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**NOVEL AND TRADITIONAL MEANS OF FIGHTING
GREENHOUSE GAS EMISSIONS:
A COMPARISON OF INTERNATIONAL, REGIONAL AND
NATIONAL LEGAL REGIMES**

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Abstract

One of the most important but also most controversial issues of international policy and law making today is climate change. The forecasted negative effects of global warming have led to reactions at global, regional and national levels. This essay analyses the international legal framework following the Kyoto Conference in 1997 as well as regional approaches for the prevention of climate change. The essay also compares different national measures – command-and control regulations, emissions trading, eco-taxes and self-regulatory regimes – concerning their suitability to reduce greenhouse gas emissions. Finally some recent issues at the international and domestic level are discussed.

This essay contains approximately 15484 words excluding footnotes.

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I INTRODUCTION

Global warming has become one of the most challenging issues in international policies and law making in recent years. Since the late 1980s the danger of greenhouse gases for the global climate have come to international attention. Rising temperatures and sea levels as well as more frequent and serious natural disasters show the urgency to reduce emissions of greenhouse gases.

However, the fight against global warming is not a one-dimensional effort. Besides several national attempts to reduce emissions from domestic sources, there are also initiatives at regional and international levels. However, there is no global consensus about the human influence on climate change and the real dimensions of the problems. This leads to problems especially when negotiating international approaches. It will be the aim of this essay to provide an overview of approaches for the prevention of air pollution at all three levels, to evaluate international (II) and regional (III) approaches and to display and analyse the most common national approaches to prevent climate change – command-and-control regulations, emissions trading, eco-taxes and voluntary instruments (IV). Finally, some current issues on international and national level, like the opposition of the United States to the Kyoto Protocol and their alternative proposal “Clear Sky Initiative”, will be discussed and evaluated before a final conclusion is drawn (V).

II INTERNATIONAL EFFORTS AGAINST GLOBAL WARMING

A Historic Developments

The development of international environmental law on a large scale started in 1972 with the Stockholm Conference. The main result was the Stockholm Declaration that contained the general acknowledgement that the protection of the flora, fauna, water and air as resources for future generations must be an integral part

of international efforts¹. It created a duty for states not to cause environmental harm to neighbouring countries², which is also a rule of customary international law. The Stockholm Conference also promoted the foundation of the United Nations Environment Programme (UNEP) in 1973³. UNEP today is one of the leading organisations concerning the development of international environmental law. However, the early years of international environmental law were dominated by attempts to reduce negative trans-border impact rather than facing global environmental treats. An important example is the ECE Convention on Long-range Transboundary Air Pollution in 1979, which was the first international convention on pollution control⁴. It contained binding targets on a general level without specific obligations⁵, which were specified in binding reduction steps in many Protocols during the following years⁶. This development was certainly due to increased scientific research on environmental issues, but mostly resulted from increasing negative effects on the economy of industrialised states, especially in Central Europe lead by Germany and France. The initial event was the discovery of serious damage to the Black Forest, an important area for tourism and forestry in Germany, which was caused by acid rain originating in France⁷.

This changed when the dangers of greenhouse gases came onto the political agenda in the 1980s in Conferences held by the WMO (World Meteorology Organisation) early in the decade, and especially due to the work of the Intergovernmental Panel on Climate Change (IPCC) established by UNEP and WMO in 1988, which developed different scenarios of climate change relating to the amount of reduction of greenhouse gases⁸. The problem of global warming was one

¹ Principle 2.

² Principle 21.

³ Jutta Brunée *Acid Rain and Ozone Layer Depletion: International Law and Regulation* (Transnational Publishers, New York, 1988) 144.

⁴ Lothar Guendling "Multilateral Co-operation of States under the ECE Convention on Long-range Transboundary Air Pollution" in Cees Flinterman/ Barbara Kwiatkowska/ Johan G. Lammers *Transboundary Air Pollution* (Martinus Nijhoff Publishers, Dordrecht, 1986) 19.

⁵ For example Article 2 stated: "The Contracting Parties, (...), are determined to protect man and his environment against air pollution and shall *endeavour to limit*, and *as far as possible*, gradually reduce and prevent air pollution, (...).".

⁶ Johan G. Lammers "The European Approach to Acid Rain" in Daniel Barstow Magraw (ed) *International Law and Pollution* (University of Pennsylvania Press, Philadelphia, 1988) 265, 272, 279.

⁷ Jutta Brunée *Acid Rain and Ozone Layer Depletion: International Law and Regulation* (Transnational Publishers, New York, 1988) 166.

⁸ Richard Elliot Benedick *Ozone Diplomacy* (Harvard University Press, Cambridge, 1998) 321.

of the key issues at the Rio Conference in 1992. One of the main instruments negotiated at Rio was the Framework Convention on Climate Change (FCCC), in which states committed themselves to reducing the emission of greenhouse gases⁹. This aim was expressed in Article 2 that called for a long-term stabilisation of atmospheric concentrations of greenhouse gases in order to prevent interference with the global climate system. Article 3 stressed the necessity of support for developing countries for the reduction of greenhouse gases and defines general principles of inter- and intragenerational equity. In Article 4 (2), industrialised countries assumed certain general commitments to introduce national regimes to control and reduce greenhouse gases as well as regulations for the creation of natural carbon sinks. However, no specific limits for emissions were fixed, nor were any specific milestones or enforcement powers implemented. Only a general, non-binding, commitment to a stabilisation on the level of 1990 can be found in the text, as and “overall aim” in context with information duties¹⁰ combined with an option to impose binding targets and rules in later Protocols to the Convention¹¹. The Framework Convention was sometimes criticised being the “absolute lowest common denominator outcome”¹².

But the way of passing general commitments first and going into more details later had been executed successfully in the context of Ozone Layer Depletion with the Vienna Framework Convention of 1985, that was followed by numerous detailed Protocols starting with the Montreal Protocol 1987¹³. According to the same pattern more detailed regulations concerning Climate Change were expected from the Conference of the Parties (COP) in Kyoto in 1997.

⁹ Richard Elliot Benedick *Ozone Diplomacy* (Harvard University Press, Cambridge, 1998) 323.

¹⁰ See Framework Convention on Climate Change Article 4 (2) (b).

¹¹ Article 17.

¹² Lawrence E. Susskind “What Will It Take to Ensure Effective Global Environmental Management? A Reassessment of Regime-building Accomplishments” in Sjostedt et al (eds) *Negotiating International Regimes: Lessons Learned from the United Nations Conference on Environment and Development* (Graham & Trotman, London, 1994) 221, 224.

¹³ Jutta Brunée *Acid Rain and Ozone Layer Depletion: International Law and Regulation* (Transnational Publishers, New York, 1988) 233, 242-243.

B The Kyoto Protocol 1997

The main result of the COP was the Kyoto Protocol, which obliged developed nations to reduce their greenhouse gas emissions to at least five per cent below 1990 levels until 2012 on average. First demonstrable progress is due in 2005¹⁴. The specific targets differ from country to country and are specified in Annex B, forcing the United States to reduce by 7 per cent and the European countries by 8 per cent under the 1990 level, whereas New Zealand is allowed to maintain its 1990 emissions and Australia was granted an increase of 8 per cent. There are no restrictions for China and other developing nations. Art 3 (6) of the Kyoto Protocol allowed the industrialised countries to choose the mechanisms to achieve their target, including the opportunity to introduce market-based regimes like international emissions trading¹⁵. The Kyoto targets mean a 30 per cent cut compared to the expected situation in 2012 without restrictions of emissions¹⁶. The target seems to be clear, but there are uncertainties how to measure the reduction of emissions were established that should be remedied¹⁷.

A binding target for the reduction had been initially discussed before the Rio Conference in 1992, but had not succeeded there¹⁸. The binding character of the Kyoto Protocol is surely one of the most important achievements as it is necessary to ensure long-term reduction of greenhouse gas emissions. Non-binding commitments are obviously not strong enough as the following conclusion of the UNFCCC concerning the development after Rio shows:

¹⁴ Article 3 (1), (2). See also Decision of CP 8 “Demonstrable progress under Article 3, paragraph 2, of the Kyoto Protocol <http://unfccc.int/cop8/latest/22_sbstal6add1.pdf> (last accessed 28 February 2003).

¹⁵ Christopher C Joyner “Burning International Bridges, Fuelling Global Discontent: The United States and Rejection of the Kyoto Protocol” (2001 Quentin Quentin-Baxter Memorial Lecture, Wellington, 31 October 2001) 33 VUWLR 27, 30.

¹⁶ UNFCCC <<http://unfccc.int/resource/iuckit/fact21.html>> (last accessed 28 February 2003).

¹⁷ Christopher C Joyner “Burning International Bridges, Fuelling Global Discontent: The United States and Rejection of the Kyoto Protocol” (2001 Quentin Quentin-Baxter Memorial Lecture, Wellington, 31 October 2001) 33 VUWLR 27, 29.

¹⁸ Lawrence E. Susskind “What Will It Take to Ensure Effective Global Environmental Management? A Reassessment of Regime-building Accomplishments” in Sjostedt et al. (eds) *Negotiating International Regimes: Lessons Learned from the United Nations Conference on Environment and Development* (Graham & Trotman, London, 1994) 221, 224.

“If compared to the year 2000, the total cuts will equal about 10%. This is because many industrialized countries have not succeeded in meeting their earlier non-binding aim of returning emissions to 1990 levels by the year 2000, so that their emissions have in fact risen since 1990.”¹⁹

The process of ratification of the Protocol, however, was slow and is still ongoing. During the first years, mainly smaller and developing countries ratified the document. The first major global polluter to ratify the Protocol was the European Union on 31st May 2002²⁰. The United States still criticise some provisions of the Protocol and, therefore, refuse its ratification. When handing over the ratification documents the President of the Council of Ministers of the Environment, Jaume Matas, announced that

“the fact that today we can come to the United Nations (...), is not a simple administrative act, nor is it even political. Rather, it is the expression of the conviction of the millions of citizens of the European Union that the Kyoto Protocol is the best instrument available for working together to achieve our common goal, and their commitment to it”²¹

The European Union hoped to encourage or pressurise other industrialised nations to ratify the Kyoto Protocol as they had the obligation to take the lead in the fight against climate change, acknowledging the need for further and extended steps in the following years. The European Union Commissioner for the Environment, Margot Wallström, obviously aiming at the opposing attitude of the United States’ Government, announced:

"This is an historic moment for global efforts to combat climate change. (...) The scientific evidence on climate change is stronger than ever. We all know that even the targets in the Kyoto Protocol are only a first step if we want to prevent the severe consequences that climate change could have. All countries have to act, but the industrialized countries have to take the lead. Climate change can only be tackled

¹⁹ UNFCCC <<http://unfccc.int/resource/iuckit/fact21.html>> (last accessed 28 February 2003).

²⁰ Official Journal L 130, 15 May 2002, 1.

²¹ European Commission Delegation in Washington DC, EU News Release, 3 June 2002 <http://www.britain-info.org/environment/xq/asp/SarticleType.1/Article_ID.2381/qx/articles_show.htm> (last accessed 2 March 2003).

effectively through a multilateral process. I urge our partners both in the developed and in the developing countries to also ratify the Kyoto Protocol soon."²²

The joint ratification by all 15 member states of the European Union was seen as a strong demonstration of leadership in the fight against climate change and of the isolated position of rejection of the United States even in US media²³. Meanwhile Canada ratified the Protocol on 17 December 2002, and it is likely that it will come into force in the next months. Only the ratification of Russia is necessary to reach the threshold of 55 per cent of emissions of Annex I countries that are accounted for by countries that ratified the Protocol, Article 25. Russia itself announced its intention to ratify the Protocol at the Earth Summit in Johannesburg in 2002²⁴. From a perspective of climate change this was the only positive aspect of a summit that was a great disappointment even for the chairman of UNEP, Klaus Töpfer²⁵, who had expected the summit to be one of implementation and action and not only new declarations²⁶. The result, however, was a single weak and general statement in the final declaration in favour of the aim of climate change²⁷. Despite this very low output the brighter prospect for the Kyoto Protocol means that the countries that ratified the Protocol must be now able to comply with its regulations.

²² European Commission Delegation in Washington DC, EU News Release, 3 June 2002
<http://www.britain-info.org/environment/xq/asp/SarticleType.1/Article_ID.2381/qx/articles_show.htm> (last accessed 2 March 2003).

²³ USA Today "European Union Ratifies Kyoto Protocol" 31 May 2002
<<http://www.usatoday.com/news/healthscience/science/climate/2002-05-31-kyoto.htm>> (last accessed 2 March 2003).

²⁴ AP on OMO <http://senrs.com/russia_to_ratify_kyoto_protocol.htm> (last accessed 2 March 2003).

²⁵ "Klaus Töpfer, (...), zog nun zehn Jahre später, als Chef des UN-Umweltprogramms UNEP, Bilanz von Johannesburg. Es seien doch wichtige Fortschritte erzielt worden, sagt Töpfer: Artenschutz, Schutz der Fischbestände, Chemikalienpolitik, bessere Wasserversorgung und anderes mehr, all dies seien nun doch Erfolge - nachdem auch er, Töpfer, zwischendurch das Gefühl gehabt habe, dass in Johannesburg nichts für Umwelt und Entwicklung herauskomme." Ulli Kulke, "Was der Gipfel wirklich brachte" (5 September 2002) *Die Welt*, Berlin. – Klaus Töpfer, the head of UNEP, summarised the outcome of the Johannesburg summit. He stressed progress in issues of fisheries, handling of hazardous chemicals and water supply and was glad about these achievements because he had not expected any positive result of the summit at some points of negotiations.

²⁶ Klaus Töpfer, 18 June 2002, SABCnews
<<http://www.sabcnews.com/world/summit/0,1009,36686,00.html>> (last accessed 2 March 2003).

²⁷ The so-called "Earth Summit Plan of Implementation" stayed far behind results already achieved at Rio and Kyoto. Section 13 calls for "sustainable consumption and production patterns, with the developed countries taking the lead and with all countries benefiting from the process" and s 36 reminds "to make every effort to ensure the entry into force of the Kyoto Protocol to the United Nations Framework Convention on Climate Change, preferably by the tenth anniversary of the United Nations Conference on Environment and Development in 2002, and to embark on the required

C The Following Conferences of the Parties (COPs)

The Kyoto process continued in the following COPs in Buenos Aires 1998, Bonn 1999, The Hague 2000, Marrakesh 2001 and New Delhi 2002. The aim of these conferences is the continuous review and development of the Kyoto regulations. Therefore, the Buenos Aires Conference passed the so-called Buenos Aires Action Plan that contained general – still weak - guidelines for financial help for developing countries, technology transfer and capacity building in these countries²⁸. However, also serious problems had to be solved that even hindered some countries from ratifying the Protocol. The main issues were rules for the recognition of carbon sinks, rules for so called “Flexible Mechanisms” that are defined in Articles 6, 12 and 17 of the Kyoto Protocol as means for emissions reductions abroad, which are international emissions trading, the Joint Implementation (JI) between developed countries and the Clean Development Mechanism (CDM) between developed and developing countries, as well effective measures of control and sanctions. Over the dispute about carbon sinks even the Conference at The Hague had to be adjourned to Bonn in spring 2001 because no compromise could be reached²⁹. The opportunity of recognising carbon sinks was introduced by Article 3.3 and 3.4 of the Kyoto Protocol. Especially the United States, Canada and Japan were interested in an unlimited opportunity to reduce their obligations by crediting capacities of absorption of carbon by the domestic ecosystem, whereas the European Union preferred strict limits.

The solution of this conflict as well as general agreements about most of the other key issues were achieved at the Bonn Conference in 2001 that ended with the Bonn Agreement. The most important results were³⁰:

reduction of emissions of greenhouse gases, States that have ratified the Kyoto Protocol strongly urge States that have not already done so to ratify the Kyoto Protocol in a timely manner.”

²⁸ Report of the Conference of the Parties on its fourth session, Addendum Part II, FCCC/CP/1998/16/Add. 1, 20 January 1999, 5-8, 11-16.

²⁹ Policy Statement of Jürgen Trittin (7 December 2000) Bundesumweltministerium <<http://www.bmu.de/fset1024.php>> (last accessed 28 February 2003).

³⁰ Review of the Implementation of Commitments and of other Provisions of the Convention, FCCC/CP/2001/L.7 24 July 2001 (“Bonn Agreement”); Bundesumweltministerium <http://www.bmu.de/download/dateien/klimakonferenz_ergebnisse.pdf> (last accessed 28 February 2003).

- The storage of carbon in forests is creditable but only up to a specific limit for each country. Reforestation and Afforestation in developing countries as part of the Clean Development Mechanism can be credited up to one per cent of the emissions for the developed country involved in the project³¹.
- Details for flexible mechanisms were negotiated and passed, concerning all three elements, especially imposing limits on sink projects within JI and CDM, banning nuclear power projects from these programmes and obliging industrialised countries to achieve a “significant” part of their reductions domestically³².
- Finally, also consequences were fixed for countries not complying with the reductions in the first period (2008 – 2012). These countries will be fined with an additional reduction of 1.3 times the excess in the following period until 2017, will have to provide a detailed plan how to achieve the reduction target in the second period and will lose the right to participate in flexible mechanisms³³.

The last details in all fields were negotiated at the COP in Marrakesh, marking the end of negotiations about the Kyoto Protocol³⁴. An important step concerning the enforcement of the Protocol is the implementation of the “Enforcement Branch” that decides the compliance of a country with the Protocol and consists of 6 members from developing countries and 4 from developed countries. States can report non-compliance of other states to the branch and their procedures will be generally public³⁵. These regulations are not yet legally binding but the first Conference after the protocol is in force (COP/MOP 1), probably later in 2003, will decide about their transformation into the Protocol itself³⁶.

³¹ Bonn Agreement, 10-13.

³² Bonn Agreement, 8-10. See for detailed rules: Decisions 15/CP.7 to 19/CP.7 of the Marrakesh COP.

³³ Bonn Agreement, 13-14.

³⁴ Swiss Agency for the Environment, Forests and Landscape *Climate in Human Hand*, 19 <<http://www.umwelt-schweiz.ch/imperia/md/content/oekonomie/klima/fakten/6.pdf>> (last accessed 2 March 2003).

³⁵ Annex to Decision 24/CP.7.

³⁶ Bundesumweltministerium <<http://www.bmu.de/download/dateien/cop7.pdf>> (last accessed 28 February 2003).

D Evaluation of the Kyoto Protocol and the Following COP Decisions

The Kyoto process has led to a balanced system of targets for the reduction of greenhouse gases among industrialised countries. It includes further duties for all members, including developing countries, to report regularly about the development of their domestic emissions and provides a scheme for financial and technological aid from industrialised countries for developing countries. As a result, the steps taken in the Kyoto Protocol can be seen positively overall, especially taking into account the difficult process of negotiations³⁷.

One reason for the difficult process was the lack of full scientific certainty about effects of greenhouse that was mainly claimed by the United States³⁸, which made the Kyoto process different from earlier negotiations about ozone layer depletion where negative impacts of CFC were mainly unquestioned and several national approaches were already on the way before negotiations started³⁹.

Furthermore, long negotiations were necessary about the treatment of developing countries in the first commitment period. The plan, not to impose binding targets lead to resistance because some countries were afraid of competitive disadvantages. This fear was especially large in the United States and resulted in the Byrd-Hagel resolution in 1997, that advised the United States not to join any international agreement unless reductions for developing countries were included or if the agreement caused harm for the domestic economy⁴⁰. This resolution is still the basis for the refusal of the United States to ratify the Protocol. The problem must be analysed from two dimensions: from the costs incurred by the industrialised countries and secondly from the privilege of developing countries.

³⁷ A comprehensive overview concerning the Kyoto negotiations can be found at: Miranda A Schreuers "Competing Agendas and the Climate Change Negotiations: The United States, the European Union and Japan" (2001) 31 Environmental Law Reporter 11218.

³⁸ Frank H Murkowski "The Kyoto Protocol Is Not the Answer to Climate Change" (2000) 37 Harvard Journal on Legislation 345, 345-346; Monica S Mathews "The Kyoto Protocol to the United Nations Framework Convention on Climate Change: Survey of its Deficiencies and why the United States Should Not Ratify this Treaty" (2000) 9 Dickinson Journal on Environmental Law and Policy 193, 200.

³⁹ Jutta Brunée *Acid Rain and Ozone Layer Depletion: International Law and Regulation* (Transnational Publishers, New York, 1988) 225.

Of course, the achievement of the Kyoto targets will lead to some economic challenges in the industrialised countries, as additional investments in new technologies are necessary. Estimates of US government advisers predict annual compliance costs from 8 to 12 billion US\$ for the United States economy between 2008 and 2012⁴¹. However, additional costs of about 50 billion US\$ over 5 years are not a large burden for an economy like the United States, especially if there is enough time to prepare for these costs. Additionally, most of the challenge has been caused during a time, in which binding measures for climate protection were predictable, which means after 1992. If countries continued their emissions policies as if nothing had happened, it is also their own fault if they now have to take even stricter measures to come close to the targets. Other countries that started with reductions earlier have made an “advance payment”. And even strong reductions of emissions must not necessarily lead to massive economic problems. This can be demonstrated with a look into some European countries that already achieved substantive reductions, for example Germany⁴²:

Greenhouse gas	% reduction compared to 1990 in	1995	1999	2005	2010
Carbon dioxide		-11	-15	-25	N/A
Methane		-30	-41	-46	-60
Nitric oxide		-2	-34	-30	-32

According to the most recent *Umweltökonomische Gesamtrechnung* (Environmental-economic accounting) of the German Federal Statistical Office even the target of the internal European burden sharing of 21 per cent has been almost fulfilled, reaching 19 per cent reduction in 2002⁴³.

One of the most important factors, however, is that economic compliance costs of carbon dioxide reduction are not comparable with those of general air quality improvements. Whereas sulphur dioxide is mainly filtered from exhausts, which

⁴⁰ Res 98, 105th Congress (1997).

⁴¹ Frank H Murkowski “The Kyoto Protocol Is Not the Answer to Climate Change” (2000) 37 Harvard Journal on Legislation 345, 355.

⁴² Table developed on basis of “total emissions” figures in Third Report of the Government of the Federal Republic of Germany in Accordance with the Framework Convention of the United Nations 2002, 120-123 (2005 and 2010 projections).

⁴³ German Federal Statistical Office *Umweltökonomische Gesamtrechnung 2002* (Wiesbaden, 2002) 11. It must be taken into account that a significant part of the overall reduction resulted from the

means additional costs for purifying equipment without improvement for the economic efficiency of a factory, there is physically no way to filter carbon dioxide effectively. This means that all improvements must be generated by more efficient technology or alternative energy sources. These more efficient machines need less fuel so that in the end the economy is more environmentally friendly and economically more efficient – therefore, temporarily higher compliance costs are a mid-term benefit for the economic strength of a country⁴⁴.

The exclusion of developing countries from the binding targets is one of the weaker points of the Protocol, although it does not mean that developing countries have no obligations. Already today, only 48 per cent of global carbon dioxide emissions originate from developed countries, and the increase of emissions in developing countries by 5 per cent per annum will increase the share of developing countries⁴⁵. Therefore, it is crucial to include them into the reduction pattern in the next negotiation period⁴⁶. Although the commitments to support developing countries technologically and financially will reduce the greenhouse gas emissions substantially, it is unlikely that help from outside can really stop this development. The emissions will rise because of the sheer number of people and possible emission sources in these countries. Whereas international aid will be able to limit emissions from large facilities it will be mainly a task of domestic policy to deal with the small sources. Fighting against emissions from developing countries will be one of the great challenges of the next decades. However, the Kyoto Protocol was created as a first step to set binding obligations for industrialised countries first⁴⁷ that have the necessary funds to take the necessary measures at once – and to implement binding reductions for other countries in following protocols. In future negotiations it is inevitable to force developing countries at least to stabilize their emissions as

breakdown and restructuring of Eastern German industries. But these effects are recognised in the high German target within the European burden sharing.

⁴⁴ Christopher C Joyner “Burning International Bridges, Fuelling Global Discontent: The United States and Rejection of the Kyoto Protocol” (2001 Quentin Quentin-Baxter Memorial Lecture, Wellington, 31 October 2001) 33 VUWLR 27, 43.

⁴⁵ *Environmental Defence Society (Incorporated) v Auckland Regional Council* (6 September 2002) Environment Court Auckland, A183/2002, R G Whiting J/ R F Gapes/ J Kearney, para 57, 58.

⁴⁶ Peter Slinn “Development Issues: The International Law of Development and Global Climate Change” in Robin Churchill/ David Freestone (eds) *International Law and Global Climate Change* (Graham & Trotman, London, 1991) 75, 77.

⁴⁷ See also Roberta Mann “Waiting to Exhale?: Global Warming and Tax Policy” (2002) 51 American University Law Review 1135, 1149.

otherwise progress in developed countries would be nullified by increasing emissions in the developing countries. But the intended incompleteness of the Kyoto Protocol should be no reason for any country to oppose this first step; it can be seen as a part of the agreed principle of common but differentiated responsibilities, expressed in Principle 7 of the Rio Declaration 1992.

Also concerning the obligations of industrialised countries, compromises reached in Bonn and Marrakesh lead to a significant reduction of the net targets – taking into account opportunities to credit carbon sinks, joint projects etc. By this means Japan, for example, could be able to reduce its obligations by nearly two thirds from 6 per cent to 2.2 per cent⁴⁸ and New Zealand will be able to comply alone because of afforestation from 1999 to 2001⁴⁹. Such compromises diminished the environmental efficiency of the Protocol, but keeping in mind the more than difficult negotiations it is often better to have a smaller first step on a broad international basis than a hardly supported extensive regime.

In any event, an important positive result of the Marrakesh COP was the introduction of procedures and sanctions for non-complying parties. As these elements are currently still not legally binding it will be important to add them to the Protocol as soon as possible, hopefully in 2003 as envisaged. This step is necessary to finish the Kyoto process with a really strong legal framework on which further negotiations could be based.

Although there is still a lot to do in the fight against global warming in coming years, it is necessary to be fair towards the Kyoto Protocol. It is necessary to take it as it was always intended – the first step of a long way⁵⁰. Further efforts must be taken in the next negotiation round that is due to start in 2005 at the latest⁵¹. Here the issue of binding targets for developing states must be addressed. This will be surely a difficult task, but if the industrialised countries give a good example towards their

⁴⁸ Miranda A Schreuers “Competing Agendas and the Climate Change Negotiations: The United States, the European Union and Japan” (2001) 31 Environmental Law Reporter 11218.

⁴⁹ *Environmental Defence Society (Incorporated) v Auckland Regional Council* (6 September 2002) Environment Court Auckland, A183/2002, R G Whiting J/ R F Gapes/ J Kearney, para 33.

⁵⁰ Christopher C Joyner “Burning International Bridges, Fuelling Global Discontent: The United States and Rejection of the Kyoto Protocol” (2001 Quentin Quentin-Baxter Memorial Lecture, Wellington, 31 October 2001) 33 VUWLR 27, 43.

commitments in the first Kyoto period until 2005/2012, it will be much easier to find a consensus with developing countries about their participation as they would see that the industrialised countries have taken serious their part of responsibility.

However, multinational agreements just provide the general framework of binding and non-binding targets. They also cause a psychological advantage by imposing duties not only on one country but also on a number of parties. Thus everyone has to contribute to the common goal. The necessity of negotiations between different countries and to find a compromise acceptable for many countries also helps to bring ideas and goals of different countries closer together.

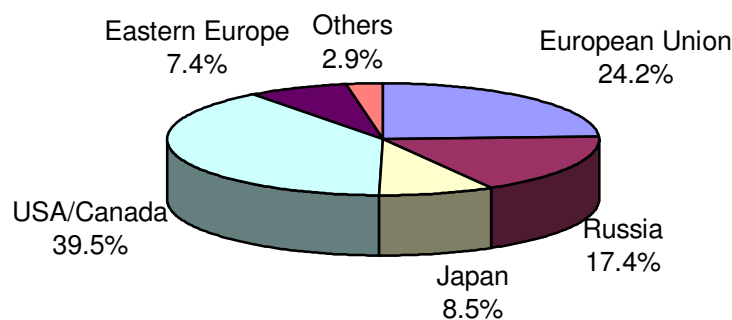
Still, the specific implementation of rules is the task of national governments – or integrated regional bodies like the European Union. At this level, decisions with direct influence on the people and the economy are made. Already the start of the “Road to Kyoto” but even more the results of Kyoto and the following COPs led to massive developments in national and also regional legislation concerning Climate Change. Many countries modified their laws to comply with the Kyoto targets as well as the European Union intensified its legislation concerning pollution control. These developments will be analysed in the following chapters in order to show advantages and drawbacks of different approaches taken.

III REGIONAL EFFORTS

Over the years, several regional bodies have developed all over the world. Whereas most of them are co-operation organisations, the European Union is an integrated organisation with its own law-making institutions. The economically most important organisations are the European Union (EU), the North American Free Trade Agreement (NAFTA) and ASEAN (Association of South East Asian Nations). The Commonwealth of Independent States (CIS – some republics of the former USSR) – although struggling economically – is responsible for a substantive amount

⁵¹ Article 3 (9).

of greenhouse gas emissions. Overall, these areas account for over 80 per cent of greenhouse gas emissions from industrialised countries⁵².



Therefore, most efforts for the reduction of greenhouse gases according to the Kyoto Protocol will have to take place in these regions – most of them will occur at the national level, but regional approaches could be a good support. However, there are significant differences among these organisations. Whereas the EU is an integrated organisation, NAFTA, ASEAN and CIS rather focus on co-operation. While the institutions of the European Union can issue binding law independent from decisions of the member states⁵³, decisions in other regional organisations are based on agreements among these states.

A NAFTA, ASEAN and CIS

The focus of the organisation also affects the intensity of regional efforts against greenhouse gases. In co-operation organisations, the most important issues in negotiations usually are problems of trans border pollution rather than global issues like climate change. This status is comparable to Europe in the 1970s in Europe, when bilateral treaties against transboundary pollution were established. Although containing two G8 members, Canada and the United States, NAFTA has not yet

⁵² Source: German Federal Environmental Ministry, Bundesumweltministerium <<http://www.bmu.de>> (last accessed 28 February 2003); share of greenhouse gas emissions 1990 (reference for targets).

⁵³ Procedures according to Articles 249 - 256 Treaty Establishing the European Community.

managed to broaden the scope of agreements, still only focussing on acid rain and local environmental problems in the border region⁵⁴ - if at all dealing with environmental problems. Also existing environmental NAFTA institutions concentrate on aspects of free trade. For example, the North American Agreement on Environmental Cooperation (NAAEC) only determines whether one member state lowered its environmental standards to attract investors⁵⁵. Taking into account the importance and also the amount of emissions from NAFTA countries, it is a pity that global warming has virtually no recognition at the multinational level. Of course, there are domestic approaches in Canada and the United States but an intensive co-operation would be beneficial for global climate because this would produce synergetic effects that are inaccessible in national approaches.

The situation in the ASEAN region is not much more elaborated. The efforts taken are transboundary. Most recently the members agreed on an Agreement on Transboundary Haze Pollution in 2002, aiming at co-operation in the fight against forest fires and monitoring of the pollution, which is co-ordinated and assessed by an independent body, the ASEAN Centre⁵⁶. Although the problem of forest fires has been approached from the perspective of a major regional problem, the agreement will also have a certain impact on climate change, as forest fires in South East Asia are a substantive source of greenhouse gases. But integration in the region is increasing, for example, with the free trade zone AFTA that will be completed in 2005⁵⁷. It will be important, that environmental issues get a higher value in this process. A free trade zone is important for the development of South-East Asia, but the opportunity to implement specific environmental regimes, including climate change issues, should not be passed, as developing countries will probably be affected by emission targets in the second Kyoto period after 2012.

⁵⁴ For example the "Agreement Between the Government of the United States of America and the Government of Canada on Air Quality", of 13 March 1991 or the Agreement on Cooperation for the Protection and Improvement of the Environment in the Border Area of 1983 between the United States and Mexico that contains some specific regulations in several Annexes, for example emissions from copper smelters in Annex IV, Jutta Brunée *Acid Rain and Ozone Layer Depletion: International Law and Regulation* (Transnational Publishers, New York, 1988) 210, and the "Agreement of Cooperation Between the Government of the United States of America and the Government of the United Mexican States Regarding International Transport of Urban Air Pollution" of 3rd October 1989 as Annex V.

⁵⁵ Paul Stanton Kibel *The Earth on Trial* (Routledge, London, 1999) 140-141.

⁵⁶ Articles 5 and 8.

⁵⁷ ASEAN < <http://www.aseansec.org/viewpdf.asp?file=/pdf/afta.pdf> > (last accessed 2 March 2003).

Finally, the current state of environmental legislation in the Commonwealth of Independent States (CIS) is even lower – basically non-existent. The CIS was formed by states of the former Soviet Union for co-operation in economic but also environmental affairs in 1991⁵⁸. However, the output of the co-operation within the CIS has been low so far, especially in matters of the environment, mainly because of different opinions about the intensity of co-operation within the CIS. As a result, five members (Russia, Belarus, Kazakhstan, Kyrgyzstan and Tajikistan) founded the EURASEC (Eurasian Economic Community) with the aim of more profound co-operation, integration and policy harmonisation⁵⁹. This is the most interesting and important aspect of the CIS in this context. If integration proceeds within EURASEC questions of environmental harmonisation might come onto the agenda quite quickly. Although the development is still in the beginning⁶⁰, the target of integration and harmonisation makes experiences from the European Union even more useful for future steps of environmental legislation in this part of the world.

B European Union

Up to now nearly all legal developments at the regional level against greenhouse gases have taken place in the European Union. However, the focus of the European Union only slowly shifted towards the problem of global warming. In the early years, after many European states had tackled the problem of transboundary air pollution in bilateral treaties⁶¹, the European Community (EC) started its environmental work with a number of directives concerning the improvement of air

⁵⁸ CISStat <<http://www.cisstat.com/eng/cis.htm>> (last accessed 2 March 2003); see Article 2 CIS Charter, The Russia Site <<http://www.therussiasite.org/legal/laws/CISCharter.html>> (last accessed 2 March 2003); Article 1 explicitly stresses the co-operative character of the CIS by denying any kind of supranational power of the CIS itself.

⁵⁹ Gregory Gleason / Rosa Zhalimbetova “Eurasian Economic Community (EEC) Comes into Being” (2000) *Central Asia-Caucasus Analyst* <http://www.cacianalyst.org/view_article.php?articleid=148> (last accessed 2 March 2003).

⁶⁰ EURASEC <http://www.mpa.eurasec.ru/en_index.htm> (last accessed 27 February 2003).

⁶¹ See for example agreement between France and Germany: Thomas Bunge “Transboundary Co-operation between France and the Federal Republic of Germany” in Cees Flinterman/ Barbara Kwiatkowska/ Johan G. Lammers *Transboundary Air Pollution* (Martinus Nijhoff Publishers, Dordrecht, 1986) 181-198; concerning Poland Jerzy Sommer “Transboundary Co-operation between Poland and its Neighbouring States” in Cees Flinterman/ Barbara Kwiatkowska/ Johan G. Lammers *Transboundary Air Pollution* (Martinus Nijhoff Publishers, Dordrecht, 1986) 205-233.

quality in general and for special polluters⁶² - but not primarily tackling greenhouse gases. These Directives mainly contained command-and-control measures like emission limits or technology guidelines.

Following the increasing international concern about global warming and the formation of the IPCC in 1988, the topic also came onto the Agenda of the EC. The first important document was the resolution of the Council of the European Communities in June 1989 concerning measures against climate change⁶³. This resolution was based on the Precautionary Principle stating that action against climate change should be taken even without full scientific certainty about effects of greenhouse gases⁶⁴. Although non-binding, the resolution is remarkable, as many other countries even today want full scientific certainty before actions are taken.

In the following years, the EC refined its legislation concerning air pollution by issuing amendments to existing Directives, but it also issued Directives and Decisions only dealing with greenhouse gases and climate change. One example is the Directive to limit carbon dioxide emissions by improving energy efficiency (SAVE)⁶⁵ from 1993, that forced member states among other things to implement measures for energy certification of buildings, improved insulation, regular inspection of heating systems and billing of heating according to the actual consumption⁶⁶. The Decision for a monitoring mechanism of Community CO₂ and other greenhouse gas emissions⁶⁷ introduced duties for the members to develop, publish and implement programmes for the reduction of greenhouse gas emissions and to report domestic greenhouse gas emissions to the European Commission.

Although the European commitment against climate change was important and also considerably successful, these early steps were rather patchy reactions on the recognition of important greenhouse gas sources than result of a co-ordinated

⁶² See only Directive 80/779 (OJ L 229, 30 August 1980, 30) concerning limits for sulphur dioxide, Directive 82/884 (OJ L 378, 31 December 1982, 15) concerning lead in the air or Directives 93/59 (OJ L 186, 28 July 1993, 21) and 93/76 (OJ L 237, 22 September 1993, 28) concerning catalytic converters in cars and energy efficiency.

⁶³ Official Journal C183, 20 July 1989, 4.

⁶⁴ James Cameron "European Community Law and Policy on Global Warming" in Toru Iwama (ed) *Policies and Laws on Global Warming: International and Comparative Analysis* (Environmental Research Centre, Tokyo, 1991) 229, 238.

⁶⁵ Directive 93/76.

⁶⁶ This Directive was just recently upgraded by Directive 2002/91 (OJ L 001, 4 January 2003, 65).

approach against climate change or even pollution in general. However, this development was just in line with the general European Environmental Law that was – although of high density and quite efficient at the end of the day – still a conglomeration of single measures.

This focus changed with the IPPC (“Integrated Pollution Prevention and Control”) Directive⁶⁸ of 1996 that is currently being implemented throughout Europe. It aims at a comprehensive approach for a more efficient environmental management⁶⁹, including emissions of greenhouse gases. Since 1999, all new potentially polluting installations have to obtain an operation permit. This permit does not refer to one specific kind of pollution but takes into account the whole (“integrated”) environmental performance of a facility including all kinds of emissions, waste management, prevention of accidents and risk management. IPPC, therefore, allows a comprehensive determination of environmental risks and a more efficient environmental management.

The issued permits are based on the use of the Best Available Techniques (BAT), which means

“the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole.”⁷⁰

Existing installation will have to fulfil the IPPC requirements by 2007, but member states can introduce BAT regulations for these installations earlier⁷¹. The permits contain value limits for emissions from the installation, including most of the

⁶⁷ Decision 93/389 (OJ L 167, 9 July 1993, 31). A decision is a binding instrument to the subjects to whom it was addressed, Article 249 (4) Treaty Establishing the European Community. Decision 93/389 addressed all member states - Article 9 - and was, therefore, directly binding to them.

⁶⁸ Directive 96/61 (OJ L 257, 10 October 1996, 26). Directives are binding for member states concerning the result but leaves member states the choice of form and method, Article 249 (3) Treaty Establishing the European Community.

⁶⁹ See Directive 96/61, Article 2 (2).

⁷⁰ Directive 96/61, Article 2 (11).

⁷¹ European Union IPPC Summary <<http://europa.eu.int/comm/environment/ippc/>> (last accessed 28 February 2003).

greenhouse gases, but not explicitly for carbon dioxide, which may be included under the aspect of “energy efficiency”⁷². The operator will be responsible for controlling the emissions from his facility. The detailed BAT requirements are developed in working groups with representatives of governments, the industry and environmental NGOs⁷³. However, the resulting BAT reference documents (BREF) are only non-binding guidelines for local licensing authorities⁷⁴.

The IPPC Directive introduced a mandatory Environmental Impact Assessment with the application for a permit, which means, that the operator has to show that he has fully considered the environmental effects of the proposed operation⁷⁵. It also launched the European Pollutant Emissions Register, which will be a fully operational by June 2006⁷⁶.

IPPC is a major step in the EU climate change policy but also in general environmental issues. It is the first comprehensive approach after many specific regulatory approaches before. The included chances for the public information from the Pollutant Emission Register will increase pressure to reduce emissions. Another important element for the success of IPPC is the participation of different interest groups for BAT definitions. This opportunity is even welcomed by environmental NGOs which are generally quite satisfied with the opportunity to participate but suggest some operative improvements like more specific guidelines for BAT selection or a better representation of technology leaders in the industry in order to achieve higher BAT standards⁷⁷. This might also require a better procedure for the final enactment of BREFs that is currently sole responsibility of the European Commission without official voting influence by other parties in the development

Ian Skinner “EU Climate Policy and Integrated Pollution Prevention and Control” (2000) 2 <<http://www.ieep.org.uk/PDFfiles/PUBLICATIONS/Clean%20Air%20July%202000%20doc.pdf>> (last accessed 2 March 2003); Directive 96/61, Article 18.

⁷³ Article 16 IPPC Directive.

⁷⁴ Uwe M. Erling “Approaches to Integrated Pollution Control in the United States and the European Union” (2001) 15 *Tulane Environmental Law Journal* 1, 38.

⁷⁵ Ian Skinner “EU Climate Policy and Integrated Pollution Prevention and Control” (2000) 2 <<http://www.ieep.org.uk/PDFfiles/PUBLICATIONS/Clean%20Air%20July%202000%20doc.pdf>> (last accessed 2 March 2003).

⁷⁶ European Union <<http://europa.eu.int/comm/environment/ippc/eper/index.htm>> (last accessed 2 March 2003).

⁷⁷ Joachim Lohse/ Knut Sander “Is the BREF process a success or a failure? – an NGO perspective” in Umweltbundesamt *The Sevilla Process: A Driver for Environmental Performance in Industry* (2000) 61, 62-66.

process⁷⁸. Although the final competence will have to remain with the commission according to European Union Law there might be options to limit their discretionary power and to standardise a voting procedure that is binding for the Commission's decision to a certain extent.

Despite such critics in details it is considered that the IPPC Directive is more advanced concerning a large-scale implementation of integrated pollution control than comparable efforts elsewhere, especially in the United States⁷⁹.

Additional Directives supported the efforts for a reduction of greenhouse gas emissions. In Directive 1999/30 the EC tightened the limits for emissions of sulphur and nitrogen oxides and demanded a stricter assessment for these substances⁸⁰. Furthermore, Directive 2001/80 of 23 October 2001 forced operators of new combustion plants, irrespective of the fuel, to obtain a licence or permit from 2002 that depends on the fulfilment of emission standards⁸¹. The Directive forces operators to shut down a plant or to use low polluting fuels in case of a breakdown of the abatement equipment for more than 24 hours. No plant is allowed to operate in unabated state for more than 120 hours per years⁸².

Information of the public about pollution and its sources is another important aspect. One important step was Directive 1999/94⁸³, which imposed a duty on sellers of new cars to provide information about fuel efficiency and CO₂ emissions at the point of sale⁸⁴ to enable the consumer to consider these facts in his decision of purchase. Even without strict targets for reduction, the Directive will have some significant impact. Because there are no efficient ways to filter carbon dioxide from the air, any

⁷⁸ Uwe M. Erling "Approaches to Integrated Pollution Control in the United States and the European Union" (2001) 15 Tulane Environmental Law Journal 1, 39.

⁷⁹ Uwe M. Erling "Approaches to Integrated Pollution Control in the United States and the European Union" (2001) 15 Tulane Environmental Law Journal 1, 41.

⁸⁰ Gases like carbon monoxide or nitrous oxides (NO_x) are not greenhouse gases themselves, which means they do not absorb infrared light. Still they have indirect influence on climate change as they can react in the atmosphere and support the creation or enlarge the duration of greenhouse gases why it is useful to keep an eye also on the emissions of these substances, Bundesamt für Umwelt, Wald und Landschaft <http://www.buwal.ch/klima/d/klimaproblematik_02.htm> (last accessed 2 March 2003).

⁸¹ Directive 2001/80, Article 3 (OJ L 309, 27 November 2001, 1); existing plants from 2015, Article 4 (4).

⁸² Directive 2001/80, Article 7.

⁸³ Official Journal L 012, 18 January 2000, 16.

⁸⁴ Directive 1999/94, Articles 1, 3.

reduction of emissions must originate from saving fossil fuels⁸⁵. The idea is to promote the use of cars with higher energy efficiency by creating awareness. It is advantageous that here economic and environmental aims work in the same direction as more efficient cars cause lower operating costs and lower emissions, which creates a double incentive for consumers.

The more organised approach against climate change also influenced the institutional level. In 2000, the European Union established the European Climate Change Programme (ECCP) in order to develop policies and measures concerning climate change. The ECCP is a co-operation between the European Commission, the Member States, the industry and environmental groups, which means that all important interest groups are represented. In a first period until June 2001 the ECCP developed general suggestions for measures against Climate Change, including proposals for the European Emissions Trading System that will start in 2005⁸⁶. The aim was to develop measures that ensure compliance with the Kyoto target while causing the least amount of compliance costs⁸⁷. The proposed measures were published in a comprehensive report⁸⁸ that is the basis for the further work of the ECCP. The report came to the conclusion that – in contrast to claims of the United States – there is an opportunity for cost-effective (meaning maximum additional costs of 20 Euro per tonne of carbon dioxide equivalent) greenhouse gas reduction of 9 per cent until 2010⁸⁹ compared to the existing baseline projections, which would be sufficient to fulfil the Kyoto targets. Suggested measures include the de-carbonisation of energy supply by using low carbon fuels like gas or renewable resources and the improvement of energy efficiency⁹⁰. In a second period until 2003, the ECCP is developing more detailed proposals on identified priority matters as the

⁸⁵ Christoph Bals “Der sich selbst zerstörenden Klima-Strategie der USA auf den Leim gegangen” (23 June 2001) *Frankfurter Allgemeine Zeitung*, Frankfurt.

⁸⁶ Ludger Giesberts/ Juliane Hilf “Emissions Trading – a New Way of Reducing CO2 Emissions Effectively” (2002) *International Trade Law & Regulation*, 8 (2), 61, 62.

⁸⁷ European Union <http://europa.eu.int/comm/environment/climat/eccp_report_summary_0106.pdf> (last accessed 2 March 2003).

⁸⁸ European Union Long Report ECCP (2001) <http://europa.eu.int/comm/environment/climat/eccp_longreport_0106.pdf> (last accessed 2 March 2003).

⁸⁹ European Union Long Report ECCP (2001) 8; <http://europa.eu.int/comm/environment/climat/eccp_longreport_0106.pdf> (last accessed 2 March 2003).

promotion of bio fuel and other renewable resources, combined heat and power fuels (CHP) and vehicle taxation, ideally resulting in a proposal for a Directive. Furthermore, the ECCP is analysing additional measures like carbon dioxide sinks and alternative mechanisms for the reduction of greenhouse gases⁹¹.

However, in order to ensure long-term compliance with reduction targets, further ideas will be necessary in the next ECCP periods. Nevertheless, the comprehensive scope of the ECCP programme combined with challenging targets including the need for further development is ambitious⁹² and also a good starting point for future efforts for the reduction of greenhouse gas emissions.

Finally, the sixth Environmental Action Programme, that has recently been passed by the European Parliament and the Council and defines the environmental aims of the Union in the next five years, already contains aims derived from the ratification of the Kyoto Protocol by the European Union⁹³.

These latest developments show, that the development for environmental protection in the European Union will continue. Many of them could even be a good basis for further negotiations at the international level.

The comprehensive regulation network of the European Union guarantees a common minimum standard of greenhouse gas prevention in all member states. But member states can go further than the European Directive demands or take appropriate steps in different areas, for example by supporting renewable energy sources. Taken into account development differences within the EU the European Union internally redistributed the individual targets under the Kyoto Protocol. Most

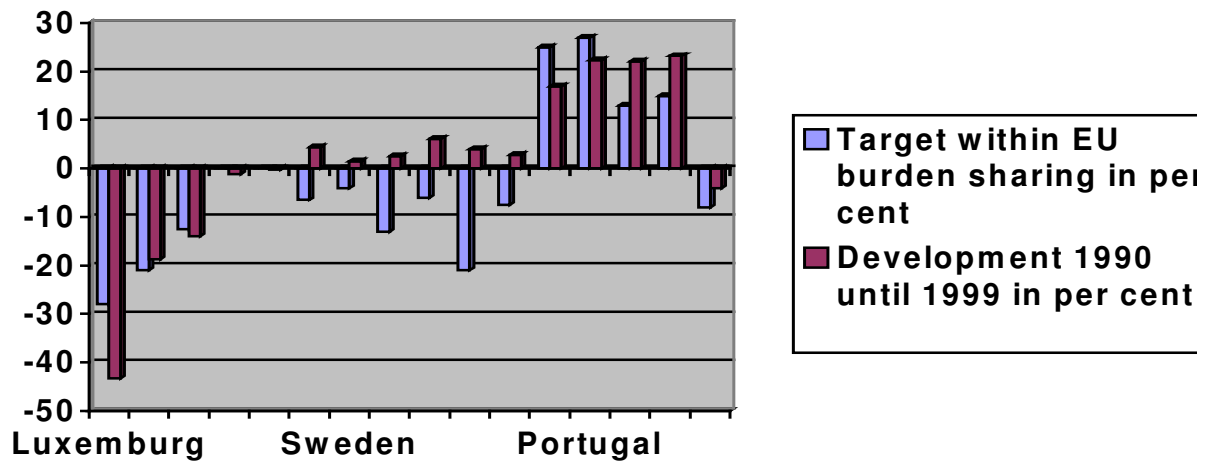
⁹⁰ European Union Long Report ECCP (2001) 9; <http://europa.eu.int/comm/environment/climat/eccp_longreport_0106.pdf> (last accessed 2 March 2003).

⁹¹ European Union <<http://europa.eu.int/comm/environment/climat/eccp.htm>> (last accessed 2 March 2003).

⁹² Nuna S Lacasta/ Saraje Dessai/ Eva Powroslo "Consensus Among Many Voices: Articulating the European Union's Position on Climate Change" (2002) 32 Golden Gate University Law Review 351, 391.

⁹³ Article 5, Decision No 1600/2002 of the European Parliament and the Council, 22 July 2002 (OJ L 242, 10 September 2002, 1).

of them and the European Union in total are on path to achieve the Kyoto target, although some countries still have a long way to go⁹⁴:



Although the European framework concerning greenhouse gases is still at its beginning compared with other fields of environmental protection where the EU has the “most progressive environmental policies in the world”⁹⁵, IPPC and ECCP are important steps towards effective greenhouse gas reduction in Europe. Both brought together single aspects of climate protection that existed before, into a comprehensive action pattern. However, further efforts will be necessary to ensure compliance with the Kyoto targets. It is likely that this will further increase the density of European law against climate change. But a strong European Union can be the important leader for global efforts against climate change. The better the European framework works the stronger will be the European position in further negotiations following the Kyoto process.

C Evaluation

Because of the different character of the European Union on the one hand and the other regional organisations on the other hand it would be unjust to directly

⁹⁴ Source: German Federal Environmental Ministry, Bundesumweltministerium <<http://www.bmu.de>> (last accessed 28 February 2003).

compare the legal framework of the EU and other regions. However, the EU rules can be a good example of how integration on the environmental sector can proceed, which can save years of time if similar steps are desired in other parts of the world. Furthermore, some parts of the EU framework like IPPC issues can be transferred to co-operative organisations without larger problems. In any event, a better coverage of global climate issues is required from co-operative international organisations. The mere focus on trans border problems is not sufficient. Negotiations within regional organisations have several advantages compared with global approaches. Because of the smaller number of countries involved it is easier to find common positions and, therefore, to implement more far-reaching reduction standards and targets than required by the Kyoto protocol. Regional co-operation also lowers the risk of competitive disadvantages that might occur in countries with stricter environmental standards. Common agreements about greenhouse gas emissions ensure that there is at least no imbalance of standards among member states of the organisation, and therefore neighbouring countries. This closes an easy route of evasion that often does not take place around half the world but just into countries in the vicinity.

Concerning the European Union, climate change policy is just building up in recent years and there are still a lot of things to improve. As about half of the member countries are struggling to fulfil their internal Kyoto target, more steps from the European Union might be necessary in this respect. The proper implementation of IPPC and EPPC will be an important milestone, but it is necessary to keep a close eye on the developments.

IV NATIONAL APPROACHES

As mentioned above, the implementation of the Kyoto targets must take place at the national level, even in the European Union where most of the responsibilities for the achievement of the targets remain at the national level. Generally, it is

⁹⁵ Nuna S Lacasta/ Saraje Dessai/ Eva Powroslo "Consensus Among Many Voices: Articulating the European Union's Position on Climate Change" (2002) 32 Golden Gate University Law Review 351, 377.

possible to distinguish between three approaches, the traditional command-and-control regime, economic instruments and self-regulatory regimes. Among the economic instruments, emissions trading and eco-taxes are the most important subspecies. All these approaches are used in the fight against climate change. In the following sections, each of the regimes will be analysed including advantages and drawbacks before some problems and experiences from countries using these regimes will be highlighted in short case studies.

A Command-and-control Regulations

1 Description

The traditional way of regulating environmental issues is command-and-control. In this approach the state directly defines a certain target for a specific group of people or companies. Everyone who fits into the description of the group has to comply in the same way. The compliance is monitored and in case of non-compliance sanctions are imposed⁹⁶. A typical example of command-and control regulations to reduce emissions is a fixed emission limit – either by prohibiting certain behaviours or defining emission thresholds that are not to be exceeded. Command-and-control mechanisms have been widely used around the world, especially in the EC, since the 1980s. Many of these rules are still in force today⁹⁷. Examples are a Directive for the reduction of Nitrogen Oxide in the air from 1985⁹⁸ or for a specific pollution source the Directive concerning emissions from new municipal waste-incineration plants of 1989⁹⁹, imposing detailed emission limits, for example in Article 4 (2)¹⁰⁰. The latter Directive is also a good and obvious example

⁹⁶ Philippe Sands *Principles of international environmental law* (Manchester University Press, Manchester, 1995) 126-127.

⁹⁷ As many national regulations derive from the European Directives, it is useful to refer to European Law in this context rather than to national law.

⁹⁸ Directive 85/203 (OJ L 87, 27 March 1985, 1).

⁹⁹ Directive 89/369 (OJ L 163, 14 June 1989, 32).

¹⁰⁰ All new municipal waste incineration plants shall observe the following conditions when in operation:

(a) the concentration of carbon monoxide (CO) in the combustion gases must not exceed 100 mg/nm³;
(b) the concentration of organic compounds (expressed as total carbon) in the combustion gases must not exceed 20 mg/nm³.

The limits stipulated under (a) and (b) above shall be standardized at the following conditions: temperature 273 K, pressure 101,3 kPa, 11 % oxygen or 9 % CO₂, dry gas.

how to define the scope of a command-and-control regulation, namely new waste-incineration plants. Correspondingly another Directive deals with the improvement of existing plants¹⁰¹, granting a transitional period with lower requirements basically until 2000¹⁰².

A second kind of command-and control regulations are equipment standards for certain products or facilities. Early rules often tackled general problems of air pollution like the EC directive concerning the equipment of new cars with catalyst converters¹⁰³. More recent rules also aim at the protection of global climate like the Directive concerning energy efficiency of new building, which contains fixed requirements for minimum energy efficiency¹⁰⁴. Other rules prohibit the use of certain technology or the force its use.

2 Pros and Cons

An obvious advantage for the government is that command-and-control mechanisms allow a strict implementation of government goals. It is only necessary to pass the corresponding binding legislation. The affected people know exactly what to do according to the law. If, for example, the use of certain ineffective heaters is prohibited from 2005 onwards, it is clear, that people have to get rid of these heaters. Although there is a necessity to monitor and control compliance with the rules, command-and-control regulations are still suitable under conditions with many affected subjects, like individual transport. The monitoring efforts and costs for the state will increase with the number of affected people, but the system itself still remains manageable.

However, there are also serious disadvantages of command-and-control regimes. The main problem is that the regulations are created by a central administration and, therefore, do not necessarily fit the socio-economic realities and expectations and requirements. For example, many command-and-control

¹⁰¹ Directive 89/429 (OJ L 203, 15 July 1989, 50).

¹⁰² Article 2 (b), compare Articles 3 and 4 of both Directives for different thresholds.

¹⁰³ Directive 93/59 (OJ L 186, 28 July 1993, 21).

mechanisms under the United States Clean Air Act are considered inefficient, because they contain complicated and strict regulations without taking into account specific needs and circumstances of a polluter. This uniform regulation causes unnecessary compliance costs without the chance to gain a competitive advantage from environmentally friendly behaviour¹⁰⁵. Furthermore, command-and-control regulations are often based on a standard technology that is available today¹⁰⁶. Many operators will be satisfied when complying with this standard, as there is no incentive to go further than the law requires, and additional potentials for more efficient technology will not be exhausted.

Command-and-control regimes may not only fail to get maximum results of emissions reduction, they also cause higher compliance costs than necessary due to inherent inefficiencies of the system. Command-and-control regimes usually don't care about the compliance costs for an individual polluter. Everyone within the scope of the regulation has to fulfil the same goal. But the individual costs of each polluter vary according to the marginal compliance costs for another avoided unit of pollution¹⁰⁷. In other words, two companies A and B must both reduce their emissions by the same amount, although company A could manage its own reduction and parts of B's reduction cheaper. As transfers are not allowed, the command-and-control regulation leads to the same environmental goal, but cause higher costs, which slows down economic growth and destroys financial opportunities, e.g. for further technological advance.

The lack of economic efficiency has its most adverse effect on industrial polluters. Here the drawbacks concerning economic costs and slower technological developments higher than in regulations for private consumption where the necessary level of adjustments and compliance costs is more comparable. Furthermore, industrial facilities are the sector, in which emission permits can be used efficiently

¹⁰⁴ Directive 2002/91 (OJ L 001, 04 January 2003, 65) following earlier steps in the same direction, e.g. in Directive 93/76 (OJ L 237, 22 September 1993, 28).

¹⁰⁵ President's Council on Sustainable Development, Eco Efficiency Task Force Report 1996, Chapter 4; US National Archives and Records Administration <http://clinton2.nara.gov/PCSD/Publications/TF_Reports/eco-chap4.html> (last accessed 2 March 2003).

¹⁰⁶ Thomas W Merrill "Explaining Market Mechanisms" (2000) 2000 University of Illinois Law Review 275, 276.

¹⁰⁷ Horst Siebert *Economies of the Environment* (3ed, Springer-Verlag, Berlin, 1992), 132.

as will be shown below. On the other hand, the opportunity to cover all members of a pre-defined group by a single and clear regulation without dependence on market-reactions makes command-and-control mechanisms a good instrument for sectors with many affected subjects. Therefore, command-and-control measures should be primarily used, where use can be made of this advantage. For example, concerning individual traffic or private consumption like heating. Command-and-control mechanisms should also be used as an addition to other measures like eco-taxes and even tradable permits to make sure that certain completely unacceptable activities cease within a reasonable timeframe. In this case, the command-and-control regime would constitute the absolute minimum compliance level everyone has to achieve, whereas emission trading or taxes set incentives for further reduction¹⁰⁸.

Command-and-control measures are capable of achieving a reduction in greenhouse gas emissions. There might even be cases, where they are the most favourable option, for example if market-mechanisms are doomed to fail under specific circumstances. Also sectors with a large number of polluting sources can be a suitable area for command-and-control mechanisms, for example, private heating, where product standards can be imposed quite easily to guarantee at least a certain minimum standard. These measures might be accompanied by taxes in order to achieve even higher reductions.

B Emissions Trading

1 Description

Emissions trading is used as a device for pollution control to a large extent in the United States. Although originally designed to tackle problems of acid rain (Acid Rain Programme) and regional environmental problems, for example in Los Angeles area¹⁰⁹, tradable permits can also be used for the reduction of greenhouse gases. The theoretical background of market-based systems is the idea of the internalisation of

¹⁰⁸ Horst Siebert *Economies of the Environment* (3ed, Springer-Verlag, Berlin, 1992), 148.

¹⁰⁹ Denee A Diluigi "Kyoto's So-called 'Fatal Flaws': a Potential Springboard for Domestic Greenhouse Gas Regulation?" (2002) 32 Golden Gate University Law Review 693, III C 2.

the commons¹¹⁰. Simulating virtual ownership of a certain part of the air by issuing permits for a certain amount of pollution should raise responsibility for the protection of this common good. These initial permits are usually issued free of charge according to historic emissions¹¹¹. At all times the operator of a facility must hold enough permits for his emissions – otherwise he will be fined¹¹². If he runs out of permits he has to buy additional permits on the free market¹¹³. Therefore, pollution is made an ordinary monetary factor, for which the polluter has to pay a price. If this price is higher than for the installation of technology for pollution prevention, the polluter has an incentive to install this technology. He then has to buy less permits or can even sell unused permits on the free market. The overall reduction of emissions can be initiated directly from the operators of the programme by reducing the number of emissions permit annually according to a pre-fixed schedule¹¹⁴. At any stage of the programme it remains the free decision of the operator how to achieve the necessary reduction of emissions – or not to buy additional permits instead of reducing emissions.

2 *Pros and cons*

The main advantage of tradable permits is the low regulatory impact on economic developments. Whereas command-and-control mechanisms demand state defined reactions from all polluters, the operators have a broad freedom under a tradable permit system. They can decide the best means to reduce emissions or, if it is too expensive to buy additional permits. As every operator is aiming for the most cost-effective solution for his company the reduction of emissions should be

¹¹⁰ John A Barrett “The Global Environment and Free Trade: A Vexing Problem and a Taxing Solution” (2001) 76 Indiana Law Journal 829, 839.

¹¹¹ See for example Section 403 (a) (3) Clean Air Act (CAA); however, it is also possible to trade these initial emission permits in a state held auction or sell it directly by the state for a fixed fee. Auctions are the more market based approach, however, this does not prevent the danger of economically disastrous developments in these auctions as the auctions for licences for the new UMTS communication standard in Europe – especially Germany - show, where a each licensee had to pay 16 billion Deutschmark in the end. Therefore, sensible rules for such auctions would be necessary.

¹¹² Section 403 (g), 411 CAA.

¹¹³ Or from a reserve of the state, s 416 CAA.

¹¹⁴ Denee A Diluigi “Kyoto’s So-called ‘Fatal Flaws’: a Potential Springboard for Domestic Greenhouse Gas Regulation?” (2002) 32 Golden Gate University Law Review 693, III C 2 b.

achieved with the least overall compliance costs for the economy¹¹⁵. The only danger in this context is a certain likelihood that operators evaluate the different options from a short-term perspective rather than from a mid- or long-term perspective and that short term benefits of buying additional permits might cause long-term disadvantages¹¹⁶. However, such misjudgments are the typical business risk of a company and usually do not have major impact on the overall economy.

The freedom of choice by the operator can also lead to a higher level of technology compared with other regulatory regimes. While command-and-control regulations are defined by the administration and, therefore, do not necessarily cover the most up-to-date developments, the prospect of economic advantages by investing in latest technologies might lead to a faster upgrade of technology¹¹⁷. This effect will be even stronger concerning carbon dioxide compared to general air pollution as reductions can only be achieved by decreased fossil fuel consumption. Therefore, users of the necessary more efficient technology will have a double economic advantage resulting from lower input costs as less fuel is needed and lower output costs as less permits are needed. And this advantage is 100 per cent compatible with the environmental goal of greenhouse gas reduction.

Another important aspect concerning greenhouse gases is compliance with the Kyoto targets. Tradable permits can be used quite easily and efficiently. Just by reducing the number of permits it is possible to achieve any desired reduction of emissions¹¹⁸. This is a substantial advantage compared to other measures, that are uncertain concerning the actual reduction.

Of course, a system of tradable permits has some disadvantages and problems. Most importantly, the compliance of the operators with their permits must be

¹¹⁵ Bruce A Ackerman/ Richard B Stewart "Reforming Environmental Law" (1985) 37 Stan L Rev 1333, 1335-1337.

¹¹⁶ David M Driesen "Free Lunch or Cheap Fix?: The Emissions Trading Idea and the Climate Change Convention" (1998) 26 Boston College Environmental Affairs Law Review 1, 4.

¹¹⁷ Denee A Diluigi "Kyoto's So-called 'Fatal Flaws': a Potential Springboard for Domestic Greenhouse Gas Regulation?" (2002) 32 Golden Gate University Law Review 693, III D; Richard Toshiyuki Drury ea "Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy" (1999) 9 Duke Environmental Law and Policy Forum 231, 237.

¹¹⁸ Thomas W. Merrill "Explaining Market Mechanisms" (2000) 2000 University of Illinois Law Review 275, 286.

monitored and controlled. Furthermore, it is necessary to provide an efficient trading system. Although there is no problem concerning technical requirements for control or the trading system, efficiency requires a limited number of participants in the system. Because of this, the US Acid Rain Programme only covered large electricity plants, in the first step in 1995 only 110 facilities, in the second step up to 2000 facilities in 2000. Also the new European trading system, that will start in 2005, will focus on certain parts of the industry – energy, iron and steel, refining, chemical industry and glass/ceramic. In total, 4500 installations throughout Europe will participate, accounting for 45 per cent of industrial emissions of carbon dioxide¹¹⁹. It is difficult to extend the scope of tradable permit programmes to areas with many users, such as private heating or traffic. The required bureaucracy to handle the number of participants would lead to a quick collapse of the whole trading system or at least high operation costs that would drastically skim off efficiency advantages of the system.

Another problem of tradable permits arises from the fact that the polluters are usually located at the front of the consumption chain. As the purchase of tradable permits has the same effect on producers as a tax, namely increasing costs of production, it is quite likely that the producers will react with passing over these costs to the next link in the chain and finally to the consumer. In the end the consumer will pay a higher price for the product, but the incentive for the polluter to reduce emission might be limited. But at least the consumer pays for the use of a polluting product. This problem can be seen in context with the very common “hot spot” argument, which means that tradable permits can lead to a accumulation of emissions in certain parts, especially where older facilities are still operating, as buying additional permits is cheaper than investing in cleaner technology¹²⁰. Both factors, the opportunity to reimburse costs for permits and the cheaper option of buying additional permits, can cause a decision of operators to refrain from investing in more efficient technology. However, unlike the situation of local air pollution, this argument does not work for greenhouse gases that cause global pollution. Therefore, a certain area or factory with more carbon dioxide emissions is not a matter of

¹¹⁹ Peter Bareis/Thomas Elsner “Anforderungen an Lenkungssteuern und Beurteilung der ‘ökologischen Steuerreform’ aus ökonomischer Sicht“ (2000) DVBl 2000, 1176, 1184.

concern for climate change, if there is a gradual reduction of overall emission permits.

A problem is the accumulation of unused emission targets for following years that is allowed in some current programmes in the United States¹²¹. This accumulation is already a problem for local air pollution, but if allowed in a greenhouse gas trading system it would jeopardise one of the biggest advantages of a trading system – the opportunity to fix an exact maximum amount of emissions for a certain year. The consequence for permits on greenhouse gases must be a prohibition of such accumulation and transfer.

Finally, the basis of the trading system must be a realistic distribution of initial permits. A negative example is the RECLAIM programme in California, a emissions trading programme set up to reduce air pollution in the Los Angeles region. When launched, the amount of issued permits was much higher than the real emissions in the years before, which lead to the ridiculous situation that the price for a permit on the market dropped to 0 \$¹²². One might say that this does not matter if the total amount of permits drops in the following year. But this decrease starts from the initial level causing reductions of emissions only on paper. The artificially low prices reduce the incentives to invest in emissions reduction in time, which will have negative effects on the unprepared economy once the decrease will really require reductions.

The analysis shows that market based systems, if set up properly, have a chance to reduce greenhouse gas emissions significantly and at comparably low economic costs. Especially, unnecessary interference with business decisions of the operators can be prevented. However, it is also important to see the systematic limits of the instrument and to avoid mistakes in the implementation. Most importantly, an efficient system can only be run with a manageable number of participants.

¹²⁰ Richard Toshiyuki Drury ea “Pollution Trading and Environmental Injustice: Los Angeles’ Failed Experiment in Air Quality Policy” (1999) 9 Duke Environmental Law and Policy Forum 231, 251.

¹²¹ Denee A Diluigi “Kyoto’s So-called ‘Fatal Flaws’: a Potential Springboard for Domestic Greenhouse Gas Regulation?” (2002) 32 Golden Gate University Law Review 693, IV B 1.

¹²² Richard Toshiyuki Drury ea “Pollution Trading and Environmental Injustice: Los Angeles’ Failed Experiment in Air Quality Policy” (1999) 9 Duke Environmental Law and Policy Forum 231, 263-264.

Therefore, tradable permits are a good option for large industry with a substantive amount of greenhouse gas emissions. Here it is possible to set up an effective trading system and to achieve reasonable reductions of greenhouse gases. In other cases, especially involving private consumption inefficiencies and costs of the trading system will be too large, so that other regimes should have priority there.

C Eco-taxes

1 Description

Eco-taxes are a second market-based approach for the reduction of greenhouse gas emissions. Like in tradable permit systems the state does not demand specific action from a polluter but sets incentives for environmentally friendly behaviour. However, the mechanism of eco-taxes is exactly opposite to the permit systems. The operator of a permit system pre-defines the maximum amount of pollution and issues permits accordingly, leading to a certain price on the free market when traded. Eco-taxes directly change the price of pollution either imposed on the emission itself or on a polluting raw material, for example by increasing the price of petrol. On a free market this rise in price in most cases leads to a decrease in demand according to basic economic rules because less people are willing to pay the higher price or at least reduce their demand¹²³.

The tax adds at least some costs of pollution to the costs of production and reduces market failures, because of the free use of clean air and sends a social message that a certain behaviour is discouraged and is more expensive than before¹²⁴. The polluter has to recalculate his profitable production under the new circumstances. The final result is ideally that the costs that are normally borne by the society are now paid by the polluter himself (“social marginal costs”)¹²⁵. If he is able to pass the higher costs on to the consumer, the consumer will re-evaluate his attitude

¹²³ Horst Siebert *Economics of the Environment* (3ed, Springer-Verlag, Berlin, 1992), 131.

¹²⁴ Stephen M Johnson “Economics v Equity II: The European Experience” (2001) 58 *Washington and Lee Law Review* 417, 435.

¹²⁵ Richard A Westin *Environmental Tax Initiatives and Multilateral Trade Agreements: Dangerous Collisions* (Kluwer Law International, Dordrecht, 1997) 46-47.

towards the product according to the new price, which might lead to a reduced use of the polluting product¹²⁶.

There are two different options of eco-taxation: increasing taxes on environmentally unfriendly behaviour or granting tax subsidies for environmentally friendly behaviour. Early examples of both were the higher taxes on leaded fuel and temporary tax subsidies for the use of catalytic converters, that were applied successfully in Europe in the late 1980s and early 1990s¹²⁷. However, the liberalisation and a general bias against subsidies lowered the use subsidies in the last few years. Additionally, tax subsidies like direct subsidies always carry the danger of misallocations of resources if granted for more than a short transitional period^{128, 129}. This makes them unsuitable for a long-term control of greenhouse gas emissions. Therefore, this section will focus on eco-taxes in the form of higher taxes for polluting activities.

2 *Pros and Cons*

Like emissions trading, eco-taxes lead to a partial internalisation of external costs and an improved recognition of environmental costs within society. The price for the use of environmental resources is not the result of a market process but is defined by the state and, therefore, does not necessarily represent economic and environmental realities. It rather represents the government's belief of the appropriate price according to their policy preferences. However, the reaction to the increasing prices is in the hands of the operator of a polluting facility. This, corresponding to the mechanisms explained for tradable permits, prevents economic inefficiencies that occur in command-and-control systems, where all facilities have to

¹²⁶ Charles D Patterson "Environmental Taxes and Subsidies: What is the Appropriate Fiscal Policy for Dealing with Modern Environmental Problems?" (2000) 24 William and Mary Environmental Law and Policy Review 121, 134.

¹²⁷ Richard A Westin *Environmental Tax Initiatives and Multilateral Trade Agreements: Dangerous Collisions* (Kluwer Law International, Dordrecht, 1997) 35.

¹²⁸ Horst Siebert *Economies of the Environment* (3ed, Springer-Verlag, Berlin, 1992), 131.

¹²⁹ The success of the subsidies for cars with catalytic converters does not contradict this finding. The subsidies were granted only for three years in order to accelerate the introduction of cars with catalytic converters. If subsidies are granted over a longer time, this leads to a re-socialisation of costs that should be borne by the polluting individual.

act equally regardless of individual compliance costs. Also better results concerning technological innovation are possible, compared to command-and-control systems.

The major advantage of eco taxes compared to emissions trading is the comparably low level of control that is necessary¹³⁰. Whereas the state must supervise the compliance with imposed rules or the conditions of the permits in a command-and-control or tradable permit system, eco-taxes require no compliance control – just some spot checks to prevent tax fraud might be necessary, especially if the eco tax is based on the volume of emissions rather than use of raw materials. Therefore, eco-taxes are generally a very suitable instrument for areas of greenhouse gas reduction, in which a large number of sources exists, for example private households or individual traffic.

Another main argument for eco-taxes is the additional revenue for the state. Whereas formerly the revenue was supposed to be invested into environmental projects, recently even positive employment effects are sought with eco-taxation. According to the theory of the “double dividend” it is possible to use this additional money to reduce unemployment by investing it for a reduction of labour costs¹³¹. The existence of a double dividend, however, is already theoretically disputed. It is argued that the source of costs (labour or higher energy costs) is economically irrelevant and that eco-taxes rather shift employment from energy intensive sectors to services than create new employment¹³². Additionally, positive influences might be reversed when the revenue of the tax decreases with success on the primary environmental goal. This might require a further increase of the tax, a reversion of supporting measures for labour costs or higher public deficits¹³³. This theoretical dispute cannot be solved in this essay. However, even assuming that slightly positive employment effects are possible, there are implementation dangers as experiences with the German *Ökosteuer* show.

¹³⁰ Charles D Patterson “Environmental Taxes and Subsidies: What is the Appropriate Fiscal Policy for Dealing with Modern Environmental Problems?” (2000) 24 William and Mary Environmental Law and Policy Review 121, 135.

¹³¹ See for example Peter Bohm “Environmental Taxation and the Double Dividend: Fact or Fallacy?” in Tim O’Riordan *Ecotaxation* (St. Martin’s Press, New York, 1997) 106, 107, 121.

¹³² Peter Bareis/Thomas Elsner “Anforderungen an Lenkungssteuern und Beurteilung der ‘ökologischen Steuerreform’ aus ökonomischer Sicht“ (2000) DVBl 2000, 1176, 1180-1181.

¹³³ Peter Bareis/Thomas Elsner “Anforderungen an Lenkungssteuern und Beurteilung der ‘ökologischen Steuerreform’ aus ökonomischer Sicht“ (2000) DVBl 2000, 1176, 1180.

The German eco-tax was explicitly introduced in order to benefit from the double dividend¹³⁴. Labour costs should be lowered by investing the revenue into the national pension scheme that was suffering from demographic changes in the society. However, a tax is not able to cure permanent structural deficits of the system. Therefore, the costs for the pension scheme increased steadily and no positive second dividend was achieved. Even worse, the additional funding by eco-taxes was adjourns necessary structural reforms for a short while but the pressure within the systems gets bigger and bigger¹³⁵.

Furthermore, eco-taxes are likely to have negative social impact on a society due to the spending pattern of lower class and upper class people. Whereas upper class people usually have a fair amount of money available for free spending, lower class families usually spend a greater proportion of their income for heating, electricity and transport. Therefore, the proportional influence of an eco-tax is much higher and worse on lower class people¹³⁶.

Another danger is a loss of competitiveness, if the eco-tax is only introduced nationally as an additional burden without compensation in other areas. Linked to this is the evasion of industry into countries without the tax and possibly lower environmental standards¹³⁷. The German answer to this threat was the exemption of companies with the largest energy consumption¹³⁸. Of course, such an exemption is absurd keeping in mind the principle target of any eco-tax, the reduction of pollution. The correct answer on this threat is a common eco-tax approach in a number of states, for example the European Union.

¹³⁴ Johanna Hey "Fortführung der ökologischen Steuerreform – Übergang zur Routine?" (2000) Neue Juristische Wochenschrift 2000, 640.

¹³⁵ Johanna Hey "Fortführung der ökologischen Steuerreform – Übergang zur Routine?" (2000) Neue Juristische Wochenschrift 2000, 640: "Die erhoffte 'doppelte Dividende' wird zu einem Grossteil von den strukturellen Defiziten der Rentenversicherung aufgezehrt."

¹³⁶ Stephen M Johnson "Economics v Equity II: The European Experience" (2001) 58 Washington and Lee Law Review 417, 437.

¹³⁷ Peter Bareis/Thomas Elsner "Anforderungen an Lenkungssteuern und Beurteilung der 'ökologischen Steuerreform' aus ökonomischer Sicht" (2000) DVBl 2000, 1176, 1179. This problem is of great importance in Germany as evasion to countries in Eastern Europe is easy and environmental standards are generally still lower there than in Germany.

Finally, one problem of eco-taxes especially concerns climate change: the reduction effect of the increased tax is hard to quantify in advance. This means, it is difficult to find the right adjustment to fulfil the Kyoto targets without causing unnecessary costs for the economy¹³⁹. The effects of the tax are dependent on the elasticity of demand, an economic value that can be calculated theoretically, but always with quite a lot of factors of uncertainties¹⁴⁰. This depends on the availability of an appropriate alternative for the polluting behaviour in the eyes of the public. For example, a substitute for individual traffic is public transport but as long as people are not satisfied with service, price and reliability – which seem to be problems in New Zealand as well as in Germany – the elasticity of demand will be low. Additionally there are psychological aspects. If the price for polluting behaviour has already been high for a long time, as petrol prices in Germany, people tend to accept a certain further increase without changing their behaviour while rather showing general anger about the government.

Nevertheless, eco-taxes can be an effective measure for the reduction of greenhouse gases. Additional efforts might be necessary to promote environmentally friendly behaviour, for example better funding for public transport. The extra revenue could be used for these tasks, as spending in support of the ecological goal is likely to achieve the necessary support from public opinion, which is crucial for its success as it is visible in Germany these days¹⁴¹.

An investment in infrastructure or environmental cleanup projects also recognises the fact that revenues of the tax might decrease with the desired change of behaviour. On the other hand, the revenue should not be used to correct developments beyond the capacity of the government like demographic change or that create long-term obligations. It must be the goal to make the eco-tax fiscally neutral. This lowers the risk to be trapped between contradicting goals – environmental protection on the one

¹³⁸ Section 9 (3) StromStG; see Frank Drozda/ Bertine Storm “Die Stromsteuer – nur eine neue Verbrauchssteuer?” (1999) *Neue Juristische Wochenschrift* 1999, 2333, 2334.

¹³⁹ John A Barrett “The Global Environment and Free Trade: A Vexing Problem and a Taxing Solution” (2001) 76 *Indiana Law Journal* 829, 844.

¹⁴⁰ See only: Antonia Cornwell, John Creedy *Environmental Taxes and Economic Welfare* (Edward Elgar, Cheltenham, 1997) 5-6.

¹⁴¹ Wolfgang Streeck “High Equality, Low Activity: The Contribution of the Social Welfare System to the Stability of the Germany Collective Bargaining Regime” (2001) 54 *Industrial and Labour Relations Review* 698, Fn. 15.

hand that reduces revenues of the tax, and on the other hand long-term obligations that require increasing revenues from the tax.

Another question is, how to find a suitable base for the eco-tax. The easiest way is to impose a tax on used input units like petrol or energy. However, this is not the best approach in many cases. It only works, if there is certain congruence between input and emissions¹⁴². This is the case concerning carbon dioxide, why an input taxation for individual traffic by an increase of taxes on mineral oil is an acceptable approach. Therefore, one major source of climate change can be easily tackled with an input tax. If there is no congruence, only taxes based on the emissions output are able to reach a change of behaviour. An example is a tax on energy consumption where Germany gave another bad example. When introducing the *Stromsteuer* in 1999 it was imposed on energy from all, even renewable, sources¹⁴³. Therefore, there was no incentive to use renewable energy sources. Officially, problems in distinguishing the source of energy are the reason for the narrow exemption. However, this could be solved quite easily by taking the average rate of carbon dioxide emissions of a certain energy producer and applying the tax to this average rate¹⁴⁴. There are similar problems, where emissions can be reduced by abatement technologies (e.g. NO_x). The input based tax creates no incentive to use available abatement technology. This shows, that effective eco-taxes must be based on the emission output in most cases.

If some basic principles are obeyed, eco-taxes are a good opportunity to reduce greenhouse gas emissions especially in fields with a large number of sources. The effects of the Swedish carbon tax are a good example. According to studies the carbon dioxide emissions from heating, industry and housing decreased by 19 per cent between 1987 and 1994¹⁴⁵. However, it is important to create an output tax wherever possible and to be careful not to follow contradicting targets with the tax.

¹⁴² Peter Bareis/Thomas Elsner "Anforderungen an Lenkungssteuern und Beurteilung der 'ökologischen Steuerreform' aus ökonomischer Sicht" (2000) DVBl 2000, 1176, 1179.

¹⁴³ With some exceptions in § 9 (1) StromStG, which, however only cover energy from private installations that have no connections to the public electricity system, which is hardly ever the case.

¹⁴⁴ Peter Bareis/Thomas Elsner "Anforderungen an Lenkungssteuern und Beurteilung der 'ökologischen Steuerreform' aus ökonomischer Sicht" (2000) DVBl 2000, 1176, 1183.

¹⁴⁵ Roberta Mann "Waiting to Exhale?: Global Warming and Tax Policy" (2002) 51 American University Law Review 1135, 1210.

Preferably an eco-tax should also be implemented on a regional level, but this is not necessarily crucial for its success.

D Self-regulatory Regimes

1 Description

The least infringing approach towards emission control are self-regulatory regimes, that are usually based on voluntary commitments of polluters or agreements between the state and companies or industrial interest groups. Voluntary regimes have been implemented in several countries in the 1990s. Examples are an agreement in Denmark concerning CO₂ reduction by improving energy efficiency and a similar agreement in the United Kingdom¹⁴⁶. In 1998, even the European Commission made an agreement with the European, Korean and Japanese Automobile Manufacturers Associations¹⁴⁷. Usually, the industry makes a commitment to reduce greenhouse gas emissions – ideally in a quantified target – whereas the government refrains from imposing regulatory measures like taxes or command-and-control regulations. Often, the government threatens to take regulatory measures like eco-taxes if the voluntary agreement fails¹⁴⁸. This connection allows further pressure on the other party of the agreement to stick to their voluntarily agreed targets. Another voluntary instrument is self-certification, for example ISO EMS 14001, that leads to self-binding of the participating company but cannot be explained here¹⁴⁹.

2 Pros and Cons

The advantage of voluntary agreements is their low regulatory impact on business decisions. Like emissions trading and eco-taxes, voluntary agreements

¹⁴⁶ Patrick ten Brink, Marina Morère “Voluntary Initiatives to Address Climate Change in the EU” (2000) 10 *European Environment* 178, 186.

¹⁴⁷ Nuno S Lacasta/ Suraje Dessai/ Eva Powroslo “Consensus Among Many Voices: Articulating the European Union’s Position on Climate Change” (2002) 32 *Golden Gate University Law Review* 351, 387.

¹⁴⁸ Patrick ten Brink, Marina Morère “Voluntary Initiatives to Address Climate Change in the EU” (2000) 10 *European Environment* 178, 188.

¹⁴⁹ David Monsma “Sustainable Development and the Global Economy: New Systems in Environmental Management” (2000) 24 *Vermont Law Review* 1245, 1256.

usually do not force polluters to take any specific measures¹⁵⁰. Therefore, the companies can choose their measures to achieve the goal. Specific measures are only possible in agreements with single companies rather than interest groups that usually cannot act for their members concerning business details, but if they are part of an agreement they are likely to find sufficient support as business interest have been taken into account in the negotiations.

Furthermore, the participation of the industry in the definition of targets can lead to the development of a common interest or understanding that supports the implementation of the necessary steps. The informal setup procedure of these agreements – at least theoretically – allows the participation of other interest groups like Unions or environmental NGO's¹⁵¹ and, therefore, further input of possible solutions and problems.

The advantage for the state is that the voluntary agreements takes place outside the regular law-making process, which generally eases the burden from government and parliament¹⁵² and will become even more important if opposing majorities in one chamber of the parliament (for example in Germany or in the United States) make legislation difficult.

On the other hand, the flexibility and low interference with business interests is fraught with the drawback of non-enforceability. This means, that the range of possible sanctions are low. If a single company broke its promise, at least a stop of granted advantages for participation might be possible. If the agreement was negotiated with interest groups, the only possible consequence is the implementation of the threatened regulatory regime. However, this is likely to cause new problems as voluntary agreements are often set up because regulatory measures are considered to be inefficient or are opposed by important public players¹⁵³.

Finally, voluntary agreements can only be negotiated in certain fields of pollution control. Because effective negotiations are a condition for a successful

¹⁵⁰ See Figure 5: Patrick ten Brink, Marina Morère “Voluntary Initiatives to Address Climate Change in the EU” (2000) 10 *European Environment* 178, 188.

¹⁵¹ Patrick ten Brink, Marina Morère “Voluntary Initiatives to Address Climate Change in the EU” (2000) 10 *European Environment* 178, 184.

¹⁵² Stephen M Johnson “Economics v Equity II: The European Experience” (2001) 58 *Washington and Lee Law Review* 417, 443.

agreement, it is impossible to create an agreement with too many players involved. A condition is to have either an industry with only a few affected operators or a powerful industrial interest group as partner¹⁵⁴. However, the latter option will lead to a rather general agreement, as interest groups are usually not allowed to negotiate specific measures that affect business decisions of their members.

Therefore, voluntary agreements are unsuitable to reduce emissions where many sources are responsible for the pollution, especially not for automobile traffic and other private emissions. The most effective results might be achieved with only a few companies involved in the agreement – of course, this also lowers the impact of the agreement on the overall domestic emissions. If larger parts of the industry are involved by negotiating with interest groups, this necessarily leads to more general targets and probably less commitment of the single operator concerning the aims of the agreement.

Perhaps this is the reason, why many voluntary agreements fail to reach their desired aim. In order to reduce greenhouse gas emissions, for example, the Netherlands implemented a voluntary agreement with industrial associations in 1992¹⁵⁵. However, the Netherlands are still far away from reaching their commitments under the European Burden Sharing as greenhouse gas emissions increased from 1990 to 1999 by 6.1 per cent, compared to a reduction goal of 6 per cent¹⁵⁶ – most of the time the voluntary agreement was in force. Independent from greenhouse gas emissions, just recently, a voluntary commitment in Germany concerning throwaway packs for drinks failed, because the ratio of returnable packaging dropped drastically. As a result, the government has now introduced a deposit system on throwaway packs as it was threatened when the agreement was concluded in the 1990s. Especially without additional threat, voluntary problems often face compliance problems. This was experienced by George W. Bush as Governor of Texas, when he tried to reduce

¹⁵³ See Figure 4: Patrick ten Brink, Marina Morère “Voluntary Initiatives to Address Climate Change in the EU” (2000) 10 *European Environment* 178, 181.

¹⁵⁴ See Figure 4: Patrick ten Brink, Marina Morère “Voluntary Initiatives to Address Climate Change in the EU” (2000) 10 *European Environment* 178, 181.

¹⁵⁵ Patrick ten Brink, Marina Morère “Voluntary Initiatives to Address Climate Change in the EU” (2000) 10 *European Environment* 178, 179.

¹⁵⁶ See FN 68 and Patrick ten Brink, Marina Morère “Voluntary Initiatives to Address Climate Change in the EU” (2000) 10 *European Environment* 178, 189 – Table 2.

emissions from old-fashioned power plants with voluntary permits but just achieved a reduction of 0,01 per cent¹⁵⁷.

These practical experiences with voluntary agreements allow doubts about their long-term suitability for an efficient reduction of greenhouse gases.

E Evaluation

The analysis demonstrated that all possible measures have their individual advantages and disadvantages. But even if a measure is considered generally appropriate, it is important to avoid mistakes of implementation that might turn advantages into a problem or at least diminish positive effects.

The most efficient way to reduce emissions in big industries with few installations responsible for significant greenhouse gas emissions is a system of tradable emission permits. It has a manageable size under these conditions and makes a reduction of emissions possible with the least economic compliance costs. However, the analysis has shown that tradable permits are not suitable for the reduction of emissions from numerous smaller sources like individual traffic or household emissions. In these sectors, eco-taxes can play an important and efficient role. It may be useful to support the tax with a certain amount of command-and-control measures in order to accelerate technological changes, for example to get rid of inefficient heating systems up to a certain date. As the command-and-control regulation is only the minimum baseline, it must be made sure that the emission tax contains an incentive to go further than the command-and-control regulation¹⁵⁸. In some sectors, it can even be the best approach to focus totally on command-and-control mechanisms. This is the case if tradable permits are not suitable because of the number of sources and eco-taxes cannot be effectively used because no proper base of emissions can be found and an input tax would reduce incentives to use abatement technologies. However, the restrictions for the people should be as little as

¹⁵⁷ Thomas O McGarity "Jogging in Place: The Bush Administration's Freshman Year Environmental Record" (2002) 32 Environmental Law Reporter 10709.

¹⁵⁸ See illustration in Horst Siebert *Economies of the Environment* (3ed, Springer-Verlag, Berlin, 1992) 148.

possible. This means a preference of economic incentives wherever this is possible and reasonable. A good example for successful tax incentives is the introduction of unleaded fuel in Europe that was supported by tax advantages for people who used it.

Although the suitability of an instrument should be the key aspect, the attitude and socio-economic history of a country is also an important factor. Whereas the United States have a long tradition of liberal economic policies with as little state influence as possible according to the ideas of the Constitution of 1776, European countries have a long tradition of state bureaucracy and state care. This makes it much easier to find acceptance for command-and-control measures in Europe than in the United States, while many people in Europe might have a basic mistrust in the power of free markets and emissions trading. Japan, on the other hand, has a great variety of voluntary agreements, however concerning local environmental problems rather than climate change¹⁵⁹. However, the general acceptance of these regimes would also favour their implementation in other fields of environmental protection. These cultural differences will have a decisive impact if two measures possibly have similar chances of success. It is not sensible to push through a certain regime against the mentality and beliefs of the public. Resistance and, therefore, the failure of such policy would be guaranteed.

V *CONCLUSION*

The essay so far has analysed the key developments and results in the Kyoto Process on an international level as well as steps taken by regional organisations, especially the European Union, to tackle climate change. At the national level, different possible measures for the reduction of greenhouse gas emissions have been compared. It has been shown that the decision for one of these measures often depends on the circumstances in which regulation is needed and on general cultural preferences of a country.

¹⁵⁹ Patrick ten Brink, Marina Morère “Voluntary Initiatives to Address Climate Change in the EU” (2000) 10 *European Environment* 178, 184.

But the fight against global warming is not over – it has just started. Already in the near future important issues must be dealt with. Only a few can be mentioned in this essay. Nevertheless, it can be useful to develop some ideas about these issues.

A Future of the Kyoto Protocol

Although the criticism about the Kyoto compromise was strong and negotiations about details took a while, the Protocol is likely to come into force in 2003, as Russia is expected to ratify this spring. This prospect allows an outlook on issues that will be important in the next years. Two aspects will be discussed here, the position of the United States and the use of the international trading of overfulfilled reductions.

1 Position of the United States

As shown above, the United States is the most prominent opponent of the current Kyoto Protocol by persistently refusing to ratify it. The opposition is mainly based on four arguments,

- additional burdens and disadvantages for the domestic economy,
- no binding reduction targets for developing countries,
- scientific uncertainty about the scope of global warming and its effect on the United States economy and
- technological problems with the abatement of carbon dioxide.

Some of the arguments are appropriate. It is true that there will be additional short-term burdens for the economy for new technology. However, this should pay out sooner than later in a higher efficiency for the economy with higher competitiveness and profitability of the industry. The profits might even be higher than the direct costs for investments in new technology¹⁶⁰. Furthermore, a substantive

¹⁶⁰ Roberta Mann “Waiting to Exhale?: Global Warming and Tax Policy” (2002) 51 American University Law Review 1135, 1155.

part of the disadvantages will occur to old coal power plants that were supposed to run out but were recently revitalised by legislation allowing them exorbitant emissions compared to modern plants leading to a kind of unfair competition among different energy sources¹⁶¹. This indirect subsidies runs counter to the goal of a reduction of greenhouse gas emissions and should, therefore, be abandoned. Also the problem of missing targets for developing countries has been recognised and must be one of the key issues for following negotiations. But these problems do not justify obstructing the Protocol, which is an important first step.

Another common argument is scientific uncertainty, meaning that further detailed research about specific consequences is necessary before the United States should enter the agreement. US politicians regularly quote an IPCC report that predicts a massive raise of temperatures and sea levels until 2100, but cannot tell the exact volumes and says that regional predictions are difficult to establish (an increase of temperatures by 1.6 to 6.4 degrees F and rising sea level by 30 centimetres to a metre are predicted)¹⁶². These figures alone should give reason for concern as even a 30 centimetre rise will be the end for many South Pacific Islands and for some coastal areas in the industrialised world – or will at least cause enormous economic costs for additional and higher dikes. The US position is, therefore, hard to understand, especially considering the precautionary principle in global matters of this importance, especially as latest projections even see an increase by up to 10 degrees F with dramatic shifts in the global climate¹⁶³. This should be enough reason for all industrialised countries to take action before it is too late; especially as scientific evidence concerning human impact on climate change becomes stronger¹⁶⁴.

Even more problematic under the global scope of climate change are statements like this of Senator Murkowski:

¹⁶¹ Zoya E Bailey “The Sink that Sank The Hague: A Comment on the Kyoto Protocol” (2002) 16 Temple International and Comparative Law Journal 103, 118.

¹⁶² Frank H Murkowski “The Kyoto Protocol Is Not the Answer to Climate Change” (2000) 37 Harvard Journal on Legislation 345, 347-348.

¹⁶³ Christopher C Joyner “Burning International Bridges, Fuelling Global Discontent: The United States and Rejection of the Kyoto Protocol” (2001 Quentin Quentin-Baxter Memorial Lecture, Wellington, 31 October 2001) 33 VUWLR 27, 40.

¹⁶⁴ Christopher C Joyner “Burning International Bridges, Fuelling Global Discontent: The United States and Rejection of the Kyoto Protocol” (2001 Quentin Quentin-Baxter Memorial Lecture, Wellington, 31 October 2001) 33 VUWLR 27, 42.

“Because the United States might realize net positive benefits from a warmer, CO sub2-rich environment, however, it is difficult for politically attuned leaders to agree to risk America's economic growth in an effort to minimize the uncertain impacts of climate change¹⁶⁵.”

This argument might satisfy the American population but it is not a good basis for the solution of a global problem, where local effects should play a rather secondary role when international solidarity is required.

Also statements of George W. Bush demonstrate national pride rather than a serious basis for fighting global warming. Examples are his announcements that there is “incomplete knowledge of the causes [...] and solutions to global climate change and the lack of commercially available technologies for removing and storing carbon dioxide”, or that he would not sign an agreement that would “harm our economy and hurt our workers.”¹⁶⁶

Indeed, there is currently no abatement technology to remove carbon dioxide. But emissions can be avoided by using more efficient technology or alternative fuels. Another approach is to plant trees as carbon sinks as proposed by the United States. Afforestation surely reduces pressure on climate change and also offers positive side effects for life quality of the population¹⁶⁷. But it should be used parallel to reductions of emissions rather than instead of.

However, it is important to have a short look at the alternatives that the United States offers. Consistent with the claim of scientific uncertainty there are several research projects about the causes and effects of climate change, like the Climate Change Science Programme, established in 2002¹⁶⁸. This research, even on basic

¹⁶⁵ Frank H Murkowski “The Kyoto Protocol Is Not the Answer to Climate Change” (2000) 37 Harvard Journal on Legislation 345, 358.

¹⁶⁶ Cited in Christopher C Joyner “Burning International Bridges, Fuelling Global Discontent: The United States and Rejection of the Kyoto Protocol” (2001 Quentin Quentin-Baxter Memorial Lecture, Wellington, 31 October 2001) 33 VUWLR 27, 31.

¹⁶⁷ Roberta Mann “Waiting to Exhale?: Global Warming and Tax Policy” (2002) 51 American University Law Review 1135, 1175.

¹⁶⁸ Main questions to be researched in this programme are according to the Draft Strategic Plan for the Climate Change Science Programme, Version 19 November 2002, 4, 122, 123
<<http://www.climatescience.gov/Library/stratplan2003/ccspstratplan2003-11nov2002.pdf>> (last

questions, is probably necessary, but that should be an addition to the current Kyoto Process, not an alternative.

The larger US alternative project, however is the “Clear Sky Initiative” that was launched in February 2002 and was announced as the “most aggressive in American history to cut power plant emissions, [and a] bold new strategy for addressing global climate change“¹⁶⁹. Besides more funding of scientific programmes it contains some reduction targets, namely 73 per cent of sulphur dioxide, 67 per cent of nitric oxide and 69 per cent of mercury emissions from a 2002 baseline, mainly by using market-based approaches (“cap-and-trade”) – but only concerning emissions from electricity plants¹⁷⁰. This part of the programme reveals several problems. First of all the very limited scope, especially taking into account, that electricity plants are in the Acid Rain trading programme anyway. Furthermore, it addresses the wrong emissions concerning climate change, as only nitric oxide has indirect influence on climate change, whereas mercury and sulphur dioxide are the problems of general air pollution. The most dangerous greenhouse gas, carbon dioxide is intentionally not included¹⁷¹. Therefore, this part of the programme is not an alternative to the Kyoto Protocol at all.

The second pillar of the initiative is the voluntary reduction of the so-called “greenhouse gas intensity” by 18 per cent in ten years¹⁷². The greenhouse gas intensity is defined as the ratio between greenhouse gas emission and the GDP. The problem is, that this does not guarantee a real reduction of greenhouse gas emissions. It rather legitimises further increases. This results from the combination of emissions with the GDP. If the GDP grows stronger than the emissions, the greenhouse gas intensity decreases. This can be proven with the development in the United States in

accessed 2 March 2003): The extend to which global temperatures have in fact changed and whether most of the observed overall change of temperatures of the last 50 years is attributable to human activities; how do humans and human societies drive changes in the global environment? How do humans respond to global environmental change?.

¹⁶⁹ The White House <<http://www.whitehouse.gov/infocus/environment/>> (last accessed 2 March 2003).

¹⁷⁰ Thomas O. McGarity “Jogging in Place: The Bush Administration’s Freshman Year Environmental Record” (2002) 32 Environmental Law Reporter 10709.

¹⁷¹ Christopher C Joyner “Burning International Bridges, Fuelling Global Discontent: The United States and Rejection of the Kyoto Protocol” (2002) 33 VUWLR 27, 47.

¹⁷² The White House <<http://www.whitehouse.gov/infocus/environment/>> (last accessed 2 March 2003).

the 1990s. Whereas the “greenhouse gas intensity” was reduced by 1.6 per cent per year, the real greenhouse gas emissions increased by 15 per cent¹⁷³. The protection of global climate needs real reduction of greenhouse gases, not only a ratio containing greenhouse gas emissions. Therefore, the Clear Sky Initiative is not capable of supporting this goal. It is estimated that the Clear Sky Initiative will in fact lead to a “significant increase of more than 30 per cent above 1990 levels” by 2012¹⁷⁴. This would mean a 37 per cent fail of the target in the Kyoto Protocol, which is even worse considering the 25 per cent share of the United States in carbon dioxide emissions. These 37 per cent are pretty close to the gap that opponents of the Kyoto Protocol see between the Kyoto targets and the situation without any change of greenhouse gas policies, namely 40 per cent¹⁷⁵. This supports the assumption that the Clear Sky Initiative is mainly a device to justify doing nothing while the world will be suffering even more¹⁷⁶. Additionally, the shift of the baseline from 1990 to 2002 consolidates the enormous increase of greenhouse gas emissions by 15 per cent in the 1990s.

Nobody forces the United States to use a specific instrument to reduce greenhouse gases. They can use their preferred tradable permits wherever they want. The important factor is, that in the end there must be a significant reduction of greenhouse gases – and this is the point that the Clear Sky Initiative cannot provide. Therefore, the United States has no real alternative to the Kyoto Protocol and should, therefore, rejoin the rest of the world in the Kyoto process. This is even more important if the Kyoto Protocol comes into force since it would not be binding on the United States unless they ratify the Protocol¹⁷⁷. With a responsibility for 36.1 per cent¹⁷⁸ of the emissions from industrialised countries the effect of the Kyoto Protocol would be dramatically diminished if the United States did not commit themselves

¹⁷³ Christopher C Joyner “Burning International Bridges, Fuelling Global Discontent: The United States and Rejection of the Kyoto Protocol” (2002) 33 VUWLR 27, 48 (Fn 69).

¹⁷⁴ USA Today “European Union ratifies Kyoto Protocol” 31 May 2002: <<http://www.usatoday.com/news/healthscience/science/climate/2002-05-31-kyoto.htm>> (last accessed 27 February 2003).

¹⁷⁵ Frank H Murkowski “The Kyoto Protocol Is Not the Answer to Climate Change” (2000) 37 Harvard Journal on Legislation 345, 345-346.

¹⁷⁶ Christopher C Joyner “Burning International Bridges, Fuelling Global Discontent: The United States and Rejection of the Kyoto Protocol” (2001 Quentin Quentin-Baxter Memorial Lecture, Wellington, 31 October 2001) 33 VUWLR 27, 47.

¹⁷⁷ John O’Brien *International Law* (Cavendish Publishing, London, 2001) 340.

¹⁷⁸ UNFCCC <http://unfccc.int/resource/kpthermo_if.html> (last accessed 28 February 2003).

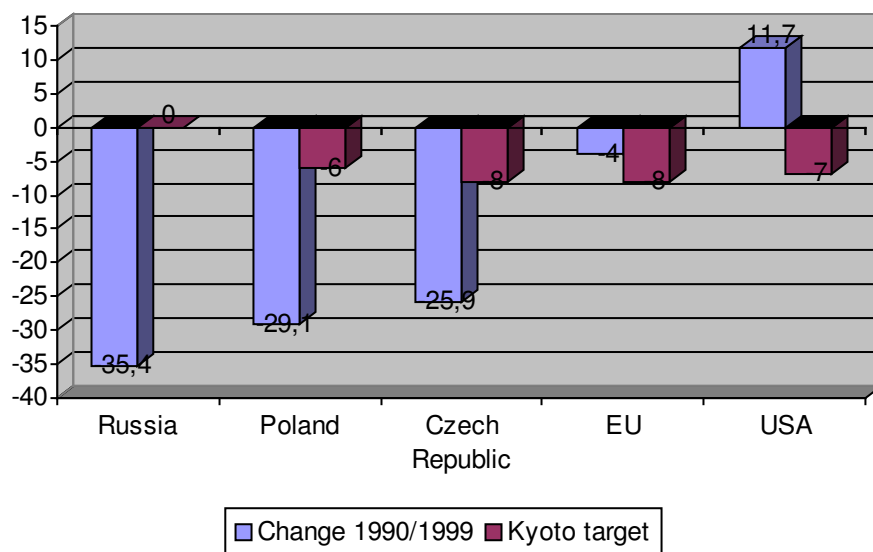
towards the reduction of greenhouse gases or even continue their policy of increasing total emissions as intended by the Clear Sky Initiative. It is another question whether the United States under these circumstances would violate their obligation not to defeat the object or purpose of the Protocol that they signed¹⁷⁹ by continuously increasing domestic greenhouse gas emissions, although they are surely not bound by every detail of the Protocol, especially specific reduction targets. However, this problem cannot be discussed here.

2 Trading of unused national emission units

A second issue is the opportunity to trade unused emission units to other nations that are parties to the Kyoto Protocol as discussed in detail in Marrakesh. This procedure is based on the idea of a joint achievement of the Kyoto targets and gives a chance to co-operate for the global aim. Therefore, trade of emission units is a useful element within limits as it allows adjustments to unforeseen short-term events that lead to temporary increase or decrease of emissions in a country. The question is whether unlimited trading should be allowed. This can have undesired effects, especially in case of extreme emission decreases in one country. A good example is Eastern Europe after 1990. Because of the transformation and breakdown of their economies many countries in the area, especially Russia, “overfulfilled” their obligation as displayed below¹⁸⁰:

¹⁷⁹ Article 18 Vienna Convention on the Law of Treaties; see: John O’Brien *International Law* (Cavendish Publishing, London, 2001) 334.

¹⁸⁰ Source: German Federal Environmental Ministry, Bundesumweltministerium <<http://www.bmu.de>> (last accessed 28 February 2003).



It is estimated that the Kyoto targets of the whole world would be already fulfilled if Russia and Eastern Europe traded all their overfulfilled obligations¹⁸¹. Therefore, unlimited trade of emissions between countries is problematic. It eliminates potential additional reductions for the fight against global warming. The wording of Decision 15/CP.7 must be taken serious¹⁸² and measures must be developed accordingly that require a significant domestic reduction and make trading options really only supplemental.

Looking to the future when developing countries will become subject to the reduction scheme, another danger must be taken into account. Developing countries could jeopardise their development prospects by selling so many emission units as an easy source of revenue that the remaining permits are not enough for domestic industrial development¹⁸³. It will be one predominant task of negotiations to elaborate suitable restrictions to prevent both perils.

¹⁸¹ German Federal Environmental Ministry, Bundesumweltministerium <<http://www.bmu.de>> (last accessed 28 February 2003).

¹⁸² UNFCCC <<http://unfccc.int/resource/docs/cop7/13a02.pdf>> (last accessed 28 February 2003).

¹⁸³ Todd Adams "Using Justice as Fairness in Reducing Global Greenhouse Emissions" (2001) 16 *Journal of Environmental Law and Litigation* 331, 375.

3 Final remarks

Already these two points show that, although the Kyoto Process approaches its formal end, there is still a lot to do in the fight against climate change. Problems of the current system must be evaluated and if possible solved, especially concerning participation of developing countries. But on the other hand, even popular ideas like international emissions trading must be well considered before they are implemented. Only a cautious approach that takes into account potential problems can help to avoid problems right from the beginning.

B Current Issues for Domestic Implementations

It has been shown that the implementation of national measures against greenhouse gases faces significant challenges. Besides questions of general efficiency, cultural issues like preferences in the public opinion and circumstances of the specific case must be considered before an instrument is chosen.

Questions of efficiency and cultural problems might also influence problems concerning the international setup of instruments on a larger scale. Some authors propose a general and worldwide trading system of emission permits. In this system fuel producers instead of end consumers would participate in the trading system to reduce numbers of participants¹⁸⁴. However, the idea faces serious problems, as fuel producers are not directly responsible for most of the emissions. This means that the subjects responsible for emissions are different from those who make the economic decisions within the trading system. More importantly, a substantive part of greenhouse gases, especially in developing countries, originate from little sources that are beyond the control of fuel producers and would, therefore, be outside the scope of the system. Therefore, the most likely result of such a system would be nothing, but an increase in fuel prices. However, this effect could be achieved more easily and cheaper by using eco-taxes. Therefore, it is necessary to adjust the measures for emission control to the national conditions of each country or region

¹⁸⁴ Jennifer Yelin-Kefer "Warming up to an International Greenhouse Market: Lessons from the US Acid Rain Experience" (2001) 20 *StanEnvtlJ* 221, 242, 259.

and find an efficient mix. Probably, a number of smaller scale projects will have better effects than a giant worldwide system.

Whatever regime is finally elected in a country, the measures taken should always be considered in a larger context. Even if the primary goal is the reduction of greenhouse gases, it is important to consider effects on other environmental fields, especially possible evasions that might cause harm to other parts of the ecosystem.

Good approaches in this context are the IPPC in the European Union, which was already explained above, and the New Zealand Resource Management Act (RMA), that enables an integrated approach of environmental protection and replaced a number of previous Acts. The integrated multi-media approach is already expressed in the aims of the Act¹⁸⁵:

- sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations;
- safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- avoiding, remedying, or mitigating any adverse effects of activities on the environment.

The integrated approach not only covers all kinds of pollution it also guarantees a harmonisation of national legislation and avoids burdens for people and economy by a number of different unaligned pieces of legislation.

Under the Resource Management Act, responsibilities for the implementation are shared between national, regional and District authorities. Whereas the national authorities mainly create general guidelines for environmental development, that constitute minimum requirements for subordinate authorities, and are responsible for the monitoring of the implementation at lower levels, specific regulations are set up by the Regions, especially in Regional Plans, and the District authorities.

¹⁸⁵ Section 5 (2).

The key principle in the national Act is the sustainable management of natural resources¹⁸⁶ - without specification on one kind of pollution. On the contrary, the RMA is designed to link different fields of pollution control as well as the different responsible agencies in order to harmonise aims and measures and to prevent negative interactions¹⁸⁷.

The more specific measures are contained in the several Regional Plans. Here, regional authorities can make rules to tackle the most urgent problems in their area. However, this power of the regional councils led to different developments in different parts of the country. Whereas Canterbury that has regular problems with winter smog elaborated a dense pattern of rules¹⁸⁸, including timetables for monitoring and review¹⁸⁹, the Regional Plan of the Wellington Region that has hardly any air quality problems because of the strong winds only contains quite general statements concerning the prevention of air pollution¹⁹⁰. This is no problem concerning local air quality problems, but the evaluation changes for the reduction of greenhouse gas emissions that is also an aim of the RMA. As it does not matter where these emissions originate from, it would be useful to introduce a rule into the Resource Management Act that provides for mandatory measurable targets for the reduction of greenhouse gases in a Regional Plan. Although New Zealand is allowed to maintain the 1990 level of greenhouse gas emissions according to Annex B of the Kyoto Protocol, which was ratified by New Zealand in December 2002¹⁹¹, it still requires a reduction of 17 per cent from the current amount of carbon dioxide emissions¹⁹². Therefore, national rules to ensure the fulfilment of this obligation, besides the work on a domestic greenhouse gas emissions market¹⁹³, will be necessary. In this context it should be appreciated that the government's "Preferred Policy" contains a plan to reduce the responsibility of local authorities for the

¹⁸⁶ Section 5.

¹⁸⁷ Tony Randerson "Resource Management Act 1991" in David A R Williams (ed) *Environmental and Resource Management Law* (2ed, Butterworths, Wellington, 1997) 55, 61, 63.

¹⁸⁸ Proposed Canterbury Natural Resources Regional Plan, 1 June 2002, Section 3.

¹⁸⁹ Proposed Canterbury Natural Resources Regional Plan, 1 June 2002, 3-183, 3-211, 212.

¹⁹⁰ Regional Air Quality Management Plan for the Wellington Region, 8 May 2000, 34-35.

¹⁹¹ Paul Radich "Kyoto and the Emission Trading Market" (2001) 2001 NZLJ 463.

¹⁹² Department of the Prime Minister and Cabinet *Climate Change – The Government's Preferred Policy Package*, April 2002, 8.

¹⁹³ See Paul Radich "Kyoto and the Emission Trading Market" (2001) 2001 NZLJ 463-466.

reduction of greenhouse gases and to concentrate competencies on a national level¹⁹⁴. Although it is generally preferable to keep specific decisions on a level as close to the problem as possible (“subsidiarity”), the global problem of global warming needs national coverage, because local authorities might be lacking enough consciousness of the problem from their local view. Nevertheless, also a national coverage of climate change issues should not abandon the integrated approach of the RMA. Therefore, the implementation of national rules must be considered carefully. The government’s opinion expressed in an *Enquiry into the Role of Local Government in Meeting New Zealand’s Climate Change Targets* of 2001 that government “does not see RMA controls and the mechanisms as being cost-effective for managing greenhouse gas emissions” and that “climate change (...) should (...) be dealt with consistently on a national level”¹⁹⁵ should not lead to a dropping out of the integrated approach. Greenhouse gases are part of the scope of the RMA and should be dealt with within this framework. If necessary, special rules and procedures with more national competencies must be added to the established mechanisms in order to achieve the best results. But also climate change issues are best tackled if considered in conjunction with other kinds of pollution.

C Final Remarks

The analysis shows, that 30 years after Stockholm, the problem of climate change is tackled globally, regionally and nationally. However, there are considerable differences among the states concerning the recognition of the serious nature of the problem and the necessary steps. At the international level a joint effort of the world is required to get the United States back into the boat in order to save the goals of the Kyoto problems. Their alternative Clear Sky Initiative is unsuitable to guarantee any reduction of greenhouse gases and is, therefore, no alternative to the targets negotiated under the Kyoto Protocol. However, further negotiations about global warming will have to face the inclusion of developing countries into a system of binding reduction targets in order to provide an effective international framework.

¹⁹⁴ Department of the Prime Minister and Cabinet *Climate Change – The Government’s Preferred Policy Package*, April 2002, 11-12.

¹⁹⁵ *Environmental Defence Society (Incorporated) v Auckland Regional Council* (6 September 2002) Environment Court Auckland, A183/2002, R G Whiting J/ R F Gapes/ J Kearney, para 18 (v).

Therefore, the Kyoto Protocol must not be understood as the end of the process. It was just the first step towards the protection of global climate – exactly what it was designed to be.

At the national level, serious efforts will be required in many countries to fulfil their obligations under the Kyoto Protocol and to generally reduce greenhouse gas emissions. It is time to stop the sometimes ideological debate about the right measures against pollution. Of course, every country has a priority of certain measures – but the first criterion must be the efficiency in the specific situation. All other aspects are of secondary nature. All possible measures have their advantages but also their limits and it is important to recognise both sides. A useful further step will be to integrate the fight against climate change into an overall strategy of pollution control. The first good steps have been taken in several countries. But this cannot be the end of the efforts. It must be the basis for even stronger steps for the protection of the global climate.

There is still a lot to do!!!

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