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WEIGHTING THE POLITICS OF THE ENVIRONMENT IN THE NEW EUROPE

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SUMMARY

EU membership imposes significant environmental pressures on the New Member states (NMS's). This paper questions whether top down imposition of EU environmental regulation is the best strategy for the environmental problems of Central and Eastern Europe. While the emissions' record has greatly improved, it remains unclear how much of this is directly related to EU membership. Significant costs are attached to fulfilling EU environmental criteria while remarkably smaller amounts of funding come attached to the EU membership agreement. Top-down imposition of environmental objectives may divert attention from local, regional and state level environmental needs, preferences and priorities. Accepting the mantle of EU environmental policy means adopting a policy structure that, in many ways, is dominated by the interests and priorities of the large and more advanced EU Member states. The findings of this paper have significant implications for the lobbying activities of the NMS's, for the weighting of the pollution burden in the New Europe and for future constitutional debates.

INTORDUCTION

From an environmental perspective, the introduction of new and rigorous environmental standards in any region of the world is a welcome change. Yet the universalizing of national-level standards to supra- or international levels or their imposition on economically less developed states brings with it a unique set of problems specific to the interests of both developed and developing states. This paper emphasizes the latter – the consequences of imposing supranational standards on less developed economies – and asks what effect the exportation of European Union (EU) environmental policy will have on the countries of Central and Eastern Europe (CEEC's).

This paper assesses the consequences of pursuing highly centralized EU environmental policy that reflects the interests of the more economically advanced and politically powerful EU Member states. Imposed upon less advanced economies, highly centralized EU policies are likely to have distortionary effects that outweigh or negate expected benefits. The top-down imposition of EU standards may in particular result in significant adjustment costs for countries not involved in the original adoption of legislation. Pressures to conform to EU environmental regulations may thus result in the misallocation and diversion of scarce resources. Moreover, such regulations often imply competitive standards not present in CEE. This paper questions the notion of *positive leverage*, suggesting instead that state and/or sectoral interests and relative power motivate policy integration in the EU. With the Eastern (and previous) Enlargement(s), newcomer states were primarily *policy-takers,* unable to influence or modify the contours of the EU policy framework.

The centralization of policy at the EU level strengthens the ability of more powerful states to shape policy outcomes in ways that are less advantageous to New Member and less advanced states. The imposition of EU level environmental policy is advantageous to Western interests for several reasons: 1) it allows Western industry to control the impact of competition with firms that might otherwise benefit from weaker environmental regulation; 2) it favors the interests of Western environmental technology producers by broadening their markets;[1] 3) and reductions in transboundary pollution further benefit Western interests. In this respect, the ability to *download* Western policy preferences onto CEE yields explicit benefits for Western states. This analysis raises important concerns for newcomer states compelled to shoulder the burden of adjustment, in particular regarding the economic consequences for less competitive firms, the potential diversion of resources from other pressing local, regional or national needs.

The findings of this analysis have implications for a broad range of academic literature. For one, this analysis raises questions about the political and policy-making effects of relative power in the EU decision-making process, suggesting the need for more thorough constitutional reforms. For another, this analysis raises important questions regarding the debate on subsidiarity. For a third, this analysis has important implications for the structure and content of supra- and international environmental agreements. Finally, by suggesting that states and groups within states have a powerful impact on the policy-making process, this article provides strong support for an intergovernmental approach to European integration. It goes one step further,

[1] Gille, for example, has pointed to the interests of Western environmental technology producers in selling their technologies to CEEC's. The estimated magnitude of the "environmental market" was some $700 million for 1997 and rising (Gille, 2004: 126-7).

however, in suggesting that bargained outcomes are not necessarily advantageous for all concerned.

This paper proceeds as follows. The first section addresses the theoretical problems resulting from overly centralized control of environmental policy-making. The second section discusses the current state of the environment in CEE and analyzes the impact of importing EU environmental legislation. The third section discusses the compatibility of EU environmental policy with Central and East European priorities and needs. The final section concludes.

1) The problem of centralized control

Some argue that the EU's *positive leverage* has and will encourage beneficial changes to the legal and economic framework in CEE (Moravcsik and Vachudova, 2003: 47; Vachudova, 2002). Most authors in this general framework suggest the degree of change pursued by the CEEC's (in terms of democracy or environmental regulation) has been leveraged with the carrot of EU membership. Others argue that EU governance represents a significant check on CEE governance. In this regard, the participation of EU governments makes CEE governments more accountable and ensures a proper transition toward democracy and/or stronger environmental regulation.[2] Finally, the carrot of EU membership is often thought to have provided strong motivations for governments to rapidly pursue EU environmental policy in order to appear more prepared for EU membership (Slocock, 1996: 508), or to have strengthened the hand of environmental ministries pursuing strong environmental agendas (Slocock, 1999: 157).

Counterarguments are less frequently considered. Pavlínek and Pickles suggest the centralization of policy-making at the national level under Communism had disastrous consequences for the protection of the environment. Soviet era "centralization" disrupted patterns of environmental protection and sustainable development cultivated over centuries by local village assemblies. The introduction of centralized, bureaucratic and authoritarian control likewise brought in nationally appointed officials from other regions with little local knowledge or expertise. With little declining local knowledge, the history of local development and expertise was typically lost on the new command economy form of economic and political management (2000: 75-79). This, coupled with the communist era's commitment to increasing output at any price did not augur well for the environment (ibid: Ch. 4).

EU membership pulls the CEEC's in contradictory directions. On the one hand, both the EU and CEE governments are democratic. Thus despite increasing levels of centralization, there are more mechanisms by which countries – and groups and individuals within countries – are able to participate in the policy-making process. Moreover, since it is always possible for locally-based individuals or local governments to bring national governments before the European Court of Justice (ECJ) for failure to comply with EU legislation, the EU may actually favor local and individual forms of political autonomy and control. On the other hand, where Communist era policy mismatch occurred in part due to the degree of centralization of political power at the national level, the current potential for policy mismatch is compounded by the delegation of environmental authority to the supranational EU level.

EU accession further creates the potential for policy mismatch between local

[2] Kovách (Interview) for example, argues in more general terms. Lynch (2000) builds an argument around environmental regulation and compliance.

needs and supranational policy demands. For one, CEE needs and demands were not included in the original formulation of EU environmental policy goals. For another, while membership negotiations allowed for delays in complying with EU regulations, no CEEC's were permitted to opt out of individual policies. For a third, while some suggest the CEEC's will have more political power once inside the EU, several caveats must be considered. Frequent discussion of the EU's *democratic deficit* suggests there are potential limitations to the ability of individuals, groups and possibly even states to influence the making of EU environmental policy. Weak civil society in CEE is likely to further limit local responsiveness. Finally, in Hungary (and presumably in other CEEC's) most EU environmental legislation was introduced via government decree, not parliamentary deliberation, raising questions about the degree of legitimacy such policies enjoy.[3]

Centralization at ever higher levels of delegated authority may thus result in significant policy mismatch relative to the local, regional or even state level.[4] The 1992 UN Conference on Environment and Development concluded that strategies of sustainable development are best organized at the local level, since this method provides assurances that environmental initiatives are better adapted to local needs and more likely to serve sustainable development goals (UNCED, 1992). As Mungiu-Pippidi (2000) notes, the "*one-size-fits-all*" nature of EU policy may pose problems for CEE countries that are quite different one from the other and again from EU member states. Pavlínek and Pickles further suggest that the blind introduction of EU environmental regulation without promoting CEE "alternatives" may be problematic, warning against "international competitiveness and global market" issues overshadowing the needs of the local environment (2000: 297).

To some degree the world's pollution problems bear striking resemblance from country to country, providing strong incentives for universal policy goals. Carbon-based power plants, for example, produce very large shares of total national SO_2 emissions.[5] And many argue that nuclear power is problematic in any country. Motor vehicles – in particular in congested urban settings – produce significant shares of CO and NO_x emissions. Further, transboundary pollution problems, in particular, provide strong incentives for the centralization of policy-making. Greenhouse gas (GHG) emissions and global warming provides a highly relevant example.

Though one might argue that similar environmental regulations serve all countries well, countries at different levels of economic development have different energy needs and differing shares of resources with which to produce that energy. Moreover, variation in levels of economic development are further linked both to the relative degree of technological sophistication – in part due to the ability to afford advanced technologies. Thus while less developed economies might aspire to more environmental protection, they may lack the know-how, the necessary technology and/or the required investment resources.

Bhagwati (1994) provides two basic criticisms of supranational policy solutions. First he argues that countries might be expected to have different needs and preferences regarding the appropriate mix of environmental policies. Thus, environmental policy should fall within the purview of national govern-

[3] In the Hungarian case, for example, greater than 50% of EU-related environmental regulations were passed by government decree.

[4] Dahl (1994) argues that the delegation of decision-making authority to ever higher (more supranational) levels reduces the ability of individual citizens to influence the policy-making process, necessarily reducing democratic responsiveness.

[5] In 2000, even with one nuclear power plant producing 40% of Hungarian energy needs, Hungarian carbon-based power plants produced 72.3% of total SO_2 emissions (Ellison, 2006b).

ments and not international policy-makers. Second, he argues that the introduction of universalized standards may erode any comparative advantage enjoyed by individual countries. The imposition of such standards frequently occurs at the behest of producer groups in more advanced countries who hope to "*level-the-playing-field*". Thus exporting developed country policies may entail significant concessions on the part of developing countries in competitiveness terms.[6]

Börzel (2002) argues that EU-level regulatory standards are typically not well adapted to the interests and needs of less advanced economies,[7] forcing these countries, like the CEEC's, to become "*policy-takers*". Börzel (2003, 2002), building on the work of Liefferink and Andersen (1998), finds that states with more advanced environmental policies are likely to be "*pace-setters*" in the promotion of EU-level environmental policy. Acting as agenda-setters, the more advanced states impose their environmental agenda on laggard states, thereby offsetting the costs of competition with less environmentally rigorous states and reducing costs that might arise from setting different norms or guidelines. Of course, the imposition (and enforcement) of stricter environmental regulations may have a negative impact on the competitive advantage of less advanced countries. As Börzel (2003: 205-6) and Aguilar-Fernández (1994: 114-5) note, the result was that the cooperation of the Southern states on EU environmental policy was purchased with Cohesion fund spending on environmental investments.

In keeping with this example of *side-payments*, Baumol and Oates, suggest that countries affected by transboundary pollution but dependent on trade might effectively persuade other countries to reduce their emissions by offering to share in the subsidization of environmental investments (1988: 280-281). This approach however runs into problems regarding the principal sources of pollution. The definition of "heavy polluters" depends – in part – on how emissions are measured. Based on total output (GDP), less developed economies are the heavy polluters. Measured however in per capita terms, the results are no longer so clear-cut. As demonstrated below, in some cases the CEEC's continue to produce higher levels of pollution than Western Europe. But in the majority of cases – in particular after more than a decade of transition to market economies – the reverse is now true.[8]

A potentially more meaningful model – based on something akin to but radically different from the EU's current *polluter pays principal* – might be a per-capita emission's tax on Western states for their "use" of the environment. States could be required to pay a graduated tax on national-level emissions such that producing higher per capita emissions results in a higher tax, with some discounting for the level of economic development. A model using national level per capita emission requirements might even be combined with the current "*point-*

[6] Realists typically view the adoption of universal environmental standards as unlikely, even across countries at similar levels of economic development. The realist approach to international environmental agreements presents a relatively pessimistic outlook on the potential conclusion of such agreements. Competing and conflicting interests of states (and or domestic interests groups within states) are typically the source of these problems. States not likely to benefit from such arrangements are typically coerced or leveraged into them, either through the use of side-payments or through the exercise of influence (Sprinz and Vaahtoranta, 1994).

[7] Aguilar-Fernández notes that EU policy failed to respond to the environmental needs of the former cohesion countries. While EU policy focuses on "air pollution, waste management, control of chemical substances, and so on", the former cohesion states were more concerned about "soil erosion, desertification, and forest fires" (1994: 104-5).

[8] OECD countries consume approximately 10 times more fossil fuel energy than developing countries. And they produce 68% of the world's industrial waste while accounting for only 16% of the world's population (Stanners and Bourdeau, 1995: 312). Similar imbalances can be noted for world emissions or natural resource consumption.

source" or firm-level strategy of fining individual firms for high pollution output – in particular where such intensity has negative implications for the surrounding local environment. Revenues from these taxes/fines could be placed in a fund and made available for pollution reducing investments or perhaps for the funding and development of bio-diversity regions in Europe.[9] Ideally such a fund might also be made available for investments that reduce reliance on either harmful chemicals or natural resources, improve energy efficiency or for the development of renewable energy sources.

Political power structures at more centralized levels, however, are presumably the principal impediment to introducing a policy that favors the interests of small, less advanced states. The proposal of a tax on advanced country use of the environment – though in the interest of the less advanced CEEC's and possibly other states – is presumably less palatable to more advanced EU member states. This logic extends as well to the interests of industry in the more and less advanced countries of the European Union. Thus for example, the chemical and other industries in Western Europe had a strong interest in insisting upon a "*level-playing field*" in the Single Market – meaning that CEE firms should be subject to the same environmental restrictions as other EU member state firms. Moreover, due to the relative pollution-intensity of firms in CEE, firm-level commitments to pollution reduction favor Western firms.[10] The CEEC's, on the other hand, would benefit from national-level per capita emission restrictions.

The imposition of EU environmental law from the current EU member states to CEE fails to consider the status quo gap between Western and Central and Eastern Europe. Thus the impact – environmental, financial and competitive – of EU environmental legislation is likely to be much greater. Moreover, the EU has typically been either resistant or insensitive to local, regional or state-level concerns and resisted negotiating amendments to the *acquis*. Few or no concessions were made on existing EU policy, despite the frequent *variable geometry* of EU regulations as applied to the OMS's.[11] In this regard, asymmetrical bargaining power may have compelled the NMS's to accept an agreement not always in their best interest (Ellison, 2006a).

The consequences of adopting EU environmental legislation are several. The first is the potential lack of attention paid to local, regional or even state level environmental needs, preferences and interests. The second is the potentially negative consequence for economic competitiveness or local and national environmental needs of imposing more advanced country environmental policies on less developed economies. The third is the likely erosion of any positive local or national legacies in the wake of the wholesale adoption of EU environmental policy. Finally, though beyond the parameters of this essay, EU policy dominance may ultimately weaken CEE civil society and NGO's, thereby influencing the ability of CEEC's to develop independent social movements rooted in the

[9] Ironically, a similar fund was eliminated in Hungary. The system of "product charges" – a consumer tax on the sale of environmentally hazardous products to create an environmental investment fund – was considered a "subsidy" and the EU required the program's elimination as one of the conditions of membership (see Gille, 2004: 130).

[10] Western firms frequently lobbied hard to ensure this "level playing-field" (Ellison, 2001: Ch. 4). The German Chemical Industry Association, for example, published a position paper on the consequences of enlargement, pointing to the potential for "'environmental dumping'" posed by weaker CEE regulations (Ellison, 2001: 178; VCI, 1995).

[11] On a considerable number of EU regulations, for example Economic and Monetary Union, the Schengen Agreement and others, individual states have insisted upon various opt-outs, exceptions or concessions. However, the willingness of EU member states to accept such arrangements has typically not included matters related to competition and the smooth functioning of the Single Market.

advocacy and defense of local, regional and state level environmental interests (Ellison, 2004). One potential consequence is that the resources and attention necessary to successfully combat local regional and state environmental issues have been diverted to *centrally-determined* policy goals only partially adequate to dealing with local, regional and state-level needs and interests.[12]

2) Reflections on the environmental crisis in Central Europe

The argument that EU membership drives positive environmental change in Central and Eastern Europe rests on a number of mistaken assumptions. As the following paragraphs argue, many of the recent improvements in CEE emissions were frequently the result of other factors. Surprisingly, the CEEC's all exhibit a moderate record of reducing emissions even during the period 1980-1990 – i.e. before the fall of the East Bloc. The EU's evaluation of CEE environmental needs tends to suggest an exaggerated sense of urgency not generally reflected in per capita emissions figures. One of the more undesirable impacts of having to adopt the EU regulatory framework is the undue impact on *end-of-pipe* over other forms of emissions reductions.

Years of Soviet-style production strategies placed a significant environmental burden on the CEEC's.[13] By the 1990's, approximately 100% of the forests in the Northern and Eastern Bohemian region were damaged.[14] Until the beginning of the Transition period, these countries engaged only marginally in environmental protection. Measured in per capita terms, 1980 SO_2 emissions in the Czech Republic were 17 times (measured as a share of GDP 24 times) those in West Germany (Horak, 2001: 314). Such comparisons are prone to exaggeration. In the 1980's, major cities in CEE – apart from Prague, Zagreb and Bucharest – exhibited SO_2 levels similar to those in Western Europe. In many respects, the CEE pollution burden resembled Western Europe's before the West began to focus more attention on the environment. Even some of the most polluted regions have parallels in the West of the 1950's and 60's (2001: 43-4).

As demonstrated by the data below, the reduction of CEE air emissions reveals a remarkably successful reversal. While EU membership requirements may have played a role, democratization, the introduction of market economies, the decline of heavy industry (primarily coal and steel)[15] and agriculture, privatization, FDI and the shift from coal to natural gas heating systems likewise have significant explanatory power. Separating out the exact role of each of these factors is problematic. The emergence of democracy in 1989, the adoption of markets, privatization and increasing openness to FDI, initial changes in environmental policy and the decline in heavy industry all occurred quite early, long before EU membership negotiations – begun in March, 1998 – had much of an impact on national governments in Central and Eastern Europe.

[12] The concept of resource diversion extends to the administrative level. Ministries have seen substantial resources diverted to the EU membership drive and away from other ministerial duties.

[13] For an excellent overview of the environmental legacy left by the previous socialist systems, see Pavlínek and Pickles (2000: Ch. 3).

[14] By 1990, an average of some 58.9% of the Czech Republic's forests had been damaged (Pavlínek and Pickles, 2000: 61). In Hungary (with lower SO_2 emissions) some 22% of forests were damaged (Powell, Kaderják and Verkoijen, 1997: 131).

[15] Several transition survivors – power plants, oil refining, district heating, pharmaceuticals, chemical, cement, sugar and some remaining steel production facilities – remain significant emitters.

The full adoption of the *acquis communautaires* (the existing body of EU legislation) as a requirement of EU membership provided incentives for environmental improvements. However, the rise of environmental concerns in CEE predates the transition. Organizations such as the Hungarian Bird Life association, DunaKör (the Danube Circle) and others were founded in the 70's and 80's. While social movements lost their momentum during the transition in the 90's, many of their leaders became active in political parties and/or CEE Ministries of the Environment. Some 100 members of the DunaKör were able to win parliamentary seats in 1990.[16] Local forces thus began to shape the CEE environment before these countries even began pursuing the goal of EU membership.[17] While the CEEC's did not have a stellar record of environmental protection prior to 1989, environmental legislation was gradually adopted in these countries over the 60's, 70's and 80's. Moreover, at least part of the problem in CEE was less the formulation of environmental legislation, than its inconsistent implementation and failed enforcement.[18]

Little attention is typically paid to the record of emissions' reductions prior to the collapse of CEE governments in 1989. Though the soviet era ideology of rapidly rising output clearly outweighed concern for the environment (Pavlínek and Pickles, 2000: Ch. 4; Szirmai, 1997: 25), the CEEC's did in fact introduce environmental legislation (Pavlínek and Pickles, 2000: Ch. 8) and, as demonstrated below, reduce emissions. From among the CEEC's, Bulgaria, Hungary, Poland and Romania (as well as the Russian Federation) signed the 1979 Geneva Convention on Long-Range Transboundary Pollution.[19] As Kaderják and Lehoczki point out, Hungary successfully reduced its SO_2 emissions by 54% between 1980 and 1993. While a significant share of these emission reductions were achieved at the cost of introducing nuclear power, significant reductions were also due to cuts in industry and household SO_2 output (1997: 111-112).

Regulations in effect before the adoption of EU environmental policy have frequently been eliminated, regardless of their potential advantages. Perhaps one of the most egregious cases involves Hungary's extensive system of industrial waste collection. Though responsible for cataloguing all types of industrial waste produced by individual firms and finding alternative uses, this system was abandoned in 1992. Inefficient and far from perfect, this program represented a potentially valuable store of information and potentially could have been used for developing further alternative uses for waste (Gille, 2004, 2000). Moreover, as Gille (2004) notes, Hungary much exceeded Western Europe in its degree of hazardous waste recycling. Despite this fact, Hungary has completely shifted over to waste collection systems and has ceased recycling industrial waste.[20]

Since the transition, the introduction of market economies and the elimination of state subsidies have had a significant impact on emission levels. For one, the

[16] See for example the brief history of the Hungarian Green Democrats (www.zd.hu).

[17] The history of green social movements in Central and Eastern Europe and Hungary is well-documented. For a brief overview of the literature and the major steps in green activism in Hungary and Central and Eastern Europe, see Ellison (2004: 17-24).

[18] See for example Kerekes (1993: 146) and Gille (2004, 2000). Pavlínek and Pickles provide an excellent overview of environmental legislation in some CEEC's (including Hungary) both before and after 1989 (2000: Ch. 8). As Szirmai notes, Hungary, like many of the CEEC's, began introducing environmental legislation in the 60's and 70's (1997: 25).

[19] See the Convention's website: (http://www.unece.org/env/lrtap/status/lrtap_st.htm).

[20] Gille likewise notes a number of smaller programs that were eliminated early on. For one, a long-standing policy of deposits on packaging was eliminated. For another, deposit and refund systems for bottles and batteries were likewise weakened by the move to a market system and the introduction of new packaging materials (2000: 217).

gradual liberalization of the energy sector produced strong incentives to reduce power consumption and promote energy efficiency. Similar effects resulted from rising water prices. In agriculture, the elimination of subsidies on fertilizers had a significant impact on their use – in particular in the early 90's. Both privatization and FDI further had a significant, positive impact on the environmental performance of industry. For one, 'separating the regulated from the regulators' (Páczi and Kaderják, 1997: 62) strengthens the role of the state as the enforcer of environmental regulation.[21] As one interviewee suggested, old socialist era firms were able to dump industrial waste into rivers and streams almost at will.[22] With privatization and FDI, new environmental permits required connections to the industrial sewage system and placed important restrictions on the discharge of emissions and other pollutants – frequently in line with existing EU guidelines (see also Reiniger, 1994). In addition, many Western firms imported environmental technology, thereby introducing cleaner production methods and contributing to improvements in the CEE environment. Finally, the transition toward more service-rich economies has likewise had a positive impact on CEE pollution levels (*Table 1*).

Per capita, in most pollution categories, the CEEC's now produce less pollution than West European countries. Significant differences between Western and Central and Eastern Europe do however persist in the "efficient" production of pollution (or pollution "intensity") and thus in higher *point source* forms of pollution: per unit of GDP, the CEEC's produce greater amounts of pollution than Western countries. Individual production firms in CEE tend to be more pollution intensive than in the West. Moreover, the more geographically concentrated and the closer pollution sources are to densely populated areas, the greater the human impact of pollution generated by power plants or industrial firms. One example is the sulfur dioxide (SO_2), nitrogen oxide (NO_x) and carbon dioxide (CO_2) emissions of large combustion plants – most of which are power plants.[23]

EU directives are likely to have a strong impact on point source emissions. On average, some 74% of SO_2 emissions are produced by these large point sources.[24] In particular, the EU directive dealing with the emissions of large combustion plants (of which there are approximately 29 in Hungary), requires that these plants reduce emissions below certain "limit values". Since many of the largest emitters are in CEE,[25] this directive will have an important impact on pollution reduction in the region.[26] On the other hand, the burden of adjust-

[21] Initially the prices of privatized firms were kept low in exchange for commitments to reduce emissions. The Hungarian government likewise set up a so-called "environmental clean-up guarantee fund". Over the early years of transition, Hungarian privatization law was gradually strengthened – in particular in 1992 – to make environmental audits obligatory for new investors. This was paralleled with liability commitments to cover the costs of environmental problems to emerge after the privatization had taken place (Páczi and Kaderják, 1997: 54, 57, 62-3).

[22] Many of these sites are now the target of clean-up programs organized by local NGO's, and national and local governments.

[23] In Estonia, 80.5% of SO_2 emissions come from two thermoelectric power plants (World Bank, 1999: 84).

[24] Large point sources are responsible for much smaller, though still substantial, shares of the production of NO_x (27%) and CO_2 (25%) emissions (Barrett, 2000: 5).

[25] From the Western countries, Spain, the UK, the former East Germany, Italy, Belgium and the Netherlands (in that order) have some plants with very high emissions levels, and a larger number of West European countries have plants with emissions levels among the top 600 emitters. However the intensity of emissions and the share of firms among the top 100 emitters is much higher in Central and Eastern Europe (Barrett, 2000).

[26] Hungary's transition period on the Large Combustion Plant Directive ran out in January, 2005. According to the Hungarian Energy Office, all Hungarian power plants are now in compliance with this directive. Other countries – the Czech Republic, Estonia, Lithuania, Poland and Slovakia – have longer deadlines for compliance (see Table 5).

ment with regard to this directive is considerably imbalanced. Many of the large combustion plants in Western Europe are already compliant while the opposite was initially true in CEE. Thus, although the CEEC's did not participate in the making of this directive or setting the target date, they were nonetheless required to meet the same deadline.[27]

The calculation of pollution intensities as a share of GDP harbors a specific bias in favor of EU member states and suggests an exaggerated sense of urgency.[28] While the observation that OMS's are able to produce more GDP per unit of pollution provides an important reference, it likewise conceals several important points. For one, as evident in Table 1, the OMS's service sector is larger and contributes significantly to overall GDP (in particular in the financial, insurance and banking sectors). For another, the mix of goods produced in the EU member states is less dependent upon high pollution producing goods. Regarding fertilizer and pesticide use, a very small share of OMS production is agricultural. Pollution levels expressed as a share of GDP have the perverse effect of suggesting that absolute amounts of pollution are lower in Western Europe when the reverse is true. Moreover, such figures obscure the total amount of pollution in individual countries and its potential impact on individuals or the surrounding environment.[29]

As evident in *Table 2*, the CEEC's produce significantly more pollution per unit of GDP than the OMS's. Apart the odd exception, this remains true in 2002, though many of the CEEC's have made remarkable advances. Reductions in SO_2 levels have been the most pronounced and have migrated toward Western levels. Reductions in NO_x levels, while not quite as pronounced, have begun to approximate Western levels. Levels of CO and CO_2 still remain well above those in Western Europe.

However, as evident from *Table 3*, when emissions data is compared to the total population, the CEEC's emit much less per person than Western states. The only case in which this is not true is the emission of SO_x (though compared to the US, only Bulgaria and Estonia produce more). In the remaining cases, the CEEC's produce lower levels per person than the Western states – in particular with respect to NO_x and CO_2.

Between 1980 and 2002, the CEEC's exhibit a strikingly successful record of emissions reductions (*Table 4*). While the lion's share fall in the transition period (1990–2002), almost all of the CEEC's likewise reduced emissions between 1980 and 1990. A few failed to do this with respect to CO (the Czech Republic, Estonia, Hungary and Slovenia) and NO_x (Slovakia and Slovenia). But all of the CEEC's achieved reductions in SO_x output. While western reductions in SO_x output are more than twice as high during the same period, given the conventional image of the CEEC's, this result is surprising.

In per capita terms, the severity of environmental abuse in CEE appears overstated. In several of the above instances, the EU would be happy to attain

[27] Although for Hungary the compliance deadline with the EU Directive on Large Combustion Plants is listed as a "transitional period", the deadline for compliance is in fact the same for all EU countries. According to the Directive, all countries must achieve significant reductions by Jan. 1st, 2008. Hungary has a transition period until 2004. Only Estonia (2015), Lithuania (20015) and Poland (2017) obtained transitional periods beyond 2008. From the perspective of EU member states, the limit values set by this directive are liberal and most plants operating in the EU as of 1995 had successfully complied with the limit values set for new plants built after 2003. This is not the case for the CEEC's (see Barrett, 2000).

[28] I am indebted to a discussion with Karoly Kiss (Corvinus University, Budapest).

[29] An even more appropriate method of standardizing pollution levels might be by square miles. This measure however only results in significant differences in the Scandinavian countries and the US.

per capita levels similar to those in CEE. This approach suggests that the focus on a strategy of emission limit values (the current practice in EU environmental regulation) and thus "*end-of-pipe*" solutions (e.g. the introduction of scrubbers or other pollution reducing devices) may not always be the most meaningful strategy – in particular for CEE.

3) Priority allocation, resource transfer and resource diversion in the management of the Central and East European environment

The expectation that EU membership might help the CEEC's resolve their environmental problems is problematic on multiple levels. Not only does this tend to ignore, as argued above, the record of environmental success in CEE, it also fails to account – as argued below – for the following. For one, the EU itself tends to promote economic growth over environmental concerns. As one of the principal engines of globalization, the EU more frequently advocates a *level playing field* – emphasizing competitiveness concerns – than sustainable development priorities. For another, to-date the EU has offered only minimal financial support for environmental expenditure in CEE. Thus much of the burden of adjusting to EU environmental regulation has fallen on the shoulders of enterprising CEE governments and industry. Finally, the sheer complexity, scope and magnitude of the tasks CEE governments continue to face – coupled with high environmental costs – is likely to lead to considerable resource diversion from other economic, social and even environmental priorities.

Economy vs. environment

Although the EU claims an interest in sustainable development priorities,[30] the EU is first and foremost an economic union.[31] The impact of EU membership on the CEEC's in the area of the environment is much broader than merely the impact of adopting EU environmental regulation. As the engine of globalization, the EU's Single Market legislation defends the basic logic of the market and generally prohibits attempts to soften its impact where these obstruct the free movement of goods, capital and labor.[32] EU membership thus opens up CEE markets to EU products, economic activities and infrastructure developments, all of which may have significant impacts on the environment and which are increasingly difficult to mitigate via national-level legislation. Moreover, the CEEC's largely joined the EU in the hopes of achieving these goals. Thus economic growth priorities frequently outweigh environmental concerns.

The opening of markets and integration into the EU marketplace has thus had a distinctly *Europeanizing* impact upon the CEE environment. Moreover, the lion's share of EU spending is devoted first to economic growth – in particular the development of infrastructure – and second to the protection or improvement of the environment. Not surprisingly, these two goals frequently conflict with each other. The impact of eco-

[30] Sustainable development is mentioned 6 times in the Draft Constitutional Treaty approved in June 2004. This represents an attempt to integrate this concept more firmly into the core of the EU's environmental policy-making framework. Article 6 of the previous Treaty Establishing the European Community expressed a commitment to the goal of sustainable development.

[31] Environmental NGO's have generally recognized this point. See for example *Turning Green: Hungarian Greens on the EU* (2003).

[32] In Article 177 cases, the European Court of Justice has frequently sided against national environmental regulations based on EU directives that obstruct the free movement of goods (Cichowski, 1998).

nomic over environmental priorities is tangible in debates surrounding the considerable emphasis given to infrastructure projects. The building of highways, the construction of waste incinerators and other EU-funded projects – along with their nationally and locally based electoral constituencies – are occasionally at odds with the interests of national and/or EU-based environmental groups.[33]

EU environmental regulations are not always up to the task of mitigating the impact of the market. Western environmental approaches typically have little impact on the upward spiral of production and consumption. Thus one outcome of the introduction of market society and Western market integration is a dramatic expansion of consumer society and the inevitable rise in the production of waste. Considerable pressures come from EU-driven infrastructure projects, such as the Trans-European Networks (TENS) and the related TINA programs focusing on Central and East European transport infrastructure development. And CEE governments have clearly locked onto the TENS program as an opportunity to upgrade and modernize their road and highway networks. Similar pressures arise from plans to turn the Danube waterway into a major transport corridor with a minimum depth of 2.5 meters.[34] EU membership will further have a considerable impact on the intensification of agricultural production in CEE and thus ultimately the increasing use of commercial fertilizers. Though this is not yet a significant problem in CEE (at least compared to Western Europe), more and more fertilizers are again being used as agriculture recovers.

Urban sprawl and the related rise in the total number of motor vehicles are also considerable problems. Large tracts of land outside previous urban peripheries have been rapidly devoured by the construction of new housing and commercial outposts. Such developments raise questions that are – for the most part – going unaddressed by governments absorbed with other agendas. Such areas frequently lie outside existing public transportation networks – though in a few cases the public transportation networks have been modified to accommodate them commercial outposts. Thus, in order to commute into the cities or visit these commercial outposts, individuals are more likely to use passenger cars than public transportation. The rapid rise in the total number of passenger vehicles, urban congestion and increased levels of smog[35] have generally not met with counter attempts to modernize and extend the availability of public transportation outside the existing and new commercial networks or to reduce the total burden on urban congestion.[36] The lack of attention to public transportation and to urban congestion will only exacerbate these problems in the short and potentially also the long term.[37]

[33] The CEE Bankwatch Network recently published a report outlining environmental objections to some 22 CEE projects intended to involve EU funding during the 2007-2013 Framework Perspective (www.bankwatch.org).

[34] Organizations such as the World Wildlife Federation (the Austrian branch), the Hungarian Greens and the Danube Settlement Alliance have been organizing conferences and lobbying the Hungarian government. These organizations support the rehabilitation of existing side-arms and the protection of some bottleneck areas that likewise tend to be ecological hotspots. They likewise oppose the deepening of the riverbed and favor the use of smaller and more modern forms of river transport.

[35] Between 1990 and 1999, the total number of vehicles per 1000 inhabitants increased by 64% (against only 27% in Western Europe) (based on data from the World Development Indicators Database, World Bank, 2005). Although the total number of vehicles per 1000 inhabitants is still significantly below that in Western Europe, this suggests things are likely to get worse before they get better.

[36] On zoning and urban congestion in Prague, see Beckmann: "Dysfunctional Decision-Making: The Battle for Prague's Future" (*Central Europe Review*, Nov. 15th, 1999). This problem extends however to cities throughout CEE.

[37] According to the European Environmental Agency, transport related GHG emissions rose 24% above base year levels between 1995 and 2003 in the NMS, despite an initial 5% reduction from base year levels by 1995 (EEA, 2005: 19).

Accession-related decisions on compliance with the EU regulatory framework likewise appear strongly driven by market as opposed to environmental considerations. The most derogation-heavy directives (see *Table 5*) involve the public sector: *e.g.* the treatment of urban wastewater (largely a public sector issue) and to the emissions of large combustion plants (public sector power plants had the highest emissions). The packaging and package waste directive – with private and public sector spending components[38] – comes in a close third. Moreover, the total number of transitional periods requested often differs quite radically from the total number approved in the Accession Treaty. According to some government representatives, there were in fact significant pressures to reduce the overall number of requests.

Documents dealing with the negotiation of the environmental chapter repeatedly emphasize the importance of addressing both "transboundary" issues and environmental issues likely to affect or "distort" economic competition in the EU. Moreover, Commission documents repeatedly insist that all new plants must comply with EU regulations from the first day of production. Though the Commission invited CEE governments to develop systematic priorities and to identify "financially viable" projects that "conform realistically to national affordability/borrowing" (European Commission, 2001a: 7-8), transition periods were most readily granted where no competition or transboundary issues were evident. In sum, the pressures of EU accession resulted in costs that – to some degree – are out of line with actual CEE needs, priorities or preferences.

[38] Generally, the public sector is responsible for the collection and sorting of municipal packaging waste while the private sector is responsible for the collection of industrial packaging waste (European Commission, 2001b: iii).

Cross-national resource transfer

The fulfilment of EU-level environmental requirements imposes significant constraints that are compounded by the already difficult budgetary situation in many or most CEEC's.[39] The estimated costs of compliance with EU regulations are significant. While estimates have declined over time, the total cost of compliance for all CEEC's is estimated at some 78 to 108 billion Euros (*Table 6*). Previous estimates have been as high as 230 billion Euros. Of this sum, the EU has to-date only funded a small amount. For example, the CEE Cohesion Fund allocation for the period 2004-2006 totaled 7.59 billion Euros. Only a fraction of this amount, however, was available for environmental projects.[40] Previously the EU has granted some 3.1 billion Euros of support annually through other mechanisms such as the Phare Program, ISPA, and SAPARD (DANCEE, 2001: 43-8). Of this amount, between 1995 and 2000, 138.9 million Euros were appropriated for institution-building and 719.5 million Euros were dedicated to environmental projects. By the Commission's own admission, pre-accession funding covered only 0.59% of total CEE environmental funding needs (*Official Journal* C167, 2003: 4 Table 1, 8, Table 3). This reportedly pales in comparison to the sums granted the Cohesion Countries (Greece, Ireland, Portugal and Spain) (DANCEE, 2001: 43-8).

[39] In June 2004, six NMS's were cited under the EU's "*excessive budget deficit*" procedure and urged to bring their budgets into compliance with the EU Stability Pact (Euractiv.com, June 25, 2004). The Czech Republic, Hungary and Slovakia continue to post sizable budget deficits ranging from -4.6% to -5.9% (based on Eurostat online data).

[40] At least some of the Western assistance serves Western interests as well as CEE interests. Slocock mentions, for example, that concerns about transboundary pollution have driven at least some assistance (1999: 154), while concerns about potential catastrophes have presumably driven programs dealing with CEE nuclear power.

Seen as a share of GDP, the total cost of compliance with EU environmental policy varies tremendously across individual CEEC's. The most serious case is Estonia, where cost estimates attain some 70.4% of Estonia's GDP. This estimate is followed by Bulgaria with 56.5% and Romania with 49% of GDP. Figures for a number of countries, in particular Slovenia, Lithuania and the Czech Republic, are less daunting. However, based on an estimated yearly government expenditure of 1% of GDP and an average annual economic growth rate of 3%, it would still take the Czech Republic some 9-12 years to cover the costs of compliance with EU environmental regulations.[41] Estonia, Bulgaria and Romania will take much longer.

Attempts have been made to compensate for the lack of EU public spending through the promotion of private sector resources. The European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD) have made subsidized loans available for energy efficiency improvements and reportedly have even gone to the extent of seeking out and making recommendations to firms that might benefit from such investments.[42]

Though total projected environmental spending figures for Framework Perspective 2007-2013 remain very preliminary, Bankwatch has put together estimates based on individual country national development plans. The amounts – though on the low end of total projected needs – are substantially greater than for previous periods (*Table 7*). Together with national co-financing expenditure, they are likely to facilitate significant progress in the direction of compliance with EU environmental requirements. However, due to the high expenditure requirements, it is unlikely all or most of the CEEC's will be able to achieve full compliance within the required transitional periods.

Priority conflict, resource diversion and alternative strategies

It is something of a truism to claim that the CEEC's face the competing and potentially conflicting demands of economic development and environmental protection. Coping with the problems of the environment is just one of many issues facing CEE governments. Transition to market economies, privatization, economic restructuring, as well as the general EU accession process equally burden CEE governments. Nor have these projects come to an end with the successful completion of the accession process. The projects of economic adjustment, restructuring and above all convergence on Western levels of economic development are far from complete (see e.g. Ellison, 2005). Currently, reform of the education, healthcare and other public sectors is one of the principal tasks facing CEE governments. In this sense, multiple and potentially conflicting priorities are the letter of the day.

The presence of conflicting priorities emanating from multiple levels of governance – supranational, national and regional – increases both the likelihood and the consequences of resource diversion. Moreover, such conflicting goals and priorities are an indicator of the difficulties CEEC's are likely to have in allocating resources appropriately. For

[41] A word of caution is necessary. For one, current average government expenditure on the environment is less than 1% across all CEEC's. For another, the likely rate of economic growth is difficult to predict. While across all CEEC's, the average rate of economic growth from 1994-2000 was approximately 3.5%, rates of economic growth have slowed somewhat in recent years. Third, the nominal cost of environmental investments will increase over time. In addition, the Commission's estimates may either over or underestimate the costs of compliance (see also Inglis, 2004: 136-7). Finally, additional environmental problems may yet be discovered.

[42] See the *International Herald Tribune*: "Squandering Energy in the East" (June 2, 2006) and the EIB report "Environmental Lending in Central and Eastern Europe" (May, 2003). Between 1999 and 2002, the EIB provided some 3.25 billion Euros in financing to CEEC's (ibid, 2003: 5).

the purposes of this paper, the burning question is to what extent EU-determined environmental requirements are the appropriate alternatives for CEEC's. Given current CEE pollution levels, EU-driven priorities and their attached costs at times appear exorbitant. Moreover, many of the market-driven effects of membership go unchecked by the EU regulatory framework and the unintended consequences of some EU environmental policies have occasionally had perverse effects.[43]

The diversion of both financial and administrative resources away from local, regional and state-level priorities and concerns – in particular in the context of the relatively weak environmental organization of civil society – is likely to result in missed opportunities and even neglect. Given the tremendous effort and attention placed on EU compliance, it behooves researchers to analyze the negative side-effects of the focus on EU environmental priorities.

Some of the more common examples of resource diversion and missed opportunities involve the development of roads over rail and the lack of attention paid to expanding public transportation. Some have argued that the CEEC's have failed to build upon the *positive legacy* of the communist era, i.e. its development of public infrastructure, in particular railroads, public bus and subway systems (see for example Ürge-Vorsatz, Paizs and Pesic, 2003: 262; Horak, 2001: 322). More effort could be put into improving the railway networks instead of shifting most freight transport from rail to road.[44] District heating was likewise seen as an area with a potentially positive impact on the environment. Some 20% of the public is connected to district heating in Hungary and some 80% of apartments in urban areas in Poland.[45] Many alternatives could ultimately be mentioned; for example subsidizing the acquisition of new more environmentally friendly trucks and buses could further have a significant impact on reducing ambient air pollution.

Attention is directed in the following paragraphs to three alternatives. In view of the urgency of some *point source* forms of pollution, one alternative is to focus on *hot spots* – areas of high pollution intensity having a serious impact on human health or the environment. Both per capita and end-of-pipe strategies fail to target the more egregious cases of high pollution concentrations – in particular in proximity to urban population settings. High pollution intensity and the regional concentration of economic activity in areas of high population density had serious effects on the health of individuals and the surrounding environment. Average life expectancy at birth in Northern Bohemia was 10 years below the average in the more developed countries of Europe (Pavlínek and Pickles, 2000: 135). Similar statistics are cited for cancer rates, infant mortality and other illnesses (ibid: Ch. 6).[46]

A second alternative is to focus on energy efficiency and technological updating. Investments focused in particular on the relative pollution efficiency of

[43] An interesting example is the introduction of "*biomass*" in energy production in CEE. While *joint implementation* investment projects have facilitated emissions reductions in some power plants, they have been replaced by biomass power plants that burn wood from local forests. This has raised interesting questions about the long-term sustainability of such energy production and likewise has obvious implications for the use of forests as future carbon sinks (see Ellison, 2006b).

[44] Some of the railroad lines have been improved, in particular those that connect more important "corridors", but most freight has still been shifted to roads.

[45] I am indebted here to discussions with the Diana Ürge-Vorsatz and Energy Club's Gábor Takács. See also Ürge-Vorsatz, Paizs and Pesic (2003: 262).

[46] Powell, Kaderják and Verkoijen note that in Hungary, according to the National Institute of Public Health, 1 in 7 deaths and 1 in 24 disabilities are caused by air pollution (1997: 131). Kerekes and Bulla likewise note health problems related to air pollution (1994: 96).

production, the reduction of energy requirements, or possibly the discontinuation of harmful chemicals and other pollutants have specific advantages. While end-of-pipe vs. energy efficiency and technological change strategies have received some attention in the literature, the impact on the EU's approach toward CEE has been small. Moreover, as the pressure to comply with EU environmental regulations has grown, the emphasis on technological updating and increased efficiency has declined in favor of short-term end-of-pipe solutions.

To take the case of energy production – a source of large shares of concentrated *point-source* SO_2, NO_x and CO_2 – some argue that significant progress could have been achieved with a combined strategy focused additionally on energy efficiency. Ürge-Vorsatz, Paizs and Pesic (2003) and others point out that far more energy is used per unit of GDP in CEE than in Western Europe. Encouraging more energy efficiency in industrial production and residential consumption could result in considerable reductions of emissions.[47] As of 1997, Hungary's energy intensity was 3.5 times higher than the EU average and the Czech Republic and Poland was twice again as much energy as Hungary's (ibid: 265).[48] The potential benefits of an energy efficiency-based strategy seem to have dawned late on European authorities. Yet according to a report commissioned by the European Insulation Manufacturer's Association, energy use per square meter is considerably higher in CEE than in the OMS's (Ecofys, 2006). The implications both for potential reductions of the above noted pollutants, as well as for overall greenhouse gas (GHG) emissions, are considerable.[49]

"*End-of-pipe*" strategies have a doubly-undesirable impact. For one, they make industry less competitive (by driving up prices) and for another, they are likely to result in the diversion of resources away from energy efficiency investments. Similar observations have been made with regard to excessive water use and expenditures on wastewater treatment plants (DANCEE, 2001: 15). In a similar manner, the production of waste is favored by EU policies that fail to adequately encourage recycling over the creation/extension of landfill capacity.[50]

A third alternative is to focus more attention upon European strategies of emission and general pollution reductions based on per capita pollution measures. The following example of the Kyoto Protocol embodies most of the principal points raised in the paragraphs above and illustrates many of the problems of environmental management at the supranational level.

The Kyoto Protocol

The Kyoto Protocol and the establishment of limits on total national level GHG emissions provides one of the strongest examples of potential conflict between demands for economic growth and EU environmental regulation. As illustrated in *Table*s 4 and *8*, the former cohesion countries Spain, Portugal, Greece and Ireland (but also to some extent Italy and Austria) have so far not been able

[47] Several studies, one published by the Hungarian NGO Energy Club (Takacs, 2002), another published by the Danish Cooperation for Environment in Eastern Europe (DANCEE, 2001: 15), point to the advantages of investments in energy and water efficiency.

[48] While Ürge-Vorsatz, Paizs and Pesic note that the partial introduction of market prices has led to overall improvements in energy intensity (of 41% for Poland, 19% for the Czech Republic and 22% for Hungary over the period 1989-2000), they argue further improvements require active government intervention and alternative strategies (2003: 265-6).

[49] During the Communist era, energy and water prices (among other things) were heavily subsidized, leading to inefficient consumption. In many ways, this legacy still remains to be exploited.

[50] Gille argues persuasively that the adoption of EU directives on waste management in Hungary led to the indiscriminate elimination of Hungarian policies of waste reuse and recycling (Gille, 2004, 2000).

to reign in CO_2 and GHG emissions. In fact, since the EU reached its decision on the Kyoto targets in April 2002, the OMS's have for the most part observed increases rather than reductions in their total emissions. To-date, it is the NMS's that have enabled the EU to make progress on its Kyoto targets. Over the entire period from 1990-2004, the OMS's only reduced their GHG emissions by approximately 0.9%, suggesting that the reversal of the growth–GHG nexus is no simple matter. With the help of the NMS's, the *EU23*[51] have managed to reduce GHG emissions by approximately 7.4%. The addition of Bulgaria and Romania (as suggested by the data in Table 4) will further improve this figure.

It is more difficult to divine what this predicts for the possible emergence of a *growth ceiling* in the CEEC's resulting from their Kyoto targets. Again, the former cohesion countries have far surpassed their original Kyoto targets and have a long way to go in order to improve their current performance. Moreover, these countries along with Austria, Belgium, Denmark, Finland, Italy and Luxembourg, pose the greatest threat to the success of the Kyoto Protocol. Presumably they will be able to achieve their Kyoto targets only by purchasing carbon credits or by taking advantage of either the Joint Implementation (JI) or Clean Development Mechanism (CDM). A number of countries have apparently already set aside considerable resources for these Kyoto Mechanisms (EEA, 2005: 24-5).

The emergence of *growth ceilings* in CEE, would have a decisively negative impact on their future economic development. While it seems unlikely (though not impossible) that the CEEC's would surpass their Kyoto targets by 2012, the experience of the former cohesion countries raises important questions both about the potential emergence of growth ceilings and the continued viability of the Kyoto Protocol and the potential for continued GHG emission reductions. Spain, for example, reportedly has great potential for renewable energy investments,[52] but to-date this has had little impact on progress toward its Kyoto target. Unlike Spain, Portugal and Ireland, the CEEC's have remarkable JI potential as a result of their high GHG emissions per unit of GDP. Pressure to take advantage of this JI potential would presumably have a positive impact on the potential elimination or reduction of future growth ceilings.

While pressure for JI investments should mount as the 2012 Kyoto deadline nears – in particular for those countries noted above that have increased their effective Kyoto targets as a result of increasing emissions – one of the principal failures of the Kyoto process has so far been its inability to reverse the growth – GHG nexus. In fact, existing Kyoto targets frequently place little or no real pressure on high per capita GHG emitters. As illustrated in *Table 9*, correlation coefficients between actual or effective Kyoto targets (accounting for past performance) and per capita GHG emissions are in particular remarkably low for the OMS's (EU15).[53]

In order for the EU's Emissions Trading System (ETS) to have a serious impact, considerable downward pressure must be exerted in particular on the high per capita emitters in order for them to take advantage of JI investment opportunities in the more pollution intensive countries. Much of that pressure has been deflated however as a result of

[51] Cyprus and Malta have no Kyoto targets.

[52] Spain topped the list of countries with renewable energy potential in an Ernst and Young report, *Renewable Energy Country Attractiveness Indices* (Winter 2006).

[53] Correlation coefficients may give a false impression of the real relationship between two variables. For this reason, these relationships have also been tested in a multivariate setting along with other variables. There is typically not relationship between per capita GHG levels and effective Kyoto targets. When the relationship does appear to be significant, its impact is typically so small as to be inconsequential.

the fact that the EU has on average already come very close to meeting its Kyoto target. While individual countries still have considerable distance to make up (in particular Austria, Denmark, Finland, Italy, Luxembourg, Portugal and Spain), the relative lack of calibration between per capita GHG emissions and GHG measured as a unit of GDP as to make the ETS ineffective.

This very brief analysis of the Kyoto Protocol does not augur well for its future performance. Much of the system's success appears to depend on the inclusion of the CEEC's in the existing framework and the acceptance – in particular – of generous base year allocations for Poland and Hungary.[54] Much as with the CAP and the WTO, national interests in the setting of appropriate Kyoto targets (or CAP targets) appear to come into conflict with supranational or international agreements. In such situations, EU institutions frequently have a particularly difficult time superseding national interests. As a result, the establishment of realistic and meaningful targets for the next round of the Kyoto Protocol is likely to pose significant problems.[55]

To what extent the CEEC's benefit from their inclusion in the Kyoto Protocol is less clear. As suggested above, these countries would tend to benefit more if pressures for JI investments were greater. While these countries have typically received relatively generous effective Kyoto targets,[56] they are not as likely to benefit from JI investments as they might be under a more effective system. Oddly, the NMS's do not appear to be well recompensed for the fact that they alone appear to explain the EU's success in meeting its targets. Moreover, in its current form at least, the system does not appear to reflect the needs or priorities of the NMS's as much as it appears to do the reverse.

CONCLUSION

Perhaps the greatest advantages of EU membership are to be found in the greatly increased openness of the political process and the transparency of the EU environmental regulatory framework. Such factors greatly facilitate the monitoring of environmental practice and thereby strengthen the role of governments, environmental organizations and the average individual. In this respect, the centralization of environmental decision-making at the EU level may be an advantage. On the other hand, the political process of EU policy-making seems skewed toward the interests of the large and more advanced states. This further appears to influence the ability of the Kyoto Protocol or the broader EU regulatory framework in reducing EU-wide emission levels. The findings of this analysis thus strengthen intergovernmental accounts of European integration suggesting that more powerful states are likely to shape policies to their advantage (Ellison, 2006a).

A strong case can be made that the top-down imposition of EU environmental regulation results in a potential diversion of resources from environmental objectives corresponding to local, regional and state-level priorities and preferences. While there will doubtless be some gains from the adoption of EU environmental legislation, there are likewise significant costs and even some losses. Among the

[54] The base year allocations for Hungary and Poland are based on figures for 1985-87 and 1988 respectively. The result is a quite significant increase in the base year for these two countries. Though there are discrepancies for other countries, they are small in comparison.

[55] There are already indications that multiple countries (*e.g.* Germany, the Czech Republic and others), will push for higher national CO_2 allocations than in the period 2005-2007.

[56] The coefficient on the NMS dummy is consistently significant in the above noted multivariate setting and leads to a typically more liberal effective Kyoto target.

most important of these costs are: 1) the diversion of financial and administrative resources to projects that are of less obvious importance for CEEC's, 2) a potentially negative impact on the overall competitiveness of CEE economies, and 3) an undue emphasis on EU-defined priorities at the expense of potentially more pressing local, regional or state-level economic and/or environmental concerns.

In the long run it is questionable to what degree success in environmental policy depends on EU pressure. In addition to the evidence presented above, a recent study from the EAP Taskforce noted that although the CEEC's had a lead on some of their Eastern neighbors in environmental expenditures, many of these countries have caught up with their CEE counterparts. Overall expenditure on environmental policy in these countries – measured as a share of GDP – now approximates levels in CEE.[57] At best, this questions the role and importance of EU accession on the push to improve the environment. The introduction of democracy and markets, the role of privatization and FDI, and the decline of heavy industry, potentially even the strong-minded character of those who forcefully pushed the environmental agenda in the early years of transition (Ellison, 2004) contribute substantially to an explanation of CEE environmental success.

This paper has important policy implications, in particular for the NMS's. There are potentially large returns from successfully making the jump from *policy-taker* to *policy-maker*. Rather than junk the whole system, the CEEC's should become strong advocates for a number of EU reforms. For one, greater emphasis could be placed on EU constitutional reforms that shift the voting power of the larger more advanced states in the direction of the smaller, less advanced states. For another, greater emphasis could be placed on stronger EU-based funding mechanisms for environmental investments. Finally, more effort could be placed on shifting some of the emphasis of EU environmental policy away from pollution intensity-based measures and end-of-pipe strategies toward per capita-based measures of the environmental burden. Though difficult to achieve under the existing decision-making mechanism, the broad majority of individuals should benefit from a system which distributes the burden of adjustment across a broader range of countries aimed at achieving real reductions in EU-wide emissions.

Clearly more work could be done. For one, it is necessary to explore in more detail the range of environmental policies and practices in place prior to 1989. For another, a more systematic account of the factors driving environmental policy-making in CEE in the early years of transition is warranted. In addition, more could be done to unearth other positive environmental practices abandoned in the pursuit of EU membership. Finally, the degree to which the adoption of EU environmental policy has defused citizen participation in defining the domestic environmental agenda is worth exploring. This in fact may be one of the more significant legacies of the drive for EU membership and potentially one of its greater losses.

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[57] Kazakhstan, Moldova, the Russian Federation, Ukraine and Uzbekistan now compare favorably to the CEEC's. A few countries however failed to achieve CEE levels of expenditure (Armenia, Azerbaijan, Georgia and the Kyrgyz Republic) (EAP Task Force, 5/2003).

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Table 1
Structure of GDP
(1990–2002)

	Agriculture			Industry			Services		
	1990	1995	2002	1990	1995	2002	1990	1995	2002
Bulgaria	17.0	14.1	12.4	49.2	34.6	29.7	33.8	51.3	57.9
Czech Republic	6.2	5.0	3.8	48.8	44.2	39.6	45.0	50.8	56.7
Estonia	16.6	8.9	5.0	49.7	29.6	28.1	33.7	61.5	67.0
Hungary	14.5	7.1	4.3	39.1	32.3	31.2	46.4	60.6	64.5
Latvia	21.9	10.8	4.7	46.2	33.2	24.7	31.9	56.0	70.6
Lithuania	27.1	12.0	7.1	30.9	34.0	31.2	42.1	54.0	61.7
Poland	8.3	6.9	3.2	50.1	38.9	30.5	41.6	54.1	66.4
Romania	23.7	21.4	13.1	49.9	42.7	38.1	26.3	35.8	48.8
Slovakia	7.4	5.1	4.1	59.1	34.6	28.6	33.5	60.3	67.4
Slovenia	5.5*	4.6	3.1	45.6*	38.5	36.2	48.9*	56.9	60.7
Austria	3.8	2.7	2.4	34.1	32.4	32.0	62.1	64.9	65.6
Belgium	2.3	1.7	1.3	32.6	29.4	27.0	65.1	68.9	71.7
Denmark	4.5	3.7	2.5	26.5	25.8	26.4	69.0	70.5	71.1
Finland	6.7	4.8	3.6	33.8	33.1	31.8	59.5	62.1	64.6
France	3.8	3.4	2.6	29.7	27.3	25.3	66.5	69.4	72.1
Germany	1.7	1.3	1.2	38.0	33.4	29.7	60.3	65.3	69.2
Greece	10.7	10.2	7.3	28.2	23.1	23.2	61.1	66.8	69.5
Ireland	9.1	7.6	3.3	35.0	38.0	41.5	56.0	54.3	55.2
Italy	3.6	3.4	2.7	33.9	31.5	28.3	62.5	65.1	69.0
Luxembourg	1.9	1.2	0.7	32.4	25.5	20.3	65.7	73.2	79.0
Netherlands	4.5	3.6	2.6	30.4	28.7	25.8	65.1	67.6	71.6
Portugal	8.6	5.4	3.7	31.7	31.6	28.7	59.7	63.0	67.6
Spain	5.7	4.6	3.4	35.5	31.0	29.7	58.8	64.4	67.0
Sweden	3.5	2.6	1.9	32.3	31.0	28.2	64.2	66.4	70.0
UK	1.9	1.8	1.0	35.2	32.0	27.0	62.9	66.2	72.0

Source: World Development Indicators (World Bank, 2003, 2005).
* Data from 1991.

Table 2
Emissions per Unit of GDP, 1980, 1990 and 2002
(kg per $1000)

	SOx			NOx			CO			CO2			GHG	
	1980	1990	2002	1980	1990	2002	1980	1990	2002	1980	1990	2002	1992	2002
Bulgaria	173.3	133.6	68.3	35.2	24.0	13.7	84.3	59.3	45.0	6,365	5,511	3,396	9,573	4,535
Czech Republic	45.2	34.6	4.1	18.7	10.0	5.5	17.9	23.1	9.4		3,014	2,120	4,016	2,461
Estonia	57.2	42.4	14.1	14.0	11.4	6.4	79.7	73.1	28.6		6,413	2,775	10,092	3,130
Hungary	42.3	23.4	7.2	7.1	5.5	3.6	26.4	23.1	12.4	2,138	1,662	1,141	2,590	1,555
Latvia	11.9	9.2	1.3	10.3	8.0	4.7	93.4	72.1	42.6		2,127	825	4,664	1,197
Lithuania		13.9	3.3		9.9	4.0		32.5	17.3		2,434	945	4,286	1,566
Poland	37.2	27.6	9.2	11.2	11.0	4.7	67.3	63.6	20.7		3,272	1,863	4,141	2,243
Romania	25.4	29.4	22.4	12.6	12.2	7.8	78.1	71.4	57.1	4,615	3,729	2,596	6,529	3,355
Slovakia	43.4	27.7	4.7	11.0	11.0	4.7	27.3	25.2	13.6		3,047	1,977	4,645	2,368
Slovenia		12.2	3.5		3.9	2.9		5.1	4.4			807		1,006
Unw. Average	54.5	35.4	13.8	15.0	10.7	5.8	59.3	44.8	25.1	4,373	3,468	1,845	5,615	2,342
Wght. Average	45.2	31.4	10.7	13.9	10.4	5.2	55.9	46.9	21.8	2,847	3,042	1,851	4,666	2,293
East Germany	54.3	44.2	4.1	2.3	1.5	0.7	10.0	6.3	2.0					
Austria	3.0	0.5	0.2	2.1	1.4	1.1	15.0	8.3	4.2	441	405	358	489	435
Belgium	5.5	2.0	0.7	2.9	1.8	1.2	8.5	7.0	4.4	869	642	547	765	648
Denmark	4.2	1.4	0.2	2.9	2.2	1.2	9.6	5.9	3.6	585	419	334	538	422
Finland	7.9	2.6	0.7	4.0	3.0	1.7	8.9	5.6	4.8	771	627	561	856	661
France	3.8	1.2	0.4	2.4	1.7	1.0	18.6	10.1	4.4	567	364	300	507	410
W. Germany	2.7	0.6	0.1	2.7	1.8	0.8	11.4	7.3	2.3		657	457	752	538
Greece	4.8	5.5	4.0	3.7	3.3	2.7	15.6	14.6	11.3	623	948	871	1,134	1,117
Ireland	6.7	3.9	0.9	2.2	2.5	1.2	12.1	8.5	2.4	761	674	426	1,075	640
Italy	4.7	1.9	0.6	2.2	2.1	1.2	9.8	7.8	4.5	507	470	427	543	504
Luxembourg	3.4	1.3	0.2	3.2	2.0	0.8	27.3	15.2	2.4	1,491	1,046	506	1,002	535
Netherlands	2.2	0.7	0.2	2.6	2.1	1.1	6.9	4.1	1.7	686	577	470	731	568
Portugal	4.3	3.0	2.0	2.7	2.9	2.6	12.7	9.7	6.2	460	545	621	677	750
Spain	9.0	5.0	2.6	3.3	2.9	2.5	10.8	8.8	4.6	619	521	552	637	678
Sweden	3.1	0.5	0.2	2.6	1.6	1.0	7.6	6.1	3.1	450	284	222	375	282
UK	5.5	3.3	0.7	2.9	2.4	1.1	8.8	6.5	2.2	663	514	360	662	425
Unw. Average	4.7	2.2	0.9	2.8	2.3	1.4	12.2	8.4	4.1	678	579	479	716	586
Wght. Average	7.8	2.9	1.1	4.8	3.3	2.0	20.9	12.0	5.9	1,216	812	712	987	868
USA	4.6	3.0	1.4	4.4	3.2	1.9	18.8	18.5	8.7	902	683	574		
Japan	0.5	0.2	0.2	0.6	0.5	0.4		1.0	0.7	330	261	250		

Sources: GDP data is from the World Development Indicators database (World Bank, 2005), SOx, NOx and CO emissions data is from the Environmental Data Compendium (OECD, 1999, 2002, 2005) and missing data is from EMEP expert emissions estimates (webdab.emep.int). CO2 and GHG emissions data is from Eurostat's online data website.

Table 3
Per Capita Emissions, 1980, 1990 and 2002
(kg per person)

	SOx			NOx			CO			CO2			GHG	
	1980	1990	2002	1980	1990	2002	1980	1990	2002	1980	1990	2002	1992	2002
Bulgaria	232	229	119	47	41	24	113	102	78	8,510	9,445	5,924	13,929	7,911
Czech republic	219	182	23	91	52	31	87	121	54		15,826	12,056	18,542	13,995
Estonia	195	161	65	48	43	29	272	276	131		24,263	12,702	27,690	14,327
Hungary	152	97	35	25	23	18	95	96	61	7,703	6,923	5,623	9,214	7,665
Latvia	38	36	5	33	31	18	300	282	161		8,313	3,126	10,816	4,536
Lithuania	91	60	12	45	43	15	159	141	64		10,537	3,516	13,780	5,823
Poland	116	84	41	35	34	21	209	195	92	12,882	10,008	8,311	12,088	10,010
Romania	48	56	42	24	24	15	147	137	106	8,666	7,173	4,838	9,971	6,254
Slovakia	157	103	19	40	41	19	99	93	55		11,275	8,050	13,696	9,645
Slovenia	124	98	36	27	32	30	36	41	45		7,313	8,199	9,381	10,222
Unw. Average	137	111	40	41	36	22	152	148	85	9,440	11,108	7,235	13,911	9,039
Wght. Average	126	101	42	39	34	20	156	151	86	7,926	9,807	7,259	12,414	8,991
E. Germany	260	276	34	44	39	17	154	127	53					
Austria	48	10	4	33	28	25	237	163	101	6,944	7,966	8,639	10,170	10,492
Belgium	84	36	15	45	34	28	130	129	99	13,318	11,895	12,278	14,649	14,548
Denmark	88	35	5	60	55	37	202	145	107	12,286	10,255	10,089	13,388	12,758
Finland	122	52	16	62	60	40	138	112	116	11,923	12,556	13,379	15,433	15,777
France	60	23	9	38	34	23	294	193	100	8,983	7,002	6,842	9,981	9,333
W. Germany	51	14	2	42	35	17	187	145	52	14,262	12,837	10,482	15,783	12,324
Greece	42	49	44	32	29	30	135	128	125	5,398	8,333	9,619	10,350	12,340
Ireland	65	53	25	22	34	32	118	114	65	7,419	9,067	11,746	15,233	17,661
Italy	61	31	12	28	34	23	127	126	87	6,596	7,605	8,228	8,976	9,716
Luxembourg	66	40	7	63	61	38	531	461	110	29,052	31,655	23,009	33,562	24,341
Netherlands	35	13	4	41	39	25	109	76	41	10,855	10,782	10,969	14,194	13,273
Portugal	26	24	21	16	23	27	77	78	66	2,788	4,415	6,531	5,790	7,898
Spain	78	56	38	29	33	35	94	98	67	5,370	5,789	7,967	7,329	9,785
Sweden	59	12	7	49	38	27	145	141	86	8,594	6,549	6,146	8,460	7,812
UK	86	65	17	46	48	27	136	129	55	10,311	10,164	9,087	12,924	10,734
Unw. Average	65	34	15	40	39	29	177	149	85	10,273	10,458	10,334	13,081	12,586
Wght. Average	64	34	14	38	37	25	164	136	74	9,567	9,166	8,939	11,629	10,898
USA	102	84	48	98	92	65	418	522	303	20,037	19,307	19,848		
Japan	11	8	7	14	17	16		33	27	7,801	8,667	9,336		

Sources: SOx, NOx and CO emissions data is from the Environmental Data Compendium (OECD, 1999, 2002, 2005) and missing data is from EMEP expert emissions estimates (webdab.emep.int). CO2, GHG emissions and population data is from Eurostat's online data website. Missing population data (US and Japan) has been taken from World Development Indicators database (World Bank, 2005).

Table 4
Change in Per Capita Emissions, 1990/1980, 2000/1990 and 2002/1980
(%)

	SO_x			NOx			CO			CO2			GHG
	1990/1980	2000/1990	2002/1980	1990/1980	2000/1990	2002/1980	1990/1980	2000/1990	2002/1980	1990/1980	2000/1990	2002/1980	2002/1992
Bulgaria	-1.2	-47.7	-48.6	-12.4	-45.1	-49.3	-9.8	-15.2	-30.4	11.0	-39.6	-30.4	-43.2
Czech Republic	-17.0	-85.8	-89.4	-42.2	-26.3	-65.7	40.0	-47.9	-38.3		-21.4	-23.8	-24.5
Estonia	-17.7	-55.2	-66.9	-9.3	-21.2	-38.1	1.7	-46.6	-51.9		-49.4	-47.6	-48.3
Hungary	-36.2	-51.1	-76.8	-10.0	-20.9	-30.7	1.0	-35.6	-35.9	-10.1	-16.6	-27.0	-16.8
Latvia	-6.4	-80.8	-86.8	-5.4	-49.3	-46.6	-5.9	-45.8	-46.2		-64.7	-62.4	-58.1
Lithuania	-34.2	-79.6	-86.6	-4.2	-68.4	-67.0	-11.6	-43.0	-59.5		-62.7	-66.6	-57.7
Poland	-27.1	-53.7	-64.7	-3.0	-35.6	-39.3	-6.9	-54.0	-55.9	-22.3	-18.6	-35.5	-17.2
Romania	18.5	-28.1	-12.4	-0.5	-39.6	-38.2	-6.4	-24.6	-27.4	-17.2	-41.3	-44.2	-37.3
Slovakia	-34.8	-77.6	-87.9	2.9	-51.5	-52.2	-5.8	-40.4	-44.2		-33.3	-28.6	-29.6
Slovenia	-20.6	-50.8	-71.2	17.1	-7.5	11.0	13.0	-15.7	24.4		4.5	12.1	9.0
Unw. Average	-19.4	-60.6	-71.1	-12.1	-37.3	-47.0	-2.1	-41.0	-44.1	17.7	-36.5	-23.4	-35.0
Wght. Average	-19.6	-57.1	-66.6	-13.2	-36.6	-47.1	-2.8	-43.0	-45.0	23.7	-28.1	-8.4	-27.6
E. Germany	6.2	-87.4	-87.0	-11.4	-38.4	-49.5	-17.1	-53.1	-65.5				
Austria	-78.1	-57.7	-90.7	-14.9	-14.3	-22.2	-31.0	-36.3	-57.5	14.7	2.1	24.4	3.2
Belgium	-56.7	-55.7	-82.4	-25.2	-4.3	-38.6	-1.0	-16.8	-24.2	-10.7	3.1	-7.8	-0.7
Denmark	-60.9	-84.5	-94.7	-8.2	-29.2	-37.7	-28.3	-22.2	-46.9	-16.5	-3.3	-17.9	-4.7
Finland	-57.3	-72.8	-87.0	-2.5	-24.3	-35.2	-18.8	-9.4	-16.4	5.3	-4.1	12.2	2.2
France	-60.8	-54.5	-84.9	-11.0	-27.3	-39.5	-34.2	-41.7	-65.9	-22.1	-1.1	-23.8	-6.5
W. Germany	-72.9	-88.2	-97.0	-16.8	-45.9	-59.1	-22.2	-58.8	-72.1	-10.0	-18.4	-26.5	-21.9
Greece	16.7	-9.1	5.9	-10.3	2.7	-5.5	-5.3	9.5	-8.0	54.4	14.2	78.2	19.2
Ireland	-19.1	-34.3	-62.3	56.5	-1.6	49.3	-3.3	-35.3	-44.9	22.2	28.9	58.3	15.9
Italy	-49.5	-57.2	-79.6	20.4	-29.4	-17.8	-0.8	-27.2	-31.4	15.3	6.7	24.7	8.2
Luxembourg	-40.1	-82.0	-89.5	-4.2	-35.2	-39.4	-13.1	-75.5	-79.2	9.0	-35.0	-20.8	-27.5
Netherlands	-63.0	-62.5	-87.3	-6.0	-31.4	-39.1	-30.2	-41.8	-62.6	-0.7	-0.2	1.0	-6.5
Portugal	-7.5	-5.5	-19.8	43.6	9.8	65.8	2.2	-11.0	-14.4	58.4	41.8	134.3	36.4
Spain	-28.3	-32.1	-51.8	14.0	9.6	23.3	4.3	-26.2	-28.7	7.8	32.6	48.3	33.5
Sweden	-78.9	-50.2	-89.0	-21.9	-25.6	-44.1	-2.6	-32.9	-40.6	-23.8	-9.7	-28.5	-7.7
UK	-24.9	-69.2	-80.3	5.2	-40.3	-41.7	-5.3	-49.0	-59.8	-1.4	-10.5	-11.9	-16.9
Unw. Average	-47.2	-52.5	-76.8	-3.5	-22.0	-27.9	-15.7	-39.0	-51.9	1.8	-4.8	0.6	-3.8
Wght. Average	-46.4	-55.9	-78.1	-2.8	-28.2	-33.8	-17.5	-39.7	-55.0	-4.2	-3.5	-6.6	-6.3
USA	-17.6	-37.6	-52.8	-6.3	-21.6	-33.1	24.9	-37.0	-27.5	-3.6	2.8	-0.9	
Japan	-24.3	-16.6	-37.2	20.8	-2.1	15.2		-12.5	-21.9	11.1	7.7	19.7	

Source: own calculations on the basis of the data from Table 3

Table 5
Requested and Granted Transitional Periods

	Sector/Directive Chapter Opened/Closed	Bulgaria		Cyprus		Czech Republic	
		Jul-01	Open	Dec-99	Dec-02	Dec-99	Dec-02
		Requested	Granted	Requested	Granted	Requested	Granted
AIR QUALITY	Emissions of VOC from storage of petrol	2010		2004			
	Sulphur content of certain liquid fuels	2010		2004	1 year derogation		
	Limitation of Emissions of VOC	2012					
WASTE MANAGEMENT	Incineration of hazardous waste						
	PCB/PCT			2010			
	Waste						
	Hazardous waste						
	Packaging and packaging waste	2012		2005	2005	2005	2005
	Shipment of waste						
	Disposal of oil waste						
	End-of life vehicles						
	Incineration of waste						
	Landfill of oil shale						
	Landfill of waste	2015					
	Treatment of urban waste water	2015		to be specified	2012	2010	2010
	Protection of waters against pollution caused by nitrates from agricultural resources					2005	
	Discharges of dangerous substances into aquatic environment	2011				to be specified by 1999	
	Quality of bathing water						
	Quality of water intended for human consumption					2006	
	Quality of surface water intended for the abstraction of drinking water						
	Ground water directive						
	Quality of fresh waters						
OTHER	Conservation of natural habitats and of wild fauna and flora					2005	
	Conservation of wild birds					2005	
	Integrated pollution prevention and control	2012		2004		2012	
	Air pollution from large combustion plants				special provisions		2007
	Substances that deplete the ozone layer						
	Storage of asbestos waste						
	Health protect. of individuals against ionising radiation in relation to medic. exposure						
	Total # Derogations:	*8*	*n.a.*	*6*	*4*	*8*	*3*

Table 5 (Cont.)
Requested and Granted Transitional Periods

	Sector/Directive Chapter Opened/Closed	Estonia		Hungary		Latvia	
		Dec-99	Dec-02	Dec-99	Dec-02	Mar-01	Dec-02
		Requested	Granted	Requested	Granted	Requested	Granted
AIR QUALITY	Emissions of VOC from storage of petrol	2007	2006			2009	2008
	Sulphur content of certain liquid fuels					2004	
	Limitation of Emissions of VOC					to be specified	
WASTE MANAGEMENT	Incineration of hazardous waste			2005	2005	2004	
	PCB/PCT					2004	
	Waste						
	Hazardous waste					2004	
	Packaging and packaging waste			2005	2005	2015	2007
	Shipment of waste						
	Disposal of oil waste					2004	
	End-of life vehicles					to be specified	
	Incineration of waste						
	Landfill of oil shale		2009				
	Landfill of waste					2015	2004
WATER QUALITY	Treatment of urban waste water	2010	2010	2015	2015	2015	2015
	Protection of waters against pollution caused by nitrates from agricultural resources	2008				2010	
	Discharges of dangerous substances into aquatic environment	2006		2009		2010	
	Quality of bathing water					2008	
	Quality of water intended for human consumption	2013	2013			2015	2015
	Quality of surface water intended for the abstraction of drinking water						
	Ground water directive	2006		2007		2010	
	Quality of fresh waters					2005	
OTHER	Conservation of natural habitats and of wild fauna and flora					2010	
	Conservation of wild birds	2010				2010	
	Integrated pollution prevention and control			2007		2015	2010
	Air pollution from large combustion plants		2015	2004	2004	2008	
	Substances that deplete the ozone layer						
	Storage of asbestos waste					2004	2004
	Health protect. of individuals against ionising radiation in relation to medic. exposure					2005	2005
	Total # Derogations:	*7*	*5*	*7*	*4*	*23*	*8*

Table 5 (Cont.)
Requested and Granted Transitional Periods

	Sector/Directive Chapter Opened/Closed	Lithuania		Malta		Poland	
		Nov-00	Dec-02	Jun--01	Dec-02	Dec-99	Dec-02
		Requested	Granted	Requested	Granted	Requested	Granted
AIR QUALITY	Emissions of VOC from storage of petrol	2010	2007	2005	2004	2009	2005
	Sulphur content of certain liquid fuels			2006		2009	2006
	Limitation of Emissions of VOC						
WASTE MANAGEMENT	Incineration of hazardous waste						
	PCB/PCT						
	Waste					2012	
	Hazardous waste					2012	
	Packaging and packaging waste	2010	2006	2006 + special provision	2007	2007	2007
	Shipment of waste					2012	2007
	Disposal of oil waste					2005	
	End-of life vehicles						
	Incineration of waste						
	Landfill of oil shale						
	Landfill of waste	2015					2012
WATER QUALITY	Treatment of urban waste water	2015	2009	2009	2007	2015	2015
	Protection of waters against pollution caused by nitrates from agricultural resources	2011				2010	
	Discharges of dangerous substances into aquatic environment			2009	2007	to be specified	2007
	Quality of bathing water						
	Quality of water intended for human consumption	2015		2006	2005		
	Quality of surface water intended for the abstraction of drinking water					2010	
	Ground water directive						
	Quality of fresh waters						
OTHER	Conservation of natural habitats and of wild fauna and flora	2010					
	Conservation of wild birds	2010		special provision	2008		
	Integrated pollution prevention and control			2004		2010	2010
	Air pollution from large combustion plants		2015	2006	2005		2017
	Substances that deplete the ozone layer			special provision		2006	
	Storage of asbestos waste						
	Health protect. of individuals against ionising radiation in relation to medic. exposure					2006	2006
	Total # Derogations:	8	4	10	7	14	10

Table 5 (Cont.)
Requested and Granted Transitional Periods

	Sector/Directive Chapter Opened/Closed	Romania		Slovakia		Slovenia	
		Mar-02	Open	Mar-01	Dec-02	Dec-99	Dec-02
		Requested	Granted	Requested	Granted	Requested	Granted
AIR QUALITY	Emissions of VOC from storage of petrol	2010		2010	2007		
	Sulphur content of certain liquid fuels					2004	
	Limitation of Emissions of VOC	2015		2010			
WASTE MANAGEMENT	Incineration of hazardous waste			2006	2006		
	PCB/PCT						
	Waste						
	Hazardous waste						
	Packaging and packaging waste	2010			2007	2007	2007
	Shipment of waste						
	Disposal of oil waste						
	End-of life vehicles						
	Incineration of waste	2010					
	Landfill of oil shale						
	Landfill of waste	2017					
WATER QUALITY	Treatment of urban waste water	2022		2015	2015	2015	2015
	Protection of waters against pollution caused by nitrates from agricultural resources	2014		2008			
	Discharges of dangerous substances into aquatic environment	2015		to be specified	2006		
	Quality of bathing water						
	Quality of water intended for human consumption	2022		2008			
	Quality of surface water intended for the abstraction of drinking water						
	Ground water directive						
	Quality of fresh waters						
OTHER	Conservation of natural habitats and of wild fauna and flora						
	Conservation of wild birds						
	Integrated pollution prevention and control	2015		2011	2011	2011	2011
	Air pollution from large combustion plants	2012		2010	2007		
	Substances that deplete the ozone layer						
	Storage of asbestos waste						
	Health protect. of individuals against ionising radiation in relation to medic. exposure						
	Total # Derogations:	*11*	*n.a.*	*9*	*7*	*4*	*3*

Source: European Commission (2002) and negotiating position papers of individual candidate countries.

Table 6
Total Estimated Compliance Costs for EU Environmental Regulation
(Euros, billions)

	Cost as Share of 2001 GDP	Number Years to Comply	Total Cost 1997 Estimate	DANCEE 2001 Cost Estimate
Bulgaria	56.5%	34	15	8.61
CzR	9.7-13.8%	9-12	13.4	6.6 - 9.4
Estonia	70.4%	39	1.5	4.41
Hungary	7.1-17.3%	7-15	13.7	4.12 – 10
Latvia	17.2-27.5%	15-21	1.71	1.48 - 2.36
Lithuania	12.1%	11	2.38	1.6
Poland	10.7-20.7%	10-17	35.2	22.1 - 42.8
Romania	49.0%	31	22	22
Slovakia	11.2%	10	5.4	4.81
Slovenia	20.6%	17	1.84	2.43
Total			121.5	78.15 - 108.42

Table 6 (Cont.)

	Compliance Costing (1997)		Danish EPA (By Function)				Compliance Costing (By Function)		
	MIN	MAX	Urban Waste Water	Waste Landfill/ Recycling	Large Combustion Plants	IPPC	Water	Air	Waste max.
Bulgaria	11.7	15	2.056	2.45	1.627	3.261	4.9	5.1	5.1
CzR	10.4	13.4	1.164	1.12	1.858	3.725	3.3	6.4	3.8
Estonia	1.5	1.5	0.168	0.683	0.312	0.489	1.5	n.a.	n.a.
Hungary	11.5	13.7	1.678	0.43	0.878	1.761	6.6	2.7	4.4
Latvia	1.71	1.71	0.579	0.332	0.043	0.09	1.71	n.a.	n.a.
Lithuania	2.38	2.38	0.435	0.354	0.074	0.044	2.38	n.a.	n.a.
Poland	34.1	3.52	6.414	3.609	3.456	6.927	18.1	13.9	3.3
Romania	20.2	22	1.385	2.494	0.402	0.806	10.1	9.1	2.7
Slovakia	4.1	5.4	0.499	0.87	0.796	1.596	1.9	1.9	1.6
Slovenia	1.84	1.84	0.914	0.798	0.18	0.05	n.a.	0.69	1.15
Total	108.4	121.5	15.295	13.14	9.626	18.749	50.5	48.2	22.7

Sources: Environmental Policy Europe (1997) and DANCEE (2001). Compliance costs as a share of GDP and estimates of the number of years to comply are based on GDP data from Eurostat's online dataset and DANCEE compliance costs estimates. Calculations of the number of years required for compliance are based on the following assumptions: annual environmental expenditures of 1% of GDP and an average annual growth rate of 3%.

Table 7
Predicted Environmental Expenditure, 2007–2013
(Select Countries)

	Structural and Cohesion Funds (Mill Euros) (2007-2013, Final 2006)	Environmental Investment Share (Bankwatch)	Projected Environmental Expenditure (Euros, billions)	DANCEE 2001 Cost Predictions (Euros, billions)
CzR	23,697	20.0%	4.739	6.6-9.4
Estonia	3,058	12.8%	0.392	4.41
Hungary	22,451	16.4%	3.671	4.12-10
Latvia	4,090	14.8%	0.605	1.48-2.36
Lithuania	6,097	15.2%	0.927	1.6
Poland*	59,698	38.4%	22.924	22.1-42.8
Slovakia	10,264	18.0%	1.848	4.81
Bulgaria	6,047	23.8%	1.437	8.61

Sources: SCF data is from COM(2006) 281 final. Bankwatch data is from www.bankwatch.org. Cost estimates are from DANCEE (2001).
* includes infrastructure and environmental expenditure

Table 8
Kyoto Targets and Per Capita and GDP Measures of Greenhouse Gas Emissions

Country	Change in GHG 2004/1990	Kyoto Target (2012)	Effective Kyoto Target (2004)	Per Capita GHG (2004)	GHG per Unit of GDP (2002)	Change in GHG 2004/2001
CzR	-25.1%	-8.0%	17.1%	14,405.3	2,461.14	-1.3%
Estonia	-50.0%	-8.0%	42.0%	15,764.9	3,130.37	12.1%
Hungary	-32.0%	-6.0%	26.0%	8,214.1	1,555.03	-1.1%
Latvia	-58.5%	-8.0%	50.5%	4,613.7	1,196.95	-2.7%
Lithuania	-60.1%	-8.0%	52.1%	5,891.1	1,565.71	1.5%
Poland	-31.6%	-6.0%	25.6%	10,117.7	2,243.48	0.9%
Slovakia	-30.3%	-8.0%	22.3%	9,479.4	2,368.28	-1.9%
Slovenia	-0.8%	-8.0%	-7.2%	10,068.1	1,006.12	0.5%
CEEC8:	*-32.5%*					
Average:		*-7.5%*	*28.6%*	*9,819.3*	*1,940.9*	*1.0%*
Austria	15.7%	-13.0%	-28.7%	11,216.1	435.16	7.4%
Belgium	0.7%	-7.5%	-8.2%	14,226.1	648.28	0.6%
Denmark	-1.8%	-21.0%	-19.2%	12,616.7	421.94	-2.7%
Finland	14.5%	0.0%	-14.5%	15,594.8	661.31	8.5%
France	-0.8%	0.0%	0.8%	9,345.5	409.76	0.1%
Germany	-17.5%	-21.0%	-3.5%	12,301.9	537.74	-1.9%
Greece	23.9%	25.0%	1.1%	12,463.0	1,117.45	3.5%
Ireland	22.7%	13.0%	-9.7%	17,007.2	640.23	-3.5%
Italy	12.3%	-6.5%	-18.8%	10,062.5	504.49	3.8%
Luxembourg	0.3%	-28.0%	-28.3%	28,122.2	534.92	27.0%
Netherlands	1.6%	-6.0%	-7.6%	13,396.5	568.44	0.8%
Portugal	41.0%	27.0%	-14.0%	8,067.1	750.48	0.6%
Spain	47.9%	15.0%	-32.9%	10,105.0	678.05	11.1%
Sweden	-3.6%	4.0%	7.6%	7,787.7	281.95	1.3%
UK	-14.1%	-12.5%	1.6%	11,043.6	424.88	-1.7%
EU15:	*-0.9%*					
EU23:	*-7.4%*					
Average (EU15):		*-2.1%*	*-11.6%*	*12,890.4*	*574.3*	*3.7%*
Average (EU23):		*-4.0%*	*2.4%*	*11,822.2*	*1,049.7*	*2.7%*

Sources: Kyoto target, 2004/1990, 2004 and 2001 performance data from EEA (2006: p. 11, Table ES.1), GHG/GDP data from Table 3, and per capita estimates based on population date from the Eurostat online database.

Table 9
Correlation Coefficients between Kyoto Targets and Per Capita or GDP Measures of GHG Emissions

	Effective Kyoto Targets (2001)			Kyoto Target (ignores current perf.)		
	EU15	CEEC8	EU23	EU15	CEEC8	EU23
Per Capita GHG's	-0.10	-0.39	-0.41	-0.41	-0.08	-0.2476
GHG per unit of GDP	0.09	0.25	0.74	0.63	-0.08	-0.0478

Source: own calculations based on data from Table 8 above and EEA (2006: p. 11, Table ES.1).