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Viewpoint

Climate change and planning: carbon control and spatial regulation

After a decade of false starts, the goal of radically reducing emissions of greenhouse gases, and particularly carbon dioxide, is rising up the political agenda. The renewed urgency of the 'carbon control' agenda reflects a tipping point in political, public and media acceptance of the reality of global warming, its human causes, and the future economic and social costs of inaction. Political commitment to carbon control is also being driven by various other pressures, including the rising cost and instability of oil supplies, and the threats posed by rapid industrialisation in India and China.

At the international level, the desperate search is on for a robust programme for reducing carbon emissions to levels that avoid irreversible and damaging global climate change (currently linked to a 2°C rise in global temperature). Like the 1997 Kyoto Protocol, the new international programme will be based on the setting of national targets. However, unlike the Kyoto Protocol, these targets will be framed within an agreed set of 'environmental' limits for future greenhouse gas emissions underpinned by broad international support. Clearly there is still much to be negotiated in terms of the distribution of the global emissions quota, but it is a matter of 'when' rather than 'if' the post-Kyoto target will be set. The geopolitics of carbon control means that the targets will be rigorously monitored and enforced at national and international levels.

Towards a new regulatory era of carbon control

Most Western nations have begun to anticipate the new era of carbon control, with Norway planning to become carbon-neutral by cutting its net greenhouse gas emissions to zero by 2050 (Vidal, 2007). In the UK, the Stern Review of the economics of climate change (HM Treasury, 2006) has been followed by a succession of policy commitments: a requirement for zero-carbon new housing by 2016; more stringent national targets for reducing carbon dioxide emissions by 60 per cent on 1990 levels by 2050; a draft planning policy statement on climate change (DCLG, 2006); ministerial enthusiasm for a personal carbon-trading scheme; and a raft of related policy initiatives across government departments. Political responses have been mirrored by widespread media interest in climate change and a minor publishing boom in carbon calculators and guides to low-carbon lifestyles. It is becoming increasingly

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apparent that the years 2006–2007 represent a major turning point in attitudes to socio-environmental regulation as a new era of carbon control takes hold. From now on, carbon considerations will exert increasing influence over the choices we make in all aspects of our lives. Moreover, the pace of change will increase rapidly.

There has been a lot of debate about the implications of carbon control for spatial regulation. So far, much of the discussion has focused on the actions required to reduce our carbon footprint: shifting the balance of energy supply away from carbon-based fuels; investing in renewable energy technologies; increased energy efficiency; reducing dependence on car travel; and investing in sustainable transport solutions (Bulkeley, 2006). The new politics of carbon control will bring a new urgency to these policy commitments, most of which have been priorities for well over a decade. However, relatively little has been said in spatial planning circles about what is likely to be the most distinctive aspect of new climate change regimes: the use of carbon quotas and market-based carbon emissions-trading schemes to guide the transition to low-carbon living. This element of carbon-control mitigation has largely gone unexplored because carbon quotas and emissions trading have not yet been rolled out explicitly to places and people.[1] Nevertheless, the subnational regulation of carbon emissions through quotas and trading – 'carbon budgeting', to use the UK government's preferred phrase – is clearly on the horizon as one of a set of government responses to the challenge of reducing the global carbon footprint.

Targets, trading and low-carbon capitalism

A low-carbon polity is structured around a somewhat instrumental goal, especially in comparison with the integrated perspective of sustainable development. The objective to be secured is the reduction of the major greenhouse-gas emissions to a stable level, as quickly and efficiently as possible. The definition of a stable level of emissions is set by climate science at a global scale, currently sanctioned by the Intergovernmental Panel on Climate Change (IPCC). Although the question of who should bear the costs of carbon inputs can get complicated, it is fairly easy to monitor the carbon we use, and also to hypothecate the embodied carbon of goods and services (Henson, 2006). However, as carbon control is ultimately concerned with reducing emissions rather than the use of CO_2 per se, it is possible that the political goal of carbon control could be achieved through technological fixes that seek to manage rather than reduce the emissions, such as carbon capture and storage.

While the broad goal of reducing carbon emissions has always been part of approaches to sustainable development, making genuine progress on a low carbon economy poses a range of regulatory and legitimation challenges for governments.

1 There have been limited experiments with emissions trading across some of the US states (Rabe, 2004).

So far, much of the approach has relied on a mix of fairly weak direct regulation, voluntary measures and market-based incentives, as energy generators pass carbon costs on to consumers. This has had only a limited effect in achieving the degree of behaviour change required, particularly at the household level, where emissions continue to rise (Seyfang, 2007). The new regulatory phase of carbon control will lead to an increase in direct environmental taxes, and in the UK this is already reflected in more stringent low carbon standards for housing and transport sectors, targets for non-renewable energy generation, government experiments with low-carbon communities, and monitoring the climate-change impacts of regional spatial strategies. The problem for governments is that pushing further via direct taxation is politically sensitive, potentially socially regressive and risks failing to engage citizens in the carbon-control agenda. Moreover, direct taxation does not necessarily guarantee a fixed level of emissions reduction.

The spatial logic of carbon control is that once the global emissions-reduction requirement is agreed, it is then translated into a series of territorially-based targets organised at the scale of the nation-state. However, because the carrying capacity is set globally, international carbon-control regimes offer the possibility of the exchange or trading of carbon credits between participants. One form of carbon exchange is a bilateral agreement, whereby one country offsets its carbon emissions by 'buying' credits from another country. An example is the Clean Development Mechanism, whereby Western nations can fund projects intended to reduce emissions in developing countries. Another form of exchange is the market-based trading of carbon units, in which a financial price is attached to carbon emissions, which can then be traded as commodities. The logic of these 'cap and trade' schemes is that those who save carbon emissions are rewarded by being able to sell the excess carbon credits, while those who overshoot have to pay for their pollution by buying additional carbon credits. The overall quota is reduced over time, thus pushing up the value of each carbon unit while ensuring that carbon emissions remain within natural limits. In 2005, the EU emissions trading scheme was established for large European companies. The UK government has also discussed the possibility of establishing personal carbon trading, in which carbon points would be used alongside cash when purchasing goods and services such as energy, petrol, flights, and so on (in theory each product could have an embodied carbon value).

For governments, there are a range of advantages to cap-and-trade carbon control. First, there is certainty about the emissions quota, but flexibility in the choice of how that target should be met. Second, carbon trading leaves participants to determine the cheapest and easiest way to meet their target, allowing for choices and trade-offs to be made between different sources of carbon emissions. In theory this should mean that carbon trading exerts an influence on upstream producers and service providers, as well as consumers. In addition, proponents of carbon trading argue that it is poten-

tially more equitable and more empowering than direct taxation, though that can depend on the ways in which carbon quotas are distributed (Seyfang, 2007).

The UK government has signalled its commitment to using new economic instruments as a central element in its approach to national carbon management: 'the best way to encourage a change in investment patterns towards a low-carbon economy, and the most cost-effective way of reducing global emissions, is to establish a price for carbon' (DTI, 2007, 38). The draft Climate Change Bill of March 2007 (Defra, 2007) set out proposals for enabling powers to introduce new domestic emissions-trading schemes and carbon budgeting as major parts of the government's plan for 'a clear and credible pathway' to a 60 per cent reduction in carbon dioxide emissions by 2050. The bill places a legal duty on the Secretary of State to stay within the carbon budget, which would be allocated for five-year cycles. The bill allows for the banking and borrowing of emissions across each five-year cycle, as well as emissions trading with other countries. It also supports the extension of existing international trading mechanisms, such as the EU emissions trading scheme.

The rolling out of carbon control: the regional and local dimension

The draft Climate Change Bill and related UK government carbon-control statements have largely sidestepped the question of how the national carbon budget will be distributed among people, places and organisations. This is perhaps not surprising given that the priority has been to set the national framework. However, given the importance of spatial planning in meeting climate change outcomes it is likely that carbon budgeting will have strong local and regional dimensions. To some extent the devolution of responsibility for (though not necessarily powers over) carbon control is already happening through targets for renewable energy generation and a requirement for regional planning authorities to monitor, report on and ultimately reduce the climate-change impact of regional spatial strategies (DCLG, 2006). The Energy White Paper 2007 also announced plans to implement a mandatory cap-and-trade scheme for all large UK organisations, which will cover many of the large local authorities. But that is just the beginning. Explicit carbon quotas will open up a new phase of socio-spatial regulation, and far-sighted regional and local decision-makers are busy preparing for the new era by developing carbon-reduction strategies and modelling the complex carbon impacts of different spatial planning and management trajectories. Some authorities, such as the Greater London Authority, are seeking to secure their competitive post-carbon future by experimenting with alternative energy supply, investing in low-carbon infrastructure and ensuring that present planning decisions will not be a burden in the future (Hodson and Marvin, 2007). The Transition Towns movement in the UK has seen carbon constraint as an opportunity to

experiment with (re)localisation and alternative economic development strategies (Transition Towns, 2006).

The question I want to pose is: how might carbon budgeting begin to change the metrics and calculations – and thus the politics – of decision-making at the subnational scale? One set of issues relates to the ways in which carbon quotas will cascade down to the regional and local scale.

- What will be the balance between quotas for organisations, places and households, and how will these overlap with one another? How will production-related and consumption-related emissions be covered in different quota and trading schemes?
- How will quotas be set for different localities? Will they be weighted to account for the current unevenness in carbon dependence by taking into account factors such as the amount of heavy industry, power generation, the number of households, geographical area, and so on? Will there be some form of contraction and convergence factored into carbon quotas and public spending?
- Will quotas for local areas be set at national or regional levels?
- How will carbon budgets be related to other strategic planning policy objectives such as new housing development, regeneration and economic development?

Another set of issues relates to the ways in which carbon quotas might alter the strategic and operational context for decision-making at the subnational level. Rigorous carbon budgets for places would mean that carbon impacts have to be taken into account in all spatial planning decisions. Hard choices would then have to be made about development and investment decisions on the basis of carbon impacts within the overall carbon budget. In other words, regional and local authorities will need to secure their own carbon-control fixes within the target they have been set, weighing up the costs and savings of actions in social, economic and environmental spheres. We might imagine the necessity for a much more integrated and interventionist approach to local and regional development, in which the management of energy, waste and mobility is explicitly linked to economic and social development. A whole range of questions and possibilities begin to open up:

- How will carbon budgets change the metrics of local growth and economic development strategies?
- Will carbon budgets lead to new forms of spatial interdependencies and/or spatial coalitions at the regional, intra-regional, subregional or city scales?
- Will the diktats of carbon control alter the relationship between citizens and local authorities?
- What will be the penalties for failure to comply? What will be the balance between disciplining or punishing and rewarding local authorities?

- Will local authorities need new powers if carbon trading is to work effectively?
- Will regions and localities be allowed to trade carbon credits? Will regions and localities be allowed to bank or borrow credits?

Lurking behind these questions are wider issues of uneven development and spatial justice in an era of carbon control. Some commentators, for example, see the potential for a progressive new localism as regional and local authorities seek to balance economic and social development with carbon control. This might lead to a different view of what gets valued, as well as new sets of relationships between citizens and the state. The possibility might even exist for local authorities to think about local development differently, particularly if strong sustainability approaches lead to financial rewards; some areas might find a future as carbon-savers, selling their excess credits to high-carbon centres of production and consumption. It is in this context that the new era of carbon control opens up the potential for a renewed progressive environmental politics following the somewhat cosy and co-opted approach to sustainable development years. But that is one scenario. One might equally warn of the dangers of a new protectionism and increased socio-spatial polarisation as some places and some communities find it easier to adjust to a post-carbon future than others.

Conclusions

Carbon control is rapidly becoming the 'overriding concern at the heart of sustainable development' (Bulkeley, 2006, 206), and it is well on its way to being an overriding concern at the heart of public policy. Backed by a powerful political mandate, carbon control entails a significant reworking of state–society and economy–environment relations as governments seek to deliver on commitments to a low carbon future. To achieve the required reductions in carbon (ab)use, governments will need to find new ways of steering patterns of consumption and behaviour, through a mix of encouragement and compulsion. This is reflected in the current experiment with new forms of socio-spatial regulation, and especially the commitment to carbon accounting.

The new regulatory phase of carbon control will gather pace when national targets are set in a post-Kyoto international treaty, and particularly when it becomes clear that much more stringent measures are required (the UK government's target of a 60 per cent cut in emissions is unlikely to limit the temperature increase to 2°C). Carbon control will be rolled out differently in different national regulatory contexts. However, in all countries, the imperative of achieving a low-carbon transition will bring challenges and opportunities for spatial regulation in two main ways:

- hard decisions about the distribution of emissions quotas between different places, and different interests within those places; and

- new requirements for regional and local authorities to manage their territories within their carbon quotas.

Whilst the outcomes of carbon control are uncertain, it is guaranteed that carbon rationing will have a significant impact on the ways in which we think about the sustainable management of cities and regions.

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