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Common Problems and Their Solutions for Environmental Protection in the CEEC & NIS

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Abstract

CEEC/NIS struggled for decades with non-democratic political system and with central planning. The state of their natural environment in the beginning of the last decade was also determined by factors that were the legacy of the economic, social and political conditions that prevailed in the region under communism. In 1989-90, CEEC/NIS countries embarked on a system transformation that contributed to a major reduction in environmental degradation and helped to increase the efficiency of environmental protection. It resulted mostly from more efficient ecological policy, decreased raw material and energy consumption and foreign environmental assistance. The start of transformation in CEEC/NIS coincided with economic globalization that has both positive and negative impact on the CEEC/NIS environment. Last year, after more than ten years from the beginning of the transformation, some of CEEC/NIS have been invited to join the European Union. The prospect of EU accession is an additional incentive for CEEC/NIS to step up their care for the environment. Adaptation to EU environmental protection requirements will make it possible for candidate countries to derive a large number of economic and social benefits. Finally, EU membership will offer these countries a unique opportunity to finance many environmental projects using EU funds.

1) The Lay of the Land

A) General characteristics

Contrary to popular belief, Central and Eastern European Countries¹ (CEEC) and New Independent States² (NIS) reveal more differences than similarities. In fact, they only have three things in common. First, for decades in the past, all of them were saddled with central planning. Second, they all struggled with non-democratic political systems: CEECs spent 45 years under communism; the NIS had to live with it for 83 years. Third, since both central planning and the irrational political systems were largely imposed on these countries from above, CEEC/NIS were not fully independent. Naturally, prior to the watershed of the late 1980s and early '90s, some of them enjoyed more independence than others. These three shared features determined everything that happened in the region over decades. In fact, their influence was so enormous that the West used to treat these countries as a single entity, referring to them as the Comecon or the Soviet Bloc, and overlooking the differences. The few differences that the West acknowledged included the independent foreign policy of Yugoslavia, the reform of the Hungarian economy, the role of the Catholic Church in Poland and the influence of Islam in the Asian republics of the former Soviet Union.

In reality, CEEC and NIS countries differ vastly in a number of areas, including size, language, religion, history, tradition, economic growth and the advancement of transition.

¹ Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, the Federal Republic of Yugoslavia, Hungary, FYR Macedonia, Poland, Romania, the Slovak Republic and Slovenia.

² Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, the Kyrgyz Republic, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

In terms of population, the CEEC/NIS region includes one very large country—Russia; two relatively large countries—50-million-strong Ukraine, and 40-million Poland; many medium-sized countries—10-20 million Romania, Kazakhstan, the Czech Republic and Hungary, and about 5-million Slovakia, Azerbaijan and Lithuania; as well as several small countries with a population of 1-2 million (exemplified by Slovenia and Estonia).

CEEC and NIS countries differ even more substantially in terms of history, religion and cultural traditions. For example, Armenia boasts a history of statehood above 10 times longer than the United States,³ and several CEEC countries (including the Czech Republic, Poland and Hungary) have a more than 1,000-year-long record in this area. On the other hand, several other CEEC and NIS countries (including Latvia and Estonia) were only established after World War I, and some (Belarus) were born at the start of the '90s.

The cultural and social differences separating individual CEEC and NIS countries are predominately due to the dominant religions. In Asian countries (except Armenia and Georgia), and among a predominant number of Albanians and Bosnians, Islam dominates, while the remaining countries are Christian. Notably, the CEECs with Christian traditions mark a borderline between Catholic and Protestant countries (such as Estonia, Latvia, Lithuania, Poland, Slovakia, Hungary and Croatia), on the one hand, and Orthodox countries (Russia, Belarus, Ukraine, Romania and Serbia).

Finally, CEEC and NIS countries display huge differences in the level of economic development. The scope of these differences, among CEECs alone, is reflected by per capita GDP. On the one hand, Slovenia and the Czech Republic reported a per capita GDP of \$10,500 and \$5,250 respectively in 2002; on the other hand, Romania and Moldova reported \$1,670 and \$400 respectively³. There are also huge differences among CEEC and NIS countries in the advancement of transition, both economic and political. The greatest progress in this area has been attained in the countries scheduled to be admitted to the EU in 2004. These include Poland, the Czech Republic, Hungary, Slovakia, Lithuania, Latvia, Estonia and Slovenia. Other CEECs (except Belarus), as well as some NIS countries, also display relatively advanced changes in this area.

B) The State of the Natural Environment at the Start of Transition

In the second half of the '80s, directly before the start of transformation in CEEC and NIS countries, the state of these countries' natural environments was widely seen as disastrous. However, this opinion was extremely difficult to verify. In most countries in the region, reliable information on environmental hazards was unavailable. This did not apply to Poland and Hungary, which released relatively reliable data from the end of the '70s.

The popular assessment of these countries' natural environment was determined by the developments in the best known industrial districts (such as Upper Silesia) and cities most popular with tourists (such as Prague, Budapest, Cracow and St. Petersburg). The Chernobyl nuclear power plant disaster contributed negatively to this assessment. Even though it was a one-off incident, it testified to the failure of Soviet nuclear technology and the paranoid obsession of the Kremlin to conceal the truth about the tragedy.

³ Aktuell 2003, Harenberg Lexikon Verlag, Dortmund 2002.

Political change was accompanied by greater availability of data on the condition of the CEEC/NIS environment. This was primarily due to relaxed political censorship and the emergence of nongovernmental organizations (NGOs). Still before the start of transition, the ecological awareness of societies in the two regions increased rapidly. For example, the Polish Ecological Club, Poland's leading NGO dealing with environmental issues, was set up together with the Solidarity trade union in 1981. Similarly, in the Baltic States, animated environmental activity began several years before these countries became independent. Some fragmentary data on forest mismanagement in the Soviet Union surfaced at the outset of *perestroika*.

As the availability of statistical data increased, experts could more precisely determine the state of the region's environment and point to differences in hazards compared to Western Europe. Environmental hazards in CEEC/NIS countries were primarily characterized by a high level of concentration in select industrial regions. The main trouble spot was the "Coal Belt," an area of intensive coal and lignite extraction and related energy, metal and chemical industries. It stretched from southern East Germany to northern Czecho-slovakia and southern Poland (specifically, Upper Silesia and the Cracow area). As a result of the huge accumulation of business activity and insufficient attention paid to the environment, the Coal Belt underwent rapid degradation. Intensive lignite extraction turned many areas into wasteland and upset their water conditions. Intensive coal extraction led to river salinity and housing loss. Alarming sulfur dioxide, nitric oxide and particulate matter emissions contributed to acid rains and the destruction of forests in the Polish-Czech borderland. This was not only a clear symptom of environmental deterioration, but also led to a major decline in living standards and health in these areas.

The Coal Belt was not the only industrial CEEC/NIS district that featured such hazards. Industrial centers in other CEECs (including Hungary's Miskolc region and Romania's Copsa Mica) were plagued by similar problems, though on a slightly smaller scale. Later it transpired that the mining and industrial regions of eastern Ukraine and Russia suffered from similar hazards.

However, in many areas of the CEEC/NIS, the condition of the environment was actually much better than in Western Europe. This was due to these areas' small populations, non-intensive agriculture and the absence of industry. For example, in 1990, an estimated 11.2 percent of Poland's area, inhabited by 35.4 percent of its population, constituted a territory of ecological hazard, i.e. a territory in which pollution standards were exceeded in reference to at least two elements⁴. On the other hand, at least a third of the country's area (*see map*) represented an area that had only marginal pollution and was characterized by considerable biodiversity and primeval nature. These included Białowieża Natural Forest, Europe's only primeval wilderness. A similar situation existed in other CEEC and NIS countries, where some less populated and developed regions (for example, the Ukrainian and Romanian Carpathians, the forests of Lithuania and Belarus, and the Danube River delta) boasted natural values rarely seen in Western Europe.

C) The environmental legacy of the old economic and political system

Similar to other countries, the state of the CEEC/NIS environment was primarily the outcome of economic development. However, to a large extent, it was also determined by factors that were the legacy of the economic,

⁴ Obszary ekologicznego zagrożenia w Polsce w latach 1982 i 1990, GUS, Warsaw 1992, p. 7.

social and political conditions that prevailed in the region under communism⁵. These factors can be classified into three groups: those inherent in the centrally planned economy, those resulting from mistakes in economic policy and those rooted in the political system.

Factors inherent in central planning primarily included preference given--by the USSR, and then by CEECs--to an economic development model that focused on the development of heavy industry. Sectors especially hazardous for the environment included steel and chemicals. The problem was that neither potential export sales nor the raw material resources possessed by these countries justified such a strategy. At the same time, the communist authorities in CEEC/NIS sought to discredit the development strategy adopted by some developing countries and based on the development of light industry for the sake of exports; this strategy was referred to as neocolonialism. The excessive reliance on heavy industry made serious environmental damage in both the Soviet Union and CEEC countries. Industrialization called for the "conquest and taming of nature," an approach that was reflected in the media and films. As a result, many investment projects disregarded ecological limitations, betraying a veritable "size obsession." It was exemplified by a huge steel mill near Cracow, industrial plants on Lake Baikal and a canal from the Danube River to the Black Sea.

Another important cause behind environmental hazards in CEECs was the absence of sufficient incentives for rational resource management. In the management systems of these countries, a key role was played by enterprise assessment methods that tied remuneration to the volume of production without paying attention to the costs. Under these conditions, environmental resources used in production, even if they had a specific price tag (as in the case of raw materials and electricity), were usually utilized in a completely irrational manner. Even if raw material and energy prices increased as the management systems were upgraded, this did not limit enterprises' access to these factors of production. Due to soft budget constraints⁶ in individual countries in the region, enterprises could always count on an inflow of funds (for example, in the form of low-interest loans) necessary to finance such purchases. Naturally, enterprises operating under this system were uninterested in introducing innovative solutions likely to reduce raw material or energy consumption per unit. This means that the factors that normally contributed to lower demand for raw materials and energy in a market economy (especially after an oil crisis) were not at work in the CEEC/NIS region.

The absence of the mechanism reducing raw material and energy consumption had its significant macroeconomic repercussions, particularly from the perspective of demand for environmental resources. In the case of raw materials or energy, those managing the economy were unable to balance demand and supply through innovative solutions at enterprise level, and consequently opted for centralized solutions. If, for example, Poland or East Germany suffered from a shortage of coal or lignite, they immediately proceeded to build a new mine or expanded those already in existence.

⁵ A. Budnikowski, M.J. Welfens, S. Sitnicki, *Rozwój gospodarczy a ochrona środowiska naturalnego w krajach RWPG, PWE*, Warsaw 1986, M.J. Welfens, *Umweltprobleme und Umweltpolitik in Mittel- und Osteuropa. Ökonomie, Ökologie und Systemwandel*, Physica-Verlag, Ein Unternehmen des Springer-Verlag, Heidelberg 1993, p.137-176, *Baltic Sea Region Environmental Protection. Eastern Perspectives and International Cooperation*, edited by M. Sandberg, Almqvist & Wiksel International, Stockholm 1992.

⁶ J. Kornai, *Contradictions and Dilemma: Studies on the Socialist Economy and Society*, MIT Press, Cambridge, Mass 1986, p.33-51.

Mistaken economic policies negatively affected the condition of the natural environment in CEEC and NIS countries. One major limitation of central planning that often threatened the environment was the short time frame of most socioeconomic plans. These plans were *ex definitione* the foundation of these countries' management systems. Economic decision-making, which frequently had serious, long-term ecological implications, was usually harmed by the absence of long-term plans. One example was the purchase of a license to produce the Fiat 126 in Poland, a decision that triggered the massive growth of private motoring in the country. Making that decision, the authorities failed to take into account the long-term ecological consequences of the project (such as increased demand for fuel, higher noise levels and rising pollution). Nor did the government consider the potential ecological benefits of an alternative solution involving modernization and expansion of the rail system or the development of public transportation, among other options.

Another factor that deformed CEEC economic policy and rendered it harmful for the environment was an excessive impact of various pressure groups. In most CEECs, groups linked with the coal and steel industries had the greatest influence on development guidelines, which perpetuated an industrial structure detrimental to the environment.

Payment problems necessitated policies designed to reduce imports and promote "anti-import production." This produced negative ecological consequences. As part of the policy, domestic machines, equipment, technology and raw materials enjoyed priority over imported goods, especially those from the dollar zone. Machines and equipment manufactured in CEEC countries were usually more raw material- and energy-intensive, and their use entailed greater energy consumption, higher risk of failure and increased hazardous emissions. Standout examples included Soviet nuclear power plants and antiquated blast-furnace technology, to name a few. Another consequence of the anti-import policy was an excessive role of coal in the CEEC fuel balance. Unlike oil and gas, coal usually came from these countries' own deposits. However, its use created much greater environmental hazards than hydrocarbon fuels; moreover, the expansion of the coal sector added to the energy-intensiveness of the economy.

Finally, the state of the CEEC environment was influenced by these countries' political system. Unlike in Western countries, the environmental effects of both state and corporate-sector activities were beyond the control of parliament, ecological organizations, social communities and the media. Ecological objectives were of marginal importance in the programs of the political parties at the time. Finally, school curricula tended to overlook environmental protection issues, with the exception of traditional nature protection.

2) Trend Analysis

A) Review of selected pollution indicators

In 1989-90, CEEC and NIS countries embarked on a system transformation that contributed to a major reduction in environmental degradation and helped increase the efficiency of environmental protection. However, the overall influence of transition on the CEEC/NIS environment over the past decade or so defies a definitive assessment. This is primarily due to the absence of reliable data on the condition of the environment in many of the analyzed countries. It is sometimes difficult to determine just to what extent environmental improvement is the result of transition, and to what extent it should be attributed to reduced economic activity. The effect of reduced production is reflected by developments such as a considerable decrease in average sulfur dioxide

concentration in cities such as Prague, Zagreb, Riga, Tirana and Bratislava in 1985-1990⁷ — on the eve of transition, when these countries reported an economic slowdown.

Space constraints rule out a comprehensive analysis of the changes in the CEEC/NIS environment under transformation. Yet, it seems evident that the condition of the environment improved tangibly in the overwhelming majority of CEEC and NIS countries in Europe. Two trends seem to confirm that: tendencies in the defoliation process and changes in the population's access to municipal sewage treatment plants.

The tendencies in the defoliation process, though seemingly narrow in scope, invite a series of conclusions. Defoliation is primarily the consequence of sulfur dioxide and nitric oxide emissions as well as other atmospheric pollution. Changes in this indicator consequently reflect the following: changes in economic activity, changes in the structure of energy sources used, the efficiency of measures designed to limit hazardous emissions and the quality of forest management. Last but not least, this is probably the only indicator that can be determined for such a large number of countries for the 1990-2001 period.

Data presented in graphs 1, 2 and 3 indicates that defoliation increased under transition in only three countries (Bulgaria, Slovenia and Ukraine) of 13 polled in all. With the exception of Ukraine, where transition seems to have been much slower than in CEECs, this growth has been relatively moderate, with Slovenia additionally reporting a low level of growth in absolute terms.

Four countries (Croatia, Romania, Hungary and the Czech Republic) display stabilization in their tree stand. With the exception of the Czech Republic, this process has been taking place at a very low absolute level. On the other hand, six other countries (Belarus, Estonia, Lithuania, Latvia, Poland and Slovakia) recorded a clear improvement in their tree stand in the analyzed period.

Changes in the population's access to municipal sewage treatment plants (Table 1) are more difficult to interpret. This is chiefly because the data is incomplete and not fully comparable. Data on Romania and Slovakia, as well as Poland until 1990, applies to the population with access to the sewage system, regardless of whether or not sewage is fed to a treatment plant. On the other hand, the Estonian data applies to both municipal and industrial sewage treatment plants. The Hungarian data is fragmentary and seems to be lower than real. However, even this incomplete data makes it possible to draw some conclusions. With the exception of Estonia, none of the countries listed in Table 1 saw deterioration in this area. Just the reverse, the indicator has increased there. This is especially true of the Czech Republic and Poland.

Table 1
Population connected to municipal wastewater treatment plants (in % of total)

Country	1980	1985	1990	1994	1995	1996	1997	1998	1999
Bulgaria				35,0	35,0	35,0	36,0		
Czech Republic	43,7	47,5	51,7	55,0	56,0	56,0	59,0	62,0	64,8
Estonia*				72,0	72,0	72,0	72,0	70,0	

⁷ *Europe's Environment: Statistical Compendium for the Debris Assessment*, Eurostat, Brussels 1995, p. 27-29.

Hungary	19,0*	25,0*	31,0*	21,0	21,0	22,0			
Lithuania				49,0	50,0	50,0	52,0		
Poland	35,4*	41,5*	51,5*	39,0	42,0	43,0	47,0	49,0	51,5
Romania*					51,0				
Slovakia*	27,3	36,4	43,0	51,0	53,0	53,0	54,0	54,0	
Slovenia							30,0	30,0	

* not comparable

Source: OECD Environmental Data, Compendium 1997, OECD, Paris 1997.

EUROSTAT. Statistical yearbook of candidate and South-East European Countries.

EUROSTAT. Environment Statistics Yearbook. 2001 Edition.

B) System transformation and the CEE/NIS environment

How has transition influenced environmental protection in the CEEC/NIS? In a nutshell, it has led to a more efficient ecological policy and decreased raw material and energy consumption per unit, accompanied by foreign environmental assistance.

Many experts agree that one of the positive effects of system transformation is a more efficient ecological policy. This results from two basic factors. First, the existing ecological policy tools have been put in order, accompanied by the introduction of new tools and better enforcement of the new regulations. Second, businesses have introduced full-fledged market rules to their day-to-day operations. Ecological policy was first upgraded by those countries which were first to embark on the radical restructuring of their political and economic systems at the start of transition. These included the Czech Republic, Hungary and Poland. Later other CEEC and NIS countries followed suit, especially those scheduled to join the EU in 2004. All of them have made considerable progress in this area.

In their environmental management systems, CEEC and NIS countries rely on a wide range of legal measures and economic policy tools. Economic tools include environmental fees, taxes, penalties and subsidies. Even though these instruments existed in some CEECs previously, they did not become fully efficient until the start of transition. Only then did they begin to tangibly influence the economic performance of businesses.

Another important outcome of transition, with significant implications for the environment, involves decreased consumption of raw materials and energy per unit of GDP. Under central planning, due to the aforementioned reasons, these indicators were much higher in CEEC and NIS than in the West. System change promoted a reduction in the energy-intensiveness of the economy. In addition to the more efficient ecological policy, the governments introduced realistic prices for fuel, energy and raw materials, accompanied by the removal of soft budget constraints, the winding up of some enterprises and business divisions, and the phasing out of whole sectors of the economy. Examples include the closure of aluminum mills in Trinec in the Czech Republic and Poland's Skawina, and the closure of coal mines in Poland and the Czech Republic. Reduced raw material and energy consumption per unit (described in greater detail later in this report) was also due to changes in the structure of production. Reduced carbon dioxide emissions in relation to GDP were a direct favorable

environmental effect of lower energy consumption per unit in most of the analyzed countries. This process is illustrated by the tentative data offered in Table 2.

Table 2
Carbon Dioxide Emitted per Million \$ (PPP) of GDP
(metric tons)

Country	1990	1996
Albania	1255	255
Bulgaria	1920	1539
Hungary	955	848
Poland	1947	1506
Romania	1610	1140

Source: World Resources 2000-2001, World Resources Institute, Washington, D.C. 2000.

An indirect effect of transition in CEEC and NIS is that these countries became eligible for environmental assistance programs⁸. Foreign assistance was motivated by reasons similar to those applying to other regions of the world. In addition to humanitarian considerations, these included a desire to reduce or eliminate transfrontier hazards and the need to ensure more rational management of funds for the protection of shared resources. Political factors also played a role, in addition to the fact that the benefactor countries wanted to secure export markets for their environmental protection equipment industries.

The launch of foreign environmental assistance at the start of transition was one of the ways to support the process of transformation in the CEEC/NIS region. It was also a response to the stepped-up activity of environmental protection movements in these countries. The political motives behind environmental assistance to CEEC/NIS countries were additionally reflected by the directions of bilateral assistance. This was especially clear in the case of assistance from Scandinavia that was primarily addressed to countries in the Baltic region⁹.

As with other regions, environmental assistance received by CEEC/NIS countries was relatively small compared to need. For example, in Poland, it accounted for only 5% of total spending on environmental protection from 1990-95. Most of the environmental assistance granted by individual countries, and subsequently the EU as a whole, took the form of subsidies for the implementation of specific investment projects.

The main advantage of environmental assistance was that CEEC and NIS countries could pursue their environmental goals at a lower cost. There was also a whole series of indirect benefits such as access to new technology. The environmental benefits derived by these countries were to an extent reduced by the fact that foreign assistance was not always commensurate with the national priorities in the area. Another weakness of

⁸ A. Budnikowski, Foreign Participation in Environmental Protection in Eastern Europe, The Case of Poland, *Technological Forecasting and Social Change*, 41 (1992)

⁹ *Baltic Sea Region Environmental Protection. Eastern Perspectives and International Cooperation*, edited by M. Sandberg, Almqvist & Wiksel International, Stockholm 1992, Ringius L., Holm J., Klemmensen B., Denmark's *Environmental Aid to Eastern Europe: Present and Future*, in: Environmental Aid Programmes to Eastern Europe. Area Studies and Theoretical Applications, edited by R.E. Löfstedt and G.Sjöstedt, Avebury Studies in Green Research, Ashgate Publishing Limited, Aldershot 1996, p.7-30.

these programs was that the benefactors frequently underestimated the research and technological capacity of CEEC/NIS countries.

3) Challenges and opportunities

A) Globalization as a challenge for the CEEC/NIS environment

The start of transformation in CEEC/NIS countries coincided with economic globalization. All around the world, this process has been based on an intensified movement of goods and factors of production, leading to more rational management. However, globalization also spells major threats; it is widely believed to be a factor that may contribute to environmental hazards in some countries and regions.

All the consequences of globalization are especially vivid in the CEEC/NIS region. Transition not only coincided with globalization, but, more important, it led to an unprecedented opening of CEEC/NIS economies on a scale much larger than in any of the previous decades. In those countries in which it ended in success, transition usually began with moves such as the abolition of state monopoly in foreign trade and the currency market, in addition to the introduction of currency convertibility and foreign direct investment. This, in turn, produced a major increase in the number of domestic entities establishing various kinds of economic ties with abroad, sometimes with little or no knowledge in this area. At the same time, foreign investors appeared in these countries en masse; these included both leading and well-established corporations and fly-by-night businesses with a dubious reputation. As a result, before long, CEEC and NIS countries became a region that was, on the one hand, open to globalization's benefits, but, on the other hand, susceptible to the threats involved.

For the sake of brevity, the following presentation of the implications of globalization on the CEEC/NIS environment—both those positive and those negative—cannot be sufficiently detailed. In general, the *OECD Environmental Outlook* states that the implications of globalization for the environment “can be either positive or negative, depending on the rate and direction of economic growth and the presence and effectiveness of institutions and policy frameworks¹⁰.” The globalization effects specified in the OECD report, both positive and negative, can be presented in the form of a chart. Let us now use this chart to outline those implications which are the most widespread in the CEEC/NIS region.

CEEC and NIS countries certainly display scale effects involving faster economic growth and the increased use of environmental resources as a result of the greater role of foreign trade and direct investment. From the perspective of the environment, the positive outcomes of this process include a reduction of poverty-driven degradation and growing ecological consciousness. Economic growth and improved living conditions in many CEEC/NIS countries have made it possible to increase expenditure on environmental protection, thus averting its degradation.

However, some of the negative scale effects have also manifested themselves in the CEEC/NIS region. This especially includes an increased volume of municipal waste stemming from rapidly growing consumption of market goods. Under central planning, producers did not have to bother to sell goods in attractive and easy-to-use packaging. Consumers were ready to buy just about any product that met decent standards regardless of the packaging. At the start of the '90s, due to both transformation and the inflow of foreign capital, disposable

¹⁰ OECD Environmental Outlook, OECD, Paris 2001, p. 52.

packaging began to crowd out multiple-use packaging in CEEC/NIS countries. This was accompanied by the appearance of collective packaging, and a new trend involving an increasingly widespread use of packaging for household appliances; under communism, most household appliances were sold without packaging in the CEEC/NIS. From the point of view of the environment, these processes were decidedly negative, especially as the analyzed countries reported a major increase in the use of packaging such as styrofoam, the production of which is harmful for the environment.

Evidently, CEEC and NIS countries also saw structural effects involving shifts in the structure of production, both within individual economies and internationally. In a favorable trend, most countries in the region moved away from heavy industry and looked for export opportunities in goods manufactured by light industry. It is possible to assume that these advantages were especially visible in those CEECs which relatively early and consistently scrapped subsidies to energy prices and stopped supporting energy- and raw material-intensive sectors such as coal and steel.

Among other globalization-related factors, the condition of the CEEC/NIS environment was influenced by technological effects, based on an accelerated diffusion of technology as a result of liberalized international trade and capital flows. It seems that the influence of this factor on the environment was rather positive in most CEEC/NIS countries. As their economies opened, these countries increasingly relied on machines and equipment that consumed less energy and produced less pollution. As a result of foreign investment, many enterprises, especially in the chemical industry, replaced whole production lines, thus substantially reducing their hazardous effect on the environment. These generally positive effects were countered by an inflow of technologies and goods hazardous for the environment. This included the emergence of many plants that produced goods sold in disposable packaging.

Over the past several years, the CEEC/NIS environment has also experienced product effects, or changes in the mix of goods produced and consumed. This has been brought about by liberalized foreign economic relations. The influence of this factor on the CEEC/NIS environment, rather negative on the whole, is well illustrated by the developments on the CEEC/NIS automotive market. Over the past decade or so, all the countries in the region have seen a major increase in the number of passenger cars and trucks. This has led to increased vehicle transportation at the expense of environment-friendly rail and public transportation. Most newly registered vehicles are larger than their predecessors in the previous era; therefore, despite their relative fuel economy, they consume more fuel. Other environment-unfriendly trends on the CEEC/NIS car market include the growing popularity of air-conditioning, extremely rare in the past, coupled with huge private imports of used cars, most of them in poor technical condition and harmful for the environment. The only environment-friendly change on the car market probably involves the growing use of catalytic converters.

The final consequence of international trade liberalization in CEEC/NIS countries—one that does not easily fit into the pattern used here—is the threat posed by imported waste. After abolishing rigorous border controls, countries in the region attracted the interest of various Western European businesses seeking to get rid of their waste. At the same time, the previous policy whereby waste imports required official permission has been replaced by attempts to smuggle industrial waste into Poland. In many cases, this involves hazardous waste. In 1991-1995 alone, several hundred attempts to smuggle waste into Poland were recorded, including nine shipments of hazardous waste (chiefly chemicals, paints and glues past their expiration dates from the former East Germany).

Another spectacular though marginal trend involved the "private" exportation of waste, whereby Trabant car owners from eastern Germany crossed into neighboring countries to dump their automotive junk in forests across the border.

As with other types of illegal business activity, illegal waste imports featured cooperation between foreign and domestic entities. The former were usually second- or third-rate businesses not concerned about their reputation. The latter were local "entrepreneurs," and sometimes even local government officials. By now, the most law-abiding of the CEEC/NIS countries have largely eradicated massive waste importation, thanks to cooperation with Western border services. Still, tentative data indicates that waste imports continue in some of the countries.

B) EU accession as an opportunity to upgrade environmental policy and management

As a result of successful transition, some CEEC/NIS countries have been invited to join the European Union. In 1991, the Czech Republic, Hungary and Poland signed their respective association agreements with the EU. Other countries followed in their footsteps later. In 1993, the EU decided to enlarge itself eastward, and at the end of 2002 it agreed to admit the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia. In May 2004, more than a decade after the start of transition, these countries will be able to join the mainstream of European integration, previously denied for them for decades.

The prospect of EU accession was an additional incentive for CEEC/NIS countries to step up their care for the environment. With the start of accession negotiations in 1998, this took the form of agreements on the scope and rate of adaptation to EU requirements in this area. Obligations undertaken by EU applicant countries included adaptation of environmental law and policy and ratification of international conventions in the area of environmental protection, in particular the Convention on Climate Change.

Institutional and legal adaptation is of fundamental importance for the candidate countries. Priorities in this area include decentralization of environmental protection policy, an increased role of NGOs in environmental decision making and improved monitoring. In another important objective, the candidate countries must adapt their legal systems to enable a wider use of integrated solutions to gradually replace end-of-pipe solutions. It is also essential that production conditions in the candidate countries meet EU requirements, including production and emission standards, because otherwise they could undermine competition in the enlarged EU.

The possibilities of introducing EU law vary from one country to the next. For example, in Poland, in the area of air pollution, adaptation to directives on emission standards for SO₂, suspended particulate matter, NO_x and lead will carry the steepest price tag; in the area of water pollution, the same will apply to directives on the quality of drinking water and a reduction in surface water pollution due to mineral fertilizers, pesticides and municipal sewage; in the area of waste, Poland needs to comply with a number of directives on industrial waste as well as hazardous and toxic waste, in addition to directives on packaging and packaging management. The scope of the costs involved is shown by the fact that meeting EU requirements in the area of water protection alone would require Poland to earmark 3% of its GDP for this purpose in 2010.¹¹

¹¹ Dostosowanie polskiego prawa i regulacji ekologicznych do rozwiązań Unii Europejskiej. Koszty i strategia, ed. by B. Fiedor, Wydawnictwo Ekonomia i Środowisko, Białystok–Warsaw 1990-2000.

Still, adaptation to EU environmental protection requirements will make it possible for the candidate countries to derive a large number of economic and social benefits. It will also contribute to improved health standards. The European Commission estimates that the candidate countries will attain full compatibility with *acquis communautaire* by 2010; their total annual benefits from this are expected to reach 2.6-14.5% of GDP on average, depending on the variant adopted; in per capita terms, this amounts to 81-420 euros. The Czech Republic is expected to draw the greatest benefits¹². Notably, due to growing environmental awareness in the region, and given the priorities these countries have adopted, the candidate states would probably have to incur many of these costs anyway even if they had decided to stay out of the EU.

Finally, EU membership will offer these countries a unique opportunity to finance many investment projects using EU funds. Estimates for Poland presented in Table 3 show that these amounts will be much larger than the funds obtained by these countries as part of foreign environmental assistance in the first half of the '90s. However, the candidate countries will only become eligible for these funds if they contribute substantial funds of their own, from both private and public sources.

Table 3
Estimated environmental protection financing in Poland by sources
(mill. Euro)

Category of sources	2000	2001	2002	2003	2004	2005	2006
Domestic public sources	606,0	608,5	610,9	613,4	615,8	618,3	620,7
Domestic private sources	1427,4	1498,7	1570,1	1641,5	1712,8	1784,2	1855,6
EU sources	67,1	141,2	239,2	513,2	600,6	660,5	854,9
Total	2100,5	2246,4	2420,2	2768,1	2929,2	3063,0	3331,2
EU sources as % of total	3,2	6,3	9,9	18,5	20,5	21,6	25,6

Source: http://www.mos.gov.pl/integracja_europejska/koszty/podsum.html.

Conclusions and recommendations :

1. The key shared feature of CEEC and NIS countries is that their politics and economies were dominated by non-democratic systems and central planning for decades in the past.
2. At the start of transition, the CEEC/NIS environment was characterized by a high level of pollution in many industrial regions, accompanied by relatively good environmental standards in many poorly populated and non-industrial regions.
3. The CEEC/NIS environment is to a large extent the legacy of the old economic and political system.
4. The past decade or so has seen a tangible improvement in the quality of the CEEC/NIS environment due to transition.
5. Economic opening in the CEEC/NIS coincided with globalization, producing a number of environmental threats.
6. The accession of some CEEC/NIS countries to the EU, planned for 2004, will help these nations improve their environments.
7. In order to use the opportunity the CEEC/NIS should:

¹² http://www.gov.pl/integracja_europejska/notatka.shtml.

- continue the transformation of their economies combining it with the implementation of a sustainable development concept,
- put more stress on the environmental issues in the social and political life,
- provide appropriate financing of environmental projects in order to get access to the EU sources,
- try to avoid some ecological risk related to the opening of their economies in the period of globalization.