DEFRA's pre-feasibility study into Personal Carbon Trading - A missed opportunity

The Lean Economy Connection
9th May 2008

Abstract

This short paper summarises the response of the Lean Economy Connection to DEFRA's pre-feasibility study into personal carbon trading. While welcoming the additional research in the field, we believe that a number of important misunderstandings are contained in the papers, and that DEFRA's consequent decision to delay a full feasibility study into the TEQs concept is ill-advised in the absence of other realistic and effective means for addressing climate change and fuel depletion.

DEFRA yesterday published the results of their 'pre feasibility study' into personal carbon trading. The headline finding is that "personal carbon trading has potential to engage individuals in taking action to combat climate change, but is essentially ahead of its time and expected costs for implementation are high".

The study consisted of four reports in the following areas, commissioned from various bodies:

i) Technical feasibility and potential cost – Accenture
ii) Effectiveness and strategic fit – DEFRA
iii) Public acceptability – Opinion Leader and Enviros Consulting
iv) Distributional impacts – Centre for Sustainable Energy

as well as a synthesis report which attempted to draw together the conclusions of all four.

All of these reports can be accessed on the DEFRA website at: http://tinyurl.com/5ffje4
The Centre for Sustainable Energy published a response yesterday: http://tinyurl.com/5g95w5

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Executive Summary

The DEFRA synthesis report states that,

> "To ensure the research areas were as compatible as possible and could be brought together into this synthesis report it was necessary to provide a baseline description of a personal carbon trading scheme, and setting some key assumptions around scheme design... For the purposes of this project, a Domestic Tradable Quotas (DTQs) model was assumed." (p.5)

As this DTQs model (now known as Tradable Energy Quotas – TEQs) was developed here at the Lean Economy Connection, we welcomed the Government's interest and investment and were happy to comment on the drafts of the four reports.

However, while the brief specified that the TEQs scheme should be the subject of the four reports, the different reports explicitly addressed significantly different schemes, making it hard to draw together a coherent set of conclusions from DEFRA's pre-feasibility study as a whole. We will therefore address these reports separately.

Technical feasibility and potential cost – Accenture

We believe that the Accenture report has made a useful contribution to research in the area of feasibility and cost, and welcome their headline finding that there are no insurmountable technical obstacles to the implementation of TEQs.

While we believe that the total set up costs of between £700 million and £2 billion, and running costs estimated at £1–2 billion per annum may be somewhat overstated, we would also emphasise that the hypothecated income to Government generated by the sale of TEQs allowances to organisations would be £6 billion per annum, based on the same assumptions. Additional savings would also be generated through the redundancy of other existing schemes.

Effectiveness and strategic fit – DEFRA

The headline finding of this report is that,

> "Government policy should look to raise visibility of personal carbon emissions where it can be done cost-effectively. Increased visibility would be expected to translate into raised awareness and as a result behavioural change. However, the additional visibility delivered by personal carbon trading would be limited and as it would come at a high cost, it would need to deliver very considerable savings to be justified. This suggests that other measures to increase the visibility of personal carbon emissions and influence carbon saving behaviours should be explored." (p. xii)

This report has highlighted – as we have ourselves – the inadequacies of a personal carbon trading scheme that does not involve the whole economy, but explicitly states that it does not examine the economy-wide TEQs model. Indeed, it also proposes 'softening' the hard emissions cap which is central to the TEQs model, and thus removing the guarantee that the national carbon budget is actually achieved.

We strongly dispute the report's argument that its conclusions on this alternative model nonetheless apply equally to TEQs.

Public acceptability – Opinion Leader and Enviros Consulting

The headline finding of this report is that,

> "Overall, the degree of resistance to individual behavioural change was less than had been expected compared to previous research Opinion Leader has conducted in this area. But even in this light, when first proposed at the meetings, there was a strong feeling against the perceived idea of Government-imposed 'limits' on carbon emissions from individuals. Of the three policy options proposed, PCT was seen as the most complex and difficult to understand, even though some could see that it may be more equitable than the other two options." (p.50)

The report's methodology was based around focus groups, in which a generic personal carbon trading scheme was briefly described to these groups. The results support our view that without an in-depth understanding of both the detail of the TEQs scheme and the severity of the challenges it is designed to ameliorate, attitudes to energy rationing are generally almost as negative as those towards carbon taxation.

As outlined in the DEFRA synthesis report, this report "can only be taken as a snapshot of the group's very first reaction to the proposal" (p.13). We believe the most interesting area for further research is the change in attitudes during deeper explanation and exploration of the topic. Our own experience over the past twelve years suggests that once the scheme design is fully understood attitudes tend to be overwhelmingly positive.

Distributional impacts – Centre for Sustainable Energy

This report adds to the weight of evidence that TEQs would be a financially progressive policy instrument, and we agree with the conclusion that, since a small number of low-income households may nevertheless lose out from the introduction of personal carbon trading (albeit by a relatively small amount), these exceptions could be addressed through compensatory measures, such as the existing benefits system.

However, we also believe that the reports represent a missed opportunity, as they focus exclusively on TEQs in relation to climate change, but do not address the benefits of applying TEQs to the related challenge of depleting fossil fuels. With the North Sea producing steeply declining quantities since 1999, and the UK now a net importer of both oil and gas, this is a critical issue.

Due diligence in the context of rising energy prices, global production trends and the geopolitical climate requires that an energy rationing scheme be ready for implementation at short notice as a means of guaranteeing access to fair shares of energy as supply tightens. For a full assessment of the benefits of TEQs, any investigation into distributional impacts would need to consider and compare the distributional impacts arising from an energy shortage *without* an effective rationing system in place.

In Conclusion

Overall, DEFRA's pre-feasibility study represents a useful addition to the body of research in this area, but does not constitute the detailed systems-audit of TEQs which could be the basis of a decision on whether to take the scheme forward. DEFRA's press release yesterday stated that:

> "The Government remains interested in the concept of personal carbon trading and, *although it will not be continuing its research programme at this stage*, it will monitor the wealth of research focusing on this area and may introduce personal carbon trading if the value of carbon savings and cost implications change."[1] (our emphasis)

In the absence of such a properly grounded evaluation, the development of ways of including the personal and the commercial sector both in the reduction of carbon emission and in the rationing of fuel has stalled. This leaves the United Kingdom and other economies unprepared and vulnerable to the consequences of energy shortages and unmitigated climate change. It is to be hoped that a full, grounded and careful feasibility evaluation will be commissioned in Britain or elsewhere in the near future. This is now a priority.

[1] http://www.defra.gov.uk/news/2008/080508c.htm, 8th May 2008

Detailed comments

Technical feasibility and potential cost report – Accenture

We believe that the Accenture report shows understanding of the TEQs scheme, and has made a useful contribution to research in the area of feasibility and cost. We welcome their finding that there are no insurmountable technical obstacles to the implementation of TEQs.

However, there are a number of points where we believe misunderstandings or inappropriate assumptions have been made, and we shall examine these point-by-point, going through the report in order for ease-of-reference. This is no reflection on the relative importance of the points raised.

3.2, p.11 – The report reads:

> "If individuals do not enrol in the scheme the design assumption is that their credits would be made available for auction."

While this appears a not-unreasonable design assumption, we believe it may need to be reviewed with caution. The scenario of individuals being forced to go without the use of the energy they are entitled to because they have failed to register in time would justifiably be a controversial one. The parallel scenario of wartime families having to go without their food ration because they had not procured a ration book is illustrative and DEFRA have indicated in personal communication that "this would certainly be something to be avoided".

3.2, p.16 (and 4.2, p.33) – It is strange that this report assumes *quarterly* auctions of allowances to organisations. As stated in our own work[2] and in this report, the auction model would mirror the Debt Management Office's existing auction design for Government Debt, in which Treasury Bills are auctioned weekly.

The report considers a scheme design in which the auction of allowances to organisations is quarterly, yet the issue of individual entitlements is annual (on a staggered basis). This disparity seems unnecessary. The TEQs scheme is based on concurrent weekly issues of both auctioned allowances and individual entitlements. The other essential feature of TEQs is the rolling budget. On the opening day, a year's worth of allowances is issued. After that, they are topped up on a weekly basis so that, on the first day of the second week, a further one-week's supply is placed on the market. In other words, between 51 and 52 weeks' supply of allowances will be on the market at all times.[3]

The alternative arrangement described in the report has a number of drawbacks, and appears to indicate that the authors had not considered the design feature of the rolling budget. The report states:

> "The enrolment and allocation process we have described in Section 3.1 is based on the assumption that Carbon Credits would be allocated in annual lots on a staggered basis (i.e. not everyone would receive their entitlement on the same day). This staggering of allocations may go someway to mitigate against acute market fluctuations – for example, if all 50 million individuals within the scheme sell their excess credits in the final two weeks of the year.."(p.16)

[2] David Fleming (2007), *Energy and the Common Purpose*, p. 19 http://www.teqs.net/book/teqs.pdf
[3] David Fleming (2007), *Energy and the Common Purpose*, p. 20 http://www.teqs.net/book/teqs.pdf

But there is no "final two weeks of the year" in the case of a rolling budget. A straight annual allocation would indeed cause acute market fluctuations around the time of issue, as might a quarterly auction and the fact that the two issuing processes (allocation to individuals and auction to organisations) would take place on different timetables. The idea of staggering the allocation process could also exacerbate any short term factors, as certain individuals would find themselves more short of allowances than others, and so would be willing to pay a higher price for their allowances on the market. We do not believe that the additional costs of a weekly automated issue need be substantially higher than those of a quarterly automated issue.

3.4, p. 23 – The report identifies four ways in which operators might make money from the scheme. One way that is not mentioned is via the operators' margin on the price at which allowances are sold on to organisations after being bought at auction.

If this approach was adopted then the operators could be assured of an income from the scheme. If minimal trading was taking place (thus reducing any transaction-income) then this margin could be increased to cover the costs of administering the individual carbon accounts, and to allow some operating profit.

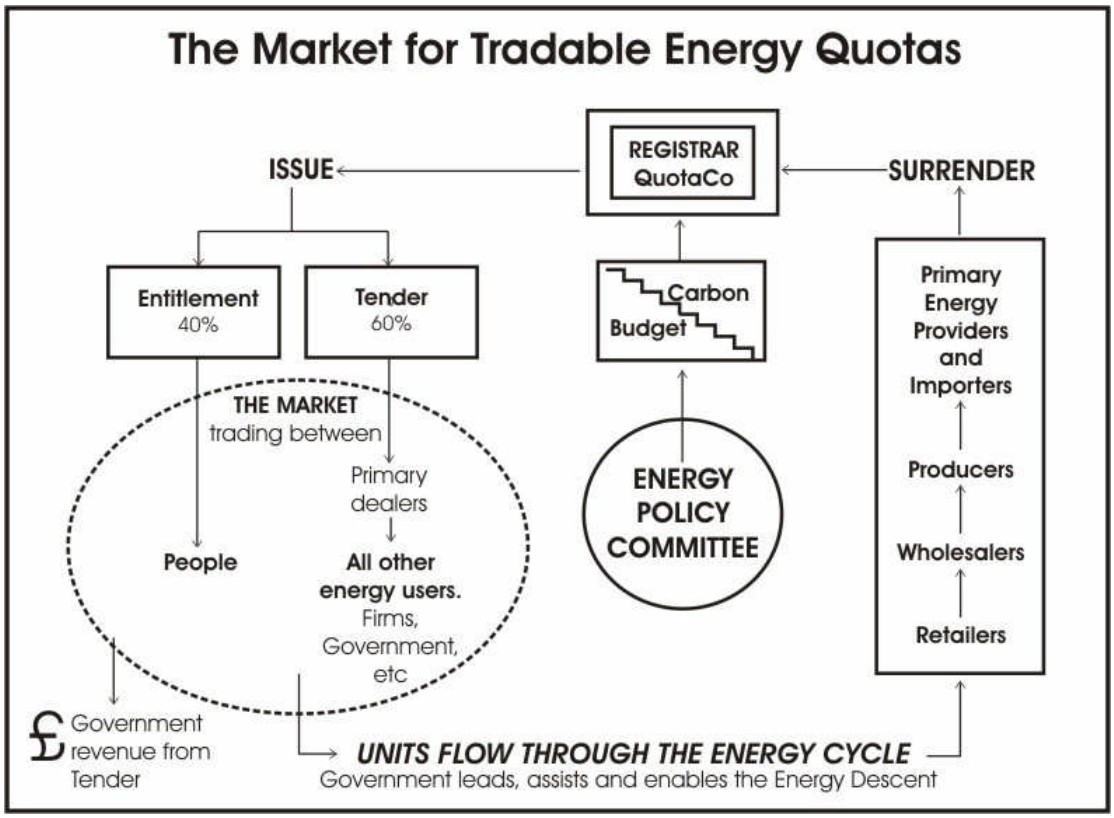
3.7, pp. 26-27 – Self-regulating flow of allowances – Here the authors appear to have misunderstood a fundamental aspect of the scheme. The report discusses…

> "…procedural and reporting requirements on the carbon 'retail' and Carbon Credit trading processes, including… a requirement on the registered 'carbon retailers' to collect the correct number of Carbon Credits from their customers to match their carbon sales and to report on these and redeem the Carbon Credits on a routine and regular basis with a central carbon accounting body." (p.26)

However, there would be no need for such a register of 'carbon retailers' (other than for infrastructure upgrades such as new software to handle allowance trading). The report seems to imply that each 'carbon retailer' will need to surrender the allowances it receives directly back to what they term the "aggregate national account", but this is not the case.

Instead, when the retailers buy energy from the wholesalers they would have to surrender to the wholesaler *the same allowances* that they have received from their customers. The wholesalers would then do the same when they bought their energy, and the allowances would thus flow back up the energy supply line until they arrived with the primary energy providers/importers, just as money does.

These energy providers and importers are then obliged to surrender the allowances (to the aggregate national account) in order to be permitted to bring carbon-rated energy into the economy in accordance with the national cap. This completes the cycle, as the allowances have returned to the body that is issuing them, as illustrated below.



So there is no need for a 'downstream' compliance and enforcement process to ensure that all carbon-related transactions are linked to the appropriate number of allowances, any more than there is a need for the Government to monitor every financial purchase in the country to ensure that the appropriate amount of money changed hands.

The TEQs market is essentially self-regulating: the energy company that sells you the fuel has to claim back from you the allowances it surrendered when it bought the fuel in the first place: allowances are pulled round the energy cycle, and (as in the case of money) it is in the interests of every participant to be sure that the chain remains unbroken. This does not rule out the need for routine auditing, but it enables auditing producers to fit comfortably into current commercial auditing requirements.

The above points would have substantial implications for the estimated costs of the TEQs scheme.

4.1, pp.31-33 – Costs vs. income – The report states, with various caveats, that:

> "Our estimates for the total set up costs of a PCT scheme of this type are between £700 million - £2 billion… Our estimates for the total running costs … are between £1 billion - £2 billion per annum,"

What is not mentioned in the report is that the income to Government generated by the scheme would be around £6 billion per annum.[4]

[4] The DEFRA document outlining the design assumptions for this research states that allowances covering 200 million tonnes CO2 p.a. would be distributed to individuals free-of-charge, and that this would represent 40% of the total national carbon budget. Accordingly the remaining 60% available for auction would cover 300 million tonnes CO2 p.a. At the assumed average market price of £20/t the auction of these allowances would generate gross Government revenue of £6 billion per annum (though the public sector would of course also be a buyer).

We see two possible reasons for this omission. The first is a possible underlying assumption that the same level of revenue would be generated by an upstream trading system, hence making this £6bn revenue irrelevant to the comparison between the two schemes. This assumption warrants further examination, however, as the (variable) price of the traded allowances would be different depending on which type of scheme is implemented. We would suggest that a TEQs scheme would be likely to generate a lower price for carbon allowances than an upstream scheme.[5] If true, this would reduce direct Government revenue from the auctioning process, but would also reduce the net energy costs paid by the economy as a whole, with important knock-on effects on competitiveness, disposable incomes etc. An examination of these effects is crucial to any comparison of the financial impacts of TEQs and an upstream auction.

The second possible reason for this omission is that the payments made to the Government in the Tender (auction) for TEQs allowances are being regarded merely as 'transfers', and not therefore as a mitigation of the cost. Transfers are payments made without any good or service being received in return, and the argument would be that if the scheme did not exist, energy users would not need to buy allowances. It is debatable whether the payments made in the Tender are in fact transfers in this sense, for these five reasons:

i) Purchasers obtain allowances to energy in return for their money, which are a clear benefit and may be regarded as a service.

ii) The allowances are *auctioned* in the Tender, which means that the price is under the bidders' control. This means that the cost of allowances accurately corresponds to the marginal utility for the purchasers – that is, it corresponds to the value of the service provided.

iii) They are also participating in a scheme which provides the even more significant benefit of a realistic and effective response both to the challenge of climate change and to fuel depletion, from both of which they derive utility.

iv) It is now widely recognised that the real social and environmental costs of climate change and fuel depletion can no longer be treated as 'externalities' and ignored. If it were not TEQs applying these costs to the economy it would be another scheme. If there were no such scheme the payment would be taken in consequences.

v) The revenue received from the Tender means that all energy users receive these benefits without having to pay any additional tax. On the contrary, since the Government is in surplus in the transaction, it is able to spend significantly on the task of working with energy consumers to enable them to achieve the energy descent, keeping the costs of these benefits low.

When considering the costs of a TEQs scheme it is also worth remembering the policy context into which TEQs would be moving. Consider these comments from the Environmental Audit Committee:

> "It is clear that the Government has responded institutionally to the challenge of climate change through the creation of new bodies to tackle specific climate issues. Although this process signifies the Government's willingness to tackle the issue, the organic process by which leadership and responsibility have evolved appears to have created a confusing framework that cannot be said to promote effective action on climate change… Upon its creation the Committee (on Climate Change) should conduct a strategic review of Government bodies with a major stake in climate change policy... aspects of the evidence that we have received for this inquiry

[5] David Fleming (2007), *Energy and the Common Purpose*, http://www.teqs.net/book/teqs.pdf , e.g. p. 36

have indicated to us that there is a need for an additional policy framework to lead to further emission reductions"[6]

and the Treasury:

"PricewaterhouseCoopers considered that it was becoming more difficult to establish which Government department was in the lead on climate change issues, in the context of a growing number of initiatives, programmes and associations which have been set up in recent years: "there is now perhaps a perception that the setting of government policy needs to be more focussed". Nor did the Better Regulation Commission (BRC) see sufficient cohesion, telling us that there needed to be a clear lead department. The BRC was encouraged by the concept of the Office of Climate Change, but insisted that it needed to develop a clear role and hoped that its priority would be establishing:

> the fundamental building blocks of the policy, which is understanding the pros and cons of different methods of carbon pricing, establishing a clear stabilisation goal so that everyone understands it and a carbon-price pathway—a clear methodology for evaluating policies across government—and to make sure that the [BRC's] seven tests are woven deeply into the policy-making agenda."[7]

The last of those 'seven tests' – as accepted by Government in May 2007 – is

"If it isn't working, change it".

And clearly there is a widespread feeling that the current piecemeal approach to addressing climate change isn't working.[8]

TEQs would not only achieve that clarity and focus, but would also *free up much of the spending* currently allocated to these various policies, as many of them would no longer be required, and the Government would be able to shift the focus from educating the country on the emissions reductions that are required to helping the country to achieve them.

This confers the benefit of leverage on government policy, applying solutions at the beginning of the pipe, which aligns citizens' motivation with the aims of the programme as a whole, so that a single right policy ripples through the whole system – rather than at the end of the pipe, which faces the massive task of preventing or repairing the problems that occur when that guiding motivation does not exist.

4.3, pp.34-35 – Implementation timescale – The report states that,

"If a decision to give further consideration to the implementation of a Personal Carbon Trading scheme were to be made by Ministers, it would in our view require some 6-8 years before such a scheme could become operational. The following are the main elements in this timescale:

Enrolment of adults into the Personal Carbon Trading scheme (9-15 months)…
Full feasibility study (9-12 months)…
Legislative proposals (12-18 months)…

[6] EAC Ninth Report - http://www.publications.parliament.uk/pa/cm200607/cmselect/cmenvaud/740/74010.htm
[7] Treasury Fourth Report - http://tinyurl.com/2pa79m
[8] Annex C of DEFRA's "Effectiveness and Strategic Fit" report discussed below counts a full *94* present or planned policies that impact on the level of personal carbon emissions, before even considering other emissions

> Design, development and implementation of the IT system changes needed in government, banking, retailing and other sectors (18-24 months)…
> Issue of new multi-functional smartcards (12-36 months)…
> Enrolment of adults into the Personal Carbon Trading scheme (9-15 months)…"

This expectation of set-up time appears to be excessive, for these four reasons:

i) The primary legislation required to implement TEQs is already passing through Parliament. Clause 28 of the Draft Climate Change Bill will give Government these powers. To quote the consultation document on the Draft Bill:

> "The building blocks of trading schemes in different sectors and to meet different objectives are very similar and therefore make it possible to take broad powers to introduce them through secondary rather than primary legislation. Taking these powers will make policy-making more responsive by avoiding the need for new and separate primary legislation to introduce any future schemes. This does not mean less analysis, scrutiny or consultation before a decision to implement a new scheme but will reduce the time and cost to the UK of developing and scrutinising the same building blocks again and again. This frees up time to consider the policy itself." [9]

As stated, analysis, scrutiny and consultation will still be required, but the necessary primary legislation will already be in place, and will not require a further 12-18 months.

ii) The report states that "some of these tasks could be overlapped to a limited extent", and we believe that many of these tasks could be undertaken in parallel. For example, once the decision to go ahead is taken, there is no reason why the issue of multi-functional smartcards should not take place concurrently with the enrolment of adults into the scheme.

iii) As explained above (3.7), the flow of allowances through the market is all done by retailers, wholesalers and primary producers in the energy cycle. It is they who would need to set up new entry categories in their stock accounts and ensure that their point-of-sale card readers had been modified. That is, the task would be widely distributed; it would not be another large Government information technology project. It would fall into the category of a substantial initiative by business, having much in common with the projects they regularly implement successfully on their own initiatives. It would be startlingly out of line with current practice for such a project to require six to eight years of development, particularly if it were given priority.

iv) Our climate and energy emergencies demand a realistic and effective response be implemented with all the urgency of a wartime response. When a thing really needs to be done quickly, it can be.

[9] HM Government (2007), *Draft Climate Change Bill,*: http://tinyurl.com/2gmjkj, p.46

Effectiveness and strategic fit report – DEFRA

The headline conclusion of this report is that,

> "Government policy should look to raise visibility of personal carbon emissions where it can be done cost-effectively. Increased visibility would be expected to translate into raised awareness and as a result behavioural change. However, the additional visibility delivered by personal carbon trading would be limited and as it would come at a high cost, it would need to deliver very considerable savings to be justified. This suggests that other measures to increase the visibility of personal carbon emissions and influence carbon saving behaviours should be explored." (p. xii)

Conclusions inapplicable to TEQs model

However, it is important to note that the personal carbon trading scheme examined in this paper is not the TEQs scheme. Although DEFRA's brief specified to all the research project teams that the research was to be based on the TEQs model, this report explicitly addresses Mayer Hillman's substantially different PCA scheme, which has a more limited scope. The report states that:

> "In this report, an assessment is made of the economic efficiency of creating a downstream cap and trade scheme that covers the following sectors; domestic primary fuel, domestic electricity use, leisure use of road transport fuel and leisure aviation, as proposed by Hillman (2004).
>
> Alternative designs have been proposed, including more ambitious economy wide schemes, however considering the net benefit of introducing trading to the above sectors provides an insight into the added value of personal carbon trading generally." (p.2, footnote 19)

Our own publications on TEQs are unreferenced as sources, but the report argues that the conclusions reached are nonetheless applicable to all forms of personal carbon trading scheme because: [10]

> "If trading cannot be introduced cost effectively downstream to these sectors then the element that differentiates personal carbon trading from other types of trading schemes will have been shown to be inefficient.
>
> Whatever other design features a particular type of personal carbon trading scheme has, if it cannot deliver cost effective abatement in these sectors, there will be no case for its introduction." (p.20, footnote 19)

Accordingly, for this report to be relevant to the consideration of an economy-wide TEQs scheme one would need to defend the assumption that the effect on the sectors covered would be the same, regardless of whether other sectors are involved.

This is the fundamental point that we would challenge. A scheme that does not include all sectors of the national economy would mean two different carbon budgets and ultimately two different prices operating for the same fuels within the same economy – an anomaly which black-market arbitrage

[10] David Fleming (2005, 2006, 2007), *Energy and the Common Purpose: Descending the Energy Staircase with Tradable Energy Quotas (TEQs)*, London: The Lean Economy Connection and at www.teqs.net. David Fleming (1997), "Tradable Quotas: Using Information Technology to Cap National Carbon Emissions", *European Environment*, 7, 5. pp 139-148. David Fleming (1997, 1998), "Tradable Quotas: Setting Limits to Carbon Emissions", *Lean Economy Discussion Paper*. David Strahan (2007), *The Last Oil Shock*, John Murray… (For full listing see endnote 2 in *Energy and the Common Purpose*).

would quickly destroy. It would also fail to account for the embodied energy in goods and services purchased by individuals. A single market for all users and for all purposes is also crucial for the public perception of the scheme, as a sense of common purpose will not be generated by a scheme which does not cover the Government, industry, agriculture etc.

Perhaps most crucially, without this co-operation and interaction, the level of change in infrastructures necessitated by emissions reduction targets ranging from 60% by 2050 upwards cannot be achieved by sectors of society working in isolation. Whereas this report considers the opportunity-set for households in isolation, it is the interactions between sectors that hold the key. It is a critical feature of TEQs that it is designed to stimulate and enable constructive interaction both between households and between households and all other users – companies, local authorities, transport providers and national government. The PCA scheme is not designed in this way.

For all of these reasons it can be seen that the effect of a limited PCA scheme on the emissions of individuals would be substantially different from the effect of an economy-wide scheme.

It is also important to appreciate that TEQs is not only a means to guarantee emissions reductions, but also provides an energy rationing system in the current context of energy shortages. A PCA scheme would not have this dual function, and this would make it necessary to devise a separate electronic energy rationing scheme in conditions of fuel emergency.

As such, we believe that to apply the conclusions from a report considering the PCA scheme to the TEQs scheme is inappropriate and misleading. We broadly agree with the report's conclusions on PCAs, but must reiterate that they are not applicable to TEQs, despite this being the stated scope of DEFRA's pre-feasibility study.

<u>Proposed 'soft cap' undermines purpose of scheme</u>

The report proposes the idea of 'softening' the hard emissions cap central to the TEQs scheme,

> "The Government may wish to be flexible about the number of allowances that are available in the scheme, increasing the number available should the price of allowances reach a level that is politically and socially unacceptable. This can be done by either issuing unlimited additional allowances and selling unlimited numbers of them to those prepared to pay a given 'ceiling' price. An alternative mechanism, which it has been proposed for the Carbon Reduction Commitment (CRC), is to allow participants to meet their obligations through the purchase and retirement of EU Emissions Trading Scheme allowances (EU ETS). This is a one way link as participants in the EU ETS cannot buy CRC allowances to meet their obligations. This would ensure that the price of the allowances in the CRC is always at or below the price of allowances in the EU ETS." (p.3)

These suggested mechanisms would remove the essential guarantee that the national carbon budget is actually achieved, and so are fundamentally in conflict with a core purpose of the TEQs system, not to mention undermining the underlying assumption of the report that the Government's emissions targets will be met, and that the only outstanding question is how to achieve this at the lowest cost.

Loosening the carbon budget because achieving it appears too challenging is the path to disaster. As Dr. Richard Gammon famously told the US Congress in June 1999,

> *"If you think mitigated climate change is expensive, try unmitigated climate change"*

It is true that a very high price for TEQs allowances would be undesirable, and for this reason the TEQs scheme is designed to keep TEQs prices as low as possible by stimulating the necessary changes in national infrastructure and lifestyles to bring down demand. Yet if the TEQs budget (as dictated by the actual circumstances of fuel supply and climate science) was very tight and this caused TEQs prices to rise, people would still have their regular entitlement of TEQs allowances, which cost them nothing, and so would still be able to get their ration of fuel. And a lower TEQs price would then be stimulated in two ways – firstly those who wanted to use *more* than their entitlement might find the price prohibitively high, and so decide not to buy. And secondly, those energy-thrifty souls able to make do with *less* than their entitlement would find they could profit greatly by selling their supply of allowances onto the market.

The report organises its case around a discussion of price signals and quantity rationing, which economics recognises as alternative control variables. If a commodity is rationed by quantity, the required limits to its consumption are determined directly by the quantity constraint; if the upper bound is set by price – by, for instance, a tax – consumption is constrained by the price. Theoretically, in the notional circumstances of an otherwise perfectly competitive market, the two instruments should achieve the same outcome, but the substance of study in this field of economics lies in delineating the many ways in which outcomes actually turn out to be profoundly different.

By introducing the notion of a 'soft cap', the report introduces a hybrid system in which there are two control variables in the same market. Under such a hybrid scheme the carbon budget is set as a guideline in order to raise prices to a level at which consumer demand for the asset of emission rights is constrained. The report considers the question of how high the price would have to go to keep emissions down to the level set by the cap, and then ironically goes to great lengths to argue against the convoluted proposition it is presenting.

The essence of the TEQs scheme is fundamentally different. Here it is quantity alone, not price, which is capped, which would also represent a critical political step forward. A developed country committing to meeting its obligations through domestic emissions reductions alone would amount to that country standing up and declaring *through its actions* that "failure is not an option" with regard to climate change. This would be providing real moral leadership to the world, and would make the wavering stance of other countries indefensible.

It is also important to note that this report contains an undefended assumption of the equivalence of 'domestic abatement' and 'international abatement' with regard to honouring our national carbon emissions budget. In reality there are well-documented problems with the existing international carbon trading schemes, which call into question whether such 'international abatement' really addresses the problem of climate change and allows us to avoid its worst consequences. [11]

The comparative assessment between a 'soft cap' personal carbon trading scheme and TEQs would be the comparative assessment between addressing climate change and failing to do so.

[11] For further details see for example Larry Lohmann et al (2006), *Carbon trading, a critical conversation on climate change, privatisation and power*, http://tinyurl.com/yxjcu6

Public acceptability report – Opinion Leader/Enviros

The headline finding of this report is that,

> "Overall, the degree of resistance to individual behavioural change was less than had been expected compared to previous research Opinion Leader has conducted in this area. But even in this light, when first proposed at the meetings, there was a strong feeling against the perceived idea of Government-imposed 'limits' on carbon emissions from individuals. Of the three policy options proposed, PCT was seen as the most complex and difficult to understand, even though some could see that it may be more equitable than the other two options." (p.50)

The report's methodology was based around focus groups, in which a generic personal carbon trading scheme was briefly described to these groups. The results support our view that without a proper understanding of both the detail of the TEQs scheme and the severity of the challenges it is designed to ameliorate, attitudes to energy rationing are generally almost as negative as those towards carbon taxation.

As outlined in the DEFRA synthesis report, this report "can only be taken as a snapshot of the group's very first reaction to the proposal" (p.13). We believe the most interesting area for further research is the change in attitudes during deeper explanation and exploration of the topic. Our own experience over the past twelve years suggests that once the scheme design is fully understood attitudes tend to be overwhelmingly positive.

However, the general public are unfamiliar with the detail of both upstream trading and TEQs, and a widespread education drive is required. The Enviros/Opinion Leader report confirmed this, finding that:

> "In particular, the research highlighted that the way that personal carbon trading is presented and described and the context in which it is set, can have a considerable impact on its acceptability. Although it is difficult to be definitive with this small sample size, the results from this project indicated that none of these options were necessarily unacceptable in principle. However, the concepts and detailed rules need to be communicated clearly and carefully to individuals if they are to be understood (either to gauge acceptability or to implement such a scheme). A considerable amount of information would need to be provided in order to help people understand and get to grips with such a scheme. The implementation of any of the policy options proposed would therefore present a communications challenge; a key starting point to influencing behaviour will be raising awareness and providing information of the impact of different activities." (p.50)

With this in mind it is unsurprising that the project found strong resistance to the idea of limiting individual emissions via any method, be it taxation, TEQs or upstream trading, despite the apparently contradictory viewpoint that "something should be done to cut emissions and that Government should be responsible for helping individuals to reduce their impact" (pp.50-51).

The experience of the present authors, and of others in the field, is that reaction to TEQs is usually negative until the details of the scheme are understood, but positive once that understanding is reached. We would suggest that a useful complementary line of research would involve undertaking this education with some of the individuals concerned and measuring the degree to which their opinions change with greater understanding.

Research conducted in Canada has also indicated that people often have an initial negative reaction to the concept of rationing, but that this reaction changes drastically once they have been convinced

of the need for a carbon/energy descent. When that assumption is in place, and the alternatives are understood and compared, there is a strong preference in favour of TEQs, not least because respondents appreciate that it empowers the individual and his or her neighbours to address the problem, rather than leaving them as passive recipients of tax and regulation.[12]

[12] Lee-Gosselin Associates Ltd (1985), Approaches and Attitudes to Fuel Conservation, Final Report to Energy, Mines and Resources, Ottawa, Canada.

Distributional impacts report – Centre for Sustainable Energy

This report adds to the weight of evidence that TEQs would be a financially progressive policy instrument, finding that:

> "Approximately three fifths of UK households would have more allowances than they currently need under a PCT scheme based on equal per capita allowances for adults with the system cap set at current emissions. The distribution of these 'winners' is progressive: 71% of low income households are in this category, whereas 55% of high income households are 'losers'."

And that:

> "This progressiveness is enhanced by the fact that for households that lose, average allowance deficits tend to increase with income, and for households that gain, average allowance surpluses fall with income. As a result, low income households tend to gain more and lose less than high income households." (p.69)

We welcome this confirmation, and agree with the conclusion that, since a small number of low-income households may nevertheless lose out from the introduction of personal carbon trading (albeit by a relatively small amount), these exceptions could be addressed through compensatory measures, such as the existing benefits system.

However, we also believe that the reports represent a missed opportunity, as they focus exclusively on TEQs in relation to climate change, but do not address the benefits of applying TEQs to the related challenge of depleting fossil fuels. With the North Sea producing steeply declining quantities since 1999, and the UK now a net importer of both oil and gas, this is a critical issue.

Due diligence in the context of rising energy prices, global production trends and the geopolitical climate requires that an energy rationing scheme be ready for implementation at short notice as a means of guaranteeing access to fair shares of energy as supply tightens. For a full assessment of the benefits of TEQs, any investigation into distributional impacts would need to consider and compare the distributional impacts arising from an energy shortage *without* an effective rationing system in place.

In Conclusion

Overall, DEFRA's pre-feasibility study represents a useful addition to the body of research in this area, but does not constitute the detailed systems-audit of TEQs which could be the basis of a decision on whether to take the scheme forward. DEFRA's press release yesterday stated that:

> "The Government remains interested in the concept of personal carbon trading and, *although it will not be continuing its research programme at this stage*, it will monitor the wealth of research focusing on this area and may introduce personal carbon trading if the value of carbon savings and cost implications change."[13] (our emphasis)

In the absence of such a properly grounded evaluation, the development of ways of including the personal and the commercial sector both in the reduction of carbon emission and in the rationing of fuel has stalled. This leaves the United Kingdom and other economies unprepared and vulnerable to the consequences of energy shortages and unmitigated climate change. It is to be hoped that a full, grounded and careful feasibility evaluation will be commissioned in Britain or elsewhere in the near future. This is now a priority.

[13] http://www.defra.gov.uk/news/2008/080508c.htm, 8th May 2008