 and the period of account to which the expenditure relates ends on or after 6 April 2001.

As stated in section 2.1.2 the energy technology list is added to each month as new technologies are proven. The scheme was designed around a model operating in the Netherlands.

Key features of the scheme include:

- All businesses will be able to claim capital allowances, regardless of size, industrial or commercial sector or location except where the assets are leased in the course of the business;
- Enhanced capital allowances will permit the full cost of the investment in specified technologies to be relieved for tax purposes against taxable income of the period of the investment.
- The qualifying technologies will have to meet defined energy saving criteria. They will be published in a list, and the criteria will be reviewed on an annual basis;
- There are no territorial restrictions on manufacturers wishing to place their products on the list or the source of products;
- Only investments in new and unused machinery and plant can qualify.

## **2.3 The Carbon Trust**

The carbon trust is an independent not for profit company set up by the government at the onset of the climate change programme in April 2001 with support from business to “take the lead on low carbon technology and innovation in this country, and put Britain in the lead internationally” (Tony Blair).

Key Aims and Objectives

- Ensure that business and the public sector meet ongoing targets for carbon dioxide emissions
- Improve the competitiveness of UK business through resource policy
- Support the development of a UK industry sector that capitalises on the innovation and commercial value of low carbon technologies.

Key functions



The Carbon Trust is developing and implementing programmes that will accelerate the take up of low carbon technologies. This includes:

- Developing and delivering the **Action Energy Programme** to provide independent information and impartial advice for energy users in the non-domestic sector
- Developing and promoting the **Enhanced Capital Allowance Scheme** to encourage investment by business in qualifying energy efficiency measures.
- Investing in the development of low carbon technologies in the UK
- Coordinating and brokering between developing technologies and funding partners.

Funding to the Carbon Trust comes from DEFRA, the Scottish Executive, the national assembly for Wales and the Northern Ireland Assembly, and in part from climate change levy receipts. Offices are based in London, Glasgow, Lisburn and Cardiff.

In practical terms the carbon trust assists UK businesses to reduce CO<sub>2</sub> emissions through a number of programmes which fund and support technological innovation and the adoption of more energy efficient working practices. It works in a similar fashion to a venture capitalist company, seeking the best CO<sub>2</sub> emission reductions, rather than a specific financial return, although returns will be sought where possible. The major aim will be to fund projects with a strong probability of becoming commercially sustainable. Essentially the trust is positioned between government, business and the public sector [13].

This research is concerned with the climate change programme and energy efficiency of small businesses and so the element of the carbon trust relevant to this study is action energy, which will now be discussed.

### **2.3.1 Action Energy**

Action energy is an energy efficiency programme run by the carbon trust and launched in June of 2002. Action Energy was introduced specifically to help businesses and organisations cut their energy costs through the provision of free, professional advice and assistance. This programme is very highly geared towards the SME sector, which is responsible for significant amounts of CO<sub>2</sub> emissions in the business sector. Cutting energy use in this sector is considered central to meeting targets for a move towards a low carbon economy.

Action energy was formerly known as the energy efficiency best practice programme and has been renamed since it now provides advice to all types of organisation. The focus of this programme has been stated as “providing easy access to easy to understand information” [13]. The services offered include a free action energy help line providing expert advice, online information, publications providing basic and technical information and free energy surveys to identify opportunities for energy savings. More recently action

energy is able to provide interest free loans worth £10 million for England and Wales available to SMEs requiring capital investment in order to become more energy efficient. Loans are available between £5,000 and £50,000 repayable over four years. Such loans were previously already available in Scotland and Northern Ireland and the purpose of loans in all four areas is essentially the same although application procedures differ in Scotland.

#### **2.3.4 Action Energy Loans**

Although many energy saving measures involve little or no expenditure, some organisations find that they need to invest in new equipment in order to reduce their energy consumption. Most companies could cut their energy costs through simple low-cost or no-cost measures, however some might find that investing in energy saving equipment could lead to even more significant savings in the longer term. Finding the capital needed to make these investments can be difficult for some small companies.

Action Energy loans are available to SMEs that have been trading for at least 12 months. The Carbon Trust and Action Energy defines an SME as a business with no more than 250 employees, an annual turnover of less than £25 million or an annual balance sheet total under £17million. Loans are not yet available to the transport sector or those linked to the production, processing, or marketing of agricultural or fisheries products. Loans are only given to companies that can demonstrate that investments made will produce significant energy savings. A project promising first five-year energy savings greater than the loan value may qualify. Examples of equipment that can offer considerable energy savings and would be viable for loans include:

**Energy saving lighting**

**High efficiency electric motors and drives**

**Boilers and heater controls**

**Building Insulation**

**Compressed air system and fittings**

**Insulation for boilers, builings, hot water tanks and pipework**

**Heat recovery systems**

**Lighting controls**

**Power factor correction**

**Water controls**

**High efficiency heating**

This list is not exhaustive and any investment that will lead to increased efficiency and thus reduced emissions would be considered.

Loans may also be used to cover installation and commissioning as well as equipment provided payback is still met.

Formal steps involved in obtaining a loan are as follows [14].

1. Contact Action Energy on the helpline or fill out an eligibility form.
2. After initial eligibility check each proposal is assessed on technical merit and energy saving potential. If an applicant has not yet specified

- equipment and a chosen supplier Action Energy can offer free technical advice. An applicant must get their own quotations for the project from a supplier and make a decision on whether to invest.
3. Financial information sufficient for a credit check must be supplied to action energy
  4. Action Energy will assess the full application and if deemed appropriate, offer the loan. The applicant may then order the equipment, and the loan will be forwarded to the applicant on receipt of a copy of the suppliers invoice to the company.

Action energy looks to make a loan decision within two weeks of receiving the formal loan application.

Further considerations for loan application include:

Action energy interest free loans are considered state aid and this is limited to £60,000 in any three year period. Applicants will be asked to declare they are not receiving other aid that would cause them to exceed this limit.

Applicants must fall into the EU definition of an SME, which has been stated above.

Carbon Trust and Action Energy reserve the right to manage loans by limiting applications from certain sectors, or through loans of certain sizes, or based on other criteria.

Loans are repayable over a four year period in equal instalments by monthly direct debit. Repayments must be made even if a project does not achieve the savings expected. Carbon Trust also reserves the right to offer loans with different repayment terms on a case by case basis [13].

### **2.3.4 Loan Action Scotland**

Although Scottish enterprises can benefit from the action energy programme as an advice and auditing centre the interest free loans only apply to businesses in England and Wales since a similar scheme has already established itself in Scotland.

Loan Action Scotland is funded by the Scottish executive through The Scottish Energy Efficiency Office (as well as receiving additional funding through the European regional Development Fund), and is operated by the Energy Saving Trust. Like those provided by action energy the scheme provides interest free loans of £5000 to £50000, so that companies can take action to reduce their energy bills. The loans can have a repayment period of up to 5 years, and are available to companies based in Scotland, with up to 250 employees.

#### **Criteria for Funding**

The criteria for loan eligibility is as follows [15]; A company must:

- Be based in Scotland
- Have up to 250 employees

- Have been trading for 12 months
- Intend to use the loan for installation of energy efficient measures
- Be applying for a loan of £5-50,000
- Be able to provide evidence, through advice from the Environment and Energy helpline or other reputable consultants, of the proposed measures to be installed and the potential savings (annual savings in kWh per fuel type)
- Agree to repayments within 5 years
- Be able to provide financial information which shows that the company is trading at a profit.
- Be eligible for funding within the context of EU State Aid Rules

Preference is given to those companies that already have, or are developing, an environmental/energy policy.

Applications are considered on the basis of essential criteria set out on the loan form and potential for energy savings. All loans are subject to a credit check and energy saving trust must see a set of the applicants latest audited accounts, the most recent forecast for the forthcoming financial year and details of any charges against the company [15].

### **Additional Information**

Successful candidates must sign a direct debit mandate in favour of the energy saving trust for the loan repayment. This is the only accepted method of repayment.

- Loans are advanced to companies on receipt of copy invoices for work carried out
- Funds are limited and the scheme operates on a first come first served basis
- Installations for which loans are granted will be subject to a site inspection to verify that the installation complies with the scheme conditions
- End users must also agree, if chosen to co-operate with an energy monitoring exercise
- Only one loan per company is permitted at any time.

Some businesses can benefit greatly from interest free loans and certainly loans are central to investment and growth for enterprises of all sizes. Although a credible case study is reported below, there are still very many businesses within the SME sector which are unable to benefit these attractive incentives for energy efficiency simply because they are not aware they exist. The government has not yet promoted these subsidies and schemes to the market place. This may be because funds are limited and therefore since loans are on a first come first serve basis there is no point in promoting them too much when there is not enough to go around. Whatever the reason may be certain sectors are missing out on valuable benefits. Since in the future it is likely that all business will be required to reduce energy consumption to set

targets, it is possible that those that are unable to progress now due to constraints in time money and a fundamental ignorance to incentives will be penalised with a last minute capital cost at a later date.

The general awareness of available help and subsidies is analysed in this report for the pub sector.

### **2.3.4 Case Study Loan Action Scotland**

Some cottages in the Glencoe region of Scotland within the Glencoe village recently benefited from an interest free loan. Torren self catering cottages shown below successfully applied for a total loan of £25,000. The total cost of measures taken was £33,000 and payback was negotiated over 6 years.



**Figure 5: Torren Self Catering Cottage**

Measures taken included the installation of a central heating woodchip boiler and distribution pipework. Underfloor heating in each cottage, wet heating and MHRV (mechanical ventilation heat recovery fan) for drying room, loft insulation. All these measures combine to form an effective district heating system which is both cost effective and environmentally friendly.

Prior to these measures being installed, electric storage heaters inadequately heated three cottages. The location of the cottages means they are continually in use throughout the year, with peak periods in winter as well as summer. This placed additional strain on the old heating system, The floors also were a problem and tended to sweat and were prone to condensation.

Estimated energy savings are £5000 per annum which represents an annual saving of 100,000 kWh, and a reduction of 30 tonnes per year of CO<sub>2</sub> emissions [15].

## **2.4 Climate Change Agreements (CCA)**

The government has negotiated with 43 trade associations enabling respective trade associations to offer discounts of 80% to their members.

Discount schemes where 80% discounts on climate change levy are given require companies to set up a climate change agreement with the appropriate trade organisation. To achieve the discount a business is required to take on

set energy reducing practices in order to adhere to set CO<sub>2</sub> reducing targets. The business will be required to reduce its energy consumption by an agreed amount in a set time. If this is achieved then through membership of the relevant trade association and comparison of “before” and “after” energy consumption the business can negotiate an 80% reduction in the payment of climate change levy.

The company is then free to spend the discount as they please although reducing energy consumption in order to conform to targets will have most likely required some sort of investment in energy efficient practice/technology perhaps in the form of new equipment or staff training. There will also be a charge for membership of the trade organisation and this is generally dependant on the size and/or the energy consumption of the business, although criteria for cost of membership differs for different trade associations.

Climate change agreements were introduced because the government recognised that the energy intensive industries required special consideration with regard to the climate change levy. The government defines an “energy intensive” sector as one which carries out activities which are listed under Part A1 or A2 headings of Schedule 1 to the pollution prevention and control regulations. There are ten major energy intensive sectors (aluminium, cement, ceramics, chemicals, food and drink, foundaries, glass, non-ferrous metals, paper and steel) and over thirty smaller sectors. Facilities within these sectors were eligible for discount from 1<sup>st</sup> April 2001 and eligibility from then onwards depends on whether the first targets have been met. Companies which are not members of trade associations will be able to join the relevant sector agreement without having to join the trade association if they wish, however trade associations may charge for administration for such non-members.

#### **2.4.1 Results of Climate Change Agreements**

DEFRA reports that British industry cut CO<sub>2</sub> releases into the atmosphere by 13.5 million tonnes during 2002/03 which is almost three times above targets signed up to under the climate change agreements [6]. Furthermore of 12000 individual sites covered by CCAs, 10500 (88%) met targets and have had their climate change levy discounts renewed. The remaining 125 either did not submit data, dropped out or failed to meet targets and did not have agreements renewed [6].

Many SMEs are eligible for these agreements such as those in the baking, glass and printing industries amongst others. However it should be made clear that the smaller end of SMEs such as are the focus of this study are not in most cases likely to benefit from climate change agreements since the costs of adhering to reduction in energy consumption, membership fees for trade associations and time expended in administration of the discounts is not outweighed by the savings in reduced climate change levy. Indeed many companies do not even have the option to join trade organisations and even then if that business sector is not energy intensive then as discussed such agreements would be entirely inappropriate. Chapter three covers the sector

of SMEs including European and UK economic statistics, environmental practice and awareness. Public houses form the commercial sector focused on in this report. Pubs are represented by the many different licensed trade associations, although in Scotland the majority of pubs, if they are members of a trade association, are members of the Scottish licensed trade association (SLCA), as is the case for all pubs analysed in this research. The SLCA was contacted during this study and questioned on the possibility of negotiated discounts to CCL for public houses.

# **Chapter 3**

## **Small and Medium Sized Enterprises (SMEs)**



### 3.1 SMEs Size Definition

There is no single definition of an SME and different surveys and statistics vary slightly in their definitions. The governments small Business Service defines businesses according to the number of employees they have. Micro–businesses are those with 0-9 employees, small businesses have 10-49 employees, medium sized businesses have 50-249 employees, and large businesses 250+ employees. These definitions are mostly used by other European countries and since the research outlined in this report is closely concerned with UK government policy and programmes these figures define micro, small, medium and large enterprises discussed in this work.

### 3.2 SMEs In Europe

A staggering 93 percent of European enterprises have less than 10 employees thus the micro- business sector holds the vast majority of businesses in Europe. There are 20.5 million enterprises in the European Economic Area (EEA) and Switzerland, providing employment for 122 million people. Some 93 percent of these enterprises are micro while 6 percent are small and less than 1 percent are medium. Only 0.2 percent are large. Of all these enterprises nearly 20 million are established within the European Union. Two thirds of all jobs are provided by SMEs, one third are provided by large companies. Within SMEs, the total employment is split roughly equally between micro enterprises (0-9 employees), and small and medium-sized enterprises. As far as employment is concerned size-class distribution varies between countries. For example the share of micro enterprises in total employment is 48% in Italy but 57% in Greece. On the other hand the share of large enterprises in total employment is over 45% in Iceland and the UK. The average European enterprise employs 6 people. This figure is inclusive of all major companies including The Royal Dutch Shell Oil Company, Siemens, Nokia and Citroen. The table below displays these figures for enterprises in Europe [17].

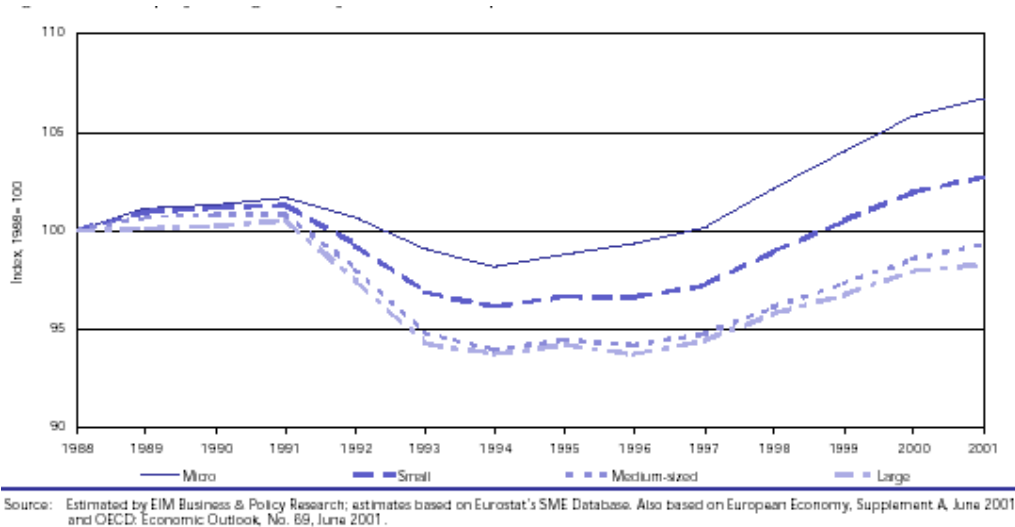
|                                      |         | SME    | Large  | Total   |
|--------------------------------------|---------|--------|--------|---------|
| Number of enterprises                | (1 000) | 20 415 | 40     | 20 455  |
| Employment                           | (1 000) | 80 790 | 40 960 | 121 750 |
| Occupied people per enterprise       |         | 4      | 1 020  | 6       |
| Turnover per enterprise              | Million | 0.6    | 255.0  | 1.1     |
| Share of exports in turnover         | %       | 13     | 21     | 17      |
| Value added per occupied person      | 1 000   | 65     | 115    | 80      |
| Share of labour costs in value added | %       | 63     | 49     | 56      |

Source: Estimated by EIM Business & Policy Research; estimates based on Eurostat's SME Database. Also based on European Economy, Supplement A, June 2001 and OECD: Economic Outlook, No. 65, June 2001.

**Table \*\*\*: The basic facts about SMEs and large enterprises in Europe [34].**

The average European SME employs only 4 people. There are large differences between countries also. In Greece an enterprise has on average 2 employees while in Italy this number is 3 and in Ireland an enterprise has on average 10 employees. Most jobs in Europe are created by micro enterprises.

Large enterprises lost jobs between 1988 and 2001 while employment in SME sector increased. As shown in figure 6, in the early years this growth was concentrated in micro and small enterprises, as employment growth in medium and large enterprises did not start until 1997.



**Figure 6: employment growth by size class 1988-2001**

In 2001, employment growth slowed down in both SMEs and large enterprises with most severe slowing in large enterprises.

With an average size of 6 people European enterprises are relatively small. An average Japanese enterprise employs 10 people and an average American enterprise employs 19 people. Therefore SMEs account for only 33% of employment in Japan and 46% in the United States. SMEs in Europe account for 66% of total employment.

Countries like Germany which have high gross domestic product (GDP) tend to have larger sized enterprises while countries such as Greece Portugal and Spain who have a lower GDP tend to have low average enterprise size. These economic trends do not explain the differences between continents, which are attributed to different economic and political structures.

Many European enterprises have ambition for growth while more micro sized enterprises are concerned with the struggle to survive. Again national differences exist. 41% of SMEs in the UK want growth while in Austria German and Finland only 15% seek growth. [17].

Loans are often important for SMEs in surviving hard times and investing for growth. Of those SMEs that needed a loan on the last 3 years almost 84% obtained the loan. Only 12% of SMEs were refused the loans they needed. Loans were refused on the grounds of lack of collateral, poor business performance and insufficient information. The questionnaire in this report looks at the awareness of SMEs for interest free loans available to them for investment in Energy efficient equipment/practices.

Clearly SMEs play a massive role in providing to the European economy both in providing a greater overall turnover than large companies as well as providing almost double the employment of large companies. The next section shows a more focused picture for SMEs in the UK re-emphasising the importance of SMEs, but on a national level.

### 3.3 SMEs UK

Of the 3.7 million businesses in the UK, only 7,000 (0.2%) are large firms. 24,000 firms are medium-sized which leaves almost 99% of businesses which are small or micro sized. The small business population size is up by over 50% since 1980 and there is one small business or sole trader for every 13 adults living in the UK. The combined annual turnover for SMEs is around £1 trillion and they employ 12 million people in the UK which constitutes around 55% of the private sector workforce [17].

The UK ranks as the 11<sup>th</sup> best place in the world for starting a new business according to business executives surveyed in the World Economic Forum. Since 1997 1.3 million new businesses have started up and nearly 130,000 more businesses have started up than closed down in the last three years. The average age of a UK business is 7 years and one in every 30 adults (1.4 million) is actively trying to start up a new business at any one time. Percentages for total business, employment and turnover for SMEs and large companies in the UK are given in the table below.

| Profile of Small Firms in The UK 2001 |       |         |          |        |
|---------------------------------------|-------|---------|----------|--------|
|                                       | Micro | Small   | Medium   | Large  |
|                                       | (0-9) | (10-49) | (50-249) | (250+) |
| % total business                      | 94.9  | 4.1     | 0.6      | 0.2    |
| % total employment                    | 30.2  | 13.3    | 11.4     | 44.9   |
| % total turnover                      | 22.8  | 14.4    | 13.9     | 48.8   |
| DTI SME statistics 2001               |       |         |          |        |

The UK government recently (April 2000) set up The Small Business Service which is responsible for the network of Business links which provide information, advice and access to experts on all issues relating to running your own business. It also runs national services to help small firms such as the benchmarking service, the small firms loan guarantee scheme, the high technology fund and smart grants for technology transfer.

The international benchmarking study 2002 undertaken by the department of trade and industry (DTI) suggests that 63% of micro firms and 83% of small firms are connected to the internet, and 26% of all businesses are trading online.

There was an estimated increase of 3.8 million business enterprises in the UK at the start of 2002, and increase of 1.4 % on the start of 2001. At the start of

2002 SMEs accounted for more than half of the business turnover and employment in the UK (figure 7).

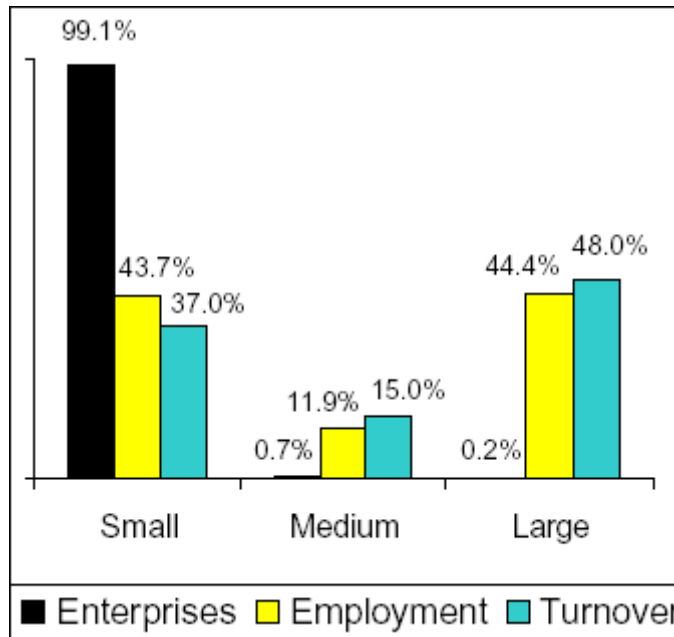


Figure 7: share of businesses, employment and turnover by size of business

UK business enterprise employed an estimated 22.7 million people, 43.7% in small and micro enterprises and 11.9% in medium sized enterprises. As shown above the estimated combined turnover was divided between SMEs and large firms with SMEs having the majority by a margin of 5.6% [17]

### 3.3.1 SMEs and Job Creation

Although large firms are responsible for almost half of UK turnover there is no doubt that SMEs are the major job creators.

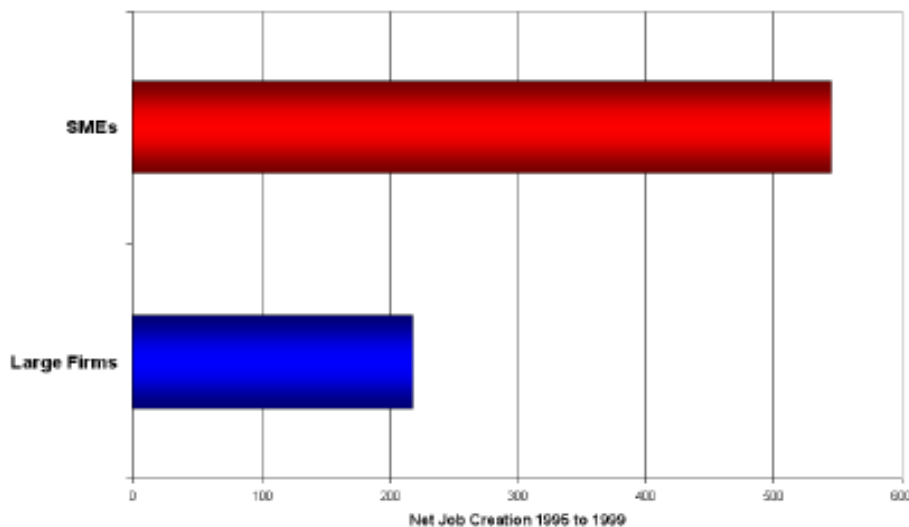


Figure 8: SME job creation.

More precisely the figure below shows that it is the very smallest firms which contribute most to job creation.

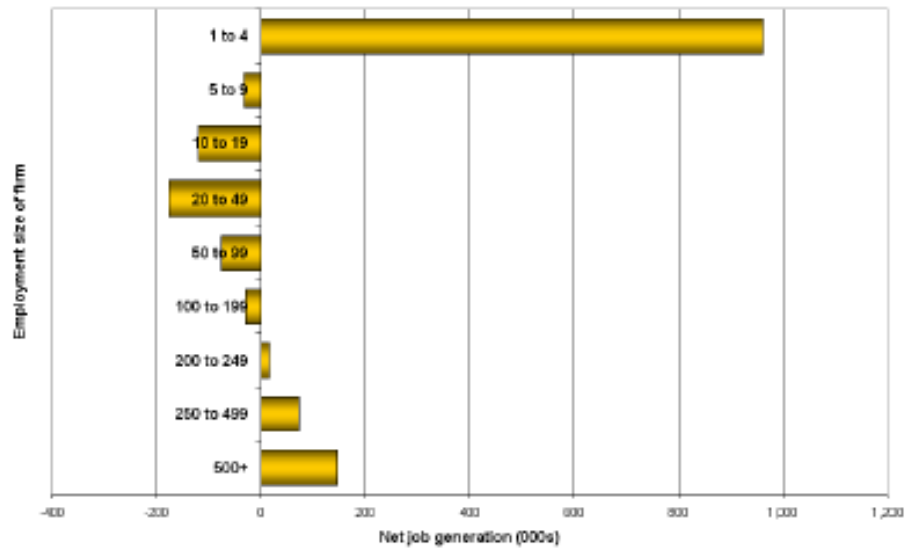


Figure 9: net job creation 1995-99 by size of firm.

The process of creating jobs is extremely important for economic growth and the place of SMEs in this picture is further emphasised when considering how SMEs actually contribute to large firm employment through the growth of firms from SMEs. This is shown graphically below.

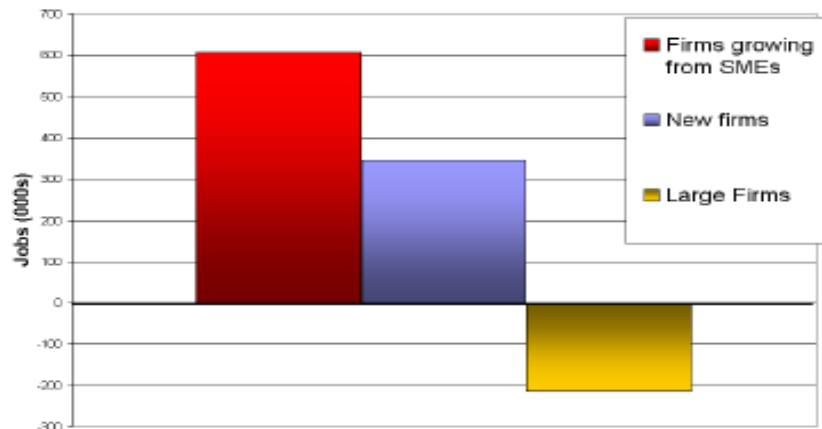


Figure 10: How SMEs contribute to the increase in large firm employment.

Overall SMEs create jobs and today's SMEs are the large firms of tomorrow. Small businesses feed off and service medium sized and large enterprises in regional areas. Many large enterprises would struggle to, or even not survive without the small firms which contribute to their supply chain.

SMEs in the UK are responsible for greater turnover than large companies, greater job creation and represent the sector of most employment. It is therefore right that they should receive due attention from the government in

terms of appropriately designed policy, which is fair and not discriminating to smaller businesses [18].

### 3.3.2 Economic Growth, Energy Consumption and Emissions

Lastly it is important to realise that SMEs play a massive part in what is comparably a booming economy in the UK. One of the major challenges that faces the UK over the coming years is to break the link between economic growth, energy consumption and emissions. The chart below shows that the UK has had some success with uncoupling energy consumption from economic growth and, to a lesser extent, energy consumption from carbon dioxide emissions. This is only a fraction of the improvement that will be needed to meet the longer term CO<sub>2</sub> reduction targets.

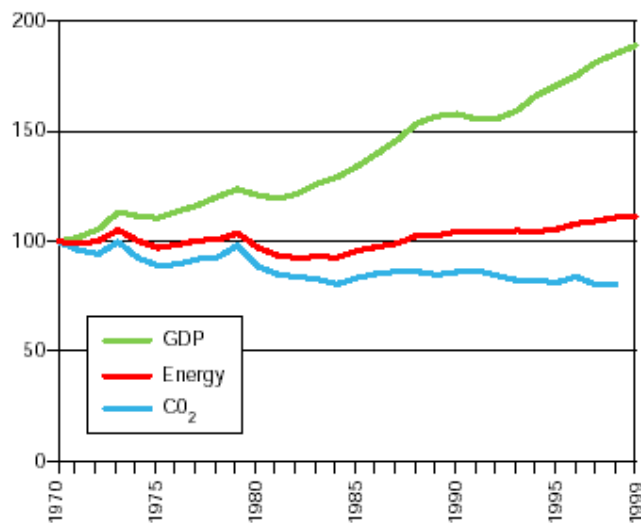


Figure 11: Uncoupling economic growth from energy consumption and CO<sub>2</sub> emissions

### 3.4 SMEs and the Environment

Despite recognising the business benefits of becoming more environmentally friendly, many smaller Scottish businesses are failing to take practical measures to reduce their impact on the environment. Only a quarter of Scottish SMEs have any environmental policy in place [19].

The government has recently been part to the largest ever UK-wide study into the environmental behaviour of SMEs. This study was undertaken for NetRegs (a unique web resource designed to help SMEs navigate the environmental legislation that affects them) and is titled “SME Environment Scotland” The following sub sections report some of the results and conclusions drawn from this survey [19]

Of 785 SMEs surveyed in Scotland only 22% of respondents had implemented any measures at all to reduce harm to the environment. Of these the most common form of practical action was to appoint a member of staff to take care of environmental matters. Of the respondents who took positive action only 18% had taken measures to improve energy efficiency.

Of those companies with an environmental policy in place only 18% had a stand alone policy, 35% included the policy in the overall business plan and the majority 41% had an informal management aim to address environmental issues.

### **3.4.1 Environmental Management Systems**

A formal environmental management system (EMS) – such as the ISO 14001- identifies and quantifies the impact of a business on the environment and helps ensure legislative compliance and improved management control. An EMS primarily addresses waste minimisation and improved energy efficiency. Only 7% of businesses have an EMS in place and only a further 1% has any plans to introduce one. This is likely to be a result of ignorance about what an EMS is and the potential benefits and costs entailed. Interestingly the up take in Scotland is reported as more than twice that for the UK as a whole where only 3% of SMEs surveyed had an EMS in place.

### **3.4.2 Legislative awareness**

All businesses face increasing amounts of legislation environmental or other and there is continually more in the pipeline from Brussels. That legislation which is most important to financial prosperity is likely to take precedence over environmental policy. Only 20% of SMEs surveyed could name any environmental legislation. This figure increased four fold when owners were prompted and the most recognised piece of legislation was the Environmental Protection Act.

### **3.4.3 Motivation For Change**

Legislation and a general concern for the environment play big parts in motivating businesses to take on positive environmental action. The survey revealed that these were the two major driving forces while very few businesses could actually name potential business benefits for taking on positive action. From those who had actually taken positive action (eg Implementing an EMS) 51% were motivated by general concern for the environment, 49% by legislative pressures, 7% by potential business benefits and 4% by parent company pressures.

### **3.4.4 Getting Help**

Local authorities are most likely to be asked for assistance on environmental matters by small businesses. Of the 38% of businesses that had sought help on at least one occasion, 62% had contacted their Local authority, 44% had contacted the Scottish Environmental Protection Agency (SEPA) and 29% had contacted a waste company. 46% of businesses asked said they would like more information and advice on environmental issues in the future and the proffered delivery medium for this information was paper format followed closely by the internet and face to face/telephone.

Overall the SME environment survey, which has only been touched upon here, revealed that there is a serious lack of awareness by SMEs to environmental obligations. Poor awareness of business impacts on the environment was a clear statement as well as poor awareness of environmental legislation. Time and staff resource pressures on SMEs concurrent with a slow down in the economy are considered the major contributors to delivering such low priority to environmental issues.

Some of the business incentives for taking positive environmental action include the following:

- Recognising that good environmental management equals good business management and that in the future pressure from the supply chain will mean good environmental practices win orders preferentially
- Reduced operating costs
- Improved competitiveness in line with point 1
- Reduced risk of prosecution
- Good customer relations
- Increased sales and profitability
- Motivating the work force

Many large companies are well aware of the business benefits of fulfilling basic environmental obligations. This is partly because they have been directly targeted by government schemes or trade organisations and have had the portrait of real benefits illustrated to them. Small companies on the other hand represent a greater diversity of business sectors far more widely dispersed over the nation. This is thus a far harder zone to categorise and target for reducing energy consumption. As research both from the SME environment survey and that carried out by this piece of work reveal, SMEs are not aware of the benefits to implementing an EMS (although many have taken positive action to save energy) or for that matter the government delivered incentives to promote them to do so. The benefits are dissimilar and less for smaller firms and the time and staff required to profit subsidies and incentives provided are less also.

The main points of awareness (benefits, legislation, aid), promotion and delivery of information and services outlined in the SME environment survey are very important and will be discussed again in the results analysis section since much of these outcomes are mirrored in the results of this research.

Public houses have been the focus of this investigation and unfortunately it has proved very difficult to obtain statistics on this sector illustrating their economic value to SMEs as a group. They generally come under hospitality statistics including pubs, restaurants and hotels or licensed traders which includes restaurants, hotels, pubs, off licenses, stores which may sell whiskey to tourists, licensed cafes and entertainment licenses amongst other more obscure licensed traders. Statistics for these general groups are not representative of public houses alone. Numbers provided by the Scottish Licensed Trade Association for the later group indicate there are 17059 licensed premises in Scotland and 1412 within the geographical area of the Highlands and Islands where this work was undertaken [20].



# **Chapter Four**

## **Data Gathering Procedures**

## 4.1 Economic Case Studies

Business owners were contacted with the proposal of participating in this study. An analysis of their business energy consumption over the last year was proposed. Business owners were made aware that accounts including the full years energy bills including climate change levy paid, the overall wage bill for the year and the number of staff employed were required for the study. Nine businesses responded positively which have since been reported in this study. They consisted of 5 public houses, a hotel/pub/restaurant, a Renault car dealership, a carpet retailer and a printing firm. In order to achieve this support the researcher provided assurance to certain businesses that the staff wage bill for the year would be used in calculation but not directly reported in the study. Where business owners were willing the staff wage bill has been reported.

The data gathered was then analysed to determine the financial position of different businesses with regard to the Climate Change Levy.

The Levy Paid (in case studies reported energy consumption consisted of gas and electricity only) on energy consumption was summed as read from energy bills.

The government taxes business energy consumption through the Climate Change Levy and returns this revenue to business by reducing employer paid national insurance contributions. This number had to be calculated. The number of staff employed and annual wages bill for the companies were used to calculate the reduction in national insurance contributions received by respective businesses. This calculation is outlined below and was carried out in a work book designed in excel.

1. The annual wage bill inclusive of national insurance payments for all employees in the company in the case of ltd companies or excluding salaries of owners in other cases was noted and divided by the number of employees. Thus an average annual wage was calculated.
2. For the average wage the sum of £84.32 was deducted since this is the proportion of any individuals salary that is exempt to national insurance payments. This number was then multiplied by 0.003 (0.3 percentage points) as is the government reduction.
3. By multiplying this number by the number of employees the total reduction through recycled NICs was calculated.
4. This number was then subtracted from the Climate Change Levy costs for the year to establish a net financial gain or loss for respective companies studied.

## 4.2 Questionnaire

A questionnaire was designed [21] and handed out to forty public houses in and around the area of Inverness. The questionnaire was delivered to establishments and filled out by company owners. A copy of the questionnaire which was geared towards assessing a level of awareness for certain aspects of the UK governments climate change programme is given below.

### **UK Climate Change Programme and Small Businesses**

As Part requirement for an MSc in Energy Systems and the Environment at the University of Strathclyde I am undertaking a dissertation intended to show the impact of the **governments climate change programme** on small businesses (pubs).

I would be very grateful if you could find the time to fill in the following questionnaire. Please note all information will be compiled to show a broad picture and no individual businesses will be quoted in name.

1. Please state the number of employees in your business?

2. Are you aware of the climate change levy?

Y/N

3. Are you aware that you pay climate change levy on your energy bills (gas, electricity, coal, LPG)?

Y/N

4. Are you aware that the climate change levy is designed to be neutral and as an employer you automatically receive a 0.3 percentage point reduction on the national insurance contribution you pay for each of your employees?

Y/N

5. Do you think this mechanism of recycling revenue generated from the climate change levy is useful in stimulating increased energy efficiency?

Y/N

6. Given the following options which do you consider the best option for investing the revenue generated by the climate change levy in order to increase incentive for energy efficiency in the business sector?

A. Recycle the tax by reducing employer national insurance contributions for employees.

B. Put the revenue generated, into a fund, which provides grants to businesses for investment in energy efficient technology such as boilers, lighting systems, insulation and refrigeration.

C. Put the revenue generated into a fund, which provides grants to businesses, for investment in energy efficient technology, which are proportional to any individual business sectors energy consumption.

7. Have you installed any energy efficient equipment since April 2001? (this might be in the form of energy saving lighting, boilers, insulation, ventilation systems or refrigeration systems).

Y/N

8. Are you aware of enhanced capital allowances, which enable tax-free purchase of certain energy saving equipment on the governments "Energy Technology List"?

Y/N

9. Have you benefited from an enhanced capital allowance for purchasing energy efficient equipment from the governments "energy technology list"?

Y/N

10. Have you consciously taken on any energy efficient practices since April 2001? Measures taken might be as simple as turning more appliances off at night, turning off security lighting during daylight hours or closing windows and doors when heating is on.

Y/N

11. Are you aware of the government's action energy programme, which offers free energy efficiency advice and auditing to small businesses?

Y/N

12. Have you benefited from the governments action energy programme in any form? (this may be as simple as seeking advice from the energy efficiency help line or ordering energy efficiency booklets relevant to your business)

Y/N

13. Are you aware that five year interest free loans between £5,000 and £50,000 are available from loan action Scotland for investment in energy saving equipment?

Y/N

14. Are you a member of a trade association?

Y/N

Thank you for your time in answering this questionnaire

Patrick Honor

# **Chapter Five**

## **Results Analysis and Discussion**

## Economic Implications of The Climate Change Levy

### 5.1 General Case Studies

Case studies were carried out on individual firms in order to establish a picture for the relative impact of the climate change levy on different SMEs in the Highlands of Scotland. Five business sectors have been studied and in each case the climate change levy paid on energy consumption was compared with the recycled national insurance contributions at a rate of 0.3% point reductions per employee. The focus of these case studies was for the pub sector. A list of names and addresses for all businesses participating in case studies is given in appendix A.

#### 5.1.1 Case Study One: Car Dealer, Ness Motors Inverness



Figure 12: Ness motors, Inverness

Ness Motors is a Renault Car dealership with two car garages, one based in the longman industrial estate in Inverness and one based in Elgin both of which come under the same directors. There are 63 employees in this medium sized company and the evaluation of the effect of climate change levy is outlined in tables below. The company primarily sells and repairs Renault cars. The buildings were built in 1984 (Elgin branch) and 1997 (Inverness branch). The new

branch in Inverness is very much more energy efficient with large glass windows reducing heat and light requirements on-looking the indoor show room, modern building insulation, under floor heating and fluorescent tubes/bulbs for lighting. The older building is less well insulated, does not benefit the large glass surface area for light and heat and uses gas boilers for heating as well as portable electric heaters in the winter. The major energy uses include lighting for show rooms and offices (showroom lights remain on all night), heating, garage and veleting bay equipment (including drills, compressed air, powered jacks and a car wash) as well as office computers coffee machines, photocopiers and printers. The company uses gas and electricity in almost equal amounts. The gas is exclusively for heating and hot water (car wash) and electricity is used for everything else.

The company does not come under any climate change levy discount scheme and is required to pay the full tax on energy used.

## **Car Retail Sector**

### **Energy Consumption – Car Retail Sector**

| Energy Source                                 | Annual Quantity (£) | Climate Change Levy |
|---|---------------------|---------------------|
| Electricity                                   | £12504              | £1205               |
| Gas   | £13462              | £1346               |
| Total   |                     | £2551               |
| Total Climate Change Levy                     |                     | £2551               |
| Discount Through NICs                         |                     | £3627               |
| Discount Scheme                               |                     | £0.00               |
| Net effect of Climate Change Levy (per annum) |                     | -£1075              |

It is clear from the above that Ness Motors Renault Garage is a net winner from the climate change levy with a credit of over £1000 pounds annually. This is a result of a high staff to energy consumption ratio.

It should be noted however that the owner Mr S. Lauder and the head accountant Mr G. Fraser perceived that the climate change levy was a burden on their business as neither of them were aware that the business was benefiting from a reduction in national insurance contributions.

#### **5.1.2 Case Study Two: Carpet Retail Case Study, The Carpet Emporium**

The Carpet Emporium is a small retail outlet in Inverness supplying carpets, rugs and hard flooring to businesses and the domestic sector. The building is two story, relatively old and due to the size of the products shipped in and out continuously, large doors have to remain open for a lot of the time which in winter months pump heat out of the building.



**Figure 13: Carpet Emporium, Inverness**

Energy consumption is mainly due to lighting and heating. Lighting remains on all night in the shop display and comprises mainly fluorescent tubes. There is a gas boiler for space heating and hot water and on the shop floor there is a gas blower for heating in the colder months. Above this, one upstairs office contains a computer and there is an electric coffee machine in the tea room.



The two partners employ two other staff and they receive no discount scheme through climate change agreements for this micro sized firm.

| <b>Energy Consumption – Carpet Retail Sector</b> |                     |                     |
|--|---------------------|---------------------|
| Energy Source                                    | Annual Quantity (£) | Climate Change Levy |
| Electricity                                      | £1503               | £150                |
| Gas  | £1306               | £131                |
| Total  |                     | £281                |

| <b>Carpet Retail Sector</b>                   |       |
|---|-------|
| Total Climate Change Levy                     | £281  |
| Discount Through NICs                         | £125  |
| Discount Scheme                               | £0.00 |
| Net effect of Climate Change Levy (per annum) | £155  |

It is clear that the carpet emporium is a net loser from the Climate Change Levy with a net annual cost to the business of £155. This is a result of few low paid staff relative to business energy costs. The business owners thought they were paying the full £281 and were unaware of the reductions in NICs they were receiving.

It is also worth noting that recently the carpet emporium has become a limited company which means the company will receive further reductions for the two higher paid directors and the net effect of the climate change levy will be reduced.

### 5.1.3 Case Study Three:

#### Printing Firm Case Study, The Piccolo Press

The Piccolo Press is small printing firm based in Nairn. The business uses traditional methods and machines from the early 1900s and is the only dye stamper in Scotland. The building is a converted Tesco's freezer centre and dates back to the 1800s. All windows are double glazed and lights and machinery are switched off at night.



Figure 14: Piccolo Press, Nairn

Energy consumption is exclusively electricity to power all the printing machines, photocopiers, gilatines, computers, a coffee machine and lighting.

Two electric boilers provide hot water. Heating is provided by standard electric storage heaters. This small sized company employs eleven people. The company is not a member of a trade association and receives no discounts on the levy.

| <b>Energy Consumption – Printing Sector</b> |                     |                     |
|---|---------------------|---------------------|
| Energy Source                               | Annual Quantity (£) | Climate Change Levy |
| Electricity                                 | £3316               | £332                |
| Gas   | £0.00               | £0.00               |
| Total                                       |                     | £332                |

| <b>Printing Sector</b>                        |       |
|---|-------|
| Total Climate Change Levy                     | £332  |
| Discount Through NICs                         | £447  |
| Discount Scheme                               | £0.00 |
| Net effect of Climate Change Levy (per annum) | -£116 |

The Piccolo Press is clearly a net winner and gains £116 per year. This is a result of the staff and salaries comparing favourably to the tax paid on electricity consumption.

The company was unaware it was paying the climate change levy and of the implications in terms of recycling revenue and stimulating increased energy efficiency. The company has recently become a limited company and sets to gain further from the climate change levy over the next tax year since the overall wage bill will be increased and the company as opposed to the owner will receive greater reductions in national insurance contributions.

#### **5.1.4 Case Study Four:**

##### **Pub/Restaurant Sector Case Study: The Corrie Garth Hotel**

The Corrie Garth is a pub/restaurant/hotel based in Inverness and there are 23 staff members making it a small company. The business is housed in a period building, which has recently been refurbished. It is completely detached has 5 ensuite double bedrooms and one single room, two bars, a bistro restaurant, a kitchen and office.

Energy consumption consists of both electricity and gas. There is one gas boiler for space heating and hot water (a recently installed energy efficient condensing boiler), cellar cooling equipment, low voltage light bulbs and fluorescent

tubes, hot plates in the kitchen and bistro, pumps, an air conditioning unit in the office, coffee machine, a computer, duke box and gas is used for cooking. There is also a ventilator for reducing smoke. The building is well insulated since

refurbishment. The business is not on a Climate Change Levy Discount Scheme.



Figure 15: Corrie Garth Hotel, Inverness

| <b>Energy Consumption – Hospitality Sector</b> |                     |                     |
|--|---------------------|---------------------|
| Energy Source                                  | Annual Quantity (£) | Climate Change Levy |
| Electricity                                    | £6108               | £611                |
| Gas  | £2313               | £231                |
| Total  |                     | £842                |

| <b>Hospitality Sector</b>                     |       |
|---|-------|
| Total Climate Change Levy                     | £842  |
| Discount Through NICs                         | £371  |
| Discount Scheme                               | £0.00 |
| Net effect of Climate Change Levy (per annum) | £471  |

The Corrie Garth is clearly a net loser and pays an annual net tax of £471. This is a result of the high, energy consumption to staff ratio. The company was unaware of the reductions in NICs payments it receives. It is also worth noting that the owner was unaware of enhanced capital allowances, which would have made the recent purchase of a condensing boiler which is on the governments energy technology list eligible for a tax break.

### 5.3 Pub Sector Case Studies

Five pubs have been analysed for the overall effect of the climate change levy. All five premises have one juke box, one bandit, one glass washer, one ice maker, two fridges, a gas boiler, extractor fans. Gas boilers supply hot water and central heating while everything else is powered by electricity. With the exception of the riverslea bar all pubs have one cellar with cooling equipment and pumps. All pubs are reasonably long established businesses and have standard lighting systems. None of the establishments offer any food or accommodation. These individual case studies are outlined below.

### 5.2.1 Case Study 5: Legends Bar

Legends bar in Forres is a lock up property and the business which is micro sized, employs five people. Energy consumption is both gas and electricity for the equipment outlined above.



Figure 16: Legends Pub, Forres

| <b>Energy Consumption – Pub Sector (1)</b> |                     |                     |
|--|---------------------|---------------------|
| Energy Source                              | Annual Quantity (£) | Climate Change Levy |
| Electricity                                | £1277               | £128                |
| Gas  | £316                | £32                 |
| Total                                      |                     | £159                |

| <b>Pub Sector</b>                                |       |
|--|-------|
| Total Climate Change Levy                        | £159  |
| Discount Through NICs                            | £121  |
| Discount Scheme                                  | £0.00 |
| Net effect of Climate Change Levy<br>(per annum) | £38   |

It can therefore be seen that Legends Bar is a net loser from the Climate Change Levy with an annual tax pay out of £38. The owner was unaware of reductions in NICs and thought he was paying out the full amount.

### 5.2.2 Case Study Six: Castle Inn

The Castle Inn has four staff and is a detached building with two bars and one four bedroom flat where the employees live. There is one boiler for the whole premises. The business employs four people making it a micro sized enterprise. Energy consumption entails the use of gas and electricity and is required for the equipment outlined above. The business is based in Forres.



Figure 17: Castle Inn Pub, Forres

| <b>Energy Consumption – Pub Sector (2)</b> |                     |                     |
|--|---------------------|---------------------|
| Energy Source                              | Annual Quantity (£) | Climate Change Levy |
| Electricity                                | £2318               | £232                |
| Gas  | £1903               | £190                |
| Total                                      |                     | £422                |

| <b>Pub Sector</b>                                |       |
|--|-------|
| Total Climate Change Levy                        | £422  |
| Discount Through NICs                            | £74   |
| Discount Scheme                                  | £0.00 |
| Net effect of Climate Change Levy<br>(per annum) | £348  |

It can therefore be seen that Castle Inn is a net loser from the Climate Change Levy with an annual tax pay out of £348. The owner was unaware of reductions in NICs and thought he was paying out the full amount.

### 5.2.3 Case Study 7: Thistle Bar

The thistle bar has five employees and is a micro sized business. It is based in Forres and uses gas and electricity for the equipment outlined above.



Figure 18: The Thistle pub, Forres

| <b>Energy Consumption – Pub Sector (3)</b> |                     |                     |
|--|---------------------|---------------------|
| Energy Source                              | Annual Quantity (£) | Climate Change Levy |
| Electricity                                | £1924               | £192                |
| Gas  | £215                | £1902               |
| Total                                      |                     | £213                |

| <b>Pub Sector</b>                                |       |
|--|-------|
| Total Climate Change Levy                        | £213  |
| Discount Through NICs                            | £127  |
| Discount Scheme                                  | £0.00 |
| Net effect of Climate Change Levy<br>(per annum) | £87   |

It can therefore be seen that Thistle Bar is a net loser from the Climate Change Levy with an annual tax pay out of £87. The owner was unaware of reductions in NICs and thought he was paying out the full amount.

### 5.2.4 Case Study 8: Riverslea Bar

The Riverslea Bar has 6 staff making it a micro sized business. There are three bar areas, one public bar, one lounge bar and a function area, which is only used around 15% of the time. There is no cellar area and there is a kitchen which is not used. The business is based in Forres. Electricity and gas are used to power and provide heat for the equipment outlined above.



Figure 19: Riverslea pub, Forres

| <b>Energy Consumption – Pub Sector (4)</b> |                     |                     |
|--|---------------------|---------------------|
| Energy Source                              | Annual Quantity (£) | Climate Change Levy |
| Electricity                                | £2376               | £238                |
| Gas  | £832                | £83                 |
| Total                                      |                     | £320                |

| <b>Pub Sector</b>                                |       |
|--|-------|
| Total Climate Change Levy                        | £320  |
| Discount Through NICs                            | £81   |
| Discount Scheme                                  | £0.00 |
| Net effect of Climate Change Levy<br>(per annum) | £239  |

It can therefore be seen that Riverslea Bar is a net loser from the Climate Change Levy with an annual tax pay out of £320. The owner was unaware of reductions in NICs and thought he was paying out the full amount.

### 5.2.5 Case Study 9: Newmarket Bar

The Newmarket Bar has 6 staff making it a micro sized business. It is a two story property with two Bars. Electricity and gas are used

to power and provide heat for the equipment outlined above. The business is based in Forres.



Figure 20: Newmarket bar, Forres

| <b>Energy Consumption – Pub Sector (5)</b> |                     |                     |
|--|---------------------|---------------------|
| Energy Source                              | Annual Quantity (£) | Climate Change Levy |
| Electricity                                | £2276               | £228                |
| Gas  | £1138               | £114                |
| Total                                      |                     | £341                |

| <b>Pub Sector</b>                             |       |
|---|-------|
| Total Climate Change Levy                     | £341  |
| Discount Through NICs                         | £106  |
| Discount Scheme                               | £0.00 |
| Net effect of Climate Change Levy (per annum) | £235  |

It can therefore be seen that Newmarket Bar is a net loser from the Climate Change Levy with an annual tax pay out of £341. The owner was unaware of reductions in NICs and thought he was paying out the full amount.



### **5.3 CCL Sensitivity Exercise (Neutralising the CCL through Reduced NICs)**

This section shows the point at which returns from reduced NICs contributions equal the CCL charged for different annual energy bills, therefore defining a neutral zone for the levy. A discussion of real examples where businesses are at a disadvantage due to staff wage mechanisms / business practices and not energy practices is also given.

The staff wages for enterprises (SMEs), which have made up the case studies of this report varied from over £1 million to £27,325 and energy bills varied between around £25,000 and £1,593. This study has focussed on micro sized enterprises and so limits to the sensitivity analysis have been set in accordance with this, although the initial analysis expands on the range of energy consumption studied in this report.

The upper limit for annual energy consumption was set at £50k and this has been focused down to a limit of £10,000 in figure 2 since all micro sized enterprises investigated here fall within this lower range. A lower limit of £500 for energy consumption has been set.

Certain assumptions also had to be introduced in order to cut down the parameters involved. First of all it was assumed that all cases had 9 employees. The number of employees makes a negligible difference to returned NICs and this is especially so when confined to less than 10 employees. Energy consumption was not broken down into both gas and electricity. This is reasonable since the climate change levy is charged at 10% for either form of energy and so a £100 gas bill will give a CCL of approximately £10 as will a £100 electricity bill. Also other fuels such as LPG and coal have been excluded in order to simplify the exercise.

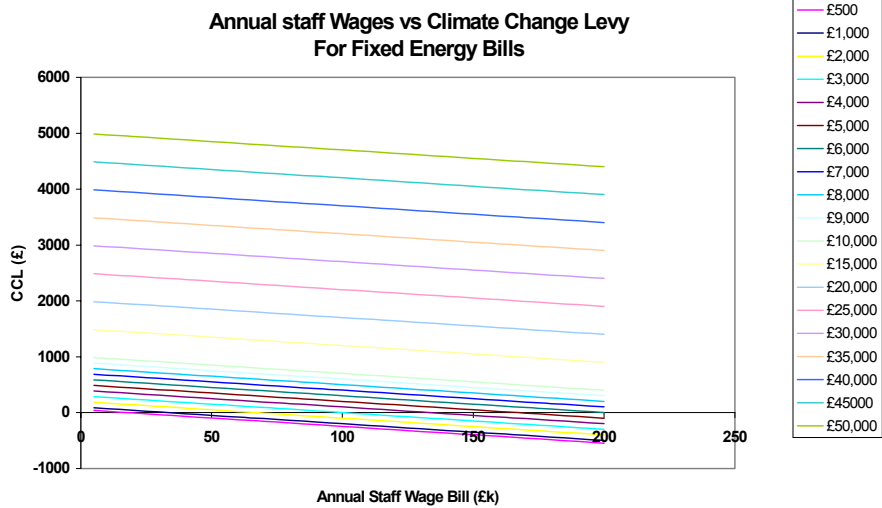


Figure 21: Annual wage bill vs CCL for fixed energy bills.

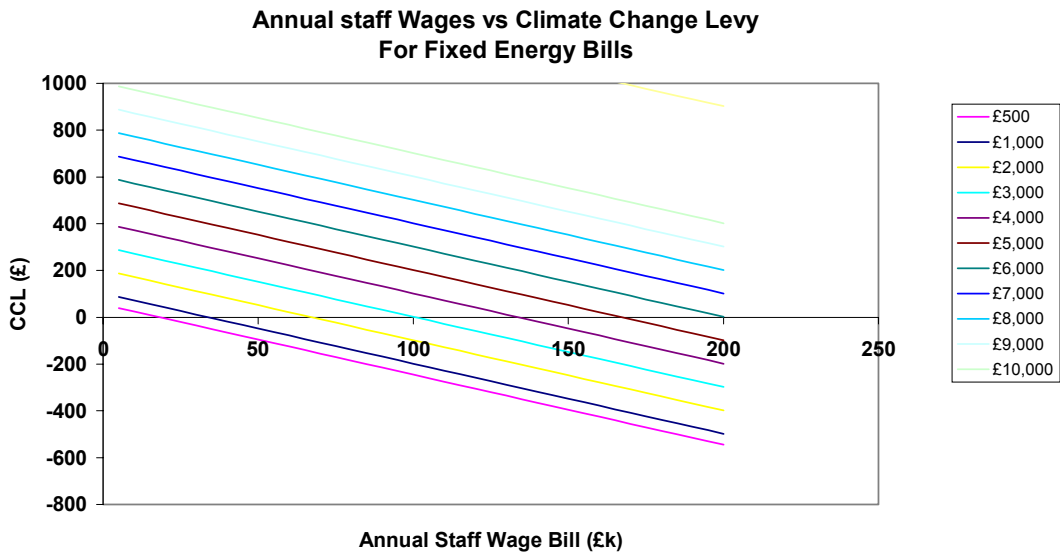


Figure 22: Annual Wage Bill vs CCL for fixed energy bills (micro enterprises).

Figure 1 and 2 above display a number of relationships for different annual energy bills. The graph shows the points at which the CCL becomes zero (neutral) as counterbalanced by reductions in NICs by the intercept on the x-

axis. There is a relationship of direct proportion where, as would be expected, increased energy consumption leads to increased CCL and a larger staff wage bill is required to neutralise this effect through returned NICs reductions.

Figure 3 below and the table below further demonstrate the line of CCL neutrality.

The CCL was predicted to add around 10% to energy bills and this holds accurate for businesses consuming only electricity and gas. For all the micro sized enterprises investigated here the maximum CCL paid after reduced NICs was £348.

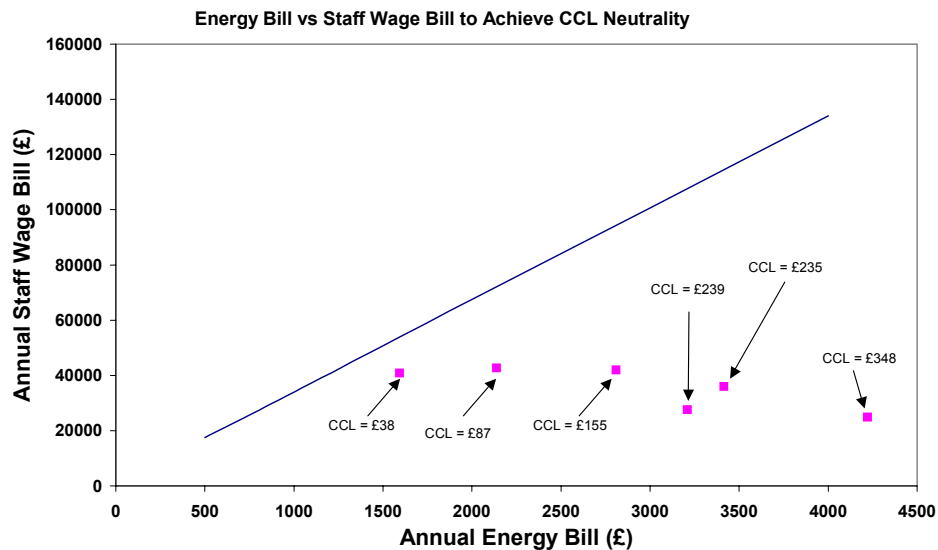


Figure 23: Annual energy bill vs neutralising wage bill.

| Company Energy Bill (£) | Staff Wages To Neutralise CCL |
|-------------------------|-------------------------------|
| 500                     | 17500                         |
| 1000                    | 34000                         |
| 2000                    | 67500                         |
| 3000                    | 100700                        |
| 4000                    | 134000                        |

Figure 3 above shows the required staff wage bill for different annual energy consumption in order to achieve neutrality for the CCL (some of these numbers are also tabulated above. The pink points on the graph show wage bills and annual energy consumption as well as resulting CCL (after reduction of NICs) for actual cases studied in this report.

It is clear that as energy consumption of a business increases the staff wages required to counter balance the CCL through reduced NICs must also increase to achieve neutrality. Figure 3 shows an interesting reality within micro sized enterprises where annual energy consumption increases significantly but annual wage bills remain the same. The net effect for these businesses is that the CCL they pay increases disproportionately to energy consumption. The businesses consuming greater energy are clearly required to pay more CCL because they do not pay their staff proportionately to their energy consumption.

Taking the mid range example of annual energy consumption equal to £3,000 it can be seen that a £100,700 annual staff wage bill is necessary in order to neutralise the CCL completely. The annual energy consumption for micro sized companies studied here ranged from £1,500 to £4,200 and the staff wage bill ranged from £25,000 to £42,000. The number of staff ranged from 2 to 6.

People employed in hospitality and more specifically in public houses are generally unskilled and therefore wages are correspondingly low (this is the case for many employees within micro sized businesses). Neutralising the CCL in this example would require a small pub employing five full time employees on a salary of £20,000 per year. This is just not financially realistic for such businesses, which operate with unskilled workers and a majority of part time employees on close to minimum wage. Furthermore, different businesses (public houses) achieve very different annual turnover, due to any number of other parameters such as location and reputation. The profits made by a company may also dictate the levels of responsibility required of employees in this industry and in turn the salary that they receive. Clearly these are factors, which have been unwittingly or otherwise engineered into the CCL and further distort the objective of taxing energy consumption within micro-sized enterprises.

On thorough investigation of CCL mechanisms it could be stated that the levy provides incentive to certain businesses to pay their employees more, which might provide incentive to increase profits. This is not necessarily a bad thing, while for no sound reason it is bias against certain businesses within the micro business range and has no apparent relevance to the broader objective of energy efficiency.

Piccolo Press and Ness Motors were not public houses and represent one small and one medium enterprise respectively. Both were calculated to be at a net gain when subject to the CCL. When comparing the average staff wage in these businesses we see that it is between £20,000 and £14,000 and this contrasts the range of average wage within public houses studied which was between £5,000 and £10,000. This further shows the CCL not as a tax on energy consumption, but a tax on the number of well paid (skilled) employees within a business.

This is further emphasised when we compare the Castle Inn (energy bill = £4221) with the Thistle bar (energy bill = £2138) (see figure 3). The Castle Inn pays a relatively high CCL of £348 after a NICs reduction of only £73.99 compare to the Thistle Bar which pays a CCL of only £87.00 after a NICs reduction of £127.26. Since the energy bill of the Castle is almost exactly double that of the thistle it might be expected that the CCL paid would be double since the CCL is intended to be a tax on energy. The Castle is paying 4 times as much CCL as the Thistle. The fact is that the wage bill for the Thistle is nearly double that of the Castle and the corresponding CCL paid is disproportionately less (four times less) due to greater NICs reductions.

One last consideration is that when businesses become Limited companies the wages of the owners are included in the annual staff wage bill and this helps further neutralise the CCL through greater reductions of NICs. In the case of many companies studied here this could more than double the annual staff wage bill therefore dramatically reducing the CCL through NICs reductions. It is clear that many common economic mechanisms/practices can have an overwhelming effect on a levy, which was designed to safeguard the environment.

Although only simple comparisons have been made here it is apparent that In general terms the CCL can be seen to be potentially discriminating against any business, which does not pay its employees proportionally to its energy consumption. This study concludes that micro sized public houses fall into this category and represent a business sector, which are financially worse off compared to others upon the introduction of the CCL. The key issue here is that they are not only penalised for their energy consumption and practices but often more so because of business and staff logistics, which have nothing to do with energy efficiency or climate change.

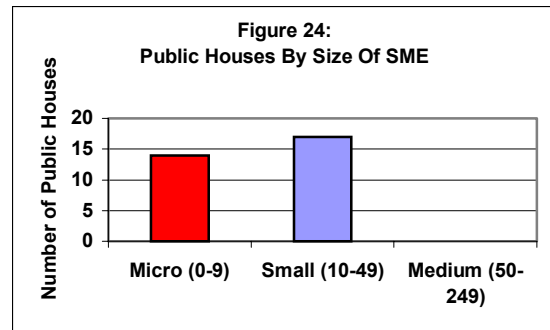
### 5.3 Questionnaire Results

As discussed in the data gathering section questionnaires were handed out to forty public houses and 31 positive responses resulted which are the basis for data reported in this section. The objective was to assess the general awareness of the UK climate change programme including awareness of the climate change levy, the availability of interest free loans for investment in carbon reducing technology, and enhanced capital allowances available to all businesses amongst other points outlined in the questionnaire and the following sections. Publicans were also questioned on what they thought the best way to reinvest revenue generated by the climate change levy.

A list of all participating public houses is given in appendix B.

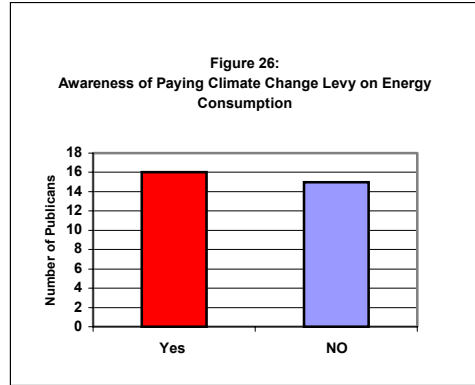
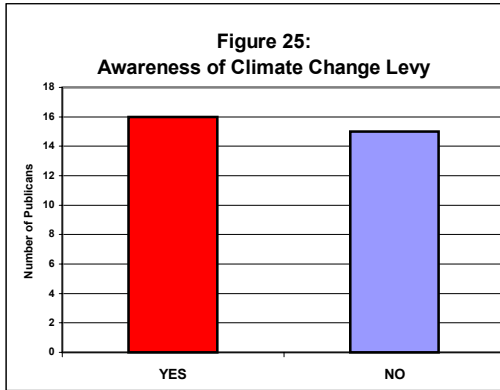
Although forty pubs might not seem a huge number, this represents the vast majority of pubs in Inverness as well as some from close by areas. Furthermore the average response to questionnaires is about 17% which would in this case amount to less than 7 pubs. The response to this survey was almost 78% which is well over four times the average. If the average positive response had been the case then numbers would result from a survey of 182 public houses.

All the public houses surveyed were either small or micro sized enterprises with the highest number of occupied persons being 36 and the minimum being 2. The vast majority of small enterprises comprised of less than 15 employees. This is displayed in figure 21 (right).

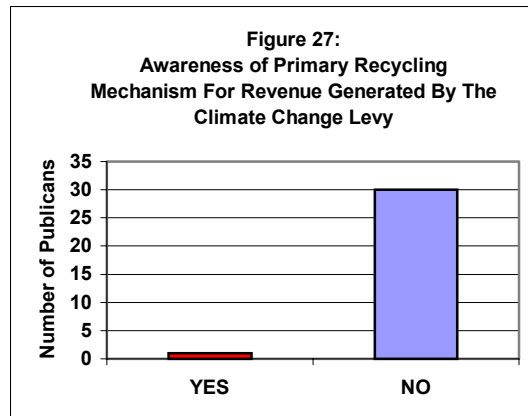


A study undertaken by the federation of small businesses (FSB) in 2001 [22] just after the CCL was introduced showed that a very small minority of SMEs were aware of the climate change levy or that they actually paid the Levy.

The figure's below show that almost two and a half years later the level of awareness is still very low. It is a simple tax on energy consumption that businesses are required to pay. There is nothing complicated about it yet business owners in high proportions are still oblivious to its existence. Almost 50% of publicans surveyed are ignorant to this tax and the fact that they pay it (figure's 22 and 23).



The CCL was introduced as a neutral tax intended to provide incentive to the business sector to increase energy efficiency thus in turn reducing carbon dioxide emissions into the atmosphere. Neutrality was achieved by returning the majority of the £1.75 Billion in revenue generated by the CCL by reducing NICs paid for each employee by the employer. Employer NICs contributions were reduced by 0.3 percentage points in order to render the tax neutral over the whole business sector. It is reasonable since this tax can amount to hundreds and thousands of pounds for SMEs that the payers should be made aware of the mechanisms that govern the investment of revenue generated, and especially so if those mechanisms are returning revenue to the tax payer. In this survey only 1 from 31 positive responses was aware of the primary recycling mechanism. This is shown below (figure 24).



Although it is impossible to compare this level of awareness with large companies it is clear that within the pub sector of micro and small sized enterprises in the Inverness area the climate change levy is discriminating simply because those paying it think they are paying more than they actually are, since they are unaware of tax returns they are receiving. From the case study sections it can be seen that the business sector of public houses is a net loser from the climate change levy and many hundreds of pounds can be involved annually for only micro enterprises. It is therefore very important that this sector, which is set to lose out financially from this environmental levy, be aware of this tax and its basic functions. This is clearly not the case.

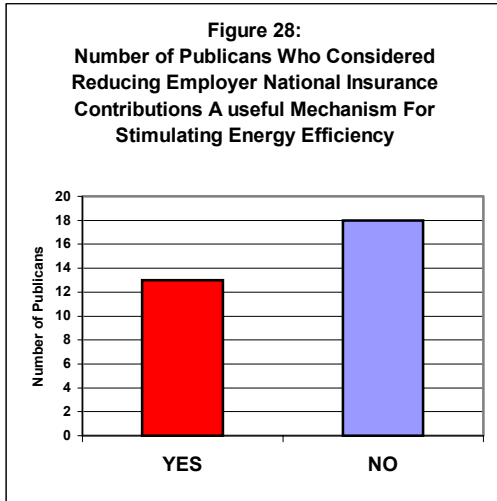
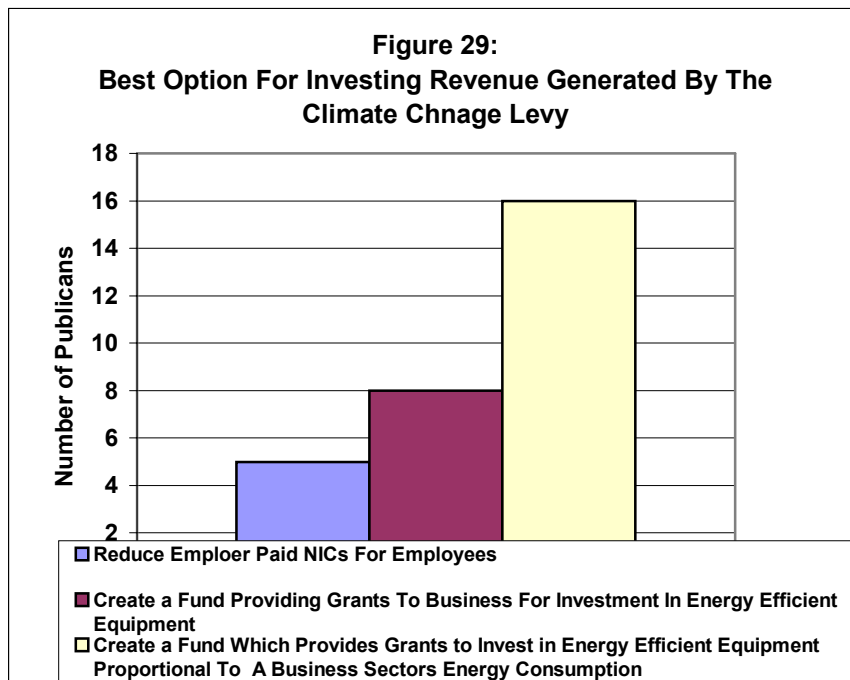


Figure 25 (left) shows that close to half of the publicans surveyed thought that reducing NICs contributions was a useful mechanism for stimulating increased energy efficiency. This is a little surprising and it is possible that in answering this question they were more concerned about receiving returns on their tax than actually increasing energy efficiency. For most small and micro sized enterprises profits and financial survival are obvious primary concerns.

Interestingly when given the primary option of recycling revenue generated by the CCL by creating a fund for subsidising energy efficient investments over five times more publicans thought this a better option than reducing NICs contributions. This is shown in figure 26 below.

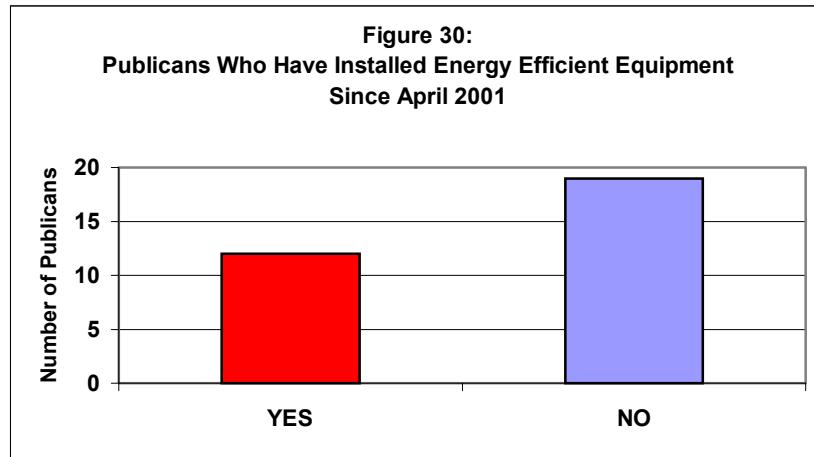
Eight respondents thought that creating a fund providing grants for energy efficient investments was a better method for stimulating energy efficiency while 16 respondents thought that this was the best option with revenue made available to specific business sectors. For example, hospitality or retail would have separate funds available to them proportional to the tax paid on energy for their business sector. Only 5 respondents supported continued reduction of NICs as the best mechanism for stimulating energy efficiency.



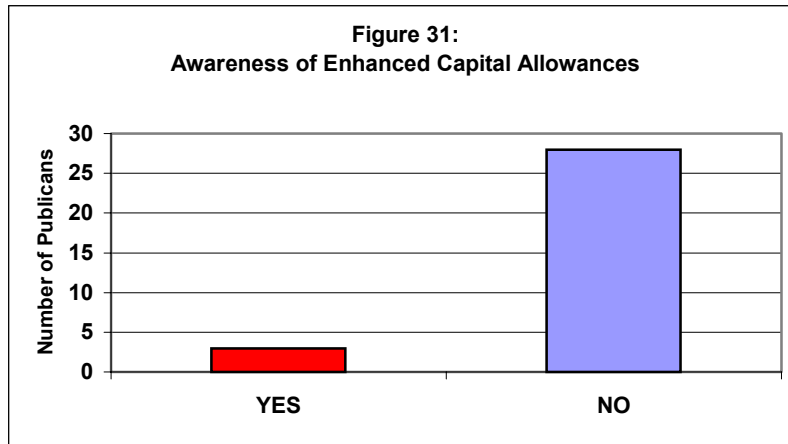


Throughout this report subsidies and benefits available to businesses for energy efficient investments have been discussed. Energy intensive companies can benefit from CCAs, which provide financial incentive to reduce consumption through negotiations with respective trade associations. Most small and micro firms are not eligible for such CCL discounts and certainly none of the enterprises researched in this work could benefit from such agreements. Other subsidies geared towards the SME sector are available and if companies are making energy saving investments it is right that they should be able to benefit the financial support available from taxes they pay.

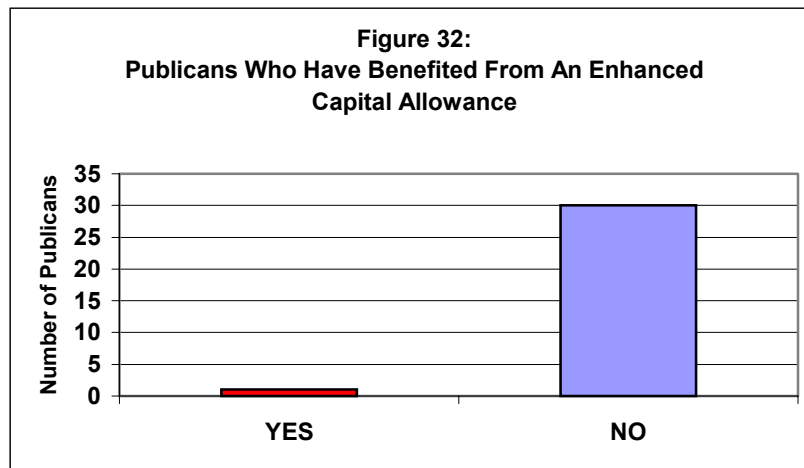
Figure 27 below shows that over one third of publicans surveyed have installed energy efficient equipment since the onset of the UK Climate Change Programme in April 2001. Since financial support exists for such investments they should be able to benefit. However they can only benefit if they are made aware that such funds and subsidies exist.



From figure 28 Below it is clear that very few business owners in the pub sector are actually aware of ECAs which would give them financial relief on certain purchases. Essentially the entire business sector is paying into a fund in terms of the CCL, and ECA subsidies are a portion of this fund designed to benefit all businesses across the board. Clearly from figure 27 publicans could benefit from this fund, though the lack of promotion to this business sector has meant that awareness is very low and thus the funds are not reaching the businesses they are targeted at.



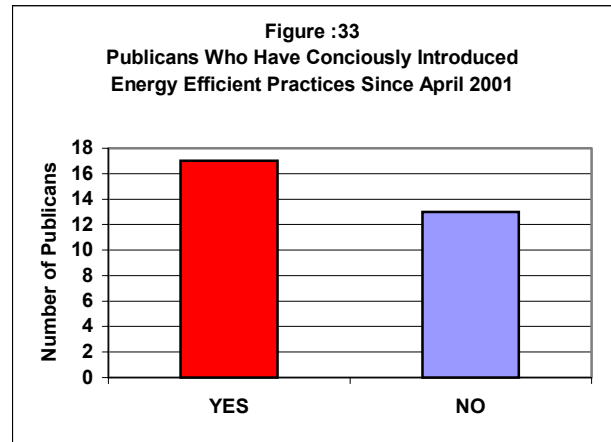
Three from the thirty one publicans surveyed were aware of ECAs, and of those three one had actually benefited from a subsidised purchase. Since numbers for this survey are small there is no sense drawing too much from the relation between awareness and application for ECAs. However it can be seen that a percentage of those aware of the ECAs available have benefited from them, as shown in figure 29 below. How high the conversion might be between those aware and those actually applying for ECAs is impossible to predict. However since in the case of energy efficient equipment such as a new boiler the purchase will undoubtedly be cheaper from the governments energy technology list it is likely that the conversion between awareness of ECAs and actually benefiting the subsidy would be high, and especially for micro and small enterprises. Excluding time required in administration of forms it is essentially “shopping for the cheapest purchase.”



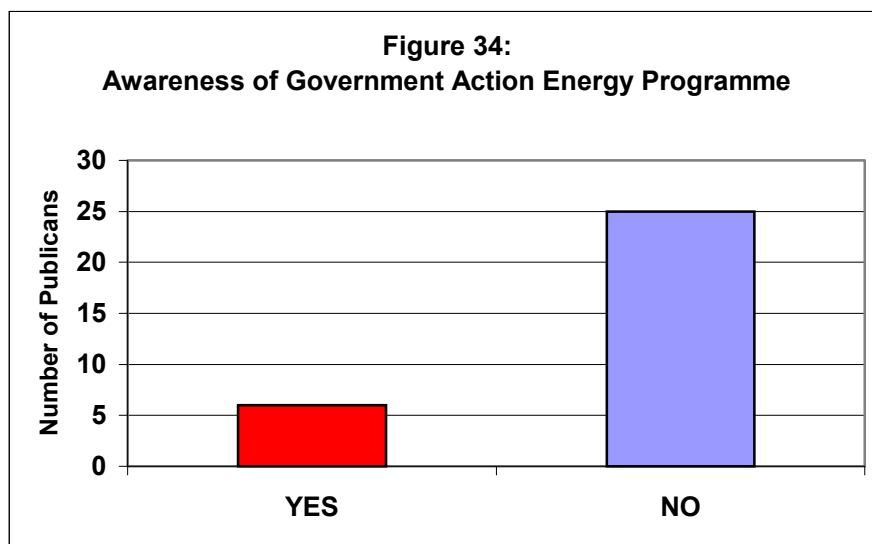
When asked if they had consciously introduced energy efficient practices in recent years a surprisingly high proportion reported that they had. The SME environment survey discussed in section 3.4 discovered that one of

two major driving forces for businesses to take positive environmental action was concern for the environment, the other being legislation. It is reasonable to suggest that a great many business owners are keen to play their part

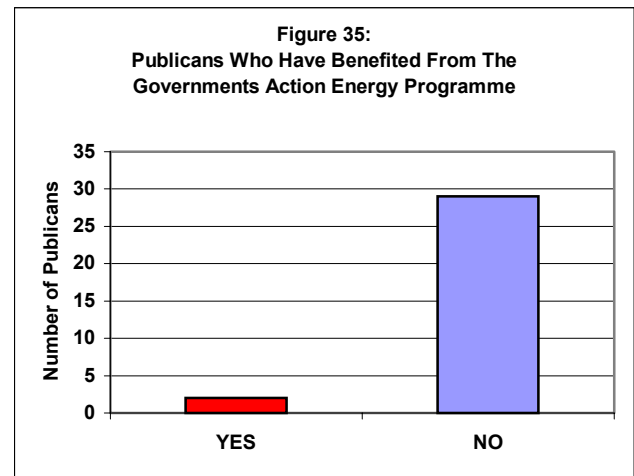
in helping the environment, and this is re-emphasised by the graph below. 17 of 31 publicans surveyed admitted to consciously taking energy saving measures in recent years. This may be as simple as turning off more lights at night or installing energy saving light bulbs. The point here is that despite this high proportion of enthusiasts, their actions are likely to be far less usefull to UK targets than they could or indeed should be.



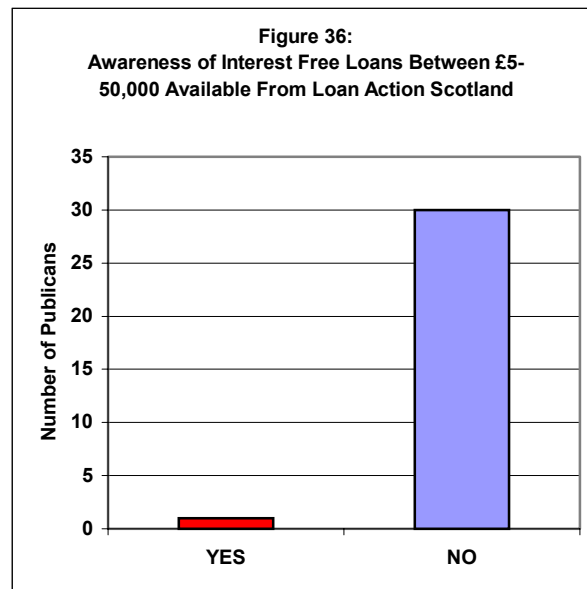
As discussed previously the government has set up an energy advice and auditing programme within the carbon trust called action energy. This scheme is almost entirely geared towards providing help to small businesses in order to increase energy efficiency. The scheme can offer business sector specific advice and simple to follow instructions on how to effectively monitor and reduce energy consumption in respective industries. This can help companies and the environment effectively. Again this can only occur if a level of awareness for such support exists. Figure 31 shows that awareness is low with only 6 of 31 publicans aware of the government action energy programme.



Again a correlation between awareness and positive action taken can be seen with 2 of the 6 publicans aware of action energy having sought advice and benefited from the programme. This is shown in Figure 32 (right). With such low numbers it is difficult to predict how high the correlation might be with higher awareness, while it is clear that it is higher with awareness than without.

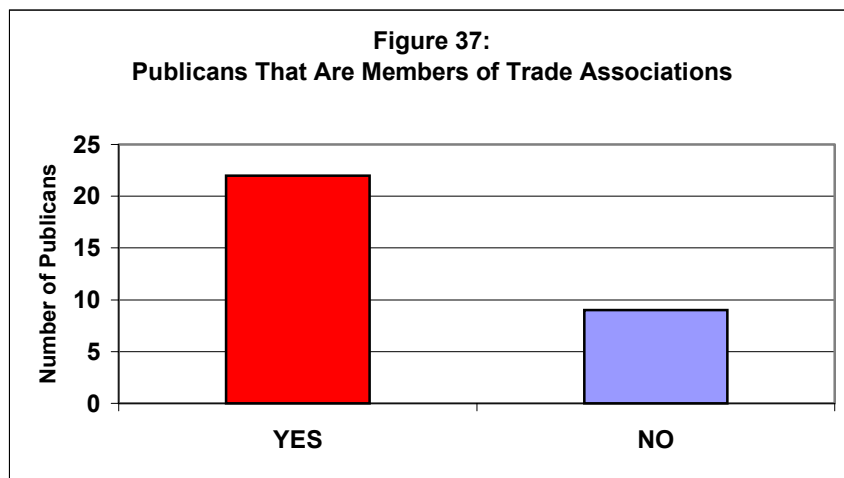


As part of the governments action energy programme interest free loans are available to small businesses making energy saving investments. Loans are only available for England and Wales since equivalent loans with a longer pay back time have been available from loan action Scotland for some time. Section 3.2 illustrates that loans are an integral element of company growth crucial to making business investments. The case study of Torren cottages in Glencoe also illustrates well, the potential benefits including financial gains that can result from a loan for energy saving measures. A tiny proportion of publicans surveyed were actually aware of loans available to them with only 1 from the 31 responses reporting to know of their availability.



Several of the public houses surveyed have recently changed owners and undergone severe renovations. Such loans could have proved a very attractive incentive to these establishments, however again as shown in figure 33 above awareness within the micro and small public houses is extremely low.

SMEs deliver a massive turnover to the UK economy and hold more than half of all UK employment. They deserve in accordance with their place in the economy a decent focus from the government in helping them benefit from subsidies introduced by new legislation, especially since these subsidies are investment of the tax payers money (of which SMEs make up a majority). The climate change programme including CCL, action energy, interest free loans and ECAs seems to have missed the sector of small and micro sized public houses all together. The environmental levy (CCL) is financially discriminating against this sector amongst others and the programme which has been designed to help SMEs has either failed to reach this sector or geographical area, or the government has simply failed in marketing its subsidies to the smaller business sector. It is likely that the sector of public houses in the micro to small size bracket is not alone in falling ignorant to this programme.



Of all publicans surveyed only 9 were not members of the Scottish Licensed Trade Association (SLTA). This trade association does not hold a negotiated agreement with the government in order to issue CCAs to it's members. On discussion with the SLTA, it was clear that larger public houses (a large public house consumes around £20,000 of energy per annum) could benefit from CCAs for discounts on the CCL, while due to previous bad encounters with power suppliers and in terms of numbers only a small proportion of businesses that could really benefit they were not offered and are not forecasted for the future.

The picture in terms of awareness of the governments climate change programme for small and micro sized public houses is low.

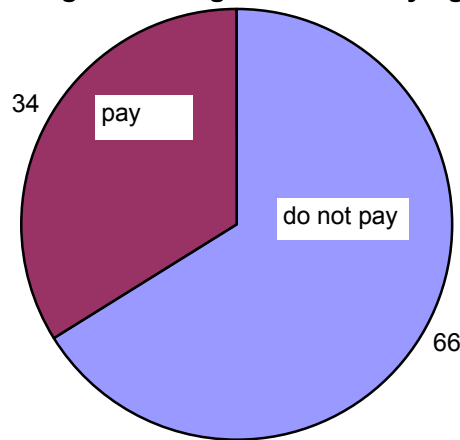
Another point of fundamental importance is that if the tax was intended to be neutral, such that all revenue was returned to industry in the forms described and primarily through reduction of NICs, where is the tax payer left after the recent increase in national insurance. Would NI have been increased by less if it had not been reduced through the CCL or would the same increase have been made disregard of the introduction of the CCL. This is of course impossible to answer. However it is very important to realise the blurred

boundaries that have arisen for what was intended to be a neutral tax solely for the stimulation of increased energy efficiency. This research has shown that a majority of business owners would invest revenue in order to instigate energy saving measures while the government, who has stated this objective for the revenue, chose to return all of revenue generated to industry by cutting a pre-existing tax. Now that this other tax (NI), which really has no relation to environmental legislation has been increased, and stands to be increased further in the future, it is certainly understandable that certain authorities visualise the CCL as another stealth tax on business which is neither being returned to business nor provides incentive for increased energy efficiency as was the primary objective on its introduction.

The fundamental fairness of the climate change levy to individual businesses or business sectors is disputable. As the case studies show (section 5.1.2) without any conscious effort employed, a company can be financially at a net gain or loss, by hundreds or thousands of pounds, even though they may not be aware of this. It is very hard to visualise how net tax paid by certain sectors, such as is apparent for public houses from this work, delivered back to different sectors without them knowing (as shown for the car dealership in case study 1) is in anyway stimulating energy efficiency within business. In fact the sectors which are paying net taxes after returns through NICs are those which need to reduce their consumption most of all and so this is even more reason for investing revenue generated from CCL back into individual industries. This cannot happen with the present mode of recycling which is clearly not equal in stimulating energy efficiency for different industries, if it provides to this objective at all.

All businesses with low energy consumption (below 1000kWh/month) are at a net gain since even though they are not required to pay the CCL they still receive the reduction in NICs. This means that 66% of all organisations are financially better off immediately although as this research has revealed they are most likely unaware of this gain.

**Figure38:**  
**Percentage of all Organisations Paying CCL**



Statistically this is displayed in figure 35 above. This point alone raises serious arguments as to the usefulness of the primary recycling mechanism

for the CCL. All these businesses are not paying CCL, yet they receive the benefit of reduced NICs. The tax was introduced to stimulate increased efficiency in the business sector which is visualised as the major contributory to reducing consumption and CO<sub>2</sub> emissions for UK targets, yet a vast quantity of the revenue is disproportionately returned to businesses, which are energetically speaking, on a domestic tariff and perhaps should be considered in domestic terms as far as this environmental levy is concerned. This money could be invested in further subsidies or as would seem more appropriate from this research, marketing subsidies that already exist. Therefore, in a real sense, increasing energy efficiency, and taking the country closer to its targets. It is very easy for power suppliers to categorise users while dishing out different NICs reductions to different users would be a massive task indeed. The recycling of CCL through NICs is a simple mechanism but in more ways than one it fails in adhering to the governments intentions for introducing the CCL in the first place (incentive to stimulate energy efficiency).

It is also worth mentioning results reported by the SME environment survey, which showed that of those respondents that had sought help for improving environmental practice, 70% had contacted their local authorities for that help. The action energy help scheme could perhaps benefit from distributing available information on energy saving to local authorities for distribution.

Overall it seems that the climate change levy has been successful as combined with CCAs in instigating increased energy efficiency within large companies. However this tax does not seem to be providing incentive to small companies and the primary mechanisms for recycling revenue do not seem useful in delivering to the objectives of increasing incentive for reducing energy consumption. In many respects the tax seems to discriminate against small businesses and since NI contributions have subsequently increased for everyone the governments initial pledge of a neutral tax generating no net revenue to them certainly seems questionable.

# **Chapter Six**

## **Conclusions and Recommendations**



## 6.1 Economic Implications of The Climate Change Levy

Since only nine case studies have been undertaken in this work it is impossible to draw conclusions that are representative of an entire business sector. The following statements are with regard to research undertaken in this study. The researcher realises that conclusions drawn for both sections of research are at best representative of individual businesses studied or for the sector of public houses in and around the geographical area of Inverness.

- The climate change levy is in most cases not neutral to individual businesses. Some businesses stand to gain financially from the CCL while others stand to lose. This fact can be impartial to any action taken by business owners to introduce energy efficient measures and is dictated by type of industry.
- Although the climate change levy was designed to be neutral to the business sector as a whole this is justifiably questionable since those businesses consuming a domestic quantity of energy do not pay the tax but still benefit from the primary method of recycling revenue generated, by reduced NICs contributions. Therefore the CCL is not neutral to those businesses that are required to pay it.
- Since the quantity of tax paid after returns via reduced NICs contributions is proportional to the number of staff a business has and their respective salaries and not solely the quantity of energy they consume, the CCL discriminates against certain industries. In this study it is clear that the business sector of public houses is one such industry which consistently represents a sector, which is at financial loss from the CCL. Businesses with a high energy consumption to staff ratio are more likely to lose financially while businesses with lower ratios are more likely to gain. This is illustrated for companies case studied in this work.
- Small businesses have almost no awareness for the primary or secondary mechanisms for recycling revenue generated by the CCL. Since this environmental levy is being returned, to an extent, to the payer without the payers knowledge it can be stated again that the CCL is discriminating against many small businesses.
- In case studies undertaken in this work it is clear that the CCL has played no part in stimulating increased energy efficiency, which was stated as the governments primary objective for this new environmental tax.
- ECAs are available to all businesses of all sizes and one case study revealed investment in new equipment, which was not subsidised, but which could have been since it was a product on the governments energy technology list. Given the small scale of this investigation it is reasonable to say that many businesses are not benefiting from

subsidies available to them due to lack of awareness for government investment of taxes they pay.

## **6.2 Sensitivity Exercise**

- The CCL is potentially discriminating against any business, which does not pay its employees proportionally to its energy consumption. This study concludes that micro sized public houses fall into this category and represent a business sector, which are financially worse off compared to others upon the introduction of the CCL.
- The CCL does not only penalise companies for their energy consumption but also and in some cases more so because of business and staff logistics/practices, which have nothing to do with energy efficiency or climate change.

## **6.3 Awareness of the UK Governments Climate Change Programme Within the Business Sector of Public Houses**

- Awareness for the existence of the CCL and actual payment of the levy is low at just over 50%. Almost half of publicans surveyed were completely oblivious to the CCL and therefore the CCL is having absolutely no effect on increasing energy efficiency for around half of this business sector. Whether the half of publicans that are aware of the levy increase energy efficiency as a result is unclear.
- Almost none of the publicans surveyed realised they were receiving any returns on the tax they paid in terms of NICs reductions and therefore visualised the tax as a financial burden in its entirety. Case studies showed a financial burden of up to several hundred pounds for micro sized public houses and given that such quantities of money could have serious financial implications for such micro enterprises, the lack of awareness for primary returns dictates that the CCL discriminates against these businesses.
- The investment of revenue generated by the CCL is directed back to businesses via reduced NICs. Five times more publicans thought that placing all revenue into a fund to subsidise energy efficiency projects/purchases a more useful mechanism for stimulating increased energy efficiency in business than reducing NICs.
- Over one third of publicans have installed energy efficient equipment since the onset of the governments climate change programme while only 3 from 31 publicans is aware of ECAs and only 1 has benefited an ECA. Therefore publicans in reasonable proportions are energy conscious and take practical measures to increase efficiency without

incentive. Since ECAs represent an investment made with the tax payers money which these businesses are entitled to and would likely claim if aware, these businesses are again discriminated against.

- Publicans that are aware of ECAs benefit them, in turn increasing energy efficiency, while publicans that are unaware do not.
- Almost two thirds of publicans surveyed undertake simple energy saving measures as standard practice. This shows that this sector is willing and actively saving energy. The degree of savings made can be increased by educating businesses on simple actions appropriate to their businesses which are provided free of charge by action energy. This programme again represents investment of tax payers money from the CCL. Only 6 from 31 publicans were aware of this programme. Since a proportion of those aware of the programme have sought help, it can be seen that a reduction in CO<sub>2</sub> emissions is far less than it could be as a result of the lack of promotion of action energy to these businesses.
- Loans are central to growth and expansion of many small businesses and interest free loans represent an attractive incentive for energy saving investments. Within the scope of this study several establishments were noted to have undergone severe renovation. Awareness for interest free loans was 1 in 31 publicans. Clearly business owners are missing out on attractive incentives and the government is sacrificing emissions reductions due to lack of promotion of existing subsidies geared to the market of SMEs.

## Recommendations

First of all, further surveys of different business sizes and industrial sectors require to be undertaken so as to better establish the picture of awareness for the UK climate change programme within business. However based on results from this work it is suggested that the climate change levy be redesigned. Returning revenue via NICs seems an inappropriate and distinctly ineffective measure for stimulating energy efficiency and it is suggested that alternative methods where funds are established for higher subsidisation of energy efficiency projects are put in place. Universal mechanisms for investing revenue from the CCL are unlikely to be beneficial to all business size sectors and so it is suggested that in designing methods of investing revenue from any environmental tax, business sizes are considered and delivered to separately. For example CCAs as an incentive for large energy intensive companies appears to work well, while perhaps similar programmes or entirely different projects, ideally on a local level could better support reduced emissions within SMEs. Importantly funds should be separated and available to the tax payer proportionally, such as by size of business or by energy consumption of business sector. This would enable tax payers to benefit in accordance to their payments, atleast to a far greater extent than present. The action energy programme seems a useful scheme though it is recommended that greater emphasis is put into promoting help in all varieties

available, from this scheme to SMEs, since clearly the messages are not being received. Delivery of information to businesses is likely better received from local authorities in the case of SMEs and it is perhaps an idea to use revenue from CCL to open paid positions for energy efficiency officers within local authorities. By establishing individual consultancy type appointments between businesses and officers, benefits and appropriate action for respective businesses can be well established. Further more if revenue from the CCL is available to businesses after consultation with an officer the likely hood of sound action being taken is visualised as being far greater. Overall the government should rethink the design of incentive for energy efficiency in the SME sector since it is clear that improvements are possible and efforts to date are poor. Furthermore the business sector approves capital investment of the CCL. This £1.75 billion annually can if correctly invested provide the cuts sought to achieve emissions targets in al of business.

## Appendices

### Appendix A Businesses Participating in Case Studies

#### Public Houses Surveyed For Economic Analysis

Thistle Bar, 168 High St, Forres  
Riverslea Bar, Pilmuir Rd, Forres  
Legends Bar, 122 High St, Forres  
Newmarket Bar, 3 Tolbooth St, Forres  
Castle Inn, Caroline St, Forres

#### Other Businesses Surveyed For Economic Analysis

Ness Motors, Harbour Rd, Inverness  
Corrie Garth, 5 Heathmount Rd, Inverness  
Piccolo Press, Harbour St, Nairn  
Carpet Emporium, Tomnaheurich St, Inverness

### Appendix B Public Houses Given Questionnaire (non-participants in bold)

#### **Barbazza, 5 Young St, Inverness**

Berties Bar, Railway Station, Academy St Inverness  
Blackfriars, 93-95 Academy St, Inverness  
**Blacksmiths, Keppoch Rd, Culloden, Inverness**  
Chilli Palmers, 73 Queensgate, Inverness  
Clachnaharry Inn, 17-19 High St, Clachnaharry, Inverness  
**Culloden Moor Inn, Culloden Moor, Inverness**  
Fluke Inn The, Culcabock Rd, Inverness  
Gate Café Bar The, 21 Queensgate Inverness  
Glenalbyn Bar, 2 Young St, Inverness  
Gunsmiths, 30 Union St, Inverness  
Haugh Bar The, 39-41 Haugh Rd, Inverness  
Hootananny Pub, 67 Church St, Inverness  
**Jacko's, 44 Hardour St, Nairn**  
Johnny Foxes Irish Pub, 26 Bank St, Inverness  
Keg The, 30-32 Baron Taylors St, Inverness  
Lauders Bar, 16 Church St Inverness  
Maccallum's, 40 Union St, Inverness  
Mallard The, Station Square, Dingwall  
Number 27, 27 Castle St, Inverness  
Old Market Inn The, 32 Church St Inverness  
Phoenix Bar, Academy St Inverness  
Shots Sports Bar, Academy St, Inverness  
Tarry Ile Bar, 2-6 King St, Inverness

**Yard The, 28 Church St Inverness**

Thistle Bar, 168 High St, Forres

Riverslea Bar, Pilmuir Rd, Forres

Legends Bar, 122 High St, Forres

Newmarket Bar, 3 Tolbooth St, Forres

Castle Inn, Caroline St, Forres

Smithton Pub, Smithton, Inverness

Corrie Garth, 5 Heathmount Rd, Inverness

**Harlequin The Café Bar, 1 View Pl, Inverness**

Heathmount, Heathmount Rd, Inverness

Finlays Bar, Young St, Inverness

**The Gellions, Bridge St, Inverness**

**Bar 45, Rose St, Inverness**

**Moray Bar, 1 Academy St, Inverness**

Nicos Bar, Nessbank, Inverness

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