
European Climate Change Policy in a Global Context

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Introduction

The purpose of this paper is to analyse the evolution and state of policy towards climate change in the European Union (EU), to assess prospects for the EU meeting its carbon dioxide CO₂ emission target, and to consider future options for EU climate policy and their international implications. Because detailed accounts of the science are available elsewhere, for this paper it is sufficient to say that, although there have been significant advances in aspects of our scientific understanding, for policy purposes we remain uncertain but concerned:

- uncertain because, although the science is beyond dispute at the most fundamental level (i.e. that greenhouse gases such as CO₂ act to warm the earth's surface and that human emissions are increasing their concentration), we do not understand adequately the various positive and negative feedbacks associated with the water cycle, and longer-term responses associated with natural carbon and methane cycles; nor do we understand the critically important issue of ocean-current behaviour;
- concerned because we know that CO₂ and (to a lesser extent) other greenhouse gas emissions are making a large perturbation to the natural balance of flows of greenhouse gases and that this must ultimately affect climatic patterns and possibly the ocean-current flows that we believe have been implicated in past climatic instabilities.

Since concerns about human-induced climatic change first emerged as a major political issue in the mid- to late 1980s, governments in the European Union and Scandinavia have been in the forefront of efforts to start addressing the problem. Some EU countries, and later the EU itself, adopted unilateral emission goals and sought to follow these through with policies to limit particularly CO₂ emissions. Building upon this, the EU sought to lead the international process established by the UN General Assembly towards a strong Framework Convention on Climate Change.

The Convention which emerged from this process, signed by 153 countries at the UN Conference on Environment and Development at Rio in June 1992 (and by several more since), now forms the legal basis for the international development of responses to the climate problem.

International Importance of EU Climate Strategy *EU Emissions in the International Context*

Figure 1 shows the contribution of different regions to fossil-fuel CO₂ emissions in 1993, in terms of emissions per capita compared against population (the product—the area of the blocks—is thus proportional to total emissions). The USA was the biggest emitter, accounting for 25 per cent of the global total; the countries of Central/East Europe, including Russia, in total accounted for another 17 per cent, but following the breakup and economic contraction of this region, the EC is left as the second-biggest cohesive economic group, emitting 14.5 per cent of global CO₂ emissions (the accession of Austria and Scandinavian countries will add another per cent or so). Emissions from developing countries are rising rapidly, and now account for over a quarter of the global total.

On a per-capita basis, the USA is again the most profligate emitter and forms a distinct group along with Canada and Australia; European per-capita emissions are in a range similar to Japan and (now) to the former USSR, at about half this level. On this measure there is a big gulf compared with most developing countries, where emissions per capita are typically several times lower than in developed countries.

Because of this and differences in wealth, and the fact that the developed countries have dominated emissions historically, developing countries have taken the attitude that stabilization of emissions from industrialized countries is a precondition for them to consider any substantive abatement action. The economic collapse of the former Soviet Union means that emissions are contracting there anyway, and precludes them from taking a more active position. The focus is thus upon OECD countries.

The US Clinton Administration published its national strategy for 1990–2000 stabilization¹ of greenhouse gases relatively early, as did the United Kingdom. Japan has committed to a target of per-capita 1990–2000 CO₂ stabilization, published an Action Plan to Arrest Global Warming, and is working on more detailed measures. Japan has also emphasized the long-term nature of the problem, and technological strategies towards this long term. Action in all three of the OECD's major economic groupings is important, but there is a particularly strong spotlight upon Europe, which led the declarations of emissions stabilization

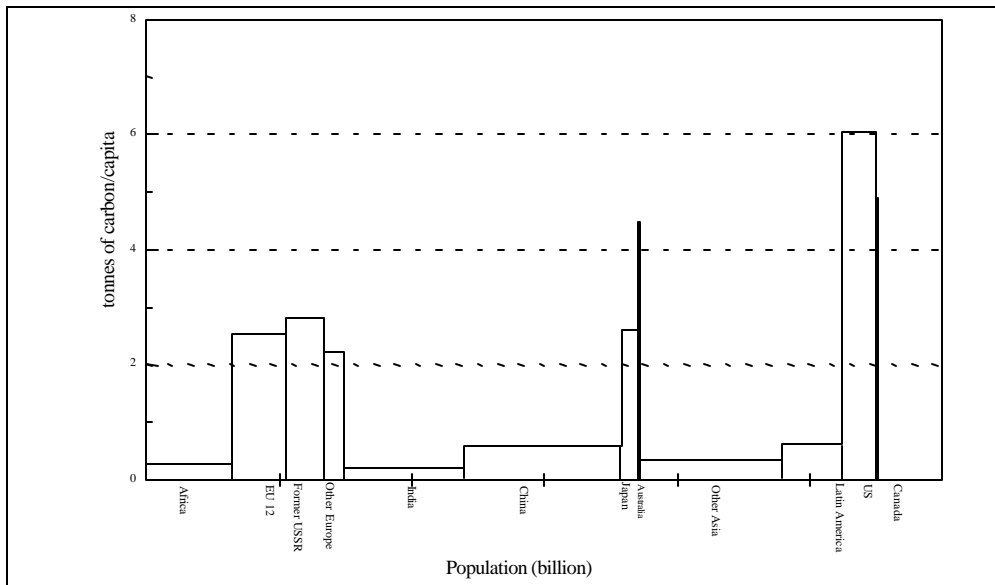


Fig. 1. Carbon emissions per capita and population, 1993

(Source: Derived by the author from *BP Statistical Review of World Energy* (1994) and *World Population Prospects*, UN).

but which has yet to agree on any coherent strategy for achieving it.

Internal Differences: The EU as a 'Test Case' and Nucleus

Another reason why the EU position is important is because in several ways the EU represents a microcosm of the global problem. EU member countries vary with respect to economic and institutional factors, and some of the problems faced by the EU reflect those that could arise, on a larger scale, at the global level in the negotiation of a co-ordinated climate change strategy. There is a 'North-South' dimension, with four countries in a markedly less advanced development stage; Spain, Portugal, Ireland, and Greece. Their relatively homogeneous economic situation is the basis for their common position on some aspects of climate change policy: these 'cohesion countries' do not want to bear the responsibility for past emissions of other EU countries, and they fear any constraint on energy consumption as an obstacle to the main aim of economic growth. Moreover, the economic costs of limiting emissions to 1990 levels would be higher for the currently less-developed countries as their economies are likely to grow faster, and start from a lower basis. Climate policy declarations in the EU have recognized the disparity, and that emissions from these countries are likely to grow in the context of overall stabilization, requiring reductions from some other member states.

Beside the decision on the extent of action, economic factors also

affect the choice of policy instruments. The same strategy will have different costs for different countries depending on the economic structure, existing taxation (average fossil-fuel prices in EU countries vary mainly because of differing taxes), and resource availability. For example, in the discussion on the carbon tax, the size of the nuclear contribution in France has motivated support for a tax entirely based on the carbon content of fuels rather than on a mix of carbon and energy; the opposite is true for Germany. Also, similar instruments would not be equally easy or efficient in all countries, given their differing political, cultural, and economic situations.

Political and institutional variations include the general national approach to policy-making; specific elements that influence the position on the particular climate change issue; and the state of the debate on sovereignty, subsidiarity, and the strength of EU decision-making powers. Wynne² draws a distinction between a 'top-down' approach centred on formal policy institutions (e.g. the Netherlands, Germany), and a 'bottom-up' approach (e.g. the United Kingdom) in which diverse actors other than the formal institutions play an important role in policy development and implementation, rather than simply adapting to it. Acceptance of policies can also be influenced by other developments; for example, the United Kingdom population is most unlikely to accept additional energy taxation just after the government has fought to introduce VAT on domestic energy consumption.

All these differences complicate the process of achieving agreement among EU countries, but they are small compared

with the differences that exist at the global level. Compared with the differences between the USA, Russia, and China, for example, the EU is quite a homogeneous group, with strong co-ordinating institutions already in place. If concrete international action to counteract global warming has any chance of being taken in the near future, it will be easier for a small group of relatively homogeneous countries such as EU member states to take the lead. Such action may also demonstrate possible avenues for implementing agreements between states with different economic conditions, cultures, and sensitivities. The demonstration effect of EU policy may thus strongly influence the approach taken at the global level. Furthermore, there exist various ways in which an initial coalition—such as the EU—may itself form a nucleus for an expanding regime, over and above the fact and impact of political leadership.³ Hence the importance of EU climate policy for the world.

The Development of EU Climate Policy⁴ *The EU CO₂ Stabilization Declaration*

The European Community has taken a forward stance on the issue of climate change, and CO₂ emissions in particular. EC member countries were amongst the first to adopt targets for limiting CO₂ emissions, and to urge the international community to negotiate a binding Convention including emission constraints. The decision with the single greatest impact on the development of the issue, both within the EC and on the broader international discussions, was the declaration by the joint Council of EC Energy and Environment Ministers of Member States, on 29 October 1990, that: 'The European Community and Member States assume that other leading countries undertake commitments along [similar] lines and, acknowledging the targets identified by a number of Member States . . . are willing to take actions aiming at reaching stabilization of the total CO₂ emissions by 2000 at 1990 level in the Community as a whole.'

This falls into the pattern of 'constructively ambiguous' declarations that mark many stages of the development of climate policy, most notably the Convention itself; it expresses 'willingness to take action aiming at . . .', and 'assumes' that other countries will take similar measures, but does not make the goal explicitly conditional upon such action. The UN Climate Convention, which the European Union signed some twenty months later at Rio, reiterates this 'aim' for all industrialized country signatories.

The EU's CO₂ stabilization goal has been repeatedly reaffirmed, most importantly with the EU Council's Monitoring Decision—a legal instrument in terms of EU law—that contains a preamble highlighting repeated reaffirmations of the goal (see below). Also, both the process

and outcome of developing the Convention have added greatly to the status and importance of the EU's commitment. To renege upon it now would undermine the UN Convention in the very area in which the EU fought hardest for stronger wording, and would be used by developing countries as a *prima facie* reason why they should not take significant action. Given that the target has already been reaffirmed by the Union's Council of Ministers, it would also make the EU look foolish, if not actually devious. Accordingly, there are now strong pressures to ensure that the EU stabilization goal is not abandoned, and to find ways of achieving it.

Stabilization by the EU is not the same thing as stabilization by all individual states, since the former allows emissions by some countries to increase *if* others reduce accordingly. The less-developed Cohesion countries—notably Spain, Portugal, Greece, and Ireland, which start from a base of per-capita emissions far below the EU average—made it plain that they would *not* stabilize their own emissions. They signed the Convention on the same basis, drawing on the provision for joint implementation of the stabilization goal—namely, their participation in the EU goal—as their commitment. The Council Declarations, and the Monitoring Decision, clearly recognize that these countries are likely to increase emissions—and by implication that others in the EU must reduce correspondingly to achieve the collective goal.

To meet the legal requirements of the Convention, a full EU report, detailing strategy in place to achieve stabilization, should be lodged with the Secretariat by 21 September 1994. The difficulties in preparing this—which at the time of writing seem unlikely to be resolved in time to meet the deadline—reflect the fundamental dilemmas and unresolved tensions in EU climate policy.

EU CO₂ Emissions Stabilization: National Composition

The EU's stabilization goal was not a random choice. Nor did it reflect simply a recognition that such 1990–2000 stabilization was fast becoming a standard symbolic and psychological demonstration to the developing world that developed countries could, and intended to, start addressing the problem by at least ensuring that their CO₂ emissions did not continue to rise. It was also a reflection that the targets already declared by member countries, if achieved, would be almost sufficient to achieve 1990–2000 stabilization across the EU. This is indicated in Table 1, which shows various measures of 1990 emissions by member countries, and the declared national emission targets. Set against these are the emissions projected in the absence of any abatement measures for the Reference Scenario calculated by the European Commission's Energy Directorate.⁵

The table illustrates several points about the EU situation

EU Monitoring Decision (passed by Council of Ministers, March 1993)

Whereas on the signing of the Convention the Community and its Member States reaffirmed the objective of stabilization of CO₂ emissions by 2000 at 1990 level in the Community as a whole . . .

2.1 The Member States shall devise, publish, and implement national programmes for limiting their anthropogenic emissions of CO₂ in order to contribute (i) to the stabilization of CO₂ emissions by 2000 at 1990 levels in the Community as a whole, assuming that other leading countries undertake commitments along similar lines, and on the understanding [of burden-sharing giving special allowances for poorer EC members] . . . (ii) the fulfilment of the commitment . . . in the UN Framework Convention on Climate Change.

2.2 Each Member State shall . . . include . . . details of national policies and measures . . . and trajectories for its national CO₂ emissions . . . to 2000.

5.3 The Commission shall evaluate the national programmes, in order to assess whether progress in the Community as a whole is sufficient to ensure fulfilment of the commitments . . .

5.4 The Commission shall report to the Council and the European Parliament the results of its evaluation within six months of the reception of the national programme

6. After the first evaluation . . . , the Commission shall annually assess in consultation with the Member States whether progress in the Community as a whole is sufficient to ensure that the Community is on trajectory to fulfil the commitments . . .

Total emissions are dominated by Germany and the United Kingdom, and then Italy and France. There are wide differences in the starting per-capita emissions, with those from Germany and the United Kingdom being about twice the level in Spain, with Portugal even lower. This reflects different patterns of economic development, but also other factors like climate and energy-supply mix, as indicated by the relatively low per-capita level of France and Italy.

The reference projections indicated that CO₂ emissions, excluding the former East German territory ('old-EC'), were expected to rise about 13

per cent above 1990 levels by 2000 in the absence of abatement measures. The Commission acknowledged considerable uncertainty in such projections—and outlined also a 'higher growth' scenario in which emissions by the year 2000 from the big four (Germany, the United Kingdom, Italy, and France) are 3–5 per-cent higher than in the reference case.⁶

The Five-Part Strategy

The year 1990, with the completion of the Maastricht Treaty and confident movement towards the '1992' Single European Market, was the year of peak optimism about European integration. In the climate discussions, the European Council decided very early on that an arrangement of explicit burden-sharing through national emission targets was not appropriate for a converging Community, and the European Commission was, in 1990, asked by member governments to prepare an EC-wide strategy for turning the projections of 12–14 per cent emissions increase into a collective stabilization. Extended discussions, and to some extent commandeering of existing EC programmes for addressing Europe's energy needs, led to a five-part strategy being advanced by the Commission, backed up by a series of analyses and discussion documents:⁷

- direct measures to improve energy efficiency through implementation of the existing SAVE proposals (Specific Actions for Vigorous Energy Efficiency) for a series of Directives on energy efficiency standards. It was estimated that these would reduce EC CO₂ emissions in 2000 by 3 per cent below the reference projection;
- strengthening of existing measures for promoting the dissemination of better energy conversion and use technologies, primarily through new phases in the EC's THERMIE programme. These were estimated to save another 1.5 per cent of projected CO₂ emissions. The JOULE programme for energy RD&D would also encourage development of better technologies primarily for longer-term reductions;
- a programme of support for renewable energy technologies, which emerged as the ALTENER Directive which set goals for the contribution of renewable energy. This would have most impact after the year 2000, but was projected to reduce emissions by another 1 per cent by that year;
- a combined energy/carbon tax, to be introduced at a level of three dollars per barrel of oil equivalent (US\$3/boe) in 1993, rising by US\$1/boe annually to a level of US\$10/boe in 2000.⁸ The reduction in year 2000 emissions would be 'between slightly more than 3% and some 5.5% of the 1990 level according to the policy stance on industry exemptions and the way of taxing electricity'; and
- additional measures taken by Member States, which would

Table 1. EU CO₂ emissions: 1990 levels and projections for 2000

Country	CO ₂ reduction target (%)	1990 emissions (Million tonnes of CO ₂)			Projected emissions to the year 2000 (Million tonnes of CO ₂)	
		% EU	Per capita	Total	CEC reference*	National targets
Belgium	-5 (2000,1990)	4.0	11.2	112*	121.7	106
Denmark	-20 (2005,1988)	1.8	9.9	51*	65.5	48**
France	stabilization at 2tC/cap	13.2	6.5	366*	431.4	425
Germany (West)	-25 (2005,1987)	25.5	11.3	709	800.6	674**
Greece	+25 (2000,1990)	2.7	7.4	74*	96.6	92
Italy	0 (2000,1990)	14.4	6.9	400	464.0	400
Ireland	+20 (2000,1990)	1.1	8.8	31	36.0	37
Luxembourg	0 (2000,1990)	0.5	35.1	13*	13.7	13
Netherlands	-3 to -5 (2000,1989)	6.6	12.2	182	178.1	177
Portugal	+29 to 39 (2000,1990)	1.4	4.1	40	57.0	55
Spain	+25 (2000,1990)	7.6	5.4	211*	259.8	263
United Kingdom	0 (2000,1990)	21.1	10.2	587	614.1	587
EU12	0 (2000,1990)			2,776	3,138.5	2,877
% increase relative to 1990					13.1	3.6
Germany (East)		10.7	18.3	298	236.8	n.a.

Notes:*Data from Commission of the European Communities, 'A View to the Future', *Energy in Europe*, special issue (Sept. 1992), CEC-DGXVII, Brussels. Otherwise data are taken from national plans or statements.

**In figures for countries which have a year-2005 target, 20% reductions are estimated as a 5% reduction achieved by the year 2000, because many measures can contribute substantially only after 2000.

report their national strategies to the Commission, which would then be empowered to monitor and review them, and if progress towards the target were inadequate, propose new measures.

Full implementation of the Community-wide measures would thus reduce projected emissions by 8.5–11 per cent, leaving a rather small gap to be filled by additional Member-State initiatives under the 'monitoring' proposals.

It was originally intended by the Commission (and indeed governments) that this package of measures would be agreed by the European Council of Ministers before the Rio 'Earth Summit' Conference. However, agreement of a draft directive on the carbon/energy tax by the Commission proved to be very difficult. Concerns about the impact of the tax on industrial competitiveness led to substantial exemptions for energy-intensive industries, and it was decided (due partly to electricity trade complications) that the tax should apply to electricity output rather than input fuels; both weaken the impact on emissions, limiting the likely emission reductions to little more than 3 per cent of the reference projection by 2000. In a further crucial change, the tax proposals were also made⁹ 'conditional on the introduction by other member countries of the OECD of a similar tax or of measures having an financial impact equivalent to the measures provided for in this Directive'.

The failure of other OECD countries to implement such fiscal

measures has been part of the justification for those opposed to the EU tax proposals, but the opposition lies deeper. In presenting its March 1993 budget the UK government signalled fundamental opposition, in declaring that it would not accept taxes 'imposed by Brussels' and announcing a very different package involving VAT on domestic energy, and steadily rising vehicle-fuel excise duties. Indeed, by the time the Commission presented its five-part package, the winds of Unification had turned 180 degrees to re-emphasize the role of national-level policy-making (subsidiarity), and there was a general decline in the priority accorded to environmental concerns as Europe sank into recession. Climate policy was one of the earliest victims of these changes. Of the Commission's five-part strategy:¹⁰

- the tax proposal is essentially dead for the present. Neither the Cohesion countries nor the United Kingdom show any willingness to accept a harmonized energy/carbon tax, and it now seems clear that Denmark is the only EU country prepared to push ahead with one on its own;
- the SAVE programme of energy efficiency standards has been largely sacrificed on the altar of subsidiarity, with an understanding that member states are free to pick and choose measures, subject to EU competition law;
- the THERMIE programme for promoting energy-efficient technologies through demonstration and enhanced diffusion schemes can only make a marginal contribution;

- the ALTENER programme for promoting renewable energy technologies likewise can have little impact by 2000, because of inherent timing constraints and lack of funding;
- the result is to place nearly all the weight upon the fifth component of the strategy, namely the 'monitoring mechanism' by which Member Countries develop and submit to the Commission their own national strategies for abatement—which presumably have to subsume the original SAVE proposals and considerably more.¹¹

The central place now given to national strategies is reflected in the fact that the Monitoring Decision is the only substantive piece of Union legislation yet to have passed through Council. As indicated in the box, it establishes a legal and institutional basis for working towards CO₂ stabilization in the Union. The problem is that the national programmes submitted under this do not convincingly add up to EU stabilization.

EU Emissions Outlook

With the exception of the United Kingdom moving its target date for returning emissions to 1990 levels forward from 2005 to 2000, little has changed in the emission commitments by Member States since 1990. The national targets set would keep old-EC emissions growth to 3.6 per cent above 1990 levels, with nearly all the difference (compared with the CEC reference scenario) coming from abatement in Germany, Italy, the United Kingdom, Belgium, and Denmark;¹² Spanish emissions would increase to nearly 10 per cent of the total.¹³ However, if the collapse in CO₂ emissions from the former East Germany projected by the Commission does materialize and is incorporated, and the rest of Germany were to achieve the separate reductions illustrated in Table 1, this brings the total to within a per cent or two of stabilization. Therefore, there are hopes that the problem of projecting 1990–2000 stabilization will solve itself.

But there are three problems with this neat solution. First, the ambiguity of the centrally important German position, arising both from the fact of Unification during the 1990 base year, and the fact that a German goal or projection for 2000 has never been presented—at the time of writing, Germany thus remains in breach of its legal obligation under the Monitoring Decision. Secondly, even if one took the plans at face value, a per cent or two more reduction across Europe needs either most countries to agree to a bit more than current goals (which are mostly simple national stabilization), or one or two countries to do much more—and neither is politically simple.

Thirdly—and most importantly—some of the national plans and the associated emission goals frankly look implausible. The first round of

national plans are of very variable quality and some are little more than a combination of 'business as usual' projections with a list of technical options for emissions limitation. This is essentially the experience that the Commission had already gone through by 1990. As experience shows, the central issues are to do with policy and implementation. Also, projections tend to swing with the economic mood: the recession induced hopes that the goal would achieve itself, but the gradual emergence from recession during 1994 is lowering the perceived credibility of such projections.

Ways Forward

The EU Report to the Conference of Parties

The most immediate dilemma facing the Commission at the time of writing is what to report to the Conference of Parties. The discussion above indicates the fragility of emission projections. Given the gift of East German reductions, Europe is within striking distance of 1990–2000 stabilization, and the blunt fact is that it could choose the projection that best suits its interests.

But it is unclear where those interests lie. For the Commission to question, in an official report to a UN body, the veracity or reliability of reports and projections submitted by Member States, is at best politically tricky; and to state that Europe will not meet the target that it has so often berated others for not formally adopting is scarcely feasible. Blind acceptance of the national projections, coupled with judicious choice of emissions base-line definitions (for example, in the treatment of emissions from East Germany and accession countries), and/or slight modification of some national targets, could allow Europe to present a picture of being on track. For the Member Countries this would be most appealing.

But for the Commission, the resulting implication that nothing needs to be done at Community level would not be so attractive. Perhaps the most likely outcome, therefore, is to admit uncertainty: if all Member States deliver their promised projections, Europe might reach its goal, but this still depends upon policies yet to be delivered and uncertain projections. Consequently there is likely to be a need to revisit, and fundamentally reconsider, Community-wide policies to limit CO₂ emissions—a conclusion which is somewhat embarrassing to admit globally, but which would suit the Commission perfectly well and is probably the most honest assessment.

The Policy Dilemma

This outcome would bring the Community almost full circle to the situation in November 1990, and serve to emphasize that whilst the EU's commitment to stabilization is an important step, the real difficulties, as so often in

environmental policy, lie in the implementation. There needs to be a fresh look at the problems, and recognition of the special difficulties involved in addressing a pervasive and crucial sector like energy, in the complex and evolving political make-up of the EU.

What are the fundamental dilemmas? Brute politics aside, they lie in the fact that the policies required to implement emission constraints logically involve action at a variety of levels, combined with a lack of real incentives on the part of member states to contribute to the collective goal. For some of the relevant measures, such as efficiency standards on tradeable goods, there clearly is a strong case for harmonizing action across the EU. There are sound reasons also for seeking to harmonize fiscal measures, though variations in existing tax structures and political attitudes create genuine difficulties and these, combined with the fact that tax issues require unanimity, have so far proved powerful obstacles. Yet, having other measures established at the Union level makes little sense: building-insulation standards are very relevant, for example, but no one trades buildings, and even if they did they would hardly want the same standards in Portugal as in Denmark. Indeed, all kinds of issues—the form of utility regulation, VAT distortions, transport policy, and so on—affect CO₂ emissions, and it is clearly not realistic to suppose that all of these can or should be co-ordinated across the EU as part of the stabilization policy.

This, combined with the broader political and cultural differences between Member States, makes it clear that the key energy-policy decisions required to stabilize emissions cannot and should not all be taken centrally. Yet the goal remains inherently a collective one.

National Emission Targets

An opposite approach to that of centralized development of energy policies for limiting CO₂ is simply to negotiate CO₂ emission targets for each Member State, such that the total adds up to the stabilization goal. In form, this would be just like the Large Combustion Plant Directive for limiting sulphur dioxide emissions. This has the political advantage of being a very simple and well-understood approach, which leaves the specific energy-policy decisions required to meet the emission targets to the Member States.

In one sense, the existence of national targets already declared means that Europe is already some way down this road. But there are several problems with relying on these national targets, backed up by the Monitoring Directive. Most importantly, it is far from clear how seriously some governments will ensure that their targets are met, because there is no direct incentive—other than political face-saving—for ensuring this. The Commission, through the Monitoring Directive, can sound the alert when national policies are not adequate to meet the declared emission goals—and it has done so. But what steps are then open?

Attempting to convert existing national targets into legal commitments, through a directive analogous to the Large Combustion Plant Directive for SO₂, faces a number of problems. These arise principally because CO₂ is a much more fundamental issue with potentially higher costs and much less scope for closely targeted reductions in emissions by installation of clean-up equipment.

Thus in the context of CO₂, the approach of setting fixed national targets is not flexible, because the process of setting such targets is so fraught and difficult politically that the prospects for revising the distribution of emissions between countries, if this proves justified in the light of national trends and experience, is negligible. This same factor creates a very powerful incentive on all the negotiating parties to ensure that they get the highest-possible emission target, with maximum headroom for uncertainty in emissions.

Nor is such a system efficient, because the targets might require more difficult or high-cost measures in one country whilst simpler abatement opportunities elsewhere remain unexploited; an argument that has already been used to oppose such a system. Also, an agreement on fixed and binding emission targets would give no incentive upon countries to do better than their negotiated target. If some breached their target, then—quite apart from the question of what sanctions might be invoked—it is most unlikely that other countries would seek to exceed theirs sufficiently to enable the EU goal to be met. On the contrary, it now seems likely that certain EU countries could readily 'over-achieve' their target, and at present they have an incentive to defer abatement policies so as to leave themselves with a high base for subsequent negotiations. On such a system, the EU would lose most of the potential benefits of being a union. In the aftermath of the October 1990 declaration, the approach was cursorily examined and politically rejected.

Tradable Emission Quotas: Principles

A way out of this dilemma could be to negotiate initial national emission 'quotas', but with the critical distinction that the Member States, or their industries, would be free to 'trade' them with others. In other words, the Union could create 'emission quotas' for carbon totalling the already agreed level (i.e. stabilization in 2000 at the 1990 level) and negotiate an initial division, but these would not form fixed targets. Participants would undertake to ensure that their emissions in the target year (2000) do not exceed the quotas they hold in that year. If their initially agreed quota allocation proves insufficient, they would have to obtain, from other Member States, additional quotas. Thus, some countries could let their emissions exceed their initial allocation if they obtain quotas from others whose abatement efforts leave them with spare—and who would thus be rewarded

accordingly.

In essence this would create an internal EU 'market' in entitlements to emit CO₂, and harness market incentives for the purpose of achieving the stabilization goal. There would be a direct incentive on all countries to minimize emissions (either to minimize the payment for quotas or to maximize the revenue from selling them) irrespective of whether they were meeting some pre-defined national target. National bureaucracies—and in particular finance ministries—would be faced directly with the fact that CO₂ emissions involve a tangible cost, and could thus balance internally the benefits of constraint against more-traditional energy policy goals. Ultimately, the 'price' of such quotas should settle at a point which reflects the least costly way of meeting the stabilization target anywhere in the Union. The efficiency benefits could be considerable; one study suggests that the costs of an approach which allows such inter-country flexibility could be just one-fiftieth of the costs involved if each country were bound to stabilizing CO₂ emissions individually.¹⁴

Such a system ensures that the collective goal of stabilizing total emissions is attained, because this is established by the total number of quotas issued. But it is much more flexible than the allocation of fixed targets. It is also fully consistent with the 'polluter pays' principle by ensuring that increases in emissions above the agreed initial quotas are paid for, and additional constraint is rewarded.

Governments would retain control over the policies used to limit emissions, but components could be adjusted for mutual benefit under the broad thrust of overall EU harmonization. The Commission could still promote Europe-wide components to energy and climate policy; indeed, governments might be more receptive to them because the benefit of limiting emissions would be more tangible. Energy pricing is important, and reform of tax systems to place greater weight on energy/carbon taxation over time is an important strategic component of climate policy; such measures could and should continue to be promoted in concert with a tradable quota system. But many other measures would be relevant, and a harmonized tax agreement across the EU would not be the focus of success or failure to achieve the stabilization goal.

The approach would thus provide an efficient and feasible way of meeting the declared goal, whilst being consistent with two major policy principles enunciated by the EU and agreed by the Member States: the subsidiarity principle, by devolving the detailed energy policy decision-making as far as is consistent with Union objectives; and the polluter-pays principle.

Tradable Emission Quotas: Practicalities

Obviously, setting up such a system would be complex and would require both analysis and negotiations to address a range of complex

questions concerning allocation, management, and practical operation of such a system, as compared with the alternatives. Many of these are considered elsewhere, in a more detailed study conducted between a number of European institutes.¹⁵

Negotiating the initial allocation of quotas would inevitably be a politically fraught and difficult process, though as experience to date reveals it is not unique in facing the problem of negotiating 'burden sharing', which ultimately has to be faced in any substantive EU effort. As compared with fixed targets, the difficulties might be eased by the added flexibility: countries would no longer have to err on the side of extreme caution because of uncertainties about being able to meet particular emission targets. It could also offer a politically feasible way out from existing declarations about the unacceptability of particular targets.

Although this is introduced in the context of the 1990–2000 stabilization goal, in practice it makes most sense if developed as an instrument for emissions control over a longer period. This recognition could also ease the initial development of the system. Countries would negotiate in the knowledge that the goal of 1990–2000 stabilization is likely to be but the first step, and that if a tradable quota system is established as an effective and efficient mechanism, there are likely to be further rounds of allocation. A country which ends up with a large surplus of quotas in the year 2000 would be pressured to a lower allocation in subsequent rounds; and if the situation arises because it held out for an unreasonably high allocation, based on implausibly high projections of CO₂ emissions, the credibility of its negotiation position for subsequent rounds would be seriously weakened.

Furthermore, this opens the possibility of 'banking' quotas for future use. In other words, if, under the incentive of the system, it proves possible to do better than the stabilization goal, and the price of quotas drops correspondingly to low levels, parties with spare quotas could elect to 'bank' them for later use—or for selling in the future—based on their expectation of how much emission constraints may tighten after 2000. This both improves the stability of the system and improves the prospects for exceeding and strengthening the environmental goal. The importance of allowing such banking has been clearly demonstrated in US experience with tradable permits.

The benefits of designing a system which can, if necessary, be extended over time raises a number of other possible design issues. Grubb and Sebenius¹⁶ develop a proposal for a system of permits with extended lifetimes, of which a fraction are retired every few years and reissued according to the need to tighten the emissions control and/or expand the range of participants.

It is this possibility which points to the real importance of finding a workable and flexible solution to the EU's climate

dilemmas. It must, anyway, be an approach that can cope with expansion of the Union. Implicitly, it could also form the practical basis for an expanding regime of climate control, that could enlarge to include non-member states: OECD countries like Japan that may only be able to meet their commitments as part of a larger group; and perhaps beyond that, developing countries who see it as an effective and practical means of developing a global regime with mutual benefits. This possibility brings us back to the starting-point of this article: if the EU system can find a way of implementing its emissions commitment in an effective and efficient manner, its greatest value may be as a demonstration and nucleus for a global solution.

As indicated, there are many practical and political issues that would need to be resolved. But what is needed at present is political recognition that such an approach could offer an effective way forward for implementing the European Union's CO₂ commitment, and a commitment to open high-level discussions on the possible design of such a system as part of the EU strategy.

Conclusions and Prospects

Climate change remains as a real concern. The institutional regimes established globally and within the EU during the past three years partially insulate government policy from the ebb and flow of popular concern, and generate internal pressures which force governments to keep addressing the issue and re-viewing whether progress is adequate. These developments have strongly reinforced the original EU undertaking to stabilize CO₂ emissions at 1990 levels by the year 2000, and the Monitoring Decision forms the legal and institutional basis for achieving this. But the national programmes are not all convincing; nor do they fully achieve the declared goal, which is but the beginning of likely longer-term needs. With the effective collapse of the carbon/energy tax and drastic weakening of the SAVE programme, Europe does not have a strategy to achieve its CO₂ undertaking.

The first meeting of the UN Conference of Parties will be held in Germany, and the submission of the European strategy has to be made during the course of the German presidency. At present, unless there are very rapid developments, Germany and the EU face a politically and environmentally damaging failure. The roots of this failure would lie in the same elements that underlie the global endeavour: how to implement collective commitments among diverse and jealously sovereign states in an area as fundamental as energy policy.

Yet there are substantial pressures to find some convincing strategy. If there is substantive political will, perhaps during the period of the sequential German–French–Spanish presidencies, then political realities may force Member States to launch negotiations on binding targets or,

more promisingly, tradable national-emission quotas—to ensure the 1990–2000 goal, and/or for implementing longer-term emission constraints. At present the omens are not promising; but if Europe can successfully develop an effective system for collective control of its emissions, it may yet fulfil its claim to lead the world in combating the threat of climate change.

Notes and References

1. I use this term to describe the aim that emissions in the year 2000 should not exceed 1990 levels. Stabilization in full implies a commitment that emissions should not rise again thereafter.
2. B. Wynne (1993), 'Implementation of Greenhouse Gas Reductions in the European Community: Institutional and Cultural Factors', *Global Environmental Change*, 3/ 1, 101–28.
3. C. Carraro and D. Siniscalco (1993), 'Policy Coordination for Sustainability: Commitment, Transfers and Bandwagon Effects', in I. Goldin and L. A. Winders (eds.), *Sustainable Development* (CEPR and Cambridge University Press); C. Carraro, A. Lanza, and A. Tudini (1993), 'Technological Change, Technology Transfer and the Negotiation of International Environmental Agreements', *International Environmental Affairs* (forthcoming).
4. An earlier but more extensive account of the development of EU climate policy and the implications of the UN Climate Convention is given in Pier Vellinga and Michael Grubb (eds.) (1993), *Climate Change Policy in the European Community* (London: Royal Institute of International Affairs).
5. Commission of the European Communities (1992), 'A View to the Future', *Energy in Europe*, special issue (Sept.) (Brussels: CEC-DGXVII).
6. *Ibid.*
7. CEC (1991), 'A Community Strategy to Limit Carbon Dioxide Emissions and to Improve Energy Efficiency', SEC(91) 1744 final, Brussels (14 Oct.); CEC (1992), 'Draft Communication on Community CO₂ Stabilisation by the Year 2000—Energy Evaluation', COM(92) 158/2, Brussels (23 Apr.); CEC (1992), 'A Community Strategy to Limit Carbon Dioxide Emissions and to Improve Energy Efficiency', COM(92) 246 final, Brussels (1 June); CEC (1992), 'Proposal for a Council Directive Introducing a Tax on Carbon Dioxide Emissions and Energy', COM(92) 226 final (30 June).
8. This was later clarified as a tax, split 50 : 50 on the energy and carbon components, starting in 1993 at 0.21 ECU/GJ (European Currency Units per gigajoule) plus 2.81 ECU/tCO₂, and rising by a third of this starting amount annually to a level of 0.7 ECU/GJ plus 9.4 ECU/tCO₂ in the year 2000. 1 ECU = US\$1.2 in late 1992. The final tax level equates to a total of around US\$80 per tonne of carbon. Small hydro and new renewable energy sources were exempted.
9. CEC (1992), COM(92) 226 final, Brussels (30 June).
10. CEC, 'A Community Strategy to Limit Carbon Dioxide Emissions and to Improve Energy Efficiency', COM(92) 246 final, Brussels, 1 June 1992.
11. CEC (1992), 'Proposal for a Council Decision for a Monitoring Mechanism of Community CO₂ and other Greenhouse Gas Emissions', SEC(92) 854 final, Brussels (May).
12. There is little additional saving from the Netherlands shown in the table because the Dutch government has already adopted a substantive National Environmental Policy Plan to limit emissions, so that abatement measures are already reflected in the Commission's reference scenario.

13. The Commission's estimates in Table 1 may be compared with the figures presented by the Spanish government, which show much higher reference emissions and slightly higher 1990 and 2000 target emissions (Luis C. M. Garcia, 'Strategies and Perspectives towards Climate Change in Spain', in Pier Velling and Michael Grubb (eds.) (n. 4 above). It remains one of the quaint and troubling facts of the European situation that the Commission's projections frequently vary from those of the Member States, and there are no institutional mechanisms for exploring the reasons for differences and achieving consistency. The Spanish official national target is a substantial reduction compared with their own 'business as usual' projections, but a fractional increase on the Commission's projection.
14. Scott Barret (1992), 'Reaching a CO₂ Emission Limitation Agreement for the Community: Implications for Equity and Cost-effectiveness', (Brussels: CEC-DG-II).
15. M. Grubb, J. Jäger, A. Tudini, H. O. Bergesen, and J. C. Hourcade (1994), *Implementing the European CO₂ Commitment: A Policy Proposal* (London: Royal Institute of International Affairs).
16. M. Grubb and J. Sebenius (1994), 'Participation, Allocation and Adaptability', with J. Sebenius, in OECD (1992), *Climate Change: Designing a Tradeable Permit System* (Paris: OECD), 185–225.