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Special Feature on the Kyoto Protocol

The Development of Climate Change Policy in Germany

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Germany is the leader among countries belonging to the Organisation for Economic Co-operation and Development (OECD) in reducing its emissions of the Kyoto basket of greenhouse gases (GHGs), having accomplished an emissions reduction of 18.9 percent from 1990 to 2000. This paper aims to explain the reasons for this success and to examine the impacts of the adoption of the Kyoto Protocol on the development of Germany's climate policy. In order to identify the factors that determined this outcome, we divide our examination of the policy process in Germany since 1987 into five periods and will evaluate it with a focus on policy measures implemented and actors as well as the institutions involved. It concludes that domestic factors, including the participation of the Greens in the coalition government, mainly determined Germany's success in developing advanced climate policies and measures to reduce its GHG emissions. The paper also highlights the importance of the linkage of climate policy with other policies, which provided incentives to those who would otherwise have opposed or remained neutral on the development of climate policy. As such, the adoption of the Kyoto Protocol did not have a direct impact on climate policy development in Germany, but it did have an indirect impact in that it triggered the development of common and coordinated policies and measures at the European Union (EU) level in order to achieve its quantified GHG reduction target of 8 percent committed to under the Kyoto Protocol, as seen in the introduction of an EU-wide emissions trading scheme.

Keywords: Climate policy, Germany, European Union, Issue linkages, the Greens, Kyoto Protocol.

1. Introduction

In 1990 Germany ranked as the fourth largest carbon dioxide (CO_2) emitter in the industrialized world, with 1,014 million metric tons (tonnes) of CO_2 emissions and 7.4 percent of total emissions of Annex I parties of the Kyoto Protocol.[1] Since the reunification of the country in 1990, CO_2 emissions have been on the decline (see figure 1). Total greenhouse gas (GHG) emissions fell from 1,222.8 million tonnes in 1990 to 991.4 million tonnes in 2000.

In the framework of the Kyoto Protocol and based on the European burden-sharing agreement,[2] Germany committed to reduce its GHG emissions by 21 percent from the 1990 base year by the

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1. The United Nations Framework Convention on Climate Change (UNFCCC) divides countries into two main groups: Annex I, which is the industrialized countries, including the relatively wealthy ones that were members of the OECD plus countries with economies in transition (EIT), and Non-Annex I, which is developing countries.
2. The member states of the European Union agreed on a burden sharing agreement, which divided the EU's 8 percent EU emissions reduction target into member states' differentiated national reduction targets, first politically in 1998 and then legally in 2002 (Council of the European Union 2002). Based on the agreement, Germany is responsible to reduce its emissions equal to over three-quarters of the total European GHG emissions reduction committed in the protocol.

protocol's first commitment period (2008–2012). In addition, in 1995 the government spelled out a 25 percent reduction of CO_2 emissions by 2005. By 2000 Germany had already achieved a reduction of about 18.9 percent, corresponding to 231.4 million tonnes of CO_2 equivalent.

Why has Germany succeeded in reducing its GHG emissions to this extent? This paper aims to explain the reasons for this accomplishment and to examine the impact of the adoption of the Kyoto Protocol on the development of climate policy in Germany. In order to identify the determining factors for this achievement, we evaluate the policy process since 1987 by dividing it into five periods, with a focus on policy measures implemented and actors as well as institutions involved.

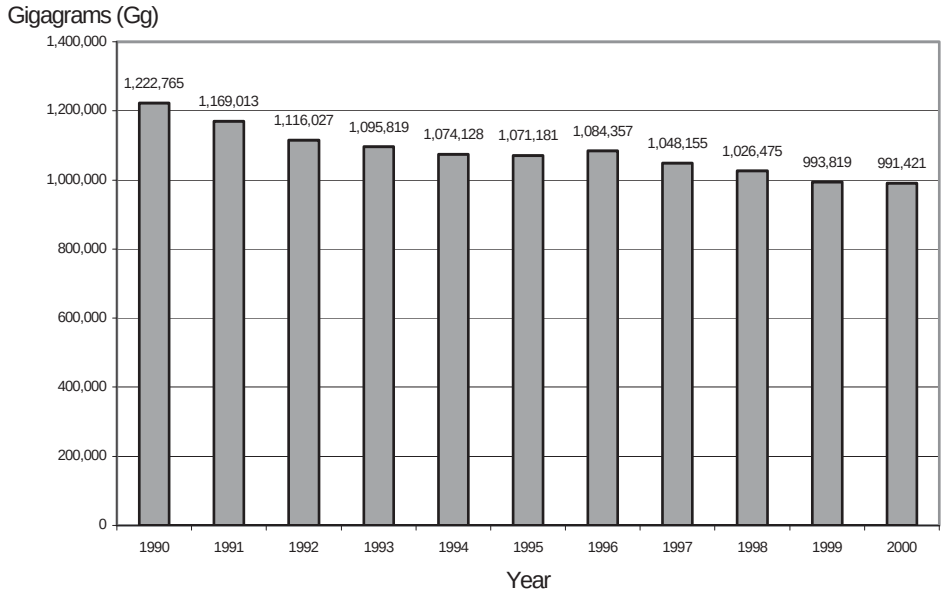

Figure 1. Greenhouse gas emissions in Germany, 1990–2000

Source: UBA 2003.

2. Climate policy development process

In this section, key measures and actors that have played a crucial role in the development of climate policy in Germany are presented and analyzed.[3]

For this analysis a criterion for categorizing the processes must be determined. Since the program drafted by parties that have won the majority of election votes and form the government provides a basis for the development of future policies, we use the election term of the Bundestag (the first chamber of

3. Before going into an analysis, the definition of climate policy used in this paper needs to be clarified. Looking at the agenda of the UNFCCC, the topic of climate policy includes measures for the mitigation of all six GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride), for adaptation, for international cooperation between developed and developing countries, and research and development. In this paper, however, we use *climate policy* as term for policies and measures to mitigate energy-related CO_2 emissions and institutional arrangements for climate policy decision-making, since energy related CO_2 emissions amount to 90 percent of total GHG emissions in Germany (BMU 2002).

Germany's parliament) as a criterion to categorize the process. Based on this, we split the climate policy development process into the following five government periods:

1. 1987–1990, The Christian Democratic Union (CDU), Christian Social Union (CSU), and the Free Democratic Party (FDP)
2. 1990–1994, CDU/CSU/FDP
3. 1994–1998, CDU/CSU/FDP
4. 1998–2002, Social Democratic Party (SPD)/the Greens
5. 2002–ongoing, SPD/the Greens

This criterion is also useful to identify the impacts of the Kyoto Protocol on the development of German climate policy, since it highlights the differences of climate policies before (from the first to the third periods) and after adoption of the protocol (the fourth and fifth periods).

2.1. The first period: 1987–1990

Germany paid little attention to the climate change issue until the middle of the 1980s (Cavender and Jaeger 1993). When international negotiations for the Montreal Protocol started in December 1986, Germany became markedly more proactive towards the climate change issue as well. In June 1986, the Ministry of Environment, Nature Conservation, and Nuclear Safety (Bundesministrium fuer Umwelt, Natureschutz, und Reaktorsicherheit, BMU) was established under the initiative of Chancellor Kohl, who realized the need for a ministry in charge of environmental issues, based on the recent experience of the Chernobyl nuclear power plant accident. The establishment of the BMU strengthened the position of those in the administration calling for stronger regulatory policy on ozone layer protection and other global environmental issues. Since then the general attention on the climate change issue has dramatically increased and climate change has become an important political issue in Germany.

Reacting to this pressure, the head of Germany's government at the time, Chancellor Helmut Kohl, in March 1987 called for national and international action to address the global threats to the Earth's atmosphere. When Germany took over the European Community (EC) presidency in 1987, ozone layer protection was put at the top of the EC's agenda. At the national level, the Committee for the Environment, Nature Conservation, and Nuclear Safety of the German parliament agreed to establish the Enquête Commission on Preventive Measures to Protect the Earth's Atmosphere (Climate Enquête Commission), with the mandate to study the ozone problem as well as the climate change problem and to make proposals for action. The Interministerial Working Group (IMA) on CO_2 Reduction was also established, which provided an institutional basis for the future development of climate policies.

a. The first Climate Enquête Commission

The German Bundestag resolved to establish the Enquête Commission on October 16, 1987, for the eleventh election period.[4] The objective of this commission was to facilitate the parliamentary discussion of possible precautionary measures concerning the changes in the Earth's atmosphere caused by humans and their impact on world climate and the environment.

4. Enquête commissions are constituted of parliamentarians and scientific experts, in order to facilitate the parliamentary discussion on complicated and long-term issues, pursuant to Article 56 of the Parliamentary Procedure of the German Bundestag.

The Climate Enquête Commission was chaired by Mr. Schmidtbauer of the CDU, and published its first report on November 3, 1988. The second report was published on May 31, 1990, and the commission completed its work on October 2, 1990, with the publication of its third report, *Protecting the Earth*. This report explained that the Earth and its atmosphere are being endangered by GHGs and ozone depletion, and that it is necessary to address both issues as soon as possible. It recommended the goals of a 30 percent reduction of CO_2 emissions by 2005 and 80 percent by 2050, both relative to the 1987 base year level. The commission further recommended the introduction of a new energy policy in Germany (German Bundestag 1991).[5]

b. Interministerial Working Group on CO_2 Reduction

On January 15, 1990, Chancellor Kohl sent a letter to the BMU requesting a study on the target of CO_2 abatement as well as policies and measures for achieving it. In response, the BMU conducted a feasibility study and concluded that a 30.5 percent reduction of CO_2 emissions would be feasible based on the knowledge provided by the Enquête Commission and Germany's federal environmental agency (Umweltbundesamt, UBA) (Beuermann and Jaeger 1996). On June 13, 1990, the federal government agreed to the target of a 25 percent reduction of CO_2 emissions in former West Germany by 2005 relative to the 1987 level, and it set up the Interministerial Working Group (IMA) on CO_2 Reduction with the task of compiling proposals for a 25 percent reduction of CO_2 emissions and of examining possibilities for a further reduction of energy-related GHGs. Within the framework of the IMA, chaired by the BMU, the following five sub-working groups were established (see figure 2):

1. Energy Supply, chaired by the Ministry for Economics and Labour (Bundesministerium fuer Wirtschaft und Arbeit, BMWA)[6]
2. Transport, chaired by the Ministry of Transport, Building, and Housing (Bundesministerium fuer Verkehr, Bau- und Wohnungswesen, BMVBW)
3. Buildings, also chaired by the BMVBW
4. New Technologies, chaired by the Ministry for Research and Technology (Bundesministerium fuer Bildung und Forschung, BMBF)
5. Agriculture and Forestry, chaired by the Ministry for Consumer Protection, Food, and Agriculture (Bundesministerium fuer Verbraucherschutz, Ernaehrung und Landwirtschaft, BMVEL).

In addition to the five subgroups, another group on emissions inventory was established in October 2000. Senior BMU officers were eager to develop and implement climate policies, but it was difficult for the BMU to do so, since climate change was relevant to environmental as well as other policies. The decision by the chancellor's office to set up the IMA enabled the BMU to take the initiative in

5. This report recommended a 30 percent reduction for Germany by 2005 of CO_2 and methane (CH_4) and an 80 percent reduction by 2050 for both gases in comparison to the 1987 base year. The commission analyzed the following three energy scenarios to achieve the targets: (1) the Energy Policy Reduction Scenario, a two-stage reference scenario where energy policy removes all major obstacles preventing efficient energy use and the application of renewable energies, and fuel prices are approximately doubled in real terms by the year 2005; (2) the Nuclear Energy Phase-Out Scenario, characterized by intensified application of efficient energy use, contribution by combined heat and power generation, a considerable increase in the application of renewable energies, and a great rise in the use of natural gas; and (3) the Increasing Nuclear Energy Use Scenario, entailing the additional construction of ten nuclear power station blocks of 1,300 megawatts each, which could lead to a drop of 31.2 percent in GHG emissions without any further CO_2 reduction measures. With the third option, it was not possible to reach consensus among the committee members. The CDU/CSU and FDP supported this option, while the SPD opposed it.

6. The Ministry for Economic Affairs (BMW) changed its name to the Ministry for Economic Affairs and Technology (BMWi) in 1999 and to the Ministry for Labour and Social Affairs (BMWA) in 2002 due to changes of its responsibilities.

developing climate policies and measures. Some have said, however, that the BMU just played a coordinator role, since it did not chair any subgroup at the beginning (Beuermann and Jaeger 1996; Bang 2000).

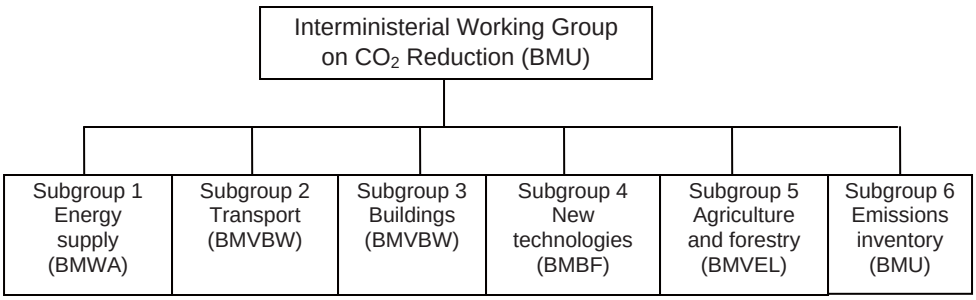

Figure 2. Structure of the Interministerial Working Group on CO_2 Reduction

Source: IMA CO_2-Reduktion 2000.

c. Summary

Since the late 1980s, in response to heightened awareness of the climate change issue at the domestic as well as international levels, the Climate Enquête Commission was constituted to compile scientific knowledge on climate change issues, and the Interministerial Working Group on CO_2 Reduction was established to compile proposals for achieving a 25 percent reduction target. Promoters of the Enquête Commission included Chancellor Kohl, the Bundestag, scientists, and the members of Enquête Commission, including its chair, Dr. Schmidtbauer of the CDU. Chancellor Kohl, Environment Minister Klaus Toepfer, and BMU officers also played crucial roles in establishing the IMA, which functions to provide an institutional basis for making decisions on climate policy.

2.2. The second period: 1990–1994

After the collapse of the Berlin Wall on November 9, 1989, the reunification of East and West Germany was undertaken at a much more rapid pace than expected, and on October 3, 1990, Germany became re-unified. The rapid reunification process and reconstruction of the former East Germany partly distracted attention from environmental and climate issues (O'Nell 1997). Although the progress of climate policy might have been slowed down because of the reunification process, it still continued with developments during this period such as the publication of the IMA's first report, the work of the second Climate Enquête Commission, the promotion of renewable energy, and the promotion of energy efficiency in the former German Democratic Republic (DDR).

a. The second Climate Enquête Commission

After the first Climate Enquête Commission completed its work with its third report for the eleventh election period in 1990, another commission was established, the Enquête Commission "Schutz der Erdatmosphaere" (Protection of the Global Atmosphere) for the twelfth election period. It completed its

work with its final report, titled *Mehr Zukunft fuer die Erde: Nachhaltige Energiepolitik fuer dauerhaften Klimaschutz* in 1994 (German Bundestag 1995). The second Climate Enquête Commission was not as successful as the first, a fact mainly attributed to its focus on implementation, while the first one mostly dealt with the natural science aspect of climate change (Beuermann and Jaeger 1996; Vierecke 1999).[7]

b. The IMA's first report

The IMA presented its first report on November 7, 1990,[8] and on its basis the federal government reaffirmed the 25 percent reduction target for energy-related CO_2 emissions in the former West Germany and to a considerably higher percentage reduction in the new East German federal states by 2005 relative to the 1987 base year. Concerning more specific measures, it recommended market instruments, the inclusion of ecological costs in energy prices, energy saving and emission-control regulations in the buildings sector, district heating, combined heat and power generation, the utilization of industrial waste heat, and opening up of the long-term economic potential of renewable energies.

c. The Electricity Feed-in Act

Measures to promote electricity generation from renewable energy sources became an issue in the German Bundestag in 1990. Under the initiative of members of parliament from different political parties, the Electricity Feed-in Act (Stromeinspeisungsgesetz, StrEG) was drafted and adopted by all political parties. The Electricity Feed-in Act entered into force on January 1, 1991. It set feed-in tariffs for electricity from renewable energy sources not owned by utilities and an obligation for grid operators to purchase electricity from renewable energy sources.

Together with direct subsidies provided by the federal government for the production of renewable energy, the Electricity Feed-in Act largely contributed to an increase of wind power capacities by a factor of around 42 times from 1990 to 1998.[9]

d. Measures to promote energy efficiency in the former East Germany

The reconstruction of the former East Germany, whose economic level was lower than West Germany and with a considerable lack of infrastructure, required the transfer of enormous financial resources from the West. The official figure is 1,000 billion deutsche marks (DM) (500 billion euros [€]), part of which was used for the reconstruction and privatization of the energy sector, such as restructuring and privatization of brown coal mining, establishment of a competitive market for private companies in the oil sector, the shutdown of nuclear power plants, establishment and privatization of local power plants, abolishment of energy price subsidies, improvement of energy efficiency in buildings, [10] and

7. Apart from the issue discussed, Beuermann and Jaeger raised the differences of charpersons and working processes between the first and second Enquete Commission as reasons for this (Beuermann and Jaeger 1996).

8. The IMA published its second report on December 11, 1991, the third report on September 29, 1994, the fourth report on January 6, 1997, an interim report on July 26, 2000, and its fifth report on October 8, 2000. BMU officers mentioned that the IMA published its reports to coincide with important international conferences such as COP 1, COP 3, and COP 6.

9. In 1994, DM 10 million was budgeted for promoting energy from renewable resources. This program operated from 1995 to 1998, and provided direct investment of DM 0.1 billion for wind, solar energy, and the installation of biogas and biomass systems.

10 In former East German states, modernization of regional heating programs was also undertaken by the federal as well as regional governments. It was estimated that the modernization rate amounts to 4.5 to 5 percent per year and that DM 3 billion had been spent on this program by 1995.

implementation of environmental regulations.[11] These instruments and a migration of population from East to West Germany was one of the reasons for unified Germany's success in dramatically reducing CO_2 emissions (Schleich et al. 2001). Although some argue that the reduction of CO_2 emissions was a "free lunch" resulting from the reunification process, Germany actually had to spend hundreds of billions of euros for it. The share of policy measures in emissions reduction is estimated at about 50 percent and the other half is attributed to reunification (ibid.; Fraunhofer Institute for Systems and Innovation Research 2001).

e. Summary

During this period, German reunification was the main focus of the political agenda for both the government and parliament. Some argue that the development of climate policy was slowed down because of the reunification process and that a decrease in support from the Greens in the 1990 federal election was evidence of this, while others explain that the decrease in support from the Greens was attributed to its negative attitude towards Germany's reunification and the late integration with its East German sister party, the Alliance 90 (O'Nell 1997). Due to these factors, climate change might have attracted fewer people's attention than in the previous period. The above examination, however, reveals that climate policy was developed even during this period, as seen by the IMA's first report, the promotion of renewable energies, and the improvement of energy efficiency in the former East Germany.

Chancellor Kohl and Environment Minister Toepfer of the CDU played crucial roles in promoting climate policies. A diversification of actors was also observed in this period. For example, the Bundestag was the main promoter of renewable energy sources, supported by the Bundesrat.[12] During the reunification process, the Ministry of the Interior (Bundesministerium des Innern, BMI) acted as a promoter as the ministry in charge of reunification policy. The BMU, BMW, and new states also contributed to the inclusion and implementation of energy efficiency policies and environmental policies in the reunification process. Evidence of this can be seen in the fact that the BMW as well as the BMI were promoters of each measure, primarily aiming to promote their primary interests of energy and reunification policy.

2.3. The third period: 1994–1998

Germany succeeded in steadily reducing CO_2 emissions during this period. Bolstered by this success, it played a leading role in climate policy at international and the European Union (EU) levels, including inviting the first Conference of the Parties (COP 1) to Berlin in 1995. In order to appeal to Germany's willingness to address the climate change issue as the host of COP 1, the federal government, again led by the CDU/CSU and FDP, strengthened its target to reduce CO_2 emissions by 25 percent by changing the base year from 1987 to 1990. The Federation of German Industries (Bundesverband der Deutschen Industrie, BDI) announced their voluntary commitment to reduce CO_2 emissions. During this period, energy policy was largely reformed to respond to adoption of the EU directive concerning common

11. An ordinance on large combustion plants contributed to closing down brown coal power plants and the subsequent reduction in CO_2 emissions.

12. The Bundesrat (federal council) is the representative body of the 16 federal states. The Bundestag is the first chamber of the Parliament while the Bundesrat is the second chamber.

rules for the internal electricity market on December 19, 1996 (96/92/EC), which had both negative and positive impacts on climate policy development.

a. Declaration by German industry on climate protection

Responding to the government's request, the BDI announced a voluntary commitment on March 18, 1995, to reduce CO_2 emissions "up to minus 20 percent" by the year 2005 relative to the 1987 level with the expectation that the government would refrain from introducing additional measures. Subject to criticism from various sides, the agreement was amended on March 27, 1996, by the modification of base year from 1987 to 1990 with dropping "up to" from the target and the introduction of monitoring by a third party, the Rheinisch-Westfaelisches Institut fuer Wirtschaftsforschung (RWI). Following the BDI announcement, the federal government announced it would refrain from introducing additional measures such as the heat usage ordinance and the CO_2/energy tax.

b. Amendment of the energy act

In autumn 1996, the German government made an attempt to deregulate the energy law and introduced a draft into the legislative process, backed by the reform requirements discussed in the drafting process for the EU directive 96/92/EC concerning common rules for the internal market in electricity adopted December 19, 1996. The reform's main goal was to induce the reduction of electricity and gas prices in order to strengthen the international competitiveness of German industry. After controversial debate within parliament and with stakeholders for more than a year, the Revised Energy Sector Act (Gesetz zur Neuregelung des Energiewirtschaftsrechts) was passed, which amended the Energy Sector Act (Energiewirtschaftsgesetz, EnWG), the Monopolies Act (Gesetz gegen Wettbewerbsbeschränkungen, GWB), and the Electricity Feed-in Law (Mez 1997). It entered into force on April 29, 1998. The basic principles of the energy law reforms are the end of demarcation agreement, the full opening up of the network for all suppliers, and the free choice of supplier for all consumers. Disregarding the scope provided by the EU directive, the new Energy Sector Act does not stipulate priority for combined heat and power (CHP) or renewable electricity sources. Moreover, by abolishing the demarcation and concession agreements, the Act contributed to stimulating competition among power companies and grid operators, which, ironically, enhanced further oligopoly and hindered the promotion of environmentally benign but high-cost energy sources, including CHP as well as renewable energies.

c. Summary

In order to show its willingness to address the climate change issue as the host of COP 1 in 1995, Germany's federal government strengthened its national target to reduce CO_2 emissions by 25 percent compared to the 1990 base year instead of the 1987 level. Furthermore, a voluntary commitment was declared by industry. In April 1998, the energy sector law was revised as Germany's implementation of the EU directive concerning common rules for the internal electricity market. In the revision, demarcation and concession agreements were abolished. Subsidies for coal also started to be reduced (BMU 2003c).[13] The Revised Energy Sector Act and the reduction of coal subsidies were developed

13. In March 1997, the Coal Subsidy Law was enacted, which stipulated that the subsidy to hard coal be reduced from €4.76 billion to €2.71 billion from 1998 to 2005.

primarily from an energy policy perspective; therefore, they did not always have positive effects on the development of climate policy.

In terms of making voluntary commitments, Chancellor Kohl, Environment Minister Angela Merkel, the Ministry for Economic Affairs and Technology (BMWi), and industry launched an initiative, which was mainly a result of industry's intention to avoid the introduction of more drastic measures by appealing for a collaborative attitude in promoting climate policy. The basis of this arrangement—the voluntary commitment of German industry—was propagated by these associations as the royal road of environmental policy.

The BMWi took the initiative in revising the Energy Sector Act and the reduction of coal subsidies, which resulted in both a positive and negative influence on emissions reduction, since it was developed mainly from the energy policy development perspective.

As characterized in the case of energy sector law, this period highlighted the complexity of climate policy, where the various interests of actors and policy perspectives at the national level as well as the EU level were intertwined.

2.4. The fourth period: 1998–2002

After the federal election in September 1998, the SPD and the Alliance 90/the Greens formed a new coalition government in October. Due to the participation of the Greens, the new coalition government strengthened environmental policy in its coalition agreement. The major elements of the agreement included plans for green tax reform, the further promotion of renewable energies as well as energy-efficient technologies, and the phase-out of nuclear energy. While the government succeeded in introducing an eco-tax, enacting a renewable energy sources act, and the phase-out of nuclear power plants, it could not carry out drastic reforms in the reduction of coal subsidies and the introduction of a CHP quota.

a. Ecological tax reform and the Act on the Continuation of the Ecological Tax Reform

Although ecological tax reform has long been discussed in Germany, the CDU/CSU/FDP government failed to introduce an eco-tax.[14] This was partly because Chancellor Kohl promised, along with Mr. Henkel (BDI) and Mr. Strueber (BASF), not to introduce one as long as he was in office (Reiche and Krebs 1999).

The Greens advocated an eco-tax and the phase-out of nuclear power in their campaign pledge for the 1998 election with the support of non-governmental organizations (NGOs) (Reiche and Krebs 1999). Nevertheless, few expected the introduction of an eco-tax. Against the expectations of most, in their October 1998 coalition agreement the SPD and the Greens agreed on an ecological tax reform that was to be implemented in three steps.[15] The mineral oil tax on heating oil and natural gas was to be increased in a series of steps and a tax on electricity was to be introduced. The total revenues were to be used to

14. For further details on discussions on the eco-tax, see Reiche and Krebs (1999), Schreurs (2002), and Mez (2003).

15. It was a significant decision that the SPD selected the Greens and not the FDP as its coalition partner. The right wing of the SPD (the Schroeder wing) was seen as a more pragmatic choice, so many expected the SPD to lean towards the FDP. As it turned out, Oscar Lafontaine, who was SPD leader and belonged to the left wing of the SPD, brought the coalition with the Greens into reality.

reduce additional social insurance costs. Renewable energy sources were to be exempt from the tax on electricity, and energy-intensive industries were to be levied a reduced tax rate due to the consideration of international competitiveness.[16] The SPD's interest in reducing social insurance burdens as well as the participation of the Greens in the government were seen as reasons for introducing an eco-tax at this time (BMU 2003b).[17]

The first stage of the Eco Tax was passed by the Bundestag and the Bundesrat after two hearings of the parliamentary finance committee, and it came into force on April 1, 1999. It stipulated an increase of 6 pfennig (3.07 Euro cents) per litre of the mineral oil tax on fuels, 4 pfennig (2.05 cents) per litre on light heating oil, and 0.32 pfennig (0.16 cents) per kilowatt-hour on natural gas, as well as the introduction of an electricity tax of 2 pfennig (1.02 cents) per kilowatt-hour. The DM 8.3 billion (€4.24 billion) in revenues for 1999 almost entirely went to reducing pension contributions (by 0.8 percent).

In summer 1999 the details of the next stages of the Eco Tax were published. On January 1 of each year from 2000 to 2003, the petrol tax was set to rise by 6 pfennig (3.07 cents) per litre and the tax on electricity by 0.5 pfennig (0.26 cents) per kilowatt-hour. Specifics of the reform included a temporary exemption from the mineral oil tax for gas and steam power plants and for CHP, as well as a reduction of the mineral oil tax for diesel fuel for local public transport.

b. The National Climate Policy Programme

In the National Climate Policy Programme of October 2000, indicative sectoral reduction targets were published for the first time. With a 2005 reduction target of 50 to 70 million tonnes of CO_2 emissions, 20 to 25 million tonnes would have to be reduced by energy supply and industry, 18 to 25 million tonnes by households, and 15 to 20 million tonnes by transport (IMA CO_2-Reduktion 2000).

c. The Renewable Energy Sources Act

After several reviews of the Electricity Feed-in Act, the necessity of scrutinizing the framework conditions for the promotion of renewable electricity was recognized.

The April 1998 Revised Energy Sector Act also included amendments to the Electricity Feed-in Act, which, on the one hand, was intended to spread the burden of financing feed-in remunerations more evenly among grid operators. On the other hand, it put a cap on further market expansion, particularly of wind energy, by limiting remunerated feed-in amounts to 5 percent of a distributor's sales. Criticism of this law grew louder as electricity prices decreased, and remunerations coupled to averages prices were expected to decrease as well. Furthermore, in some coastal supply areas the 5 percent limit had already been passed. In order to address the issues identified, legislation on granting priority to renewable energies (Renewable Energy Sources Act, or RESA) was enacted under the initiative of the parliament (and not primarily the government) on March 29, 2000. It came into force on April 1, 2000, and replaced the Electricity Feed-in Law.

16. A reduced rate of 80% applied to the manufacturing sector and forestry and agriculture, given the fact that they pay the minimum amount of tax (€511 per energy source based on electricity and heating fuels). For the manufacturing industry, there is the additional option to apply for a tax cap ("Spitzenausgleich"), through which companies will get refunded the full differential amount if the burden from increased tax rates (disregarding the mineral oil tax on motor fuel and heating oil) is 1.2 times greater than the tax relief from the reduction in pension contributions.

17. Apart from these two factors, a BMU senior officer mentioned that speed was essential, as it would be more difficult to introduce an eco-tax if more time was allowed to consider it (BMU 2003b).

The law's underlying aim is to achieve a substantial increase in the percentage contribution made by renewable energy sources to power supply in order to at least double the share of renewable energy sources in total energy consumption by the year 2010 (Fraunhofer Institute for Systems and Innovation Research 2001.

In addition to wind energy feed-in provisions, it also provides fixed remuneration for electricity from biomass and photovoltaic sources, as well as geothermal and small-scale hydropower. Although remuneration will decrease according to a fixed schedule over the years, it starts at high and economically worthwhile levels, and it is meant to function as a market transition program for new technologies.

According to the promotion of renewable energy sources, renewable electricity generation contributed 44 terawatt-hours (TWh) in 2003, and its share increased from 5.4 percent in 1998 to 7.9 percent (Wittke and Ziesing 2004).

d. Revision of the Voluntary Declaration by German industry

German industry addressed the climate change issue mainly with its Voluntary Declaration, published in 1995 and then revised in 1996.

The third monitoring report on the CO_2 emissions of Germany industry (published in November 2000) revealed that a number of sectors had either almost reached their target or exceeded it at about the half-way point between the base year and target year (Buttermann and Hillebrand 2000). Bolstered by this success, German industry published another revised declaration on November 9, 2000, in accordance with the federal government's publication of its fifth climate protection program on October 18, 2000. In the declaration, German industry aimed at a 28 percent reduction in specific CO_2 emissions by 2005 and a 35 percent reduction of emissions for the six greenhouse gases until 2012 (BDI 2000).[18]

e. Promotion of the co-generation of heat and power (the CHP Law and the CHP Expansion Law)

Another law aimed at re-regulating the electricity market is the CHP Law (the Gesetz zum Schutz der Stromerzeugung aus Kraft-Wärme-Kopplung) of May 12, 2000. The unexpectedly rapid decrease in wholesale electricity prices on the deregulated German electricity market resulted in high cost pressures on CHP power station operators (Fraunhofer Institute for Systems and Innovation Research 2001), which counteracted the original policy target of doubling cogeneration by 2010. Realizing the necessity for a legal support scheme to industrial self-producers as well as municipal utilities affected, the CHP Law guaranteed a feed-in remuneration for existing CHP power produced for public supply of 1.53 euro cents /kWh as of January 1, 2000,[19] and made all plants generating for public supply eligible for support. The law expired when the CHP Expansion Law came into force.

Since the CHP law was designed as a pure stranded cost recovery regulation, it neither counteracted the shutdown of industrial CHP plants nor integrated environmental criteria of eligibility. Therefore, the

18. After the BDI published its 1995 and 1996 declarations, the federal government announced that it would refrain from introducing additional measures on the condition that industry reduces CO_2 emissions accordingly as stipulated in the declarations. The 2000 revision was signed by representatives of industrial associations (BDI, BGW, VDEW, and VIK), Chancellor Schroeder, Environment Minister Juergen Trittin, and Economic Minister Werner Mueller.

19. To be reduced by 0.26 ct/kWh each year.

drafting of a further regulation in the frame of a comprehensive CHP program was put on the governmental agenda. According to a cabinet decision, the legislation introducing a tradable quota system was originally planned to be passed by the end of 2000. This scheme was to be open to all CHP producers, which were to be assessed primarily according to environmental efficiency standards. Strong opposition was levied by the large electricity companies and, more silently, from a number of municipal utilities. They wanted to avoid the additional cost burdens expected to arise from such a support scheme and, maybe even more important, feared losing market share to industrial self-generators because of the potentially large amount of economically- and environmentally-effective CHP expected to be mobilized. Industrial producers in turn were not natural promoters of self-managed CHP production as long as low energy costs could be maintained for their industrial production processes. In spring 2001, a customer-financed bonus system was discussed, based on strict environmental standards that would be increased over time. The Environment Minister, Juergen Trittin, and his Green parliamentary faction supported it, while the Minister of Economic Affairs and Technology, Werner Mueller, despite heavy criticism from scientific advisors, was in favor of a negotiated CO_2 reduction agreement with the large electric companies.[20]

After long negotiations between the government, the SPD, the Greens, and industry, the new CHP law came into force on April 1, 2002, protecting CHP plants for public supply and providing incentives for their modernization. Further support is given to small-scale CHP plants and fuel cells. Until December 31, 2010, expenses are expected to total €4.5 billion and CO_2 emissions should be reduced by 11 million tonnes. Industrial CHP plants are not affected by the new law, which replaced the CHP law of May 2000.

f. The ordinance to improve energy efficiency in buildings

The government's fifth climate protection program also proposed measures to improve energy efficiency in the buildings sector, where CO_2 emissions have been increasing. Under initiatives taken by Minister of Economics and Technology, Werner Mueller, and Minister of Transport, Building and Housing, Kurt Bodewig, the Buildings Energy-Efficiency Ordinance (Energieeinsparverordnung) was brought into force February 1, 2002, with the objective to reduce CO_2 emissions by up to 25 million tonnes. The law is designed to reduce energy consumption in new buildings by nearly one-third, while it requires the introduction of insulation in older houses and the replacement of up to two million inefficient domestic boilers over five years. New houses will also require energy certificates in the future. The method for calculating energy consumption based on energy sources favors the use of energy from renewable sources, and the use of electric heating will be penalized.

g. Summary

After the autumn 1998 federal election, the SPD and the Greens formed a new coalition government after a 16-year-long CDU/CSU government, which was successful in introducing the Eco Tax and promoting renewable energies as well as energy efficiency in the buildings sector.

20. In a plan devised by the large electric companies suggested carrying out efficiency measures in their plants to reduce CO_2 emissions. More than half of the reductions presented in their detailed plan, however, did not meet the standards of the economic minister's scientific advisors, because included were measures accounted for in the voluntary agreement for reducing CO_2 emissions, as well as other unacceptable measures like refurbishing lignite-fired plants and relying on public subsidies.

In regard to the introduction of the Eco Tax, the Greens, with the support of NGOs and the BMU, were its promoters, while industry and the BMWi opposed it. The SPD decided to position itself on the promoter side because of the tax's social policy benefits, which are consistent with the SPD's policy as socialist and with the interests of SPD's main supporters, namely, workers. Therefore, the SPD as well as Chancellor Gerhard Schroeder switched from supporting it to being neutral, even close to being negative, upon the revision of the Eco Tax, when it became unpopular among general public. In contrast, the Ministry of Finance (Bundesministerium der Finanzen, BMF), which was neutral at the introduction of the tax in 1998, became promoter after realizing that the tax was a stable revenue source.

With the Renewable Energy Sources Act, the Greens and the SPD played a vital role as promoters, while power companies as well as the BMWi acted as opponents.

In regard to the CHP quotas, the Greens and Environment Minister Juergen Trittin were the main promoters, while the BMWi and the Minister of Economics and Technology, Werner Mueller, with most companies, opposed it. The positions of the main actors were almost the same as with the Renewable Energy Sources Act, apart from the position of the SPD. Both Chancellor Schroeder and the SPD had difficulties in taking decisive action on this issue because the coal industry as well as the German state of North Rhine Westphalia (the largest coal producing state)—strong supporters of the SPD—fiercely opposed the introduction of CHP quotas (BMU 2003a).

Although the BMWi opposed the above measures, it was a promoter along with the BMVBW of the introduction of the energy-efficiency ordinance in the buildings sector.

This period saw the further development of climate policies and measures, mainly due to the participation of the Greens in the government, as shown in the case of the Eco Tax and the promotion of renewable energy. The cases of the Eco Tax and the buildings energy-efficiency ordinance also highlight the importance of issue linkages, which gave the BMF an incentive to support the Eco Tax and the BMWi as well as BMVBW to take initiatives on the ordinance to improve energy efficiency in buildings. Backed by the development of domestic climate policy, the German parliament unanimously ratified the Kyoto Protocol in March 2002 with the aim of entering the protocol into force in time for the Johannesburg summit, the tenth anniversary of the United Nations Conference of Environment and Development (when the United Nations Framework Convention on Climate Change was opened for signature).

2.5. The fifth period: Since 2002

During the fall 2002 federal election campaign, it was reported that the CDU/CSU was predominant due to the existing economic recession, an increase of unemployment, and the return to conservative governments in other European countries such as France and the Netherlands. After massive flooding in August 2002, however, environmental issues recaptured the general public's awareness, which resulted in the Greens winning its largest number of votes at the federal level since its establishment and elevating it to being the third-largest political party in Germany. In October 2002 the SPD and the Greens formed a second-term coalition government. With the Greens' gain of negotiating power in the coalition government, they succeeded in shifting the responsibility of renewable energies from the

BMWA to the BMU and strengthening environmental policies in a new coalition agreement, which included the medium-term target of reducing GHGs emissions by 40 percent by 2020, support of a draft directive on the EU's GHG emissions trading scheme, and measures to further promote renewable energy sources.

a. The Act on the Further Development of the Ecological Tax Reform

Although the Eco Tax, which was introduced and revised in the first "Red-Green" coalition government, contributed to the reduction of Germany's CO_2 emissions, it was criticized mainly due to a number of exemptions. After considering the criticism, the new coalition government introduced the Act on the Further Development of the Ecological Tax Reform, which entered into force January 1, 2003.

The discussion of tax reform focused on the exemptions granted to industry (BMU 2003a), which resulted in revisions such as an decrease of the eco-tax reduction rates for the manufacturing industry as well as for agriculture and forestry from the previous 80 percent to 40 percent, and the modification of the tax cap from the previous 100 percent to 95 percent of the excess tax.[21]

A review for the year 2004 is foreseen to assess if and how the Eco Tax will be further developed according to environmental aspects, considering the environmental impacts, oil prices, macro-economic developments, the competitiveness of German industry, and the social impacts of such taxation.

b. Implementation of the EU directive on establishing GHG emissions trading

Responding to a Green paper on establishing a scheme for greenhouse gas emission allowance trading within the Community (COM[2000]87) published in March 2000, Germany's government decided to establish a working group on emissions trading within the framework of the climate protection program published on October 18, 2000, with the BMU as the chair. Members of the group included a number of state and federal ministries, members of parliament, companies, industrial associations, unions, and NGOs (AG Emissionshandel 2002).

While the BMU, with the backing of some companies including British Petroleum and Shell, was in favor, the BMWA and most industries opposed the introduction of mandatory emissions trading at the EU level for the first phase, from 2005 to 2007, mainly because of concerns about the friction that would be caused by adjusting its existing measures, including the voluntary agreement (BDI 2001; BDI 2002). Considering industry's opposition, Germany made proposals on voluntary participation, opt-out,[22] and pooling to exempt its industries from the emissions trading scheme for the first phase.[23] In the end, however, it agreed on adopting the EU directive (2003/87/EC), which included very limited opt-out and pooling, therefore different from what Germany originally intended. This was mainly because a draft proposal of the emissions trading directive was submitted as an environmental directive based on Article 175 and 251 of the Treaty Establishing the European Community, therefore, it could be adopted

21. For details on the exemptions, see footnote 19.

22. The difference between the mandatory/voluntary scheme and opt-out is that country, sector, or individual installations can decide whether to participate in the scheme under the voluntary scheme, while opt-out allows them to be excluded from the scheme by fulfilling certain conditions under the mandatory scheme.

23. The pooling described in Article 28 of the emissions trading directive is the system to allow operators of installations to form a pool of installations and to take collective responsibility to surrender allowances equal to the total emissions from installations in the pool; while the pooling which Germany originally proposed was the mandatory one in which the government can decide on the participants in the pooling with the aim of maintaining its voluntary declaration.

with the qualitative majority-voting rule.[24] Under the situation that most member states were willing to introduce emissions trading in order to efficiently reduce their emissions from their energy supply and industrial sectors, Germany could not help but agree to the adoption of the directive at the Council (Watanabe 2004a, 2004b).

The National Allocation Plan (NAP) was submitted to the European Commission on March 31, 2004 and the Emissions Trading Act (Treibhausgas-Emissionshandelsgesetz, TEHG) as well as the Allocation Act (Zuteilungsgesetz, Zug) were passed by parliament in April and August, respectively. The total planned budget allocated for 2005 to 2007 (including a reserve for new entrants) is 1.497 million tonnes of CO_2 equally distributed over three years. The emissions budget for installations under the emissions trading scheme was set politically and is less than the voluntary agreement target of German industry for the energy supply and industrial sectors (Fraunhofer Institute 2004).

c. Summary

In 2002 the SPD and the Greens formed a second coalition government. Backed by the strong position of the Greens, climate policies have been further developed, as shown in the shift of ministerial responsibility for renewable energy from the BMWA to the BMU.

Regarding the revision of the Eco Tax, the Greens, the BMU, and the BMF made an effort to abolish the exemption treatments, a move opposed by industries and the BMWA. The SPD and Chancellor Schroeder were not in favor of revising the tax, because it was unpopular among the general public, which blamed the tax for the rise of oil prices.

This period observes the European Union's increasing influence on the development of climate policies in member states as characterized in the EU directive on establishing a scheme for greenhouse gas emission allowance trading within the Community.

Regarding the EU directive, again it was the Greens and BMU, backed by some industries that promoted its adoption, while it was opposed by the BMWA and most companies. Despite the opposition, the directive was adopted, mainly due to pressure from other member states and adoption procedure of the directive.

3. Conclusion

Germany is one of the few industrialized countries among the Annex 1 Parties to the UNFCCC that has succeeded in reducing its GHG emissions. The above examination revealed that this success was mainly due to domestic factors. Germany set its national target to reduce CO_2 emissions by 25 percent at a very early stage, and in order to achieve this target it developed climate policies and measures.

Following the 1997 adoption of the Kyoto Protocol, further development of climate policies occurred in Germany, such as the introduction of the Eco Tax and renewable energy promotion policy.

24. Under the qualified majority voting rules, 62 votes among 87 votes (Belgium, 5; Denmark, 3; Germany, 10; Greece, 5; Spain, 8; France, 10; Ireland, 3; Italy, 10; Luxemburg, 2; Netherlands, 5; Portugal, 5; United Kingdom, 10; Austria, 4; Finland, 3; and Sweden, 4—making a total of 87) constitute a qualified majority, while 26 is a blocking minority. This means that the five larger states cannot outvote the smaller seven and also that two large states cannot by themselves constitute a blocking minority. The number of votes will be changed in November 2004 due to the accession of ten new countries.

Nevertheless, these developments are mainly attributed to the change of government from the CDU/CSU to the SPD/Alliance 90-the Greens, not the adoption of the protocol. Apart from the change of government, the linkage of issues is identified as one of the most important factors contributing to Germany's success, as seen in the cases of the Eco Tax, improved energy efficiency in the building sector, and the reunification process. The actors involved decided their positions based on their primary interests and their mandates, which have rarely changed (Jung and Loske 2000). The German success highlights the lesson that it is very important to link climate policy with other policies in order to provide incentives to potential opponents and especially neutrals to cooperate in promoting climate policies.

As mentioned above, the adoption of the Kyoto Protocol did not have a direct impact on Germany's climate policies, but it did have wide-ranging indirect impacts. The major difference seen when comparing the situation before and after Kyoto is the development of climate policy in the European Union, one of the signatories to the protocol, with its commitment to an 8 percent GHG emissions reduction. In order to achieve the commitment as a community, the European Union has made considerable efforts to develop common and coordinated policies and measures, whose influence on climate policies in member states has been increasing—as the case of emissions trading directive clearly demonstrates.

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