



THE BALTIC SEA REGION

Cultures, Politics, Societies

Editor Witold Maciejewski



A Baltic University Publication

51 The environment

Hans Aage

1. The Baltic Sea

In the days of old, when transport by land was very expensive, the Baltic sea was the main unifying force of the region. This is still visible, for example in Gotland where 92 big and beautiful stone churches built in the XII century and the impressive 3.5 km medieval wall surrounding Visby are remnants of times, when this island far out in the Baltic Sea was a flourishing centre of cultural and material exchange.

Today, the Baltic Sea is still unifying the Baltic Region, but in addition the Baltic Sea has become a common responsibility because of the vulnerability of its brackish waters as a recipient of increasing amounts of pollution originating from human economic activity.

Until about 1960, the Baltic Sea was considered as being in a rather healthy condition, but this has changed dramatically since then concurrently with high economic growth rates in the bordering countries and huge increases in energy production, industrial output, transportation, waste disposal and the agricultural use of fertilizers and pesticides. Today, life is threatened in the Baltic Sea, and parts of it, e.g. in the inner Danish waters and in the Riga Bay, are almost dead. In the 1990s the environmental pressure was lifted somewhat because of the decline in production in the eastern parts of the region and more recently due to improved environmental policies and investments.

Pollution of the waters of the Baltic Sea is a common concern for the whole Baltic region. Poland, the Baltic states and Russia contribute significantly to the total pollution load in the Baltic Sea, although not more than the Nordic countries, and the water from the Baltic Sea entering the inner Danish waters is presumably less polluted than the water it replaces, partly due to the hydrographical conditions, namely that polluted water can be retained in the profound areas of the Baltic Sea. According to data from the late 1980s, Poland contributed 33% of the total nitrogen pollution, the Soviet Union 25% and Denmark, Sweden and Finland together 39%. Concerning phosphorus, the contributions were 39% from Poland, 25% from the Soviet Union, and 31% from Denmark, Sweden and Finland. Concerning organic matter



Figure 173. Fishing in central Stockholm is a symbol of the successful Swedish environmental policy. Photo: Katarzyna Skalska

(BOD, that is biochemical oxygen demand) the contributions were 19% from Poland, 32% from the Soviet Union, and 49% from Denmark, Sweden and Finland. The corresponding numbers of population are 37.9 million in Poland, about 16 million in the former Soviet coastal areas, including 8 million in the Baltic countries and 5 million in the St Petersburg area, and 18.6 million in Denmark, Sweden and Finland. This refers to pollution via rivers, from urban areas and from industries. For nitrogen another 25% should be added originating from the air and from the production of algae in the Baltic Sea itself.

The relative contribution to the pollution load of the Baltic Sea with heavy metals from Poland, the Baltic states and Russia is probably higher, but reliable data are lacking. The discharge of chlorines from the paper and pulp industry in Sweden and Finland is also a very harmful type of pollution.

Entirely new ecological disturbances have been actively created by the construction of a combined tunnel and bridge for railway and highway transport between Malmö and Copenhagen across the Sound, completed in 2000. It was concluded by the joint Swedish-Danish environmental evaluation report that the connection would increase air pollution, but the new problem is that the tunnel-bridge connection could disturb the salt water inflow from the Kattegat into the Baltic Sea and thereby reduce the content of salt in the Baltic Sea. The ecological balance is highly vulnerable even to small changes in the water inflow, and several species, for example the Baltic cod, could hardly survive any decreases.

The connection is estimated to reduce the water inflow by 1%, but this nevertheless caused the Swedish government's advisory board on protection of the environment (*Koncessionsnämnden*) to advise against the project, and the Swedish Water Court (*Vattendomstolen*) only accepted the project on the condition that it would be completely environmentally neutral. However, an environmentally neutral solution would have been possible, namely a railway tunnel.

2. Transnational pollution

Airborne pollution can travel long distances, several hundreds of kilometres, from the source of emission to the final deposition. This is true particularly for sulphur and nitrogen, but also for ammonia, which all contribute to acidification. Due to the prevailing western winds, Norway and Sweden are net importers of pollution, whereas Denmark, Finland, the Baltic states and Poland are net exporters of pollution (cf. Tables 51 and 52). However, most of the exchange of pollution involves areas other than Scandinavia and the Baltic region. About 10% of depositions in Scandinavia originate in the Baltic region, and an even smaller share of depositions in the Baltic region originates from emissions in Scandinavia. Finland, Norway and Sweden import a small amount of pollution from the Baltic region, but Denmark is a net exporter to the Baltic states and to Poland.

Nuclear pollution is a potential cross-frontier threat. Due to the prevailing western winds, accidents in Western European nuclear power plants, including the Barsebäck plant in Sweden situated 20 km from the city centre of Copenhagen, could have serious effects in the Nordic countries. Taking the different degrees of risk into account the more important sources of cross-frontier effects might be other more remote plants in Russia, in Central and Eastern Europe, and the Ignalina plant in Lithuania.

Concerning solid, hazardous waste the Nordic countries are probably net exporters to Russia, the Baltic states and Eastern and Central Europe, but reliable data are not available.

Table 51. Emissions and depositions per capita of sulphur, nitrogen, and ammonia in the Scandinavian and Baltic region, 1990

kg per capita	Sulphur SO ₂		Nitrogen NO _x		Ammonia NH _x	
	emission	deposition	emission	deposition	emission	deposition
Sweden	26.1	28.9	8.6	13.9	7.3	9.3
Finland	57.0	37.6	61.7	14.2	10.5	10.6
Denmark	46.7	12.2	50.6	5.5	16.6	7.3
Estonia	167.5	..	66.3	..	..	..
Latvia	44.4	..	47.0	..	..	..
Lithuania	58.1	..	45.1	..	..	..
Baltic states	75.4	25.4	50.0	8.4	20.0	11.0
Poland	99.4	32.4	35.1	6.5	10.5	7.3

Note: Data refer to 1990 which was the last year of normal production before the economic transition and depression. In the following years emissions in the Baltic states and Poland have decreased by 30-50% (cf. Table 54).

Source: Halsnæs and Sørensen, 1993, pp. 31, 37-9

Table 52. Atmospheric transport of sulphur, nitrogen, and ammonia between Scandinavia, the Baltic region, and other areas, 1990

Total emissions in ktons from		Depositions in			Total emissions
		Scandinavia	Baltic states and Poland	Other areas	
Scandinavia	SO ₂	140	16	677	833
	NO _x	51	13	820	884
	NH _x	109	7	117	233
Baltic states and Poland	SO ₂	67	713	3643	4423
	NO _x	28	76	1646	1750
	NH _x	21	241	301	563
Other areas	SO ₂	434	709	..	..
	NO _x	221	225	..	..
	NH _x	87	120	..	..
Total depositions	SO ₂	641	1438	..	..
	NO _x	300	314	..	..
	NH _x	217	368	..	..

Note: Scandinavia includes Norway, Sweden, Denmark and Finland. The Baltic region includes the Baltic states and Poland.

Source: Halsnæs and Sørensen, 1993, pp. 36-9



Figure 174. Factories, even if they fill restrictive law prescriptions, are not harmless to the environment. Photo: Katarzyna Skalska

Among the first consequences of marketization in Eastern Europe were imports of hazardous waste in Poland and the Soviet Union. After the enforcement of more efficient controls in Poland these exports were diverted towards the Baltic states, Bulgaria, Romania and the former Soviet republics. According to Greenpeace the main offenders of waste dumped such as used tyres, radioactive residues, pesticides and dust from steel mills are Germany, Austria and Sweden.

Most cross-frontier types of pollution contribute to the greenhouse effect. The contribution per capita in Eastern Europe is comparable to the Scandinavian contribution. Using an index for 1987 with the contribution from the USA equal to 100, the following corresponding numbers have been obtained for various countries: GDR 93, Denmark 73, Finland 65, Czechoslovakia 53, Norway 52, Poland 50, Bulgaria 47, Sweden 41, Hungary 31, Romania 30, Yugoslavia 27, Albania 12. However, the relative contribution per unit of GDP produced is much larger in Eastern Europe, as their GDP per capita is only 20-40% of the levels in Western Europe and the USA (World Resources, 1993:346-349; the deviations as compared to Table 53 reflect different methods, as not only carbon dioxide is included, but it also reflects uncertainty of data).

3. Resources, environment and economic growth

In a historical and global perspective the similarities between Eastern and Western Europe figure more prominently than the differences. Long-term growth paths in Eastern Europe and Russia resemble those of Western Europe (cf. Chap. 50). With respect to the consumption of resources Eastern Europe and the Soviet Union did achieve a level which is on a par with that of the rich western economies. In 1989 energy consumption was relatively high, and very high if energy consumption is computed per unit GDP instead of per capita, but consumption of fertilizer and pesticides were closer to the average. The main differences are that they used resources relatively inefficiently, that progress was small from 1973 to 1989, that they polluted more than western countries – approximately as western countries did 20-30 years before – and furthermore that pollution was more concentrated in a few heavily polluted areas. As regards the more global, less visible and more serious types of pollution, for example the emission of greenhouse gases, Eastern Europe and the former USSR did not contribute more than average.

Economic growth, resource consumption and pollution are closely related. The basic pattern in Table 53 is the similarity of performance of eastern and western countries and the difference between rich and poor countries (cf. Aage 1998c:3-15), and the basic driving forces are two basic human values, which have always threatened the environment and mankind itself, namely the desire to live well and the desire to proliferate (cf. Ponting 1991). The main

cultural, political and economic challenges of our time are related to global problems of distribution and global problems of environment and resources. Thus, competition for resources and markets is likely to intensify in the global economic environment, in which the eastern countries in the Baltic region attempt to recover from economic depression and to reach a standard of living comparable to that of the Nordic countries, which for their part strive to improve their production and income levels even further.

Endowments of natural resources differ much between the countries in the Baltic region. The resource base is relatively important for the Nordic economies, where renewable resources include fish stocks, hydroelectric power in Norway and Sweden, and forests in Norway, Sweden and Finland. There are also considerable exhaustible resources including oil in the Norwegian and Danish parts of the North Sea and mineral resources in Sweden. Poland has considerable deposits of coal. In the Baltic countries the main natural resources consist of agricultural lands and fresh water resources, but in addition there are large deposits of oil-shale and some other mineral resources in Estonia, and in all three Baltic countries there are forests, peat and also hydroelectric power resources. The eastern countries of the Baltic region all have larger areas of pristine wilderness than most western European countries.

Recent records of economic growth also differ sharply between countries. From 1989 to 1997 levels of output in the Nordic countries were retained or improved (cf. Table 54), albeit Sweden and Finland both experiencing temporary set-backs with negative growth in the early 1990s. In contrast, in the Baltic countries, GDP declined by 36% in Estonia, 48% in Latvia and 61% in Lithuania, and they have not recovered from the transition crises yet. In Poland GDP declined by only 18%, and in 1999 it was 22% higher than in 1989. Taking initial differences into account this means that the order of magnitude of GDP per capita levels in the eastern countries in the Baltic region are now 20-30% of the Nordic levels (cf. Chap. 49).

Changes in energy consumption and carbon dioxide emissions largely follow the pattern of GDP developments. Levels of energy consumption per unit GDP were high and close to the Soviet average in 1989 in Estonia and Lithuania, which both produced and exported energy made from oil-shale and nuclear power, respectively, but lower in Latvia (cf. Table 53). Air pollution from sulphur oxide and nitrogen oxide emissions has declined in both the Nordic and the Baltic countries, but for widely different reasons. In the Baltic countries the decline is explained by the economic recession, and levels of sulphur oxide pollution per unit GDP is very high, notably in Estonia due to oil-shale use. Lower levels of sulphur oxide pollution in the Nordic countries are the result of environmental policies that started in the 1970s. Concerning the reduction of pollution from fertilizer use in agriculture, the Nordic countries have been less successful.



Figure 175. Improvements in conservation and transmission of energy yield profit, for economy and environment. Photo: Andrzej Szmal

Table 53. Production, consumption of resources, and human development in BSR countries, 1989

	Human Development Index	Population (million)	GDP per capita	Energy consumption per capita	Energy consumption per unit GDP
Sweden	.976	8.5	80.8	70.6	87.4
Germany, Federal Republic	.955	62.0	82.7	56.0	67.7
Finland	.953	5.0	76.6	82.7	108.0
Denmark	.953	5.1	80.9	47.0	58.
Czechoslovakia	.897	15.6	40.1	60.2	150.1
Lithuania	.883	3.7	35.0	50.0	142.9
Estonia	.882	1.6	37.5	57.6	153.6
Latvia	.880	2.7	36.3	33.9	93.3
Poland	.874	37.9	31.1	50.4	162.1
USSR	.873	281.1	32.5	64.3	197.9

Notes and sources: The data are illustrative only, due to data uncertainty, problems of comparability and methodological arbitrariness; thus, there are inconsistencies with data in Chap. 49 due to the same reasons. All data except population and the human development index are expressed relative to the numbers for the USA which are set equal to 100. The Human Development Index refers to 1990, most other data to 1989, but in some cases data from earlier years have been used, notably for countries outside the OECD area.

Human Development Index 1990: The index combines life expectancy at birth, adult literacy, mean years of schooling, and GDP per capita assuming decreasing utility of income as expressed by the Atkinson index. For Estonia, Latvia and Lithuania figures were not available until 1994, and these figures have been used for interpolation, cf. UNDP, 1992:127-129, 1994:129

Table 53. (continued)

	CO ₂ emission per capita	CO ₂ emission per unit GDP	SO ₂ emission per capita	SO ₂ emission per unit GDP	NO _x emission per capita	NO _x emission per unit GDP	Fertilizer use per area unit	Pesticide use per area unit
Sweden	35.3	43.7	22.7	28.1	56.7	70.2	123.1	41.8
Germany, Federal Republic	52.6	63.6	18.3	22.1	40.9	49.5	289.2	182.8
Finland	52.2	68.2	58.7	76.6	71.7	92.8	211.4	46.7
Denmark	46.9	58.0	45.1	55.7	64.6	79.6	256.3	115.3
Czechoslovakia	73.8	184.0	198.4	494.8	86.8	216.5	286.2	146.4
Lithuania	47.2	134.9	69.5	198.6	56.4	161.1	327.0	108.0
Estonia	114.7	305.9	203.4	542.4	84.2	224.5	206.3	64.8
Latvia	24.9	68.6	31.8	87.6	36.4	100.3	256.6	126.0
Poland	49.9	160.5	133.8	430.2	49.7	159.8	249.5	52.7
USSR	68.8	211.7	37.5	115.4	18.3	56.3	122.6	117.1

Population: UNDP, 1992: 98-100

GDP per capita: Aage, 1998c:4

Energy consumption: OECD, 1999a; Aage, 1998c: 6. For energy consumption per unit GDP other studies suggest considerably higher figures for the Baltic countries and the USSR, particularly for Latvia, cf. Aage, 1998c: 145

CO₂ emissions: Aage, 1998c: 7. Net additions to atmospheric concentration of green house gases by carbon dioxide emissions from fossil fuels use, cement production, and land use changes; OECD, 1999a.c

SO₂ and NO_x emissions, and fertilizer and pesticide use: OECD, 1999a; Aage, 1998c: 7; Halsnæs and Sørensen, 1993

Currently, growth rates are positive in the Baltic as well as in the Nordic countries, but the conditions for environmental and resource policy differ. The Baltic countries face an enormous dual task of economic and environmental transition, and transition to a market economy is likely to affect the environment in several ways. Production recovery will have immediate negative environmental impacts, but other aspects of transition will also influence environmental policies. Restructuring towards a larger share of services in output tends to reduce energy consumption and pollution; economic accounting under market conditions will improve resource efficiency; privatization of production and resource ownership may change the conditions for environmental policies; and aspirations for EU membership will induce more ambitious policies in order to comply with EU environmental standards.

Table 54. Economic growth, energy consumption, and pollution in Nordic countries, Baltic states and Poland, 1989-1997

index for 1997 with 1989=100	GDP	Energy consump- tion	CO2 emis- sions	SO2 emis- sions	NOx emis- sions	Ferti- lizer use
Finland	106.9	106.7	114.3	41.0	86.4	59.9
Sweden	106.7	109.5	94.6	56.9	80.6	85.1
Denmark	118.1	119.7	121.6	47.2	87.0	68.4
Poland	111.7	87.2	82.0	60.6	78.0	49.0
Estonia	76.3	64.4	55.3	48.7	68.2	10.0
Latvia	56.1	53.7	51.3	76.0	39.8	10.7
Lithuania	62.6	54.0	50.1	29.5	34.3	11.4

Notes: In several cases data are illustrative only, due to data uncertainty, problems of comparability and methodological arbitrariness. Thus, in some cases data refer to 1990 and 1996 or to other years; anthropogenic CO2 emissions often include emissions from energy use only; emissions in Denmark have been almost unchanged since 1980, but in 1989 CO2 emissions were exceptionally low.

Sources: OECD, 1999a; Baltic Environmental Forum, 2000; Aage, 1998c:9

The Baltic states and Poland are actively adopting EU environmental regulations as a sort of anticipatory adaptation, although too slowly to satisfy the EU. This includes the signing of a number of international conventions. Often this means that previously very strict standards – which were not enforced – have been relaxed concurrently with improved enforcement and stronger reliance on economic incentives. The necessary investment costs are huge, estimated by the EU Commission to an order of magnitude of 120 bn EUR (*The Economist*, 11 December 1999, p. 29).

4. International cooperation

International cooperation with the aim of preserving the Baltic Sea was initiated in 1974 when the Helsinki Convention was signed by the countries bordering the sea. It went into force in 1980 with the establishment of HELCOM (The Baltic Marine Environment Protection Commission – the Helsinki Commission), an intergovernmental body with ministerial meetings every four years. In 1992 the HELCOM-PITF (HELCOM Project Implementation Task Force) was set up to oversee the improvement of conditions at 132 environmental hot spots

around the Baltic Sea, and a Comprehensive Programme to Restore the Baltic Sea to a Sound Ecological Balance was presented in April 1992 with total planned costs until 2012 of 10-17 bn EUR. In June 1998, Baltic 21, a joint Agenda 21 document, was endorsed by environment ministers from the Baltic Sea Region.

The environment ministers from countries within the region of the United Nations' Economic Commission for Europe met in Dobříš at the Environment for Europe meeting in 1991 where a major compilation of environmental data for the region was initiated. At the meeting in Lucerne in 1993 an Environmental Action Programme for Central and Eastern Europe was carried. The programme stresses cost-efficiency, economic incentives and market mechanisms, the combination of environmental and economic benefits – the so-called win-win policy – and international assistance concerning cross-frontier environmental problems. The ministers agreed to a number of specific recommendations at the meeting in Sofia in October 1995, including a “call upon the international financial institutions to provide their most favorable terms and conditions for qualified environmental investments in both public and private sectors”, and a “commitment to phase out, as soon as possible, unsafe nuclear installations, in particular unsafe nuclear reactors”.

A number of international conventions for improving the environment have been signed. All the countries in Eastern Europe have signed the air pollution convention from 1979, the biodiversity convention, and the climate convention signed in Rio de Janeiro in 1992. Only Hungary and Poland participate in these conventions to the same degree as the EU countries, whereas other countries in Eastern Europe, and particularly the Baltic countries, have desisted from the ratification of a number of conventions, including conventions concerning the dumping of waste at sea, protection of the ozone layer, and cross-frontier transport of hazardous waste. These conventions are often worked out in organizations related to the UN, like the UNDP (United Nations Development Programme) and the UNEP (United Nations Environmental Programme).

International financial institutions are increasingly incorporating environmental considerations into their evaluation procedures, and several are operating in the Baltic region. The World Bank (IBRD, International Bank for Reconstruction and Development) includes the IDA (International Development Association) for soft and concessional loans and the IFC (International Finance Corporation) for loans to private firms on market terms.

The EU is involved in a number of institutions. The EIB (European Investment Bank) is an EU institution, and the EU initiated the EBRD (European Bank for Reconstruction and Development) in 1991 with the purpose of supporting reconstruction and marketization in Central and Eastern Europe and in the former Soviet Union. All OECD countries and several other countries are members, but the EU and the EIB together own 57% of the share capital. Technical assistance and increasingly also investment support is provided by the PHARE (Poland and Hungary Assistance to the Reconstruction of the Economy) and TACIS (Technical Assistance to the Commonwealth of Independent States) programmes. Both programmes allocate only minor amounts for environmental purposes; for the PHARE programme, which is targeted towards Central Europe and the Baltic states, the share decreased from 20% to 5% during 1991-4, and in the TACIS programme the share is even smaller as the environment is not even mentioned as a priority field.

The Nordic countries own the NIB (Nordic Investment Bank), established in 1975, which has provided some loans for environmental activities in the Baltic countries, particularly through the BIP (Baltic Investment Programme), a facility of 30 million ECU during 1992-5 for loans with a full government guarantee to small and medium-sized firms in the Baltic countries on the condition that projects are both economically and environmentally viable, and through the

NEFCO (Nordic Environment Finance Corporation) established in 1990 for environmental investment loans to Central and Eastern Europe. Other Nordic institutions co-operating with NIB include the NDF (Nordic Development Fund) and NOPEF (Nordic Project Export Fund).

An assessment of foreign environmental assistance must take the motivations of donor and recipient countries as its point of departure. On the part of the donor countries one type of motivation is the concern for improving the environment, in the recipient countries, in the donor country itself due to local transboundary effects, and

in a global perspective. Economic interests are another possible motivation. There is an interest in supporting the domestic industry for anti-pollution equipment and the consultancy industry. For the EU there is an interest in upgrading environmental policy in Central and Eastern European countries in order to prevent “environmental dumping” from their export sectors.

The main priority of recipient countries is projects with an economic growth potential, as concern for the environment faded after the collapse of communism concurrently with the deepening of the economic recession. Even if the general political priority of upgrading the environment prevails, it is not evident that additional funds in the Nordic countries for environmental policy should always be allocated to Central and Eastern Europe rather than to domestic uses. Many types of pollution are not more severe in Eastern than in Western Europe. However, it could nevertheless be cost-efficient to invest in Central and Eastern Europe, where pollution is concentrated on particular types and places and therefore it is relatively inexpensive to reduce, for example waste water outlets and sulphur emissions from a limited number of cities and industries. Pollution of the Baltic Sea is partly due to untreated waste water from urban areas and industries in the eastern countries, which can be remedied at fairly low cost compared to pollution of the sea from, for example, Denmark, which is mainly caused by agricultural fertilizer usage.

However, it is also repeatedly stated as a motivation for Danish environmental support to Central and Eastern European countries that cross-frontier pollution from these countries contributes significantly to local environmental problems in Denmark, which is – apart from the potential threat of nuclear contamination – contrary to fact, as Denmark is a net exporter of air pollution and is itself the cause of most of the pollution of the inner Danish waters. The probability that Denmark receives sulphur pollution emitted in Denmark is 50-100 times larger than the probability of receiving pollution emitted in Poland. Therefore, from a narrow Danish point of view, if the aim is to improve the environment in Denmark, available funds are more effectively spent in Denmark rather than in, for example, Poland, because the costs of pollution control are not so much lower in Poland than in Denmark. Similar considerations apply to the other Nordic countries vis-à-vis the Baltic states, as they only import small amounts of pollution, the most significant being imports of sulphur pollution to Finland from Estonia (cf. Aage 1998c:203-228).



Figure 176. Forests in Silesia have been damaged by salt water being pumped out of coal mines. Since the early 1990s, a visible improvement of the environment in the so-called “triangle of death” in Upper Silesia has been noted. Photo: Paweł Migula

5. Environmental policy

Despite the evident differences between the countries in the Baltic region concerning the state of the economy and the environment, there are several similarities and many common problems for environmental and resource policy.

A common task for energy policy is to improve efficiency and to adjust to expected higher costs of energy consumption. This is one among many areas where the eastern countries have had to free themselves from the Soviet legacy, namely to remove subsidies and increase energy prices from the very low Soviet levels to world market prices, and this has been a difficult task with consequences for social policy as well as for business competitiveness. Another common endeavour is to substitute less polluting and possibly renewable resources for oil. The Baltic countries in particular want to reduce their dependency upon Russian oil, but in this as in many other respects economic considerations have taken priority. Nuclear power is important in Sweden and Lithuania and is also used in Finland. Sweden has decided to phase out nuclear power, but the time schedule is still subject to debate. In Lithuania proposals in the early 1990s for closing down the Ignalina nuclear power plant were suspended for economic reasons, and efforts have been concentrated on improving nuclear safety with assistance from international, including Swedish and Danish, experts. Now, the EU requires the Ignalina plant to be closed down by 2005 (*The Economist*, 11 December 1999, p 29).



Figure 177. Although ecologism has influenced the style of life in the Scandinavian countries, it is not too difficult to take pictures like this even there. Photo: Katarzyna Skalska

Resource management is becoming an issue particularly in some of the Nordic countries. In Iceland, overfishing of stocks has occurred recently, and it proved difficult to gain support for the more strict policies now pursued. In the Faeroe Islands, which enjoy home rule within the Danish kingdom, an overfishing crisis caused a collapse of the economy in the early 1990s. Oil resources in the Norwegian and Danish sectors of the North Sea are being depleted at rather fast rates of exploitation because of the temporary increase of world market prices for oil in the 1970s, and the fixed rates persisted in the 1990s despite low oil prices. Utilization of forest resources is regulated by the governments. In Estonia exploitation of oil-shale has been reduced in recent years, and mining of phosphorite for fertilizer was discontinued in 1991, both because of severe environmental impacts.

Environmental policies concerning air pollution in the Nordic countries started in the 1970s, and effects have been considerable in reducing primarily sulphur dioxide emissions, but also other types of emissions including pollution from motor cars and in recent years carbon dioxide emissions. Water pollution originating in agriculture, households and industry has also been reduced, but in Denmark the outcome of an expensive water purification programme has been disappointing mainly because of economic consequences for agriculture. In the Baltic countries and Poland, environmental policies were less strict in the Soviet period, when norms were often stringent but enforcement lenient, and during the transition period economic growth has been an overwhelming concern. But now environmental policies are being initiated. Due to the concentration of pollution to specific areas, environmental improvements can be achieved at relatively low costs.

In all the countries long-term sustainability is the declared ambition of environmental and resource policy, but except for fisheries and forest management policies they are mostly in a research and preparation stage. Research is carried out concerning accounting and substitutability between man-made physical and human capital on the one hand and natural capital on the other hand, and technological development of renewable resources is supported. But the general conclusion is that much remains to be done before sustainability can be achieved.

Despite all the differences concerning initial economic conditions, resource and environmental situations and policy problems, when it comes to the choice of policy instruments there are many similarities and common experiences. In all countries in the region it is acknowledged that governmental regulation of environment and resources is badly needed. Four types of instruments are generally under consideration: administrative regulation, taxation, transferable quotas and permits, and public investment and subsidies. So far, administrative regulation has been used most extensively, but there is a common trend to prefer economic incentives, and they are being increasingly introduced. Transferable catch quotas have been used in the Icelandic fisheries management since the 1980s, and systems of environmental taxation are increasingly used in all the countries, but in many cases, particularly in the eastern countries, rates of taxation are still low. The most elaborate system of taxation seems to be in effect in Sweden (Aage 1998c; Bluffstone 1997; OECD 2001).

Although notably transferable quotas and permits are usually referred to as market-oriented, all four types of instruments are basically incentive mechanisms for centrally decided policies, as total amounts of resource use and pollution are set politically and market allocation is limited to the distribution of the totals between various uses. Differences could easily be overrated. Even administrative regulation becomes a purely economic incentive in terms of fines, if the criminality of offending regulations is ignored by the public. Furthermore, taxation and the use of transferable permits have similar effects in many respects. However, there are several merits related to strong economic incentives and to "the polluter pays principle", including the possibility of providing funding for public environmental investments (OECD 1999b, 2001).

Common to all policy instruments is the serious problem of monitoring and the related problem of communicating environmental policies to the public. In all the countries' schemes for co-operation between government, local governments and organizations are being developed for these purposes. Like monetary policy, environmental policy is an area where politicians may be tempted to disregard long-term costs in the pursuit of short-term gains, and hence there is an argument for delegating environmental decisions to independent bodies as is the case for monetary authorities, in other words to create "environmental boards" in parallel



Figure 178. The northern outskirts of the region are most effectively protected against pollution. Photo: Andrzej Szmal

with the “currency boards” now established in the Baltic countries. An example of this kind of independent body exists in the Scandinavian countries, namely the so-called Water Courts, which are entitled with certain discretionary powers. Thus, the construction of hydropower plants and some other types of constructions including the bridge across the Sound between Sweden and Denmark require permission from the Swedish Water Court (*Vattendomstolen*).

6. Policy debates

In the late 1980s environmental problems came to the fore of public debate, particularly in the Baltic countries. This was a field where public debate was possible, and the green movement played a significant role in the liberation from Soviet rule. However, during the transition the green parties lost momentum, and concurrently with the deepening of the economic recession environmental problems were crowded out from the policy debate by acute economic concerns. This is also reflected in public opinion polls.

In the Nordic countries a public debate on environmental problems has been going on with varying degrees of intensity for three decades, and there are green organizations with large memberships and also some political influence. The two sides in the debate are often environmentalist on the one side and representatives for economic interests such as fisheries or agriculture on the other. A third party is scientists, and a fourth is economists. Although the economists were not very active in fostering the environmental debate, in recent years they have tried hard to convince the public of the merits of economic incentives in environmental policy. Large parts of the green movements have regarded these economic policy instruments as suspect or even unethical in relation to environmental problems. Thus it appears that even economists have a mission to accomplish in promoting the resource and environmental policies required.

LITERATURE AND REFERENCES

- Aage, H.: 1998a. Institutions and Performance in Transition Economies. *Nordic Journal of Political Economy* 24 (No. 2, 1998): 125-144
- Aage, H.: 1998b. Environmental Transition: A Comparative View. Chap. 1, pp 3-15 in Aage, H. (ed.): *Environmental Transition in Nordic and Baltic Countries*. Cheltenham: Edward Elgar
- Aage, H. (ed.), 1998c: *Environmental Transition in Nordic and Baltic Countries*. Cheltenham: Edward Elgar 1998
- Agenda 2000*. Bruxelles: EU-kommissionen, juli 1997
- Baldwin, R. E., 1995. *The Eastern Enlargement of the European Union*. *European Economic Review* 39 (April 1995, Nos. 3-4) 474-481
- Baltic Environmental Forum: *2nd Baltic State of the Environment Report*. Riga: Baltic Environmental Forum 2000
- Barro, R.J.: 1996. *Getting It Right. Markets and Choices in a Free Society*. Cambridge, Mass.: The MIT Press
- Björklund, Anders *et al.*, 2000, *Arbetsmarknaden*, (The Labour Market in Swedish) Stockholm: SNS förlag
- Blomström, Magnus, Kokko, Ari & Zejan, Mario 2000. *Foreign Direct Investment – Firm and Host Country Strategies*, London: Macmillan
- Bluffstone, R. (ed.), 1997. *Controlling Pollution in Transition Economies*. Cheltenham: Edward Elgar
- Boeri, T. & Brücker, H.: 2001. *The Impact on Eastern Enlargement on Employment and Labour Markets in the EU Member States*. Report SOC-97-102454. Bruxelles: EU European Commission (<http://www.eu-oplysningen.dk/euidag/andet/strategisk-rapport>)
- Boycko M., Shleifer, A. & Vishny, R., 1995: *Privatising Russia*. Cambridge: MIT Press
- Brabant, J.M. van, 1998. Integrating the Transition Economies into the EU Framework – An Overview. *Comparative Economic Studies* 40 (Fall 1998, No. 3) 1-5
- Desai, Padma & Idson, Todd, 2000. *Work without Wages*. Cambridge, Mass.: The MIT Press
- Dunning, John H., 1993. *Multinational Enterprises and the Global Economy*. Mass: Addison-Wesley
- Dunning, John H., 2001. Assessing the Costs and Benefits of Foreign Direct Investment: Some theoretical Issues, in: P. Artisien-Maksimenko and M. Rojec (eds.): *Foreign Investment and Privatization in Eastern Europe*-Palgrave
- Eamets, Raul, et al., 1999. *Background Study on Employment and Labour Market in Lithuania*. Working Document, European Training Foundation
- EBRD: Transition Report 2000. London: European Bank for Reconstruction and Development 2000
- ECE: *Economic Survey of Europe 2000* No. 2/3. Genève: UN Economic Commission for Europe 2000
- Economic Policy Initiative*, 1998. Mediating the Transition: Labour Markets in Central and Eastern Europe, Forum Report No 4
- EU European Commission: *Second Report on Economic and Social Cohesion*. Comm(2001) 24 final. Bruxelles: EU European Commission 2001. (http://europa.eu.int/eur-lex/en/com/rpt/2001/com2001_0024en03.html).
- Evidence from the Baltic Republics*, Annals of public and cooperative economics, vol. 71, no. 3
- Fischer, S. & Sahay, R., 2000. *The Transition Economies after Ten Years*. NBER Working paper 7664, April 2000
- Gregory, P.R. & Stuart, R.C., 1992. *Comparative Economic Systems*. (4th ed.). Boston: Houghton Mifflin 1992
- Gregory, P.R. & Stuart, R.C., 1989. *Comparative Economic Systems*. (3rd ed.). Boston: Houghton Mifflin
- Gruzevskis, Boguslavas, et al., 1999. *Background Study on Employment and Labour Market in Lithuania*, Working Document, European Training Foundation

- Halsnæs, K., Sørensen, L., 1993. *Perspectives of Regional Coordinated Energy and Environmental Planning*. Nordiske Seminar og Arbejdsrapporter (640). Copenhagen: Nordic Council of Ministers
- Hay, J.R., Shleifer, A. & Vishny, R.W., 1996. Toward a Theory of Legal Reform. *European Economic Review* 40 (April 1996, Nos. 3-5) 559-567
- Hazans, Mihails, 2001. Wages in Latvia: A Cross-Industry Analysis? *Baltic Economic Trends*. No 1
- Hazley, Colin & Hirvensalo, Inkeri, 1998. Direct Investments to the Baltic Rim Transition Economies: Some Trends, EST, vol. 1998, no. 2, pp 137-157
- Hirvensalo, Inkeri, 2000. *Foreign Direct Investment around the Baltic Sea – is there policy competition among the countries?*, paper presented at the OECD Conference on Fiscal Incentives and Competition for Foreign Direct Investment in the Baltic States, Vilnius, Lithuania, May 30, 2000
- Huitfeldt, Henrik, 2001. *Active Labour Market Policy in Russia? – An Evaluation of Swedish Technical Assistance to the Russian Employment Service 1997-2000*. Sida, Draft, April
- IMF (International Monetary Fund): Transition and Policy Issues. Chap. 3, pp 84-137 in *World Economic Report* May 2001. Washington, D.C.: IMF 2001
- Isachsen, A.J., Hamilton, C.B. & Gylfason, T., 1992. *Omstilling til marked. Økonomiske utfordringer*. Oslo: Universitetsforlaget (also published in Lithuanian and English)
- Jensen, Camilla, 2001. *Foreign Direct Investment and Technological Change in Polish Manufacturing*, Ph.D. Thesis, forthcoming from Odense University Press
- Jones D. & Mygind, N., 1999a. The Nature and Determinants of Ownership Changes after Privatisation: Evidence from Estonia, *Journal of Comparative Economics*, vol 27 no 3, pp 422-441
- Jones, D. & Mygind, N., 1999b. Ownership and Productive Efficiency: Evidence from Estonia, in Equality, participation, transition. V. Franicevic & M. Uvalic (eds.), McMillan
- Klein, L., et.al.: Novaja ekonomicheskaja politika dlja Rossii (*Nezavisimaja Gazeta*, 1. July 1996, p 1). Novaja povestka dnja dlja ekonomicheskikh reform v Rossii. Gosudarstvo dolzhno vzjat' na sebja osnovnuju rol' v stabilizatsii pod'ema strany (*Nezavisimaja Gazeta*, 9. July 2000, p 3)
- Kogut, Bruce, 1996. Direct Investment, Experimentation and Corporate Governance in Transition Economies, in: Frydman et al. (eds.): *Corporate Governance in Central Europe and Russia – Banks, Funds and Foreign Investors*, vol. 1, Budapest: Central European University Press
- Koidu, Maria, Kuldkepp, Aiki & Purju, Alari, 1999. Role of Institutional Framework for Trade with the EU. In: Ülo Ennuste and Lisa Wilder (Eds.). *Harmonisation with the Western Economies: Estonian Economic Developments and Related Conceptual and Methodological Frameworks*. Tallinn: Estonian Institute of Economics at Tallinn Technical University, pp. 91-114
- Kołodko, G.W., 2000. *From Shock to Therapy. The Political Economy of Postsocialist Transformation*. Oxford: Oxford University Press
- Krugman, P., 1994. *Peddling Prosperity*. New York: Norton
- Lankes, Hans-Peter & Venables, Anthony, 1996. Foreign Direct Investment in Economic Transition: The Changing Pattern of Investments, *Economics of Transition*, vol. 4, pp 331-347.
- Lavigne, M., 1998. Conditions for Accession to the EU. *Comparative Economic Studies* 40 (Fall 1998, No. 3) 38-57
- Lipton D. & Sachs, J., 1990. *Privatisation in Eastern Europe*, The case of Poland, BPEA, 2
- Meyer, Klaus E. & Pind, Christina, 1999. FDI growth in the FSU, *Economics of Transition*, vol. 7, no. 1, pp 201-214
- Meyer, Klaus E., 2001a. International Business Research in Transition Economies, in: T. Brewer and A. Rugman, eds: *Oxford Handbook of International Business*, Oxford: Oxford University Press
- Meyer, Klaus E., 2001b. Direct Investment in South-East Asia and Eastern Europe: A Comparative Analysis, in: P. Artisien-Maksimenko and M. Rojec (eds.): *Foreign Investment and Privatization in Eastern Europe*, Palgrave
- Milgrom, P. & Roberts, J., 1992. *Economics, Organization and Management*. Englewood Cliffs, N.J.: Prentice-Hall
- Mygind, N., 1994. The Economic Transition in the Baltic Countries – Differences and Similarities pp.197-234 in: J.Å. Dellenbrant and O. Nørgaard, *The Politics of Transition in the Baltic*

- States – Democratization and Economic Reform Policies*. Umeå University, Research Report No. 2
- Mygind, N., 2000. *Privatisation, Governance and Restructuring of Enterprises in the Baltics*, Working Paper, CCNM/BALT (2000)6, OECD, Paris
- Mygind, N., 2001. Enterprise Governance in Transition – a Stakeholder Perspective, forthcoming in *Acta Oeconomica*, no 3
- Nielsen, Jorgen, Ulf-Moller, Madsen, Strojer, Erik & Pedersen, Kurt, 1995. *International Economics. The Wealth of Open Nations*. Berkshire: McGRAW-HILL Book Company
- Nuti D., 1997. Employee Ownership in Polish Privatisations. In: Uvalic and Vaughan-Whitehead (1997) pp 165-181
- Nuti, D.M., 2000. *The Costs and Benefits of Europeanisation in Central-Eastern Europe before or instead of EMU Membership*. Working Paper, London Business School, December 2000
- OECD: *OECD Environmental Data*, Compendium 1999. Paris: OECD
- OECD: *Environment in the Transition to a Market Economy*. Paris: OECD 1999
- OECD: *Environmental Outlook*. Paris: OECD 2001
- Oxenstierna, Susanne, 1992. The Labour Market. In: B. Van Arkadie & M. Karlsson (eds) *Economic Survey of the Baltic States*. London: Pinter Publ. Lim
- Oxenstierna, Susanne, 1990. *From Labour Shortage to Unemployment? The Soviet Labour Market in the 1980s*. Stockholm: Almqvist & Wicksell International
- Oxenstierna, Susanne, 1991. Labour Policies in the Baltic Republics, *International Labour Review*, Vol. 130, No 2
- Ponting, C., 1991. *A Green History of the World*. Harmondsworth: Penguin
- Popov, V., 2000. Shock Therapy Versus Gradualism: The End of the Debate (Explaining the Magnitude of Transformational Recession). *Comparative Economic Studies* 42 (Spring 2000, No. 1) 1-57
- Pryor, F.L., 1985. *A Guidebook to the Comparative Study of Economic Systems*. Englewood Cliffs, NJ: Prentice-Hall
- Reddaway, P. & Glinski, D., 2001. *The Tragedy of Russian Reform: Market Bolshevism Against Democracy*. Washington, D.C.: The United States Institute of Peace Press
- Research Report*, no. 125, Dept. of Industrial Engineering and Management, Lappeenranta University of Technology, Finland
- Rosser, J.B. & Rosser, M.V., 1995. *Comparative Economics in a Transforming World Economy*. Chicago: Irwin
- Schreyer, M., 2001. *Financing Enlargement of the European Union*, Speech at The London School of Economics, 16 February 2001. (<http://www.europa.eu.int> (SPEECH/01 /71))
- Shleifer, A. & Treisman, D., 2000. *Without a Map. Political Tactics and Economic reform in Russia*. Cambridge, Mass.: MIT Press
- Smith, Kenneth, 2001. Income Distribution in the Baltic States: A Comparison of Soviet and Post Soviet Results, *Baltic Economic Trends*, No 1
- Stiglitz, J.E., 1995. *Whither Socialism?* Cambridge, Mass.: MIT Press
- Sztanderska, Urszula, et al., 1999. *Background Study on Employment and Labour Market in Poland*. Working Document, European Training Foundation
- The NEBI Yearbook 2000. North European and Baltic Sea Integration*. Berlin: Springer-Verlag, 2000
- The Transition to a Market Economy. Transformation and Reform in the Baltic States*. Ed. By Tarmo Haavisto. Cheltenham: Edward Elgar, 1997
- Trapenciere, Ilze et al., 1999. *Background Study on Employment and Labour Market in Poland*. Working Document, European Training Foundation
- UNDP: *Human Development Report* 1992. Oxford: Oxford University Press 1992
- UNCTAD (1997): *World Investment Report 1997: Transnational Corporations, Market Structure and Competition Policy*, United Nations' Conference on Trade and Development, New York and Geneva
- UNCTAD (2000): *World Investment Report 2000: Cross-border Mergers and Acquisition and Development*. United Nations Conference on Trade and Development, New York and Geneva
- Uvalic, M. & Vaughan-Whitehead, D., 1997. *Privatisation Surprises in Transition Economies*. Cheltenham: Elgar
- Varblane, Urmas, 2000. *Foreign Direct Investments in Estonia – Major characteristics, trends and developments in 1993-1999*, University of Tartu, Estonia, published under the Phare-ACE research project no. P97-8112-R

- World Bank (2000): *World Development Indicators*.
The World Bank, Washington
- World Bank: *World Development Report 1996: From
Plan to Market*. New York: Oxford University
Press 1996
- World Resources Institute: *World Resources 1992-93*.
Oxford: Oxford University Press 1993
- Zukowska-Gagelmann, 2000. Productivity spill-
overs from foreign direct investment in Poland,
Economic Systems vol. 24, no. 3, p. 223-25