

Climate policy convergence in Europe: an assessment based on National Communications to the UNFCCC

Johan Albrecht and Bas Arts

ABSTRACT With the adoption of the United Nations Framework Convention on Climate Change (1992) and the Kyoto Protocol (1997), an impressive international regime on climate change has emerged, involving over 190 countries. It includes legally binding quantitative targets on the emission of greenhouse gases for thirty-eight countries as well as for the European Union. In addition, the regime offers guidelines and incentives for countries to develop climate policy. The development of national climate policy strategies is legally binding, but countries are free to select their own policies and measures. Yet, since national climate policy is discussed in and promoted by international institutions, *convergence* of policies and measures can be expected. We present an empirical analysis of policy output and policy outcome convergence, based on the National Communications of twenty-three European countries. Our results suggest that in most European countries the explorative phase of climate policy has evolved into the selection and further elaboration of a set of core measures (especially in the energy and transportation sectors), implying *some* output policy convergence so far.

KEY WORDS Climate change; Kyoto Protocol; policy convergence; policy outcome; policy output; UNFCCC.

1. INTRODUCTION

The climate change issue is a complex, so-called ‘unstructured’ policy problem (Dunn 1994). There is disagreement among stakeholders concerning the status of climate science and the underlying values as well as the opportunities for policy intervention. The Intergovernmental Panel on Climate Change (IPCC), the scientific body that supports the current climate change regime, stated in 1996 that the balance of evidence suggests that a human-induced climate change is occurring, although many uncertainties remain. The so-called ‘sceptics’ challenge this view (Boehmer-Christiansen 1994; IPCC 2001) and focus on the unreliability of climate models, the invalid generalizations and extrapolations of climate data, and alternative theories to explain global

warming. In addition, there is wide disagreement on values (Gupta *et al.* 2003). Different stakeholders – industrialized countries, developing countries, industrial groups and non-governmental organizations – start from different ‘value systems’ on the basis of which they promote or put into critical perspective the need to protect the climate system. The main contradiction in this perspective is the one between economic and ecological values, both mobilized by different interests.

Yet, an impressive international regime on climate change has emerged, involving over 190 countries (Grubb *et al.* 1999; Mintzer and Leonard 1994; UNFCCC 2003). This regime was established by the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and the subsequent Kyoto Protocol of 1997. Although the goal of the Kyoto Protocol was to increase the ecological effectiveness of the existing climate policy, it resulted in a problematic divide. Because of the rejection of the Protocol by the US, as a result of the unanimous acceptance of the Byrd-Hagel resolution by the US Senate which condemned the lack of meaningful participation of developing countries, as well as the lengthy hesitation by Russia, it took eight years for the 1997 Kyoto Protocol to come into force (16 February 2005).

Although the UNFCCC and the Kyoto Protocol are legally binding, a high degree of flexibility is offered to individual countries. Policy-relevant national circumstances can strongly influence greenhouse gas emission patterns and mitigation options, whereas differences in climate change vulnerability will shape future national adaptation strategies. Consequently, significant institutional flexibility with respect to national policy targets, obligations, and policies and measures is essential.

Based on information from three rounds of National Communications of industrialized countries to the UNFCCC, in which they report their climate policy strategies between 1994 and 2002, we present a quantitative analysis of the development of climate policies and measures in European countries. This overview is used to explore different concepts of climate policy convergence among European Union (EU) countries. We clearly distinguish between ‘output’ and ‘outcome’ convergence. For the *explanation* of convergence, we adhere to the explanatory scheme in the introduction to this special issue. This scheme consists of international, domestic and policy-specific causes. We focus on the first group – international causes – to assess possible climate policy convergence, especially since climate policy was launched as an international issue right from the start. In addition, we also consider domestic factors, particularly to explain variation and divergence in climate policies and measures.

Introducing an effective climate policy requires the involvement of as many stakeholders as possible and this is clearly a unique policy challenge. Given the essential role of stakeholder interactions in the development of climate policy, we opted to integrate into our analysis Jepperson’s (2002) taxonomy of institutional logics in national political systems. This taxonomy explicitly refers to the role of corporations and associations in policy processes.

The paper contains the following sections. In section 2, we present an overview of the international climate change regime. This is followed by a section on the concept, assessment and explanation of policy convergence, as framed in this paper (section 3). Subsequently, we present our results on climate policy convergence in Europe (section 4), after which we finalize the paper with a concluding section.

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2. THE CLIMATE CHANGE REGIME

The climate regime is characterized by a number of core elements. First, Article 2 of the UNFCCC defines the ultimate goal of the climate regime: ‘the stabilization of the atmospheric concentration of greenhouse gases at levels which avoid a dangerous interference with the climate system’ (UNFCCC 1992). Since this stabilization goal is not yet clearly defined as scientists disagree on what ‘safe levels’ of atmospheric greenhouse gas concentrations are, climate policy in developed countries is mainly directed at *mitigation* policies and measures that can slow down the increase of global emissions, in order to delay the increase of atmospheric concentration levels.

The second substantive core element of the climate regime relates to quantitative and binding targets for anthropogenic greenhouse gas emissions in developed countries. The binding targets have been established in Annex B of the Kyoto Protocol (Grubb *et al.* 1999; Oberthür and Ott 1999; Rolfe 1998; UNFCCC 1998). For most Annex B countries, these caps generally imply *reduction* targets compared to the level of emissions in 1990 (for example, –8 per cent for the EU, –7 per cent for the US and –5 per cent for Japan), whereas other countries need to stabilize their emissions at the 1990 level or are even allowed to increase their emissions under the current climate regime (e.g. Australia can increase its emissions by 8 per cent). Annex B countries need to realize their national targets in the commitment period 2008–2012.

Thirdly, the climate regime contains a number of guidelines for the parties to formulate domestic policies and measures (or PAMs). Article 4 of the UNFCCC and Article 2 of the Kyoto Protocol include references to PAMs to mitigate a possible climate change (reductions of greenhouse gas emissions due to increased energy efficiency levels, sustainable energy structures, sustainable agriculture, the elimination of market imperfections and adverse state subsidies) or adapt to the possible consequences of climate change. Although the *design* of climate PAMs is obligatory under the current climate regime, specific types and specific substances of PAMs are not prescribed. Hence, parties are free to select and implement a certain set of PAMs at the national level.

Finally, Article 12 of the UNFCCC states that all parties are obliged to regularly communicate to the Conference of Parties (CoP) – the main institutional body of the regime – detailed information on their national climate policy. This includes, according to the reporting guidelines, a national inventory of anthropogenic emissions and a description of steps taken or planned by the party to

comply with the commitments under the UNFCCC. In addition, industrialized countries – or *Annex I countries* – should provide a detailed description of PAMs, together with a specific estimate of the effects of these.

3. POLICY CONVERGENCE: CONCEPT, ASSESSMENT, EXPLANATION

Concept

Internationalization processes, such as globalization and Europeanization, are often assumed to imply processes of convergence among countries, although not by definition (Drezner 2001; Knill 2001). Nor can we speak of a *general* phenomenon, as countries remain different in several characteristics as well, despite the globalized world we live in. Yet different national political, economic and social institutions may become more similar over time, due to mechanisms such as adaptation pressure from international organizations and agreements, market integration, transnational communication, transboundary diffusion of ideas and mutual learning (Holzinger and Knill 2005; Jordan and Liefferink 2004). These observations also hold for policy-making, including environmental policy (Bennett 1991; Weale 1992). Policy convergence is generally defined as ‘the tendency of policies to grow more alike, in the form of increasing similarity in structures, processes and performances’ (Kerr, cited in Drezner 2001: 53). ‘Structures’ in this definition refer to administrative organizations and rules, ‘processes’ to agenda-setting and policy-making, and ‘performances’ to policy outputs and policy outcomes. All three dimensions – structures, processes, performances – may be more or less subject to convergence processes.

This paper presents an analysis based on National Communications (NCs) to the UNFCCC and focuses on the last dimension, namely convergence in *performance*. Obviously, national policies are formulated as a national response to the obligations of the international climate policy regime.

In dealing with policy performances, we make the commonly used distinction between ‘policy outputs’ and ‘policy outcomes’ (based on Dunn 1994; Knill and Lenschow 2000; Van Steertegem 2003). *Outputs* cover the launching of PAMs as well as the organization and mobilization of resources to execute these. *Outcomes*, on the other hand, refer to the effects of these PAMs in terms of goal-achievement. As stated in the above, both outputs and outcomes – as aspects of policy performance – can be subject to convergence. Then ‘output convergence’, as we call it, refers to the extent to which (climate) PAMs as well as (climate) policy instruments of different countries grow more alike over time, and ‘outcome convergence’ refer to the extent to which these PAMs of different countries produce ever more similar effects in terms of goal-achievement and problem-solving (see Table 1).

It should be noted that we are able to present an *ex-post* analysis of output convergence in this paper, as countries started to adopt PAMs in about 1994 (when the UNFCCC entered into force). However, with respect to outcome

Table 1 Conceptual framework of this paper

<i>Concept</i>	<i>Dimensions</i>
<i>Output</i> convergence	Policies and measures: similarity grows over time
<i>Outcome</i> convergence	Effects of policies and measures: similarity grows over time

convergence, this is not possible, as the *effects* of these PAMs will only be known by the end of the commitment period 2008–2012. Hence, we are dealing with *future projections* of policy effects over here. Such *ex-ante* analyses are characterized by many uncertainties. Moreover, countries have used different methodologies to calculate their emission projections and the future effects of their PAMs. Also, most of them negotiated as soft targets for themselves as possible. In other words, we are dealing with self-selected targets and self-projected future emissions and policy effects in the case of outcome convergence in this paper, so we should be careful not to draw too easy conclusions.

Assessment

Now that we have defined the key concepts, the question is how to operationalize these. Firstly, the (possible) increase of similarity among PAMs – output convergence – will be assessed on the basis of the reported PAMs in different sectors (like transport, industry and energy) in the three NCs of each country involved. Secondly, the (possible) increase of similarity in the *effects* of PAMs – outcome convergence – will be assessed on the basis of: (a) checking whether ever more countries foresee being able to realize their mitigation targets over time, and (b) calculating the ‘policy gap’ for each country, on the basis of their Kyoto target and projected future emissions, including the effects of their (additional) PAMs. As already mentioned, our assessment of outcome convergence is restricted to an *ex-ante* analysis based on self-selected targets and self-projected future emissions and policy effects, which will put our conclusions on outcome convergence in a certain perspective (see next section). In total, the NCs of twenty-three European countries were analysed (listed in Table 5). However, not every European country published three NCs.

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Explanation

With respect to policy convergence, we apply the explanatory scheme of the introduction to this special issue (see also Bennett 1991; Drezner 2001; Holzinger and Knill 2005; Jordan and Liefferink 2004). This scheme consists of international causes, domestic causes and policy-specific causes for policy

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convergence. As climate policy is of international origin, we will concentrate on the first category of international causes below. Within this category, four mechanisms to understand policy convergence are distinguished: *imposition* (forced by states or international organizations on other states), *international harmonization* (binding international and supranational law), *regulatory competition* (adaptation of regulation into a similar direction due to international market pressure) and *transnational communication* (collective learning in international organizations). However, this paper also touches upon *outcome* convergence. To explain this type of convergence, one cannot make use of the same explanatory scheme as for output convergence, because – as Holzinger and Knill (2005) note – outcomes are only *indirectly* related to outputs. Outputs are poor predictors of outcomes, as any implementation process is affected by many intervening variables.

For in so far as the international mechanisms to explain *output* convergence fall short, we will focus on domestic factors too. It should be stressed that we are dealing with a heterogeneous group of European countries in our sample. Institutionally, these countries differ widely. To theorize about a wide group of countries, we use Jepperson's (2002) taxonomy of institutional logics in national political systems.

This taxonomy is based on two dimensions: 'collective action' and 'organization of society'. The first dimension distinguishes between 'society-centric' and 'state-centric' collective agency. In state-centric societies, governments steer and guide society 'from above', while deriving authority from the state. Such a government may even decide to build a new nuclear plant, while an overwhelming majority of the population are strongly against it. In society-centric politics, citizens and action groups have much more access to decision-makers and well-organized action groups can launch new policy issues quite easily. For example, the unexpected problems with genetically modified organisms (GMOs) in Europe are the result of effective campaigning by interest groups in open societies such as the United Kingdom. It is not a coincidence that mainly in the US the scientific uncertainties with respect to climate change dominate the public debate. Several well-structured interest groups did elaborate and diffuse this issue of scientific uncertainty in a fragmented issue-focused political landscape.

With respect to the 'organization of society', Jepperson (2002) distinguishes between 'associational' and 'corporatist' dimensions. In associational societies, new partnerships might suddenly emerge to reflect new interests. A typical example of an associational organization in the context of climate policy is a new federation of small producers of renewable energy which presents its views to decision-makers. Corporatism, in contrast, construes collective action on an inclusive basis among functionally and hierarchically defined groups. With corporatism, the same federation of renewable energy will face high barriers around decision-makers. This taxonomy, based on Jepperson (2002), is presented in Table 2. For comparable taxonomies, we refer to Self (1985), Van Esch (2001) and Van Tatenhove *et al.* (2000).

Table 2 National political institutions

<i>Organization of society/collective action</i>	<i>Societal</i>	<i>Statist</i>
Corporate	<p><i>Social-corporatist</i></p> <p>Interactions among formally organized interests; government is a partner and facilitator; effectiveness and transparency of policy is important.</p> <p><i>Example:</i> Sweden, Denmark</p>	<p><i>State-corporatist</i></p> <p>Centralized and bureaucratic approach; state legitimizes new societal groups and interests; high state capacity to implement policies.</p> <p><i>Example:</i> Germany, Japan</p>
Associational	<p><i>Liberal-pluralist</i></p> <p>Dynamic issue-focused policy orientation; weak state and competition among interest groups; open and adaptive political environment.</p> <p><i>Example:</i> US, UK</p>	<p><i>State-nation</i></p> <p>Co-operation between state and private interests as well as citizens; high state capacity; focus on consensus and risk-minimization.</p> <p><i>Example:</i> France</p>

Source: Based on Jepperson (2002).

This taxonomy is of great relevance for climate policy. Climate policy convergence ultimately deals with convergence patterns in the reorganization of societies. This type of reorganization/transformation takes a long time before it can be observed. Climate policy requires the definition and implementation of a clear and future-oriented low-carbon societal project. This goal touches upon many different interests and the interaction between states, industries, decision-makers and interest groups will shape the evolution of climate policy. The taxonomy shows that the chances for a strong take-off of climate policy depend most of all on the ability to organize interest groups in favour of climate policy. Once these interest groups are legitimized by the state – a process that will take some time – the prospect of developing climate policy becomes more attractive, especially when the state acts as a facilitator. However, once enough interest groups defend the transition to a low-carbon society in liberal-pluralist societies with an adaptive policy process, a general consensus can suddenly emerge to tackle the climate challenge. Of crucial importance, of course, is the commitment by government to safeguard vested interests. The recent decision of the British government to set a 60 per cent reduction target for greenhouse gas emissions by the year 2050 is illustrative in this context (DTI 2003). Acceptance of new societal interests can take longer

in statist societies, but the presence of a strong state with the ability *and* political will to effectively implement ambitious policies can yield impressive results in the short term.

4. CLIMATE POLICY CONVERGENCE IN EUROPE: RESULTS

Policies and measures

Given the institutional economic constraints on drastic reductions of emissions, national climate policies should consist of measures with immediate, medium-term and long-term impact. After all, the climate policy process does not end with the commitment period of the Kyoto Protocol (2008–2012). The design and development of long-term measures – e.g. changes in energy and electricity structures – are of vital economic interest for each country and hence require careful consideration. We can assume that long-term greenhouse gas mitigation measures fall mainly in the category of planned measures, whereas short-term mitigation measures can already be implemented. In the NCs, *implemented* PAMs, according to the reporting guidelines, need to be distinguished and reported next to *planned* PAMs. However, these guidelines do not distinguish between short-, medium- and long-term PAMs.

The changing nature and development of climate policy can be deduced from a longitudinal analysis of the NCs. Table 3 presents such information, on PAMs as well as on their preconditions. To start with the latter, we find that the number of countries which consider themselves vulnerable to the consequences of a climate change increased from twelve in the first NC to nineteen in the third NC. These self-assessments should in principle be reflected in more efforts to implement PAMs to reduce greenhouse gas emissions or to prepare an optimal adaptation to the changing climate. The number of countries which associate an economic cost with the changing climate also increased, from seven in the first round of NCs to thirteen in the third round. The presence of economic costs links financial benefits to national efforts to mitigate greenhouse gas emissions. This implies a more positive cost–benefit assessment of climate PAMs. The fact that ever more countries consider themselves vulnerable to climate change and foresee economic costs as a consequence of climate change could be interpreted as the diffusion of a ‘sense of urgency regarding climate change’ among the countries involved. Such a ‘sense of urgency’ is an important precondition for the development of policy.

Table 3 also presents a general overview of the PAMs in the three NCs of the twenty-three European countries in our analysis. The average number of implemented PAMs did increase from eighteen in the first NC to twenty-nine and twenty-six in the second and the third NC respectively. However, the standard deviation for the total number of PAMs is much lower for the third NC, which refers to more emphasis on fewer measures by the countries. A selection process took place in most countries. This can be interpreted as an indication of output convergence based on similar patterns – here selection

Table 3 Policies and measures in the National Communications

	NC 1	NC 2	NC 3
Countries which consider themselves vulnerable to consequences of climate change	12	13	19
Countries which foresee economic costs from climate change	7	7	13
All PAMs (average (standard deviation))	18 (32)	29 (31)	26 (18)
Energy: number of PAMS (average (standard deviation))	7 (17)	11 (18)	9 (12)
Energy: number of <i>planned</i> PAMs (average (standard deviation))	10 (14)	9 (13)	6 (6)
Countries distinguishing most important energy PAMs	3 (BUL, GRE, NOR)	6 (POR, FRA, GRE, NOR, SLO, UK)	9 (POR, BUL, EST, FRA, GER, NET, POL, CZE, SLO)
Industry: number of PAMs (average (standard deviation))	3 (5)	3 (5)	4 (4)
Industry: number of <i>planned</i> PAMs (average (standard deviation))	3 (3)	4 (4)	4 (4)
Countries distinguishing most important industry PAMs	1 (GRE)	4 (BUL, FRA, GRE, SLO)	8 (POR, FRA, GER, GRE, NET, NOR, POL, CZE)
Transport: number of PAMs (average (standard deviation))	4 (7)	6 (7)	5 (5)
Transport: number of <i>planned</i> PAMs (average (standard deviation))	7 (14)	10 (15)	6 (6)
Countries distinguishing most important transport PAMs	2 (GRE, FRA)	5 (BUL, FRA, GRE, SLO, NET)	9 (POR, FRA, GER, GRE, NET, SWI, UK, NOR, POL)

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after the initial exploration of many possible PAMs – in the development of climate PAMs. The countries with the strongest reduction in the number of PAMs between the second and third NCs are Belgium, Germany, Ireland, Slovenia, the Czech Republic, Poland and Sweden. Over the same period, the

number of PAMs increased in Bulgaria, Hungary, France, Greece and Switzerland. However, the last three countries reported a low number of PAMs in their second NC, so the increase should be interpreted as moving towards the average number of PAMs.

In addition to this selection process, output convergence is also expressed by the growing similarity of PAMs in sectors like energy, industry and transport. The most important PAMs – fuel switches, energy-efficiency improvements, an increasing reliance on renewable energy, the development of new technologies – are considered by all European countries. What matters, of course, is the real effort to successfully develop these new measures. The NCs, however, provide too little information to assess the latter. The focus on fuel switches and renewable energy should not be a big surprise. The EU goals with respect to the promotion of renewable energy and the increasing share of gas in total energy use have obvious implications for the EU member states.

Table 3 shows that most climate PAMs are taken in the energy sector; on average seven in the first NC, eleven in the second NC and nine in the third NC. The number of planned policies and measures for the energy sector is reduced from ten to six on average. The standard deviation for the planned energy PAMs was fourteen for the first NC, but only six for the third NC. Here again, we touch upon the phenomenon of output convergence, namely the selection of a limited set of key measures, which will be further elaborated on in the future. An important point, however, is that some countries do not distinguish clearly between implemented and planned measures, although this is demanded by the reporting guidelines. According to the guidelines, priority should be given to those PAMs which have the most significant impact. Countries should, therefore, select a set of most important measures. We consider this as an essential requirement and competency, since it is easy to publish an impressive list of PAMs, whereas it is difficult to prioritize and mobilize consensus regarding a core set of PAMs. Therefore, we consider this ability as typical for countries with a relatively high state capacity.

However, Table 3 shows that most countries do not distinguish the most important measures from the less important ones (although their number is increasing over time). Furthermore, when this distinction is made, countries only present very basic descriptions of PAMs, without attaching precise implementation plans and time-frames. The countries which do distinguish, however, are listed in Table 3. It is striking that most of these are 'state-centric' countries, as expected, and several economies in transition are found in this group. The latter are typically not considered as climate policy pioneers, but economic transition also includes modernization of energy structures. Thus, the connection between economic transition and climate policy is obvious for these countries. Bulgaria, for example, lists the reduction of subsidies and the modernization of the electricity sector as the most important energy measures in its third NC. In Estonia, a fuel switch from coal to gas is the most important energy measure. Measures with respect to coal mining and coal-powered plants are a priority for Poland, while the Czech and Slovak Republics focus on energy

efficiency and an increase in the installed capacity of renewable energy. The most important energy measures in the third NC of France are additional nuclear investments and investments in co-generation. For Germany, an increase in renewable capacity is top priority. A further diversification of energy structures is the first priority in Portugal, whereas Greece wants to increase the share of natural gas in the energy mix. The Netherlands lists some measures with respect to coal-fired power plants.

The average number of implemented and planned PAMs for industry is surprisingly low in all countries and in all NCs. The low standard deviation suggests that there are no countries with long lists of industrial PAMs. In the third NC, Germany refers to the voluntary agreements with industry as the most important measure. Comprehensive voluntary agreements with strict enforcement procedures are typical of state-corporatist societies. France also mentions voluntary commitments, whereas in Greece and Poland the restructuring of heavy industries is presented as the most important measure. The Czech Republic refers to the implementation of the Integrated Pollution and Prevention Control Directive of the EU as the most important measure.

The average number of implemented PAMs for transport is slightly higher and there are also more PAMs planned for this sector. France foresees technical inspections for light vehicles in its third NC, whereas several countries consider fiscal instruments (Portugal, Germany, Switzerland and the UK). The promotion of public transport is another obvious option and is emphasized by Greece, the UK and the Netherlands. The reduction of implemented and planned PAMs from the second to the third NC can be, again, an indication of a set of 'core' measures, selected for further elaboration in the transport sector. The much lower standard deviation for the number of planned transport PAMs confirms this assumption.

Overall, European countries seem to converge with regard to the selection of a set of 'core' PAMs for energy and transport, the two sectors with relatively low capital–turnover ratios. This selection and prioritization process has mainly taken place in the so-called statist countries. As predicted by theory, these countries have the ability to launch policy initiatives quickly, overruling domestic protest if necessary. However, a comprehensive policy package with respect to industry seems to be much more difficult to establish. This can be the result of differing industrial structures that require country- or group-specific PAMs.

Projected effects of policies and measures

In order to assess the future effects of PAMs, information is needed on projected emissions and the models used for these projections by the countries involved. Table 4 includes such information. The number of countries presenting projections for a reference scenario – i.e. a projection of emissions if no climate PAMs are taken or in a *business-as-usual scenario* – did increase over the three NCs, but is still rather low. A similar development is observable for the

Table 4 National Communications – information on scenarios

	NC 1	NC 2	NC 3
Countries that include a reference scenario for emissions in their projections	7	12	13
Countries that present all hypotheses and key variables used in the projection models	7	10	13
Countries that include a ‘with measures’ scenario for emissions in their projections	11	17	16
Countries that include a ‘with additional measures’ scenario for emissions in their projections	1	5	11
Countries that foresee achieving their mitigation target	11	12	16

number of countries that present the used hypotheses and key variables in the economic models for the projections. Without this information, it is impossible to assess the quality of the projections of emissions and the adequacy of the PAMs. We also found that the number of countries which present ‘with measures’ projections and ‘with additional measures’ projections is increasing from, respectively, eleven and one countries in the first round of NCs to, respectively, sixteen and eleven countries in the third round.¹ More countries clearly follow the UNFCCC guidelines to present a ‘with measures’ projection. In addition, the increase in ‘with additional measures’ projections – not an obligation under the UNFCCC guidelines – indicates that the quality of long-term assessments of the impact of possible PAMs is improving. Otherwise, it would not be possible to distinguish the effects of already planned and implemented measures from the effects of a reserve set of additional measures.

Table 4 also contains some general information on *outcome* convergence – again, based on data and targets as negotiated, assessed and projected by the countries themselves. The table shows that more countries foresee that they will be able to realize their mitigation target, from eleven in 1994 to sixteen in 2002. We will return to this subject below.

Table 5 presents an overview of the gaps between the (self-)projected emissions and the (self-)negotiated Kyoto Protocol reduction targets for our set of countries. In the second column, emissions data for 1990 are presented in carbon dioxide (CO₂) equivalent Tg, the baseline for the Kyoto targets. The guidelines for the NCs require projections ‘with measures’ (WM), but countries are free to include projections ‘with additional measures’ (WAM). For the projected scenarios, the change in percentages always refers to the level of emissions in 1990. The last column presents the gap between the projected emissions under the WM scenario and the allowed emissions under the

Table 5 Greenhouse gas projections (expressed in CO₂ equivalents) in the third National Communication and the Kyoto Protocol target

Country	Tg CO ₂ equiv. emission in 1990	WM projected by 2010 (%)	WM projected by 2020 (%)	WAM projected by 2010 (%)	WAM projected by 2020 (%)	WAM reduced target (%)	KP reduced target (%)	WM - KP gap (% 2010 emission)
Austria	77.39	11.2	15.4	-7.5	-10.9	-13	-13	21.8
Belgium	144.50	18.5	-	6.3	-	-7.5	-7.5	22
Bulgaria	157.09	-14.8	-1.3	-20.1	-7.0	-8	-8	-
Czech Republic	192.02	-33.2	-36.9	-36.5	-40.2	-8	-8	-
Estonia	43.50	-56.6	-58.8	-59.9	-64.4	-8	-8	-
Finland	77.09	16.6	23.7	-1.7	-	0	0	14.3
France	549.34	6.0	18.8	-4.6	-2.2	0	0	5.7
Germany	1 222.76	-33.6	-	-	-	-21	-21	-
Greece	104.89	40.3	59.9	26.7	-	25	25	11
Hungary	84.47	-22.0	-20.5	-	-	-6	-6	-
Italy	520.58	3.7	-	-4.7	-	-6.5	-6.5	9.9
Latvia	31.06	-58.8	-50.3	-	-	-8	-8	-
Netherlands	217.00	18.0	31.3	6.0	-	-6.5	-6.5	20.8
Norway	51.96	21.6	-	11.4	-	1	1	17
Poland	463.05	-14.9	-5.2	-	-	-6	-6	-
Russia	2 360.00	-11.1	14.1	-	-	0	0	-
Slovakia	72.94	-27.1	-	-34.0	-	-8	-8	-
Slovenia	20.18	9.8	12.7	-1.4	-1.6	-8	-8	16.3
Spain	208.92	47.1	-	27.0	-	15	15	21.9
Sweden	70.56	0.5	3.2	-	-	4	4	-
Switzerland	53.24	-1.0	-3.8	-5.9	-10.5	-8	-8	7
UK	742.50	-15.1	-11	-23.9	-23	-12.5	-12.5	-

Kyoto Protocol. This gap is expressed as a percentage of projected emissions for 2010. However, not all European countries present WAM projections in their latest NC.

Given the figures in Table 5, eleven countries will not meet their Kyoto Protocol emissions target under the WM projections. With additional measures, Finland and France project meeting the Kyoto Protocol target, whereas countries like Greece, Italy and Switzerland will almost meet their target. This is not the case for six countries – Austria, Belgium, the Netherlands, Norway, Slovenia and Spain – as their PAMs, additional or not, will always fall short. Therefore, these countries will need the flexible instruments under the Kyoto Protocol to meet a part of their quantitative reduction targets abroad.

It is difficult to draw Conclusions on outcome convergence from Table 5. The gap between projected emissions and the national reduction target depends not only on the effectiveness of short-term climate policies, but also on the ability of national negotiators to secure achievable reduction targets. When comparing Table 3 with Table 5, we find that most countries, those which clearly selected a core set of the most important PAMs, face fewer problems in meeting their reduction targets. But again, this could be the result of relatively softer reduction targets compared to other countries. Furthermore, emission inventories and especially projections of emissions are subject to different methodologies and to frequent revisions. After 2012, a comparison of emissions to projected emissions will yield interesting results with respect to the ability to forecast the impact of climate policy measures.

5. EXPLAINING CLIMATE POLICY CONVERGENCE

As already mentioned in the theoretical section of this paper, we apply the explanatory scheme introduced in this special issue in order to seek an explanation for the extent of climate policy convergence which we found. Given our analysis in the above, we cannot confirm the mechanism of international harmonization on the basis of binding international law and legal compliance, as countries are not legally bound to design climate PAMs in a particular way. ‘Imposition’ is even less likely than harmonization, as neither the UNFCCC regime nor individual parties can force others to adopt certain PAMs. The mechanism of ‘regulatory competition’ does not explain output convergence in our case. Climate policy, in particular, imposes future restrictions with only limited current costs. Hence, an endangering of the competitiveness of countries and companies by climate PAMs has so far remained a vague future threat. However, we observed that, with respect to industrial PAMs, no set of core measures is emerging in most countries. This is probably related to regulatory competition. In its second NC Germany proposed concrete options for fiscal measures at the European level, i.e. the implementation of an EU-wide CO₂ tax² and the increase of minimal excise duties on mineral oils. Hence, the mechanism of ‘regulatory competition’ can explain a different pattern in industry when compared to the selection process that took place in the energy and transportation sectors.

Instead of binding harmonization, imposition or regulatory composition, the mechanism of ‘transnational communication’ best explains climate policy output convergence. Holzinger and Knill (2005) distinguish four sub-mechanisms: (1) *lesson-drawing* (e.g. country X experiences a similar problem as country Y and adopts a successful policy from Y); (2) *transnational problem-solving* (a group of countries experience a similar policy problem, and design and adopt a common policy model); (3) *emulation* (a country copies a widely used model, in search of policy conformity with other countries); and (4) *international policy promotion* (international organizations recommend certain policy models to address certain problems and, as a result, several countries adopt these policies). Of these sub-mechanisms, (2) and (4) seem particularly relevant as the climate change regime has been a common effort to address a shared policy problem (sub-mechanism (2)). Furthermore, it functions as an international institution that promotes certain policy models today (sub-mechanism (4)). For example, the UNFCCC, the Kyoto Protocol and many CoP decisions refer to concrete (sets of) domestic PAMs in addition to the use of international flexibility instruments. The same holds for the recommendations and decisions of other international institutions, such as the EU and the Organization for Economic Co-operation and Development. The other sub-mechanisms are of less relevance here, as the climate change issue is a *global* issue, so countries started an international policy process right from the start. *Individual* learning and copying from other countries have therefore hardly played any role, an exception being the late 1980s when some countries started to formulate national targets to reduce greenhouse gas emissions, a route which was followed by others (O’Riordon and Jäger 1996). Soon after, however, international target-setting took over the initiative.

Besides international mechanisms, domestic factors should be considered in an analysis of policy convergence. As our analysis shows, there are striking differences with respect to the development of climate policy among country groups with different political-institutional settings (see the Jepperson taxonomy). For example, the selection of core sets of measures took place mainly in the two groups of statist countries. To a large extent, these core sets are growing more similar over time and focus on energy efficiency and low-carbon policies. Of course, given the very different nature of the countries in our analysis, country-specific circumstances can be reflected in the set of core measures (for example, the restructuring of energy-intensive sectors in economies in transition). As a consequence, each type of convergence analysis is conditional.

6. CONCLUSION

Climate PAMs in European countries have developed in a particular way in the period 1994–2002. Whereas the number of PAMs has increased in general, certain ‘core sets’ of PAMs have been formulated in certain sectors – notably energy and transport (and surprisingly not in a sector such as industry) – and

by countries characterized by (relatively) strong states. With that, our analysis and results show *some* climate policy *output* convergence in Europe. Besides the tradition of 'statism', this convergence can be best explained by transnational communication in, and policy promotion by, international institutions. The different situation with respect to industrial PAMs is probably related to the mechanism of regulatory competition.

Contrary to output convergence, we did not find climate policy *outcome* convergence. Although ever more countries believe they will be able to realize their mitigation targets in the future, thus complying with the Kyoto Protocol, a more detailed analysis shows both huge differences among countries and many cases of (potential) non-compliance. Nonetheless, any conclusion (or lack of) on outcome convergence of this sort should be put in perspective, given the highly political nature of the setting of national emission reduction targets, on the one hand, and the future projections of domestic greenhouse gas emissions and national policy effects, on the other. In such a situation, future compliance prospects can be more the result of good negotiation and creative scenario-building skills and less the effect of 'real' PAMs.

Address for correspondence: Bas Arts, Department of Political Sciences of the Environment, Nijmegen School of Management, Radboud University Nijmegen, PO Box 9108, 6500 HK Nijmegen, The Netherlands. Tel: ++31-(0)24-3612103. Fax: ++31-(0)24-3611841. email: B.Arts@fm.ru.nl

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NOTES

- 1 'Additional measures' are considered for implementation when the initial 'with measures' did not meet the mitigation targets.
- 2 Several other countries also suggested that new energy taxes should not be introduced unilaterally but be considered at the international level.

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Queries

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- Q1 UNFCCC 2003a is not listed in the References – only 2003b. I have changed to 2003 in both cases. However there are two UNFCCC 2004 references which, if cited, should be labelled 2004a and 2004b. See also query 8.
- Q2 I have numbered the headings as you refer to numbered sections at the end of the introduction. However, there are two sections after heading number 4, which is not indicated in this paragraph. Please can you check.
- Q3 You refer to 23 countries here but I can count only 22 in Table 5. See also in the abstract; and under heading 4. Should Portugal be included?
- Q4 Bennet was spelled Bennett in the References which I have assumed is correct. However, please check.
- Q5 Is SWI = Sweden? Should be SWE if so.
- Q6 Please spell out what Tg stands for.
- Q7 O’Riardon here but O’Riordon in the text. I have assumed that the latter is correct. Please check.
- Q8 These references appear to be uncited and may be deleted if so: UNEP 2000; UNFCCC 1994, 1997, 2004 (both references with this date).