

1. Introduction

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The discovery of the ozone hole over Antarctica in 1982 and its subsequent connection to the production and use of Chlorofluorocarbons (CFCs) represented an important link between industrialization and its impact on the global environment. Today, the debate over how best to manage the interplay between trade, industrialization and their impacts on our global environment (known as the trade–environment debate) is commonplace in the academic and popular press. Much of this debate has been concerned with the scientific evidence on the impact of industrialization on the environment, the economic evidence concerning the creation of wealth and its impact on the demand for a cleaner environment, and the ethics concerning how burdens should be shared by industrialized and developing nations. Given the multiplicity of issues and perspectives, this debate could be endless.

The 1997 Kyoto Protocol has brought some immediacy to the trade–environment debate. The Protocol, concerning the reduction of greenhouse gas emissions, placed in a specific context all of the issues of the general debate. The European Union nations became the chief advocates of the Protocol, while the United States, under the administration of George W. Bush, became its chief opponent. A sufficient number of nations have pledged to ratify the proposal, and a number of nations are presently debating ratification.

Even if the protocol fails the ratification stage, it is unlikely that the European Union will abandon its greenhouse gas emission reduction targets.¹ Thus, the situation now faced by the European Union (EU) provides us with a concrete example of how policy must be developed in order to constrain the impact of industrial production on the natural environment while at the same time ensuring acceptable rates of economic growth. Indeed, in the context of the trade–environment debate, the European Union provides us with a microcosm of the world. With the accession of Central and Eastern European (CEE) countries to the EU, the union now contains both developed and industrializing nations. As such, EU policy must adapt to the different realities of these two types of economies.

In the initial phases of the Protocol, the EU might benefit from their industrializing members. The collapse of the Soviet Union, and the subsequent collapse of CEE economies, means that those economies are likely to produce fewer emissions than their targeted levels. This should ease the burden on the developed EU economies, which are already exceeding their targeted emissions levels. The Protocol, however, is simply an initial step in achieving what scientists argue are required emissions reductions. Consequently, the pressures of rapid economic development and continued development of large economies, in the face of a goal to reduce their environmental footprints, must be met by EU policy.

This volume contains a series of essays that deal with numerous issues in the trade–environment debate, with a particular focus on EU enlargement. Two non-EU-based perspectives, American and Russian, are included as well. The papers in this volume have been selected from several papers presented at the Fondazione Eni Enrico Mattei (FEEM) in Milan, Italy in the summer of 2002 in two workshops on Trade, the Environment and Carbon Flows in Europe. The sessions, co-sponsored by FEEM and the Centre for European Integration Studies (ZEI) in Bonn, Germany, produced lively debates and important feedback for the presenters. The papers selected for this volume have been revised and updated so as to incorporate this feedback and incorporate present policy conditions. The book begins with articles from two prominent American scholars who present each side of the debate over the Kyoto Protocol. With this debate firmly in mind we turn, in Part II, to a review of the broader trade–environment debate by undertaking a critical analysis of the interplay between current World Trade Organization (WTO) and EU economic policies and how those strategies conflict with courses of action aimed at environmental protection. In Part III we focus on the economies of the EU accession countries. Several articles provide an economic and environmental history of these economies, while others provide policy suggestions regarding how EU policies and actions can best strike a balance between necessary environmental improvements while at the same time promoting trade and economic development. Part IV is devoted to three papers detailing various impacts of economic transition on environmental institutions, policies and outcomes of CEE nations and Russia. While not an EU member, Russia will play an important role *vis-à-vis* the EU in the area of trade and the environment. As a means of meeting its Kyoto obligations, it is likely that the EU will rely on imports of natural gas from Russia. Recent large investments from EU energy companies, most prominently BP, will help to fully develop Russia's energy potential. In addition, the Soviet collapse has left Russia producing greenhouse gas emissions that are well below its Kyoto targets. While reliance on foreign nations to meet one's own national Kyoto obligations,

through the use of, say, tradable emissions credits, is less popular in the EU than with other large greenhouse gas emitting nations (such as the US, Canada, Australia and Japan), reliance on Russia's 'emissions gap' may grow in popularity if internal solutions fail and if targets become more stringent. The final paper in this volume, however, offers a warning in this regard. In Russia the financial attractiveness of the Protocol is fading, and with it the chances of ratification. Finally, the precarious state of Russia's environment is of great importance to the EU as Russia is now a neighbouring country. This fact is illustrated by the general unease within the EU at suggestions that Russia may engage in the development of nuclear power generating facilities along its western boarder in order to free up natural gas reserves for sale to EU nations.

THE TRADE-ENVIRONMENT DEBATE IN CONTEXT: THE US DECISION ON KYOTO

The first two chapters in this volume provide different American perspectives on the US government's decision not to support the Kyoto Protocol. The chapters are included in this volume since they help to illustrate, in context, the broader debates over the science and economics of environmental policy and its interplay with economic development.

In his chapter, Richard N. Cooper outlines the case against the Kyoto Protocol. After stating that the Bush administration's decision not to participate in the Protocol was unnecessarily vague, he goes on to argue that failure of the Protocol would constitute no great loss for society. In short, Cooper argues that the Protocol is flawed in several aspects, including its limitation on participants, its vagueness concerning the means by which nations should achieve their goals, and the fact that the Protocol's design delivers short-term political costs with gains occurring only over the longer term.

Cooper begins his condemnation of the Protocol by noting that the problem of global warming is, as its name suggests, global in scope. He argues that the problem must be tackled globally, and is particularly critical of the exemption of larger developing countries such as China and India from the Protocol. He argues that in its present form the Protocol is weak and unlikely to contribute significantly to solving the global warming problem. Next, he argues that at the time of the supposed entry of developing nations into the Protocol, they will surely demand further concessions, further weakening it.

The vague nature of the Protocol is noted in relation to supposed markets for tradable emissions permits. At present it is unclear who the

participants in these markets will be. Will they be national governments or the multitude of firms residing in the nations that sign the Protocol? If it is the latter, how will trade between firms be monitored and required emissions reductions be appropriately enforced? The imposition of a trading system also brings to light problems with excluding some nations from the Protocol. It may be the case that trade involving firms residing in nations that are non-signatories is the most efficient course to achieve greenhouse gas emissions reductions. Other problems associated with any possible trading system include how to deal with firms that have been grandfathered into the system and then go bankrupt.

Cooper closes by suggesting the alternative approach of having nations commit to actions rather than targets. In particular, he suggests a universal agreement to impose a carbon tax. Although nations may face differing degrees of opposition to such a tax, Cooper argues that taxes carry the political benefit of generating short-term gains for governments in the form of general revenues. The idea of a common carbon tax could then be extended to other greenhouse gasses such as methane. Finally, Cooper notes that in light of the fact that some nations may fail to pass taxes on greenhouse gasses, all nations should position themselves for adaptation to climate change in the event that the world fails to coordinate sufficient actions to avoid impending global warming.

Jeffrey A. Frankel defends the Clinton administration's version of the Kyoto Protocol in dealing with global warming through his own experiences as a member of President Clinton's Council of Economic Advisers on global climate change. He starts with the scientific evidence (for example, the IPCC report) showing that the Earth is getting warmer, and argues that the approach to addressing global climate change must be multilateral due to the free-rider problem.

Frankel then reviews the specific US principles upon which the Clinton administration's proposal presented at the third conference of the UN Framework Convention on Climate Change (UNFCCC) in 1997 in Kyoto were based. First, he believes that the traditional cost-benefit methods such as Integrated Assessment Models and Business as Usual path were constrained in the Kyoto Protocol application, because of tremendous uncertainties involved in any model and difficulty in assigning probabilities on catastrophic scenarios. The economists at the Council of Economic Advisers used estimates by Alan Manne and Rich Richels and found that the most efficient paths involved heavy cuts below current levels of emission only in the second half of the 21st century.

Second, Frankel notes the importance of the political environment in which the Kyoto Protocol was set up. Any US policy to address climate change has to contend with four political chasms: (1) the gap between

environmentalists and the Congress in understanding the climate change issue and willingness to bear some economic costs to address it; (2) the gap between the US and the European Union; (3) the gap between the US and developing countries; and (4) the chasm between engineers and economists.

Third, Frankel emphasizes the flexibility mechanisms embedded in the Kyoto Protocol, namely, 'when flexibility', 'what flexibility' and 'where flexibility'. 'When flexibility' refers to the fact that countries are allowed to average over the five years of the budget window (2008–12) and to bank any reductions beyond the target for future budget periods. 'What flexibility' implies that individual numerical targets for six different gases were replaced by a numerical target of a linear combination of the six. 'Where flexibility' is the most contentious issue. It loosened the constraint regarding within whose borders physical reductions in emissions occurred. Specifically, it allowed international trading of emission permits, and includes developing countries.

Fourth, Frankel explains the Council of Economic Advisors (CEA) estimates of the economic costs of the policy to show the legitimacy of allowing the international trading of emission permits. Lastly, he explains why the Kyoto Protocol set quantitative targets rather than relying on the price mechanism: the price mechanism is not politically feasible.

TRADE AND ENVIRONMENT POLICIES

Part II contains three chapters. The first two chapters offer overviews of the interplay between supranational policies governing international trade, and supra- and subnational policies governing environmental protection. The final chapter offer theoretical investigations of this policy interplay.

Charles Perrings examines the linkage between trade and environmental policies, and the role of harmonization of environmental policy. From the discussion, useful implications about trade and environmental policies in the enlarged EU and WTO are provided.

Perrings first reviews the literature on the linkage between trade and environment. In particular, the author discusses a strand of literature which explores the impact of trade liberalization on the environment. The common view is that as a result of the composition effect, liberalization of global markets is environment-improving. The counter-argument, that liberalization increases environmental damage, is also presented. Perrings claims that the impact of trade liberalization is an empirical question, and that it depends on people's preferences between environmental quality and consumption possibilities.

Perrings then considers the importance of country differences. Differences in economic structures, income levels, labour market conditions, technological development and environmental resource endowments create an incentive to negotiate the linkage between environmental institutions and trade pacts, given that environmental policy may be used as a surrogate for trade policy in place of subsidies or tariffs.

Next, the discussion focuses on issues related to coordination, harmonization and subsidiarity within the EU. In particular, the characteristics of the Sanitary and Phyto-Sanitary Measure (SPS) and Article XX measures associated with trade pacts are considered. Perrings indicates that harmonization of environmental policy is driven by a trade agenda, and that it will be inefficient if environmental conditions and preferences are different between different locations. Harmonization also tends to be incompatible with the subsidiarity principle. Coordination of policy, instead of harmonization, is needed in the above setting.

The above arguments are illustrated by a particular problem, the problem of invasive alien species (IAS). Perrings uses the specific case of foot-and-mouth disease (FMD) to extend the discussion on the linkage between trade and environmental policy.

The chapter concludes that it is inappropriate for environmental policy to be driven by trade policy. Harmonization induces an inefficient and environmentally inappropriate use of local resources in that it ignores local conditions and local preferences. Perrings claims that it would be a mistake, for both economy and the environment, to apply harmonization to countries with very different socio-economic and environmental conditions across the enlarged EU.

In Chapter 5, Alexey Vikhlyaev examines how various trade measures relate to domestic health, safety and environmental protection policies in the context of a multilateral trading system and regional integration arrangements. Based on the discussion, he provides valuable recommendations for policy makers.

First, he reviews broad issues concerning trade measures for environmental purposes in the WTO and EU. In general, not only do international instruments address risk, lack of certainty and action, but also regional integration agreements incorporate the notion of precaution in situations of uncertainty.

In detail, he reviews issues related to two core trade and environment concerns in both the WTO and the EU: (1) different balance between market access, and (2) environmental protection and regulatory tensions between jurisdictions with differing environmental standards. In particular, he focuses on domestic, extra-jurisdictional and institutional aspects of trade and the environment in the WTO and the EU.

WTO, Article XX, the SPS and the Technical Barriers to Trade (TBT) determine the levels of domestic health, safety and environmental protection. The evolution of these three sets of rules is also discussed with applications. The discussion of extra-jurisdictional activities deals with the scope of trade measures for environmental purposes. Finally, the WTO institutions have very limited directives on domestic health, safety and environmental protection, and the relationship between the provisions of the multilateral trading system and trade measures for environmental purposes. Conflicts in the process of trade–environmental rule making between developed and developing countries are specified as well.

The EU adopts similar rules to restrict imports from other member states that do not comply with domestic levels of health, safety and environmental protection. In contrast to the WTO, the EU offers upward harmonization of domestic standards at a high level of protection. The EU also goes further than the WTO on extra-territorial activities and provides a regime of minimum production process or methods standards (PPMs) and a large number of directives to address air, water, waste and chemicals. Furthermore, the absence of a unanimity requirement contributes to better environmental standards and harmonization in the EU, compared with the WTO.

In conclusion Vikhlyaev argues that trade and environmental rule making is a function of economic integration that cannot succeed without each other. The comparative discussion on trade and environmental issues within the GATT/WTO and the EU indicates a rationalization of trade and environmental rule making.

Savas Alpay explores the Porter hypothesis, which has not been given much credit in the academic environmental economics literature. The Porter hypothesis concerns the relationship between environmental regulations and international competitiveness of the domestic firms subject to higher environmental standards. Specifically, it argues that environmental regulation can augment regulated firms' international competitiveness under the conditions that these firms engage in innovation and that the environmental regulation is incentive-based. This view is contrasted to the conventional one that claims stricter environmental regulations at home have an unambiguously negative effect and regulate firms' international competitiveness.

Alpay's theoretical work is of interest because the considerable amount of empirical work in this literature has not been able to generate evidence for either of these two views. Alpay presents a two-country model which incorporates a Tradable Emissions Permit system as the environmental regulatory regime. He starts with a closed economy, where two Cournot-oligopolists produce a good that causes pollution. In such a model, firms

subject to stricter environmental regulation can offset regulatory costs through innovation and/or permit revenues by abating more and selling extra permits, conditioned on the features of the permit market, such as the price elasticity of permit demand and firms' R&D behaviour. For example, if the permit market is sufficiently inelastic and investment in R&D results in innovation with some known probability, stricter policy may lead to increased competitiveness for the regulated firms.

Alpay extends the model into the open economy case where there is a second country with two Cournot-oligopolists producing the same good. He presents the conditions for when regulation decreases international competitiveness (the conventional view) and when it does not (the Porter hypothesis). Similar to the closed economy case, the main determinants are the probability of innovation, the cost of R&D, returns to innovation and the price elasticity of permit demand.

ENVIRONMENTAL POLICY CONCERNS IN THE CONTEXT OF EU ENLARGEMENT

In Part III we examine the trade–environmental debate in the context of EU enlargement with a particular emphasis on how development and environmental policies will impact economic growth and environmental conditions in CEE accession countries.

Onno J. Kuik and Frans H. Oosterhuis examine how the accession of Greece, Spain and Portugal to the EU in the 1980s affected their natural environment. Their analysis helps us understand the impact of present-day eastern enlargement of the EU upon entrants' environment, since certain economic and environmental characteristics of Greece, Spain and Portugal were comparable to these new entrants from CEE countries.

In analysing the environmental dimensions of southern enlargement, Kuik and Oosterhuis focus on the impact of the economic changes that took place in Greece, Spain and Portugal after their accession to the EU. Specifically, the authors analyse the changes in foreign trade, the composition of agricultural production, the share of agriculture in GDP and employment, and foreign direct investment.

The authors use the framework often used in studies of the impacts of trade liberalization on the environment and decompose the environmental effects into scale, composition and technique effects. The authors find, first, that the opening-up of trade raised the levels of economic activity in these countries, which led to growth in transport and air pollution. Second, trade liberalization affected the relative prices of final and intermediate goods in different sectors to such an extent that capital and labour may

be induced to shift between sectors, thereby affecting the structure or composition of industry within these countries. Moreover, rising incomes and more consumption goods from the EU have affected the spending patterns of households in these countries. Finally, trade liberalization influenced production methods. All three countries exhibited improvements in the technical aspects of production and consumption due to the application of EU policies and standards, and these countries' autonomous modernization of products and technologies. As a check of the validity of their analysis to Central and Eastern European countries, the authors also present evidence concerning the environmental impact of Poland's process towards accession.

The analysis of environmental changes during the accession process is also taken up by M. Özgür Kayalica and Sajal Lahiri. The question these authors consider is whether easier access to EU markets actually helps bring environmental policies closer to each other. To answer this question, the authors develop a Cournot Oligopoly model, where a number of identical foreign firms located in a host country compete with a domestic firm for the market of a homogeneous product in a consuming country. According to the model, the host country represents a candidate for EU membership and the consuming country is viewed as the EU. Pollution is created as a by-product of production in both countries. Pollution from the host country is also transmitted across the border to the consuming country as a spillover. For simplicity, the model only considers an emission standard in the form of a maximum amount of pollution that a firm is allowed to emit per unit of its output. The consuming country charges a tariff for each unit of imported good produced in the host country. Both countries set their own emission standards to maximize their respective welfare. The firms maximize their profit net of production cost, pollution abatement payment and tariff.

In the benchmark model, the number of foreign firms in the host country is exogenous. Unemployment in the host country is assumed, and the host country benefits from FDI only through the employment generated by foreign firms. The analysis of the optimization problem shows the following. A larger market implies a stricter emission standard by the government of the host country. The same is true in the consuming country if the marginal disutility from pollution is significantly greater than the unit abatement cost in that country. A reduction in the tariff leads to a stricter emission standard in the host country. The same is true in the consuming country if the spillover parameter for cross-border pollution is sufficiently large. Compared to the non-cooperative equilibrium, a small uniform reduction in the emission standards in the two countries makes the host country unambiguously better off. The same is true for the consuming

country if the marginal disutility of pollution there is sufficiently high. With free entry and exit of foreign direct investment (FDI) captured by allowing the number of foreign firms to be endogenous, similar results to those from the benchmark model are obtained.

Matthew R. Auer and Rafael Reuveny examine the issue of where foreign financial aid to accession countries should best be directed. The authors contend that external public sector actors, such as international financial institutions and the EU, need to shift attention and financial aid from preventing prospective pollution to cleaning up past pollution in Central and Eastern Europe.

The authors begin by describing the patterns of FDI inflows to CEE countries. These inflows grew steadily in the 1990s, but only 15 per cent of them were directed to pollution-prone industries, much less than the more than 30 per cent share in industrializing Asian countries. Next they summarize the costs and benefits of FDI in general and in the context of CEE. The authors note that FDI has failed to promote environmental quality in CEE as expected; a large fraction of FDI went to greenfield investments, partly because of investors' concerns about liability for past pollution.

In response to the liability concern, the CEE governments established generous liability schemes as incentives to reassure investors. But this led to various problems and failed to accelerate FDI inflows to pollution-prone industries and areas. The authors thus argue that liability schemes were not sufficient to reactivate the brownfields in CEE. Why? The authors contend that enduring economic problems and persistent environmental ills occur in concert in CEE. Thus economically and environmentally poisoned areas of CEE are distinctly disadvantaged and deserve attention from external actors. The authors thus suggest that multi-faceted western-style brownfield revitalization programs be adapted to solve the above problems in CEE. It is noted, however, because of financial constraints, that CEE governments will not be able to exactly copy the Western counterparts to play a major role in paying for cleanup. In this case, external actors, such as private investors, bilateral aid agencies and international financial institutions, are the most promising sources of financing for brownfield revitalization. The authors propose a prospective plan to revitalize depressed sub-regions of CEE, and explain why and how the four external public actors, that is, the International Finance Corporation (IFC), the European Bank for Reconstruction and Development (EBRD), the Instrument for Structural Policies for Pre-accession (IPSA), and the Objective 1 funds at EU, can help expedite cleanup of past pollution in CEE. The main thrust of their arguments is that funds from these sources, and others, should be directed more to cleanup of past pollution instead of prevention of future pollution in CEE.

Chapter 10 examines the allocation of FDI via joint implementation projects under the Kyoto Protocol and the role that they could play in improving the environment of transition economies. The sale of tradable emissions permits by these economies is also examined. Under the Kyoto Protocol, economies in transition are eligible for both emission trading and joint implementation. It is expected that these countries may benefit substantially from those mechanisms if they are implemented appropriately. These benefits include additional revenue, project finance, knowledge and technology transfer, and synergies with existing policies.

Fanny Missfeldt and Arturo Villavicencio suggest that a key criterion on whether a country should undertake emission trading is the comparison of their projected emissions up to 2012 with their targets under the Kyoto Protocol. Only if there exists a sufficiently wide gap between the projections and the target should the country undertake emissions trading mainly because of the high level of uncertainty in the economic development in transition economies. The prospect for financial gain from emission trading for transition economies became less encouraging with the departure of the US, the largest potential buyer of emission permits, from the agreement. To increase revenue, it is suggested that transitional economies reserve their emissions quota until the second commitment period rather than selling quota at a low price in the first period.

The authors argue that for successful joint implementation projects, the domestic investment climate and the emission reduction potential of specific projects are of particular importance. A country's investment climate is reflected in the general performance of the economy and also the enforcement of business laws, and so on. It is suggested that setting up a clear institutional structure is important for the success of joint implementation. Specifically, an organization solely in charge of joint implementation is necessary.

ECONOMIC AND ENVIRONMENTAL POLICIES IN TRANSITION ECONOMIES

In Part IV three chapters provide us with an inside look at economic transition and its impact on the national environments and environmental policy institutions of CEE countries and Russia. In chapter 11 Diana Üрге-Vorsatz, László Paizs and Radmilo Pesic note that post-communist countries and CEE countries have some of the most obsolete, polluting, economically and environmentally inefficient energy industries in the world. The purpose of their chapter is to review the progress that has been achieved in selected CEE countries' energy sectors during the 1990s and to

develop a policy agenda aimed at establishing a sustainable restructuring of the energy sector in these countries.

The authors describe the major characteristics of the national energy sectors in CEE in the post-communist era. Key features include: energy intensities, wasteful production and use of energy, and high environmental emissions. The authors believe that the key to a more sustainable energy sector in CEE is the reduction of the high energy intensities by restructuring the sector. They go on to identify the weak points of the centrally planned economy that led to intensive energy usage. These include: no reward for efficiency, no penalty for inefficiency, highly subsidized energy prices, flat rates independent of actual energy consumption, and dominance of heavy industries in the economic structure. The authors also note several aspects of the centrally planned economy that can be viewed as environmental strong points, such as efficient public transport, the high share of district heating and high levels of reuse and recycling, and argue that these should be preserved. Based on these observations, the authors develop a concrete policy agenda aimed chiefly at a reduction in the intensity of energy usage.

The authors then summarize the progress that has been made over the first decade of transitions, using the electricity industries in Hungary, Poland and the Czech Republic as examples and Russia as a contrast. Their analysis concludes that, overall, there is no significant improvement in the energy efficiency gap between the EU and CEE. It is shown that Poland has achieved the most significant progress in energy efficiency among the above four countries, while the energy efficiency gap between the EU and Russia has only broadened. The authors demonstrate that, although economic reforms and energy sector restructuring are keys to the improvement of energy intensities, they are not sufficient alone. Other reasons, such as the understatement of previous energy intensities data and a gradual change in consumer behaviour and technical organization, explain the lack of progress.

The authors argue that in order to reach the levels of energy efficiency in the current EU, CEE countries need to consistently implement energy efficiency policies and establish or reinforce the relevant institutional and educational reforms. The ideal timing for pursuing these reforms is the beginning of the transition process. In conclusion, the authors note that even if the most radical policy, legislative and institutional reforms, are implemented, it will still take time for the energy efficiency gap to close.

In Chapter 12 Vladimir Kotov and Elena Nikitina provide us with a history of the economic and environmental changes that have been undertaken in Russia since the early 1990s. Since then Russia has seen a series of changes in its environmental policies. These include the adoption

of new environmental legislation, the creation of domestic environmental management systems, the decentralization of environmental management with the transfer of authority from the central government to the regional level, the introduction of economic mechanisms as a tool of environmental management, and participation in international environmental agreements.

These new policies defined a framework to address the environmental degradation that was largely inherited from the Soviet period of extensive and unsustainable use of the environment. The authors note, however, that the implementation of these policies was not successful. Several factors are identified as barriers to new policy implementation. First, due to institutional reorganization, Russia's environmental agencies were gradually degraded to a weak position in the Russian power structure. This led to poor enforcement of environmental legislation, difficulty in acquiring funds and the subjugation of environmental concerns in the face of economic objectives. Second, the decentralization of environmental management caused overlaps of control and power at the federal and regional levels, which led to a state of confusion over enforcement obligations. Third, serious misapplication of economic mechanisms occurred. In particular, pollution taxes were not set at appropriate levels and their collection was often poorly enforced because of the pressure from economic development. Hence, these taxes failed to provide the polluting firms with the right incentive to invest in environmentally efficient technologies. Fourth, the general lack of funding severely affected the capability of environmental agencies to carrying out their programs. Major reasons leading to the under-financing of environmental programs include the economic crisis that Russia experienced in the 1990s and the utilization of environmental funds for other purposes by local administrations. The authors conclude with the observation that the main lesson learned from Russia's experience in the 1990s is that the success or failure of environmental policies depends not only on the design of the policies as such, but also on the domestic economic and political institutions.

In the final chapter of this volume Vladimir Kotov discusses the present state of Russia's climate policy. Russia's climate policy was formed in the 1990s during the period of economic transition. This fact has impacted some of the basic characteristics of Russia's climate policy as well as its evolution.

Kotov notes that Russia's climate policy is currently going through some fundamental institutional changes. The organization in charge of Russia's climate policy, The Interdepartmental Commission on Climate Change (ICC), is undergoing a transition of its basic functions and method of management. Due to Russia's transition to a market economy, the old methods

that ICC used (based on a planned economy) were no longer appropriate and new methods had to be developed. Corresponding to ICC's low position in the Russian national power hierarchy, the legal support that is essential for the implementation of climate policy is still absent.

While the emission trading promised by the Kyoto Protocol has turned Russia's climate policy into a potentially huge business, the institutional capacity building has been delayed partially due to the lack of a balance in interests between different agencies for the control of future climate business. Due to the prolonged recession, economic development has become the Russian government's number one priority in its political agenda. As a consequence, climate policy is subordinate to the policy of economic growth. As such, Russian climate policy is determined by economic goals, rather than environmental constraints. The main parameters determining the greenhouse gas emissions in Russia are largely beyond the control of Russia's climate policy institutions. Instead, they are under direct control of the institutions controlling Russia's economic growth policy and its energy policy. These institutions are also undergoing a great deal of change.

With this institutional backdrop in mind, Kotov speculates on the likelihood of passage of the Kyoto Protocol by the Russian government. He is sceptical for two main reasons. First, the absence of the United States has considerably diminished the economic attractiveness of the Protocol for Russia. This attractiveness is being driven mainly by the sale of emissions rights to US companies or the US government. Second, the increase in Russia's rate of economic growth has brought with it more industrial and consumer-driven pollution. As such, the amount of pollution rights at Russia's disposal for sale has diminished, further reducing the economic attractiveness of the protocol.

NOTE

1. Indeed, even in the United States, the main non-signatory, major corporations are in the process of documenting their reductions in greenhouse gas emissions so as to obtain early reduction credits should laws mandating emissions reduction be passed.