

sustainable development commission

SDC submission to

Stern Review
on the economics of
climate change

December 2005

1 THE CLIMATE CHANGE CHALLENGE

Recent evidence suggests that the climate change impacts resulting from a stabilisation of CO₂ concentrations at 550ppm – the basis for the UK's 60% target – may have been previously underestimated and should be avoided if at all possible. There is growing concern that even current concentrations of 381ppm are beginning to cause significant damage. Concentrations are increasing at around 2ppm per year, and it will now be impossible to avoid 400ppm. Although 550ppm will itself be a huge challenge, it now seems increasingly likely that the international community will need to set a much lower acceptable limit, possibly around 450ppm.

The central message is that any level of CO₂ above pre-industrial levels can be expected to cause undesirable effects on the global climate, and the risk of severe and potential runaway effects increases with every increase in concentration levels.

As there is a well understood link between the amount of CO₂ we release into the atmosphere and the risk of severe climate change, we will at some point need to decide what concentration level is acceptable and then act accordingly to stay within this cap. Such an approach will need to have regard for the rate of emissions reduction that is technically feasible, employing a bottom-up approach.

The basis for climate change policy cannot be framed in terms of simple 'cost-benefit analysis', but must be based on whether the net costs of a cost-effective strategy to tackle climate change represent a 'reasonable insurance premium' against the effects of climate change, and against fossil fuel price rises and scarcity. Attempts to calculate a social cost of carbon based on marginal damage are likely to severely underestimate

the more serious effects of severe climate change impacts.

The potential gravity of the effect of rising CO₂ concentrations, and the cumulative and potentially irreversible nature of the process makes a strong 'a priori' case for invoking the precautionary principle – making sure that policy options allow for early and effective action to reduce emissions even though it would be decades before any benefits became evident.

Classic economic theory (by which deep cuts in carbon emissions could theoretically be validated by establishing the intersection between the rising marginal cost of CO₂ abatement and falling marginal benefit in order to indicate the 'optimum' emission reduction and the "acceptable cost" of doing so) may well prove to be unworkable in this case because:

- the degree of uncertainty creates very large numbers of potential intersections over many decades;
- over time, marginal abatement costs might fall (through innovation), and marginal abatement benefits might rise (if the consequences of cumulative irreversibility become more evident);
- the quantification of the benefits of abatement decades hence is much more difficult than quantification of the costs (even though that itself is not easy).

The argument that meeting the climate change challenge will result in unacceptable 'economic damage' completely ignores the virtually incalculable economic damage from severe climate change effects. What we need is a form of economic growth that embraces sustainable development principles –

stimulating enough economic activity to generate improved well-being while living within environmental limits.

It is worth noting 2 commentators - Mike Parker in a paper presented in Nov 2005, and Clive Hamilton (in *Growth Fetish*) who both highlight the minimal impact on GDP of moving to a low carbon economy. As Mike Parker puts it:

"..studies by and for the DTI suggest that the effect of a "low carbon strategy" would be to lower GDP by 2050 by some 0.5%-2%: equivalent to less than one year's growth of GDP, which can be expected to expand two-or-three fold over the next half century. If that proved to be the outcome, there would be little difficulty in arguing that the strategy represented a reasonable "insurance premium" since there would be no real problem of affordability, since it is too small materially to affect the economic growth rate as a whole... "

2 POTENTIAL POLICY RESPONSES

Given this context, the SDC submission is based on three main interdependent points which are all based on or stem from our work on *Redefining Prosperity*.

- Decoupling energy use and economic growth
- Internalising external costs
- Capping emissions and trading: a carbon-constrained economy

2.2 Decoupling economic growth and energy use

In broad policy terms, the Government's favoured strategy for maintaining economic growth on a more sustainable basis is to improve resource productivity – getting more economic value from each unit of production, thus 'decoupling' economic growth from increased resource use.

This strategy appears to offer a relatively painless route to a cleaner environment without in any way jeopardising macro-economic priorities. It is far more attractive to concentrate efforts on the supply side (seeking technological changes that improve efficiency of resource use) than it is to confront problems of demand management.

The Government's 'decoupling indicators' show that this has happened in many important respects including many polluting emissions (sulphur dioxide, ozone-depleting gases, nitrogen oxides and carbon monoxide), and the UK's total material requirement which grew by 12% between 1970 and 1999 whilst GDP increased by 88% during the same period. However much of this shift is attributed to the shift from manufacturing to

service industries and does not reflect the energy embodied in imported goods: just because we no longer produce energy-intensive goods in the UK we are not absolved from responsibility for the emissions and other environmental and social impacts associated with their production.

With greenhouse gas emissions, the race so far is pretty much a dead heat: efficiency improvements in buildings are just about keeping pace with increases in consumption. In road and air transport, however, efficiency gains are not managing even this: increases in consumption are outrunning efficiency improvements by a factor of at least nine. Research by the Tyndall Centre shows that moderate growth by the aviation sector would fill the UK's total carbon allowance if we set ourselves a cap consistent with stabilisation at 450ppm.

It is therefore clear that a reliance on conventional improvements in resource efficiency (or more specifically 'carbon intensity') will not deliver the substantial cuts in CO₂ emissions that are required. Indeed, it seems unlikely that the decoupling trend is likely to continue in the same way as over the past 30 years (given that certain structural changes will not occur again) without intervention either by government or through a large and sustained increase in energy prices. The challenge facing government is therefore how to intervene to ensure far greater resource productivity, whilst simultaneously ensuring that low carbon energy supplies are brought into the energy mix.

Evidence gathered in the review of the Climate Change Programme shows that

energy efficiency achieved in households is often being offset by the “rebound effect”, whereby savings in energy use are offset by increased use of energy-consuming appliances. As more and more appliances become commonplace, this trend is likely to have increasing significance despite overall reductions in demand as a result of active energy efficiency policy implementation.

2.3 Internalising external costs

The SDC believes the Stern Review needs to look at some of the inherent and fundamental issues that are inhibiting really significant progress in tackling climate change. Such a broad Review should not confine itself to the status quo, but should examine critically the decades of perverse subsidies and the “licensed externalisation of costs” to keep energy prices low. The cumulative affect of these failures has been perversely low fossil fuel prices, and so neither producers nor consumers are required to pay for the full cost of their actions. The environmental cost of energy use in the UK will be paid for by future generations, globally, in coping with the effects of climate change.

This transfer of costs is contrary to the principles of sustainable development, and should be seen as a significant and entirely illegitimate subsidy for the present-day industry and consumers. It also creates a decidedly un-level playing field when comparing the costs of action on climate change against alternative options based on continued use of fossil fuels with their externalized climate change costs.

We recommend that the Stern Review thoroughly examines the potential impact on products and services when the costs of climate change are internalised into fossil fuel prices. By offering an alternative analysis to the conventional approach, Government could begin to see a way of moving ahead on this agenda in a way that will build long-term sustainability into policy making processes.

Resource flow accounting will also need to be a part of this analysis, and we would recommend further work to reveal the true impacts of imported products and services on the UK’s overall level of responsibility for carbon emissions.

2.4 Capping emissions and trading: a carbon-constrained economy

The two overarching goals of sustainable development are *living within environmental limits*, and *ensuring a strong, healthy and just society*. These core principles are key to determining an upper limit to CO₂, recognising that we are already past a safe concentration and that any level should aim to avoid the worst predictions of climate change scientists (for example, the IPCC Assessment Reports).

To accurately value and therefore internalise carbon emissions into economic decisions, a price for carbon needs to be determined. This price is meaningless unless it is directly related to the scarcity of the resource it is meant to represent. Fixing an upper limit on the supply of carbon (in terms of what we are collectively permitted to emit in total) will create the demand for it, resulting in a price of carbon that reflects the marginal abatement cost of reducing CO₂ emissions, as experienced by the end user.

A market-determined price of carbon is inherently more robust than attempts to determine it empirically, as only the traders in the market will know what cost is necessary to stimulate a certain level of action. This is what lies behind cap and trade schemes, or ‘emissions trading’, in which carbon emissions are capped and the market sets the price. However, the current EU Emissions Trading Scheme (EUETS) relies on a cap set only for short periods, and does not currently base this cap on an estimation of the absolute reduction in emissions that is needed as part of a long-term strategy. It therefore follows that the price of carbon resulting is not a true price of

carbon, as it has not sufficiently limited the 'resource' being traded.

An efficient and effective emissions trading scheme would need to have a long-term cap, which could then be divided by the number of years or blocks of years within which the cap has to be met, creating distinct carbon budgets over set periods. This would allow the market to price carbon within each period, whilst having full information on the final outcome and long-term scarcity of the resource and hence an expectation of prices in future periods.

Emissions trading can be upstream or downstream, or somewhere in-between. Upstream emissions trading would allocate emissions rights to fuel producers and importers, who would then establish a market for carbon between themselves and pass the resulting cost of carbon on to their customers (mainly power generators, refineries, and industry). This cost would be passed down through the economy to final consumers. This approach in effect works like a tax, with emissions reductions encouraged solely through the price mechanism.

Downstream emissions trading could take a number of forms, but taking a strict definition would involve the allocation of emissions rights to the final end-user - individuals and businesses.

The current EUETS falls into an in-between category, with emissions rights allocated to some industrial end-users and the power generating sector, but not to SMEs or individuals. As a result it only covers a proportion of the emissions in the economy. Even if this is extended to other industrial sectors and aviation, the EUETS cannot be classified as a proper downstream scheme, as for most individuals and businesses it relies on an indirect price effect, and does not allow them to take part in the market.

The SDC believes a more comprehensive emissions trading scheme, (ultimately covering all sectors of the economy including individuals) will need to be the way forward. Current policies for tackling climate change are not designed to make fundamental changes like this: they are designed only to make incremental improvements to existing policies, and overcome perceived barriers. Thus the Energy Efficiency Commitment could not be converted into an emissions trading scheme, it will need to be redesigned completely so it can move in the direction of trading over time.

We would recommend therefore that pilot programmes in householder trading are trialled to identify the advantages and problems associated with such a mechanism. In the meantime it would be preferable to explore ways of liberalising access to EEC by players other than energy suppliers, to begin to engage other bodies interested in the business opportunities of saving carbon emissions from households.

The SDC is also extremely supportive of a proposal being considered as part of the Climate Change Programme Review to introduce a mandatory UK ETS for business and the public sector. Analysis by the Carbon Trust¹ shows interesting results if such a scheme covered major retailers, building managers and the public sector, where a combination of auctioning allowances, and a rebate on the Climate Change Levy (80% in the first year) would cover any additional cost to business. The Carbon Trust estimates that such a scheme could save 2.5MtC/yr by 2010, rising to 5MtC/yr by 2020. A mandatory UK ETS could also be expanded to cover the sectors with Climate Change Agreements when they expire in 2008, and to other sectors such as the agricultural or haulage sectors. It would also be highly complementary to the downstream emissions trading outlined above.

¹ The UK Climate Change Programme: Potential evolution for business and the public sector. Carbon Trust, Nov 2005.

3 COMPETITIVENESS

The SDC believes that an economy that moves earlier towards a low carbon economy, through efficiency measures and technology transformation, is one that will over the medium term reveal itself to have a competitive advantage. Global businesses are seizing the opportunities to reduce energy waste by early investment in more efficient technologies, and by improved and sustained good energy management practices, and they recognise that their ongoing cost savings are helping to make them more competitive than other businesses in the field. We firmly believe that this should be the thesis followed by the UK as an economy, to enable us to gain early mover advantage.

Analysts such as the Carbon Trust have good evidence that achieving a 20% cut in carbon emissions by 2010 is possible and is cost effective in the business sector. Similarly in the household sector the overall savings to the economy in saving energy far outstrip the costs of implementing energy efficiency programmes. However Government needs to recognise that more intervention is needed to begin influencing peoples' behaviour and understanding of the impacts of their behaviours and choices, and be willing to make more policy interventions to tackle these barriers².

² Further thinking on immediate policy interventions is contained in the SDC response to the Climate Change Programme Review

