ASSESSING THE COSTS AND BENEFITS OF ADAPTATION TO CLIMATE CHANGE

We have an imperfect knowledge and understanding of current risks, and even where we understand them, are not very good at incorporating a proper assessment of risk into decisions – although there are mechanisms that enable this. Most decision makers make little formal attempt to deal with changing risk levels over the lifetime of an investment. Most of us are pretty lousy at managing risks and base decisions on a mixture of partial understandings coloured by our own attitudes to certain sorts of risks – more people die on the roads in a month in the UK than have ever died of variant CJD, but our reaction to the latter was extreme and sustained. We are even worse at dealing with uncertainty.

Complexity leads to a confused signal

Even where the direction of a climate change effect is well understood and communicated, scientific uncertainties over quantum and timing complicate decision-making. But climate is made up of a range of parameters and social and economic impacts may be determined by particular combinations – temperature AND rainfall patterns. Alternatively responses may be driven by the most significant impact, even if this is less frequent and more uncertain. So "cognitive overload" quickly sets in. Inaction may result even though there is a strong "suspicion" that investment in adaptation would be worthwhile. Public policy or economic measures can reinforce certain elements of these signals where desired public benefits would accrue from individual actions.

Incentives for individual action

For an individual or business to act they need to perceive or receive early rewards/benefits. These might be:

- Reduced damages or losses from current weather events, severe or "routine";
- Reductions in other maintenance or ongoing costs such as insurance (but markets can only factor in short term risks, not long term);
- Enhanced asset values or returns on investments through higher rents or dividends;
- Enhanced reputational or other intangible benefits such as certainty or shareholder assurance;
- Fiscal or other financial incentives.

These incentives would lead to market-based solutions which may be diverse and so increase societal resilience. If the combination of these benefits is insufficient to prompt action, and government wishes to ensure that wider societal benefits are delivered by adaptive actions, regulatory approaches will be necessary.

Adaptation is a merit good

This imperfect risk management process is in part fed by an inability to perceive, let alone quantify, the full costs and benefits associated with a choice (or decision), perhaps because we are neither the beneficiaries nor bearers of all of these.

Climate change mitigation is seen as a top-down process, requiring a regulatory approach in order to ensure trans-boundary and inter-generational costs are internalised by those giving rise to greenhouse gas emissions. GHGs are managed as a public good.

Climate change adaptation is typically seen as a bottom-up process, driven by the self-interest of the individual, firm or community benefiting from the adaptation measure. But events such as the Carlisle floods, let alone those on the scale of Hurricane Katrina, demonstrate that geographically concentrated weather events quickly generate a non-linear escalation of costs as infrastructure – physical assets and networks as well as social support systems – are disrupted. Improved resilience delivers wider social and economic benefits and may be more costly to put in place than the individual's willingness to pay. For society to enjoy these increased benefits it needs to bear some of the cost. Adaptation is therefore a merit good, like education or health services. This may explain why reliance on bottom-up individual actions is not leading to widespread adaptation despite growing awareness of climate change.

Societal benefits might include:

- Protection of the most vulnerable;
- Social cohesion;
- Increased social and economic development and regeneration;
- Reduced job losses;
- Protection of social assets and critical infrastructure;
- Reduced health costs;
- Achievement of other public policy aims such as improved health outcomes or educational attainment;
- Protection of heritage, natural or cultural.

The case for public sector leadership on adaptation

In many developed countries public expenditure accounts for 35-40% of GDP and the public estate makes up a significant proportion of building stock and critical infrastructure. Public services provide critical social safety nets. Regulatory controls shape the decisions of private sector actors providing, for example, energy, telecoms, water, transport and housing. Public policy reaches even further into the activities of individuals and firms.

A strong signal that Government takes the need for action seriously would in itself encourage more action by the private sector.

In addition the public sector needs to give the lead in:

- Managing its own assets;
- Ensuring its regulations, economic instruments and policies do not provide perverse incentives (for no action or maladaptation) or confuse the message;
- Providing examples of what works;
- Developing markets by becoming early adopters, so reducing the costs of those adopting similar measures slightly later in time;
- Leaving options open for taking additional measures later, if action now is not warranted, eg through land use policy.

In conclusion

The economics of adaptation are probably more similar to those of mitigation than we have previously acknowledged. The technical solutions may be more diverse and need to be more closely tailored to local physical, social, cultural and economic circumstances.

We need long, loud and legal signals here too, since mitigation cannot avert the increasing climate risks already locked in to the climate system and which will be expressed over the next 30-40 years. The most vulnerable in all societies will be affected. But the affluent will also benefit where adaptations have positive CBAs.

The need for early action is vital. Some of the decisions we are making now need to take account of climate change and incorporate adaptive measures or at least facilitate future adaptation.

Jane Milne
9 May 2006