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## Lessons from the Southern enlargement of the EU for the environmental dimensions of Eastern enlargement in particular for Poland

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Fondazione Eni Enrico Mattei

**Lessons from the Southern  
Enlargement of the EU for the  
Environmental Dimensions of  
Eastern Enlargement,  
in particular for Poland**

Onno J. Kuik\* and Frans H. Oosterhuis\*  
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SUST – Sustainability Indicators and Environmental Evaluation
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## **1. Introduction**

The accession of countries of Central and Eastern Europe to the EU will lead to institutional and economic changes in these countries that may affect their natural environments in various ways. One way of trying to understand these changes and their effects on the environment is to study past accessions to the EU. The southern enlargement of the EU in the 1980s offers an interesting comparison. At the time of their accession, certain economic and environmental characteristics of Greece, Spain and Portugal were comparable to present-day Central and Eastern European countries. This paper analyses the environmental changes that accompanied the southern enlargement with a view to draw some lessons for the eastern enlargement, especially for Poland.

In analysing the environmental dimensions of the southern enlargement we use the analytical framework that is often used in studies of the impacts of trade liberalisation on the environment: the decomposition of environmental effects into scale, composition and technique effects. Section 2 introduces this framework and explains how it is used in the present study. Section 3 looks at some similarities between the southern accession countries in the mid-1970s and Central and Eastern European countries in the 1990s and argues that these similarities might justify the comparison that is made in this paper. Section 4 briefly describes the accession experience of the southern accession countries and identifies the main similarities and differences in economic and environmental trends and tendencies between those countries. Section 5 presents preliminary evidence of trends and tendencies for Poland. Section 6 concludes.

## **2. Trade liberalisation and the environment**

The environmental impacts of trade liberalisation have been the subject of many heated debates and scholarly treatises. In theory, in the (hypothetical) case that all environmental costs would have been adequately internalised in prices and costs of production, trade liberalisation would benefit the environment by a more efficient allocation of resources (including environmental resources) within and between countries. However, without perfect internalisation of environmental costs in all

trading countries, the impacts of trade liberalisation on the environment are more difficult to predict. Trade liberalisation can influence environmental quality in five ways (Kuik and Oosterhuis, 1999):

- by encouraging the imports of products which may be environmentally inferior or superior to their domestic substitutes;
- by changing production patterns and production technologies in the trading countries;
- by enhancing transport between the trading countries;
- by enhancing economic growth in the trading countries; and
- by affecting the possibilities and the incentives of national governments to implement and enforce domestic environmental policies.

Whether the net effect of these impacts is positive or negative for the environment depends on the economic, technological, environmental and legislative circumstances prevailing in the countries that engage in trade liberalisation. Since Grossman and Krueger's influential paper on the environmental impacts of NAFTA (Grossman & Krueger, 1991), the environmental impacts of trade liberalisation are often decomposed into scale effects, composition effects and technique effects.

*Scale effects.* The opening-up of trade often raises the levels of economic activity in the trading countries. Trade (especially exports) is often viewed as a motor of economic growth. All things equal, this growth in economic activity raises the demand for raw materials, energy and transportation services, resulting in increased levels of pollution and natural resource depletion.

*Composition effects.* Trade liberalisation may affect the relative prices of final and intermediate goods in different sectors to such an extent that capital and labour may be induced to shift between sectors, thereby affecting the structure or composition of industry within a country. The composition of the package of consumption goods purchased may also change, both as a result of the relative price changes and of the increase in spendable income. Whether this is good or bad for the environment is dependent upon the *direction* of the shift: whether it is to relatively clean or dirty industries and products.

*Technique effects.* The last and most “illusive” factor is the effect of trade liberalisation on changes in production methods. Production methods or techniques may change in a more environment-saving manner if, for example, income growth after trade liberalisation leads to more demand for environmental quality and more stringent environmental policies and enforcement or if increased foreign direct investment results in a faster depreciation and replacement of obsolete, environment-intensive capital equipment. It could also lead to more environment-intensive techniques if the relative prices of inputs change in such a way that firms chose a more polluting input mix or if governments try to gain trade advantages by lowering environmental standards or by lowering their efforts to enforce existing standards.

It is impossible to predict *a priori* the combined impact of the scale, composition and technique effects on environmental quality. The Task Force on the Environment and the Internal Market (1992) that advised the European Council on the environmental dimensions of the completion of the internal market of the EU in 1992, stressed the environmental implications of the expected accelerated economic growth due to the completion of the internal market. The Task Force concluded that *without adequate policy responses*, the completion of the internal market could lead to negative environmental impacts due to an accelerated growth in energy demand, international transport, and waste generation, and also identified potential spatial problems and specific problems for the peripheral EU Member States. Besides these “dynamic effects”, the Task Force also warned for the environmental risks that could arise (e.g. transport of hazardous waste) if all border controls (including environmental inspections) were to be removed without putting in place alternative policy measures (Task Force, 1992).

### **3. Why study the southern enlargement?**

A potentially interesting case for the eastern enlargement of the EU, is the southern enlargement of the EU that took place in the 1980s. What were the economic and environmental effects of the accessions of Greece (1981), Spain (1986) and Portugal (1986) to the EU? Parallels between the southern and the eastern enlargement have previously been noticed, for example by Hardes and Stupp (1996). The accession of Greece, Spain and Portugal was characterised by long transition periods. Greece had an association treaty with the EU as early as 1961, Spain and Portugal followed in

1970 and 1972, respectively. However, it was not until the mid-seventies that political changes in the three countries paved the way for a further integration with the EU. The formal accession dates did not mark the full liberalisation between the southern accession countries and the EU; for many products further transition periods were negotiated. It was not until 1992 that a full liberalisation was completed. Hardes and Stupp therefore consider the full period from 1975 to 1992 to analyse the economic effects of accession on the southern accession countries. For a comparison between the initial economic and environmental situation in the southern accession countries and four Accession Countries (ACs) in Central and Eastern Europe (the so-called Viségrad countries), Table 1 compares macro-economic and environmental indicators in 1975 and 1990, respectively.

*Table 1: Macro-economic and environmental indicators for southern accession countries in 1975 and ACs in 1990, in relation to EU9 and EU12, respectively*

	Greece	Spain	Portugal	Poland	Czech	Slovak	Hungary
	1975			1990			
GDP (billion ECU)	16.8	86.7	12	49.0	24.8	11.3	26.1
EU 9/12 = 100	1.5	7.7	1.1	1.2	0.6	0.3	0.6
GDP/capita (ECU)	1,875	2,443	1,373	1,283	2,409	2,128	2,508
EU 9/12 = 100	42.3	55.7	31.3	9.8	18.4	16.3	19.2
Employment (million)	3.4	13.7	4.0	16.5	5.4	2.5	4.7
EU 9/12 = 100	3.1	12.5	3.7	11.3	3.7	1.7	3.2
SO <sub>2</sub> emissions kton	..	3,003	178	3,210	1,876	3,757	1,010
EU 9/12 = 100	..	15.0	0.9	27.6	16.2	32.4	8.7
NO <sub>x</sub> emissions kton	..	625	104	1,280	742	227	238
EU 9/12 = 100	..	6.4	1.1	11.0	6.4	1.9	2.0
CO <sub>2</sub> emissions mln t	..	48	7	350	157	..	68
EU 9/12 = 100	..	18.0	0.8	12.7	5.7	..	2.5

Source: Hardes and Stupp (1996) and OECD (1991, 1997b)

Table 1 shows that the sizes of the economies of the Viségrad countries can be compared with the southern accession countries --in terms of employment. Poland's economy can be compared to Spain, Hungary and the Czech Republic can be compared to Greece and Portugal. The economy of the Slovak Republic is smaller. The relative income measures for the Viségrad countries are significantly smaller than those for the southern accession countries.<sup>1</sup>

<sup>1</sup> Hardes and Stupp remark that the GDP measures of the Viségrad countries may have been somewhat underestimated because of the 'shock' of the transformation and the undervaluation of the national currencies with respect to the ECU. (Hardes and Stupp 1996:357).

On the environmental side, SO<sub>2</sub> emissions of Poland and the Slovak Republic (in 1990) can be compared with those of Spain (in 1975). CO<sub>2</sub> emissions in the Viségrad countries are much larger than in Spain and Portugal, though. The relative pollution measures of the Viségrad countries are much larger than those for Spain and Portugal.

Comparable is the low level of “openness” of the economies of the southern accession countries and the Viségrad countries towards the EU in 1975 and 1990, respectively.<sup>2</sup> The rate with which the openness changed in the first years after 1975, respectively 1990, differed significantly, with a much faster rate of change in the Viségrad countries.

Given these similarities (but acknowledging the differences), it is interesting to study the history of the southern enlargement, to look for common trends and patterns that might also be applicable to the eastern enlargement. Therefore, we will now give a brief account of the economic and environmental aspects of the southern enlargement.

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#### **4. The accession experience of Greece, Portugal and Spain**

Greece became a member of the European Community in 1981. Spain and Portugal followed in 1986. In all three countries the prospect of future membership led to anticipation processes that induced patterns of convergence towards EU economic, social, institutional and environmental standards in advance of the accession dates. Nevertheless, considerable differences between the acceding countries and the EU remained. Therefore, transition periods were negotiated during which complete mutual market access was restricted for some product categories, unharmonised external tariffs were allowed, and/or full application of the Common Agricultural Policy (CAP) was postponed. All three countries also managed to obtain transition periods allowing them temporary exemptions from the full application of the obligations imposed by the environmental *acquis communautaire*.

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<sup>2</sup> The openness ratio is defined as  $0.5 \times (EX_{eu} + IM_{eu})/GDP$ . In 1975 Spain, Greece and Portugal had openness ratios of 3%, 7%, and 8%, respectively. In 1989, Poland, Czechoslovakia and Hungary had openness ratios of 5%, 5%, and 10%, respectively. (Hardes and Stupp: 358).

<sup>3</sup> Kuik and Oosterhuis (2000) give a detailed account of the Southern enlargement history.

#### 4.1 Economy

For all three countries, some general economic tendencies following trade liberalisation with and accession to the EU can be observed:

1) A substantial increase in the volume of foreign trade, accompanied by a significant shift of foreign trade towards the EU at the expense of traditional trading partners, and a growing trade deficit, due to massive imports of consumer and capital goods.

In the years prior to accession, **Greece** had developed an intricate system of protection for its industries through external protection walls and through wide state intervention (Kazakos and Ioakimidis, 1994). A major consequence of accession was the gradual removal of this external protection (both tariff and non-tariff) and state aid, including export subsidies to industrial firms. Greek firms were ill prepared for this more competitive environment. As a consequence of the loss of protection, they saw their market shares (both at home and abroad) quickly deteriorating. Import penetration, especially from EC countries, rose fast, in particular for traditional consumer goods, intermediate products, and capital goods (Giannitsis, 1994). The ratio of imports to domestic apparent consumption increased from 25.8 per cent (1978-80) to 43.1 per cent (1989). The increase in imports was much higher than the increase in exports. The uneven rates of growth of imports and exports led to alarming trade deficits from US\$ 7 billion in 1976-80 to US\$ 20 billion in 1991. Greece experienced acute balance-of-payment crises in 1985 and 1990/91. In **Portugal** both imports and exports rose substantially. The trade share of the EC increased for both imports and exports. This was especially due to the removal of trade barriers with Spain (Glejser and Moro, 1996). Third countries saw their shares decreasing, especially the USA. The rise in imports was mainly due to increased imports of cars, machines, textiles and footwear. In fact, in the period 1985-1992 the share of consumer goods in total imports rose from less than 9 to more than 28 per cent.

Export also increased but the export structure changed very little. Exports remained concentrated in textiles, clothing, footwear, products of the automobile sector, and machines. Actually, trade effects *reinforced* the Portuguese traditional pattern of specialisation (Marques-Mendez, 1993). The trade effects of **Spain's** accession were quite significant. After 1986, Spanish agricultural exports to the EC-10 show a strong and significant breakthrough. The same holds true, to a lesser extent, for industrial exports (Glejser and Moro, 1996). The share of the EC in Spanish imports (both agricultural and



industrial) also rises very fast. In contrast, the shares of Latin America and Africa in Spanish imports (especially for agriculture) strongly decline. The accession of Spain thus caused some substantial *trade diversion*. The EC-10's share of agricultural imports from Latin America also shows a breakpoint around 1986: from rising to falling. Glejser and Moro (1996) attribute 1/3<sup>rd</sup> of Latin America's loss in agricultural exports to the EC-10 to the accession of Spain and Portugal.

## 2) Considerable changes in the composition of agricultural production.

In **Greece**, accession influenced relative prices of agricultural products, to the advantage of products that were in little competition with the EC (especially industrial crops such as cotton and tobacco, and citrus fruits), and to the disadvantage of products where competition with the EC was fierce (cereals, beef). Table 2 shows developments in Greek agriculture, prior and post accession.

Table 2: Growth of Greek agricultural activity by enterprise prior and post accession

Crop area/livestock units (%)					
Enterprises	1965	1980	1984	Pre-entry change 1966/80 %	Post-entry change 1981/94 %
<u>Crops</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>		
Cereals	43.6	33.3	28.1	-23.6	-15.6
Vegetables	4.6	5.3	5.9	+15.2	+11.3
Industrial crops	9.7	8.4	12.2	-13.4	+45.2
Fodder crops	15.7	22.9	23.1	+45.9	+0.9
Fruit trees	1.2	2.0	2.2	+66.7	+10.0
Citrus trees	1.4	1.5	1.9	+7.1	+26.7
Olive trees	15.8	20.4	21.1	+29.1	+3.4
Vineyards	8.0	6.2	5.5	-22.5	-11.3
<u>Livestock</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>		
Bovines	34.0	26.3	22.6	-22.6	-14.1
Sheep	32.1	30.1	30.6	-6.2	+1.7
Goats	15.9	17.8	17.9	+11.9	+0.6
Pigs	9.1	14.8	15.8	+62.6	+6.8
Poultry	8.9	11.0	13.1	+23.6	+19.1
Total (l.u.)	2,442.8	2,678.0	2,679.0	+9.6	+0.04

Source: Zioganas, 1998.

In **Portugal** the area of arable land slightly decreased in the period 1980-90 (-2 %), in favour of the area planted with permanent crops (+ 11 %). In **Spain**, the area of crops fell in favour of a relatively large increase in the area of permanent grassland. Within the crops sector, the area shares of industrial crops, cereals, permanent crops (among which olives) grew, while the area shares of root crops (potatoes, sugar beet), pulses, vegetables and temporary grassland remained relatively stable. The share of other crops fell to zero. Crop yields per hectare increased for root crops (with about 10-15 %), but cereal yields stayed low and show a large annual variation. Livestock numbers increased, especially the number of sheep, goats and pigs showed a large increase.

3) A decrease in the share of agriculture in GDP and employment. In **Spain**, for example, the share of agriculture in total employment dropped from 18.7 per cent to 10.1 percent, while its share in GDP fell from 5.6 to 4.6 per cent in the decade after accession (OECD, 1997a).

4) Large inflows of subsidies and credits from the EU and international financial institutions. In **Greece**, transfers and loans from the EC increased substantially during the 1980s, and probably prevented a major economic crisis in Greece. In 1990 alone, Greece received almost three billion ECU in direct grants, totalling about four per cent of its annual GDP. Greece also borrowed heavily after its two balance-of-payments crises. In **Portugal** and **Spain** the inflow of Structural Funds of the EC totalled about 2.7% and 0.7% of GDP, respectively. (1989-1993: European Commission, 1999a).

There are, however, also differences:

1) Economic growth in **Greece** slowed down after accession, whereas in **Portugal** and **Spain** the introduction of trade liberalisation with the EU was accompanied by a rapid growth of GDP (Table 3).

*Table 3: Annual GDP growth (%) in Greece, Portugal, Spain and the EC in constant 1990 prices*

	1961-70	1971-80	1981-85	1986-90	1991-95	1996-99 <sup>1)</sup>
Greece	7.6	4.7	1.4	1.9	1.1	3.2
Portugal	6.5	4.7	0.9	5.5	1.7	3.6
Spain	7.3	3.5	1.5	4.5	1.3	3.3
EC-11 <sup>2)</sup>	5.3	3.3	1.4	3.4	1.5	2.4

1) 1998-1999: projections.

2) before 1991: excluding German new Länder.

Source: European Commission, 1998.

2) Industrial specialisation in Greece and Portugal remained much the same after accession, while Spain managed to diversify its industrial structure. Table 4 presents an overview of revealed comparative advantages by sector. The revealed comparative advantages of Greece and Portugal are still very much in agriculture, minerals and basic manufactures, while Spain has diversified to more advanced industrial sectors such as metal products and transport equipment.

Table 4: Revealed comparative advantages by sector, 1997 <sup>1)</sup>

	Greece	Spain	Portugal	EU-15
Agriculture	0.19	0.10	-0.67	-0.20
Mining and quarrying	-0.88	-0.81	-0.95	-0.53
Petrol and gas extraction and refinement	-0.30	-0.54	-0.65	-0.38
Electricity, gas and water supply	-0.52	-0.87	-0.82	-0.36
Basic metal products	-0.23	-0.09	-0.57	-0.06
Mineral products	0.04	0.36	0.26	0.12
Chemicals and pharmaceuticals	-0.67	-0.24	-0.52	0.04
Fabricated metal products	-0.57	0.02	-0.10	0.11
Machinery and equipment	-0.76	-0.19	-0.53	0.23
Office machinery and computers	-0.85	-0.46	-0.81	-0.11
Electrical and telecom equipment	-0.59	-0.18	-0.12	0.05
Transport equipment	-0.91	0.15	-0.15	0.09
Aviation and space	-0.65	-0.15	-0.41	0.05
Instruments	-0.91	-0.49	-0.55	-0.02
Food, beverages and tobacco	-0.34	-0.01	-0.29	0.07
Clothing and textiles	-0.09	0.05	0.34	-0.05
Wood	-0.74	0.02	0.51	0.02
Paper and printing	-0.32	-0.08	0.10	0.09
Rubber and plastics	-0.54	-0.01	-0.43	0.07
Various	-0.09	0.15	-0.48	0.13
Total	-0.40	-0.06	-0.18	0.03

<sup>1)</sup>  $(X-M)/(X+M)$ , where X = exports, M = imports.

Source: European Commission, 1999a: Table 12.

3) The volume of total agricultural production and exports increased in **Spain** much more than in the other countries. In the period 1986-97, the value added earned in agriculture in Spain increased with 50 per cent in real terms. About half of this increase was due to a rise in the value of output; the other half was due to a rise in direct subsidies. In **Portugal**, by contrast, accession and transition measures lowered the real prices of many agricultural products in the period 1985-89 by 20 per cent (wheat) to 30 per cent (pork and poultry). Although intermediates also became cheaper, agricultural incomes fell sharply. Real farm family incomes dropped by 16 per cent (Avillez, 1993). In **Greece**, agricultural production remained stagnant in the 1980s, with investments (both public and private) falling in real terms (Maraveyas, 1994). Farmers' incomes increased because of the support of the CAP, but there was no modernisation and no structural improvement.

4) Foreign direct investment (FDI) increased substantially in Portugal and Spain, but hardly so in Greece. The inflow of FDI in **Portugal** increased substantially, especially from other EC member states but also from third countries. FDI rose throughout the

1980s, reaching a peak of 2 billion ECU in 1990. Major investors were Spain, the UK, France and Germany. Most of the investments went into services, particularly banking, property and business services. In a number of years there was also substantial investment in electricity, gas, water and construction. In the period 1989-93, FDI was about 2.8 per cent of GDP. The inflow of FDI into **Spain** increased rapidly after accession, reaching a peak of almost 10 billion ECU in 1990. Half of the FDI went into manufacturing, especially into the food, chemical and motor vehicle industries. In the services industry they went into banking and business services, including computing (European Commission, 1999a). Over the period 1987-1996 the total inflow of FDI in Spain totalled 64 billion ECU, or 1.7 per cent of GDP. FDI in **Greece** remained limited, far below the EU-15 average. Greece is the only country among the four Cohesion countries (Ireland, Spain, Portugal and Greece) where FDI in the period 1989-1993 was less than the contribution of the EC's Structural Funds. Table 5 presents an overview.

*Table 5: Foreign Direct Investment in Cohesion Countries, 1987-1996*

Member State	Intra-EC ECU million	Extra-EC ECU million	Intra-EC % of GDP	Extra-EC % of GDP
Greece	2,623	804	0.4	0.1
Portugal	8,567	2,756	1.4	0.4
Spain	46,143	18,521	1.2	0.5
EU-15	332,892	246,538	0.6	0.4

Source: European Commission, 1999a.

These differences can to a large extent be explained by the unequal starting points, the prevailing economic climate during the years of liberalisation, the domestic macro-economic policies, labour market features, and geographical factors such as proximity of markets, infrastructure and so forth.

## 4.2 Environment

### Scale

As the economic growth in the three countries following EU accession differed widely, the environmental impact of growth also differed. Regional differences can also be observed, as a result of the unequal geographical distribution of growth. For example, air pollution in Greece increased mainly in the Athens area. In all countries, growth in transport (both of goods and persons) has been particularly high, with substantial consequences for environment, nature and landscape. In **Greece** the length

of motorways increased more than 14 times in the period 1980-97, and the number of motor vehicles increased by almost three times in the period 1980-97. In **Portugal** the economic growth in urban areas led to an increase in the amount of household and industrial waste. The infrastructure for waste collection and disposal lagged behind, resulting in a significant growth in unregulated waste dumps and a particularly worrying situation in the case of industrial, hazardous wastes. In the early 1990s, 75 per cent of these hazardous wastes were simply dumped without treatment (OECD, 1993). The integration of **Spain** in Europe has accelerated economic growth and influenced consumption patterns that, at least in certain regions, rapidly converge towards those patterns found in North-European member states. Economic growth in Spain has generated significant pressures on the environment (OECD, 1997a). Between 1985 and 1993, the increase in environmental pressures often exceeded the growth in industrial production, energy production, and growth of GDP. Fast-growing environmental pressures include water extraction, NO<sub>x</sub> emissions, municipal waste and road traffic volumes. It also shows that the growth in energy demand equals GDP growth.

Table 6: *Growth of the economy and environmental pressures in Spain, 1985-1993*

	1985-1993 (% change)
<b>Selected driving forces</b>	
Population	1.5
GDP	26.8
Industrial production	11.1
Agricultural production	2.8
Total primary energy supply	26.5
Total final energy consumption	25.7
Energy intensity per GDP	-0.3
Vehicle ownership	49.6
Road traffic (veh.-km)	38.4
<b>Selected environmental pressures</b>	
SO <sub>2</sub> emissions	5.2
NO <sub>x</sub> emissions	49.8
CO <sub>2</sub> emissions from energy use	16.6
Water withdrawal	-33.5 <sup>a</sup>
Municipal waste generation	42.4 <sup>b</sup>
Nitrogenous fertiliser use	-2.5
Phosphate fertiliser use	7.5
Pesticide use	-33.3 <sup>c</sup>

a. this decrease is due to unavailability of water as a result of drought.

b. 1985-92.

c. 1987-93.

Source: OECD, 1997a.

## Composition

### *Production*

The environmental impact of changes in the composition of production activities has been mixed. In agriculture, some specialisation on relatively polluting products and sectors can be observed (e.g. cotton in **Greece**; livestock farming in **Spain**), but in the case of **Portugal** the reduction of cereals production can be considered as beneficial for the environment. Portuguese agricultural policy had since the 1930s heavily subsidized cereal growing, expanding the area where annual crops are cultivated towards marginal and unsuitable (erosion-prone) lands. After accession, real prices of wheat and maize dropped by 23, respectively 30 per cent in the period 1985-9 (Avillez, 1993). The resulting reduction in arable land in favour of permanent crops reduced (the risks of) erosion substantially.

### *Consumption*

Rising incomes and the availability of a wide choice of consumption goods from the EU have greatly affected the spending patterns of households in all three countries.

From an environmental point of view, the spectacular growth of private car ownership and use is the most obvious trend.

### Technique

Two major factors determine the EU-induced developments in the environmentally relevant “technique” aspects of production and consumption: the application of EU policies and standards, and the more autonomous “modernisation” of products and technologies. Furthermore, R&D can be an important factor stimulating environmentally compatible technology.

### *The EU environmental acquis*

All three countries have introduced several policy measures aiming at less polluting processes and products. To a large extent these measures were taken in response to the need to implement EU policies. However, there are large differences between sectors and full implementation has yet to be accomplished. Air and water pollution have been reduced by means of “end-of-pipe” abatement as well as modernisation of production equipment. Nevertheless, many emissions are above average EU levels, especially when measured on a per unit of GDP basis.

### *Modernisation of processes, production methods and products*

Apart from the direct influence of EU policies, the environmental impacts from processes and products have been influenced by a variety of changes in technologies, management practices, lifestyle etc., which were not primarily adopted because of EU environmental policy considerations, but because of economic attractiveness or personal preferences. The overall outcome of these factors is mixed. In all three countries the lifetime of many products tends to become shorter, leading to growing volumes of waste and low recycling rates.

### Environmental indicators

The overall result of the scale, composition and technique factors is reflected in the final impact on emissions and the environment. The net outcome differs between environmental items. Emissions of the main traditional air pollutants (SO<sub>2</sub>, NO<sub>x</sub>, VOCs, CO<sub>2</sub>) have increased, as has the amount of municipal waste generated. On the other hand, the percentage of households connected to public wastewater treatment has also grown in all three countries.



### 4.3 Regional disparities

In the process of their integration with the EU, **Greece** and **Spain** experienced an increase in regional disparities, whereas **Portugal** did not. Generally, economic growth induced by the liberalisation seems to be concentrated in the main urban areas and in the regions that are located relatively close to, or have good connections with, the (other) EU countries. Despite the support from CAP and Structural Funds, regions where agriculture dominates and/or which are situated in the periphery tend to fare less well. Nevertheless, the example of Portugal suggests that increases in regional disparities are not an inevitable by-product of EU accession. It is well conceivable that after some time economic growth “trickles down” towards poorer regions. This process could be supported by sensible regional policies and financing.

*Table 7: GDP per capita and regional disparities, purchasing power standards, EU-15 = 100*

Member State	GDP per capita		Regional disparity (standard deviation)	
	1986	1996	1986	1996
Greece	59.2	67.5	6.0	8.6
Portugal	55.1	70.5	16.2	13.1
Spain	69.8	78.7	13.7	16.8
EU-15	100.0	100.0	27.1	26.9

Source: European Commission, 1999a

## 5. Preliminary evidence from eastern enlargement: the case of Poland

Although the Accession Countries in Central and Eastern Europe (CEE) are still in the process of negotiating their EU membership, their economies and policies have already been deeply influenced by the EU during the past decade. At the example of Poland, the country that was the first to start reforms, we can try to check whether the findings on the impact of EU accession, as described in the preceding on three southern Member States, might be valid for CEE countries as well.

### 5.1 Economy

Poland's economy shows considerable differences with the present EU-15, both in size and structure. GDP per capita (in purchasing power standard) amounted in 1998 to 7,800 ECU or 39 per cent of the EU average. After a period of decreasing economic activity during the early years of transition, Poland's GDP started to grow again in 1992. Since 1994, Poland has shown a real GDP growth of about 6 percent per year.

Domestic demand (consumption and investments) has been the largest component of GDP growth in the 1990s. With the exception of the year 1995, exports increased at a slower rate than imports, widening Poland's trade deficit continuously. The EU is Poland's main trading partner: it accounts for 66 per cent of Poland's imports and 68 per cent of Poland's exports. More than half of Poland's export to the EU goes to Germany. For the EU, Poland is the fourth biggest export market (Allen, 1999). The growth in trade relations with EU countries has been accompanied by a decrease in trade with Poland's traditional trading partners, especially the former Soviet Union. Since 1996, Poland is the country with the highest inflow of foreign direct investment (FDI) among the transition countries. In 1998, FDI in Poland amounted to 6.3 billion USD (UN-ECE, 1999). Grants and credits from the EU (e.g. Phare and EIB) and other international institutions (such as the EBRD) have been an important source of funding for Poland's economic restructuring in the 1990s, but private capital flows are much larger nowadays.

In terms of Poland's economic structure, the position of the agricultural sector is remarkable. Agriculture (including forestry) accounts for about 20 per cent of employment, and contributes some 5 per cent to GDP. These figures are more than four and two times as high as the EU-15 average, respectively. Industry (including construction) in Poland is also relatively more important than in the EU (although the relative difference is much smaller here), whereas the services sector accounts for lower shares in employment and GDP. Table 8 shows the structural composition of the Polish economy in terms of value added and employment.

*Table 8: Share of main sectors in value added and employment in Poland and the EU-15*

	% of gross value added			% of employment		
	PL-1995	PL-1998	EU-1996	PL-1995	PL-1998	EU-1998
Agriculture	7.0	4.8	2.3	22.6	19.1	4.8
Industry (excl. construction)	31.9	27.9	25.4	25.9	25.0	}29.5
Construction	7.3	8.6	5.3	6.1	7.0	
Services	53.8	58.7	67.0	45.4	48.9	65.7

Source: European Commission, 1999b, c; Eurostat, 1998.

In recent years, growth of value added has been particularly strong in the manufacturing industry. Since 1992, the value of exports of manufactured articles

(expressed in USD) more than doubled, whereas food exports almost doubled, fuel exports hardly increased and raw material exports decreased.

Within agriculture, a pattern of specialisation is emerging in a limited number of products, especially pork and poultry and sugar. Cereals are clearly on the decline, whereas the picture for other products (such as beef, dairy products, fruits and vegetables) is less obvious. The trends in agriculture may change again once Poland becomes a EU member: currently it only benefits from market access, but in the future Polish agriculture will also be eligible to price and income support under the CAP. However, as the CAP itself is likely to change considerably before accession, the outcome of the process is quite uncertain.

In manufacturing, a specialisation in the direction of 'light' industry is becoming visible. Product groups where Poland's production and exports have been increasing include wood manufactures, clothing, footwear, passenger cars and some household appliances. Chemicals, machinery, building materials and vehicles (other than passenger cars) have been declining.

## **5.2 Environment**

Just like its economy, Poland's environment has experienced considerable changes during the 1990s, although the pace of change differs widely between the various environmental issues. Table 9 shows the changes that have occurred since 1989/90 in some selected parameters influencing the quality of the environment, and compares them with recent values for the EU-15.

Most of the chosen indicators point at convergence: in areas where Poland's environmental record was worse than the EU's (such as air and water pollution and energy use), it is improving; on the other hand, it is deteriorating in areas where Poland used to be "greener" than the EU (such as waste and transport).

The reductions in emissions have led to substantial improvements in environmental quality in Poland. Since 1990, national average SO<sub>2</sub> concentrations in the ambient air have been reduced by more than 50 per cent, and average lead concentrations by more

than 70 per cent. Concentrations of heavy metals in inland waters have decreased in many cases by 80 or 90 per cent (OECD, 1999a).

*Table 9: Selected environmental indicators for Poland and the EU-15*

	Poland		EU-15
	1989/1990	1996/1997	1995/1997
SO <sub>x</sub> emissions per capita (kg)	102.6	61.3	25.1
NO <sub>x</sub> emissions per capita (kg)	38.8	29.9	29.9
VOC emissions per capita (kg)	26.7	19.8	33.2
CO <sub>2</sub> emissions per capita (tonnes)	11.2	9.4	8.7
energy supply per unit of GDP (Toe/USD)	0.54	0.45	0.23
freshwater abstraction per capita (m <sup>3</sup> )	374	310	522
% of population connected to sewage treatment plant	35.4	46.6	69.8
intensity of forest use (harvest/annual growth)	0.50	0.60	0.62
amount of municipal waste per capita (kg)	290	320	461
traffic volume by passenger car (veh.km/capita)	761	2196	5955
fertiliser use (total of N, P and K; kg per ha)	174	86	121

Source: OECD (1999a) and own calculations.

### **5.3 Analysis of environmental impacts**

The changes that are taking place in emissions and environmental quality in Poland can be related to the three factors that were distinguished above: scale, composition and technique.

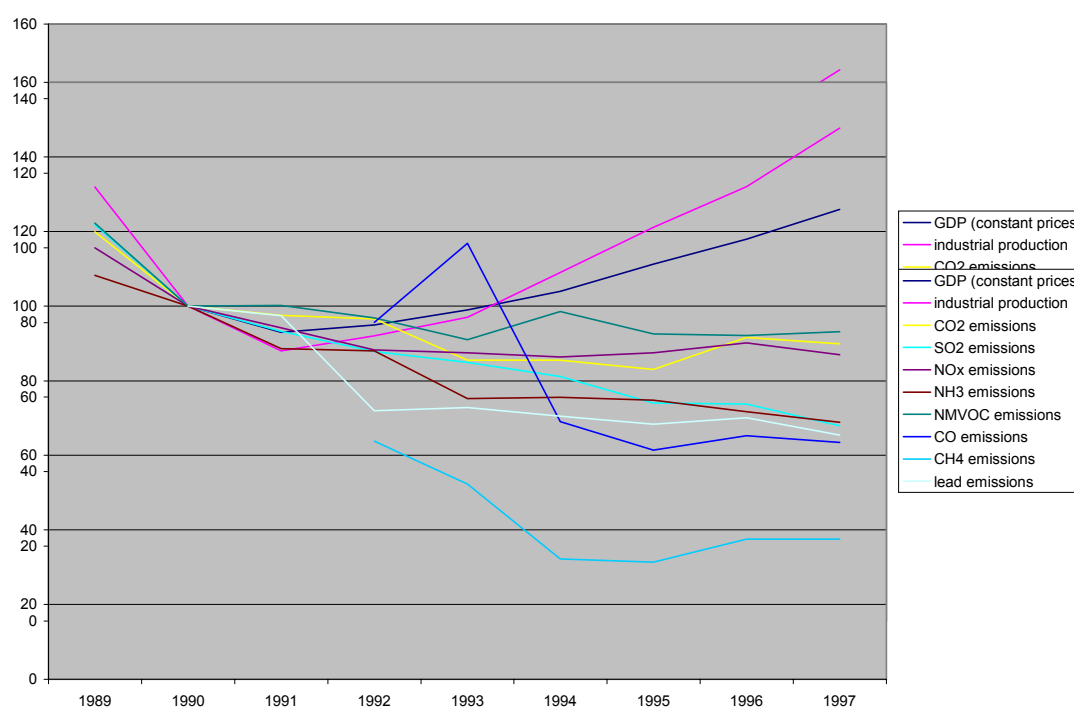
#### *Scale*

In the early years of transition, environmental improvements in Poland were to a large extent due to the decline in economic activity. Emissions decreased at about the same rate as GDP and industrial production. However, since 1992 pollution has not followed the upward trend of the economy (see Figure 1). Whereas industrial production in 1997 was almost 50 per cent higher than in 1990, emissions to air were still below their 1990 levels. Thus, the increases in production volume have apparently been more than offset by changes in the composition of production and in technologies.

The scale of consumption has also grown very fast. From 1991 to 1998, private final consumption expenditure increased by 42 per cent in real terms. Ireland was the only OECD country with a higher growth figure (44%) over the same period (OECD, 1999a). Although technical improvements may have reduced the adverse environmental impact of this growth, it is obvious that the “decoupling” is less

impressive than at the production side. For example, while there was a small decrease in VOC emissions from road traffic since 1991, NO<sub>x</sub> emissions from traffic have increased. The amount of municipal waste per capita has also grown (OECD, 1999a).

*Figure 1: Indices of economic activity and emissions in Poland (1990=100)*



Source: EMEP (2000); OECD (1999a).

### *Composition*

As we have seen in Table 8, the share of agriculture and industry in GDP is decreasing, whereas that of services is increasing. This development towards a “service economy” contributes to a lower level of emissions per unit of GDP. Within industry, the tendency towards lighter industries is likely to contribute to decreases in pollution (cf. Vukina et al., 1999). The environmental impacts of the agricultural specialisation, on the other hand, might be less favourable: the growth in pork and poultry, for instance, could imply the development of an intensive livestock breeding sector with its associated high levels of nitrate and ammonia pollution. The composition of private consumption in Poland differs from the EU-15 in some respects (see Table 10). Polish consumers spend a relatively large part of their income on food (only Portuguese and Greek households spend relatively more) and on education (in which they beat all EU countries). On transport and communication,

Polish households spend less than those in the EU. Thus, in terms of composition, expenditure patterns in Poland seem to be somewhat less environmentally harmful than in the EU, although there is a trend towards convergence (illustrated by the recent extremely strong growth in car sales).

*Table 10: Composition of household consumption by major spending categories (in % of total household expenditure), 1997*

Category	EU-15	Poland
Food	10 – 28	20
clothing and footwear	3 – 7	3
fuel and power	2 – 6	5
health	7 – 21	12
Education	6 – 16	19
transport and communication	8 – 17	6
Other	35 – 52	34

Source: World Bank, 1999

### *Technique*

Improvements in production technology (both through modernisation of production technology and through “end of pipe” pollution control technology) have been important factors behind the reduction in emissions in specific sectors. For example, while steel production in Poland increased by 13 per cent in the period 1992-1996, SO<sub>x</sub> and particulates emissions from the Polish steel industry decreased over the same period by 38 per cent and 53 per cent, respectively (OECD, 1999a).

The “technique” aspect of consumption shows a mixed picture from an environmental point of view. For instance, the emission characteristics of passenger cars have improved considerably. By 1997, unleaded gasoline had reached a 50 per cent market share in Poland (OECD, 1999c). On the other hand, recycling rates of paper and cardboard have dropped from 48 per cent in 1991 to 13 per cent in 1996 (OECD, 1999a).

## **5.4 Regional disparities**

There are large regional disparities in Poland. The European Commission’s 1999 Progress Report on Poland (European Commission, 1999c) noted, “people living in rural areas have not benefited greatly from economic growth.” The regional GDP per capita ranged between 25 per cent of the EU average in the region of Lubelskie and

55 per cent in the region of Mazowieckie (Warsaw). These regional disparities are largely related to the unfavourable position of agriculture, although the collapse of particular industries has also played a role. The regions with the lowest incomes (mainly in the north-eastern and south-eastern parts of the country) are the same as those where small farms prevail. Unemployment in these regions can be expected to increase as a result of rationalisation and modernisation in agriculture. Until now, unemployment is concentrated in the North and West, where there has been large-scale industrial decline. Foreign Direct Investment in the CEE countries is mainly directed towards capital cities, large urban centres and Western regions bordering the EU. However, in Poland FDI inflows are more evenly spread than in other CEECs (European Commission, 1999c).

## **6. Conclusions**

The present paper has shown that the process of trade liberalisation and EU accession can cause considerable changes in a country's economy, the environment and the regional distribution of wealth and employment. In addition, EU enlargement has also consequences for the existing EU members and for the existing trade partners in the rest of the world. The developments in the four countries considered in this paper were by no means uniform, due to differences in initial conditions, the prevailing economic climate during the years of liberalisation, the domestic macro-economic policies, labour market features, and geographical factors such as proximity of markets, infrastructure and so forth. However, some common general tendencies can be observed that can be summarised as follows:

- A substantial increase in foreign trade with the EU, partly at the expense of traditional trading partners. In the case of the accession of Spain and Portugal it was mainly Latin America that lost a market for its food exports. In the case of Poland, trade is diverted from the Former Soviet Union.
- A growing trade deficit. Imports tend to rise faster than exports. Whether this causes balance of payments problems depends on the capital account. All countries except Greece experienced large increases in the inflow of foreign capital, both from EC and other financial institutions and from private sources. This also is the case for Poland.
- Changes in the composition of agricultural production (and to some extent also in industrial production). Agriculture in the southern accession countries shifted

towards the cultivation of Mediterranean products. That is of course not possible for Polish agriculture. At the moment a pattern of specialisation is emerging in a limited number of products, especially pork and poultry and sugar. Cereals are clearly on the decline. However, it is difficult to predict what will happen when Polish agriculture joins the CAP, especially what will happen to the CAP itself. The composition of industry changed more in Poland than in the southern accession countries. This can be explained by the different initial economic structures of the two regions, of which the Polish economic structure was extremely capital-intensive.

- Massive growth in private consumption, especially in car ownership and use and an increase in the generation of household wastes. This is a common feature of all four countries.
- Growing regional disparities can be observed almost everywhere, with, possibly, the exception of Portugal. Regional disparities can already be observed in Poland and the disparities may accelerate after accession.

The environmental impact of these developments is mixed. The relative importance of the scale, composition and technique factors varies and often these factors have opposite effects. Generally speaking, the composition effect is relatively unimportant except in some specific cases. In Poland, there is a compositional shift towards light industry, which is, by and large, favourable for the environment. The scale factor (exercising a negative effect on the environment) is particularly strong in terms of growth in transport (both of goods and people) and waste. The technique effect is generally positive for the environment in industry and transport. But the technique effect may be less beneficial in agriculture if it destroys existing small scale, low input farming practices with their associated nature values. The future of the structure of agriculture and farming practices in Poland is highly uncertain, but may have a large impact on the environment and natural values. Past experience with the CAP in the southern Member States gives reason for concern.

## References

- Allen, T. (1999), Expanding EU Trade with Poland. *Statistics in Focus – External Trade* 3/1999. Eurostat, Luxembourg.



- Avillez, F. (1993). Portuguese Agriculture and the Common Agricultural Policy. In: da Silva Lopes, J. [ed.]. *Portugal and EC Membership Evaluated*, Pinter Publishers Ltd., London, UK. pp. 30-50.
- EMEP (2000), *Tables of anthropogenic emissions in the ECE Region*. <http://www.emep.int>.
- European Commission (1998). *European Economy: Broad Economic Policy Guidelines*, No. 66, Directorate-General for Economic and Financial Affairs, Brussels
- European Commission (1999a). *Sixth Periodic Report on the socio-economic situation and developments in the regions*, Directorate-General Regional Policy and Cohesion, Brussels. [<http://info regio.cec.eu.int/6pr>]
- European Commission (1999b), *Regular Report from the Commission on Progress toward Accession. Poland – October 13, 1999*.  
[http://europa.eu.int/comm/enlargement/poland/rep\\_10\\_99/x.htm](http://europa.eu.int/comm/enlargement/poland/rep_10_99/x.htm).
- European Commission (1999c), *Employment in Europe 1999*. Brussels.
- European Environment Agency (1998). *Europe's Environment: The Second Assessment*, EEA, Copenhagen.
- Eurostat (1998), *Key figures. Bulletin of Economic Trends in Europe*. Luxembourg.
- Giannitsis, T. (1994). Trade effects, the balance of payments and implications for the productive system, In: Kazakos P. and P.C. Ioakimidis [eds.] *Greece and EC Membership Evaluated*, Pinter Publishers Ltd., London, UK. pp. 36-55.
- Glejser, H. and S. Moro (1996). Estimates of Trade Effects of Portugal's and Spain's Entry to the European Union, *De Economist*, 144, 285-304.
- Grossman & Krueger (1991) *Environmental Impacts of a North American Free Trade Agreement*, National Bureau of Economic Research, Working Papers No. 3914, Cambridge, MA.
- Hardes, H.-D. and S. Stupp (1996) "Die Integrationserfahrungen Südeuropas: Wirtschaftlicher Wegweiser für eine Ostweiterung der Europäischen Union?", *Osteuropa-Wirtschaft*, 41, 4, 354-363.
- Kazakos P. and P.C. Ioakimidis [eds.] (1994). *Greece and EC Membership Evaluated*, Pinter Publishers Ltd., London, UK
- Kuik, O.J. and F.H. Oosterhuis (1999). *Eastward expansion of free trade: a green prospect? Environmental implications of trade liberalisation between the European Union and countries of Central and Eastern Europe*, Report prepared for the European Environment Agency, Copenhagen. 95 p.
- Kuik, O.J. and F.H. Oosterhuis (2000). *Free Trade and the Environment in the Euro-Mediterranean Context: Lessons learned from Spain, Portugal, Greece and Poland*. Report prepared for the Mediterranean Commission for Sustainable Development, W-00/04, Institute for Environmental Studies, Vrije Universiteit, Amsterdam.
- Maraveyas, N. (1994). The Common Agricultural Policy and Greek Agriculture. In: P. Kazakos and P.C. Ioakimidis [eds.], *Greece and EC Membership Evaluated*, Pinter Publishers Ltd., London, UK. pp. 56-73.
- Marques-Mendez, A.J. (1993). The Development of the Portuguese Economy in the Context of the EC. In: da Silva Lopes, J. [ed.]. *Portugal and EC Membership Evaluated*, Pinter Publishers Ltd., London, UK. pp. 7-29.
- OECD (1991). *Environmental Data, Compendium 1991*, Organisation for Economic Co-operation and Development, Paris.
- OECD (1993). *OECD Environmental Performance Reviews: Portugal*, Organisation for Economic Co-operation and Development, Paris.
- OECD (1995). *Economic Accounts for Agriculture*, Organisation for Economic Co-operation and Development, Paris.

- OECD(1997a). *OECD Environmental Performance Reviews: Spain*, Organisation for Economic Co-operation and Development, Paris.
- OECD (1997b). *Environmental Data, Compendium 1997*, Organisation for Economic Co-operation and Development, Paris.
- OECD (1998), *OECD Economic Surveys 1997-1998: Poland*. Organisation for Economic Co-operation and Development, Paris.
- OECD (1999a), *OECD Environmental Data 1999*. Organisation for Economic Co-operation and Development, Paris.
- OECD (1999b), *Environment in the Transition to a Market Economy. Progress in Central and Eastern Europe and the New Independent States*. Organisation for Economic Co-operation and Development, Paris.
- OECD (1999c). *Environment in the Transition to a Market Economy. Progress in Central and Eastern Europe and the New Independent States*. Organisation for Economic Co-operation and Development, Paris.
- OECD (1999d), *The Agri-Environmental Situation and Policies in the Czech Republic, Hungary and Poland*. COM/AGR/ENV(99)60/FINAL. Organisation for Economic Co-operation and Development, Paris.
- Task Force on the Environment and the Internal Market (1992), *The Environment and the Internal Market: Challenges and Opportunities*. Report, Brussels.
- UN-ECE (1999), *Economic Survey of Europe*. New York.
- Vukina, T., J.C. Beghin, and E.G. Solakoglu (1999), Transition to markets and the environment: Effects of the change in the composition of manufacturing output. *Environment and Development Economics* 4, p. 582-598.
- World Bank (1999). *World Development Indicators*. The World Bank, Washington, DC.
- Ziogas, Ch. M. (1998). The Organization of Primary Agricultural Production in Greece: Evolution and New Challenges for Re-orientation, In: Lekakis, J.N. [ed.]. *Freer Trade, Sustainability, and the Primary Production Sector in the southern EU: Unraveling the Evidence from Greece*, Kluwer Academic Publishers, Dordrecht, pp. 19-32.