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Climate Policy: Britain and Germany Compared

Christiane Beuermann

Climate Policy: Towards an Agenda for Policy Learning Between Britain and Germany

Christiane Beuermann

**Climate Policy Division,
Wuppertal Institute for Climate, Environment, Energy**

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CLIMATE POLICY

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**Anglo-German Foundation for the Study of Industrial Society/
Deutsch-Britische Stiftung für das Studium der Industriegesellschaft
34 Belgrave Square, London SW1X 8DZ
Tel: +44 (0)20 7823 1123 Fax: + 44 (0)20 7823 2324
Website: www.agf.org.uk**

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Preface

This report is one of six commissioned by the Anglo-German Foundation in an effort to give added focus to its work in supporting comparative research and discussion of key issues facing policy-makers in both the public and the private sector in Britain and Germany.

Topics were selected for their relevance in both countries, and for their potential to yield policy-learning dividends. Authors were selected for their expertise in the 'state of the art' in Britain and Germany. They were asked to review current knowledge, and to identify gaps in that knowledge, which might form an agenda for future bilateral research and discussion.

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Executive summary

The year 2002 marks a decade of legally binding commitments and frameworks for climate policy at the national and international level. Comparing climate policies in the UK and Germany, it is the general objective of this survey to identify some areas for future comparative or complementary research efforts. A number of these research areas are relevant to the policy-making process and may contribute to the solution of issues present climate policy is faced with. Due to the brevity of the survey, this is of course a selective account.

This survey begins by briefly recalling the general development and main features of the international climate negotiations and regime, which constitute the basic conceptual and legal framework for any future international as well as domestic climate policy. Then conceptual frameworks and theories of different disciplines that foster the understanding of climate policy are described. Based on these contexts, an outline is given of the general performance of the UK and Germany with regard to domestic policy and implementation of international commitments. The discussion of domestic implementation reflects how current climate policy approaches relate to the theory of risk management. The survey then focuses on the potential for a proactive UK and German engagement in the further development of international climate policy in two research contexts, theory of international relations and the prospects of European leadership on climate change policy. In the concluding chapter, a number of future research areas relevant to the UK and German climate policy processes are discussed.

The approaches to understanding and dealing with the climate change problem are manifold and address a wide range of issues from individual behaviour to international relations. Economic theory, sociology and psychology contribute to the understanding of the main drivers of the climate change problem. Among other disciplines, economics, political economy and jurisprudence contribute to the understanding of problem-solving mechanisms.

Looking at the different disciplines that play a role in research on climate policy, from a socio-economic point of view, theories concerned with the global commons, socio-ecological dilemmas and social traps are especially relevant. Economic theory in particular provides solutions for distorted price signals through economic instruments such as tax and trading approaches. The management of global environmental risks contributes to the understanding of how climate change has emerged as a political issue and how policy-makers have addressed this issue domestically. Regime theory and international relations provide various approaches to understanding decision-making at the international level.

Domestic UK and German climate policy is marked by a number of similarities such as the development of differentiated commitments to the reduction of greenhouse gas emissions, domestic climate policy programmes, the implementation of policies and measures as well as the effectiveness of these policies and measures. Regarding the latter, the success of both countries in significantly reducing emissions is based on a climate policy induced and a structural component.

In order to develop an understanding of the current potential of European leadership and the roles that the UK and Germany might play, the climate negotiations before 2001 are briefly discussed and the influence of the major players, particularly the USA and the EU, is shown to be fleeting. Characterising different types of leadership (structural, directional and instrumental), the need for a leadership initiative on climate policy is discussed with a view to the unsolved questions of the climate negotiations. The potential of the EU to satisfy this need appears ambiguous. However, the UK and Germany clearly fulfil some of the conditions for leadership and, hence, appear to be potentially significant players with a future leading role in EU climate policy.

The identification of future research areas is based on the experience of climate policy in the UK and Germany. Three areas of research may be considered. First, comparative research could focus on conceptual issues at the national level: how to create effective policy tools (transdisciplinary approach). Research which is more targeted at the policy process could focus on investigations of how to implement the Kyoto instruments domestically and how to link them with other policies. A second focus on conceptual issues at the international level may consider how to provide the climate negotiations with continuous momentum. Finally, research might focus on strategic issues becoming potentially important in the future, and particularly on unsolved issues of the Kyoto process.

Regarding the domestic implementation of climate policy in the UK and Germany, research may focus on policy integration, design of new instruments, empirical research and human dimensions.

Exploring the roles of the UK and Germany in international climate policy in an EU context, potential issues of research could be policy analysis of UK and German performance in international climate policy, internal EU decision-making, the linking of climate policy research with research on EU institutions, the potential of the UK and Germany as leading parties, as well as the development of a leadership strategy.

Regarding the medium-term development of the climate regime, research may be undertaken to assess strategic priorities for international climate policy, the adequacy of climate commitments and transdisciplinary collaboration, the commitments of developing countries, US reintegration, and the long-term prospects of the climate regime.

1 Introduction and background

The year 2002 marks a decade of legally binding commitments and frameworks for climate policy at the national and international level. Comparing climate policies in the UK and Germany, it is the general objective of this survey to identify some areas for future comparative or complementary research efforts. A number of these research areas are relevant to the policy-making process and may contribute to the solution of issues present climate policy is faced with. Due to the brevity of the survey, this is of course a selective account.

This chapter briefly recalls the general development and main features of the international climate negotiations and regime, which constitute the basic conceptual and legal framework for any future international as well as domestic climate policy. In the next chapter, conceptual frameworks and theories of different disciplines that foster the understanding of climate policy are described. Based on these contexts, an outline is given of the general performance of the UK and Germany with regard to domestic policy and implementation of international commitments. The discussion of domestic implementation reflects how current climate policy approaches relate to the theory of risk management. The survey then focuses on the potential for a proactive UK and German engagement in the further development of international climate policy in two research contexts, theory of international relations and the prospects of European leadership on climate change policy. In the concluding chapter, a number of future research areas relevant to the UK and German climate policy processes are discussed.

1.1 The emergence of political concern for climate policy

Increasing scientific evidence of human interference with the climate system, coupled with growing public concern over global environmental issues, pushed climate change onto the political agenda in the mid-1980s. Recognising the needs of policy-makers for authoritative and up-to-date scientific information, the World Meteorological Organization and the United Nations Environment Programme established the Intergovernmental Panel on Climate Change (IPCC) in 1988. That same year, the UN General Assembly took up the issue of climate change for the first time. In 1990, the IPCC issued its First Assessment Report, confirming that climate change was a threat and calling for a global treaty to address the problem. This call was echoed by the Ministerial Declaration of the Second World Climate Conference, held in Geneva in October/November of that year. The UN General Assembly responded to these calls in December 1990, formally launching negotiations on a framework convention on climate change and establishing an Intergovernmental Negotiating Committee to conduct those negotiations. Both the UK and Germany took on early interest in the climate issue. The UK government emphasised the climate change issue several times, though its commitment has been assessed as fleeting. Interest in climate change issues has been strong in German society since the late 1980s and led to an early political commitment and to the adoption of a strong carbon dioxide reduction target of 25% in 1991.

1.2 Political concern based on scientific evidence and consensus

The year 2001 was the second warmest since records began 140 years ago, surpassed only by 1998, which was to a large extent characterised by an exceptionally strong El Niño phenomenon. In fact, the 1990s included seven of the ten warmest years on record. The vast majority of scientists repeatedly state that there is evidence that rising concentrations of 'greenhouse gases' in the Earth's atmosphere, resulting from economic and demographic growth over the last two centuries since the industrial revolution, are overriding the natural variability of the Earth's climate system and leading to irreversible climate change. The IPCC regularly provides the political community with the latest findings and projections of the magnitude of future climate change and its impacts. Thus in 1995, the Second Assessment Report of the IPCC (IPCC 1995) confirmed that 'the balance of evidence suggests that there is a discernible human influence on global climate'. Again, the Third Assessment Report in 2001 confirmed this human influence and projected that global mean surface temperatures would increase by between 1.4 and 5.8°C by 2100, the fastest rate of change since the end of the last ice age, and that global mean sea levels would rise by between 8 and 88 cm by 2100, flooding many low-lying coastal areas (IPCC 2001). Changes in rainfall patterns are also predicted, increasing the threat of drought, floods or intense storms in many regions.

Given the complexity of the climate system, scientists still need to improve their understanding of the extent, timing and impacts of climate change (which are not the subject of this survey). However, the potentially negative impacts of climate change on human health, food security, economic activity, water resources and physical infrastructure are dramatic and not questioned in general terms. Farming could be seriously disrupted, leading to falling crop yields in many regions. Tropical diseases are expected to spread: the geographical zone of potential malaria transmission, for example, could increase from around 45% of the world population today to approximately 60% by the second half of this century. Sea-level rise and changing weather patterns could also trigger large-scale migration from more seriously affected areas. While no one will be able to escape from climate change, it is the poorer people and countries that are most vulnerable to its negative impacts. As the historic responsibility for the emission of greenhouse gases lies with the industrialised countries, strong equity concerns are involved in the international negotiations because of the regional gap between historic responsibility and potential impacts.

1.3 The Climate Change Convention

After just 15 months, on 9 May 1992, the International Negotiating Committee adopted the United Nations Framework Convention on Climate Change (UNFCCC) unanimously. The Convention was opened for signature at the UN Conference on Environment and Development, the so-called 'Earth Summit' in Rio de Janeiro, Brazil, on 4 June 1992, and came into force on 21 March 1994. Since then, 180 governments and the European Community have signed up to the Convention.

The Convention sets an 'ultimate objective' of stabilising atmospheric concentrations of greenhouse gases at safe levels. Such levels, which the Convention does not quantify, should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner. To achieve this objective, all countries have a general commitment to address climate change, adapt to its effects, and report on the action they are taking to implement the Convention. The Convention divides countries into two groups: Annex I parties (industrialised countries) and non-Annex I parties (developing countries).

1.4 The Kyoto Protocol

At the first conference of the parties (COP) to the UNFCCC, which was held in Berlin, Germany, in 1995, parties decided that the specific commitments in the Convention for Annex I parties were not adequate. Hence, a new round of talks to decide on stronger and more detailed commitments for these countries was launched. After intense negotiations, the Kyoto Protocol was adopted at COP 3 on 11 December 1997.

The Kyoto Protocol commits Annex I parties to individual, legally binding targets to limit and reduce their greenhouse gas emissions, amounting to a total cut by 2008–12 of at least 5% with respect to 1990 levels. The commitment relates to a basket of six greenhouse gases. The individual targets for Annex I parties range from an 8% cut for the EU and several other countries, to a 10% increase for Iceland. Under the terms of the Protocol, the EU is allowed to redistribute its target among its 15 member states (for detailed comments on the Kyoto Protocol, see Oberthür and Ott 1999). The EU has already reached agreement on such a scheme, known as the EU 'bubble'. The bubble agreement was only feasible because the UK and Germany, together with some other member states, agreed on stronger reduction targets, 12.5% for the UK and 21% for Germany. Domestically, both countries adopted even stronger targets, the UK 20% and Germany 25%.

The Protocol also establishes the so-called 'flexible mechanisms' – three innovative economic instruments: joint implementation (JI), emissions trading (ET) and the clean development mechanism (CDM). The flexible mechanisms are designed to help Annex I parties reduce the costs of meeting their emissions targets by achieving or acquiring reductions less expensively in other countries. The CDM also aims to assist developing countries in achieving sustainable development by promoting environmentally friendly investment in their economies from industrialised country governments and businesses. Originally pushed through by the USA, the flexible mechanisms have become the major instrument under the Kyoto Protocol. However, while they were agreed in principle in the Protocol, their operational details had to be developed. At COP 4 in 1998, parties agreed to a programme of work (the 'Buenos Aires Plan of Action') to reach agreement on these and various other issues, to be completed by COP 6 in November 2000. The Kyoto Protocol was open for signature between 16 March 1998 and 15 March 1999; 84 countries signed up during that period.

In 2000, negotiations at COP 6 in The Hague were difficult and ended without agreement. Although the USA declared its opposition to the Kyoto Protocol in the meantime, COP 6

was continued and somehow satisfactorily concluded with the Bonn Agreement in 2001. As a political document concluded at ministerial level, the agreement represented a breakthrough in many of the critical questions and was a clear signal that climate change continued to be taken seriously by the world community (Ott 2002). The adoption of the Marrakesh Accords in November 2001 at COP 7 finally paved the way for the Protocol to come into force. After the rejection of the US government, it was the EU that provided the required momentum to carry the negotiations to a successful conclusion, greatly assisted by a strong alliance with developing (G77) countries and China.

1.5 Ratification of the Kyoto Protocol

In order for it to come into effect, 55 parties to the Convention, including Annex I parties accounting for 55% of carbon dioxide emissions from this group in 1990, must ratify the Kyoto Protocol (Art. 25(1) KP). At the time of the World Summit on Sustainable Development in Johannesburg in September 2002, ratification processes in the EU are well advanced, as are those in Eastern Europe. The EU and its member states pushed for 'early ratification' and deposited their instruments of ratification with the United Nations before 1 June, to enable the Protocol to come into force by the Johannesburg Summit. Other countries, among them Japan, followed suit. Russia made clear announcements on its progress towards ratification but did not then deposit its instrument of ratification. Nevertheless, the Kyoto Protocol is expected to come into force early in 2003. This would be a sound success, especially in the face of outright opposition from the USA.

2 The transdisciplinary research framework of climate policy

The approaches to understanding and dealing with the climate change problem are manifold and address a wide range of issues from individual behaviour to international relations. Economic theory, sociology and psychology contribute to the understanding of the main drivers of the climate change problem. Among other disciplines, economics, political economy and jurisprudence contribute to the understanding of problem-solving mechanisms.

Climate policy is to a large extent influenced by economic theory. The emission of greenhouse gases and their precursors into the atmosphere is a classical *commons* (collective goods) problem. The literature on collective goods is extensive. Particularly influenced and driven by Olson (1965) and Harding (1968), it describes the mechanisms that lead to the over-exploitation and deterioration of commons by actors – individuals, institutions or countries – driven by self-interest. Actors behave according to the so-called *prisoner's dilemma* where activity leads to a net benefit for the individual but to losses or harm for other actors or for the society or the global community as a whole. Although all actors behave so as to maximise their benefit, the final result is both individually and socially sub-optimal.

In sociology, this basic constellation has also been defined as a *social or ecological-social dilemma* (Ernst 1997, 1998) where actors may be trapped in a number of ways in the process of deciding on their behaviour. At least three different traps can be distinguished: social, time and spatial. While the social trap more or less describes the prisoner's dilemma, the time aspect relates to the fact that for some psychological reasons, actors are less concerned if the effects of their activities are expected to occur some time in the future. Hence, individuals are less concerned if environmental damage occurs later than the activity that causes it. Finally, the spatial trap points to the fact that benefit and damage might arise in different places or regions. The anthropogenic greenhouse effect relates to all three kinds of trap.

The *theory of social traps* (Platt 1973; Cross and Guyer 1980) demonstrates that traps work because they contain positive reinforcements (incentives) for behaviours that are ultimately damaging for the individual actor or for society. In the case of climate change,¹ human activities do not reflect the damage that is associated with the emission of greenhouse gases and their precursors, e.g. the burning of fossil fuels, in the medium to long term. As regards the emission of greenhouse gases, all three traps are in place: the present price signals of energy as well as the accepted behavioural norms and rules lead to an over-consumption of fuel and other sources of greenhouse gases without heed to the expected impacts (the social trap); these expected impacts will occur in the very long run and are not yet clearly visible (the time trap); and it does not matter where

¹ The global common here is of course the atmosphere as well as natural habitats. The atmosphere is overused as a disposal site for all kinds of emissions related to human activity, in particular greenhouse gases and their precursors.

greenhouse gases are emitted, or in other words, the impact occurs globally and independently of the location of the sources of greenhouse gas emissions (the spatial trap).

As *psychology* shows, the reasons for getting trapped are difficulties in dealing with issues characterized by complexity, uncertainty, and distant impacts (time and space) (Dörner, 1996). Usually the privatisation of commons and the development of new institutional frameworks are discussed as ways out of such dilemmas. The way out of traps is neither through punishment nor moral exhortation, which are usually ineffective. Rather, the way out is to design social institutions and mechanisms that instead provide competing positive reinforcement for alternative behaviours of the actors involved.

Economists have been discussing the use of *economic instruments* for decades. Economic theory suggests two ways to solve a global commons situation. One of these is the alteration of prices. The basic behavioural assumption behind this approach is that individual behaviour follows rational decision-making. Ernst (1998), however, points out that social dilemmas are often correlated with imperfect information and, in contrast to theoretical assumptions, responses are characterised by limited individual rationality. The other way is to define a threshold level for the polluting activity and subsequent trading. Here the difficulty lies in the determination of the environmentally adequate threshold level. Economic theory provides climate policy with the tools for determining the cost of climate policies and measures.

Political science contributes to climate research by evaluating the capacity of political systems to deal with new policy issues (e.g. Jänicke and Weidner 1997). Based on political economy theories such as the *issue attention cycle* and derived concepts (based on Downs 1972), institutional adjustments are often discussed as ways to manage global environmental problems. Through the institutionalisation of mechanisms for addressing environmental issues, routines might be established that help to recognise (global) environmental risks at an early stage, or that are adequate for *managing global environmental risks* efficiently. Such management procedures include risk assessment, monitoring procedures, the assessment of political options, the formulation of goals and strategies, the implementation of policies as well as evaluation procedures (Social Learning Group 2001a, 2001b). Apart from research focusing on single countries, comparative research on climate policy has so far often taken the form of case studies based on these theories to investigate success and driving factors for climate policy (O’Riordan and Jäger 1996; Fermann 1997; Collier and Löfstedt 1997). Some studies have related climate change case studies to the wider arena of sustainable development issues (e.g. Lafferty and Meadowcroft 2000) or other environmental cases (Social Learning Group 2001a, 2001b).

From a legal point of view, the climate regime itself is of interest. In a tradition of analysing multilateral environmental agreements (e.g. Lang *et al.* 1991; Haas *et al.* 1993) the climate regime has been compared with the ozone regime (Vienna Convention and subsequent Montreal Protocol, e.g. Gehring and Oberthür 1997; Benedick 1998) and the acid rain regime (Convention on Long Range Transboundary Air Pollution and Gothenburg Protocol, e.g. Young and Levy 1999). In their investigation of the success factors of international environmental regimes, Young and Levy (1999) analyse causal connections and behavioural mechanisms, applying a transdisciplinary approach that incorporates psychological, organisational and sociological theories. Regimes as social institutions composed of roles, rules and relationships can only be effective if the

behaviour of the actors operating under the regime members' jurisdiction can be influenced. Asking what kinds of change in behaviour might be achieved, Young (1999) identifies six roles that regimes fulfil: regimes as utility modifiers ('utility' being basically economic in nature), regimes as enhancers of cooperation, regimes as bestowers of authority, regimes as learning facilitators, regimes as role definers, and regimes as agents of internal realignment.

Besides an institutional approach, the climate regime has also been discussed in light of other theoretical approaches of international relations. Rowlands (2001) summarizes and discusses the concepts of realism and neorealism, historical materialism, neoliberal institutionalism, and cognitive approaches. The key concepts of realism/neoliberalism are hegemonic stability and power. The hypothesis that major state powers determine international rules undoubtedly plays a role in the climate regime. However, other states still have influence and the roles have recently been shifting. Again, Rowlands concludes that historical materialism plays a role in explaining the development of the climate regime with power asymmetries in the world economies. 'Capital' partially influences the determination of rules in the climate regime through lobbies; however, divisions appear to be greater than anticipated by this approach. Whereas neoliberal institutionalism contributes to the understanding of divergent interests in the climate regime, there appears to be more cooperation than anticipated under this approach. The notion of constitutive organisations and institutions promoting cooperation on climate change is assessed as being important but not all-determining. Finally, cognitive approaches that focus on epistemic communities, the science-policy interface and decision-making under uncertainty and complexity have been found useful at the stage of agenda setting in the climate change negotiations but weaker at the stage of negotiating and agreeing on rules to manage climate change.

With respect to the science-policy interface, one focus of research has been the understanding of the role of science in international environmental regimes (e.g. Boehmer-Christiansen 1997; Andresen *et al.* 2000; Weingart 2001). Advanced scientific knowledge has a legitimising function for policy-making. Apart from political consensus building for multilateral political action, the application of scientific knowledge is also the necessary condition for the effective implementation of multilateral regimes. The transformation process itself has proven to be crucial for the environmental effectiveness of such regimes.

The transdisciplinarity of approaches to the challenge of climate change has been emphasised in scientific communities. In both the UK and Germany, scientific communities and institutions have been established focusing on the different facets of global environmental change (GEC). Research on climate policy has increasingly been subsumed under GEC research. Both countries run national GEC research programmes. Both countries have established research councils and institutional focal points of climate research as supplements to the existing research communities. In the UK, the Economic and Social Research Council (ESRC), for example, commissioned the Centre for Social and Economic Research on the Global Environment (CSERGE) in 1991 to carry out a ten-year transdisciplinary research programme into the human dimensions of GEC. The objective was to bring social science expertise to bear on global environmental research and, at the same time, to take environmental concerns to social sciences. Since 2001 CSERGE has continued with research on environmental decision-making. Similar objectives are subsumed under the German Research Ministries' Programme for Socio-Ecological Research, which is targeted at the human dimensions of GEC. In addition to the existing

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research landscape, in Germany, the Potsdam Institute on Climate Impact Research was established in 1991. At state (*Länder*) level, the Wuppertal Institute for Climate, Environment, Energy (WI) was founded in 1991 and is based in Northrhine Westphalia.

3 Climate policy in the UK and Germany: managing a global environmental risk at home

The positions of the UK and Germany on climate change policy are broadly similar, although there are differences in detail. Our examination of climate policy in the UK and Germany in this chapter will address the following issues: domestic commitments, differentiation of targets, climate change programmes, the domestic application of economic instruments, as well as compliance with commitments and effectiveness of domestic policies.

3.1 Domestic commitment

Both countries took a comparatively early interest in climate change. In the UK, a 1990 White Paper acknowledged that climate change presented an enormous challenge (HM Government 1990). Thatcher's scientific background meant that this was an issue to which she could relate strongly and positively. However, the UK's commitment on the one hand and resistance to international currents and more progressive targets on the other have been perceived as paradoxical. As a result, Wynne and Simmons (2001) conclude that, historically, there is only fleeting evidence for a strong role in international climate politics. It took the UK until the late 1990s to reverse the image of being the 'dirty man of Europe' which resulted from resistance towards environment policies during the 1970s and 1980s (Collier 1997; Wynne and Simmons 2001). Nevertheless, the UK was involved in international initiatives before Rio. Under both the Conservatives and Labour, commitment to the UNFCCC remained consistent but rather vague (Young 2000). After Kyoto, the pace of development of climate policy accelerated in the UK (Eichhammer *et al.* 2001).

In Germany, public interest in climate change was initially spurred by a scientific report of the German Physical Society (DPG) in 1986. The press covered the issue extensively. Public and political concern rose steadily. Discussion in the federal cabinet, the German Bundestag and the German Bundesrat was followed by the establishment of the Enquete Commission *Vorsorge zum Schutz der Erdatmosphäre* (Preventive Measures to Protect the Earth's Atmosphere) in October 1987 with the aim of dealing comprehensively with all aspects of climate change. Germany committed itself early in 1991 to domestic action and since then has repeatedly reaffirmed this commitment. The political approach to climate change has to be seen in the German tradition of applying the precautionary and polluter pays principles as guidelines for environment policy.

3.2 Differentiation of targets

Both countries gave an early commitment to domestic reduction targets for greenhouse gases, in particular for carbon dioxide. Both also agreed on stronger targets domestically than internationally. Thus they provided room for manoeuvre for the adoption of the EU burden-sharing agreement that enabled the EU to agree on a reduction target of 8%. On several occasions during 1997 and 1998, the UK Labour government committed itself to higher reduction targets than agreed under the Kyoto Protocol. Based on the EU bubble agreement, it committed to a domestic 12.5% reduction target by the year 2010 for greenhouse gases regulated under the Kyoto basket. Additionally, in the Labour election manifesto a commitment was made to larger voluntary reductions of 20% for CO₂ only by 2012 (Young 2000). These commitments have been officially reconfirmed, for example, in the government's climate change programme in 2000 (DETR 2000). An assessment of policies and measures implied a potential reduction of the UK's greenhouse gases by 23% by 2010; hence the 20% goal appeared feasible.

In Germany, following the Enquete Commission's work, climate change policy emerged on the ministerial agenda in early 1990 and led to the preparation of a Cabinet decision for a CO₂ reduction target. Based on feasibility studies, a reduction of CO₂ emissions of 30.5% by 2005 based on 1990 levels appeared realistic. Thus a 25% reduction seemed practical and was adopted by the federal cabinet in June 1990. This target was reconfirmed several times (Beuermann and Jäger 1996). Under the EU burden-sharing agreement Germany agreed on a 21% reduction target for the Kyoto basket of gases. As a response to expected shortfalls in achieving the reduction target, the Social Democratic and Green coalition government broke down the remaining gap into individual sectors. The resulting shares are 1.8–2.5 percentage points for private households and building sector, 2–2.5 percentage points for the energy sector and industry, and 1.5–2 percentage points for transport (all based on 1990 levels). In addition, stressing its own commitment, the government announced that, as an emitter of greenhouse gases, it would also contribute to their reduction, pledging to cut CO₂ emissions in its own portfolio by 30% by 2010 and 25% by 2005, respectively (based on 1990 levels). Departments will formulate and implement their own reduction programmes (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) 2000).

3.3 Climate change programmes

Though acknowledging climate change early on as an important environmental challenge, the first climate change programme of the UK published in 1994 was not considered an ambitious document as it consisted basically of voluntary initiatives (Eyre 2001). It was in late 1998 that the UK Department of Environment, Transport and the Regions (DETR) revised government policy and published a consultation paper which became the basis for the 2000 climate change programme (DETR 2000). In Germany, the negotiation of the reduction target of 25% for CO₂ was closely related with the development of feasibility studies and investigation of policy options for implementing that target. The initial climate change programme of 1994 included 30 policies and measures. It was subsequently extended into a comprehensive catalogue of measures

addressing CO₂ and other greenhouse gases. In a review process, experts concluded that the adopted policies would lead to a CO₂ reduction of between 15% and 17% by the year 2005. Thus the domestic target would not be realized without additional measures. The new coalition government of Social Democrats and Greens adopted an enhanced climate protection programme in 2000 (BMU 2000) to reduce the expected shortfalls. Both programmes set out packages of policies and measures for the various sectors contributing to the emission of greenhouse gases. These policies and measures are wide-ranging and include the improvement of the energy efficiency in various sectors and activities, the stimulation of new and more efficient sources, among them the introduction of a higher share of renewable energy sources, the cutting of emissions from the transport sector, and the cutting of emissions from agriculture as well as from the public sector. The programmes include policies that combine regulation, investment, and fiscal measures. The UK programme additionally includes a new economic instrument – emissions trading. Though comprehensively discussed in economic theory and under the flexible mechanism of the Kyoto Protocol, European member states have so far had no political experience with the implementation of trading schemes.

A common feature of both programmes is that they have not been developed in isolation but with a view to other policy sectors. The UK government has emphasised this in the slogan 'gain not pain', stressing that the climate change programme is part of a broader UK sustainability strategy (Eyre 2001). The programme particularly relates to structural policy through the encouragement of sustainable technologies, to social policies seeking to alleviate fuel poverty and associated health effects, as well as to transport policies aiming at the reduction of negative impacts (congestion, urban air quality and health impacts) while keeping mobility affordable. The relation of the German climate change programme to a broader sustainability strategy is only generally addressed, calling it a 'vital prerequisite'.

One part of the UK climate change programme focuses on adaptation to predicted impacts of climate change on the UK. The German programme does not focus on mitigation and adaptation policies.

3.4 Domestic application of economic instruments

The introduction of economic instruments, in particular ecotaxes, has been a cornerstone of the climate change programmes of both countries. However, decision-making and implementation have been highly controversial and difficult. Whereas the UK has pursued a number of tax policies, in Germany the discussion particularly focused on the introduction of energy taxes combined with a reduction in statutory pension contributions. In addition, the UK has been more progressive in implementing an initial emissions trading scheme.

Dresner (2002) gives a comprehensive analysis of ecotaxation in the UK. Dating back to the early 1970s, the debate in the UK on environmental taxation was particularly driven by the introduction of carbon taxes in the Nordic countries in the early 1990s. In Britain, unlike the Nordic countries, the fundamental stumbling block has been more the attitude of the public than of business. The idea of increasing taxation on domestic energy received a fatal blow from the public reaction to the introduction of VAT on domestic

energy in 1993. The political problems with environmental taxation are exemplified by the introduction and abuse of the so-called road fuel duty escalator. From 1993 to 1997 road fuel duties increased by 5% in real terms each year. In 1997 the escalator was increased to 6% per annum. The tax was for several years remarkably successful at raising revenue, but had a low profile. Until 1999, oil prices were falling and the effect of the escalator was largely to prevent the price of petrol at the pump from falling in real terms. Then it began to be noticed, and opposition to the escalator grew louder and louder. Finally, the escalator was abandoned in so far as future annual increases would not be automatic and would be hypothecated for expenditure on public transport and road-building. Driven by oil price increases during 2000, pressure increased for a reduction in fuel duty. The fuel protests of September 2000 led to a shift in the government's attitude resulting in a freeze and, finally, in the March 2001 Budget, in cuts in the duty on ultra-low-sulphur petrol and diesel and a temporary cut in the duty on ordinary petrol and diesel.

The UK Climate Change Levy was announced in March 1999; its final form was decided in March 2000, and implementation followed in April 2001. It is a downstream tax on business energy consumption (rather than an upstream tax on generation) with the revenues to be recycled back to companies, mainly through a cut in employers' national insurance contributions (payroll taxes) but also through energy efficiency and renewable energy support schemes. Natural gas, coal and electricity used by business, agriculture and the public sector are all subject to the tax, but electricity generators are exempt. Domestic users are also exempt.

In Germany, the idea of an ecological tax reform (ETR) has been discussed since the late 1980s (on ETR in Germany, e.g. Beuermann and Santarius 2002). Debates have been conducted with varying degrees of urgency. During the second half of the 1990s, expert studies focused on the employment effects and calculated positive net job effects. Subsequent to these studies, ETR became politically more acceptable. With the change in federal government in 1998, ETR became a priority issue for the coalition of Social Democrats and Greens and was finally introduced in 1999. Taxes on all fuels were increased by 3 cents per litre, electricity by 1 cent per kilowatt-hour and natural gas by 0.16 cents per kilowatt-hour. In addition, the tax rates on heating oil, which were formerly differentiated according to use, were harmonised in order to avoid distortions in the taxation of electricity. With the tax on electricity, electricity end use became taxable for the first time. Imposing a tax on natural gas puts all different energy carriers in the same category. Under the law continuing the ETR in 2000, only fuels and electricity were to be taxed progressively during the four subsequent steps of the ETR. Until 2003, the tax on electricity increases annually by 0.25 cents per kilowatt-hour, while that on fuels increases by 3 cents per litre. Fuels with a low sulphur content have been treated preferentially from 1 November 2001. This means that since then an additional tax of 1.5 cents per litre has been imposed on fuels with a sulphur content exceeding 50 ppm. From 1 January 2003, this additional tax applies to fuels with a sulphur content exceeding 10 ppm. In principle, the German ETR is designed to be revenue-neutral. €100 million will be spent on a 'Programme to Promote Renewable Energies'. The remaining revenue from ETR is intended to offset a reduction of statutory pension contributions in equal measure for employers and employees. Initially, the government's target was to reduce those contributions from 42.3% to 40% at the end of the legislative period (2002). Most likely, the full reduction will not be achieved.

As regards trading instruments, the UK government introduced an emissions trading scheme in 2002, the rules having finally been decided in August 2001. Permits were 'grandfathered' (assigned for free on the basis of historical emissions) to companies with negotiated agreements under the Climate Change Levy. They will be assigned permits equal to the emissions they are allowed in each two-year milestone period. Because the scheme is voluntary, the government is offering a total of £215 million as a financial incentive for other companies without negotiated agreements to take part in order to provide liquidity for the scheme. Discussing emissions trading in a non-binding consultative process with businesses, Germany has not yet shown serious political interest and not developed the political momentum to introduce a similar scheme domestically.

3.5 Compliance with commitments and effectiveness of national policies

The UK and Germany are among the few countries that substantially reduced their emissions of greenhouse gases during the 1990s. As a result, they are both likely to deliver their obligations under the Kyoto Protocol and on track to meet their domestic reduction targets. Between 1990 and 2000, greenhouse gas emissions in the UK and Germany decreased by about 12% and 18%, respectively. Apart from approaching their national climate policy goals, the UK and Germany have also played a central role since 1990 in enabling the EU to achieve an overall cut in greenhouse gas emissions. Without the considerable emission reduction trends in these two countries, the EU as a whole would find it much harder to meet its Kyoto Protocol commitment to cut emissions by 2008–12 to 8% below 1990 levels. Hence, the EU is relying heavily on UK and German emission reductions to meet its overall Kyoto Protocol commitment. The most recent statistics show that UK and German carbon dioxide emissions rose in 2001 for the second year running, and in both countries by more than in 2000: in the UK, CO₂ emissions increased at 3%, compared with a 2% rise in 2000, while German emissions rose by 1.5% in 2001, compared with 1% in 2000 (Eichhammer *et al.* 2001). Key factors behind these emissions increases appeared to be more use of brown coal (lignite) in Germany, and, for the second year running, a shift away from natural gas towards coal in the UK's electricity sector.

Despite commitment, targets, timetables, policies and measures, in both countries, governmental climate policies account only partially for the successes in emission reductions (Eichhammer *et al.* 2001; Eyre 2001; Schleich *et al.* 2002). In the UK, an evaluation of climate policy effects on emissions concluded that despite the country's first modest programme, the significant emissions reductions have mainly been achieved through a combination of business-as-usual trends and side effects of other policies (Eyre 2001). Among these, the most relevant appear to be a shift of economic activity from industry to services, a shift towards less energy-intensive industrial production and technical change resulting in efficiency improvements despite falling energy prices, improvements in household heating techniques as well as more efficient and gas-fired power generation. Regarding the latter, a decrease in coal consumption and a higher nuclear output were consequences of the liberalisation of the energy market in the early 1990s. Germany particularly benefited from special circumstances, in particular the breakdown and restructuring of the eastern German economy after German unification. The related reductions of emission occurred mainly during the first half of the 1990s.

These so-called 'wall-fall profits' account for about 50 % of the total emission reductions. Nonetheless, Schleich *et al.* (2002) conclude that the German achievements are significant, given that the strong German commitment under the EU burden-sharing agreement was only adopted because of the expected wall-fall profits. Moreover, a policy-induced reduction of greenhouse gas emissions in one decade by approximately 9% is a considerable achievement in light of the Kyoto commitment. However, further climate policies and measures appear necessary to meet the strong domestic target.

In conclusion, the assessments show that significant emission reductions are possible with modest climate policies. However, ambitious goals as set by both countries need further specifically targeted action.

4 International climate policy: prospects for European leadership in climate policy

While there is evidence for all of the four theories of international relations discussed above, realism or neorealism, with the concepts of hegemonic stability and power, appear to particularly contribute to the understanding of how the negotiations of international climate policy evolved. In the case of climate policy, 'power' has been defined as the ability of actors to change the global climate. Thus the cooperation of these actors is so essential to a successful agreement that it has the power to block strong international action (Porter and Brown 1996).

From the early climate negotiations on, international climate policy was driven by the countervailing powers of the different interest groups of countries, with the USA playing the central role. These groups remained relatively stable during the course of negotiations, and their general positions have been described extensively elsewhere (e.g. Oberthür and Ott 1999; Gupta and Grubb 2000). Bodansky (2002) argues that the decision to negotiate international climate policy through the United Nations has been an obstacle to the functionality of the evolving regime, resulting in a significant institutional deficit. Bodansky particularly stresses the general organisation of interests of the developing countries in the G77 and China, which does not reflect the specific features of the climate change issue but has burdened the climate negotiations with a pronounced 'North-South flavour'. The G77 and China represent a conglomerate of interests ranging from those of rich oil-producing countries to those of poor small island states and, thus, might not be the right organisational form to serve the interests of all of its members.

Closely related but with a more positive connotation, the discussion of 'leadership' in international regimes contrasts with the concept of 'power'. Leadership in the context of climate policy has been discussed by a number of authors. Gupta and Grubb (2000) provide a comparative analysis of the different leadership concepts. During the last five years of international climate policy, there have been calls for European leadership to counter blocking powers with more progressive powers (Jäger *et al.* 1997; Ott and Oberthür 1999; Gupta and Grubb 2000). Based on policy analysis, Ott and Oberthür (1999) suggested three core elements that should be pursued: early and prompt ratification, the introduction of measures for domestic implementation, and the involvement of developing countries.

In order to develop an understanding for the current potential of European leadership and the roles that the UK and Germany might play, this chapter first discusses the negotiation situation until 2001. Following a brief introduction of the leadership concept, the need for a leadership initiative is discussed as the result of the withdrawal of the USA from its Kyoto commitment. Finally, the potential for the EU as well as the UK and Germany to satisfy this need is addressed.

4.1 The historic negotiation landscape

Rowlands (2001) discusses the role of the USA as a participant in the climate regime with blocking or vetoing power. He recalls the influence of that country during the preparations of the UNFCCC and the Kyoto Protocol, and its successful opposition towards timetables for the reduction of greenhouse gases that resulted in Art. 4 (2) UNFCCC aiming only for a stabilisation of greenhouse gas emissions by 2000 based on 1990 levels. Regarding the Kyoto Protocol, the USA succeeded in the inclusion of a more comprehensive basket approach (six gases instead of three) as well as the Kyoto mechanisms (Art. 3(10), 3(11) and 17). These positions were not favoured by the EU, although the comprehensive basket did have some proponents, for example the UK. Oberthür and Ott (1999) interpreted the conditions under which the Kyoto Protocol enters into force as a quasi-veto given to the USA.

However, the USA has not been all-dominating. Negotiations appear to have been influenced by bargaining blocs of interests. Commitments for developing countries called for by the USA were not supported by the EU and remain unrealistic. As an important element of the Protocol, the Kyoto target of an average reduction of 5.2% for developed countries has been pushed through by the EU, despite US opposition. Besides these broader strategically issues, the EU and member states have had a particular influence on various technical and instrumental issues such as methodologies regarding the inclusion of sinks (UK) or the discussion of compliance issues (Germany together with the USA).

4.2 Definition of leadership

Leadership is in general terms associated with the existence of visionary beliefs, the stimulation of followers, credibility, bravery, strategic divide and rule behaviour. There is a whole body of literature on leadership applied in different contexts. In the climate change context, Grubb and Gupta (2000) may have provided the most comprehensive analysis of the concept and synthesised the findings of several authors into three types of leadership: structural, instrumental, and directional. Structural leadership is characterised by the use of incentives based on political and economic power. Instrumental leadership relates to the crafting of structures and application of diplomatic skills to create 'winning' coalitions. Finally, directional leadership uses ideas and domestic implementation to influence the perception of other countries as to what is desirable and possible.

4.3 The EU response to US withdrawal and future needs for leadership

With the US withdrawal from the Kyoto Protocol in March 2001, the backdrop to the negotiations was utterly transformed. The EU and its member states had the opportunity to fill the power vacuum that remained. However, the challenges were enormous. The environmental reputation of the regime had again suffered as the regime now covers

one-quarter less of the total global emissions of greenhouse gases (Sach and Reese 2002). At the same time, the clause requiring 55 ratifications accounting for 55% of the emissions of Annex I parties in order for the Kyoto Protocol to come into effect confronted the parties to the Protocol with enormous difficulties. The clause had been interpreted as in effect a US veto over the Protocol, which the US withdrawal eventually showed to be the case.

Responding to these challenges, political reactions especially in Europe took the issue outside the climate regime to the highest levels of government (Ott 2002). At the Gothenburg Summit in June 2001, the EU heads of state and government asked – without mentioning the USA – for further progress on the elaboration of the Kyoto Protocol not to be blocked. President Bush, who was present at the beginning of the summit, gave an assurance that he would work constructively at the next conference. This agreement ensured a successful conclusion of the resumed session of COP 6 from 16 to 27 July in Bonn. At COP7, the USA maintained its neutral attitude. US negotiators were present at all meetings, but did not interfere. Hence, the EU did provide the required momentum and flexibility to carry the negotiations to a successful conclusion, greatly assisted by a strong alliance with G77 and China. However, flexibility here meant that the EU had to accept compromises as regards the accounting of sinks. Such a compromise proved to be necessary in order to convince hesitating countries, particularly Japan and Russia, to find consensual solutions for controversial issues and to prepare to ratify the Protocol (Sach and Reese 2002).

One immediate reaction to the US withdrawal was that the Kyoto Protocol would be kept alive. Indeed, attempts to stick to the ratification plan have been successful. Nevertheless, the need for a continuation of EU procedural leadership (in cooperation with other like-minded parties) remains. As Ott (2002) shows, the arguments for EU leadership have almost not changed. First, national legislatures of critical parties (Japan and Russia) still have to ratify the Kyoto Protocol. In the context of national ratification debates, scepticism about the overall seriousness of the problem might again evolve. Ratification might also cause efforts to undermine the political consensus behind the need for and appropriate nature of action.

Second, the Marrakesh Accords mark a shift from the legislative phase of the climate regime to the beginning of a phase of implementation. 'The focus of attention will lie on the translation of the protocol into national climate policies, the co-operation in the implementation of those commitments and, if necessary, the enforcement of obligations.' However, it remains uncertain quite how – and in some cases whether – countries will implement their commitments. There is also scepticism about the ability of some governments to do so. Few countries yet have a coherent strategy for limiting emissions that is developed and accepted across the political spectrum. Leadership is also needed as regards the implementation of an emissions trading regime, both at the international level between states and, as in the case of the EU, at the national or regional level for companies.

Third, controversial negotiations are to be expected regarding the inclusion of developing countries into the commitments. However, the provisions concerning the transfer of technologies and financial resources to developing countries will ensure broad participation of those countries. The composition of the various bodies overseeing the implementation of the protocol's provisions has been treated quite imaginatively and will provide compelling blueprints for inevitable future conflicts. Furthermore, the design of

targets for the second commitment period after 2012, and the further elaboration of the Kyoto mechanisms, will certainly require tremendous creativity, political will and legal drafting skills.

Fourth, some uncertainty remains regarding the compliance procedure although it is 'the strongest environmental compliance procedure ever adopted' and contains most elements necessary for its facilitative and enforcement functions.

4.4 The EU's potential as a leader in climate policy

The EU has consistently been the largest political grouping emphasising the urgency of the issue and pressing for stronger policy responses, and has played a key role throughout the policy process. However, Gupta and Grubb (2000), on which this section heavily draws, conclude that it has historically fallen far short of its potential and ambitions. Its effectiveness was disputed and external judgements have been very mixed. This harsh judgement is based on three arguments: structure, diversity, and performance.

Regarding structure, the EU is judged to have difficulties with the implementation and negotiation of international commitments as the EU is a community of sovereign states and above all not a static coalition of countries. On global issues, there is a shared responsibility between the EU and its member states. The access of new eastern European member states will represent a challenge in a number of questions related to the EU's climate policy commitments.

Regarding diversity, the EU countries differ in terms of economic welfare, language and culture, though they share a common democratic foundation and comparable legal systems. Eurostat opinion polls reveal that environmental issues and policies are seen differently in different member states. However, although there is legal clarity in principle, there is political confusion and controversy about how the EU and the member states can interact in the most efficient and effective manner.

Regarding performance in international policies, the EU's international role has been assessed as being somewhat wanting. Reviewing the experience of EU foreign policy, even official EU assessments used terms such as 'confusion', 'incoherence', 'paralysis', 'lack of credibility' and 'lack of real influence on the international scene'. Another assessment concluded that the EU had failed to bring its members together for any common policy or action in military or foreign affairs and that the European edifice is fundamentally hollow and selfishly obsessed with fiscal rectitude and commercial advantage (Gupta and Grubb 2000).

In turn, however, because of these shortcomings the EU is a microcosm in which all of the internationally experienced problems occur. So it may carry lessons for climate policy. The EU comprises a diverse group of countries, with its own 'North-South divide', that have built institutions for cooperation that span widely divergent perceptions and interests. These countries have struggled over what decisions should be taken at what levels, how to gain legitimacy and effectiveness for higher-level decisions taken on collective aims, how to address economic disparities, and how to bring in new entrants. These, on a broader plane, are fundamentally also the challenges underlying climate policy. Drawing

a perspective from the most recent development in international climate policy, one could conclude that the EU might use climate policy as an opportunity to improve its low profile in international policy.

4.5 The role of the UK and Germany within a European leadership strategy

In light of the rather negative assessment of EU performance in international policy, it appears that there is the potential and necessity to find procedures for developing a more successful policy strategy. EU negotiating power in international climate policy might benefit from UK and German experience. Both countries appear to have an intrinsic interest in providing this experience. The UK, for a long time accused as the dirty man of Europe, may be interested in playing a more significant role in global environmental politics than it has over the last decade. Reasons for believing in such a role are the UK's leading international role in research on climate change, which is demonstrated in IPCC representation and in recent emissions reduction successes. During the past decade, the reunified Germany has had to redefine its role in Europe and globally. For historical reasons, foreign and military policy were perceived as difficult policy arenas (though in recent years this has apparently begun to change), while environmental and climate policy were seen as less difficult policy arenas.

The leadership potential of the UK on climate change issues has been assessed as being strong in principle (Wynne and Simmons 2001). The argument is that the UK could profit from its robust democratic culture and institutions, its international reputation in science relevant to climate change and a confidence in international policy arenas borne of a history of empire and economic domination. The leadership potential of Germany may also be assessed as being strong. A major reason for this is its international reputation for being strongly committed to environmental protection. The credibility of this perception results from the strong and continuous commitment of the German government to its reductions targets, even when that government changes. Moreover, their success in achieving significant reductions, as compared to other countries, contributes to the credibility of the UK and German domestic climate policies, although these policies are also subject to criticism and could be improved. In particular, the crucial role that the UK and Germany play with regard to the successful implementation of the Kyoto reduction commitment of the EU increases the opportunities for both countries to be at the forefront of defining future climate policy strategies.

Recall the different types of leadership, it appears that the UK's particular strengths are those subsumed under instrumental leadership, whereas those of Germany have to be seen as directional leadership. The conditions for structural leadership exist in both countries. Hence the potential to improve EU climate policy by means of concerted activities should be significant. However, the difficulty of finding a consensus on a common climate policy strategy within the EU remains.

5 Potential research areas

The identification of future research areas is based on the experience of climate policy in the UK and Germany. Three areas of research may be considered. First, comparative research could focus on conceptual issues at the national level: how to create effective policy tools (transdisciplinary approach). Research which is more targeted at the policy process could focus on investigations of how to implement the Kyoto instruments domestically and how to link them with other policies. A second focus on conceptual issues at the international level may consider how to provide the climate negotiations with continuous momentum. Finally, research might focus on strategic issues becoming potentially important in the future, and particularly on unsolved issues of the Kyoto process.

5.1 Domestic implementation: effectiveness of policy tools

The account of UK and German domestic climate policy revealed that both countries have made significant efforts to deal with the climate change issue during the last decade. There have been three dimensions to socio-economic research in both countries, providing policy makers with arguments and tools for decision-making. First, there is a broad research agenda focusing on the applicability and effectiveness of specific instruments, for example the design and impacts of ecological tax reform which had a particular influence on the introduction of the instrument in Germany. Second, empirical socio-economic research focuses on policy analysis of climate management. Third, impact assessments focus on the effectiveness of domestic climate policy programmes. Future research may thus consider the following areas.

Policy integration: Some assessments of the effectiveness of the present climate policy programmes in the UK and Germany criticise these programmes as by-products of other policies (e.g. Eyre 2001). Hence, research may focus on complementing existing policies with new policy tools. These new policy tools, on which research in the UK is beginning to focus, should aim at the integration of climate policy with other policy fields. A comparative perspective with German experience could add to the discussion. For the assessment of such new policy tools, four criteria for improved environmental decision-making have been proposed: legitimacy, equity, efficiency, and effectiveness (CSERGE 2002). Legitimacy has been characterised as the basis of informed consent regarding new policies and is based on inclusive and empowering processes of governance. Equity ensures that legitimate interests are identified and considered. Efficiency has been interpreted as ensuring that the cost of implementation of any decision must be outweighed by its gains, which represents a difficult normative and accounting question. Finally, effectiveness relates to the impacts of policies and measures on natural system processes. Hence, effectiveness links policy analysis with the science of climate change and impact assessment. Particularly interesting is the identification of suitable instruments and processes under the climate issue as well as an investigation of the conditions under which these policies may be adopted and implemented. What are the country-specific

obstacles to the introduction of specific instruments? How can these barriers to implementation be addressed?

Design of new instruments: With regard to instruments, both the UK and Germany are at present faced with the challenge of introducing emissions trading systems in the medium term. This obligation results indirectly from the Kyoto Protocol (Art. 17) and directly from the draft EU directive on an emissions trading system (European Commission 2001). The UK and Germany have different views on how to address this future obligation: the UK follows an experimental approach, whereas Germany started by setting up a discussion forum with the potential actors. There are numerous research activities dealing with the design of emissions trading under the Kyoto Protocol in the UK and in Germany; however, a comparative approach to learn from experience in other countries has so far not been developed.

Empirical research: Research in emissions trading focuses on institutional aspects and the design of the instrument. As experience with the introduction of ecological tax reform (ETR) in Europe demonstrates, the design of economic instruments according to effectiveness criteria ultimately depends on bargaining processes with the actors involved. Hence, research on emissions trading should also include empirical components reflecting the views of interest groups at an early stage.

Human dimensions: Furthermore, empirical research on experience with ETR shows that the implementation of policies with desirable environmental, economic and social effects can be limited by problems with their political and social acceptability. As there are only few studies that investigate the social acceptability of climate policy, it would appear to be useful to apply these research frameworks to other climate policy instruments. Research on the human dimension would in particular foster the understanding of the social, behavioural and educational aspects of GEC. Applying the theoretical framework of disciplines such as environmental psychology and sociology would provide insights into the mechanisms leading to individual behavioural changes towards more sustainable lifestyles.

5.2 The role of the UK and Germany in an EU climate policy strategy

Potential issues of research could focus on two aspects: first, historical analysis and an empirical account of the performance of the UK and Germany in international climate policy; second, prospects for future engagement in the wake of US withdrawal. As UK and German climate policy has to be analysed in an EU context, it would appear to be necessary to focus on EU policy-making.

Policy analysis: A comprehensive and systematic policy analysis of the UK, German and EU roles in the climate policy process is so far not available. Assessments of the negotiation strategies of both countries, identifying strengths and weaknesses, would provide further insights into criteria for effective international policy-making. Regarding effectiveness in international policy-making, a key lesson is that conceptual diversity should be the guiding analytical principle.

EU decision-making: In addition, there are only few analyses of the decision-making processes within the EU with regard to climate policy. Such an analysis, in particular regarding decision-making after the withdrawal of the USA, would be helpful with regard to potential renegotiations of future commitments under the Kyoto Protocol. This kind of analysis facilitates an understanding of the bargaining process within the EU. Furthermore, this would shed some light on bargaining processes in general and could be transferred when it comes to negotiating commitments for non-committed parties to the Kyoto Protocol. Without significantly strengthening EU negotiation capabilities, its potential role as a leader on climate and other environmental issues has to be questioned.

Linking climate policy research with research on EU institutions: An analysis of the effectiveness of EU climate policy, and UK and German contributions to it, should be linked with research on EU institutions and policy-making in general. Research on EU issues has so far not been comprehensively transferred to climate policy research. There are only few comparative studies where the EU is treated as an individual actor in climate policy (e.g. O’Riordan and Jäger 1996; Gupta and Grubb 2000).

UK and Germany as leading parties: There appears to be room for both the UK and Germany to take more prominent positions in international climate policy. However, a more systematic application of the leadership concept to a single country or a group of like-minded countries has not been carried out. Taking into account the situation after the US withdrawal, the conditions for leadership have fundamentally changed. Research in this area could also explore the leadership potential of the UK and Germany as single parties and in an EU context.

Developing a leadership strategy? Finally, based on climate policy analysis and research into negotiation mechanisms, research could address the medium-term leadership strategy for the UK and Germany in an EU context, identifying policy options for strategically addressing the unsolved issues of the Kyoto Protocol as well as potential future areas of conflict.

5.3 Future development of the Kyoto Protocol

To prepare for an enhanced UK and German role in climate policy, research could focus on options for the further development of the climate regime, in particular regarding those issues likely to be a source of conflict which could hamper the progress in climate policy.

Assessment of strategic priorities: As a condition for a successful concerted policy approach, a comparative assessment of policy priorities and interests for further development might identify general lines for closer cooperation and identify potential areas of conflict between the UK and Germany.

Adequacy: A future area of research could aim to foster collaboration between the science of climate change and socio-economic and political sciences. There is a particular need for such enhanced cooperation as one important field of future negotiations will be the identification of dangerous levels of the human interference with the climate system.

Commitments of developing countries: In any case, such a concerted approach has to deal with the future commitments of developing countries under the Kyoto Protocol. There are several studies exploring how and on which basis to involve developing countries in the quantitative obligations of the Kyoto Protocol (Berk and den Elzen 2001; Philibert and Pershing 2001). Whereas the scientific discussion of the 'timely' participation of developing countries is ongoing, it would appear to be necessary to compare those approaches and assess their political potential in light of UK–German priorities in climate policy.

US reintegration: A strategic analysis of UK and German climate policy options may also focus on expectations regarding the future reintegration of the US into the climate regime. As Bodansky (2002) showed, a strategic reorientation of the US government may occur in the medium to long term, e.g. for the second commitment period under the Kyoto Protocol. The German government in particular has stressed its interest in reintegrating the USA (BMU 2000).

Prospects of the climate regime: Finally, with a view to the long-term development of the climate regime, research could focus on the exploration of future options for the integration or separate treatment of climate issues so far not covered under the Kyoto Protocol. As such the integration of new substances such as ozone precursors or additional sectors such as aviation may be considered. However, these issues do not necessarily have to be integrated into the Kyoto Protocol but may be treated separately.

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