

Call for evidence – Response from Friends of the Earth

January 2008

Question 1: Carbon Budgets

1. Which modelling approaches (e.g. cost-benefit analysis) and practical issues (e.g. international agreements to reduce emissions) should the CCC consider so as to ensure the budgets it proposes are deliverable and socially optimal?

We have four points to make for this question, on

- setting the UK budget
- delivering the UK budget
- the impact of new proposals on the strategy
- non-traded versus traded sectors

Setting the UK budget

The budgets set by the Government should be consistent with the UK playing its part in keeping global temperature increases below 2 degrees centigrade. This entails setting a global budget for greenhouse gases, and then setting appropriate budgets for the UK, based on the “differentiated responsibility” criterion to which the UK is committed via the UNFCCC process. It is essential that the scientific basis and effects of the recommended budget on our climate is laid out clearly, with any assumptions the Committee has made as to target concentrations, the relative contribution of the UK to global totals, the consequences of these on cumulative emissions over the period to 2050, and the risks of breaching the 2 degree limit clearly stated on the basis of the latest available research.

It is imperative that this science-political approach is used to determine the UK budgets, rather than reliance on cost-benefit analysis (CBA). CBA is entirely inadequate because it is not possible to come to a reasonable monetary estimate of the costs of climate change: many impacts are too uncertain (how fast will the Greenland ice sheet melt?); many impacts cannot be monetised at present (what is the value of the Amazon rainforest or coral reefs?); and many impacts have not been monetised (what will be the economic and social cost of millions of environmental refugees?). Use of CBA will inevitably underestimate the “true” cost of climate change, and lead to inadequate policy responses.

It is far more preferable to set the overall budgets based on the best scientific evidence of the greenhouse gas cuts required to deliver a politically determined target for an unacceptable level of warming which must be avoided. The EU and UK have already agreed on a two degree target, this should be the initial basis for setting global and then UK budgets.

With regard to the relative contributions of different budget periods, we strongly advocate tighter caps in earlier periods. Climate change science is still evolving, but what has been clear for the last decade is that as our scientific understanding increases, climate change impacts are happening earlier and more severely than expected, and the risk of positive feedback loops is increasing. Rather than trying to set budgets based on the minimum we think might be required to deliver on the 2 degree target, they should have considerable slack within them, ie action earlier, to reduce the likelihood of very nasty surprises. The approach to climate change policy should be akin to military planning, with a much stronger focus on ensuring we avoid worst-case outcomes, rather than planning to do what is thought the barest necessary to achieve the primary objective.

It is also the case that because the severity of climate change depends upon cumulative emissions between now and 2050, rather than emissions in 2050, early cuts are more effective at restricting those early emissions (on a graph, the area under the line – which is what represents cumulative emissions – is less under a graph curved like a ski-jump slope than under on falling to the same 2050 target along a trajectory like a falling bullet.)

Such an approach is essential to avoid what the Environmental Audit Committee has described as the “incoherence” of current Government targets which it has for both a 60% cut in carbon dioxide and restricting temperature rise to no more than 2 degrees Celsius. These two targets are simply not compatible with each other – as reports by both the United Nations Development Programme and the Tyndall Centre have made clear. Both of these have found that the 60% cut, if replicated in all other developed countries, would be likely to result in 4-5 degrees Celsius of warming.

Finally, there is the question of aviation and shipping. Friends of the Earth has argued strongly that the UK’s share of international aviation and shipping should be included in the carbon budgets, so that policies for meeting budgets can properly make trade offs and decisions between all sources of carbon. This remains a matter of some debate as the Bill progresses through Parliament, and the Committee will of course not advise on the outcome of this debate, but simply have to implement the Bill as it finally becomes law.

However, whether or not the emissions are included in the budget, it is essential that the Committee considers them when setting budgets. Put simply, if the Committee concludes that the appropriate budget for UK carbon emissions 2018-2022 is 500 MtC, then either

- (a) if international aviation and shipping emissions are included in the budget, recommend the appropriate budget for that period is 500 MtC, or
- (b) if international aviation and shipping emissions are excluded from the Bill, the Committee must make its best assessment as to what quantity of such emissions will arise from this sector as a result the actions of UK citizens during this period and therefore recommend a budget that is reduced by this amount. So, for the sake of argument, if Government projected these sectors would emit around 15 MtC per year across this period, the Committee must recommend a budget of 425 MtC for the period to cover those emissions which are included in the budget.

In one sense this is so obvious it may almost seem unnecessary to mention it – any budget setting process which did not take account of these sectors could

hardly be described as taking account of the science of climate change, which is clear that all sources of carbon dioxide cause climate change, not just those that can be neatly measured from inside UK borders. But the target which was suggested by the RCEP report did not exclude international aviation and shipping, and yet when Government “accepted” the target it recommended, it excluded those two sectors – giving the appearance of accepting the target, while actually accepting a different, less rigorous one. The Committee must be absolutely clear in its deliberations and recommendations in order to prevent the same happening again.

The economic imperatives of setting tight budgets in the early periods is also clear. The effects of action within our economy on future changes in the climate have long lead-times. What we do in the next 10-20 years can have a profound effect on the climate in the second half of this century and the next. The quicker that innovation and investment decisions can be harnessed to bring about the changes in economy required the better. As Stern stresses “Tackling climate change is the pro-growth strategy for the longer term. The earlier effective action is taken the cheaper it will be”.

Delivering UK budgets

Within the UK, a clear strategy will be needed to deliver budgets, with different levels of action in different sectors.

The strategy will need to use all the policy options available but in a tightly coordinated manner. Each policy type will have an important role to play. Regulation is the best tool for defining minimum acceptable standards, for example in energy efficiency in buildings, cars and white goods, and has a clear legal incentive for compliance. Ensuring clear comparable information is available allows markets to work better with consumers and businesses able to make more informed choices, for example product labelling and comparable carbon reporting. Government too can use information disclosure policies to drive continual improvement in emissions reduction for example by reporting annual milestones in keeping to the carbon budget. Economic instruments, such as trading and tax, crucially affect the price of carbon directly and can therefore begin to embed carbon reduction into market decisions when their impact is strong enough and both provide a continual incentive to improve and innovate. Trading also has the advantage of being able to set absolute limits for the sectors covered by the policy. Tax has the advantage of providing government with the ability to move quickly where yearly milestones indicate that carbon budgets maybe be breached.

Ensuring all of these policies work together in the optimum way will not only mean that their impact is maximised but also that the amount and complexity of policy intervention can be kept to a minimum for the required output. Cost-effectiveness is an important criterion for helping to determine this strategy. However, it has limitations. In summary:

- Cost-effectiveness is not static. Indeed, some measures are not currently cost-effective because of existing market failures, as Stern highlights in chapters 16 and 17. Policies need to be introduced to correct these market failures, which would have the effect of changing the ranking of cost-effective policies.
- Cost-effectiveness is often used loosely or inconsistently – a key question is who do the costs fall upon?

- Cost-effectiveness is not the only important criterion – for example a cost-effective policy might be particularly regressive.

We also note the potential for confusion over definitions of cost-effectiveness. Cost-effective should be taken to mean “the cheapest way to meet an agreed target”, rather than “the largest ratio of benefits to costs”, because (for reasons already argued) the “costs” part of the equation is not possible to value efficiently in monetary terms.

In short, the strategy for delivering the budgets must be based on a combination of clear principles, one of which would include cost-effectiveness. Our suggestions for these principles are:

- **A clear long term strategy** is set out, with clear responsibilities for each sector, and clear roles for different policy instruments:
 - Clarity on the role, purpose and interplay between **taxes and trading**
 - Increased use of dynamic **standards** to drive improvements
 - Increased use of Government **spending** to drive improvements
 - Increased use of **policy packages** to remove market failures
 - Removal of conflict between objectives in project and **policy appraisal**
- **Progressive, equitable strategies.** For the UK, tackling climate change is to a large degree an ethical imperative to protect people in future generations, and to protect poorer people in other countries, who will be hardest hit by climate change. However, there are major ethical implications within the UK also. Two principles should underpin the transition to a low-carbon economy:
 - **Policies to reduce emissions should be progressive.** Inequality and poverty are still rife in the UK, millions of people are still missing basic requirements for a decent quality of life. So,
 - **Policies on carbon should be integrated with policies to provide basic needs** – for example access to services; ensuring everyone can affordably keep their home warm.
 - **Policies affecting prices should be implemented in packages** (for example with spending measures) so that negative impacts on marginalised groups are minimised and that overall the impact is progressive.
 - **Adequate funds must be set-aside for preventative and reactive measures.** Even though the worst damage can still be prevented, many impacts like flooding are going to increase due to the warming which is already inevitable. These impacts will hit the poorest and most vulnerable in the UK hardest. Strong strategies for preventative and reactive action are needed.
- **Maximising economic benefits.** Tackling climate change, as well as being a significant economic challenge, is a massive economic opportunity. Implementing the right suite of policies to effect the transition to a low carbon economy will create a dynamic, successful economy for the 21st century. To achieve that four essential reforms are

needed to embed climate change policy into Government economic strategy:

- **Government must immediately modernise its productivity strategy to include resource and energy productivity alongside labour productivity.** While it may have been the case in decades past that resource inputs were a minor element of productivity, this situation has now changed. It is becoming increasingly important for all economies to make rapid improvements in the efficiency with which they use resources and energy.
- **Innovation policy should have a much greater focus on low C technology and skills.** This is no picking-winners strategy it is simply a strategy that recognises Stern's conclusion that a transition to a low-carbon economy is the 'pro-growth strategy' for the medium and long term.
- **Competitiveness concerns of vulnerable sectors should be dealt with by sector specific action** and should not be dealt with by weakening overall policy. Analysis of potential competitiveness claims shows they have been widely exaggeratedⁱ yet too often climate policies have been widely weakened as a result - such as the CCL negotiated agreements and ETS grandfatheringⁱⁱ. Government should commit to stopping this practice.
- **Address market failures.** The UK economy is a high-carbon economy and the structure and operation of markets within the economy reflect that. In making the transition to low-carbon economy policies will continually confront market failures that favour high-carbon options. The Government must commit firmly to consistently rooting these out.

Whatever principles are chosen, the final strategy must be very clear about the relative contribution required from different sectors of the economy, and about the necessary policy mechanisms. Confidence in the effectiveness of policies at keeping the economy within budget is crucial. Businesses and individuals must have clarity, certainty and the right economic signals so they are able to play their part in staying within budget. Currently it is too difficult, expensive, unclear and uncertain, for people and industry, to take action on climate change.

Impact of new proposals on the strategy

A further mechanism is needed to ensure that new policies or proposals are compatible with the strategy. The Government is currently advocating the use of a "shadow price" for carbon to ensure that the carbon impact of all policies is taken into account within the decision-making process. This "shadow price" is new guidance, and it is not clear how it will dovetail with the strategy needed for delivery of carbon budgets. The implication is that if it is too low, and it allows new carbon-intensive projects which compromise the budgets then it can be revised upwards later to ensure that carbon is given greater weight. We strongly believe this is an inappropriate and dangerous response given the fundamental importance of early cuts in emissions highlighted by Stern, Tyndall, UNDP and in this evidence. The "shadow price" proposed at present is so low that it will give an extremely low weight to carbon, incommensurate with either the challenge of climate change or with the budgets necessary. We do not have

time to waste setting a low price then adjusting it in years to come – policies need to be right, now.

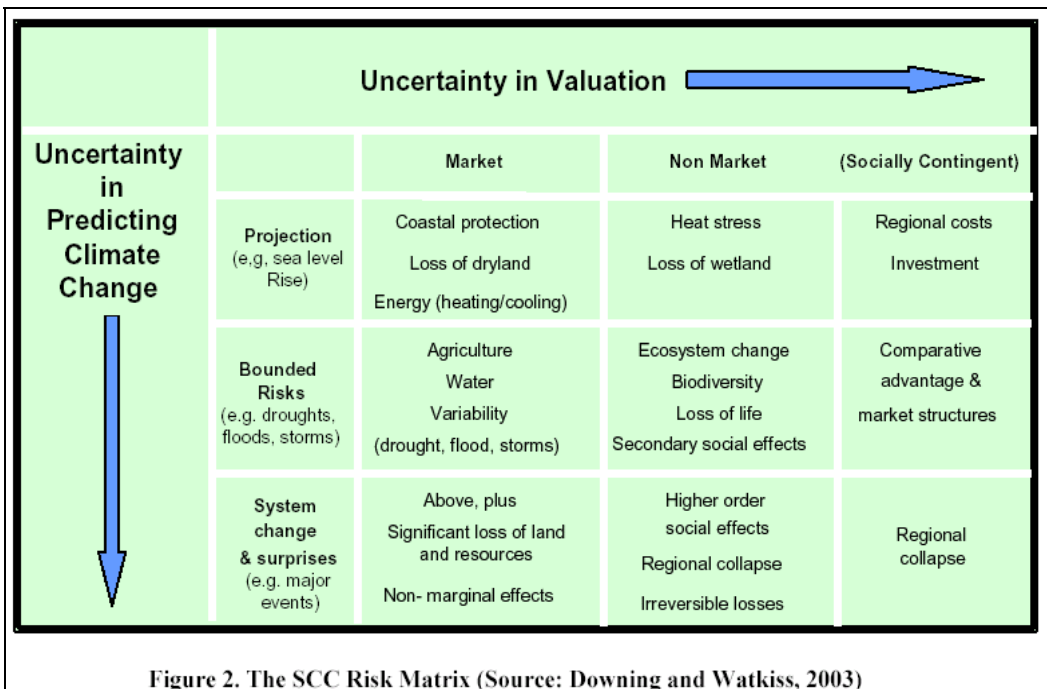
We set out below three reasons why the price is too low, and strongly argue that the shadow price in appraisal needs to be at least £100 t/CO₂ rather than the £19t/CO₂ advocated by DEFRA (2000 prices).

- Circular predictions on success

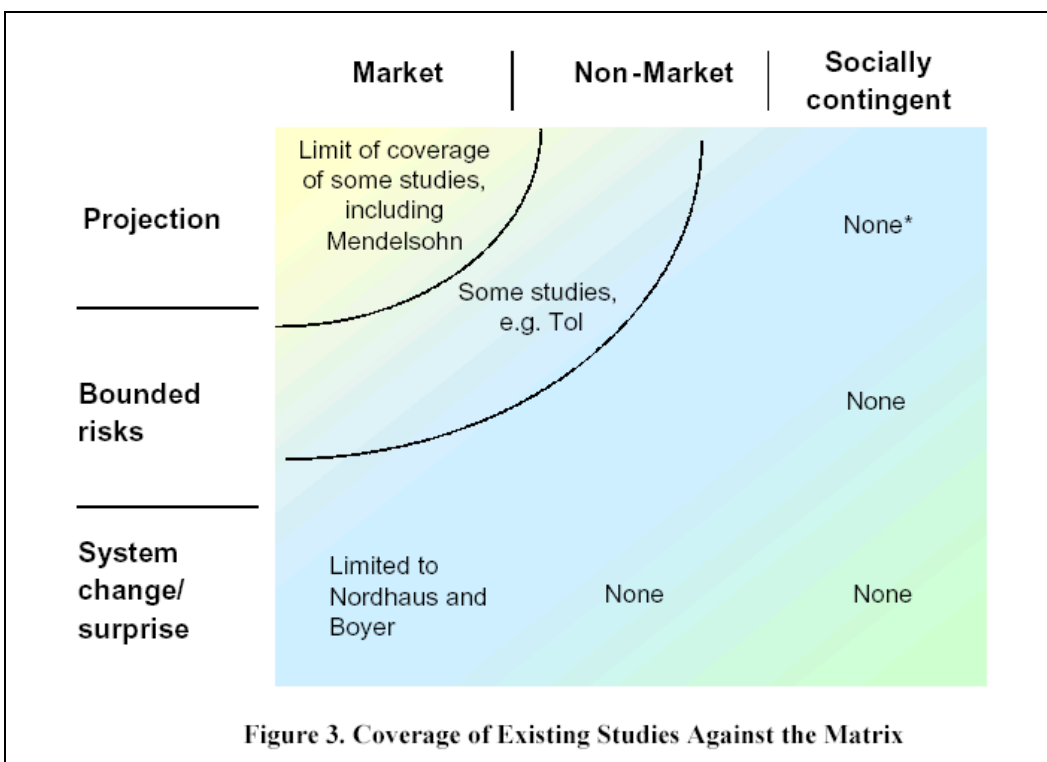
Carbon dioxide stays in the atmosphere for hundreds of years. So, the total damage from a tonne of carbon emitted now depends on what sort of future we have. Stern calculated the damage cost of carbon assuming business-as-usual policies. However, the new DEFRA guidance assumes strong climate policies will happen which will keep global atmospheric concentrations to 550ppmv, thus ensuring far less climate damage than business-as-usual, and hence a far lower damage costⁱⁱⁱ. The flaw in this reasoning is that by then using this far lower damage cost in policy determination means the strong policies assumed to stop the worst of climate change will not happen. It would be far more sensible to assume business-as-usual, and a subsequent more reasonable estimate of damage costs for use in policy determination. As strong policies come on stream with this price, the risk of dangerous climate change would genuinely decrease, and the cost of carbon used could then be lowered. It is highly relevant to note that after a number of Government climate change strategies over two decades strong policies are still not even close to being implemented. Jam tomorrow is not good enough and the shadow price of carbon should reflect this.

- Science has moved on.
- Many impacts not covered

Using the far more reasonable Stern assumption on future costs would mean a 2000 price for carbon of £53 t/CO₂, rather than £19 t/CO₂. However this is still a major underestimate. First, the science has moved on since the reports upon which Stern based this figure. The latest IPCC reports show worse damages than predicted five years ago. Second, many impacts are still not monetised at all, and therefore the overall figure is an underestimate. A literature review in a 2005 AEA report^{iv} to DEFRA illustrates this point. They categorised the coverage of impacts using the following matrix of impact categories:



It sets out the results (below), stating "very few studies extend beyond the top left hand corner of the matrix and none even has a full coverage of the four boxes that represent market and non-market impacts for the projected and bounded risks of climate change. There are only limited studies that have considered any socially contingent effects or the potential for longer-term effects" (our underlining).



The Stern Review refers to the above graph, stating: "*because the impacts in the bottom right corner of the matrix are surrounded by the greatest scientific uncertainty, they have not been incorporated into Integrated Assessment Models. Yet it is also these paths that have the potential to inflict the greatest damage*" (p150-151). The new DEFRA guidance acknowledges the

potential impact of including these as yet unmonetised impacts, saying "*the incorporation of socially contingent impacts into the modelling would increase the social cost of carbon*" (p9). However, in the final figure used by DEFRA's new guidance (whatever assumptions are made about future trajectories), these impacts are treated as if they have zero value.

In summary, a higher price than £53 t/CO₂ is needed to deal with the updated science and the un-monetised impacts. There is considerable uncertainty, but a figure of £100 t/CO₂ would appear a reasonable first guess at the lowest figure which might begin to cover these impacts.

A stronger approach still would be to drop the attempt to calculate damage costs, given the inherent uncertainties, and instead adopt a price for modelling new policies or proposals based on ensuring that the overall strategy continues to deliver the carbon budget. Again, this would entail a far higher price than £19 t/CO₂.

There is a final argument which suggests that a much higher price for carbon is needed for policy appraisal. The current price changes very little. Aviation is deemed to be "covering its environmental costs" simply by virtue of the tax passengers pay in Air Passenger Duty being around the same as the climate costs using the £19t/CO₂ figure. The economics of major carbon-intensive projects like Heathrow is barely nudged using a £19t/CO₂ figure. This price is a recipe for and justification of inaction, which does not tally at all with the consensus and proclamations of leading politicians, academics, businesses and NGOs that climate change is for example "the greatest challenge the world faces", requiring an "urgent world wide shift to a low carbon economy". The politics and the science say that action is needed, use of this figure will provide the exact opposite.

Non-traded versus traded sectors

The Bill will most likely set the EU agreed cap for UK sectors in the EUETS as the contribution of those sectors to the Bill's Budgets. In deciding on policies to deliver the Budget, two issues are important for traded sectors: the need for other policies to augment trading and the level and effectiveness of trading using projects outside the EU, through flexible mechanisms of the Kyoto Protocol.

It is not yet clear how the Climate Bill will treat the traded-sector. For sectors in the EUETS if all that is required is that the sector notes its allocation under the overall cap, then it might appear at first sight as if the Bill creates no incentive for stronger policies in those sectors or policies that augment trading. But policy measures are indeed necessary to make trading more effective and to augment trading by working alongside the trading scheme and increase the incentive to innovate and invest. Policies include: regulation of minimum standards for energy efficiency and in-built renewables; information policies such as compulsory, comparative carbon reporting; and tax incentives (potentially paid for by higher green taxes - the Climate Change Levy is the model for this - unless auctioning money is pooled for this purpose).

Such policies would help ensure that it becomes more cost-effective for a focus on emissions reductions rather than purchase of permits – this will become increasingly important in future budget periods as ETS caps tighten and permit prices increase.

Lax design of trading schemes can also reduce the policy's ability to stimulate innovation and investment in the UK with significant negative implications for the UK economy. Leakage from the EU ETS through buying carbon-reduction projects has been a major problem that needs to be addressed when developing the UK strategy.

The use of external credits through the Clean Development Mechanism (CDM) under the Kyoto Protocol can facilitate 'business as usual' and reduces incentives to improve resource efficiency in the economy. Excessive use of such credits would remove the need for UK industry to improve resource efficiency and reduce emissions hence delaying the transition to a low-carbon economy. For example, this could lead to lock-in to high carbon investments in heavy industry and the power sector^v. This would have a negative effect on the UK economy, reducing the rate of innovation and investment in carbon mitigation now and storing up hefty bills and great competitive disadvantage in the future as we pay for massive numbers of carbon credits to cover emissions from current carbon-intensive investment such as the proposed coal fired power stations.

Over reliance on the use of project credits is already prevalent in the EU ETS, the shortage of carbon allowances under the phase 2 cap of the scheme could be met entirely by project credits under the lax limits currently in place^{vi}.

This should be of great concern because: -

- It breaches the 'subsidiarity' principle embedded in the Kyoto protocol and the EC directive^{vii} on the use of such projects
- Emissions reductions met through project credits are not emissions cuts but in best case a prevention of emissions increases that would not otherwise occurred
- There are significant concerns about the legitimacy of such projects some are not additional and would have happened anyway^{viii}
- The quality of many CDM projects are failing to contribute towards positive sustainable development in host countries as intended under the criterion of CDM project qualifying rules.

Overall, it is essential for the UK economy that we put in place policies in all sectors – traded or otherwise - to ensure the UK invests and innovates in low-carbon technologies and practices, rather than focus now on long-lived high-carbon infrastructure which will become an economic millstone. Without such tough policies UK businesses will lose out on the opportunity to innovate and find resource efficient solutions with an inherently lower cost base. Ultimately such a failure to ensure tight budgets will reduce competitiveness as the UK economy fails to achieve resource efficient outcomes and misses opportunities to grow through associated innovations and investments.

Question 2: Transport

2. *What is the potential for cost effective CO₂ emissions abatement in transport and where might that potential lie?*

Surface Transport

We believe there is significant potential for CO₂ emissions reduction in transport. Research for the Department for Transport has shown that emissions from transport could be cut to 60% below 1990 levels by 2030^{ix}. Cuts on this scale will involve both technological measures and behavioural change. Improving the fuel-efficiency of new cars would make the single biggest contribution, but a package of behavioural change measures would have an equal impact. The researchers conclude that *"major change is required that combines behavioural change with technological innovation. Little increase in travel on 2000 levels is possible"*. The Commission for Integrated Transport has identified a package of measures that would result in emissions reductions from transport 71% greater than the measures outlined in the 2006 Climate Change Programme^x. This would mean transport emissions falling to 14% below 1990 levels by 2020.

We believe the key components of a package should be:

- Improving the fuel efficiency of new cars

The EU is currently setting targets for cutting carbon dioxide emissions from new cars. The targets should be to reduce average emissions from new cars sold to no more than 120 grammes of carbon dioxide per kilogramme (g/km CO₂) by 2012 and to no more than 80g/km by 2020. However the targets proposed by the European Commission are substantially weaker than this and the car industry's proposals are weaker still. Research has shown that the targets proposed by environmental NGOs and the Greens/EFA group in the European Parliament would save more than twice as much carbon dioxide in the EU-15 between 2008 and 2020 as the European Commission's proposal: 521 million tonnes CO₂ compared to 239 million tonnes^{xi}.

In Part 1 of its report, the King Review, commissioned by the Treasury, concluded that CO₂ reductions of up to 30% per vehicle are possible, using evolutionary, cost-effective technology, within as little as 5 years^{xii}. This would add around £1,000 - £1,500 to the production costs of a car, which could be recouped by a typical driver through reduced fuel costs in 3 to 5 years. However we must avoid the potential 'rebound' effect of greater fuel efficiency and lower running costs tempting drivers to use their car more (which is a strong argument for other policies in packages to improve travel alternatives and reduce the need to travel, and complementary measures to prevent the overall cost of motoring from falling).

- Behavioural change measures

We cannot rely on technology alone to reduce transport emissions. The cuts achieved will not be great enough, and the 'rebound' effect might counteract some of the reductions made as more fuel-efficient cars make driving cheaper. Measures to change travel behaviour will also be needed. Anable & Bristow summarise the impact of possible behavioural change measures and show that substantial cuts in carbon emissions can be made from wider use of measures such as smarter choices, eco-driving and speed enforcement^{xiii}. For example, the promotion of Smarter Choices in the Government's Sustainable Travel Towns has resulted in double-digit reductions in car use, similar size increases in walking and cycling, and smaller but still significant increases in public transport use.

However we do not believe that cost-effectiveness should be the only way to assess what measures should be taken to cut emissions from transport. This is because it ignores other potential benefits of transport policy; and because there are problems with the use of cost-effectiveness

- Ignoring other potential benefits of transport policy

Assessing whether or not to implement a transport policy based solely on cost-effectiveness of emissions reduction excludes many other benefits of transport policy. Goodwin lists these as including "*relief of congestion, greater efficiency of use of transport networks, improved quality of movement and access to activities and opportunities, improved social inclusion, improved commercial success in city centres, reduced accidents, better fitness and health, expenditure savings on expensive infrastructure and maintenance, reduced local environmental damage, more productive use of scarce land and other resources, and reduced nervous tension and stress*"^{xiv}.

- Problems with the use of cost-effectiveness

The value of cost-effectiveness is limited by problems with the data and how the methodology is used. These limitations have been well summed up by Anable & Bristow. They conclude that "*the evidence on the cost-effectiveness of measures in the transport sector is limited, few measures have been thoroughly assessed in this way and methods used are often inconsistent. Indeed it is reasonable to say that any cross study comparisons should be viewed with extreme caution as the methods, assumptions and indicators vary a great deal between studies*"^{xv}.

We would also like to draw the Committee's attention to the results of a workshop on cost-effectiveness in the transport sector, held in October 2007, involving Government and academic participants. This can be found at:

http://www.ukerc.ac.uk/Downloads/PDF/Transporteconomicsreport_FINALpdf.pdf

In conclusion, we believe that there is significant potential for carbon abatement in the surface transport sector, which would not harm the economy, and which would also deliver on multiple other Government policy goals.

Aviation

At present the Government does not intend to include the UK share of international aviation (or shipping) emissions in the Climate Change Bill. Friends of the Earth strongly believes that these emissions can and must be included in the bill from the start on the basis of existing international reporting methodology.

The case for the direct abatement of aviation emissions is irresistible, several studies have shown that current and forecast future passenger/km growth rates combined with continuation of current rates of efficiency improvements in aircraft fleets and operations could make a 80% cut 2050 target virtually unachievable. It is therefore clear that any suite of policy measures designed to

address aviation's climate impact must significantly reduce the rate of growth or preferably stabilise or reduce aviation emissions. The current proposal to bring aviation into the EU ETS will not achieve this on its own.^{xvi}

Here we consider three main ways to abate aviation emissions: -

1. Improved airframe and engine technology including use of alternative fuels
2. Fiscal measures including taxation and trading
3. Restrictions on provision of airport capacity

TECHNOLOGY IMPROVEMENTS

Although significant technology improvements have been made over the last 40 years, progress is much slower than the rate of growth of passenger-km.^{xvii} The UK's 'Greener by Design' and 'Sustainable Aviation' initiatives have made some ambitious and radical proposals for accelerating the rate of technological improvement. However even if these were achievable aviation emissions would still continue to grow unless passenger-km growth is reduced or reversed.

The Tyndall centre used the Greener by Design assumptions to develop aviation emission scenarios in two recent reports "The Future Starts Here" and "Aviation in a low Carbon EU".^{xviii}

These reports found that: -

- 1) An unprecedented rate of aircraft efficiency improvement including future use of new low carbon fuels is required if a growing aviation sector is to be part of a UK or EU carbon budgets designed to limit temperature rise to 2°C
- 2) The current aviation EU ETS proposal combined with the current or envisaged carbon price will not provide the necessary incentives to achieve the required rate of technology improvement
- 3) Other complementary measures will be necessary including: -
 - a. Taxation
 - b. Operational improvements to air traffic control and to improve aircraft load factors

So, whilst technology has potential, significant and unprecedented rates of improvement are required and even then other measures will be needed.

FISCAL MEASURES

The Government's main policy proposal for abating aviation emissions is incorporation of the sector into the EU Emissions Trading Scheme (ETS). This is unlikely to happen before 2012. The Government frequently states that this effectively means that emissions from the sector will be capped at 2004/6 levels and any subsequent increases will be offset elsewhere in the economy. We believe that there are a number of reasons why incorporation into the EU ETS is an inadequate response to the challenge that aviation growth presents:

- At least a 4 year delay in implementation coupled with uncertainty over possible legal challenges to the scheme by third countries.
- In the meantime, decisions are being made about expensive new airport infrastructure that will lock the UK into increasing aviation emissions.

- The concerns raised above about the legitimacy of the emissions 'cuts' in the EU ETS met largely or entirely by project credits.
- The ETS is an imperfect trading system, covering less than half of EU emissions and is not international. Aviation is not subject to international competition like other sectors and in an open trading system with a declining emissions 'cap' aviation's appetite for carbon permits could drive up the price of carbon to the point where other sectors such as steel manufacture would relocate outside the EU – so called 'carbon leakage'.

The Government acknowledges the role that direct taxation can play in abating carbon emissions in the aviation sector.

- In 2003 the Government reran its passenger growth forecasts and assumed that fuel tax is phased in on aviation fuel and VAT applied to air tickets. The results showed a large reduction in the rate of passenger and hence emissions growth. The reduced rate of passenger growth could be accommodated by existing runways until 2030 so no new runways would be required.^{xix}
- In 2007 the Treasury doubled Air Passenger Duty (APD), the Pre Budget Report predicted that this would save 2.75MT CO₂ per year.^{xx}

Friends of the Earth believes that direct taxation is a necessary and effective complement to incorporating aviation into the EU ETS. We welcome the Treasury's proposal to replace APD with an emissions based tax from 2009 that will be charged per plane. We recommend that an annual escalator must be applied to this tax at least until aviation is incorporated into the EU ETS. This would limit the increase in aviation emissions. This proposal would not just be cost effective it would be revenue raising, revenues that could be used to improve the alternatives to flying such as:-

- UK and international rail links
- Provision of video conferencing facilities

or to cut emissions in other parts of the economy (e.g. funding domestic energy efficiency or microgeneration).

RESTRICTIONS ON PROVISION OF AIRPORT CAPACITY

Current Government policy as published in the 2003 Aviation White Paper is for significant expansion of airport capacity including new runways at Heathrow, Stansted, Birmingham and Edinburgh airports. This will permit a doubling of passenger numbers by 2030 and a substantial increase in carbon emissions, primarily to allow more discretionary leisure travel. A substantial proportion of this increase in leisure flights would not take place if the runway capacity is either not available or at a premium price due to a shortage of runway slots, travellers would either forgo their journeys or choose alternative (less carbon intensive) modes such as rail. A revision of the Aviation White Paper incorporating a presumption against airport expansion would at virtually no cost restrict the increase in aviation emissions.

In conclusion, we believe there is significant scope to curb the increase in aviation emissions through introduction of the following policy measures:-

- **introduction of an annual escalator for APD and its replacement 'per-plane' tax in advance and in addition to incorporation into the EU ETS**
- **a presumption against expansion of airport capacity which would not only restrict the growth of aviation emissions at no cost to the**

Government but would provide much needed revenue to fund low carbon alternatives to flying and other carbon abatement measures across the economy.

Question 8: Budget costs and benefits

8. How will carbon budgets affect economic, social, fiscal and regional circumstances, and the government's energy policy goals, and how should the budgets be set to appropriately balance the costs and benefits to these factors?

The question is not clear whether it means that issues of “competitiveness, energy security of supply, energy poverty, fiscal and regional impacts” should determine the overall budgets themselves or the relative contribution of sectors to deliver those overall budgets. It is imperative that it is the latter. The overall budget should be set to deliver the overall goal – keeping within a two degree rise. Issues of competitiveness, poverty, regional impacts are crucial, but they are an issue for determining how the budgets are met, not what the budget should be.

The most recent and comprehensive review of the impact of climate change policies on economic factors including competitiveness, energy security of supply and energy poverty was the Stern Review. This review came to the overwhelming conclusion that the economic costs of inaction far outweigh the economic costs of action. It must be remembered that climate change beyond two degrees will have far larger impacts on the economy and on poverty than policies to prevent it happening.

The Stern Review also set out (in detail in Chapter 11) that the competitiveness impacts on the UK economy of strong climate policies would only affect a small number of sectors, and that in those sectors other factors “such as the quality of the capital stock and workforce, access to technologies, infrastructure and proximity to markets are usually more important determinants of industrial location and trade than pollution restrictions”.

The Stern Review's Chapter 12 also set out that strong climate change policies can be good for the economy, creating many new markets and products, removing existing inefficiencies and achieving other policy objectives.

In designing the strategy for how budgets are met these broad economic factors are important. Here again the Stern Review presents a wealth of empirical evidence that well-designed policies can have a very low negative impact, and sometimes positive impact on both the economy overall and on competitiveness in particular. Finally, we note that the financial estimates of the costs of climate change used by the Stern Review are themselves underestimates – because the figures are based on science which is now out-of date (the science now shows worse impacts) and because many categories of impact do not have monetary values attached (for example socially contingent impacts, and losses to ecosystems).

ENDS

References:

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- ⁱ Grubb, M. et al (2005) Allowance allocation in the European Emission Trading Scheme: a commentary. Climate Policy 5.
- ⁱⁱ IPA Energy Consulting report to DTI, 11 November 2005
- ⁱⁱⁱ We note also that 550ppmv has an extremely low probability of keeping the world to within a two degree rise. Also, if Governments decided in future that the goal was to stabilise at lower concentrations, with consequent lower damage costs, then the price used in policy making would be even lower, making it even less likely that in practice strong policies would come forward.
- ^{iv} AEA, 2005. <http://www.defra.gov.uk/environment/climatechange/carboncost/pdf/aeat-scc-report.pdf>
- ^v Point Carbon (2006) Carbon 2006: towards a truly global market.
- ^{vi} Roine, K "CDM/JI supply: will there be enough?" Carbon Market Europe, Point Carbon (1 June 2007)
- ^{vii} Directive 2003/87/EC establishing EU ETS
- ^{viii} For further evidence see WWF report:-
http://www.wwf.org.uk/filelibrary/pdf/emission_impossible.pdf
- ^{ix} Bartlett School of Planning (University College London) and Halcrow Group (2006) 'Looking over the horizon: visioning and backcasting for UK transport policy'
http://www.ucl.ac.uk/~ucft696/documents/Executive_summary_Jan_2006_HR.pdf
- ^x Commission for Integrated Transport (2007) 'Transport and climate change: advice to the Government from the Commission for Integrated Transport'
<http://www.cfit.gov.uk/docs/2007/climatechange/pdf/2007climatechange.pdf>
- ^{xi} European Parliament Greens / EFA Group (2007) 'Putting the brakes on climate change'
- ^{xii} HM Treasury (2007) 'The King Review of low-carbon cars – Part 1: the potential for CO2 reduction' para 4.27
- ^{xiii} J Anable & A Bristow (2007) 'Transport and Climate Change: supporting document to the CfIT report' <http://www.cfit.gov.uk/docs/2007/climatechange/pdf/2007climatechange-support.pdf> chapter 6
- ^{xiv} P Goodwin (2007) 'Does the discussion around cost effectiveness of hard and soft measures have implications for pre- and post-appraisal of transport schemes and programmes?' Paper for UKERC workshop on carbon abatement in the transport sector 30th October 2007
- ^{xv} J Anable & A Bristow (2007) *op cit* pages 29-30
- ^{xvi} The European Commission's own impact assessment (SEC(2006)1684) of the aviation ETS proposal showed that with an assumed allowance price of €15 emissions from the EU aviation sector will be reduced by just 3% by 2020 - the equivalent of just one year's growth.
- ^{xvii} DfT Passenger and CO2 forecasts predict an increase from 37.5MtCO2 in 2005 to 59MtCO2 in 2030, see:-
<http://www.dft.gov.uk/pgr/aviation/environmentalissues/ukairdemandandco2forecasts/airpassdemandfullreport.pdf>
- ^{xviii} http://www.foe.co.uk/resource/reports/living_carbon_budget.pdf
http://www.foe.co.uk/resource/reports/aviation_tyndall_07_main.pdf
- ^{xix} <http://www.cfit.gov.uk/docs/2003/aec/evidence/05.htm>
- ^{xx} see 7.56 http://www.hm-treasury.gov.uk/media/C/8/pbr_csr07_chapter7_258.pdf