



International Actions to Combat Pollution in the Black Triangle and Katowice Regions

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Working Paper

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**International Actions to Combat
Pollution in the Black Triangle and
Katowice Regions**

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Introduction

The Black Triangle, a region spanning the borders of eastern Germany, the Czech Republic, and Poland, has elicited a number of international efforts to combat pollution emanating from the region's industries and power generation plants. Few international actions have been directed toward the Katowice region of Poland, and even fewer toward the problem of heavy metal pollution there. Largely because transboundary air pollution has caused widespread damage to countries outside of Central Europe, especially in Western Europe and Scandinavia, much of the international environmental efforts directed to the region have been focused on this form of pollution. Some programs have also addressed local sources of pollution, including heavy metal contamination and local heating systems. The bulk of international action in the environmental sphere, however, has focused on local and *transboundary air* pollution resulting from emissions of sulfur dioxide (SO₂), nitrous oxide (NO_x), carbon dioxide, and particulates.

This paper will consider international environmental efforts applied in the Czech Republic and Poland in order to provide a context for considering both present and possible future international efforts to combat air pollution and heavy metal contamination in the Black Triangle and Katowice regions. Many international efforts to improve air and water pollution are regionally based and span international borders, for example in the Black Triangle and Silesia. One form of international action, international environmental treaties, usually addresses states as a whole. For these reasons, it is helpful to examine international actions as they have been directed to the countries of Poland and the Czech Republic, which include much of the Black Triangle region as well as Silesia.

This paper has been divided into five sections. First, to provide a general context for considering international efforts in the Black Triangle and Katowice regions specifically, domestic environmental policies and domestic funding sources for environmental investment in Poland and the Czech Republic are briefly discussed. Second, several criteria with which to evaluate international actions are described. In the remaining sections, an examination is made of each of three areas of international action: international environmental treaties; international conferences and forums for discussing environmental issues; and international financial and/or technical assistance for environmental remediation. To conclude, an assessment is made of possible lessons and recommendations for further international action for combating heavy metal pollution in the Katowice region.

Given the difficult task of describing and evaluating the myriad of international efforts to combat pollution in Central and Eastern Europe to date, a brief caveat is in order. This paper surveys and evaluates a representative selection of international actions that have aimed to achieve environmental improvements in Poland and the Czech Republic. As such, the paper does not purport to provide an exhaustive account of all efforts to date in this sphere. In the section on international financial assistance, for example, the analysis centers on efforts by the European Union and the United States, and does not address the individual bilateral aid programs of European Union member states.

Before 1989, during the period of communism in Poland, the Czech Republic and East Germany, international environmental treaties were the primary means by which the international community tried to address transboundary air pollution emanating from the Black Triangle region and Upper Silesia. The fall of communism and the establishment of democratic governments in Central Europe has inaugurated a new era of cooperation between the countries of that region and those of Western Europe and the United States. New forms of cooperation since 1989 include environmental conferences, as well as foreign assistance directed primarily from the European Union and the United States to Poland and the Czech Republic. The former East Germany is a special case due to the rapid adoption of environmental policies and the flow of financial investment from West Germany, and therefore will not be considered in this paper.

International efforts have increased significantly in the six years since the end of 1989, but it is clear that the level of financial assistance required to control pollution in the region is much greater than that which has so far been committed by the West. Though international efforts are vital to improving conditions in the Black Triangle and Katowice regions, the primary conclusion of this paper is that domestic resources will be required to finance the bulk of investments for improving environmental conditions and transboundary air pollution in these areas.

I. Domestic Environmental Policy and Funding Sources: Czech Republic and Poland

International actions to combat pollution in Central and Eastern Europe should be considered within the framework of environmental policies and domestic funding sources already established within individual countries such as the Czech Republic and Poland. Without such domestic efforts, any international efforts to mitigate pollution would be largely ineffective. International efforts to date have largely complemented domestic policies in the Czech Republic and Poland both in terms of economic reforms and new environmental regulations.

A. Economic Reforms and the Transition to a Market Economy

The transition to a market economy in Poland and the Czech Republic since 1990 has resulted, in some cases, in hard budget constraints to enterprises, a gradual adjustment of prices of natural resources to market levels, and the privatization of thousands of state-owned enterprises. These processes resulted in a sharp decline of domestic production during the period from 1990-93 in the Czech Republic, and from 1990-91 in Poland. These countries have since experienced positive economic growth, but output in most cases is still below levels of 1989. With the decline in production has come a sharp drop in energy use. In addition, the rationalization of prices has provided incentives to enterprises and individuals to conserve energy, both of which have resulted in a significant decline in air pollution emissions and other forms of pollution compared with levels in 1989.

B. Environmental Policy Changes

The decline in production, which led to an unintended and perhaps temporary improvement in environmental conditions, has been paralleled by changes in domestic environmental policy to further lower pollution to levels compatible with human health needs, and to ensure that the gains so far made in cutting pollution are not lost as economic growth resumes and production expands beyond the levels of the early 1990s.

Both the Czech Republic and Poland have adopted stricter emissions standards for air pollutants such as SO₂, NO_x, CO₂ and particulates. In many cases, environmental standards in these countries have been set to levels as strict, or stricter, than those in the European Union. In addition, Central European countries have largely adopted the EU method of 'command and control' policies, rather than economic instruments. Standards are being imposed gradually, to give firms time to make necessary investments. For example, in the Czech Republic, full compliance with air pollution standards set out in the Czech Clean Air Act of 1991 is not required until 1998.

Poland and the Czech Republic have also raised fees and fines and improved monitoring and enforcement. Fees and fines, however, are still too low to provide a financial incentive for enterprises to internalize the costs of pollution, and therefore simply serve as a revenue raising device. In addition, the collection and use of revenues from fees and fines is constrained by limited monitoring capabilities, widespread exemptions, and the dilution effect of inflation.¹ Despite inconsistencies with monitoring and enforcement, declines in production and stricter standards have shown results. For example, from the period of 1991-94 in Poland, the emission of CO₂ dropped by 15%, NO_x by 14% and particulate matter by 23%. In 1980, Poland emitted 4.1 million tons of SO₂, while in 1994 it emitted only approximately 2.7 million tons.² In the Czech Republic, from 1989-1992, emissions of SO₂ declined by 23% and NO_x by 24%.³

C. Sources of Domestic Financing for the Environment

Domestic instruments for funding environmental investments in the Czech Republic and Poland are three fold: national environmental funds, direct public investments from state or local budgets, and investments financed by the private sector, by both commercial banks and firms. In addition, Poland has two unique financial institutions that span the public and private sectors. These are the Polish Bank for Environmental Protection, and the Ecofund. The Ecofund, which was capitalized by a debt-for-the-environment swap with Poland's creditor countries, is discussed in the section on international financial assistance.

¹ Magda Lovei, "Financing Pollution Abatement: Theory and Practice," Environment Department Papers, No. 028, The World Bank, October 1995.

² "Strengthening Environmental Funds in Economies in Transition." Conference Report from May 1995, Poland, p. 2.

³ *Energy Policies of the Czech Republic*, 1994 Survey, OECD, Paris, 1994.

National environmental funds in the Czech Republic and Poland finance the bulk of environmental investments in these countries. Poland's National Environmental Fund, established in 1989, is supplemented by some 48 Voivod and Gmina (regional and local) environmental funds. Funds in both the Czech Republic and Poland are capitalized by pollution fees and fines, as well as occasional grants from the state budget. In Poland, total capitalization of the National Fund and all the regional and local funds amounts to approximately \$450-500 million per year, and is used to provide grants and soft loans to enterprises or communities to make investments to reduce pollution.⁴

The Czech State Environmental Fund was established in 1991, and had total revenues of \$256 million in 1995, which includes funds raised from pollution fees and fines, and government transfers.⁵ Total projected disbursements for 1992-1997 are \$531 million.⁶ Fund revenues are used to provide grants, loans and interest subsidies for environmental projects in cities and at firms, in many cases to help these entities comply with the National Clean Air Act.⁷ No foreign monies are transferred through the Czech fund, though the U.S. government did make a one time grant of \$10 million as start up capital for the fund in 1992.

The environmental funds in the Czech Republic and Poland have provided important sources of financing for environmental projects, and many of them have received international support, primarily in the form of technical assistance. It has been suggested that environmental funds could improve their performance and increase their impact by providing financing only to projects that are not commercially bankable, by gradually replacing grants by loans for projects with economic merit, and by moving increasingly toward partially guaranteeing loans made for environmental purposes by private banks.⁸ All of the above would help ensure long-term viability of the funds and improve the efficiency of the use of resources without replicating financial services provided by private credit markets. The Czech fund, for example, is gradually phasing out grants and increasing the percentage of loans in its total disbursements. In 1992, for example, 5.9% of disbursements were loans, compared to 29% in 1993, and 44% in 1995.⁹

In addition to its network of national, regional and local environmental funds, Poland has established a unique vehicle for investment in environmental projects, the Bank for Environmental Protection. The Polish Bank for Environmental Protection began operations in 1991, and is the only commercial bank in the world established solely for providing soft-loans for ecological purposes. The Bank had a total capitalization at the end of 1994 of \$234 million, nearly double that of 1993. Though the bank is commercial, approximately two-thirds of its credit portfolio consist of loans provided on preferential terms for environmental projects, primarily to local

⁴ "Strengthening Environmental Funds in Economies in Transition," Proceedings from the International Conference, Jablonna Palace, Poland, May 10-12, 1995.

⁵ "Economic Report for the State Environmental Fund for 1995," Prague, Czech Republic, February 1996.

⁶ State Environmental Fund, Internal Budget Document, Czech Republic, 1995.

⁷ Draft Budget of the State Environmental Fund of the Czech Republic for 1996, July 21, 1995.

⁸ Interview with John W. Haines, Senior Finance Advisor, Czech National Environmental Fund, EAPS, Prague, Czech Republic, September 25, 1996.

⁹ State Environmental Fund, Czech Republic, 1995.

governments and other entities. The bank has 18 branch offices around the country that cooperate with other, including foreign-owned, banks. In 1994, the Bank ranked among Poland's top 20 banks according to capital base and profit. Of its total projects in 1994, 58% went towards water improvement, 37% for air, and 5% for soil. The Bank's ownership structure mixes both public and private entities: the controlling stake in the bank (45%) is held by the National Environmental Fund, with the remaining ownership held by private domestic capital (22%), regional environmental funds (17%), the state treasury (7.5%), foreign capital (0.75%), and other entities. Projects with international partners include an international pilot project for coal to gas conversion financed by a \$25 million grant from the Global Environment Facility.

Additional private and public sources of financing for environmental investments in Poland and the Czech Republic are difficult to separate due to the lack of statistics on environmental investments. Total amounts, however, are reported by official environmental bodies of both countries. Both the Czech Republic and Poland have maintained high levels of investment in the environment over the past several years, and plan to continue this investment into the next century. The Czech Republic's total environmental investment, including funds from the state budget, the state environmental fund, and investments from the mostly state-owned Czech power company, CEZ, totaled some \$925 million for 1995, according to official environmental policy approved by the Czech government, or approximately 2.5% of GDP.¹⁰ A large portion of these investments go toward upgrading technology to reduce pollution at CEZ's main coal-fired power plants so that they can comply with the 1998 deadlines for emissions standards outlined in the Czech Clean Air Act. Poland now spends approximately 1.3% of GDP per year on environmental expenditures, comparable to levels in OECD countries, though far less on a per capita basis. For example, approximately \$22 per capita is spent on the environment in Poland on an annual basis, versus some \$268 per capita in Germany. Some 25% of Poland's environmental investment was financed by foreign sources in 1995.¹¹

II. Evaluating International Efforts

Evaluation of international efforts to address pollution problems in the region is complicated by the variety of international policy responses, both in terms of the means used and the final output achieved. While some of the effects of international treaties and conferences are often indirect, for example strengthening of networks and the exchange of information, the results of investment programs are more easily measured in terms of pollution reduction, and can thus be considered 'direct.' Criteria used in evaluating international efforts, therefore, should take into account both indirect and direct effects of international efforts. In the case of international efforts to clean up pollution of the Rhine river, indirect effects of international cooperation, such as the exchange of information, technology and strengthening of domestic environmental agencies, were found to be most significant for realizing environmental

¹⁰ *State Environmental Policy*, Ministry of the Environment of the Czech Republic, Prague, August 1995.

¹¹ Jan Kruszewski, "Refining the Operating Procedures and Principles of the National Fund for Environmental Protection and Water Management," from *Strengthening Environmental Funds in Economies in Transition*, Proceedings from the International Conference, Jablonna Palace, Poland, May 10-12, 1995.

improvements.¹² Evidence from some six years of concentrated environmental assistance in Central Europe indicates that international policy efforts have had both direct and indirect effects that have proven helpful in pollution reduction.

A comprehensive evaluation of efforts to date is constrained also by the relatively recent introduction of most international actions, and the expectation that results will be apparent only over the long term. Although the Convention on Long Range Transboundary Air Pollution (LRTAP) was signed in 1979, meaningful participation by Central European countries did not begin until after democratic governments were established there in 1989. Investment projects that are designed to reduce pollution from specific sources often require several years from design to completion, meaning that results from projects begun in the early 1990s may just now be apparent. Further, much of the efforts to date may have indirect effects that are difficult to measure. Though it may be too early to expect significant results from international efforts in terms of large reductions in pollution, it is useful to consider several criteria that can help us make a preliminary evaluation of efforts to date. These criteria include:

- 1) cost effectiveness (in terms of indirect and direct impact on the environment and human health)
- 2) flexibility of instrument for different environmental problems and regions
- 3) ease of implementation
- 4) positive externalities for employment, democratization, etc.

III. International Treaties: LRTAP

Over the past two decades, the problem of transboundary air pollution and acid rain in Europe has moved from obscurity to international prominence as one of the most serious environmental threats in both Western and Eastern Europe. Western European countries have officially recognized the deleterious effects of acid rain since the late 1970s. Scientists from Sweden and Norway first noticed increasing levels of acidity in lakes beginning the 1940s, but it was not until over 30 years later that the international community accepted transboundary air pollution as part of the cause.¹³ Sulfur dioxide emissions blow over the borders of Central Europe and contribute to acid rain in ecosystems throughout Western Europe and the Scandinavian countries. Sources of sulfur dioxide from both Western and Eastern Europe have made long-range transboundary air pollution and acid rain a leading problem for every country in Europe. The portion of trees more than one-quarter defoliated in 1992 ranged from 7% in Austria to 26% in Denmark, Norway and Germany, 48% in Poland, 56% in the Czech Republic, and over 58% in the United Kingdom.¹⁴ In Central Europe, the health effects from extreme levels of air pollution have largely overshadowed the environmental damage to trees and ecosystems caused by acid rain.

The Convention on Long Range Transboundary Air Pollution (LRTAP) may be one of the most effective international policy instruments for leveraging reduction

¹² Thomas Bernauer and Peter Moser, "Reducing Pollution of the Rhine River: The Influence of International Cooperation," IIASA Working Paper 96-7, January 1996, 10.

¹³ Levy, "European Acid Rain," 78-81.

¹⁴ Acid News, No. 5, December 1993.

of emissions of industrial air pollution in Central Europe. Based on their LRTAP agreements for lowering SO₂ emissions, the governments of Poland and the Czech Republic have committed themselves in an international legal forum to reduce air pollution in their countries. With the desire to speed their acceptance as full members of the European Union (EU), Central European governments are more likely than before 1989 to fulfill their commitments to emissions reductions. Further, LRTAP commitments are useful for the national governments of Poland and the Czech Republic, as well as their national and regional environmental agencies, because they provide a source of justification for stricter environmental standards in the face of opposition from industry.

The history of Central European participation in LRTAP illustrates how the treaty's effectiveness has evolved since the end of the Cold War. Signed in 1979 by all countries in North America and Europe, LRTAP is the first and most comprehensive international effort to combat problems of air pollution and acid rain in Europe. LRTAP was originally conceived as a means for continuing détente by engendering East-West cooperation on what was perceived to be a less politically sensitive issue than arms control or human rights.¹⁵ Protocols regulating specific emissions followed the signing of the original convention. In 1985, most Western European countries and some Eastern European countries signed the first sulfur protocol, which committed states to reducing sulfur emissions by 30% from their 1980 levels by 1993. A second sulfur protocol followed in 1994. The protocol for freezing emissions of nitrogen oxide was signed in 1988, as was a protocol for volatile organic compounds (VOCs) in 1991.

Western Europeans intended the 1985 sulfur protocol in part to decrease the threat of acid rain and other forms of pollution caused by Central European emissions in Western Europe, though this effort proved largely unsuccessful. In 1988, East Germany, Poland and Czechoslovakia accounted for 74% of all sulfur dioxide emissions in Eastern Europe.¹⁶ Reductions of emissions from these countries could have significantly reduced transboundary air pollution throughout Europe. Poland, however, did not sign the first sulfur protocol because it knew it could not fulfill the agreement¹⁷ (Poland has since signed). East Germany and Czechoslovakia followed the example of the Soviet Union by signing without serious intentions of complying. By the late 1980s, it appeared that none of the Central European countries would meet standards of the first sulfur protocol from 1985 calling for a 30% reduction of SO₂ from 1980 levels by 1993. LRTAP's weak institutional framework can only encourage compliance through joint monitoring efforts and publication of national emission levels to shame countries into fulfilling their obligations. These methods were largely unsuccessful during the Cold War, when directed at eastern, communist governments with little interest in maintaining good relations with the West.

Since the collapse of communism and the subsequent transition to a market economy in Central Europe, SO₂ emissions have declined, largely due to the drop in

¹⁵ Marc A. Levy, "East-West Environmental Politics after 1989: The Case of Air Pollution," *After the Cold War, International Institutions and State Strategies in Europe 1989-1991*, Eds. Robert O. Keohane, Joseph S. Nye and Stanley Hoffman, Harvard University Press, Cambridge, MA, 1993.

¹⁶ Ibid, 313.

¹⁷ The UK, Spain, Turkey, Romania and Belorussia also refused to sign at that time.

production. The Czech Republic, for example, was able to meet its commitment to the first sulfur protocol in 1992, one year ahead of the 1993 deadline, due to the drop in production and energy use caused by severe recession during the first years of economic reform.¹⁸ The Czech Republic expects to meet its commitments ahead of schedule for the second sulfur protocol as well, even according to a “high economic growth” scenario.¹⁹ Poland has recently signed the second sulfur protocol, and intends to meet its obligations for reducing sulfur dioxide emissions through improved technology and a decrease in energy use.

In terms of East-West cooperation, the second sulfur protocol under the Convention for Long Range Transboundary Air Pollution, negotiated beginning 1992, presents a starkly different picture than that of the first sulfur protocol of 1985. Anxious to improve their international reputations and increase chances for membership in the EU, and facing domestic pressure to reverse decades of environmental degradation under communism, the new democratic governments of Poland and the Czech Republic set ambitious goals for reductions of sulfur emissions when the protocol was signed in 1994 in Norway. The Czech Republic, Poland and Germany, whose emissions now include those of the former East Germany, set targets for reducing SO₂ emissions from 1980 base levels by increasing percentages (see Table 1). As is evident from the Table, Germany committed to the most stringent levels, followed next by the Czech Republic, and finally Poland.²⁰

Table 1:

Target Reductions of SO₂ Emissions from 1980 Base Levels
(in percent of total 1980 emissions)

	By 2000	By 2005	By 2010
Czech Republic	50%	60%	72%
Poland	37%	47%	66%
Germany	83%	87%	--

The second sulfur protocol of 1994 is significant not only for the participation gained from Central European countries, but also for the method by which target reduction levels were calculated. The 1994 protocol is the first under LRTAP, or any other international agreement, to use the critical loads approach. This approach sets different emissions levels for each country based on the capacity of humans, animals,

¹⁸ *Energy Policies of the Czech Republic: 1994 Survey*, OECD, Paris, 1994, p. 175.

¹⁹ According to *Preliminary Report on Emissions of SO₂ and NO_x in the Czech Republic*, Ministry of the Environment, 1993, as cited in *Energy Policies in the Czech Republic*, 1994 Survey, OECD, Paris, p. 167.

²⁰ Levy, “International Cooperation to Combat Acid Rain,” *Green Globe Yearbook 1995*.

and ecosystems in the country to withstand pollution. This means that different countries are permitted different levels of pollution, based on their critical loads.²¹ The sources and effects of transboundary pollution originating from a given country are also taken into account in setting a nation's emissions levels. Critical loads were identified by over five years of research, monitoring and development of a computer model called RAINS by the International Institute of Applied Systems Analysis (IIASA).

Due to political constraints, negotiations resulting in the use of the critical loads approach entailed some concessions that will reduce the effectiveness of the protocol. Signatories agreed upon the *eventual* goal of cutting emissions to below the critical load level for each country. The problem was then how to close the gap between current emission levels and those below the critical loads. Two concessions eventually were made in this process. The first concerned an agreement to reach a level of protection below the critical load level *for all but the most sensitive 5% of ecosystems*. The RAINS model estimated that extending protection to the 96th- 98th percentiles would cost as much as protecting the entire first 95, a commitment beyond the reach of most countries.

The second concession revolved around the *percentage* by which countries were willing to close the gap between current emissions levels and the critical load levels by the year 2000. The first proposed figure of 60% gap closure seemed an extraordinarily small to many environmentalists and some signatory countries, especially given that only 95% of ecosystems would be protected.²² It was therefore more of a disappointment when the negotiators settled on 50% gap closure, which environmentalists said represented no more of a commitment than countries had already specified in their current domestic policies.²³

Evaluation

While the SO₂ reductions contained in LRTAP's 1994 sulfur protocol are not as stringent as many had hoped, they do represent East-West cooperation and levels of commitment from all countries that were unimaginable just fifteen years ago. The most important achievement of LRTAP is bringing Central European countries into the international community to take responsibility for their contributions to transboundary air pollution as well as emissions of local pollutants.

In this sense, the main contributions of LRTAP have been indirect, though significant. Commitments made within the various LRTAP protocols will provide important goals for Poland and the Czech Republic as they design and implement environmental policies to reduce air pollution. In addition, the commitments made to LRTAP will provide domestic environmental groups and other pro-environmental lobbies with a benchmark when monitoring government pollution reduction efforts, as well as a source of leverage on government and industry if these efforts stall. Such international commitments may also increase the bargaining power of domestic

²¹ *Acid News*, No. 4, October, 1993.

²² *Ibid.*

²³ *Acid News* No. 1, March 1994.

environmental and monitoring agencies within government, as well as the flow of resources to these agencies, as they did in the case of the Rhine River.²⁴

Another indirect impact of LRTAP is that participation in the treaty by signatory countries like Poland and the Czech Republic has provided an important source of information on levels of pollution, technology and policy options, and has facilitated contacts and networking among neighboring countries. Such benefits are difficult to link to direct pollution reductions, but evidence suggests that the cost-effectiveness of treaties such as LRTAP is quite high. Participating countries incur only costs of attending meetings and preparing their contributions, while indirect benefits to the country and its pollution reduction efforts are multiple. In addition, treaties such as LRTAP seem to provide positive externalities in terms of strengthening domestic institutions and democratic processes. The meetings involve non-governmental organizations as well as official country representatives. Participants engage in debate and problem solving in an open forum, with the results and commitments of countries made publicly available.

International treaties such as LRTAP are also flexible policy instruments in that they can, by definition, be applied across international borders, and can be directed to different environmental problems. Though current LRTAP protocols have had the greatest impact on a small number of mostly transboundary air pollutants, LRTAP is moving toward regulating emissions of heavy metals as well. Pressure from countries such as Sweden led to the agreement of signatory countries in February 1996 to create a new protocol on heavy metals that should be ready for signing by 1997. The protocol will regulate cadmium, lead and mercury by setting emissions ceilings for each country.²⁵ Such a protocol will have important implications for government and private sector efforts for reducing heavy metal pollution in the Katowice region, among others in Central Europe.

IV. International Forums: 'Environment for Europe' Biannual Conferences

The most significant international forum established to date for addressing environmental problems in Central Europe is a five-year tradition of biannual conferences of environmental ministers from Western and Eastern Europe, the so called 'Environment for Europe' conferences. The first such conference, proposed by the former Czechoslovak Minister of the Environment, Josef Vavrousek, took place in June 1991 at Dobris castle in Prague. The aim of the meeting was to develop priorities and solutions for environmental problems in Central Europe, and to prevent a worsening of conditions during and after the transition to a market economy.²⁶ The ministers arranged a follow up conference in Lucerne in April 1993, and a third conference took place in October 1995 in Sofia, Bulgaria. At Lucerne, the environmental ministers endorsed the Environmental Action Program for Central and

²⁴ Bernauer and Moser, 10.

²⁵ "Treaty Signatories Agree to Push Ahead on New Protocols for Heavy Metals, POPs," *International Environmental Reporter*, Washington, DC, March 6, 1996, 157.

²⁶ "Environment Conference Debates Future Dangers," *The Financial Times*, East European Markets, June 28, 1991.

Eastern Europe (EAP), the product of negotiations and studies conducted during the two years since the Dobris meeting.

The Environmental Action Program (EAP) ranks environmental problems and priorities for investment according to their effects on *human health*. Loss of productivity, destruction of natural resources and deterioration of biodiversity are used as criteria in the rankings as well, though they are given less weight. Based on this method, the EAP states that in Central Europe, "(a)ir pollution is potentially the most serious short-to-medium term environmental problem for human health. It is also the one that has received relatively little emphasis in the environmental expenditure programs...Treating air pollution should be the top priority for environmental policy."²⁷ Water pollution is stated as the second highest priority for action, and is expected to emerge as the key environmental problem in the long run. In this respect, Central Europe is the opposite of less developed countries, in which water pollution tends to be the most immediate environmental problem, followed by air pollution in the long term as industrial development occurs.

Within the category of air pollution, lead and other heavy metals in the air, often from smelters and transport, as well as particulates from furnaces, power plants, and metallurgical plants, are singled out by the EAP as the greatest source of environmental risks to human health in Central Europe. Sulfur dioxide emissions, in combination with particulates, are also a priority consideration, though transboundary effects of SO₂ are considered secondary to local effects in the EAP's list of priorities for action. Given the high priority accorded to heavy metal pollution in the EAP, international and domestic measures in this area should be significant. Such efforts could also be targeted to effects of heavy metals in soils. So far, however, most investment has been targeted to air pollution sources, specifically for lowering emissions of SO₂ that contribute to transboundary air pollution and acid rain. Some observers believe that heavy metal pollution has received a disproportionately low amount of international funding relative to health risk because heavy metal pollution remediation does not provide quick and readily visible results. Compared to reductions of air pollution, which are visible and easily monitored, reduction of heavy metal contamination in soils is less tangible, and the results are often seen only after many years. One representative from the U.S. Agency for International Development (USAID) stated that international aid agencies believe that improvements in human health for reductions of heavy metals in soils would be apparent only after comparing health statistics after one or two generations, a timeline that is too long for providing political justification domestically for aid programs.²⁸

The EAP acknowledges that Western and Eastern European countries have limited funds to spend on the environment, and recommends that resources be targeted to projects with the highest benefit to cost ratios. It also emphasizes "win-win" market reforms and development which lead to economic growth while also improving environmental conditions. The EAP recommends that Central Europe adopt a phased system of regulations to increase emissions standards over 10-20 years to international standards in place at that time, rather than impose overly ambitious

²⁷ *Environmental Action Program for Central and Eastern Europe*, 1994, p.8.

²⁸ Interview with Andrzej Pecikiewicz, Environmental Program Officer, USAID, Warsaw, Poland, April 22, 1996.

regulations with no hope of enforcement. Though the Environmental Action Program has proven a valuable document in terms of laying out priorities for action, it did not specify concrete mechanisms for financing such action, though it endorsed the concept of “burden sharing” by Western Europe for environmental improvements in Eastern Europe.

In addition to the EAP, a tangible result of the Environment for Europe conferences has been the creation of a Project Preparation Committee (PPC) with a secretariat at the European Bank for Reconstruction and Development (EBRD) in London.²⁹ The PPC, administered by both the EBRD and the World Bank, provides guidelines for financing of environmental projects, and helps match donor co-financing (from donor governments) with commercial financing available from international financial institutions.

Evaluation

Like the Convention on Long Range Transboundary Air Pollution, the Environment for Europe conferences have had a number of indirect effects which, though difficult to measure, contribute to the overall process of reducing pollution and raising environmental awareness. The ministerial conferences resemble the biannual environmental summits of the G-7 countries; agreements made during the meetings lack legal status, so attending countries are not confronted with the uncomfortable problem of compliance. At the same time, the forums are constructive because they provide a means to set priorities for action and a potential mechanism for international policy coordination. Though not legally binding, commitments made at the conferences are offered in a public forum that increases the pressure on a country to fulfill its commitments in order to maintain its reputation. The conferences often receive broad media coverage domestically, giving impetus to citizens and politicians to implement the stated aims. All of these indirect effects create an additional positive externality of increasing the transparency of government and strengthening domestic institutions. Like LRTAP, the conferences provide a low cost and flexible means for addressing environmental issues. Such processes can be extended to address other environmental problems, or to include other countries or regions.

Perhaps the most tangible result of the conferences is the endorsement by 50 environmental ministers of the Environmental Action Program, which states explicit priorities for efforts to improve the environment in Central Europe and established the Project Preparation Committee with a Secretariat at the EBRD to prepare projects for financing.

V. International Financial Assistance

Official financial assistance available for Central Europe for environmental programs comes in three forms: bilateral and multilateral aid from donor governments and the EU, and loans and grants from multilateral development banks such as the European Bank for Reconstruction and Development and the World Bank, and a one time debt-for-the-environment swap by creditor countries with Poland.

²⁹ *EBRD Annual Report*, 1994.

Much of the international financial assistance for the environment has not so far focused on tangible investment projects to reduce pollution, but rather on improving governments' institutional capacity for environmental regulation, monitoring, enforcement, and project design. Two recent loans for institutional capacity building, for example, were made by the World Bank to environmental agencies in Poland and Russia.

Development assistance for institutional capacity building requires a long-term financial and managerial commitment from both donors and recipients, and its results are often difficult to measure. Some donor governments and environmental groups in Central Europe have called for a renewed focus on investment projects rather than technical assistance. In recent years, there is evidence that such a shift may be slowly occurring, primarily due to a set of recent projects financed by international financial institutions and development aid from the EU.

A. Methods and Motivations of Bilateral and Multilateral Development Assistance

Bilateral aid is directed by the donor country to a recipient government, and usually entails a legal agreement between the two states. Most bilateral assistance for environmental improvement in Central Europe has come from the United States (through the U.S. Agency for International Development--USAID). Multilateral development aid is a special category encompassing financial assistance efforts of the European Union, which allocates funds provided by member countries for foreign aid. The majority of bilateral and multilateral environmental assistance efforts in Central Europe are in the form of small grants for technical assistance. Technical assistance encompasses a broad range of efforts, including studies, research projects, monitoring, training, legislative development and institution building—efforts that do not include investment in concrete projects with readily tangible results.

Motivations behind bilateral aid reflect a variety of political and economic interests on the part of donor governments, as well as a desire to fulfill what some governments perceive as a moral responsibility to aid other countries. Motivations to provide bilateral aid include the desire to increase economic and political stability in the recipient country, develop export markets for donor-country products, and provide contracts for commercial products and services in which the country has a comparative advantage. Japan's assistance in Central Europe, for example, is directed at municipal solid waste and flue gas desulfurization equipment where its technology excels.³⁰

The interests of Western governments in providing financial assistance for environmental projects are related to motivations behind development aid in general, but also involve factors tied specifically to the environment. These interests include the desire to limit transboundary and global forms of pollution affecting their countries and the broader international community; to provide humanitarian assistance; to reduce the security risks of political instability in and migration from recipient countries that may arise from deteriorating environmental conditions; to

³⁰ This discussion is drawn in part from Connolly, et al., pp.4, 25-27.

advance democratic processes in recipient countries; to improve their track record with domestic environmental groups; and to develop export markets for environmentally related technology.

Unlike the motivations for assistance from the United States and other geographically distant donor countries, motivations for environmental aid given by the European Union reflect the specific political and economic interests of member states that are close neighbors of Central and Eastern Europe. First, transboundary air pollution originating in Central Europe is a significant concern for European Union members, and has been recognized as a key environmental issue since the early 1980s. Second, the stability of democratic governments and the successful economic development of Central Europe is of vital importance to the European Union for economic and security reasons, and improvement of environmental conditions is seen to be an important aspect of such development.

In the early 1990s, the European Union sought to demonstrate its desire to support the new democratic governments of Central Europe, while postponing the thorny question of their eventual EU membership. To allay concerns of EU member countries over competition from Central European exports of steel, textile and agricultural products, the EU adopted a strategy of “aid, not trade” with Central Europe.³¹ As serious consideration of European Union membership has become increasingly difficult to postpone, the EU has shifted its aid strategy to helping Poland and the Czech Republic prepare for eventual membership. Such efforts include institutional programs to harmonize environmental standards with those of the EU, programs to improve monitoring and information collection systems, and financing of small investment projects that improve environmental conditions along borders with EU countries.

Evaluation

Official development assistance from bilateral and multilateral sources has the most direct effects on environmental conditions of any of the international policy efforts considered in this paper. Financial assistance for concrete investment projects especially can have a direct impact by reducing pollution and improving monitoring capabilities. Further, these efforts are a cost-effective form of assistance when funds are channeled directly to improving environmental conditions rather than being spent on improving administration or financing only feasibility studies. To have real impact, feasibility studies and pilot projects must address the next steps in terms of implementation and replication of the project as a working example. The potential impact of official assistance is in some cases diminished due to a lack of coordination among donors, a failure to focus on domestically identified priorities, and low levels of funding compared to investment needs. Governments often tend to direct aid to areas where they have a comparative advantage, rather than seeking new solutions and a coordinated response with other governments to priority problems.³² Traditional country-to-country bilateral assistance programs are challenged by the additional issue

³¹ Connolly, et al, 22.

³² Barbara Connolly, Tamar Gutner, and Hildegard Bedarff, “Eastern and Central Europe,” Paper for the project on financial transfers for environmental protection, Center for International Affairs, Harvard University, September 26, 1994.

that such assistance for the environment often comes with the requirement of co-financing by recipient countries, or the purchase of goods and services from the donor. Many co-financing arrangements, though costly to the recipient government, do improve incentives for the recipient government to follow through, as well as helping it 'buy-in' to the process. It is necessary to find a balance between satisfying financing requirements for donors and ensuring that the project is not so costly to the recipient government that it declines assistance altogether.

The Environmental Action Program aimed in part to solve some of the problems of lack of coordination among donors of environmental assistance by identifying priorities for investment based on risks to human health. European governments identified local sources of air pollution as *the* priority environmental problem in Central Europe in the EAP, yet assistance has not been allocated proportionately in this area. Though a large amount of bilateral assistance from the United States has focused on technical assistance for reducing pollution of SO₂ and NO_x from district heating systems, little aid has been directed to decreasing emissions of heavy metals from local sources such as smelters and non-ferrous metal industries. Further, these funds do not provide direct investments for the projects themselves. Official development assistance for investment projects from the EU has focused not on local air pollution, but almost exclusively on water and sewage treatment plants, primarily for towns along the Labe and Mandava rivers that flow into European Union member states.³³

In addition to an insufficient focus on priority areas, the levels of funding distributed so far by both bilateral and multilateral sources and international financial institutions cover only a fraction of the amount needed to bring environmental standards up to those of Western Europe. The World Bank estimates that at least \$30-35 billion is required to bring Central European power plants alone up to EU standards.³⁴ The Czech government estimates that total investments of 200-400 billion crowns (\$7-15 billion) are needed for compliance with current Czech air, water and waste management standards.³⁵ To meet these standards, the Czech Republic estimates that some 25 billion Czech crowns (\$1 billion) must be invested per year until the year 2000.³⁶ In comparison, total EU assistance for the environment in the Czech Republic from 1990-94 totaled just 22.6 million ECU, less than one percent of the annual investment needed.³⁷ Additional revenue for investment will need to be generated within these countries in part by further raising user fees for water and energy to market levels.

Despite its shortcomings, international aid is a flexible policy instrument that can be applied to a wide range of environmental problems, either by directly funding investment projects or by providing technical assistance to project preparation. The cost effectiveness of aid may be increased when funds are matched, when possible, by private sector sources or the recipient governments. In some cases, the domestic

³³ *Czech info*, Phare, October 1995, Delegation of the European Commission, Prague.

³⁴ Levy, "East-West Environmental Politics."

³⁵ *Energy Policies of the Czech Republic*, 170.

³⁶ "State Environmental Policy," Ministry of Environment of the Czech Republic, August 1995, Prague.

³⁷ *Czech info*, Phare, p. 1.

situation may make these financing options unrealistic, in which case full subsidies may be required for a project to be implemented. In terms of providing direct effects in emissions reductions in the short and medium term, investment projects are likely more effective than efforts to improve capacity of domestic institutions. Trade-offs clearly exist when weighing the merits of the indirect, and difficult to measure, effects of capacity building versus the direct effects of investment projects.

USAID

The United States Agency for International Development has allocated some \$20 million from 1990-95 to the environmental sector in the Czech Republic and some \$50-60 million in Poland.³⁸ About half of the \$20 million spent on the environment in the Czech Republic has consisted of technical assistance, with the other half consisting of a one time grant of \$10 million to the Czech State Environmental Fund. Due to domestic political pressure and a change of priorities for assistance, the United States, however, will end its financial assistance to the Czech Republic in 1997. USAID will allocate its last funds in Poland in 2000, meaning that programs there will be phased out by 2002.

USAID's Environmental Action Program Support (EAPS)

Most of the USAID environmental funds for technical assistance allocated since 1990 have been directed to the Environmental Action Program Support (EAPS) project, designed to help fulfill the objectives of the Environmental Action Program in the Czech Republic and Poland.³⁹ The EAPS project consists of technical assistance for the preparation of proposals for environmental infrastructure projects that will compete for financing by national (and in the case of Poland, also regional) environmental funds, domestic banks, and national and local governments of the Czech Republic and Poland. Technical assistance for project development under the EAPS program includes:

- financial analysis, project design, and legal assistance for cities developing environmental projects
- capacity building efforts to strengthen the environmental funds (project cycle and cash flow management)
- assistance and financial analysis and project development workshops for representatives of local government units and fund managers

Many of the environmental infrastructure projects that have been prepared under the EAPS program are located in cities in the Black Triangle region of Northern Bohemia, or in Silesia in the Czech Republic, and in the Katowice and

³⁸ "U.S. Assistance to the Czech Environmental Sector," USAID, Prague, 1994 and interview with Jan Pisko and Andrzej Pecikiewicz, Environmental Program Officers, USAID, Prague and Warsaw, respectively.

³⁹ The United States operates the EAPS program in other parts of Central Europe, including Bulgaria, Lithuania and Romania.

Krakow areas of Poland. These projects include conversion of district heating systems from coal to gas, construction of cogeneration plants, and abatement of coke oven pollution (in Northern Moravia and Silesia). Several projects in the Katowice voivod are focused toward conversion of district heating systems from coal to gas. EAPS program support in project preparation, however, cannot guarantee that a project will be funded. Past experience in Poland has shown, however, that projects that are not funded by the environmental funds often receive funding from private sources.

USAID Investment Projects

In Poland, USAID has also made a limited number of investments in large environmental projects. These include a \$20 million project to improve air pollution in Krakow, as well as a \$10 million grant to retrofit a coal-fired power plant in the same region.

U.S. Environmental Protection Agency Projects

In cooperation with the U.S. Environmental Protection Agency (EPA), USAID administered a \$1.7 million project in the Katowice district that provided technical assistance and training to improve local environmental management and develop projects to improve air pollution, solid waste management, and heavy metal soil contamination. The EPA project will be extended by an additional \$2 million grant for 1995-97 for further technical assistance for environmental projects, some of which include remediation of soil contamination by heavy metals from industry, underground storage tanks and sludge. Though many industries in the area would be potential candidates for technical assistance under this program, private firms are sometimes reportedly unwilling to participate because they fear that involvement in the project would reveal unacceptable levels of heavy metal contamination for which they would be legally responsible and forced to pay fines.⁴⁰

The EPA has administered a \$4 million dollar project from 1990-93 in the Krakow region, in which it provided air monitoring equipment, training and technical assistance to help improve local sources of air pollution in the region. In cooperation with USAID, the U.S. EPA has also worked in the Czech Republic during 1993-94 to conduct research on the health benefits of and necessary technology for reducing air and water pollution from coke batteries in Northern Bohemia and Silesia. Research and other technical assistance provided by EPA and its contractors helped prepare for investments by the Czech government and private Czech and German banks for the installation of filters in the coking process. This technology will reduce dust emissions, primarily of particulates and benzene soluble organics (BSO). The EPA also helped develop plans for the installation of flue gas desulfurization equipment at the Czech Nova Hut iron works, to cut emission of hydrogen sulfide, phenol, hydrogen cyanide and BSO.

⁴⁰According to written correspondence with Glen Anderson, Harvard Institute for International Development, April 15, 1996 and personal interview with Andrzej Pecikiewicz, USAID.

THE EUROPEAN UNION: PHARE

The European Union created the Phare program in 1989 to coordinate bilateral assistance efforts of the G-24 countries to Central Europe, but impetus for this task dissolved and Phare turned to programmatic efforts. The Phare program is established in 11 countries of the region, including Poland and the Czech Republic, with a total of some 4.2 billion ECU allocated to these 11 countries from 1990-94.⁴¹ Only a small portion of these funds have been spent on the environment. Consistent with thinking in the European Union, Phare took an institutional building approach to environmental problems in Central Europe, establishing units within national environmental ministries to help draft legislation and increase ministerial capacity for enforcing regulations.⁴² Phare programs have thus tended to advocate a strong role for government and 'command and control' measures of environmental regulation rather than market-based mechanisms.

From 1990-94, Phare allocated 22.6 million ECU to environmental projects in the Czech Republic, out of a total budget of approximately 265 million ECU, or approximately 8% of all Phare funds allocated to the Czech Republic during that period.⁴³ Within its Cross Border Cooperation program, Phare has allocated some \$65 million for environmental projects along the Czech border with Germany and Austria for 1995-1999. Much of these funds will go toward environmental infrastructure projects such as sewage treatment plants on rivers flowing into EU member states, and mitigation of air pollution in border towns and cities.

In Poland, Phare allocated 87 million ECU to the environment and nuclear safety from 1990-94, or approximately 9% of the funds allocated to Poland by Phare for that period.⁴⁴ Examples of environmental projects in Poland financed by Phare include the transfer of "know-how" and investment for addressing chronic environmental problems; the development of legal and economic instruments for environmental management; and the creation of an environment program for the Upper Silesian region.

One of the major Phare programs focusing on environment was the Black Triangle program. Phare established the Black Triangle program in the early 1990s. Its focus was to coordinate efforts to decrease pollution in the countries of Poland, the Czech Republic and Germany, primarily by investing in monitoring equipment, facilitating the exchange of information, preparing studies, training and expert counseling. Most of this program, therefore, has consisted of technical assistance, rather than specific investment projects. For example, Phare helped establish some 40 emission monitoring stations throughout the region, with regional centers established to collect and analyze the data. A common secretariat in the Czech town of Usti nad Labem opened in mid-1993. Due to lack of funds and a change in priorities, Phare

⁴¹ Other countries in which Phare operates are Hungary, Romania, Bulgaria, Slovakia, Albania, Lithuania, Latvia, Estonia, Slovenia and Croatia.

⁴² Connolly et al.

⁴³ *Program Phare v Ceske republice*, Ministry of the Economy of the Czech Republic, Prague, 1995, p. 7.

⁴⁴ *Phare programmes in Poland*, Delegation for the European Commission, Warsaw, p.1.

abandoned its original goal of providing investment to restructure five of the coal-fired power plants located in the Black Triangle.

B. Debt-for-the-Environment Swap

A one time debt-for-the-environment swap, concluded in 1991 with Poland, created the Ecofund, an additional mechanism of international financing for environmental projects. The Polish Ecofund was established when the creditor countries of Poland, the so-called Paris Club, agreed to reduce the country's debt by 50%, and to allow a supplemental bilateral debt-for-the environment swap of an additional 10% of the original debt. Such debt-for-the-environment deals were completed with the governments of Finland (1990), the U.S. (1991), Switzerland (1993), and France (1993), capitalizing the Ecofund from the proceeds with a total of \$481 million.⁴⁵ The Ecofund finances environmental projects in Poland according to four financing criteria that mix pollution abatement and nature conservation:

1. Greenhouse gas emission abatement
2. Transboundary air pollution abatement
3. Pollution abatement in the Baltic Sea
4. Biodiversity conservation

Pollution abatement projects so far financed by the Ecofund include coal to gas conversion for local heating systems; a pilot project for the use of geothermal energy in an urban heating system; desulfurization of flue gases in power plants; and investments in waste water treatment plants on the Baltic Sea coast.

Though the debt-for-the environment swap provided an important source of financing for Poland, it is not an instrument with a great deal of flexibility across countries. Only countries with the unfortunate distinction of having significant foreign debt burdens can participate in such programs. In addition, creditor countries are often unwilling to forgive debt, even for environmental purposes, for fear of setting a precedent that would create problems of moral hazard, diminishing the incentive of other debtor countries to repay their loans. In their limited application, however, debt-for-the-environment swaps provide a low cost financial transfer, if the funds owed to the creditor country are considered to be otherwise "lost." Though most of the possibilities for such swaps with creditor countries have been exhausted, it may be possible to pursue additional swaps in the region with private sector creditors, especially commercial banks.

C. International Financial Institutions

THE WORLD BANK

In Poland and the Czech Republic, the World Bank has provided a number of loans since 1990 to finance investment projects to reduce air pollution. In addition, the World Bank has provided financing for environmental projects through the Global

⁴⁵ Magda Lovei, "Financing Pollution Abatement: Theory and Practice" October 1995.

Environment Facility (GEF), for which it is one of three implementing agencies, in conjunction with the United Nations Environment Programme, and the United Nations Development Programme. The World Bank is also an implementing agency for the Montreal Protocol which governs ozone depleting substances. The World Bank houses the Montreal Protocol Implementation Fund, which also provides environmental loans and grants.

World Bank and Global Environment Facility projects in Poland through 1995 include:⁴⁶

- A \$15 million loan for financing the upgrading of environmental policy and regulation of industrial emissions, as well as for setting up a system of air quality management in Upper Silesia and Krakow, and for water quality management in the Vistula River basin
- A \$45 million loan for 1995 for a Katowice Heat Supply and Conservation project with total cost of \$93 million. The project will address the environmental, health, and economic problems caused by soot and dust particulates generated by energy production. It will also enhance energy conservation in the district heating sector by introducing modern technology to heating plants and eliminating coal-fired, heat only boilers
- A \$5 million grant from the GEF and the Multilateral Fund for Implementation of the Montreal Protocol (MFMP) for energy efficient lighting production subsidies to make fluorescent lights that will lead to power savings and reduced emissions from coal-fired power plants
- A \$25 million grant from the GEF and MFMP for a Coal-to-Gas Conversion Project, designed primarily to cut CO₂ emissions by extending coal to gas conversion to medium sized boilers whose owners could not achieve financially acceptable rates of return without concessional financing

In the Czech Republic, environmental projects financed by the World Bank include:

- A 1995 GEF and MFMP grant for \$2.3 million to phase out ozone depleting substances. The project will eliminate production of chlorofluorocarbons (CFCs) in the Czech Republic.
- A \$246 million loan from the World Bank to the Czech Power Company (CEZ) to finance desulfurization equipment and to increase energy efficiency at coal-fired powered plants

⁴⁶ *Mainstreaming the Environment: The World Bank and the Environment Since the Rio Earth Summit*, Summary, WB, Wash DC, 1995, 32-49.

THE EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT

The European Bank for Reconstruction and Development (EBRD) was established in May 1990 to help finance economic development and the transition to a market economy in the former communist countries of Central and Eastern Europe and the former Soviet Union. According to its charter, in all the EBRD's activities, it is required to promote environmentally sound and sustainable development.⁴⁷ The bank applies environmental due diligence to all its projects, and also offers pre-investment training and other environmentally related programs. Only a minimal portion of its total portfolio, however, has gone directly to finance environmentally related projects. No specifically environmental projects have been financed by the EBRD in the Czech Republic.⁴⁸

Environmental projects and technical assistance financed by the EBRD in Poland are extremely limited as well, but include:

- Co-financing for the completion of a fluidized-bed boiler combined heat and power plant to generate low cost and environmentally clean energy
- Technical assistance in preparing investors' guidelines for soil and groundwater standards

In addition, the EBRD provides the secretariat for the Project Preparation Committee (PPC) established under the Environmental Action Program to provide screening and development of proposals, as well as to help match donor co-financing of environmental projects with funds available from international financial institutions.

VI. Potential Future International Policies

In addition to the current policies employed by the international community for environmental improvements in Central and Eastern Europe—international environmental conferences, international environmental treaties, and official development assistance—a number of other policy options exist. The viability of these, however, must be judged within the context of current political and economic realities. Interest by countries in providing further assistance to Poland and the Czech Republic has waned. In the United States, domestic pressure to trim back aid programs, and the more pressing humanitarian needs of less developed countries in Africa and Latin America, and the reconstruction of Bosnia and Hercegovina, have led to the phasing out of aid programs in Poland and the Czech Republic. The EU, on the other hand, must respond to domestic concerns as these countries are increasingly perceived as economic competitors to industry located within the European Union. The following suggestions provide several policy alternatives for improving environmental conditions in Central and Eastern Europe.

⁴⁷ *European Bank for Reconstruction and Development Annual Report*, London, 1994, 29-31.

⁴⁸ "Seznam Projektů Financovaných Evropskou Bankou v České Republice," EBRD, Prague, March 1996.

- **Trade, Not Aid** Further lowering of trade barriers and removal of quotas on goods from Central European countries, and their acceptance into the European Union, would contribute to the development of private companies and increase their ability to self-finance environmental investments.
- **Bilateral Discussions on Pollution Reduction** could be strengthened by countries directly impacted by transboundary pollution emanating from Central Europe. An exchange of financial assistance for pollution reduction efforts may be necessary to produce good will and results.
- **Tobin Tax** A tax on international financial transfers has been proposed by economist James Tobin. Revenue from such a tax could be applied to environmental problems with international significance such as transboundary air pollution from Central Europe.
- **Further Exchange Programs** should be institutionalized among environmental experts, scientists, policy makers, and managers from Central and Eastern Europe. Extended visits of specialists at institutions from neighboring countries in would facilitate an exchange of information and expertise regarding pollution reduction efforts.
- **Further Debt-for-the-Environment Swaps** could be negotiated among both private and public creditors to provide additional financing to environmental funds, especially in Poland where foreign debt is still high.
- **Direct Transfers to Environmental Funds** held as a loan-loss reserve would be an effective way to leverage financing for environmental investments in Central Europe without incurring additional costs for start-up, administration and implementation of projects.
- **Promotion of Joint Ventures** for companies in Western Europe and the United States with their Central European counterparts could facilitate investment and the exchange of technology for environmental improvements.
- **Strengthening of Treaty Provisions** LRTAP could be expanded to include protocols on other pollutants as well as by increasing the standards and commitments to pollution reduction of current protocols. A start in this direction has already been accomplished by including heavy metals in the Convention's most recent proposed protocol.

VII. Conclusion

International efforts to combat pollution in the Czech Republic and Poland—in the spheres of international treaties, conferences, and financial assistance—have increased significantly since 1990. In the future, we can expect that Central European countries will strengthen their cooperation with the international community through environmental treaties, as well as through the Environment for Europe conferences, as these institutions develop and Poland and the Czech Republic become increasingly integrated into the European Union. International financial assistance from governments and international financial institutions, however, has probably reached its zenith in the region. Due to the shift in priorities to other regions of the world, the decline in domestic support for foreign aid, and the growing success of democracies and economies of the region, financial assistance can be expected to decline in the coming years. The Czech Republic and Poland will need to rely increasingly on private sources, many of them domestic, for environmental financing needs. In addition, some funds may be gained through joint-ventures and other forms of foreign investment in the region.

As is clear from this report, international environmental efforts in Central Europe have been directed largely toward the problem of air pollution. Even these efforts, however, are small compared with the overall investment required to improve conditions to levels comparable with those of Western Europe. It is clear that the countries of Poland and the Czech Republic have been, and will increasingly continue to be, responsible for financing the overwhelming majority of their own environmental improvements. Given the priorities outlined in the Environmental Action Program, and the financial assistance which has followed, heavy metal contamination in soils has received very little attention from international sources. The experience with international action toward improving the environment in the Czech Republic and Poland suggests several lessons and recommendations for involving international efforts to combat heavy metal pollution in the Katowice region:

- Non-legally binding forums such as international treaties and conferences can provide an effective framework for cooperation and for exacting commitments from countries and private entities for pollution reduction
- LRTAP has now moved to regulate heavy metals, providing potential incentives for heavy metal remediation in the Katowice district
- Efforts to reduce heavy metal pollution should be incorporated into existing structures such as the Environmental Action Program, the Environment for Europe Conferences, and existing foreign aid programs, as well as in negotiations for EU membership

- Foreign aid agencies should be encouraged to address problems such as soil contamination within their current and future programs
- Efforts should be made to make results of heavy metal remediation publicly available and easy to monitor, in order to encourage international financial assistance and decrease industry opposition to remediation
- Government guarantees regarding temporary suspension of fines and protection from legal liability may be required to ensure industries' participation in voluntary heavy metal remediation programs
- Co-financing may be available through international financial institutions and domestic environmental funds for reducing heavy metal contamination
- The decline of international bilateral assistance in the region requires that financing or co-financing be increasingly secured from additional sources, including both foreign and domestic capital markets and private banks