UKERC

MEETING REPORT

TAXING AND TRADING: DEBATING OPTIONS FOR CARBON REDUCTION

3rd & 4th November 2005, St Anne's College, Oxford University

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Executive Summary

This meeting report summarises the presentations and discussions at "Taxing and trading: debating options for carbon reduction" – a two day seminar held on 3rd and 4th November 2005 at St Anne's College, Oxford. The seminar provided the first forum in which carbon taxation and three alternative carbon trading options have been directly compared. Speakers and discussants with contrasting views from a range of backgrounds provided starting points for discussion. Participants' input was structured via a 'balloon debate' on the second day of the workshop. The event took place over two days to allow full discussion of each option. The key aim was to facilitate a rigorous debate about how the UK can achieve the huge carbon savings required.

The first day set the scene, with speakers presenting the principles underpinning the four options: a carbon taxation-led strategy, domestic tradable quotas (DTQs), personal carbon allowances + upstream capping for organisations, and extending the EU emissions trading scheme. These options were debated further by two panels of discussants. The first panel addressed the economic and distributional impacts of the different options. The second panel considered the public and political acceptability of carbon taxation and the different capping and trading options. Panellists expressed a range of views about the advantages and disadvantages of different options, with no one option being universally preferred.

The end of the first day and the whole of the second day was dedicated to breakout sessions and the 'balloon debate', whereby each of the four options is presented by delegate groups. Voting took place at the end of the second day to reject the least preferred policy options. The balloon debate approach allowed participants to take off their institutional hats and to 'role-play'. Previous experience with this format has shown it encourages creative thinking and allows for a transparent, objective debate. It also opens up people's minds to the lines of argument that differ from their own and can bring about greater understanding and appreciation of the difficulties and how they might be solved.

For the balloon debate, the composition of groups was mixed with respect to professions and disciplines. If it was known that a participant particularly supported any of the four policy options, then they were not put in the group charged with discussing that/those policy option(s). Each group was given one of the scenarios to analyse. The groups' task was to: a) put together the case in support of their own proposal; b) develop 'defensives' to defend their own proposal; and c) critically analyse the other options, thinking up questions for the other groups. The groups took it in turns to present their proposals in plenary. At the end of the debate, DTQs was the policy which survived in the balloon, with carbon taxation being thrown out first, followed by extended EUETS and then personal carbon allowances + upstream trading.

Participants were generally very positive about the workshop and many commented that they found the balloon debate format helpful and enjoyable.

Note:
There is a parallel 'background papers' document also available on the UKERC / Meeting Place web site which contains copies of all the papers mentioned in this document. Powerpoint presentations given at the event are also available on the web site (www.ukerc.ac.uk).

Introduction to the event: background briefing paper

Tina Fawcett, UK Energy Research Centre & Environmental Change Institute, Oxford University; Richard Starkey, Tyndall Centre & Manchester University

NOTE: This briefing document was sent to all participants prior to the event.

Current policy is not achieving sufficient carbon savings

Radical changes in the way organisations and individuals use fossil fuel energy will be required to prevent the worst extremes of climate change. The government's chief scientist has suggested the UK may need to reduce carbon dioxide emissions by 80% by 2050 – which equates to a reduction of 3-4% per year every year between now and then. However, carbon emissions only fell by 7.7% in total between 1990 and 2002. In 2003 and 2004 emissions actually rose by 2.2% and 1.5% respectively. Based on usage of fuels in summer 2005, emissions in 2005 are expected to rise still further. New policy solutions are required which engage individuals and organisations with the need to make dramatic cuts in emissions and at the same time enable technology to play its part.

General policy options

There are two main framework approaches which can be adopted to reducing emissions:

- Capping and trading
- Carbon taxation

And each approach has many different possible variations.

In this workshop three different approaches to cap and trade will be considered – as described below. These are by no means the only possible cap and trade options. Two of the options give individuals their own personal carbon quota – so they have some direct responsibility for their emissions. The third cap and trade option targets organisations, and relies on individuals responding to resultant changes in prices. The carbon taxation-led strategy uses the price signal to produce change in both individual and organisational behaviour.

None of these policy options would operate in isolation. It is likely that policies which promote efficiency and renewable energy, support new technologies, give advice and information to business / consumers and so on would still be part of the overall policy package.

Option 1: Carbon taxation-led policy

Energy taxation has long been part of UK taxation strategy. Additional energy taxation was introduced in 2001 for electricity, gas and other fuels for non-domestic sectors of the economy via the Climate Change Levy. However, increasing taxation has proved particularly controversial for both household energy and transport fuels. Nevertheless, a carbon taxation-led response to reducing emissions would have advantages. Firstly, it would take advantage of administrative systems which already exist. Secondly it would be an economically efficient policy. It would also avoid much of the complexity of an expanded EUETS scheme, and taxation levels could be adjusted to deliver required levels of carbon savings. Carbon taxation can be combined with tax relief schemes for those who adopt carbon saving measures (as in the current Climate Change Agreements) and would be part of an overall taxation strategy which would be designed to meet social and economic as well as environmental goals.

Option 2: Domestic Tradable Quotas (DTQs)

DTQs is an economic instrument proposed to allow nations to reduce greenhouse gas emissions from energy use. If the UK were to implement a DTQs scheme, the first step would be to establish the maximum level of greenhouse gases which can be emitted from energy use in a given year. This carbon budget would be reduced year on year in order to meet emissions reduction targets. The carbon budget would be divided into carbon units. A proportion of these units would be allocated to all adult citizens by government, on a free and equal per capita basis. Firms and other organisations would be required to purchase units on a national carbon market. When individuals and organisations purchased fuel and electricity they would be required to surrender units corresponding to the carbon content of their purchase. Individuals with surplus units could offer them for sale to those who wished to buy extra.

Option 3: Personal Carbon Allowances / Rations + carbon caps for organisations

Personal carbon allowances (PCAs) would be a UK-wide allowance system covering the carbon emissions generated from the fossil fuel energy used by individuals within the home and for personal transport, including carbon equivalent emissions from air travel. It would account for around half of current UK carbon emissions from energy. The primary aim of the scheme would be to deliver guaranteed levels of carbon savings in successive years in an equitable way. It is similar in most respects to the individual element of DTQs. The key differences are firstly that PCAs would cover public surface transport and personal air travel, as well as the motoring and household energy sources covered by DTQs. Secondly, children would also be awarded PCAs (but receive a smaller allowance than for adults).

A parallel scheme would be required to cap and reduce carbon emissions from the other half of the economy. In Option 3 this will be a form of upstream capping.

Option 4: Extended EU Emissions Trading Scheme (EUETS)

EUETS was introduced in the UK on 1 January 2005. It covers around 2000 UK installations that collectively emit around half of the economy's carbon dioxide emissions. A cap on CO_2 emissions has been set for each installation and they receive free permits which they are then able to trade. Presently, carbon emissions from transport, including air travel, and from energy use by households and small businesses (excluding electricity) are not included in EUETS. However, EUETS could be expanded to include these sources and thereby cover all carbon emissions from UK use of energy. The UK government has already said it aims to get agreement to include EU origin and destination air travel within EUETS. This option looks at the possible extensions for EUETS so that it becomes a comprehensive capping and trading system.

Further reading

Anderson, K and Starkey, R 2004. *Domestic tradable quotas: a policy instrument for the reduction of greenhouse gas emissions.* Tyndall Centre for Climate Change Research, Norwich.

Ekins, P and Dresner, S 2004. *Green taxes and charges: reducing their impact on low-income households.* Joseph Rowntree Foundation, York.

Hillman, M and Fawcett, T (Eds) 2005. *Living in a low carbon world: the policy implications of rationing*. Meeting report DR1. UKERC, London
Available at: http://www.ukerc.ac.uk/content/view/96/57

Introductory session

The event was opened by Dr Brenda Boardman of the Environmental Change Institute, University of Oxford and UKERC – the chair for both days of the seminar.

Dr Myles Allen, Atmospheric Physics, Oxford University
*** Powerpoint slides of presentation available***
Myles Allen gave a presentation about the science of climate change and predictions of the likelihood of different temperature outcomes under a range of emissions scenarios. His key themes focussed on how climate prediction models could be used to comment on future scenarios and probabilities, the circumstances under which answers of greater certainty could be given, and therefore the extent to which models could be used to guide decisions about acceptable levels of carbon dioxide emissions. The most likely equilibrium warming response to a doubling of CO_2 concentrations in the atmosphere is a temperature increase of approximately 3°C. However, the odds on the climate sensitivity and the resultant temperature increase being greater than 3°C are much greater than 50:50. Therefore the 'most likely' estimate of how the temperature will respond to a CO_2 doubling is an underestimate of how the climate will actually respond. As a rough guide, no more than 1000 GtC from fossil fuel sources should be released into the atmosphere if the risk of a temperature rise of more than 2°C is to be kept less than 20%. As 500 GtC has already been emitted, we can emit a maximum of the same amount again to keep within this temperature and risk profile.

The conclusions which can be drawn from modelling research are:

- Scientists can provide much more certain answers about the effect of long-term reductions scenarios than short-term emissions reductions. Science cannot tell us very much about what is required, say, within the next five years to avoid particular outcomes.
- Scientists can't quantify the dangers of freezing emissions per annum at any level – to get a certain outcome emissions need to reduce towards zero.
- The notion of a 'sustainable emission rate' is indefensible. The only safe sustainable emissions rate is zero.
- What is required is a 'containment' scenario. The peak of atmospheric concentrations (e.g. whether or not 550ppm is exceeded) matters far less than the total carbon emitted into the atmosphere.

Presentation of the four policy options

Option 1: Carbon taxation-led policy

Dr Cameron Hepburn, Oxford University
*** Powerpoint slides of presentation available***
Cameron Hepburn showed how economists distinguished between taxation and quantity restriction systems and how established economic theory could be used to decide in principle which policy option would be preferable under different circumstances (as measured by which would be most efficient – lead to least loss of welfare). The results of this theory show that tax is a more efficient instrument if the slope of the marginal damage curve is relatively shallow compared to the marginal abatement cost curve, i.e. if each additional one tonne of carbon emitted into the atmosphere causes a similar amount of damage regardless of the quantity of carbon emitted. The shape of the marginal damage and abatement cost curves is a matter of empirical enquiry. Of course, efficiency is not the only criterion on which alternative policies should be compared: equity, administrative and transaction costs and political acceptability are also important.

So while such insights about efficiency are important, they are not the only input into decision making.

Cameron's preferred policy option would probably be some sort of 'hybrid scheme', which would be a mix of taxation and quantity instruments, but for the purposes of the workshop he presented the advantages of a taxation-only scheme. The characteristics of a carbon taxation policy could include: replacing various existing price instruments, e.g. the Climate Change Levy, with a true carbon tax; the tax rate should be set bearing in mind overlapping policies, specifically EUETS which already imposes a cost of carbon emissions in some sectors; the tax should be set early in the supply chain to minimise implementation costs.

Option 2: Domestic Tradable Quotas (DTQs)

Richard Starkey, Tyndall Centre & University of Manchester
*** Powerpoint slides of presentation available***
*** Written paper available***

Richard Starkey made the case for an economy-wide system of domestic tradable quotas (DTQs), an idea originated by David Fleming. Under DTQs each adult would get an equal quota for carbon emissions from household and transport fuels, with quotas from all other sources of emissions within the UK being auctioned to (downstream) organisations. There would be one market in all emissions, i.e. the residential and commercial / industrial sectors trade together. The annual carbon emissions limit for the economy would be set by an independent Carbon Policy Committee – in the same way as the Monetary Policy Committee of the Bank of England currently sets UK interest rates.

The advantages of the system include certainty of carbon savings and equity. The equity of the system, particularly as regards low income and vulnerable householders, will be influenced by how the revenue raised from the auction is recycled through the economy. Initial research has indicated that managing such a system electronically should be fairly straightforward and that the cost, while not negligible, would be much lower than other proposed government policies such as the ID card or road pricing.

Option 3: Personal Carbon Allowances + carbon caps for organisations

Dr Tina Fawcett, UKERC & Environmental Change Institute, Oxford University
*** Powerpoint slides of presentation available***
*** Written paper available***

Tina Fawcett presented the case for a combination of personal carbon allowances (PCAs) and upstream capping and trading for the remaining sources of carbon emissions. PCAs are similar to the individual aspect of DTQs. Each adult gets an equal allowance with children getting a lower allowance. The allowances are tradable and cover trips by public transport and by air as well as household and transport fuels. As for DTQs, advantages include equity, certainty of result and the benefits of including individuals in moving towards society's goal of lower carbon emissions. Emissions from the rest of the economy (about half of the UK total) would be managed by an upstream auction for fuel producers and processors. Unlike under DTQs, this system would be kept separate from the PCA system. The advantages of two separate systems would be greater transparency, that each could be designed to best suit the different capacities of individuals or organisations, and it might be possible to introduce PCAs before eventually switching from the existing EUETS and other policy instruments to upstream capping and trading. Tina also presented case study data on personal carbon emissions from 40 individuals – which showed a factor of 12 difference in annual emissions.

Option 4: Extended EU Emissions Trading Scheme (EUETS)

Dr Tony Grayling, Institute of Public Policy Research

*** Written paper available***

Tony Grayling presented the case for expanding the current EUETS scheme to encompass more uses of energy. Although the EUETS is currently imperfect, it has only just begun operating and it contains within its founding legislation the capacity for expansion and improvement. The key advantage of expanding EUETS is that it is a system which has already been agreed – it is therefore politically acceptable whereas the other possible policies might not be. We must recognise that this is a very important factor. Expanding the EUETS is already on the political horizon and would allow something to be done in the next five years. In addition, it could provide a pathway towards the later introduction of DTQs / PCAs. Finally, he cautioned that in reality there was no 'silver bullet' to provide reduction of carbon emissions, a mix of instruments will be required. The following table provides an overview of the advantages of each policy approach.

	Expanded EUETS	DTQ / PCA	Taxation
Environmental integrity	✓	✓	x
Consumer incentives	x	✓	✓
Social equity	x	✓	x
Political feasibility	✓	x	✓

A participant suggested that Tony's comparison table was a bit hard on EUETS and that social equity could be delivered via this scheme if the revenues raised by EUETS were recycled in a progressive way.

Panel on economics & distributional effects

Three participants were invited to act as discussants on the four policy options presented earlier, and to reflect on their likely economic and distributional effects.

Dr Simon Dresner, Policy Studies Institute

*** Written paper available***

Simon Dresner drew on research he had carried out with Paul Ekins at PSI. He talked about how expenditure on household and transport fuels varied between and within income deciles (the UK population divided into equal tenths by income, so the lowest decile is the tenth of the population with the lowest household income). One of the key insights is that expenditure on fuels varies much more within the same decile than it does between deciles. Expenditure on household fuels varies relatively little by decile. The consequence of this is that a carbon taxation scheme would be very inequitable, in that it would affect the poorest much more than the richest. The variation of expenditure within deciles would make it very difficult to adequately compensate the poor for the effects of taxation. There are similar concerns about the introduction of DTQs/PCAs. Even with extensive revenue recycling, Simon explained that 20% of people in the lowest two income deciles would under present day conditions end up worse off.
(For detailed numerical analysis see Simon's full paper.)

Michael Haslett, Barclays Capital

Michael Haslett is involved with carbon trading within EUETS. He acknowledged that the present EUETS scheme is flawed, in that it is giving incentives to increased coal burning within power stations. There is a danger that more effort is expended in operating advantageously within the EUETS rules than on implementing measures to reduce carbon

emissions. He questioned whether countries would be sufficiently responsible under an expanded EUETS to not try and get free rider advantage. Upstream capping and trading might have advantages compared with the current downstream system. Finally, he thought the idea of personal quotas was interesting.

Dr Chris Hope, Cambridge University
*** Powerpoint slides of presentation available***
Chris Hope began by reflecting on the work done by Peter Chapman in the 1970s in his book Fuel's Paradise. Chapman tried to develop an energy theory of value, which didn't lead anywhere in the end and Chris questioned whether attempts to make carbon a key source of value would meet the same fate. In response to Myles Allen's presentation, he suggested environmental integrity may not be a useful way of judging between the four schemes under discussion, given the high degree of scientific uncertainty about the temperature rise needed to reach 'tipping points' and the cumulative effects of carbon dioxide emissions. In addition, there are also other greenhouse gases, so the system introduced for carbon management needs to be generalisable.

Key points raised during Chris's presentation included:

- Revenue recycling: Terry Barker's work suggests that significant carbon cuts can be made at zero cost if you recycle the revenue the right way.
- Chris's research uses an integrated assessment model (which includes both economic and scientific modelling) – PAGE 2002.
- Evidence from Chris's model shows that the marginal damage curve for carbon dioxide is flat – which would lead to taxation as the most efficient solution.

In terms of political/public acceptability, measures like a carbon tax might be easier and quicker to implement initially (because we are already familiar with this type of instrument). However, a scheme like PCA/DTQs might have more rewards in the long-term because of the high level of public engagement making it potentially easier to ratchet-up over time.

A questioner asked whether Chris's model included scientific tipping points – Chris said that it did.

Discussion
A participant raised the issue of embodied energy and emissions. Data from the USA shows that from the householder's point of view, indirect emissions are twice the direct emissions. Does this call into question the validity of PCAs? More generally, one limitation of all the policies suggested is that none of them deal with imported goods, which can be a way of importing embodied energy from countries outside the system whether EU or UK. This danger suggests that any system adopted would have to be global. Following this, it was suggested that CDM (the Clean Development Mechanism) would be a good interim method for building confidence in developing countries before they could become full participants in any global taxing or trading scheme.

Doubts were raised about the usefulness of using economic models to determine the level of action which should be undertaken to limit further climate change. It was suggested that these models don't take enough of a precautionary approach. Chris Hope said that integrated models do take account of the need to keep the world away from the climate brink. There has been some irresponsible modelling in the past, where key assumptions or controversial inputs were hidden. However, economists are well aware of this and are not repeating the same mistakes in current models. Integrated scientific/economic models aim to be as transparent as possible.

One participant wondered whether there is a link between encouraging innovation and either taxing or capping? There was no real answer to this question.

There was discussion on how any revenue raised from either taxation or permit auctions should be recycled. Simon Dresner explained that the study he was involved in with PSI - which looked at taxation of the residential sector and its impact - showed it would be necessary to spend all the carbon taxation money on compensation to get the level of poor losers down to 20%. However, Chris Hope explained that revenue can be recycled into the economy more generally to achieve a 'double dividend' effect (e.g. reduce NI contributions which would encourage more employment and help promote growth) in addition to compensating the losers. With an economy-wide carbon tax, considerable revenue would be available. Chris thought it would only be necessary to set aside a small proportion of the money collected by an economy-wide tax to compensate losers.

Panel on public and political acceptability

Three participants were invited to act as discussants on the four policy options presented earlier, and to reflect on their likely public and political acceptability.

Ed Gillespie, Futerra
*** Powerpoint slides of presentation available***
Ed Gillespie made a presentation based on Futerra's work for DEFRA on communication of climate change: 'The Rules of the Game'. He began by contrasting the attitudes that many people have about climate change, with what we might need them to believe before they will act. Encouragingly there has been a big change in awareness about climate change over the past year, but this has not led to changing actions – for several reasons, which he elaborated on (see Powerpoint presentation for more details).

He recommended the following approaches to communication on climate change:

- Start communicating a sense of vision and values - the positive outcomes achievable by taking action to avoid the worst excesses of climate change. This is currently missing from the debate.
- Research shows that there is not one single audience for messages about climate change, but different groups of people, with different values, who will respond best to different messages. This must be recognised.
- Current approaches based on making people fearful about climate change without giving them positive actions to take to prevent further climate change would not work. Fear needs to be coupled with 'agency'. People should be encouraged to move towards something positive rather than run away from something negative.

Dr Patrick Devine-Wright, De Montfort University
Patrick Devine-Wright suggested that we should be careful of using the word 'public' as people are using it with different meanings. Two main views of the public have emerged from the discussions and presentations so far. The first model is the 'deficit' model, whereby the public will not be competent to be involved with personal carbon allowances/DTQs. This understanding of the public leads to conclusion that upstream trading systems will be most successful and appropriate. The other model evident has been the 'citizen' model which suggests that people must be consciously involved in order to reduce the UK's carbon emissions. The citizen view leads to a preference for downstream solutions. The citizen view of the public is most compatible with the ideal of sustainable development.

Other points Patrick raised included:

- In terms of introducing new policies, familiarity is good. This is an advantage of taxation, which is already very well understood.
- Need to make the language used in this debate less incendiary. Terms like 'rationing' and 'surrendering carbon units' is very problematic.

- What images do we have to use to communicate DTQs? There is no research which tells us how to communicate the term 'carbon' to the public and how people feel about it.
- Because different people have different motivations, a policy which relies for success on a mix of moral and self-interested motives would maximise the likelihood of positive responses.
- The schemes mentioned today have focussed either on governments / international big business or individuals. Are we missing out the possibility of engaging community level responses?

Teresa Smallbone, Oxford Brookes University
Teresa Smallbone opened her discussion by reminding the audience that the poll tax was originally sold as a fairer local taxation system where everyone paid the same. This did not prevent it being politically rejected. So the lesson is to be cautious about assuming that a system which is theoretically fair (eg PCAs / DTQs) will be perceived as having fair outcomes.

Teresa referred to some of her previous research which showed that a number of different groups can be distinguished with reference to their environmental behaviour. They have different incomes, education levels and motivations. Any carbon reduction scheme would have to take account of the differences which we know exist within the population. The public acceptability of different approaches may vary from the perspective of these different groups.

Other points she raised included:

- A taxation approach could form part of a package leading to fundamental ecological tax reform.
- An equal shares system under DTQs or PCAs could immediately be compromised by additional credits given to vulnerable groups (e.g. the elderly / fuel poor / rural dwellers).
- Based on years of experience as a consumer advocate, Teresa thought it might be best to go for a more upstream system rather than one such as DTQs or PCAs which relies on engaging individuals directly.

Day 2: Balloon Debate report

The participants were split into four groups to analyse one of the four policy options each. Each group had a mix of participants from different disciplines and different professions. The groups were required to analyse the positive aspects of their option, prepare defensive arguments to rebuff anticipated criticisms from the other groups, and prepare critical questions of the other three policy options which they could ask the other groups. Each group took it in turns to present the positive aspects of their own option to the other participants and to answer any questions. Once all groups had presented and defended their option, participants were asked to vote for the option that they had least confidence in. The option receiving most votes was then removed and voting continued until just one option remained.

GROUP 1 – Domestic Tradable Quotas

This group felt that the key selling point of this policy option was that individuals would receive something for nothing and this was in effect "power in your pocket". The major benefits listed by the group were as follows:

- personal ownership and control (own decisions on actions and choices)
- democratic and collective (all in this together)
- it works (can deliver and feasible)
- large economic and marketing advantages of trading and flexibility (one unified scheme)
- double signal (price and carbon literacy)
- less cost to the economy (there are no extra costs because communication, education etc are wrapped up in the scheme)
- innovation (led by demand pull as consumers become carbon literate)
- equitable (as individuals given equal share and based on contraction and convergence principle)
- global leadership (good for UK and it is an exportable scheme)
- auction of permits raises revenue (to fund energy efficiency advice, grants, benefits)
- removal/replacement of some other measures e.g. Climate Change Levy

The group members went on to analyse the scheme from different stakeholder perspectives:

Government perspective:

- EU wide, DTQs offers an improvement of the existing trading scheme. The EU emissions trading scheme post-2012 would form part of the DTQ system.
- The scheme removes politics from climate change. Once the cap has been set and the system is in place and functioning, there would be no further political issues. With taxation there would always be political pressure to change the system, tax rates etc.
- The DTQ scheme provides an overarching framework for action and so removes departmental horse-trading issues
- Implementing DTQs will allow the UK to claim the moral high ground and provide global leadership
- There are communications benefits as under other schemes the Government must make people act but under the DTQ scheme people must act for themselves
- Will assist with obtaining energy security (people generating own electricity etc)
- Consumer choice will drive innovation
- Certainty of outcome and good chance of achieving objectives
- No need to tax (some taxes removed)
- Need a framework and funds to deal with inequalities

Consumers/citizen perspective
I like it because:
- it's free
- the scheme rewards frugality
- can transfer credits if I choose e.g. to relatives
- it's a fair system and requires everyone to take part
- encourages green purchasing and green behaviour – before there were no incentives and although its easy to support the idea it isn't so easy to choose green products or change behaviour if there are no incentives
- like the idea of being connected to the world in this way (i.e. as a 'world citizen')
- the scheme promises long term security for both the world and own family

CITY view:

- London will become the European Centre for Carbon Finance Innovation
- A Carbon Policy Committee will be established to set long term goals and to keep an eye on implementation and the social and economic impacts. This committee will remove politics.
- One trading scheme means a deeper market – a deep and liquid market leads to efficient price formation

- The City will become involved in micro-finance for small businesses

BUSINESS view:
- DTQs will enable deregulation of business and consumer choice drives market in desirable direction: less bureaucracy will be better for business efficiency
- The DTQ scheme gives certainty and long term goals
- The scheme is fair to individuals/consumers and also EU-wide
- The scheme provides a wide range of businesses with the opportunity to innovate
- The scheme offers certainty as the long term as well as short term goals will be known.

ECONOMISTS view:
The scheme delivers a carbon economy:
- more cheaply, largely because: innovation and necessary investment encouraged because all agents adequately incentivised; scheme delivers a large flexible market so there are no difficult boundaries to hinder trading; extra government education scheme is not needed as the scheme delivers carbon literacy.
- quicker, because: market mechanisms efficient (other markets have problematic imperfections); more transparent.
- more fairly, as: redistributive effects are positive; stimulates behavioural change; revenue is available to target impacts.

Next steps proposed by the group:
- Begin the carbon consciousness campaign
- Early announcement effect – give people plenty of warning
- Begin EU negotiations – to modify the EU emissions trading scheme
- Promote the scheme internationally to export the policy idea to other countries.

Discussion on policy option 1 - DTQs
The scheme was criticised for favouring urban dwellers with no kids and being problematic for low income single parents living in rural areas. The quota for a single parent would be less than for 2-parent households and kids are not allocated quotas. The single parent living in the country would not be able to afford a very fuel efficient car and would probably be relying on an old inefficient vehicle. The group defended this criticism by pointing out the current system and indeed any alternative system to DTQs penalises this sector of society. Some of the revenue raised through the auctioning of permits under the DTQ scheme could be used to address such problems. Low incomes can also be dealt with through the existing benefits system. Fuel poverty is also being dealt with through a fuel poverty strategy and schemes such as 'Warm Front'. The group also pointed out that the DTQ scheme is an enabling measure and that we shouldn't patronise such people as many will want to take action to improve their own situation and to reduce their carbon emissions.

One participant raised concerns as to whether the Government could be trusted to deliver such a large and sophisticated scheme given its track record on other large IT projects. Perhaps business would be better placed to deliver the scheme but the public might think this to be morally dubious as business would be profit-making from public policy. The group defended this by explaining that delivery of IT would be contracted out to business and that the necessary technology and knowledge already exists as the use of credit and banking cards is widespread and successful. Much of the risk could be placed on the private sector if delivery is contracted out. The Government would still own the scheme and be responsible for its governance and method of operation.

As the quota available to industries reduces over time the price of products might go up. People on low incomes pay a greater percentage of their incomes on products compared to the better off and so this effect may result in significant inequities. The counter argument to this was that some products will go out of fashion or become more expensive and others may come into fashion or get less expensive as a result of the

reducing carbon cap. Competition will also help keep down prices. Further, if revenue from the auction would be recycled on a lump-sum basis, then those whose indirect emissions are below-average will be better off, and the higher prices of carbon units go the more they are better off. An advantage of the DTQ scheme is its deep market which should help ensure there are no loopholes to exploit. It is always possible to use other supporting policy measures if necessary.

A concern was raised that business might buy up all the available credits to make money out of householders wanting to buy extra credits. A group member responded that this suggestion is based on an assumption that the price of a future credit is known – an incorrect assumption. Would it be possible to guard against speculation? A respondent pointed out that the last speculation problem occurred with the Exchange Rate Mechanism when the Government tried unsuccessfully to impose controls on the market. With a free and open market – as with DTQs – this problem would be avoided. Individuals' involvement in the financial markets is a strong point of the scheme. An important aspect of the scheme design relevant to avoiding speculation might be the frequency that credits are allocated to individuals i.e. weekly, monthly, annually.

Another concern was how to protect against the market crashing. A group member replied that foreign exchange market arrangements to cope with such situations exist already and banks are good at dealing with such risks and problems. The banking sector would warmly welcome getting involved with something like DTQs and the sector is bound to come up with lots of different products for managing carbon accounts etc.

It was suggested that people with disposable income would buy extra credits and those on tight incomes would be tempted to sell when they thought the price would be favourable to them by gambling that the price would come down in the future or that they might find a way to reduce their carbon consumption if necessary (e.g. less heating). Some might not even care about the future if they are desperate to get hold of cash e.g. people in debt; drug addicts. Price volatility and direct access to cash could be issues for those on low incomes. The counter-argument to this was that the current system already has to cope with such problems where people take out loans they can't repay, where drug addicts steal to find money etc. The DTQ scheme could incorporate measures to guard against problems of gambling and selling up the total quota.

A participant pointed out that people would probably need carbon statements each month and the administration cost to the Government of providing these would be extremely high. The defending group suggested that people could be encouraged to use mobile phones, cash machines and the internet to keep an eye on their carbon account. It wouldn't be necessary to use hard copies for all people. One could also explore bundling statements will statements/bills that were anyway to be sent out each month e.g. bank statement and phone bills.

The same participant raised concerns about where the line is drawn for young people to qualify for a DTQ quota. Some young people aged 16 might already be married and living on their own but many would still be living at home and the DTQ money would simply translate to extra pocket money. The group accepted that many young people indeed up until early 20s would be in education and many might be living at home. The DTQ scheme would need to take such factors into account.

GROUP 2 - Personal carbon allowances with upstream cap and trade

How the scheme will operate: This scheme involves an upstream cap and trade (operating as part of the EU ETS) and a separate part which covers individuals. Unlike the scheme described by Tina Fawcett on Day 2, people would not be able to trade credits between themselves. People would have a carbon account with an allocation for a

certain period of time, say a year. At the end of the year, people would either have to pay because they had used more carbon than their allocation or they would receive funds as they had not used up their total allowance. This means that the price for a carbon unit would be set at the beginning of the year. At the end of the year when payments are made or refunds given, it will be possible to calculate how much the nation has overshot or undershot its national carbon target. This would be incorporated into the second year's carbon target and price of carbon units.

The group put forward the following environmental benefits for the scheme:

- will achieve given carbon reductions over time
- incorporates full 50% of carbon emissions from the household sector. The scheme has advantages over the DTQ scheme as it includes children and the aviation sector.
- allows consumer choice
- is fair
- builds on existing EUETS
- upstream auction generates revenues which can be used to manage compensation
- encourages investment in low carbon technologies and localities
- operation of personal carbon card system will use existing technologies
- promotes carbon literacy
- is flexible
- requires high participation and will enable full consumer engagement
- rewards low carbon lifestyles

The First Five Years implementation

Step 1: Set up expert working group to establish parameters for the personal carbon allowance scheme.

Step 2: Pass legislation . Educate public.

Step 3: Launch 3-yr pilot scheme for voluntary participation.

Step 4: Appoint Carbon Policy Committee.

Step 5: Launch compulsory scheme after 5 years.

Institutional Structure

An Energy and Environment Cabinet committee would be appointed. This committee would set up a Department for Energy and Environment which would include: OPDM, Defra, DTi, DfT. The Department would be a major budget holder and would carry all de-carbonisation policy tools

An independent expert Carbon Policy Committee would also be set up. It would be chaired by the Environment Agency. Its remit would include setting the long term carbon reduction targets as well as the year on year price for PCA permits.

The Government would act as a supplier of last resort and a bank for carbon credits. (some permits must be available for low income people in difficulty or such problems could be addressed through the benefits system). If the Government is the supplier of last resort then the emphasis is on the Government to make sure the system works effectively.

Discussion on policy option 2 – PCAs and upstream cap and trade

Where will the Government get allowances for last resort? The group responded that the Government would deliver the carbon reduction target over a pre-determined period of time. If after this time say an extra 1% is used up then over the next time period it will

be necessary to adjust the following year's carbon reduction quota to include this extra 1% reduction.

Why should everyone have to get involved – people will feel they are being forced? The group explained that scarce resources are already regulated, such as water, and people participate (if there are laws and fines in place). People expect the Government to solve these problems but its important that everyone is aware of the problem as they need to understand the action taken by Government and will also need to recognise that it is a collective problem which requires personal responsibility.

One participant pointed out that communicating to the public poses a major challenge. How will the Government educate people? The group responded that a carbon awareness communication programme would be required as people are not currently aware of their own impacts. Communication would be ongoing. The Government would have to get the media involved. Before the scheme's introduction there would be 4 years to educate and prepare the public.

A participant was sceptical that such a scheme could be in place within 10 years. It took a long time to get 25 countries to agree to the Kyoto Protocol – how long will it take to get Parliament and the people to sign up to the idea of PCAs in addition to the EU ETS? Prices will also increase under the EU ETS scheme so introducing carbon rationing to consumers in addition to price increases would be a double whammy for consumers. The group's counter argument to this was that the Policy Committee would help address these issues and the voluntary scheme would give plenty of opportunity for organisations and individuals to adapt.

Several questions were raised about the voluntary pilot scheme. The scheme would enable trading but wouldn't involve the transfer of real money. Some felt the voluntary pilot would simply inform people and organisations about what to campaign against. Others felt the pilot scheme should be mandatory or at least the first time period of the real scheme should not involve the transfer of real money.

Concerns were raised about splitting the carbon market in two. One market for the EUETS and the other market for personal carbon rationing. A participant explained that such an arrangement is not likely to be economically efficient as the economy is artificially split and there is no trading between organisations and individuals. If these two markets would be combined, the single market would be deeper and more liquid.

Some participants felt that the Carbon Committee would be too interfering. Markets should be allowed to run operate openly and freely. Bodies outside the market are not best placed to make decisions about the markets. The group pointed out that the Bank of England's Monetary Policy Committee is outside the marketplace but this institution is regarded as successful.

The group was asked if inclusion of children was sensible. The elderly and children often have lower carbon profiles than working adults. Would it mean that adults or couples that didn't have children would receive larger carbon budgets? The group responded that in fact a child could consume as much carbon as an adult if the child is driven to places, takes a plane on holiday with the rest of the family, uses as much hot water to bathe etc The group also pointed out that inclusion of aviation in a personal carbon budget was fairer than under the DTQ system (which incorporated aviation within the auctioning part of the scheme rather than the personal trading part). Flying is really a luxury and it is generally the better off that fly. Inclusion of aviation and children would mean larger carbon budgets for people, particularly parents, but this would really help certain sectors of society such as low income single parents and may be more helpful in preventing fuel poverty than DTQs.

While some of the personal trading issues associated with DTQs may be avoided with this scheme (such as selling up, gambling, price volatility) a participant was concerned about what would happen to individuals who went well over budget and then faced a huge bill at the end of the year. A group member explained that the individual would be well aware of the carbon he/she was using and by how much they were overshooting, as all the data would be available on their carbon card. This problem would be similar to the widespread problem we have today with people borrowing on credit. People would somehow have to find the means to pay off what they owe for the extra carbon they have used.

A participant raised a concern that the upstream auction, which would place a duty on fuel suppliers, would not influence the design of any energy intensive operations. The group replied that the revenue raised from the auction could be used to invest in efficient plant designs or operations. However, as higher costs would be passed down the chain to energy users, these users would be motivated to adapt their designs and operations to reduce their increasing energy costs. For example, it is already known that electricity companies are very sensitive to fuel costs so it would be expected that renewable energies would become more price competitive with fossil fuels.

GROUP 3 – Expansion of the EU emissions trading scheme

This group presented the idea of expanding the EU emissions trading scheme. The carbon reduction targets would be 60% by 2050 and 80% by 2050 (with 5 yr reviews). In 2008 the EUETS would include intra-EU aviation, and 50% of carbon would be covered in total. By 2010, 20% of permits would be auctioned. In 2010 a Carbon Reduction Committee would be set up. This committee would set national emissions targets in line with the contraction and convergence principle. By 2012 all EU aviation and shipping carbon emissions and all transport fuels would be included. By 2012 75% of carbon would be covered by the scheme and 50% of the carbon would be auctioned. By 2016 all carbon emissions of the economy would be covered and fuel poverty would have been eliminated (using money raised from the auctions). Some 90% of carbon will be auctioned with 10% being kept aside for public services etc. In 2020 a World Sustainability Trade Organisation (WSTO) would be established - built on existing structures of the WTO – to tackle difficult issues relating to imports, exports and carbon reduction.

There would also be measures in place to tackle non-carbon emissions e.g. industrial gases like SF6 would be phased out; methane and nitrous oxide would be dealt with by regulation.

This group went on to present various stakeholder views:

Citizens view:

- Glad industry targeted and not individuals
- Good for future security of individuals/families as well as country (reassuring that it's a big scheme involving other countries)
- Price rises are a concern but glad that energy companies help individuals (through energy services) because this means people pay as much or less for the energy service as they did before energy services were introduced. Mobility services have also made life easier as people can easily share cars which costs less than owning and running a car.
- Glad other European countries are on board. People are not so concerned about flying less as the same situation exists in other European countries.
- The scheme could have negative impacts on the elderly but with improved public transport and assistance in the form of measures such as fuel poverty programmes, they will not be worse off.

Business view:

- no free riders

- in control of own situation
- time efficient
- encourages innovation

Government view:

- This scheme gives business better capacity to respond compared to other schemes
- The scheme has environmental integrity as it will satisfy environmental commitments and NGOs demands
- The EU will demonstrate its leadership on the world stage
- Cash will be generated from the auctions of carbon permits/credits

Positive aspects of expanding the EUETS:

- political feasibility
- administrative and legal structure already exists
- chosen agents have a high capacity to respond
- environmental integrity of setting and reducing a cap
- promotes both macro- and micro-level technological innovation
- if all EU countries involved, will be easier to get whole world on board
- funding to deal with downstream equity problems

Discussion on group 3 – EU Emissions Trading Scheme (EU ETS)

It was suggested that prices might rocket at various stages of the expansion of the EUETS. Overnight prices might go sky high when a new cap is set or after a new auction. Despite communication efforts by the Government it is likely many people will not be educated, will not expect such price hikes and so in difficult times people won't know what to do.

The scheme was criticised for not being able to sufficiently engage individuals. It was suggested that the burden would be placed too much on one part of the economy – companies would be doing all they can to meet targets but consumers would meanwhile continue to use carbon without a care for reductions. A group member suggested there could be an Energy Efficiency Commitment Plus to address civic inclusion in addition to an education framework. The counter response to this was that we have these measures in place now but they have little impact on reducing demand. The defending group responded that consumers would get a price signal on certain goods and services which are carbon intensive if the providers/suppliers are included in the EUETS. By 2016 all carbon emissions would be capped so all consumer activities would be fully included.

Another participant raised a concern that there is a risk of throwing away the progress already made in getting people to understand personal responsibility. There has been lots of talk about energy services for a decade or so and we shouldn't have such a low opinion of the public – individuals are not the only target when it comes to the household level. After all, who is responsible for the carbon emissions from a building? Householders are only responsible with respect to their behaviour (how they use heat, light etc) and for maintenance, but builders are responsible for the energy efficiency of the construction, electricians are responsible for installation of CFL compatible light fittings etc.

A participant questioned what would happen if the US would not get on board. The group replied that the US would become increasingly isolated. It should be possible to control some imports and this would encourage other countries to adjust their manufacturing processes. There would be free trade issues that the EU and WSTO/WTO would need to deal with. The group explained that the carbon would be shared out between EU countries on a contraction and convergence basis and the EU would push to apply the same principle on an international basis.

GROUP 4 – Carbon taxation

The group proposed a carbon taxation scheme would have the following objectives:

1) climate change – to reduce emissions
2) raising revenue for government
3) oil depletion – to deal with effects on people and economy

Factors supporting introduction of a carbon tax:

1) already familiar to public
2) established tax systems - low administration costs
3) quick to apply
4) flexible
    a. discrimination and differentiation e.g. taxes can be set at different levels to protect exposed people/industries; to encourage certain behaviour or market shifts
    b. taxes can be adjusted in emergencies to respond to unexpected events or economy shocks
    c. taxes can be designed to work with or complement other policy schemes
5) climate change (according to Chris Hope) has a flat marginal damage curve which supports (according to economic theory explained by Cameron Hepburn on Day 1) the application of taxes rather than trading
6) unlike personal trading, taxation would protect civil liberties
7) taxation allows the UK to protect its sovereignty – measures such as the EUETS are governed at EU level
8) taxation provides price stability which encourages investment – it provides certainty over the timeframe that the tax is set whereas trading allows prices to change by the second

The group's taxation proposal consisted of the following:

1) the tax would be applied to the carbon content of fuels i.e. coal, oil, gas. The tax would be applied upstream (i.e. on suppliers rather than users) because:
    - this considerably reduces the administrative burden compared to downstream application
    - this would be more popular than taxing individuals. Individuals or end users would feel the impact through increased prices but they would not feel the tax had been targeted at them personally
    - it would ensure application of the tax economy-wide

2) Downstream supplementary taxes could be applied to:
    - improve the performance of the system e.g (VED taxes)
    - allow some flexibility
    - protect vulnerable sectors (some non-carbon taxes applied to both industries and people would be reduced)
3) Regulation to support, complement or reinforce the tax measures
4) The setting up of an advisory committee to:
    - undertake calculations which would inform of tax rates to be set and to assess impacts on the economy
    - propose tax rates and offer advice
    - provide transparency, objectivity and so to establish trust and stakeholder buy-in
5) Raising revenue which the Government can:
    - hypothecate e.g. spend or invest the revenue in ways which assist organisations/individuals in reducing carbon emissions
    - recycle into the economy e.g. by reducing NI contributions payable by employers or income tax. Recycling revenue can bring about a double dividend as reduced NI contributions for example would encourage employers to take on more staff which would improve UK output.

- spend on an eco-bonus initiative which involves lump-sum recycling of ecological tax revenue
- use to protect exposed industries. Non-carbon taxes of industries facing stiff competition from abroad can be reduced to counteract the reduction in revenue because of the carbon tax. As it would be the non-carbon taxes which would be reduced, companies would still have an incentive to reduce their carbon consumption.

The advisory committee would propose to Parliament how the revenue might most effectively be spent.

6) timeframe
- immediate action can be taken on existing downstream taxes such as vehicle excise duty
- from 2009 the upstream carbon tax would be applied, giving organisations and consumers three years to prepare. The carbon tax would be set every 2-3 years (timeframe to be proposed by advisory committee) depending on the optimal timeframe which allows regular review, allows step changes to the rate which are regular enough to ensure they are not too large to cope with and which allows enough time to encourage investment to cope with future increases to the tax rate. Indicative taxes, to enable achievement of the long term carbon reduction goal of 60% carbon reduction by 2050, would be publicised so that consumers and organisations have an outline idea as to what to expect.

7) Communications campaign – a comprehensive communications strategy will be necessary.

Discussion on carbon taxation:

A concern raised related to how it would be possible to ensure that the carbon tax rate would achieve the desired reductions. The group responded that the carbon tax rate would be regularly reviewed by the advisory committee (advising Parliament) so that the rate can be increased or decreased as necessary.

Another concern was that the tax rate would be so high that it would be politically unacceptable. The group's response to this was that the revenue raised (which would be very large) would be recycled and/or hypothecated back into the economy e.g reducing NI contributions; providing financial assistance for carbon reduction measures. The participant raising this question responded that the cases of the fuel duty escalator and VAT on domestic fuel were examples of how taxes which raise revenue, even if recycled, still leave some people worse off. The group explained that the carbon tax is applied upstream and so covers the entire UK economy. The revenue would be extremely large. There would be plenty of revenue available for introducing measures and programmes to tackle issues such as fuel poverty. In addition, the large step increases in a short space of time might not be any different to the situation under a trading scheme. In an efficient economy, the effect of a carbon tax on price should be the same as the effect of a trading system on price.

A participant pointed out that under a carbon tax, individuals whose total (i.e. direct plus indirect) emissions are below-average would be made better off by lump sum recycling. Hence they would favour increasing tax rates. The question is how can an individual tell if they are above, at or below average? This problem pertains not just to a carbon tax but to DTQs/PCAs, though a carbon statement could be available under the latter schemes.

One participant questioned the group's suggestion of exemptions for exposed industries as many of these industries would be major emitters of carbon dioxide. The group

clarified that there would not be exemptions but rather non-carbon taxes might be reduced such that the incentive to reduce carbon consumption would still be in place.

A participant felt that fuel poverty would be a much bigger problem under a taxation scheme. The situation is bad enough now. The group responded that the problem of fuel poverty exists no matter what scheme is in place. Programmes and measures need to be put in place to tackle the problem. A crash programme would be needed before the taxation scheme would come into effect in 2009. Low income households would also be assisted through the existing benefits system.

How would Government arrive at a figure for the tax rate? The tax rate could be tweaked regularly, say every 2-3 years, but as the dynamics of the economy are continually changing it might be very hard to get the rate right. The answer given by the group was that economists supporting the independent advisory committee (which would include expert economists) would use models and data to underpin tax rate proposals.

Vote on the four policy options:
The carbon taxation option was the first option to be thrown out of the balloon. The next policy option to go was the expansion of the EU emissions trading scheme. When it came to choosing between the DTQ scheme and the PCA plus upstream cap and trade option, participants were split between the two but DTQs came out ahead.

While participants voted to reject scenarios, leaving a final "winning" scenario, it is important to remember that the groups were given scenarios, and while there was flexibility and some groups attempted to adjust their scenarios, they had to work within certain constraints – they couldn't develop a scenario which was completely different. There exist many policy options to reduce carbon emissions and there are indeed many possible variations of each of the four options discussed at this workshop. The conclusion of the balloon debate is not a consensus on which policy options is most appropriate for reducing carbon emissions – nor were the contentions of the groups always correct. Further the mix of participants was not representative of all stakeholders and members of the energy policy community.

What the balloon debate did achieve is identification of some key issues and difficulties associated with application of some possible options that could be used to dramatically reduce carbon emissions to 40% of 1990 levels or more in a relatively short timeframe. The workshop also highlighted:

- The importance of both residential and non-residential sectors and the links between them e.g. should there be one or two carbon markets?
- The implications or trade offs associated with imposing upstream or downstream targets or taxes such as invisibility for citizens, involvement of limited decision-makers and lower transaction costs versus engagement of many individuals, encouragement of personal responsibility and higher transaction costs.
- The need to strike the right balance between allocations and auctions in the non-residential sector over time considering issues such as economic efficiency and fairness.
- The importance of recycling the revenue from taxes or auctions and the possible effects e.g. many of the poor are not in work so wouldn't benefit from reductions in national insurance contributions; capital investment programmes designed to compensate are often slow to be effective.
- All groups agreed public engagement is very difficult but essential. All schemes involve major uncertainties about the way people will react so thorough preparation and analysis is needed.

- Most groups proposed the establishment of an independent body to take charge of policy implementation and enforcement. Some groups suggested this body should also set taxation levels or caps to achieve the long-term objectives set by Government.

List of participants

Name	Organisation
Stephan Alberth	Judge Business School, University of Cambridge
Myles Allen (3rd only)	University of Oxford
Kevin Anderson	Tyndall Centre / University of Manchester
Brenda Boardman	UKERC / University of Oxford
Catherine Bottrill	University of Oxford
Dave Brown	E ON UK
Michael Buick	Climate Care
John Costyn	Ofgem
Patrick Devine-Wright (3rd only)	De Montfort University
Tina Fawcett	UKERC / University of Oxford
Nick Faull	University of Oxford
Michael Haslett	Barclays Capital
Mayer Hillman (3rd only)	
Cameron Hepburn (3rd only)	University of Oxford
Rudra Kapila	UKERC / University of Oxford
Sarah Keay Bright	UKERC / University of Oxford
Caroline Lucas (3rd only)	MEP
David Fleming	Independent policy analyst
Ed Gillespie	FUTERRA Sustainability Communications Ltd
Chris Hope	Judge Business School, University of Cambridge
Karin Hufnagel	University of Leeds
Oliver Knight	Sustainable Development Commission
Peter Martin	CarbonSense
Mark Partington	Trading Emissions Plc
Matt Prescott	Assistant to George Monbiot
Richard Starkey	Tyndall Centre / University of Manchester
Matt Thomas	Ecotricity
Liz Reason (4th only)	ILEX
James Tansey	University of Oxford