

# ***Danish-Polish Environmental Co-operation***

**COUNTRY BOOK**

## *1991-2000*



***DANCEE***

Danish Cooperation for Environment in Eastern Europe  
Ministry of Environment and Energy

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**Abstract**

The publication presents the Danish-Polish  
Environmental Co-operation from the beginning and  
until the year 2000. Gives an overview on the policy,  
history, priorities, structure, environmental effects,  
future perspectives etc. of the co-operation. Presents  
a range of typical projects within the different  
sectors of priority.

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# ***Danish-Polish Environmental Co-operation 1991-2000***



***DANCEE***

Danish Cooperation for Environment in Eastern Europe  
Ministry of Environment and Energy

# PREFACE

**by Svend Auken,**

Danish Minister for Environment and Energy

Since the fall of the Iron Curtain, Denmark has taken an active approach in working for a clean environment in Central and Eastern Europe. Poland, being one of our biggest neighbours in the Baltic Sea Region, was the logical first country to support with environmental assistance and to co-operate with in the field of environment and energy.

Poland has been the largest co-operating country to receive environmental assistance from Denmark. Until the end of the year 2000, Denmark supported as many as 232 environmental projects in Poland, which makes Denmark one of the largest bilateral contributors to environmental progress in Poland.

2001 is the year of the 10th anniversary of Danish environmental assistance to Central and Eastern European countries. I am pleased to see the substantial results of our joint co-operation in the field of environmental protection.

Denmark has been active in many environmental sectors, but assistance to the water sector has been one of our main target areas. As much as 49 per cent of all Danish projects in Poland cover municipal wastewater treatment. Most wastewater in Poland runs off to the Baltic Sea and I am proud that our joint efforts are estimated to have contributed to a reduction by around 14 per cent of the discharge of organic pollutants and nutrients from Poland to the Baltic Sea. This is a convincing result.

The overall idea of environmental assistance is to support Poland to improve her own ability to cope with future environmental problems. And Poland has developed to become a country with success in the field of environmental protection. Between 1991 and 1999 Poland covered about 90 per cent of her own environmental expenditures.

The Polish transition to market economy plays an important role in the development of the country – also in terms of environmental development and protection. Today, complying with the EU environmental regulations is one of the most important aspects in the Polish environmental priorities – a target area that we have supported with great enthusiasm and where superb results have been achieved.

This book presents an overview of the Danish-Polish environmental co-operation from 1991-2000. I hope you will enjoy reading it.



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The Polish transition to market economy played an important role in the development of the country – also in terms of environmental development. This was clear in 1991, when the First National Environmental Policy, the NEP I was adopted. Today, complying with the EU environmental regulation is one of the most important aspects in the Polish environmental priorities.

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# THE DANISH – POLISH ENVIRONMENTAL CO-OPERATION

During the last decades, Poland has developed from a country hidden behind the iron curtain and into an open society on its way to membership of the EU. An important aspect of this development has been a profound change in attitude towards the environment. Over the last 10 years, Poland has used considerable resources in improving its environment and has developed a fruitful co-operation with neighbouring Denmark in the process. Denmark has thus become one of the biggest donor country by contributing more than 35 per cent of the total bilateral environmental assistance to Poland. It is the “Danish Co-operation for Environment in Eastern Europe”, DANCEE, who co-ordinate the Danish efforts, which among other things have had a positive effect on air and water quality, the treatment of waste and the protection of the natural treasures in Poland.

Until the nineties, many regions in Poland had to live with the not very flattering description of the environment as being in a “state of environmental disaster”, but since the early nineties, things have changed radically. Today, Poland is a country with success in environmental protection. Apart from a lot of good and measurable environmental results, the will to improve the environment is shown by the fact that Poland, between 1991 and 1999, covered about 90 per cent of its own environmental expenditures. In terms of Gross National Product, GNP, the share of environmental investments has increased from being 0.7 per cent in 1990 to 1.4 per cent in 1999. The latter figure corresponds to USD 2,457 billion.

### **Important steps towards a better environment**

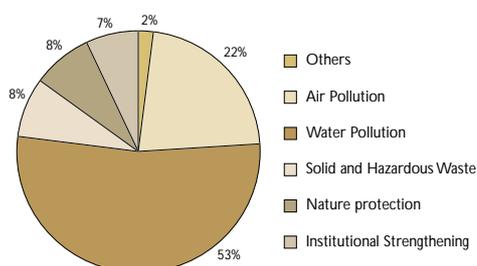
Since the political and economic transition in the early nineties, the state of the environment has improved. This development has mainly been the result of both the transition to market economy and the establishment of a system of local governance in Poland. Both the independent economic policies and the local governments are thus main actors in the environmental success in Poland.

The fact that the Polish Parliament, in the beginning of the nineties, adopted many documents of fundamental importance for the environmental protection also played an important role for the Polish environmental status.

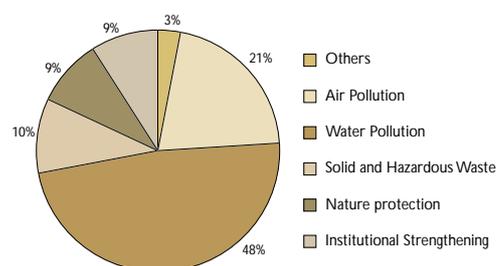
One of the most important documents was the “National Environmental Policy Statement of 1991” - NEP I which was adopted by the Polish Parliament in 1991. The NEP1 contained a commitment to clean up the environmental negligence of the past and to introduce a policy based on the principles of sustainability. One of the many priorities was given to environmental awareness raising and education.

The national environmental policy gave direction to all the actions in environmental protection in Poland throughout the nineties. Short, medium and long term objectives were developed in order to resolve the most important issues to control the tendencies to environmental deterioration, to improve the quality of the environment, to rationalise the use of its resources and to integrate environmental aspects with economic and social issues. In that connection, a decision of central importance was to establish the system of environmental

Distribution of total grant amount from DANCEE



Distribution of total number of projects



funds to collect resources from obligatory fees and fines for the use of the environment thus implementing the "polluter pays" principle.

### Integration of environmental issues

At the end of the nineties, it was recognised that both the constitutional level of environmental protection and the new challenge that Poland faced, e.g. the process of its accession to the European Union, required the adoption of new programming documents. This gave rise to "The Second National Environmental Policy", NEP II. This document defines the principles of environmental policy, formulating its main objectives which had not been clearly identified when the first environmental policy was drawn up. For instance, how to achieve the objectives and fulfil the standards specified in the environmental *acquis communautaire*. According to Parliament, the NEP II should also be extended to include other sectors such as the economic sector, industry, energy, transport, agriculture, tourism, fishery, building, trade and municipalities as well as the health and social welfare sector, labour market and the educational sectors. This will allow a full integration of the environmental, the economic and the social aspects.

As a consequence of this work, a new legal system was developed in Poland, a system based on European Union legislation in this field. The accession into the EU was initiated by the "National Programme for the Adoption of the *Acquis*" - the NPAA, which, in Poland, was called the "National Programme for the Preparation of the Membership" - the NPPM.

### An environmental landmark

The year 1991, with the adoption of the first National Environmental Policy Statement, was an environmental landmark for Poland. It was

also an important year for the Danish activities in the Eastern European countries. The Danish Parliament adopted the "Act on Subsidies for Environmental Activities in Eastern European Countries" and in addition to that, the "Danish Environmental Support Fund for Eastern Europe" was subsequently established.

In 1993, the fund was incorporated into the new "Environment and Disaster Relief Facility" (EDRF), which was a new facility for the support of environmental projects and disaster areas in Eastern Europe and in the developing countries. The funds were distributed equally to the environmental and disaster areas.

### A small country - a big help

The Danish strategy for the environmental efforts in the Central and Eastern Europe are mainly geographically focused on the Baltic Sea Region. Denmark is one of the largest contributor amongst the bilateral donors in Poland by contributing more than 35 per cent of the total bilateral environmental assistance to the country.

The Danish-Polish co-operation is based on working group activities supervised by a steering committee. It is the steering committee that formulates the general policy for the co-operation as reflected in the Country Programme - Environmental Programme Priority Areas. The funding is perceived as a means of promoting self-support. Projects involve the beneficiary's own funds or in-kind contribution, whether the beneficiary is an enterprise or a governmental agency.

In the period from 1991 to 2000, a total of 232 projects have received DKK 635 million (USD 73 million) as grants from the "Danish Co-operation for Environment in Eastern

48 per cent of the supported projects concerned water pollution, 21 per cent concerned air pollution. The remaining 31 per cent of the projects are more or less equally distributed in the categories:

- solid and hazardous waste
- nature protection
- institutional strengthening
- others primarily related to EU accession

Europe”, the DANCEE. The Danish support has again released an additional DKK 5.1 billion (USD 0,58 billion) as co-financing. This means that DANCEE has been involved in projects with a total amount of DKK 5.7 billion (USD 0,65 billion) in Poland.

#### The environmental effects

Most importantly, the Polish-Danish co-operation has had considerable environmental effects. An extract of the total environmental effects of the supported projects is summarised in the following figure.

#### Economic growth and environmental development

Even though Poland is in a difficult process of economic transition, benefits to the environment as well as to the economy can be achieved if environmental projects can be integrated in the on-going economic restructuring process. Therefore, support has primarily been given to projects that demonstrate financially and technologically appropriate solutions to environmental problems. It is crucial that the transition period from planned economy to

#### Summary of the environmental effects of the projects 1991-2000

Air quality management	
Power plants:	
Reduced emission of SO <sub>2</sub>	140,000 t/year
Reduced emission of particles	86,000 t/year
Sustainable energy:	
Reduced emission of CO <sub>2</sub>	415,000 t/year
Water management	
BOD5	36,600 t/year
N-total	7,427 t/year
P-total	1,760 t/year
Waste management	
Increased landfill capacity:	
Municipal waste	350,000 t
Increased incineration capacity:	
Hospital waste	700 t/year
Nature protection	
Contributed to nature protection of an area of	7,250 km <sup>2</sup>
Restoration of water courses	9,000 km

*A DANCEE supported  
waste water treatment  
plant in Krakow*



*Bilateral assistance to Poland within the field of environmental protection by countries in the period 1990 – 1999*

market economy does not lead to a general degradation of the natural resources because the combination of natural and economic resources form the prime basis for long term economic growth and development in the country.

**An environmental status**

Poland has scarce water resources. Therefore, it is important that the water consumption in the nineties has fallen. This is a result of the rationalisation of water use by water consumers and suppliers. However, more than 80 per cent of the water abstracted is discharged to the surface waters as waste water. Regarding waste water treatment, a significant progress has been made but the amount of waste water discharged to the environment without the required treatment is still excessive both in the urban and the rural areas.

Monitoring of the groundwater quality suggests that the degree of pollution of these resources has not changed significantly over the last few years. The quality of the groundwater is generally much better than that of the surface water. However, available data indicate a wide-

spread and locally severe occurrence of man-made pollution in the groundwater.

The industrial waste quantities have been reduced substantially during the nineties but due to changes in the economy, production of industrial solid and hazardous waste changed significantly during the period 1985-1997 from 170 million to 125 million in 2001.

Municipal waste combined with the backlock in the construction of modern landfills and water facilities, is one of the greatest problems of the Polish society whose consumption increasingly grew in the nineties. The damage done by waste to the environment primarily takes the form of water and soil pollution and the destruction of aesthetic and landscape values.

Emissions of the main air pollutants are declining or stabilising according to the balance for the period up to 1997. For instance, due to efforts in the field of energy saving, modernisation of technology and the installation of air pollution controls, the nineties brought about a systematic drop in CO<sub>2</sub> emissions and a reduction of

Country	Number of projects	Amount in national currency (1000)	Amount (1000 USD)	Amount (1000 PLN)	Contribution in %
Denmark	168	553.376 DKK	74.716	309.944	35,1
Holland	37	86.373 NLG	39.390	163.402	18,5
USA	10	36.550 USD	36.550	151.620	17,2
Finland	87	93.647 FIM	17.623	73.105	8,3
Sweden	31	134.841 SEK	15.859	65.788	7,4
Germany	2	20.805 DEM	10.690	44.345	5,0
Norway	26	42.179 NOK	5.253	21.791	2,5
Switzerland	4	5.203 CHF	3.255	13.503	1,5
Belgium	6	98.160 BEF	2.444	10.138	1,1
Great Britain	13	1.019 GBP	1.647	6.832	0,8
<b>Total</b>	<b>471</b>		<b>225.050</b>	<b>933.574</b>	<b>100</b>



As neighbours Denmark and Poland shares the same sea - The Baltic Sea

sulphur dioxide and nitrogen emissions. The dust emissions to the air were halved and so were the total emissions of heavy metals.

Despite the changes that human pressure bring upon the environment, Poland is still one of the European countries with the highest level of biological diversity. This is linked with favourable natural conditions and variable human impacts which, in spite of local problems, are generally of lesser intensity than in other European countries.

In some areas the wealth of flora and fauna is unique not only to Europe but also to the whole world. In order to protect its natural treasures, Poland has created a system of protected areas, national parks, landscape parks, areas of protected landscape etc. This extends more than 26 per cent of the country and there are plans to bring further valuable areas under protection.

### **Public awareness is the keyword**

The plans for the future Polish environment cannot succeed without public support and awareness. Therefore, individual actions and decisions by citizens with increasingly growing environmental awareness have had an important effect on the results. It was early acknowledged that improvement of the general environment requires approval by the public - and willingness and ability to act on the part of the largest possible group of citizens. Therefore, high priority is given to environmental education conducted in schools, at universities, as well as the mass media, the non-governmental and church organisations.

In the future environmental co-operation between the Denmark and Poland priority will be given to areas that influence the future Polish membership of the EU.



# HELPING EASTERN EUROPE – AND OURSELVES

**Since 1991, Denmark has supported Eastern Europe in solving the serious environmental problems caused by the politics of the former regimes of the East bloc countries. Through a series of co-operative environmental programmes, Denmark has donated more than DKK 3 billion (USD 0,34 billion) in environmental assistance to the Central and Eastern European Countries. The environmental effects of the 1200 Danish projects are tangible and has helped to prove that environmental concerns can go hand in hand with social and economic development. Today, an important objective of the Danish environmental assistance is to help a number of Eastern European countries to fulfil the environmental requirements for the EU accession.**

There are several reasons why Denmark plays a leading role in the environmental assistance to Eastern Europe. Denmark has long been pre-occupied with environmental problems and set up its Ministry of Pollution Control, today called the Ministry of Environment and Energy, already in 1971. Compared to other countries, this was early. Thirty years of experience has given Denmark a valuable know-how that can now be offered to other nations.

Having the know-how, it has become part of Denmark's international policy to be in front of the global battle for the protection of the environment. In 1992, the UN Conference on Environment and Development in Rio formulated the strategy of sustainable development: that environmental concerns must be integrated as an equal element in development projects and in development processes in general. Denmark supports the strategy of sustainable development and has committed itself to gradually increase its total budget for environmental and disaster assistance until 2005, when it reaches the level of 0.5% of the Danish GDP. At present, Denmark is running environmental assistance programmes in a number of developing countries, in the Arctic and in 13 Eastern European countries. Finally, the Danish environmental assistance policy is based on the knowledge that environ-

mental problems cannot be isolated nationally. What others are doing has an impact on us and vice versa. By helping others, we are helping ourselves. This is especially true in relation to the nations who share a common sea – the Baltic – and to some extent the ambient air. Therefore, the Danish environmental assistance to Eastern Europe has mainly been directed towards the countries around the Baltic.

## **The Danish environmental objectives and priorities**

The Danish environmental assistance to Eastern Europe has its overall focus on a number of areas. These are the Baltic Sea Region, EU accession, the implementation of the international conventions and the strengthening of environmental awareness in the countries. In the new strategic plan for 2001-2006, an increasing effort is put on the Newly Independent States (NIS-countries) in order not to create a 'silver curtain' between these countries and the countries on their way to the EU.

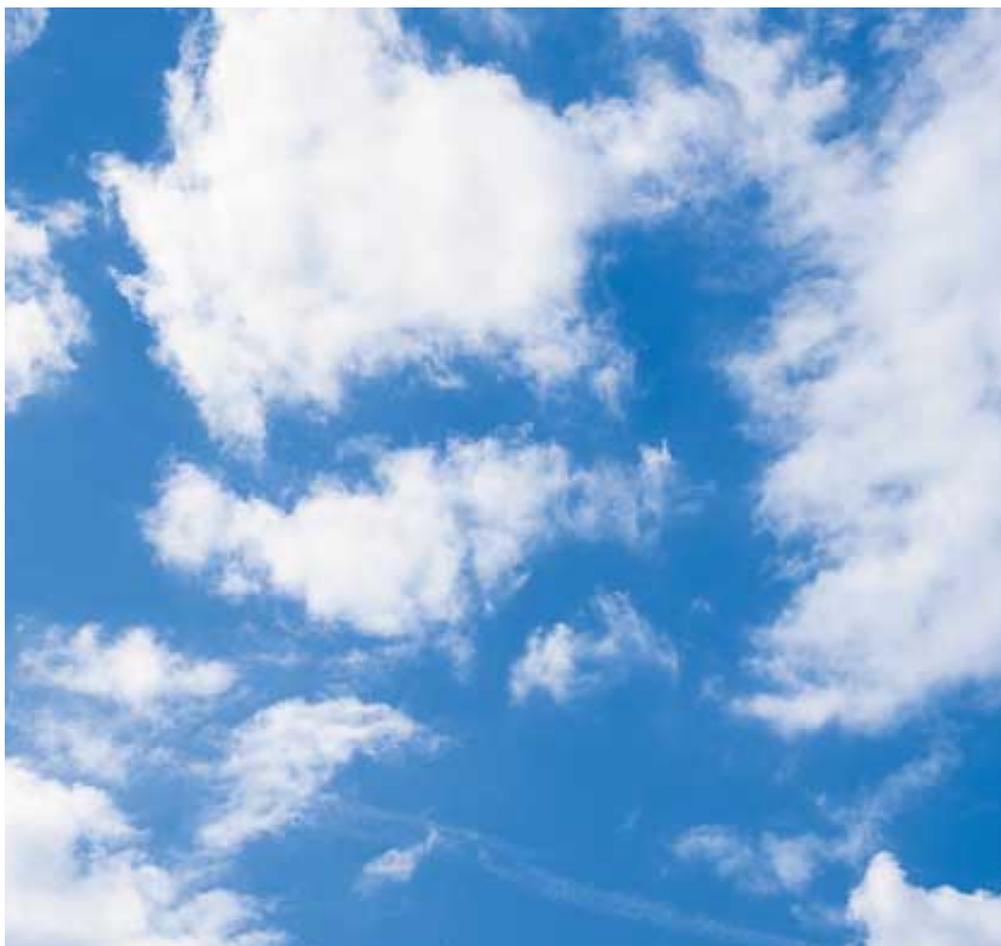
Denmark's environmental assistance policy in Eastern Europe is carried out through different programmes and agencies. The main programme is The Danish Co-operation for Environment in Eastern Europe – DANCEE.

The overall objectives for DANCEE are to:

- make the greatest possible contribution to the protection of the environment in Eastern Europe by supporting the Eastern European countries that have applied for EU membership in their efforts to implement the EU's demands in the environmental area and those of international environmental conventions,
- help the CIS countries and other non-EU pre-accession countries in their approach to an enlarged EU and to reduce the pollution which

has a harmful impact on the health of the public; reduce the cross-border pollution that has an impact on the EU countries; protect nature and biodiversity and implement international environmental conventions.

- help to ensure that political and economic developments move in the direction of environmental sustainability, especially by supporting market-based development and the promotion of democracy, also including encouraging a sense of responsibility in the private sector, involving the public and NGOs in decision-making processes in the environ-



mental area, and increasing the integration of environmental considerations in other sector policies,

- promote the use of Danish environmental expertise and technology for the benefit of the areas covered by this programme.

DANCEE's support is directed according to a list of priorities. These are: Water pollution, air

pollution, solid and hazardous waste, biological diversity and sustainable forestry, institutional strengthening and EU accession.

The DANCEE projects take two forms. The first is the investment projects which typically include support for project design, construction and supply of equipment. The second is the technical assistance projects which include areas as



analysis, monitoring, feasibility studies and institutional strengthening.

### **The Danish project criteria**

The selection of environmental projects is based on the objectives and priorities mentioned above but other considerations also play an important role.

A central criterion for the selection of DANCEE-projects is the demonstration value. Most Eastern European countries are in a period of restructuring and development of the economy and projects which demonstrate both the environmental and economic effects of using new technologies are therefore given high priority. In the same manner, projects of general interest and utility, possessing the potential for being replicated, are given preference.

A second criterion is the requirement for co-financing. The funding is required as a means for promoting self-support and it is therefore normal that the recipient country provides most of the funding for the project. The principle of financial participation secures the involvement by the beneficiary, as well as the continuity of the project.

It is a key criterion that the support conforms to the requirements of the environmental legislation in the country. It is of course also of vital importance that the project actually brings about reduction of pollution. Projects showing a significant quantitative and/or qualitative improvement of the environment and health standards are therefore given high priority.

Finally, environmental problems are not only about reducing pollution, they are just as much about conservation of raw materials, energy, water and the protection of natural

resources. This perspective is very important in the fast developing East European economies. Therefore, DANCEE has focused on pollution prevention, conservation, cleaner technologies and recycling, rather than on the reduction of existing pollution.

### **Danish environmental assistance programmes**

There are several Danish environmental assistance programmes to Eastern Europe.

- As mentioned, the main programme is the Danish Co-operation for Environment in Eastern Europe (DANCEE) formerly called the Danish Environmental Support Fund for Eastern Europe (DESF). The programme is administered by the Danish Environmental Protection Agency (DEPA).
- The sector-integrated environmental assistance focus on special areas or issues and involves different Danish ministries and agencies. Since 1998, this kind of assistance has been part of the Government's Baltic Sea Initiative within the environment sector.
- The Green Investment Facility is part of the Investment Fund for Central and Eastern Europe (the MIØ Fund).
- Finally, there is the Environmental Soft Loan Programme for Eastern Europe (MKØ), administered by the Danish State Export Credit Agency (EKF) in co-operation with DEPA.

The central co-ordinator and administrator of the programmes is DEPA. DEPA prepares the guidelines on the environmental approach, discusses the sector programmes with the various ministries and agencies which then implement them. In the figure below, the distribution of environmental assistance is shown within the different programmes.

Denmark has donated more than DKK 3 billion (USD 0,34 billion) to environmental assistance

to Eastern Europe in the years 1991-2000. The Danish support have again generated a co-financing of more than DKK 10 billion (USD 1,23 billion), making the total financial value of the Danish launched projects as much as DKK 13 billion (USD 1,5 billion).

#### Environmental programmes for Eastern Europe

The DANCEE and the sector-integrated environmental assistance are presented elsewhere. Therefore only the Environmental Soft Loan Programme for Eastern Europe (MKØ) and the Green Investment facility (the IØ Fund) is mentioned here.

In 1998, the Danish Environmental Soft Loan Programme was established with a purpose to promote investments in environmental projects in Eastern and Central Europe by means of long-term, subsidised credits. The programme is established and managed by Eksport Kredit Fonden (EKF) jointly with the DEPA.

The Danish Soft Loans are funded by annual subsidy grants on the Finance Act. At present the programme can arrange about DKK 180 million (USD 21 million) annually with a total

donor element of about DKK 60 million (USD 7 million). They are typically granted through banks by direct loans to the buyers in the recipient countries. The subsidies are granted by EKF's paying a financing subsidy of typically 25 per cent of the financed amount for the purpose of softening the conditions of repayment for the borrower.

The Danish Soft loans may be used mainly to finance environmental projects within alternative energy, water, waste management, waste treatment, and district heating. Normally, the projects must amount to more than DKK 20 million (USD 2,3 million) in order to be eligible for soft loan support.

Potential project recipients in the Eastern European countries, consultants and suppliers may apply for the support under the Programme by submitting project proposals to the Danish Environmental Protection Agency, DEPA.

Another environment-related sectoral assistance programme is the Green Investment facility under the Investment Fund for Central and Eastern Europe, The IØ Fund. The fund is designed to help to improve the environment

DKK million	1996	1997	1998	1999	2000
DANCEE	300	430	400	500	505,9
<i>Sector Integrated</i>					
Environment Assistance	100	100	140	175	178
"Green Facility" (MIØ)	100	100	70	70	50
"Soft Loans" (MKØ)			45	60	80
Total	500	630	655	805	812
DANCEE (Polish projects)	47	78	75	77	74

in Central and Eastern Europe by co-financing joint venture projects in the private sector of particular relevance to the environment. The programme is administered by the IØ Fund and DANCEE is consulted on the environmental aspects of the projects.

# THE DANISH ENVIRONMENTAL ASSISTANCE TO POLAND

**As a close neighbour, Denmark has assisted Poland in improving the environment for more than ten years. From the beginning in 1991 up to the year 2000, DANCEE has supported as much as 232 environmental projects in Poland with the amount of DKK 635 million (USD 73 million) making Denmark one of the largest bilateral environmental donor to Poland. The Danish assistance has released an additional DKK 5.1 billion (USD 0,58 billion) in co-financing, leading to projects with the total value of almost DKK 6 billion (USD 0,7 billion). Over the years, the assistance has developed into a powerful partnership producing considerable environmental effects in relation to air and water quality, waste treatment and nature protection. Apart from the environmental effects, the partnership has also the important political effect of making Poland capable of fulfilling the environmental requirements for EU-membership. EU-approximation is the current overall objective of all the projects, which formal basis, the Danish-Polish Co-operation Agreement, was renewed for an unlimited period in 1999.**

The general Danish awareness on the Polish environment accelerated in the late eighties and became a public issue after a delegation of Danish parliamentarians visited some of the 'black spots' of Poland. The leader of the delegation still remembers the trip clearly – and specially the visit to the power plants of Katowice; "The Polish official pointed to four big chimneys in the horizon and told us that these four chimneys alone produced the same amount of sulphuric dioxide as the total Danish outlet. It became clear to everybody in the delegation that if we wanted cleaner air in Denmark we would have to do something in Poland".

In April 1991 the Danish Parliament passed the Act on Subsidies for Environmental Activities in Eastern European Countries. This marked the beginning of the Danish environmental assistance to Poland.

Of the Eastern European countries, Poland has received the largest environmental assistance, namely 25.7 % of the regional budget. Of the

232 projects in the period, 48% have concerned water pollution and 21% concerned air pollution. The remaining 24% of the projects are distributed in the categories: solid and hazardous waste, nature protection (biological diversity and sustainable forestry), institutional strengthening and 'Others' (primarily related to EU accession).

## **The co-operation**

Over the years, the character of the Danish environmental work has changed from assistance to co-operation. The co-operation is based on an Agreement and a Country Programme. The Co-operation Agreement was originally signed in 1994 for a 5 year period and was renewed in 1999 for an unlimited period.

The co-operation between the Polish Ministry of Environment (PMoE) and the Danish Environmental Protection Agency (DEPA) are formalised in a Steering Committee, supplemented by a working group. The Steering Committee formulates the general policy for the Polish-Danish co-operation as reflected in the Country Programme. Any changes in the

*Overall distribution of projects and financial support*

1991-2000	Technical Assistance		Investment		Total			
	Number of Projects	Amount (million DKK)	Number of projects	Amount (million DKK)	Number of projects	DANCEE (million DKK)	Other financing (million DKK)	Total (million DKK)
<i>Air</i>								
Pollution	18	18.3	31	120.1	49	138.4	2,758.4	2,896.8
<i>Water</i>								
Pollution	49	76.8	59	262.6	108	339.4	2,125.8	2,465.2
<i>Solid and Hazardous Waste</i>								
Nature protection	14	20.1	9	29.3	23	49.4	63.4	112.8
Institutional Strengthening	20	41.7	2	11.2	22	52.9	143.7	196.6
Others	21	37.0	1	5.1	22	42.1	6.4	48.5
Total	8	13.4			8	13.4	6.1	19.5
<b>Total</b>	<b>130</b>	<b>207.3</b>	<b>102</b>	<b>428.3</b>	<b>232</b>	<b>635.6</b>	<b>5,103.8</b>	<b>5,739.4</b>

*A list including all DANCEE-projects can be found in Enclosure 3.*

strategy must be confirmed by the Steering Committee. The Committee is also responsible for the implementation of necessary adjustments in the priority areas.

### **The Country Programme**

The Country Programme sets out the Environmental Programme Priority Areas for a two year period. The first Country Programme was prepared for the period 1996-97. It was prolonged to include 1998 while the most recent programme for 1999-2000 was adopted in 1999 and is presently up for revision for the period 2001 - 2003.

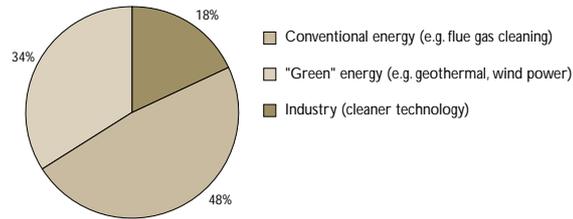
In accordance with the Country Programme for 1999-2000 (2001), the Danish assistance to protect the environment and natural resources in Poland is focused on the following Pro-

gramme Priority Areas. The areas are not listed in any order of priority:

- Water and Waste water
- Air Pollution and Energy
- Waste
- Cleaner Technology
- Nature Conservation

With Poland on the way to EU, EU-approximation has been the overall objective in all the projects. The principles of the new 2001-2003 Country Programme, which is presently being formulated, is introduced in the chapter "Future perspectives".

*Air Pollution projects – Distribution of DANCEE Financing*



**Air Pollution**

The air pollution projects can be divided into:

- projects concerning conventional energy production (e.g. flue gas cleaning at power plants)
- renewable or "green" energy production
- and projects within the production industry

(e.g. cleaner technology or end-of-pipe solutions).

Most of the supported projects are investment projects and are primarily related to energy production. Most of the financing has been



1 Environmental Performance Review, OECD, 1996

2 European Environmental Agency and Eurostat Yearbook 2000

allocated for investments in flue gas cleaning at power plants as well as to the support of the development of the exploitation of geothermal energy.

The estimated environmental effects for selected indicators are shown in the figure below. Seen from a Danish perspective, it is noteworthy that the reduction of sulphur dioxide is at the same level as the total yearly emissions in Denmark and equals 11 % of the total emission from Polish power plants. The reduction in particles/dust is also significant, it equals 20% of the Polish power plant emissions!

There is no doubt that the reduction in emissions are significant. The fact is that the results have shown the possibility of combining the last decades of social and economical development in Poland with the environmental development.

### Water Pollution

This category covers municipal and industrial waste water treatment, water supply, groundwater, surface water and recipients. The focus has been on municipal waste water treatment projects for which 73% of the grants to the water sector has been dedicated.

The table below shows the distribution of projects and their financial support.

1991-2000 Areas	Number of Projects		Financing of projects Million DKK		
	TA	Investment	DANCEE	Others	Total
Conventional energy (e.g. flue gas cleaning)	5	13	68.0	802.7	870.7
"Green" energy (e.g. geothermal, wind power)	11	11	47.3	1,908.4	1,955.7
Industry (cleaner technology)	2	7	24.9	47.3	72.2
<b>Total</b>	<b>18</b>	<b>31</b>	<b>140.2</b>	<b>2,758.4</b>	<b>2,898.6</b>

Estimated environmental effects for selected indicators <sup>1+2)</sup>

Flue gas cleaning and "green" energy	Sulphur Dioxide (SO <sub>2</sub> )	Nitrogen oxides (NO <sub>x</sub> )	Carbon dioxide (CO <sub>2</sub> )	Particles/ dust
Reduction in 1991-2000 (t/year)	140,000	6,800	415,000	86,000
Polish emissions from power plants (t/year)	1,272,727	NI	NI	430,000
Reduction in %	11			20
Polish emissions in 1996 (t / year)	2,368,000	1,154,000	373,000,000	1,130,000
Danish emissions in 1996 (t/year)	181,000	291,000	73,236,000	NI

NI: Not identified in available sources

Two DANCEE financed projects. In the foreground a waste water treatment plant in Krakow. In the background the Huta Sendzimira, the second largest steelwork in Poland, where DANCEE has supported environmental improvements

Distribution of water pollution projects and financial support

1991-2000 Areas	Numbers of projects		Financing of projects Million DKK		
	TA	Investment	DANCEE	Others	Total
Water supply (e.g. treatment, savings)	9	7	29.8	45.5	75.3
Municipal waste water (e.g. treatment, sewage)	24	40	247.8	2,017,6	2,265.4
Industrial waste water (treatment, cleaner technology)	6	12	42.3	25.3	67.6
Recipients (monitoring, impact assessment)	10	1	19.5	37.4	56.9
<b>Total</b>	<b>49</b>	<b>59</b>	<b>339.4</b>	<b>2.125,8</b>	<b>2,466.2</b>

This category also covers 49% of all the projects.

The contribution from co-financing is approx. 90% and DANCEE has typically ensured the final part of the financing.

Focusing on the traditional environmental indicators for waste water treatment (organic matter, nitrogen and phosphorus in the effluent), the yearly reduction in pollution equals the pollution from nearly 2 million inhabitants. This

figure is comparable to the pollution from as much as all citizens in Warsaw or Copenhagen!

Another very significant result of DANCEE supported projects shows a reduction of the discharge of organic pollutants and nutrients (phosphorus) to the Baltic Sea by 14%. This reduction of organic matter corresponds with more than 3 times the discharge from all Danish WWTPs!





<sup>3</sup> Agenda 21, MoE, 1998

<sup>4</sup> Orientering nr. 16, DEPA, 1996

<i>Estimated environmental effects for selected indicators<sup>3+4)</sup></i>			
<i>Waste water treatment plants</i>	<i>Organic matter (BOD<sub>5</sub>)</i>	<i>Total nitrogen (N)</i>	<i>Total Phosphorus (P)</i>
<i>Reduction 1991-2000</i>			
<i>(tonnes / year)</i>	36,600	7,427	1,760
<i>(person equivalents)</i>	1,670,000	1,700,000	1,600,000
<i>Polish emissions to the Baltic Sea 1996</i>			
<i>(tonnes / year)</i>	255,877	242,338	12,357
<i>Reduction in %</i>	14	3	14
<i>Danish emissions from point sources 1995</i>			
<i>(tonnes/year) including WWTPs</i>	13,536	3.773	479

Concerning water resources, the projects have resulted in water savings or new production of water of approx. 12 million m<sup>3</sup> drinking water which equals the water consumption of approx. 175.000 citizens.

### Solid and Hazardous Waste

Most of the projects have involved technical assistance for the municipal waste management planning in Polish cities. However, investment projects have also been implemented in which new treatment technologies such as incineration of hazardous waste, only and composting, recycling and sorting of waste have been demonstrated.

### Waste projects - distribution of DANCEE financing

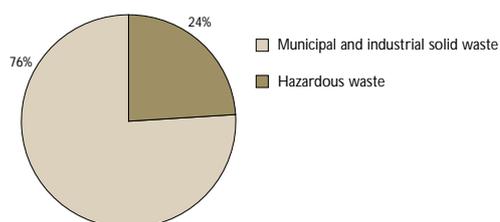
Focusing on the environmental effects of the projects, the landfill capacity created by the projects is approx. 350,000 t. This can be compared to the approximate annual Polish waste generation in 1997 which was 30,000,000 t. The Danish waste generation was 2,900,000 t/y and the capacity equals 12% of the Danish capacity.

The generated hospital waste incineration capacity equals 3.3% of the total Polish hospital waste generation.

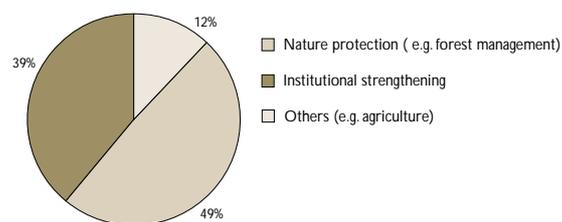
### Distribution of type of project and financing

<i>1991-2000 Areas</i>	<i>Numbers of projects</i>		<i>Financing of projects Million DKK</i>		
	<i>TA</i>	<i>Investment</i>	<i>DANCEE</i>	<i>Others</i>	<i>Total</i>
<i>Municipal and industrial solid waste</i>	10	7	37.5	52.4	89.9
<i>Hazardous waste</i>	4	2	11.9	11.0	22.9
<i>Total</i>	14	9	49.4	63.4	112.8

Waste projects - distribution of DANCEE financing



Nature and other projects – distribution of financing



### CHAPTER 3 THE DANISH ENVIRONMENTAL ASSISTANCE TO POLAND

#### Biological Diversity and Sustainable Forestry

Several technical assistance projects have been implemented within the sector related to nature protection. The contribution from co-financing has been approx. 75%.

The projects include both forest and nature reserve management and covers totally more than 6,000 km<sup>2</sup>. Most forestry projects have been nature protecting projects while the nature reserve projects have focused on specific areas and in particular 3 national parks (Biebrza, Wigry and Bialowieza).

#### Other Sectors

Several technical assistance projects have been implemented in the categories Institutional strengthening and others e.g. national oil spill. For institutional strengthening and other technical assistance projects, the contribution from co-financing has been 17-29%. The focus has been on institutional strengthening and the approximation to the EU legislation in particular. It has mainly been the implementation of various directives (IPPC and EIA).

Distribution of type of project and financing

1991-2000 Sectors	Numbers of projects		Financing of projects Million DKK		
	TA	Investment	DANCEE	Others	Total
Nature protection (e.g. forest management)	20	2	52.9	143.7	196.6
Institutional strengthening	21	1	42.1	6.4	48.5
Others (e.g. agriculture)	8	-	13.4	6.1	19.5

# THE TRANSITION OF THE POLISH ENVIRONMENT

**The future membership of the European Union is an important motivation for Poland in its efforts to improve the environment. Poland has lead the way in its own environmental development by covering more than 95 per cent of its own environmental expenditures. Even though the environmental situation has improved over the last 15 years, there is still much to do before the country reaches the EU environmental level.**

After years of inactivity, the environmental situation in Poland is now developing very fast and in the right and sustainable direction. This is clear when examining the statistical material from some of the areas with special environmental priority as for instance air-quality, water-pollution, waste-disposal and biodiversity.

Emissions of the main pollutants in Poland have been declining or stabilised according to the balances for the period up to 1997. Available data from 1999 prove the declining tendency of emissions, while the economy is growing, though slower than before. For the majority of pollution parameters, the amount of pollution discharged into the Baltic Sea by Poland has been reduced during the recent years. The industrial waste quantities have been stable during the nineties, and despite the changes that human pressure brings upon the environment, Poland is one of the European countries with the highest level of biological diversity.

Air pollution has been as well reduced significantly. Dust and SO<sub>2</sub> emissions declined with relatively 80 and 50% in relation to 1989, similarly nitrogen oxides from power plants (approx. 40%). General decrease in nitrogen oxides emissions was smaller due to the traffic growth (cars).

The environmental development in Poland actually started with the dissolution of the Eastern Block in the 1980s and the 1990s. This

was the start of a period with fundamental political, social and economic changes. These changes gave rise to democratisation of public life, market economy and political freedom, which again led to a new attitude towards environmental issues.

#### **Bad conditions for the environment**

When Europe still was divided in "East" and "West" the planned and command economy in Poland was developed on the basis of different indicators adopted at central level. The efficiency of this former economy was low, also in terms of making rational use of environmental resources. Too large quantities of raw material and energy were consumed and no attention was paid to the amounts of waste generated. Likewise, no priority was given to environmental investment projects and if some projects nonetheless were launched they would usually rather quickly go bust in the competition for resources against the heavy industry. Data on the state of the environment were censored and deliberate obstacles reduced the opportunities for public action on environmental protection. As a result of such policy, the quality of the environment deteriorated substantially, in some regions to a dramatic extent.

Management policies in the coal industry clearly illustrate the absurdity of the former political priorities. Coal was and has remained the main energy raw material used in Poland. In the

period of planned economy, the official extraction level was about 200 million tonnes; but despite this, the power generation sector industry and the population always suffered from its shortage. At present, its extraction level is lower by almost a half and the energy system of the country holds large reserves of it.

**From central to de-centralised responsibility**

Obviously, the transition to market economy has played an important role in the Polish development, but also the decentralisation and the establishment of the system of local governance have been important factors to the environmental success in Poland. It was

due to decisions from the local governments that numerous of new investment projects emerged to protect the environment.

Moreover, the fact that Poland during the 1990s covered more than 95 per cent of its own environmental expenditures shows that there are good intentions for the environment.

**Being a part of the European Community**

Short after the removal of the Iron Curtain, it was apparent that Poland wanted to be integrated in the European Union. In this integration process the environment is a sensitive area and indeed Poland still has a long way ahead before complying with the EU standards.



As a consequence of the new environmental obligations Polish authorities in the early nineties produced many documents of fundamental significance for environmental protection. It was at the same time that a number of legal acts, which were essential for correct actions in environmental protection and rational use of environmental resources, were put into action. This included the establishment of obligatory procedures in the scope of environmental impact assessment for investment projects, development and strengthening of the state inspectorate for environmental protection with powers to enforce compliance with the environmental law and monitoring the state of the environment.

From the point of view of the implementation of environmental policy, the focal point was to establish the system of environmental funds, to collect resources from obligatory fees and fines for the use of the environment, which was one of the consequences of the implementation of the "polluter pays principle".

#### **The environmental three stage rocket**

It was in relation to this initial official environmental wave that the Parliament in 1991 adopted the framework political document "The National Environmental Policy" - the NEP I. The document was based on the fundamental principles of environmental protection and recognised sustainable development as the main goal of the management of the environment.

The document provided for three stages in reaching this goal. A short-term goal was to stop the process of deterioration of the environment, which included an elimination of environmental hazards posing an imminent threat to human health. The mid-term goal was to improve the quality of the environment and to rationalise

the use of its resources. This was done by a harmonisation of Polish standards to western levels and particularly to that of EU legislation. Finally the long-term goal was to ensure that the principle of sustainable development would be implemented throughout Poland.

This first environmental strategy – the NEP I gave direction to all actions in environmental protection in Poland throughout the decade. As a supplement and on basis of the first national environmental policy the National Environmental Policy Programme to the Year 2000 was developed in 1994. It was an ambitious plan, which was intended to be a tool in the efforts to implement the mid-term policy objectives. Its main priorities were related to the reduction of the environmental impact on the air, water, and soil, development of waste treatment and disposal facilities, water resources development, as well as the expansion of nature conservation areas. The total budget required for the programme to the year 2000 was estimated at USD 13 billion. Previous estimates of the overall cost of the environmental improvements to the end of the 1990s have ranged from USD 35 billion to 50 billion.

#### **The preparation of a National Environmental Policy**

At the second half of the 1990s almost all short-term targets and the majority of medium-term objectives of the First NEP have been achieved. However, it was recognised that both the constitutional rank of environmental protection and the new challenges, which Poland faced, for instance the process of its accession to the European Union, required the adoption of new programming documents. This led to elaboration of the "Second National Environmental Policy" the NEP II, adopted by the Government in June 2000.

The intention was to make the second document a political and strategic document setting the guidelines of the state action in the field of environmental protection for the upcoming decades. The second strategy should in a new way define the principles of environmental policy and included all issues, which had not been clearly identified in the first strategy, by describing:

- a development of macro-economic and sectional policies in a manner that would favour the development of the country coming increasingly closer to the model of sustainable development;
- the improvement of the state of the environment;
- the reduction of the pressure of consumption on the environment by shaping environmentally friendly patterns;
- the provision of access for the public to environmental information and its participation in decision-making;
- the adoption of measures to ensure compliance between Polish environmental policy and the scope of actions adopted in the environmental policy of the European Union - the environmental *acquis communautaire* and also in connection to the different international conventions and protocols e.g. the Kyoto Protocol on climate changes, Convention on Biodiversity, the Geneva Convention, the Basel Convention and the II Sulphur Protocol.

These problems are continuously being addressed by:

- Improving the legal, administrative and economic mechanisms regulating the use of the environment;
- Improving the environmental management structures at all levels of government administration and local governance;

- Negotiations with the European Union concerning the adoption by Poland of certain Community requirements in the field of environmental protection.

In the drafting of the second strategy, the NEP II, it was very important to underline the priority given to work towards full integration of the environment in other sectors like for instance the economic and the social sector. This means that the environmental considerations also would play an important role when it comes to e.g.: industry, energy, transport, agriculture, tourism, fishery, building, trade, municipalities, health and social welfare, the labour market, the educational sector.

In addition to this document, several other programming papers were prepared, including the strategy on environmental education "Through Education to Sustainable Development", the Government document "Poland 2025 Long-term strategy for sustainable development" dealing with the directions of Poland's social and economic development in the spirit of sustainable development.

"The National Programme for the Adoption of the *Acquis*" and "The Negotiation Position of Poland in the Chapter: Environment" are the starting point, because they set out the major direction of actions related to Poland's efforts to become a member of the European Union.

### **The public involvement**

If the intentions, documents and programmes are going to have the slightest chance of being implemented and succeed it is of vital importance to extend the list of participants in the process. Citizens, organisations and authorities need to be actively involved and feel responsible for the development towards sustainability.

Above all, this requires openness and access to the information and decision-making processes within the field of environmental protection. For instance this implies that citizens and non-governmental organisations should be granted the possibility of having easy access to relevant information. Secondly the chances for a successful process are better if the role of the local governments are strengthened and the participation and involvement of the private sector is increased.

Also the role of education, science and transfer of environmental friendly technologies and environmental management must be emphasised in the whole process.

Even though, involvement and openness are keywords in the attempts to improve the

environment the process will not succeed without also increasing the number of the existing legal and economic instruments in order to ensure the effectiveness of the environmental laws and the economic efficiency of the currently applied solutions.

#### **The need for financial support**

The system for financing investment projects in environmental protection in Poland is mainly based on the local governments' and the companies' own resources, the state budget, commercial credits, grants and credits from the system of environmental funds, grants from the Ecofund and foreign assistance funds.

The environmental funds in Poland draw their resources among others from fees for the emissions to the environment and penalties for



its pollution. Most of the environmental fees and fines collected are set aside for environmental purposes. An analysis of the National and Regional Environmental Fund's revenues reveals that the industrial sector effectively is the main financier of environmental investments.

During the period 1990-1999, the Fund's financial resources were directed mainly towards air protection (40 per cent) and water protection projects – mainly waste water treatment (43 per cent) of the total. This is also reflected in the priority areas in the National Environmental Policy.

In this connection the National Fund for Environmental Protection and Water Management plays a key role, because it provides low

interest financing and grants. The fund was founded in 1990 and is the largest financing institution within the field of environmental protection in Poland. It is also the only one of its size in the Central- and Eastern European countries.

Except from the nation wide National Fund there are sixteen Voivodship Funds for Environmental Protection and Water Management throughout, who deal with similar activities, just on a regional scale.

About 25 per cent of the total expenditures for environmental protection are covered by the Environmental Fund. Over the period 1990-1998 the Fund has granted almost 6000 loans and subsidies, totalling over 5 billion PLN (USD 1,16 billion). The Fund also manages the financial resources made available by foreign



5 Annual Report - 1999, National Environmental Fund, 1999.

6 10 years of activities of the National Found of Environmental Protection and Water management, National Environmental Fund, 1999

7 Annual Report for 1999, National Environmental Fund, 2000

8 Input to revision of the Country Programme: "Environmental Programme Priority Areas 2000-2002 – Poland", DEPA, 2000. (Internal report, not published)

#### National Environmental Fund Expenditures 1990-99

All numbers are in million PLN <sup>5+6+7</sup>

Specification	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Total
Air protection	2.8	57.4	94.2	149.4	171.2	425.1	395.8	333.9	291.0	546.6	2,467.4
Water protection & water management	4.6	46.7	139.3	109.5	192.6	270.6	445.0	425.6	465.6	609.5	2,709.0
Soil protection	0.2	8.7	15.5	19.3	34.5	44.8	52.0	92.5	56.0	122.3	445.8
Nature conservation	0.6	1.2	5.6	9.5	28.3	27.6	31.2	38.4	40.5	38.7	221.6
Monitoring	-	1.9	10.9	15.8	16.0	9.7	11.1	9.4	9.6	*	84.4
Environmental education	0.1	0.7	2.0	3.8	4.1	9.7	16.8	17.7	15.4	*	70.3
Emergency response issues & others	-	0.1	11.7	9.6	26.2	27.5	42.5	47.2	17.5	*	182.3
Other projects											64.5
<b>Total</b>	<b>8.3</b>	<b>116.7</b>	<b>279.2</b>	<b>316.9</b>	<b>472.9</b>	<b>815.0</b>	<b>994.4</b>	<b>964.7</b>	<b>895.6</b>	<b>1,381.6</b>	<b>6,245.3</b>

\* For 1999: "Other projects" which covers monitoring, environmental education and emergency response together (total 64.5 million PLN). Annual Report – 1999, National Environmental Fund, 1999.

assistance programs for instance from the European Union. During the same period from 1990-1998 this kind of management amounted a total of EUR 103 million (USD 88 million).

#### Financial assistance from the "Paris Club"

In April 1991, creditor countries constituting the so-called "Paris Club", agreed to write off 50 percent of the Polish foreign debt, provided that the balance would be paid by 2010. The Eco Fund is a foundation established in 1992 by the Minister of Finance for purposes of effective management of funds obtained through the conversion of a part of the Polish foreign debt to the benefit of supporting environmental protection-related undertakings, the so called "debt for nature swap".

The eco-conversion arrangements allow for cancellation of up to 10% of the Polish State debt, which had been accrued before 1980 in return for environmental protection investments implemented in Poland. It has been United States, France, Switzerland, Italy and

Sweden that were involved in eco-conversion, hence the Eco Fund has been managing funds provided by these countries - a total of USD 545 million to be spent between 1992 and 2010. <sup>(8)</sup>

The task of Eco Fund is to provide for environmental protection-related projects which are of crucial importance on regional or national scale, or have a major influence on the process of achieving environmental objectives recognised as priorities by international community on a global as well as European level. Another task of Eco Fund is the transferring of the best technologies from donor countries to the Polish market, as well as stimulating the development of the Polish environmental protection industry.

#### Increase in environmental investments

In the 1990s in Poland, expenditures on investment projects in environmental protection increased tremendously. The share of environmental investments in terms of Gross National Product has increased from 0.5 per cent in 1985 to 1.4 per cent in 1999.

Bialowieza Forest - one of Europe's most important and spectacular forest areas

9 Statistical Office on Environmental Protection 1999 – Stat. Office – Website

Poland's ability to invest in environmental protection is a very important factor in its efforts of becoming a member of the European Union. Specifically, the cost of Poland's approximation with the European Union requirements in the field of environmental protection is estimated to amount to approximately PLN 90-150 billion (approx. USD 21 – 35 billion).

**Prioritised areas for environmental protection**

In an attempt to make the Polish environmental efforts as efficient as possible The National Fund for Environmental Protection and Water Management has identified its prioritised areas for environmental protection investments financed by the National Funds. The areas include:

- water resource protection, by providing financial support for the construction of water

- and waste water treatment plants, water saving technologies, construction of closed water circulation and multiple-use systems;
- air quality protection by supporting modern technologies, particularly for the reduction of energy consumption and elimination of harmful air emissions; rationalisation of heating systems; production and installation of pollution reducing equipment; use of alternative sources of energy; and encouragement of modern technological improvements to reduce the environmental impact of road transport;
- protection of land surface, and improvements in waste management by supporting low and non-waste technologies, utilisation and treatment of industrial and municipal wastes, proper handling of hazardous wastes for instance hospital waste; landfills; re-use of waste at source; reclamation and re-cultivation of degraded soils;



Recent Polish spending within the environment. All numbers are in million USD <sup>9)</sup>

	1993	1994	1995	1996	1997	1998	1999
<i>Total expenditures on</i>							
<i>environmental protection</i>	834	936	1,308	2,276	2,063	2,569	2,457
<i>Environmental expenditures</i>							
<i>as a % of GDP</i>	1.0	1.0	1.1	1.6	1.6	1.6	1.4

- geological and hydrogeological research; development of mining technologies and processing of minerals; collection and purification of mining waters; re-cultivation of areas degraded by mining activities;
- conservation of nature by providing financial assistance for projects implemented in regions under special care; projects focused on organisation and management of teaching, training, and research centres and scientific facilities in national parks; restitution and re-introduction of endangered species; complete protection of forest stands and biocenosis; restoration of natural heritage in parks and palace gardens registered as historical sites;
- environmental education by supporting training projects; radio and television programmes; support for environmental education programmes on a national scale
- monitoring of environment and financial support for the implementation of projects resulting from the national Environmental Monitoring Program.

### **Moving towards the European Union**

The Polish accession into the European Union plays a key-role in the environmental considerations and investments in Poland. The EU is the main foreign source of financing for environmental protection in Poland, thereby the EU has cemented its importance to the country – as a donor as well as a future partner.

The approximation process is regularly evaluated by the EU in the regular Reports and the Accession Partnership. The Accession Partnership indicates the priority areas for Poland's preparation for their EU membership. Before Poland can be a full member of the European Union they have to fulfil all the commitments of the legislative approximation

and implementation of the acquis in accordance with the commitments made under the European Agreement, the screening exercise and the negotiation process. However, the incorporation of the acquis into the legislation is not in itself sufficient. It is necessary to ensure that the Polish development actually apply to the EU standards. Therefore the EU support programmes play an important role for the countries applying for EU membership not only in terms of financing but also in terms of technical and practical assistance.

When it comes to the European Bank for Reconstruction and Development, EBRD and the World Bank none of them are acting as donors as such, but as financing institutions. This means that assistance is given for instance in preparation of project proposals or in connection with analyses of cost of EU-compliance.

# THE SECTOR- INTEGRATED ENVIRONMENTAL ASSISTANCE

**Protection and improvement of the environment can not only be seen as an isolated environmental task. The environmental conditions are dependent on and influenced by all the different sectors in the society. Therefore, the countries around the Baltic Sea in 1998 adopted the Environmental Sector Programmes. The objective of the programmes is to support sustainable development in all sectors in the Baltic Sea area. And to assist in the adaptation to EU legislation and establishment of implementing systems.**

The overall objective of the Sector Integrated Environment Assistance in the Baltic region is to promote environmental sustainable development based on market-economy principles in Estonia, Latvia, Lithuania, Poland and the Russian regions St. Petersburg and Kaliningrad. The programme builds on objectives set in the Baltic Agenda 21, rooted in Global Agenda 21 and the Rio Conference in 1992 and adopted by the countries around the Baltic Sea in 1998. The assistance is focusing on environmental issues in specific sectors.

The activities of the sector-integrated environment programme are scheduled as partnerships between a range of Danish Ministries or government agencies and their colleagues in recipient countries. The programmes are assisted and co-ordinated by DEPA and the Polish Ministry of Environment. The programmes are further – demanding on needs – being implemented in a close co-operation with the DANCEE programme.

The decentralised scheme of this assistance ensures a close integration of environmental sustainability into the general sector development.

The Danish authorities administrating the Sector Programmes are:

- Ministry of Labour
- Emergency Management Agency

- Danish Energy Agency
- Danish Agency for Trade and Industry
- Ministry of Food
- Ministry of Education

DEPA is responsible for the overall co-ordination of all programmes.

Another important part of the sector programme is to assist the countries in their preparations for the future EU-membership. To be a member of the EU it is required that the candidate countries fulfil the EU legislation and the environmental standards which often relates to horizontal legislation. Such as: Environmental Impact Assessment, Access to information, reporting and Implementation of environmental Directives, European Environment Agency (EEA), LIFE.



## CHAPTER 6

### ENVIRONMENTAL CO-OPERATION AROUND THE BALTIC SEA

# FUTURE PERSPECTIVES

Danish support to Central- and Eastern Europe will continue in the future. The new DANCEE strategy 2001-2006 is to a great extent reflected in the existing Country Programmes, which are made in close co-operation with the individual countries. Also in the future priority will be given to the improvement of air- and water quality, to better treatment and reduction of the amounts of waste, and to protection of the nature. All this will increasingly be seen in the perspective of a future membership of the European Union, which is the overall objective for the applicant countries where DANCEE operates.

During the most recent years an increasing number of the DANCEE consulting projects have been implemented in relation to the EU approximation process, which includes the transition and the implementation of EU environmental directives.

Because a majority of the countries in Central- and Eastern Europe co-operating with Denmark focusing on future EU accession, it is only natural that the planing of future institutional projects and investment projects will concentrate as much as possible on fulfilling the EU environmental directives.

This means that there is a general tendency in the co-operation to focus increasingly on the Polish EU accession process, which is also reflected and integrated in the projects. Today, all projects have to conform to the requirements of both Polish environmental legislation as well as EU environmental directives.

#### **A new strategy sees the daylight**

The implementation of the new Danish strategy for environmental support to Eastern Europe is a revision of the existing country programmes made in close co-operation with the individual

countries. It is expected that the country programmes are to cover a 3-year period in order to remain dynamic and be able to follow the country's development closely.

The new strategy include the following main objectives

- 1) to strengthen and specify the overall framework of the activities of DANCEE,
- 2) to form the basis for an update and revision of the country programmes for the individual countries
- 3) to specify the objectives of the activities within the different priority areas

The strategy covering the period 2001 – 2006 is based on the Danish Government's strategy for support to Eastern Europe: "Regeringens Overordnede Strategi for Øststøtten – med særlig hensyn til Østersøen" from 1997 – the so-called Baltic Sea Initiative in force from 1998 – 2001. This initiative comprises the Danish support to Poland, Estonia, Latvia, Lithuania and Russia.

The strategy is also based on the Parliament decision of May 5, 1999 in which focus is put on the Baltic Sea Region, support to the approximation of the EU-applicants and increased support in SNG-countries and to the Balkan reconstruction.

#### **Priority to cross-sectoral activities**

The updated country programme will seek to focus the support on fewer priority areas and on certain geographic areas such as selected regions in the beneficiary country. When preparing the country programmes Danish support will be co-ordinated with other multi- and bilateral donors with a view to obtaining a higher degree of synergy.

The number of priority areas have increased compared to the 1993 strategy as chemicals and multi-disciplinary items have also been included. This reflects the increasing differentiation of the need for support as well as of the degree of development between the beneficiary countries.

Future priority areas will comprise air and water quality, treatment of waste, chemicals and biodiversity. At the same time, cross-sectoral activities will be given higher priority. This will be done to strengthen local institutions

and professional expertise within the countries, promote public participation in decision-making within the environmental field, ensure that the private sector in the countries assume "environmental responsibility" and to assure that the countries fulfil international conventions within the environment.

#### **The Baltic Agenda 21**

The sector-integrated environmental co-operation is part of the action plan for the Baltic Agenda 21, which was adopted by the Baltic Sea countries in 1998. The objectives of



this Agenda was to strengthen the environmentally sustainable development based on market economy principles in Estonia, Latvia, Lithuania, Poland and the Russian regions of St. Petersburg and Kaliningrad.

The Baltic Agenda 21 is based on the global Agenda 21, which was adopted by the United Nations' members in 1992 in Rio. An additional main objective of the Baltic Agenda was to support the preparation for EU membership.

#### **Protection of the Baltic Sea**

Also the Polish-Danish environmental co-operation shall be seen in a wider international perspective. Poland and Denmark have a common interest in protecting the Baltic Sea - the world's largest brackish water system. This

co-operation is carried out between the Baltic Sea countries under the so-called Helsinki Convention, HELCOM.

A considerable part of the efforts to protect the Baltic Sea concerns the reduction of the waste water pollution from urban areas. As a result of the Polish-Danish bilateral co-operation a number of projects have been carried out which support the objectives of the Helsinki Convention. The protection of the environment in the Baltic Sea Region will also be an important issue in the future bilateral co-operation.

The regional activities in the Baltic Sea Region to limit oil pollution are still given high priority in the implementation of the MARPOL and the



HELCOM conventions. Similar regional activities will also be relevant in the Black Sea region.

Other major regional activities are under preparation within the Dioxin and Persistent Organic Pollutants' (POP) fields in order to strengthen the future phase out of the POPs and reduction of the dioxin emissions. Furthermore, the phasing out of other hazardous chemicals will also be implemented.

The regional activities are characterised by the fact that there is a regional perspective for such a co-operation across the national boundaries environmentally, politically and because the countries have a common interest in e.g. the Baltic Sea catchment area.

The nature projects are other examples of cross-border projects, for which the sustainable solutions require an extensive co-operation across country borders.

## CHAPTER 7

# THE DANCEE PROJECTS

### PART II

The following part of the book presents a selection of projects executed during the period from 1991-2000. The selection illustrates the great variety of supported projects in relation to subject, size, as well as duration of the projects.

An important strategy in the Polish-Danish co-operation has been to focus on a sustainable development in the Baltic Sea Region, support the Polish EU accession process, implement international environmental conventions and strengthen the environmental awareness in Poland.

The EU related projects have been executed over the last years and only a few of them are completed.

The projects are presented in relation to the relevant sectors of the DANCEE programme except for the last cluster of projects which were financed outside the DANCEE programme but within the Disaster Relief Facility (EDRF).



# AIR POLLUTION – A THREAT TO THE ENVIRONMENT AND THE PUBLIC HEALTH

**Air pollution is not only a threat to your health. It is also a serious threat to the environment. The acids which are spread by the wind and dropped by the rain damage forests, destroy aquatic ecosystems and corrode railway tracks, roads and the masonry of historic buildings. The high concentration of smoke and soot particles causes poor visibility and results in an increase of respiratory diseases. These are problems which are well known in Poland and caused, to a great extent, by the Polish dependence on coal. Today, coal and coke-fired power plants generate almost 80 percent of energy used in district heating but there is an attractive alternative in the use of indigenous geothermal energy. Tendencies show that Poland is moving towards a better air-quality.**

Traditionally, Poland has been dependent on coal for the production of heat and power. Despite the environmental consequences, indigenous coal resources are chosen for social and economic reasons since they provide employment and are less costly than imports. It resulted in the nation's dependency on coal for electric power generation and nearly 80 per cent of the energy used in district heating is generated by coal and coke-fired power plants.

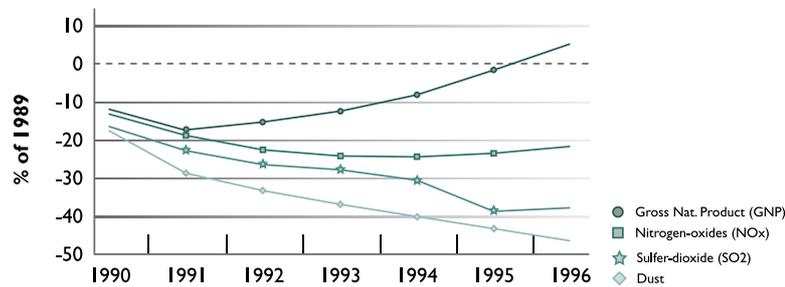
Coal has been a cheap and convenient resource but it has also led to serious air pollution problems in Poland and, to a certain extent, the problem has spread to the neighbouring countries. Problems arise when sulphur and nitrogen oxides formed during coal combustion react in moist air and form sulphuric and nitric acids. These are acids which are severely damaging to the public health, nature and the environment.

#### **The attractive alternative**

Despite the detrimental state of affairs, Poland actually holds a sound and attractive alternative to coal in the form of indigenous geothermal energy which is produced in the waterbearing aquifers in the underground as a result of heat



Air Pollutant emission changes



Pollutant emission changes in 1989 to 1996 against the GNP (in percentage of 1989 figures) Agenda 21 in Poland, Progress Report 1992-98, MoE, 1998

from the earth rising towards the surface. Furthermore, the geothermal energy provides a cost-effective alternative to other low-polluting fuels such as natural gas and compared to natural gas, Poland has massive geothermal resources.

Geothermal energy causes almost no pollution in terms of particulate matter, sulphur dioxide, nitrogen oxides or aromatic hydrocarbons. Moreover, geothermal energy provides an additional advantage stemming from the fact that it produces almost no carbon oxide. In other words, there are plenty of environmentally sensible reasons to support the development of geothermal resources.

**A better air quality**

Even though Poland still relies mainly on the use of coal and coke in its energy production, the emissions of the main air pollutants, sulphur dioxide, nitrogen oxide and particulates, are actually declining or stabilising according to the balances for the period up to 1997.

Initially, the decrease in pollutant emission was a result of the economic recession, where the steady increase in GNP since 1992 has been accompanied by continued reductions in the total pollutant emissions.

# WASTE WATER TREATMENT AND GYPSUM HANDLING AT DOLNA ODRA POWER PLANT

**The dependence on coal has led to serious air pollution problems in Poland but the coal-fired power plants are also a major potential air pollution source. DANCEE has supported a number of projects at the Dolna Odra Power Plant with the overall objective to reduce the air pollution from the existing power plants.**

Today, nearly 80 per cent of the energy used in district heating is generated by coal and coke-fired power plants – electric power generation is almost entirely based on coal. The effect of coal burning on the pollution of the air and water is well known, and extensively documented.

The problems arise when the sulphur and nitrogen oxides, formed during coal combustion, react in moist air to form sulphuric and nitric acids. These acids, which are spread with the rain, damage the environment and the nature.

The Dolna Odra Power Plant Complex is situated in the north-western part of Poland, 35 kms south of the city of Szczecin near the river Oder and close to the German border. The coal-fired power plant is with its 8x200 MW boiler units one of the largest power plants in Poland and at the same time a major potential source for air pollution close to Denmark.

### **The objective:**

The overall objective of the present project is to reduce the air pollution from the existing power plants. This is going to happen via the establishing of a gypsum handling system and a waste water treatment plant in connection with the extension of a flue gas desulphurisation system (FGD).

### **The procedure:**

The gypsum handling technology is specifically Danish know-how and this project consists of

a complete modern plant to handle gypsum of a saleable quality. As an added value to the environmental advantages this technology will also create a new field of export potential to for instance the cement industry in Sweden or Germany.

The waste water treatment plant project comprises a plant for complete purification of the waste water produced in the FGD plant.

The plant is designed for two FGD plants for totally 4x200 MW boilers. The maximum gypsum produced for four boiler units is approximately 22 tonnes per hour corresponding to 160 – 180,000 t/year.

In the waste water treatment plant the heavy metals are precipitated by means of chemicals. In this process the pH-value is adjusted to the optimum value for precipitating heavy metals and later the purified water is discharged to the recipients. The system further separates the solids from the liquid by means of centrifuges.

The filter cake consists of 96 per cent gypsum, while approximately 4 per cent is fly ash containing heavy metals. This filter cake will be returned to the boilers with the coal and hereafter primarily entrapped in the boiler slag and the fly ash. The heavy metals are here entrapped to such an extent that the slag and fly ash can be used as for instance road filler without danger to the groundwater.



**The result:**

The entire flue gas desulphurisation plant, the FGD plant, including the projects mentioned was put in operation by the end of 1999. The environmental projects have resulted in a reduction of discharge of SO<sub>2</sub> by 30,000 t/y.

The projects secure that the quality of the gypsum will be maintained all the way through to the end users. In addition to the economic advantage of selling the gypsum, the environmental benefits of avoiding to deposit significant amounts of gypsum every year in the surrounding nature will be achieved.

## EXPLOITATION OF GEOTHERMAL ENERGY

**In Poland, an attractive alternative to coal is available in the form of indigenous geothermal energy. This provides a cost-effective alternative to other low-polluting fuels such as natural gas. Compared to natural gas, Poland has significant geothermal resources. One of the areas in Poland in which geothermal resources are thought to be commercially exploitable is the mountainous Podhale region, where more than 30 per cent of the inhabitants now are connected to the pilot energy plant; this means a particularly efficient air pollution reduction.**

Geothermal energy produces almost no pollution in terms of particulate matter, sulphur dioxide, nitrogen oxides, or aromatic hydrocarbons. It has the additional advantage, compared with natural gas that it produces almost no carbon oxides.

Podhale region in the south of the country is one of the areas in Poland in which geothermal resources are thought to be commercially exploitable. The reservoir is an aquifer located at a depth of 2,500-3,200 m in highly fractured limestone and dolomite. Preliminary estimates suggest that there are sufficient geothermal resources to supply heat and hot water for 100 years. Podhale is probably also the country's most popular tourist region, with over 2.5 million visitors

recorded annually. The region has great scenic beauty and is characterised by the high mountains of the Tatra range, and extensive forests, lakes and rivers. In addition, the region contains Poland's premier ski resort, at Zakopane, and is of ecological importance because of its calcareous mountainous ecosystems. At present, there are four national parks in the Podhale region.

The economic growth of the region, as a result of the tourism development, has meant a growing demand for heat and energy. At present, coke, coal and natural gas supplies account for about 70% of the total heat demand. The result is that the air quality in resort towns such as Zakopane is now considerably worse than allowed by both





A schematically geothermal plant  
 Principle of Geothermal Heating System  
 Source: DONG

national and EU standards. Atmospheric pollution is also beginning to threaten the tourist potential and the unique wildlife of the national parks.

**The objective:**

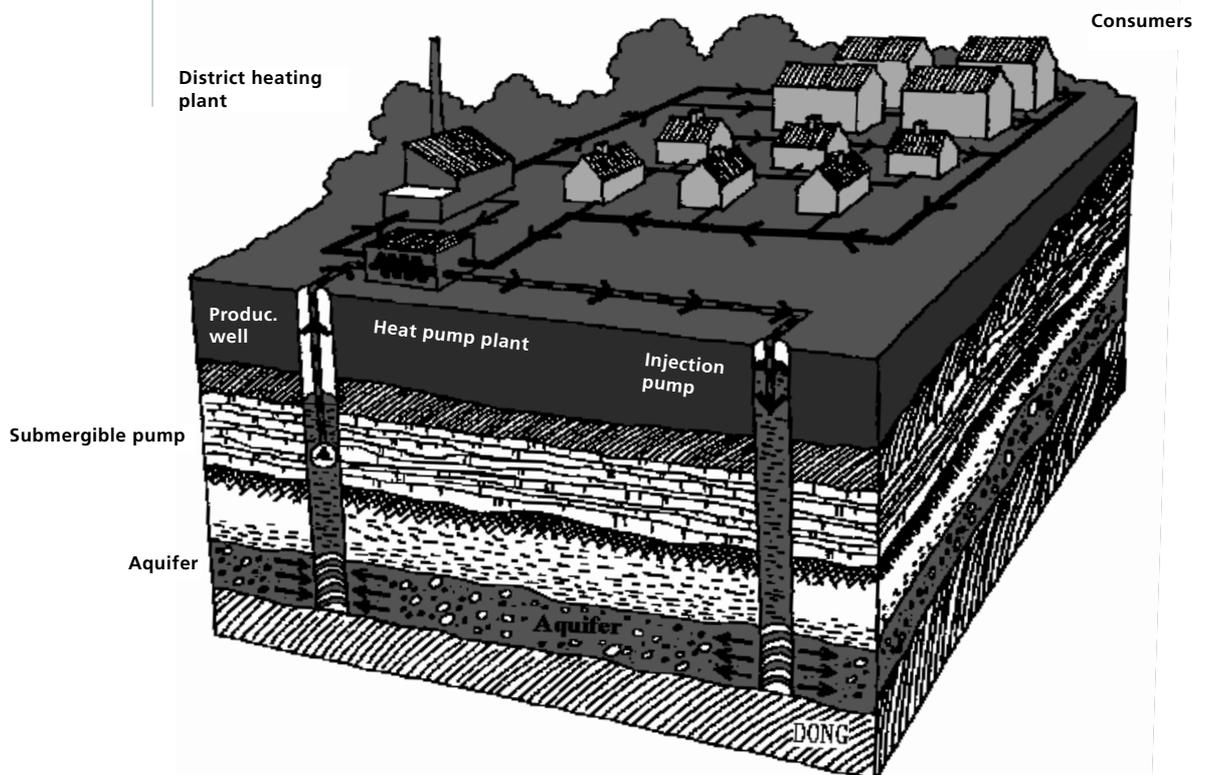
Apart from the considerable environmental advantages of geothermal energy there are likely to be long-term cost advantages as well. Polish government policy supports the use of renewable energy resources as a means of achieving higher air quality standards. In this context, it is planned that subsidies will be progressively removed from traditional fuels, which will make geothermal energy a cost-effective alternative to coal in the future. An additional cost advantage of geothermal energy is that it can be distributed through the existing district heating networks, which means that there is limited need for major infrastructure investments.

DANCEE has supported and assisted in the planning, design and start-up and development of two geothermal energy projects in Poland. One is in the Podhale region which is described underneath, and the other in the north-western part of Poland, the Pyrzyce region near Szczecin.

**The procedure:**

Danish and Dutch technical assistance have helped with the market study, the Podhale project concept, the preliminary design and cost estimates. Feasibility studies were prepared by Danish consultants.

Public participation was also an important part of preparing the project. This involved consultation with intermediary non-governmental organisations, such as the Polish Ecological Club (Polski Klub Ekologiczny) and academic institutions. The municipalities organised public hearings to inform



Geothermal heat is heat produced in the waterbearing aquifers in the underground as a result of heat from the earth rising towards the surface. The heat is produced by drilling wells to these layers and pumping the water through a geothermal production plant where the heat is conveyed to a district heating system by means of direct heat exchange and in some cases also heating pumps. The cooled water is then led back to the same water-bearing aquifer by means of injection wells. The locations, which are most appropriate for such technique, are locations with a considerable district heating system with low temperature level and having an underground with suitable water-bearing layers i.e. a thick sand layer. Such layers are typically found at 1-3 km depth containing 30-100 degrees C hot water

consumers about the economic and environmental advantages of geothermal energy.

**The result:**

At present more than 30% of the inhabitants are connected. It is expected that the Podhale Geothermy in late 2001 will supply half of Zakopane's inhabitants with an environmentally sustainable heating supply from this underground water and within the next 2 years 80% will be connected. The result of the pilot study showed that the

consumers were satisfied with the temperature of the water supplied by geothermal energy, that there was a willingness to convert to geothermal heating, and that consumers paid their bills on time.

Recently, the project received a World Bank loan of USD 38 million and a GEF-grant of USD 5,4 million for particularly efficient CO<sub>2</sub> reducing initiatives. This financing as well as an additional USD 8 million from PHARE makes it possible to complete the project and to cover the entire Podhale valley.



Production drilling

# CLEAN WATER - A SCARCE RESOURCE

**The fact that there has been a reduction in the quantity of waste water discharged into the rivers and the Baltic Sea, is an important step towards sustainability. The DANCEE supported projects have caused a reduction of discharge of organic pollutants and nutrients to the Baltic Sea by 14 per cent. This reduction corresponds to more than three times the discharge from all Danish waste water treatment plants.**

Water quantity and quality has become a resource in short supply. This is especially seen in Poland, which is poorer in resources than most European countries: 1,580 m<sup>3</sup> of water per inhabitant a year compared to the European average of 4,560 m<sup>3</sup>. Therefore it is natural that water consumption and waster-water treatment have received environmental priority in the Polish environmental strategy. A strategy, which covers municipal and industrial waste water treatment, water supply and recipients.

Another reason for the water resources being so valuable in Poland is the major economic significance of the watercourses where the Polish economy covers 81 per cent of its water demand from this source. For instance this

means that during the years 1992-1997, annual abstraction of surface water for economic purposes was in the range of 12,000 million m<sup>3</sup>.

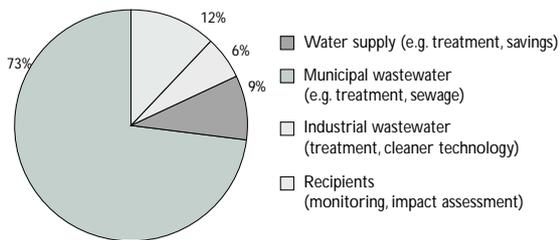
The industrial sector used more than 71 per cent of the abstracted water. The municipal management used 16 per cent of the exploited surface water, while agriculture and forestry accounted for the remaining 13 per cent.

### **Closing the financial gap**

Municipal waste water treatment covers 49 per cent of all projects for which 73 per cent of the grants to the water sector have been dedicated. The contribution for co-financing is approximately 90 per cent and DANCEE has typically ensured the final part of the financing and thus kick-starting the projects.



Water Pollution projects – Distribution of DANCEE financing to the water sector



The DANCEE supported projects have caused a reduction of the discharge of organic pollutants and nutrients (phosphorus) to the Baltic Sea by 14 per cent. This reduction corresponds to more than three times the discharge from all Danish waste water treatment plants. In addition to that, the projects supported also have resulted in water savings or new production of water for approximately 175.000 citizens.

The Polish contribution to the pollution of the Baltic Sea has been reduced during the recent years. This reflects the decreasing pollution of the Vistula and Oder, since the so-called coastal rivers flowing directly into the sea have relatively limited effect on the overall loads.



The Vistula River, which is one of the last large rivers in Europe with a considerable unregulated course and with an unique living environment for many species of flora and fauna, provides some 56 per cent of the total water input from Poland's territory to the Baltic Sea. The Oder River provides 34 per cent and coastal rivers supply 9 per cent. Hydrographically, 99,7 per cent of Poland has run-off to the Baltic Sea.

#### Discharge of waste water into the nature

In spite of the enormous biodiversity in especially the Vistula River the discharge of saline waters from the hard-coal mines represent a particularly huge water quality problem of the Polish rivers. More than 80 per cent of the water abstracted - the same as approximately 10,000 million m<sup>3</sup> per year - is

discharged to the surface waters as waste water. As a justification it should be stated that with regard to waste water treatment, a significant progress has been made. However, the amount of waste water discharged to the environment without the required treatment is still excessive both in urban and rural areas.

Groundwater quality is generally much better than that of the surface water. However, available data indicate a widespread and locally severe occurrence of man-made pollution in the groundwater.

After all, the consistent Polish water management policy over the last 10 years has brought a reduction of water consumption in the economy by diminishing its loss, through a more efficient use and the improvement of the water resource quality.

Loads of different pollutants to the Baltic Sea from Polish rivers <sup>10)</sup>

Parameter	1994	1995	1996
Flow (Million m <sup>3</sup> / year)	56,240	55,842	60,310
Organic matter (t BOD <sub>5</sub> / year)	220,018	244,194	255,887
Total nitrogen (t N / year)	254,373	206,624	242,338
Total phosphorus (t P / year)	16,667	13,717	12,357
Zinc (t Zn / year)	1,006	852	511
Copper (t Cu / year)	181	135	116
Lead (t Pb / year)	215	127	71
Cadmium (tCd / year)	18	9	8

## WASTE WATER TREATMENT AND WATER QUALITY IN THE NAREW RIVER BASIN

**The Polish waste water treatment plants use an additional 20-60 per cent of energy compared to similar plants in Denmark. Therefore considerable savings can be achieved in Poland. The objective of the projects at the Narew River was to achieve the greatest possible environmental effects in the form of energy savings and improved treatment of waste water. This was achieved via transfer of Danish know-how and technology.**

When the first phase of the Narew River project was finalised, it was concluded that the energy consumption on the waste water treatment plants could be reduced by 30-50 per cent through the implementation of the proposed changes.

The Narew River, which has a catchment area of approximately 28,000 km<sup>2</sup> flows from Belarus in the East to North of Warsaw, where it joins the Vistula river and continues to the Baltic Sea near Gdansk.

There has been granted financial support to 6 projects in the Narew river catchment area. These projects have consisted partly of planning activities and partly proposals for specific activities on several waste water treatment plants (WWTPs) in the area.

The second phase comprises plants in 8 towns of very different sizes. Bialystok with around 275,000 inhabitants is the largest and Ruciane Nida, a tourist town, with less than 10,000 inhabitants is the smallest. The total number of inhabitants of these 8 towns is around 400,000.

### **The objective:**

The objective of the project "Optimisation of WWTPs along the Narew River and Transfer of Know-How" was to establish specific proposals for the change of the operation on 10 municipal WWTPs within the existing physical

limits with a view to achieving energy savings and improvements of the treatment efficiency.

This required:

- A supply and installation of equipment with Danish support in the existing WWTPs
- Optimisation of the operation of the existing treatment plants
- Preparation of proposals for the construction of new WWTPs or extension of the existing plants to conform with the new standards for treatment from year 2000
- Transfer of Danish know-how and technology

### **The procedure:**

The optimisation of the processes on the existing WWTPs was carried out after a study of the existing conditions.

In 2 of the 8 towns it was necessary to construct new treatment plants, if the planned reduction in energy consumption was going to be achieved.

Before introducing the measures recommended, as a result of the study, the present electricity consumption and the treatment efficiency of the plant were measured. Once the proposed changes and adjustments of the present operation were implemented, similar measurements were carried out once again in order to document the environmental benefits achieved.

One of the ways that DAN-CEE assists is via transfer of Danish know-how. By taking flow proportional samples with the use of Danish equipment, experts from Denmark and the local personnel in the Narew River Basin estimates the loading at the WWTP.

The aeration system is one of the most energy consuming processes at a WWTP. By using the aeration system and thereby adding oxygen, the nitrogen is eliminated from the wastewater. At the Lapy WWTP, the aeration system was over dimensioned. To secure against precipitation of particles from the wastewater, a mixer which kept the water in circulation was installed. The oxygen meter secured that the aeration system starts when the concentration of oxygen reaches a certain level. By installing the mixer and the oxygen meter, the Lapy WWTP saved 800 KWH per day.



The preparation of the projects allowed for a later extension of the WWTPs to fulfil demands according to the EU directive on treatment of urban waste water.

**The result:**

Some of the proposals for improvement are not justifiable based on a purely economic point of view, but have been decided based on a ecological and environmental point of view. However, improved waste water discharge will, under any circumstance, result in economic savings as the WWTPs in Poland, at present, pay taxes on all the waste water discharged regardless of whether or not discharge standards have been respected. In addition to such taxes, penalties are to be paid, if the discharge standards are not respected.

The projects was launched before the EU approximation process was started in Poland, therefore the projects follows Polish environmental requirements and not the EU requirements.

When the Polish year 2000 discharge standards has been implemented on all the WWTPs included in the project, it is estimated that the total discharge of waste water per day has been reduced by approximately 1030 t of nitrogen, 320 kg of phosphorous and 630 kg BOD, organic matter. The total daily energy savings will be around 30,000 kWh. In Poland such savings correspond to about DKK 10,000 per day (USD 1147).

The pay back time for the improvements required by the optimisation project is typically 2 to 3 years.



## OSTROW GRABOWSKI WASTE WATER TREATMENT PLANT

**Even though the amounts of pollution discharged into the Baltic sea by Poland has been reduced during the recent years, the amount of waste water discharged to the environment without the required treatment is still excessive. The Harbour of Szczecin is an industrial area, which produces a lot of waste water. The project at Ostrow Grabowski Waste Water Treatment Plant, which is located at the harbour, has the objective to reduce the pollution. A new waste water treatment plant was established and the results are impressive.**

The project idea for Ostrow Grabowski waste water treatment plant, WWTP for treatment of the main part of the waste water produced at the Harbour area was already born in 1992-93 in the first project outlining plans for the environmental development at Szczecin Harbour. At that time it was a part of a larger plan also including 2 – 3 small “local” waste water treatment plants at the harbour. Later this has been adjusted to pumping lines

to the new main plant at the Island Ostrow Grabowski.

### **The objective:**

The objective of the project was to establish the waste water treatment plant at the harbour and to reduce pollution of the Baltic Sea area from the waste water produced at an industrial area of approximately 500 ha at the Harbour of Szczecin.



When the plant was finished in June 2000 there were both waste water treatment plants for the land based waste water production at the harbour and a stage for "Waste water from ships".

**The procedure:**

Treatment of the organically polluted waste water takes place in a high-technology active sludge plant with biological nitrogen and phosphorus removal according to a compact and relatively simple concept.

The main activities were:

- Planning the main lines in the development plan for the environmental investments at Szczecin Harbour
- Basic Design for Ostrow Grabowski Waste Water treatment Plant
- Detailed Design for Ostrow Grabowski WWTP
- Tendering of a Forging and Machinery Contract, a sludge Dewatering Contract and a Electrical- and CRS-contract
- Assistance during contract negotiating and signing
- Supervision during Implementation of the project during the building period, which was finished in the spring 1998
- Starting up and running in the plant and the biological processes
- Follow up on remedies etc. in the suppliers guarantee period
- Guarantee check and release of performance guarantees at the end of the suppliers guarantee periods, 31.08.99.

**The result:**

As the new plant only has been in normal operation about a year the environmental effects are not yet documented, but it is obvious that the pollution outlet have been reduced as the new plant have cleaned the waste water as intended.

## **POZNAN CENTRAL WASTE WATER TREATMENT PLANT, SUPPLY OF ICA/STAR SYSTEM**

**Insufficient treatment of domestic and industrial waste water caused serious water polluting problems around the city of Poznan in the west central Poland. The problems could be solved via new technology to the Poznan Central Waste water Treatment Plant and via training of the employees at the plant. The result was an improvement of the environmental standards around the city**

Around 600,000 people are living in the city of Poznan, which is located within the Odra River basin. The city is a major source of pollution running to the Baltic Sea. The environmental problems have earlier been so serious that Poznan was identified as a "hot spot" by the Helsinki Commission.

This designation was going to be removed by introducing new technology to the Poznan central waste water treatment plant. The intention was to ensure a physico-biological treatment of the waste water from Poznan, by

upgrading the Polish waste water technology, so that the huge demand for waste water treatment in Poland could be met by using cost effective up-to date methods.

### **The objective:**

The project should transfer new technology and Danish know-how to Poland taking into account the local conditions of the waste water treatment plants and to obtain a positive effect on the environment by applying a modern control system.



This was done by an introduction of an Instrumentation, Control and Automation system, the ICA to the plant, which should provide equipment, construction supervision and training in the operation system. The STAR system, Superior Tuning And Reporting, which should minimise the consumption of energy and chemicals, and improve the effluent quality of the plant. Apart from this it was an intention to reduce the consumption of chemicals by 20 percent and the energy consumption by 25 per cent.

**The procedure:**

- The results were going to be achieved via:  
Identification of process improvements through discussing methods with the Danish and the local consultants
- Modern control equipment supplied from Denmark should show the local people that new technologies can improve the treatment results
- The local staff should be provided with the necessary knowledge for operation of the new equipment through training.

**The result:**

The environmental effects after the implementation of the project have been achieved, which means a reduction in the use of chemicals by about 20 per cent and the energy consumption by about 25 per cent.

As side effect the project have influenced on the employment situation in the water sector in Poznan, because the high technological equipment has required more qualified employees.

# WASTE – A PROBLEM FOR THE ENVIRONMENT

**Waste is one of the largest environmental problems of the Polish society. Over the last 15 years the quantity of waste landfilled in Poland has doubled. The damage done by waste to the environment takes first of all the form of water and soil pollution but also values of the landscape are hit hard by the enormous amounts of waste. However, there is a tendency among companies and local governments to show a growing care for the correct and sustainable waste management. This is for instance seen with the increasing number of plants disposing of generated waste and new municipal investment projects.**

In the 1990s, as the standard of living and diversity of consumer goods increased, the growing quantity of municipal waste became a great problem in Poland. The most common method of waste disposal in Poland was dumping. Still, only a marginal percentage of the solid waste is disposed of by means of other methods such as composting and recycling, which was only 0.2 per cent in 1997.

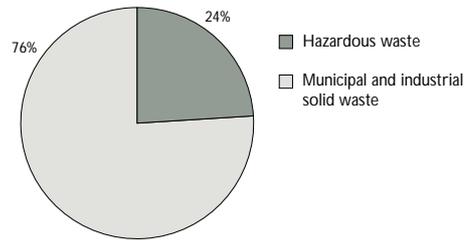
Nevertheless, overall there is a distinct positive tendency in the nation's recycling and recovery efforts.

Most of the municipal waste was and is disposed of on legal authorised landfills and dumps. However, in spite of the growing environmental awareness among citizens, part of the waste also goes to unauthorised dumps,

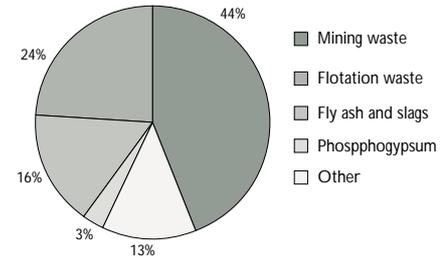


*The recycling station in Podhale.*

Waste projects – distribution of DANCEE financing



Distribution of Industrial Waste (11).



Agenda 21 in Poland, Progress Report 1992-98, MoE, 1998

which have no binding legal permits. It is estimated that there are about 10,000 unauthorised dumps in Poland.

In an attempt to solve the serious waste problems most of the existing projects have involved technical assistance for the municipal waste management planning in Polish cities. However, investment projects have also been implemented in which new treatment technologies have been demonstrated such as composting and recycling.

**Too much waste**

Focusing on the environmental effects of the projects, the landfill capacity created by the projects is approximately 350,000 tonnes. This can be compared to Poland's annual municipal waste generation, which amounted to approximately 30,000,000 tonnes in 1997.

Due to changes in the economy the production of industrial solid and hazardous waste changed significantly during the period 1985-1997 by decreasing from as much as 170 million to the present 125 million tonnes. The hazardous waste quantities constitute approximately 3-6 per cent of the industrial waste.

Unfortunately, it can be difficult to be very precise in the presentation of the changes in the area of waste management, which have taken place over the last 10 years. The reason for this is that the data until 1997 and after 1998 are not comparable, since the Act on Waste adopted in 1997 provided a new classification of waste, dividing them into 19 groups and municipal

waste depending on the generating source. But it seems that the municipal waste production and the quantities of industrial waste, in spite of the increasing consumption, have been stable during the nineties.

## **WASTE MANAGEMENT AND RECYCLING IN PODHALE REGION, POLAND**

**Every year, around 2 million tourists visit the Podhale region. This tourist migration causes problems for the environment and for the waste management in the area. Therefore, the DANCEE assists the region in the establishment of the installation of equipment for the recycling of materials and organic waste and in the construction of a new controlled landfill site for the five municipalities in the Podhale region.**

For more than 150 years, the small town of Zakopane, situated at the foot of the Tatra mountains, has been attractive for both the Polish and international tourists. It is mainly due to the nature and to the fact that the Tatra mountains are the only mountain range between the Alps and Caucasus which have alpine character. The area is therefore one of the most important sports and tourist attractions in Poland.

Zakopane has around 30.000 inhabitants and is visited every year by around 2 million tourists. Together with the surrounding municipalities, Zakopane constitutes the Podhale Region. Unfortunately, the area is very polluted as a result of the heavy human activity and the amount of waste produced by all the tourists.

To improve the environmental condition for the inhabitants, the tourists and the magnificent wildlife in the Tatra National Park and its surroundings, Dancee assists in solving the waste problems which is one of the main sources of the environmental pollution in the region.

The process of waste treatment today is outdated and does not comply with neither the Polish nor the EU environmental legislation.

Despite the fact that the Town Council has studied the possibilities of constructing a new monitored landfill and establishing a recycling depot, it is not possible to develop the plan

further due to the lack of financial resources. In Poland, the local municipalities receive only 5 per cent of the taxes, the rest goes to the state. Therefore, it is not possible for small communities like the ones in the Podhale region to invest in and improve the environment. Therefore, the DANCEE support is crucial for the region.

### **The objective:**

The specific objective of the project is to supply and install equipments for recycling of materials and organic waste and to construct a new controlled landfill site for the five municipalities in the Podhale region.

The project will have a high demonstration value with a possible duplication effect in a range of municipalities all over Poland.

The environmental benefits are double-sided as recycling of materials and protection of the flora and wildlife in the Tatra National Park are elements in the project.

The project will be implemented in The Podhale Valley including the five municipalities Koscielisko, Zakopane, Bialy Dunajec, Poninin and Bukowina Tatrzanska, with a total of 65.000 inhabitants.

### **The procedure:**

The first visual sign of the DANCEE support was an Environmental Car, which was delivered to the Zakopane waste management company - TESKO. The car, which is the first of

The Environmental Car

Inside the recycling station

Mountains of Zakopane.

In the foreground a growing mountain of waste



its kind in Poland, collects waste from among others doctors and dentists, such as medicine leftovers and used syringes and needles, used batteries, accumulators, chemicals, oil and other kinds of hazardous waste. The waste from the Podhale region is transported to Krakow where it is disposed of in an environmentally correct way.

**The result:**

The project has so far contributed to the reduction of the amount of waste and thereby avoided pollution of the mountains and the nature in the Tatra National Park.

## SHIP-GENERATED WASTE

**The protection of the marine environment in the Baltic Sea area against the impact of the pollution from various types of ship-generated waste is regulated by specific national legislation as well as by international conventions for marine environmental protection. This means for instance that vessels shall deliver their waste to the reception facilities in the calling ports. Denmark and Sweden assist the Baltic countries and Poland in the development of technical and operational structures for reception, transportation and treatment of ship-generated waste a so-called “no-special-fee” system.**

Vessels in operation produce waste. Depending on the type of vessel different types of waste are produced. All ships produce “engine room slop”, sewage and garbage. Tankers produce additionally cargo slop, tank washing and ballast water. According to the MARPOL 73/78 Convention vessels shall deliver their waste to the reception facilities in the calling ports, and the signatories to the MARPOL Convention shall provide adequate facilities in their ports. To fulfil the standards in the MARPOL Convention Denmark and Sweden are giving technical and operational assistance to Poland.

### **The objective:**

A common objective of the strategy in the Baltic area is the introduction of a harmonised fee system for the use of the reception facilities. Denmark is well known for the development of such reception facilities and the project is thus part of the larger programme on promotion of reception facilities in the Baltic Sea.

In order to achieve this overall objective Denmark has supported the immediate objective of the development of the port facilities in Szczecin-Swinoujscie. The project can be considered as a demonstration project for the sustainable development of reception, transport and treatment of waste received or generated in harbours.

### **The procedure:**

The project idea for a processing plant for the treatment of ship generated waste water was already created in 1992 with the planning of the new biological waste water treatment plant on Ostrow Grabowski Island at the harbour of Szczecin. The DANCEE supported the planning phase including the preparation of the conceptual design of the waste water treatment plant. In August 1994 DANCEE granted DKK 8,265 million (USD 0,98 million) for stage I of the project. The project was finalised in 1999 and the plant is today in full operation.

Later a pre-feasibility study for Polish ports, including the Szczecin- Swinoujscie Harbour in 1995 identified the need for supplementary facilities and reorganisation including consideration regarding the fee structure, the economic justification of waste treatment and handling, the motivation of the ships as well as the legal aspects.

In 1997 the EU-PHARE donated approximately USD 1.02 million for a processing plant and harbour facilities as part of the reception, transportation and treatment facilities for ship-generated waste water in the same port. Subsequently, the ECO Fund in Poland donated PLN 1.12 million (USD 0.26 million) for the equipment supply and construction works for the same project.

The ship waste water are contained and treated in steel-tanks

Szczecin ship waste water treatment plant.



## CHAPTER 10 WASTE - A PROBLEM FOR THE ENVIRONMENT

To comply with the MARPOL 73/78 and the HELCOM recommendations the port authorities have to prepare a Port Waste Management Plan and establish facilities for treatment of other types of waste.

### **The result:**

DANCEE financed the initial technical assistance for the project covering the preparation of the Project Outline Report and Conceptual Design as well as Technical Specifications of the reception, transportation and treatment facilities to be financed by the EU-PHARE and the ECO Fund. This part of the project was commissioned in late 1999. The detailed design of the harbour facilities as well as the civil works were financed locally.

The DANCEE support included also the preparation of the Port Waste Management Plan, which will support the sustainable development further. The plan is expected to be completed during 2001.



# THE POLISH NATURAL TREASURES

**Despite the changes that human pressure puts upon the environment, Poland is one of the European countries with the highest level of biological diversity. This is due to favourable natural conditions and variable human impact which, in spite of local problems, is generally of lower intensity than in the surrounding countries. The wealth of flora and fauna in some areas is unique not only to Europe but also to the world as a whole.**

Poland is characterised by high biological diversity and large areas of almost intact nature. Due to the high concentration of industry and mining in relatively small areas and the domination of extensive farming, very large areas in the north-east remain under a fairly low pressure of civilisation, maintaining the riches of natural ecosystems and preserved habitats of species which are now rare in other European countries.

In order to protect its natural treasures, Poland has created a system of protected areas, national parks, nature reserves, landscape parks, areas of protected landscape, etc. Until now, this covers more than 26 per cent of the

country but there are plans to bring further valuable areas under protection. Fortunately, there has been a long and healthy tradition of nature protection in Poland which means that most of the naturally precious areas are already protected by law.

DANCEE has supported several technical assistance projects which have been implemented in the sector related to nature protection. The contribution from the DANCEE co-financing has been approximately 75 per cent. The projects include both forest and nature reserve management and cover totally more than 6,000 km<sup>2</sup>.



**Wetlands:** A particularly valuable group of naturally precious areas include marshes and peatlands. The most extensive of these areas are the 1400 km<sup>2</sup> Biebrza Marshes, Poland's largest natural area of water retention. Apart from this, there are further five larger areas where raised bogs occur - two in the north, one in the east and two in the south. Fens are scattered throughout the country, except for the south, though they are particularly prevalent in the east.

The last 40 years have brought continuous changes in the country's hydrological condition partly as a result of natural factors and to a great extent, thanks to faster runoff due to water management in the form of drainage, the results have been a more or less marked drying of nearly all wetlands and subsequent changes in flora and fauna. The negative consequences of human activity have been intensified by more than 14 years of hydrological drought. Raised bogs and transitional peatlands have been most affected while improper drainage has led to the disappearance of small ponds in fields, and of areas with trees and shrubs.

### The Polish natural treasures

On the basis of the regulations set out in the Nature Conservation Act, a well-functioning system of protected areas has been established.

This includes:

- 22 national parks covering 0.94 per cent of Poland
- 1204 strictly or partially nature reserves covering 0.4 per cent of Poland and comprising:
  - 589 forestry reserves
  - 136 floristic reserves
  - 127 peatland reserves
  - 130 faunistic reserves
  - 113 landscape reserves
  - 50 reserves for abiotic nature
  - 32 steppes reserves
  - 24 aquatic reserves

- 3 reserves for halophytic vegetation
- 109 landscape parks covering 6.6 per cent of Poland
- 260 areas of protected landscape covering 18.5 per cent of Poland

A national park consists of protected areas with special scientific, natural, social, cultural and educational values and with a surface area of at least 1000 hectares where all nature and landscape values are protected.

A nature reserve is an area consisting of ecosystems preserved in a natural or hardly changed state established by a decision of a Voivode or a Minister where the establishment of such a site is required under Poland's international commitments.

Landscape parks are areas protected because of their natural, historical and cultural as well as tourist values which has been defined by the Voivodship authorities.

And finally, the protected landscape areas consist of areas with different types of ecosystems which are distinguished by their landscape. Their management should ensure a state of relative ecological equilibrium between natural systems.

One of the priority areas for environmental protection investments financed by the National Fund in Poland concentrates on the conservation of nature. Providing financial assistance for projects implemented in regions under special care should ensure this. The projects focus on organisation and management of teaching, training and research centres with scientific facilities in national parks as well as restitution and reintroduction of endangered species and restoration of natural heritage in parks and palace gardens registered as historical sites.



**Biodiversity:** There is no doubt that the biological diversity of Poland is enormous. The numbers speak for themselves: There are approximately 370 species of plants in Poland, of which 12 per cent are considered endemic. However, under the impact of a range of anthropogenic and natural or quasi-natural factors, plant species are undergoing dynamic but not always favourable changes. In the last several decades, 3 out of 280 community species have disappeared, while 55 are in decline and almost 130 are endangered to a greater or lesser extent.

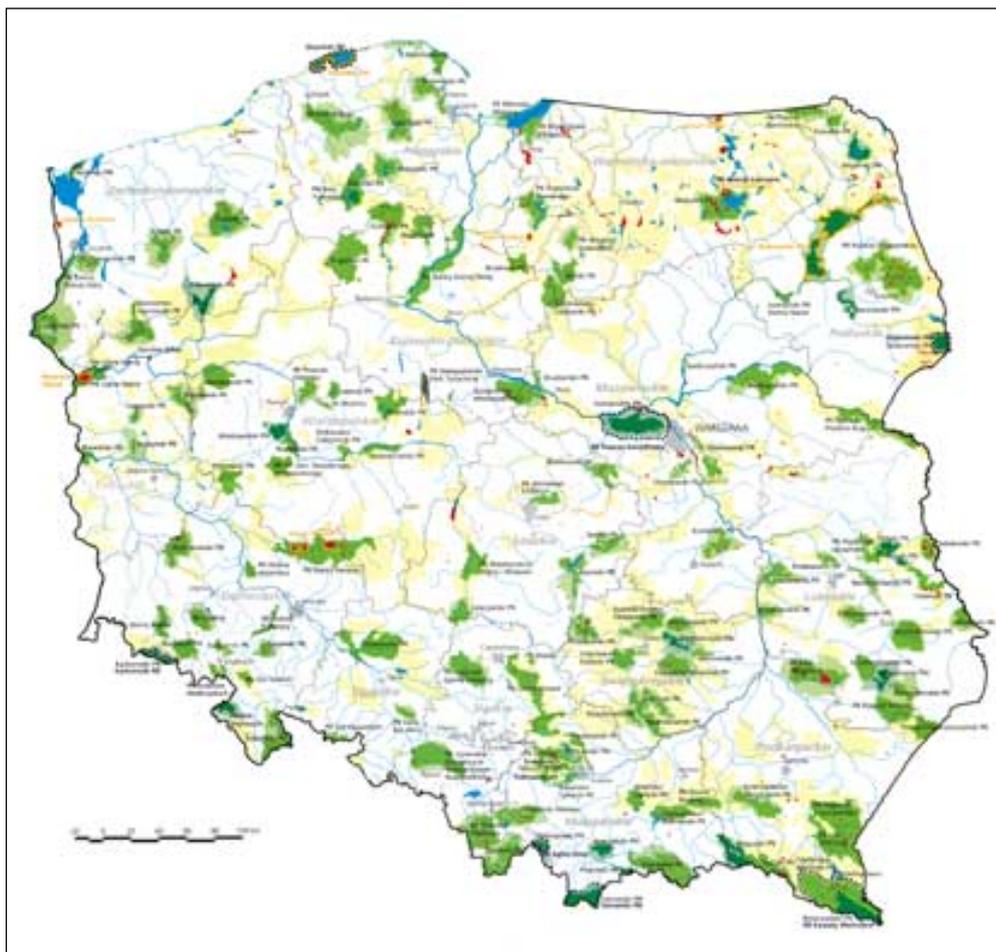
Observations carried out over many years have led to more than 33,000 species of animals being recorded in the Polish terrestrial and aquatic ecosystems. Among these are 38 relict species and 36 species that are endemic. The list of animals threatened to different extents accounts to more than 1300 species with 140 either on the verge of extinction or highly threatened. Extinction threatens at least 105 vertebrate species, among them 67 birds and 29 mammals. The latter group includes the brown bear, the wolf, the lynx, the wildcat and the otter. Some of the threatened species like the bee-eater, the alpine marmot and the Aesculapian snake is presently on the verge of extinction in Poland. As a consequence, Polish law strictly protects threatened species.

Protected areas  
in Poland

Institute of Environmental protection –  
UNEP-GRID-Warsaw,  
Web-site

**Forests:** Forest ecosystems cover 28 per cent of Poland. In terms of percentage relative forest cover, Poland takes the 16th place in Europe. However, the covers vary markedly from region to region, from 12 per cent in the north west part of Mazowieckie to nearly 50 per cent in the southern part of Lubuskie Voivodship. The Central Provinces in general have only about 11 per cent cover. This is a major difference from the situation in the late 18th century where forests still covered about 60 per cent of the country.

The two World Wars have caused particularly significant losses in the forest ecosystem but the post-war period has been characterised by a steady increase in cover. The monitoring findings actually point to a marked improvement in the state of health of trees in recent years, though the state of broad-leaved species is generally better than that of conifers. The situation in 1998 was the best in a decade though still unsatisfactory.



**Obszary chronione**  
**Protected areas**

- parki narodowe  
national parks
- parki krajobrazowe  
landscape parks
- obszary chronionego krajobrazu  
landscape protected areas
- rezerваты biosfery UNESCO-MAB  
UNESCO-MAB biosphere reserves

# **BIALOWIEZA FOREST – SUSTAINABLE MANAGEMENT OF NATURE AND FORESTRY**

**Poland has a lot of natural heritages. One of them is the Bialowieza Forest, which is one of the last areas of European lowland forest still maintaining many characteristics of the primeval forest. Through nature management, conservation, education and interpretation the aim of the project is to preserve this UNESCO World Heritage Site**

The Bialowieza Forest is situated in the Eastern part of Poland, the so-called Green Lungs of Poland, in the border zone to Belarus. It is part of a large forest complex covering both Polish and Belorussian territories, where the Polish part comprises approximately 25 per cent. Because the Bialowieza Forest contains many characteristics of the primeval forest it is designated as a World Heritage Site and 4,747 ha are set aside as strictly protected area within a National Park comprising 10,500 ha.

The remaining forest is designated as a Forest Promotional Complex and comprises active nature protection areas to productive forestry areas, small-scale farmland and villages. The population in the area is approximately 56,000, a rural population that has traditionally been dependent and still is dependent on the forest for their livelihood.

Administratively the area belongs to the Voivodship of Bialystok and contains nine local communities.

Four projects have been initiated in the region, which all are closely linked to the Bialowieza Forest.

### **The objective:**

The project "Bialowieza Forest - Protection, Public Awareness, Sustainable Management and Income Generation" aims at integrating the need for local development with the strong national and international demand for

an efficient protection of the natural values of the forest.

These issues have caused harsh discussions from time to time between various authorities, national and international nature protection organisations and the local people. In spite of this different opinions the project has worked towards a common vision for the area by improving the dialogue between the key stakeholders, encouraging local people to take an active interest in the continued and improved protection of the forest and developing income generating activities linked to the natural and cultural values. Because of the widespread involvement in the development of the forest there is a potential for a strong interaction between the local population, the voluntary and the regional and central authorities.

The objectives of the project were:

- A partly developed and agreed upon strategy for nature protection and local livelihood in the area
- Pilot activities to protect the nature and strengthen the socio-economic status of the local communities, implemented and sustained through improved capacity and decision-making processes among stakeholders.
- Improved opportunities for the general public in terms of education and tourism based on the natural and cultural values
- Methodology for zonification and planning of Bialowieza Forest securing nature and forest values.

**The procedure:**

The project focused on the nature management and conservation in the national parks, the development of the nature education and interpretation with a focus on the public actively experiencing and perceiving the nature, training in sustainable forest development based on the holistic/multiple use approach of promotional forest complexes, and local income generation through nature based tourism. Thus, the project covers the main target areas of the green sub-strategy reflected in the Country Programme.

The protection of natural values through active management involving local stakeholders is a developed concept in Denmark and of course useful experiences will be shared through the project.

Possibly, the most significant justification for the Danish assistance in this case is the present need in Poland for donor support to the implementation of the governmentally approved "Contract for Bialowieza Forest". This aims at establishing a common understanding among the often clashing interests, securing both the nature and the



local economy and including the enlargement of the National Park to the whole area. The implementation of this contract will secure the conservation of the unique biodiversity and significantly contribute to the Polish formulation of policies, methodologies and practices with respect to integrating the conservation with local development needs.

**The result:**

The Danish contribution comprises International and Polish consultancy services, workshops, study visits including equipping the museum and the two education centres in the area. The Polish contributions comprise manpower, logistics and facilities, supporting participation in workshops etc. The project contributes to a sustainable management and improved nature protection in one of Europe's most important and spectacular forest areas.

The following results have been accomplished:

- The public awareness is strengthened through improved nature and sustainable forest interpretation and improved information to visitors

- The potential for incorporating knowledge and ideas from the project into the curriculum of schools on different levels has been assessed and pilot projects directed at special segments are carried out.
- The potential for eco-tourism and recreation activities has been assessed, mapped and strengthened through pilot activities
- The local spatial plans, eco-food potential, local eco-tourism opportunities and other job opportunities have been studied, proposals for improvements made and pilot activities implemented
- Based on the richer Forest Exercise, the dialogue between the stakeholders in the area has been stimulated resulting in a common vision, a number of concrete proposals related to nature protection and an overall zoning based on nature values and forest production values have been carried out in the pilot areas
- The capacity for a joint understanding and decision-making on both local and national level about future nature protection and sustainable management zones is developed.



# BETTER ENVIRONMENT THROUGH CLEANER TECHNOLOGY

**In Poland, the industry - mining, manufacturing and utilities - plays a major role not only in the economic situation but also in the environment. Therefore, it makes an environmental difference which kind of technology the industrial sector is using. The Danish priority in the technological assistance is to change the investments from an end-of-pipe solution into an integrated system where production and the protection of the environment go hand in hand.**

Cleaner technology in the industrial production which is a well known concept within environmental protection, is the designation used in Danish projects when referring to what others may call waste minimisation, cleaner production or pollution prevention. In Denmark, the designation "cleaner technology" is seen in a broad context and is not limited to strictly technical issues.

One of the overall objectives with projects on implementation of cleaner technology has been to create a kind of synthesis between an increasing production and an increasing protection of the environment. This objective has been the approach in the 19 cleaner technology projects which DANCEE has supported in Poland. These projects involved industrial branches such as the textile industry, the fisheries, the electroplating industry and the foundry industry.

## **Cleaner technology as a priority**

The Polish industry stands for a considerable part of the country's GDP and has an internationally important mineral extraction sector including iron, steel and non-ferrous metals.

The concentration of the industrial activity is more or less limited to a few geographical areas:

- The heavy industry is concentrated in Southern Poland
- The Katowice region accounts for all of Poland's coal and zinc ore production, approximately 50 per cent of steel and approximately 35 per cent of coke.
- The Lodz region accounts for a majority of the Polish textile industry.

## CLEANER TECHNOLOGY IN THE TEXTILE INDUSTRY

**The textile industry in Poland is one of the industries where the potential for environmental improvements are obvious, both in terms of lesser consumption of chemicals, more environmentally friendly treating and re-use of selected waste water streams and in terms of rebuilding old equipment or exchanging it with new. In the project described a total of 41 cleaner technology options were identified**

One of the essential things with the project in the textile industry about cleaner technology was to establish a good and constructive co-operation with the Polish textile companies. The areas of pollution prevention and resource savings within the industry were identified from direct contact with 20 textile dye-houses including a detailed survey of 9 selected dye-houses. All the companies were open and constructive and made all the necessary information available for the project.

### **The objective:**

The specific objective was an identification of options for pollution prevention and resource savings in the textile industry. And one of the targets of the assistance to the implementation of cleaner technology was changing investments from end-of-pipe solutions into integrated systems, where the production and the protection of the environment could form a synthesis.

### **The procedure:**

The companies were selected to ensure that the various processes in the industry were well represented. This selection was carried out by the Textile Research Institute in Lodz on the basis of its very thorough and detailed insight in the textile industry.

The strategy was then to initiate direct contact with the companies with a detailed inspection of processes and recipes, and to identify possible areas of improvement in collaboration with the companies.

The identified priority areas were grouped into four categories:

1. Optimisation: Meaning improvements of routines and procedures within the existing equipment
2. Modernisation: Meaning rebuilding old equipment or exchanging it with new
3. Chemical substitution and savings: Meaning altering production recipes towards less consumption of chemicals and more environmental friendly chemicals
4. Re-use: Meaning possibilities for treating and re-using selected waste water streams and their content of energy and chemicals

### **The result:**

A total of 41 cleaner technology options were identified. There are good possibilities for each of the above categories, and possible case examples were found within the companies.

Three implementation projects were subsequently executed comprising some of the most beneficial options:

- Extended Counter Current Operation in Continuous Processes
- Implementation of Cleaner Technology in Batch Dyeing of Cotton
- Savings and substitutions of Hazardous Chemicals

The possibilities of cost-effective improvements were quite good, and the goal of an overall 50 per cent reduction in water, energy and chemical consumption seemed

*In a cellar under the Teofilow textile factory, a pilot project - and later a high pressure membrane filtering unit - were installed to clean coloured waste water from the dyeing process. The water could then be reused in the dyeing and washing process.*

achievable with the right cleaner technology strategy.  
Because of the financial situation the pay-back time for new technology should be very short, and the risk of production failures etc. when implementing new technology should be close to zero.

An important conclusion of the implementation programme is that any risk of economic losses caused by the implementation of new technology, for instance loss of production volume caused by potential misdyeing, should be covered by the existing project funding. In most cases it is no problem to give such a guaranty, as potential losses will be very small compared to the full project budget.



# RAISING THE ENVIRONMENTAL AWARENESS

**In the years of the Soviet regime Poland was in a state of environmental disaster where all attempts to improve the environment were left to the central administration. The turn of the 1980s and 1990s gave rise to democratisation of public life. Throughout the last 10 years there has been an increase in the number of citizens feeling personally responsible for the state of the local environment.**

It is evident that Poland has gone through fundamental political, social and economic changes during the last decades, and that these among other things have led to a higher environmental awareness among the nation's citizens. Formal education and the informal education conducted by NGOs and the media, together with the growing public awareness for the importance of environmental issues as well as individuals' experiences have all helped change people's perception of the state of environment and the consequences of their own actions.

At present, there are more than 600 organisations declaring environmental activities in their statutes. More than 60 organisations take part not only in solving local problems, but also in the work of Parliament's commissions and in actions to support activities of state authorities in the implementation of different tasks of environmental policy, often initiating them on their own.

## **The public support**

It is now an accepted official attitude, that the implementation of objectives related to the improvement of the condition of the environment in Poland requires approval by the public. Today, the wish for public involvement is the purpose of environmental education conducted in schools and universities as well as by independent non-governmental and church organisations and the mass media.

The independent environmental press and various publishers support the public activity and with the new legislation providing for general access to environmental information, the state of affairs has indeed improved substantially.

Also, from central level the importance of environmental education is stressed, as for example expressed by the official paper entitled "The National Education Strategy. Through Education to Sustainable Development" adopted by both the Minister of the Environment and the Minister of National Education.

An example of a project involving environmental awareness raising is "Bialowieza Forest – Sustainable Management of Nature and Forestry" described at page 68.



# BEING A PART OF EUROPE

**With the accession to the European Union, Poland wants to be an integrated part of Europe. As a member state Poland has to fulfil the EU legislation and the European environmental standards. In this process, technical and practical assistance from the EU and the old member states is needed. Therefore, the EU support programmes play an important role in the Polish application for EU membership.**

One of the Danish priorities in the environmental support to Poland is and has been to contribute to the country's preparations for the future membership of the EU. The support has, among other things, been technical assistance, institutional strengthening, education and environmental "awareness-raising" where the Polish accession to the EU runs all through the process.

A key criterion for obtaining DANCEE support is that the projects conform to the requirements of the environmental legislation of the partner country. Furthermore, as a minimum, the projects in EU candidate countries must be in compliance with the EU environmental legislation and other relevant standards e.g. international conventions. It is important to

bear in mind that the Polish society, in the days of the Iron Curtain, was used to a completely different political system than the one in the EU. It is therefore even more important to give assistance. The accession process in the candidate countries will be easier, the more the candidate country knows the EU system which they are going to be a part of.

### **The Polish preparations**

In Poland, "The National Programme for the Adoption of the Acquis" and "The Negotiation Position of Poland in the Chapter: Environment" are very important documents of programming since they set out the major directions of action related to Poland's effort to become a member of the EU.



# **ASSISTANCE TO POLAND ON THE IMPLEMENTATION OF THE EU DIRECTIVE ON INTEGRATED POLLUTION PREVENTION & CONTROL**

**In November 1998, Poland entered into formal negotiations with the European Union on accession. Like all other accession countries, Poland must, during the pre-accession process, approximate its legislation with EU requirements. With regard to the environment, this involves the transposition of EU environmental directives into national law and the building of administrative structures capable of implementing and enforcing these laws. To this effect, the DANCEE assisted the Polish Ministry of Environment.**

Following the European Commission's screening of Poland with regard to its progress in approximation in the environment sector in the spring of 1999, the Polish Ministry of Environment (the MoE), who is responsible for Poland's pre-accession preparations in the environment sector, is under considerable pressure to show concrete progress in transposing and implementing the EU environmental requirements. The MoE has requested Danish assistance in carrying out this task.

In particular, the Danish assistance has been requested in transposing and implementing Council Directive 96/61/EC on integrated pollution prevention and control (IPPC). The transposition and implementation of this directive needs special attention in Poland, not only because the directive itself is a difficult one to implement, but also because some 4000 industrial facilities in Poland will fall within the scope of the directive.

In addition, further to the administrative reform that took place in Poland in the beginning of 1999, concrete implementation of the directive now rests in the hands of the environmental offices of the restructured voivodships (regions) and of the newly created powiats (provinces or counties). These levels of government will need careful hands-on training in carrying out the integrated permitting based on best available techniques (BAT) required under the IPPC directive.

## **The objective:**

The overall objective of the project is to assist Poland to approximate with EU environmental requirements, thereby enabling it to qualify for EU membership.

In addition to the overall objective, three immediate objectives have been identified:

- To strengthen the institutional frame for integrated permitting both at central level and at regional/local level.
- To build the capacity for integrated permitting and identification of BAT at regional/local level through pilot projects in selected voivodships and powiats.
- To build expertise on BAT environmental experts and the industry-at-large through the setting up of a BAT centre.

## **The procedure:**

The project will assist the MoE in completing the transposition of the IPPC Directive and in building the framework of regulations and administrative systems necessary to implement the directive. It will also assist the MoE in developing the permitting forms, guidelines and other documentation necessary for integrated permitting and identification of BAT.

The project will also examine the crucial question of public sector costs for carrying out integrated permitting throughout Poland and will suggest financing options.

The project will build the capacity of environmental officials at voivodship and powiat level in carrying out integrated permitting based on BAT through pilot projects in selected voivodships and powiats. The officials, as well as the industrial facilities participating in the pilot projects, will be guided through each step in the permitting process, testing the draft permitting forms developed at central level.

The project will also assist the Polish authorities in developing a resource base of technical expertise and documentation on BAT. A BAT Centre will be set up during the project and will continue to operate after the completion of the project.

Finally, and bearing in mind the size of the task of implementing the IPPC Directive in Poland, a strong emphasis is put on exchange of information between the various stakeholders, on the co-ordination of the project components and on the dissemination of the project results. An intersectoral and interministerial working group will be set up during the project's inception phase, and will meet on a regular basis throughout the project. The working group is expected to continue to meet after the completion of the project.

#### **The result:**

The main outputs of the project are expected to be the following:

- Identification of any additional implementing legislation needed, assessment of the

concordance of existing legislation, action plan for full implementation

- Identification of administrative steps in integrated permitting procedure, preparation of draft regulations
- Development of permitting forms and guidelines for officials
- Development of brochure for the industry on integrated permitting
- Assessment of the institutional capacity of voivodships and powiats with regard to integrated permitting, identification of additional resources needed
- Development of the plan for financing of integrated permitting
- Outline for extending integrated permitting nationally
- The officials and the industry trained in integrated permitting through pilot projects
- BAT Centre established
- Development of national IPPC inventories and schedules for phasing in the integrated permitting and identification of BAT
- Dissemination of information to all stakeholders

An IPPC Newsletter and/or an IPPC website will be created and updated up to and after the project completion. Guidelines on integrated permitting based on BAT will be distributed to all permitting officials both at voivodship and powiat level. A brochure explaining the EU requirements on integrated permitting based on BAT and the procedures to follow will be distributed to industrial facilities that fit within the scope of the IPPC directive. Inventories of the industrial facilities and schedules for phasing in integrated permitting based on BAT will be developed for future reference of the Polish authorities and industry.

# PROJECT TO ASSIST POLAND IN THE IMPLEMENTATION OF THE ACCESS TO INFORMATION DIRECTIVE, THE EIA DIRECTIVE AND THE AARHUS CONVENTION

**Public access to information and public participation in the environmental decision-making process is one of the priorities in the Polish EU pre-accession process. To comply with this priority, DANCEE assists the Polish Ministry of Environment in increasing the capacity to inform the public about specific environmental topics, including the right to request environmental information. The project will result in guidelines for the public on access to information and public participation in environmental decision-making.**

During the Polish EU pre-accession process, Poland must approximate its legislation with EU environmental norms and build an administrative system capable of implementing and enforcing these laws. The Polish Ministry of Environment (MoE) is responsible for Poland's pre-accession preparations in the environment sector.

The MoE requested Danish assistance with respect to the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, the so-called "Aarhus Convention".

This project will assist the Polish Ministry of Environment ("MoE") in building the framework of regulations and administrative systems necessary to implement the EU Access to Information and EIA Directives and the Aarhus Convention.

In particular, this project will increase the MoE's capacity to inform the public about specific environmental topics including the right to request environmental information and result in guidelines for the public on access to information and public participation in environmental decisionmaking. It will provide support for the development of an operational system for the implementation of EU EIA requirements, including carrying out of screening and scoping under Poland's decentralised system of environmental administration.

In addition, a pilot project with a selected voivodship or powiat will be the context for development of practical methodologies for organising local public participation in the EIA process. The pilot project will lead to a handbook for the voivodships and powiats on EIA procedures and on public participation in EIA and local planning.

## **The objectives:**

The overall objective of the project proposed in this document, is to assist Poland to approximate with EU environmental requirements, thereby enabling it to qualify for EU membership.

But the objective is also:

- To build the capacity within the MoE to meet the EU and the Aarhus requirements with respect to access to information.
- To assist the ministry in developing an operational system for ensuring compliance with the EU EIA requirements in practice, including the capacity for screening and scoping
- To build the capacity among Polish municipalities, powiats and voivodships to organise public participation in the EIA process and in environmental permitting

## **The procedure:**

The project will increase the MoE's capacity to inform the public about specific environmental topics including the right to request environmen-

tal information. It will result, for the public, in guidelines on access to information and public participation in environmental decisionmaking.

Moreover, the project will provide support for the development of an operational system for the implementation of the EU EIA requirements including the carrying out of screening and scoping under Poland's decentralised system of environmental administration.

Finally, a pilot project with a selected voivodship or powiat will be the context for the development of practical methodologies for organising local public participation in the EIA process including the negotiations among stakeholders. The pilot project will lead to a handbook for the voivodships and powiats on EIA procedures and on public participation in EIA and local planning.

#### **The result:**

The main outputs of the project are expected to be the following:

- A policy on information to the public for the MoE
- Training of MoE officials on access to information & public education techniques
- System of charges for supplying information to the public, on request
- Procedures in place for official responses to requests for environmental information
- Guidelines for officials on how to meet access to information requirements
- Public relations campaign on the public right to environmental information and public participation
- Booklet for the public on how to request environmental information and participate in the environmental decisionmaking

- Strategy for the implementation of the EIA in the new administrative structure
- System of charges to cover costs of administering EIA
- Guidelines for regional/local officials on screening/scoping procedures
- Procedures developed for organising local public participation in environmental decisionmaking
- Local authorities trained on how to organise the EIA and the public participation

# DANCEE ASSISTANCE TO FLOOD PROTECTION

**In the summer of 1997, an extensive flooding catastrophe caused by extremely heavy rainfalls occurred in Poland and in the Czech Republic. Buildings, roads and towns were flooded. Thousands of people were evacuated from their homes or even lost them in the flood. Denmark decided to give emergency assistance to the two countries which included DKK 30 million (USD 3,44 million).**

The heavy rainfalls and the following floodings in the summer of 1997 left Poland in a chaotic situation. 62,000 people were evacuated from their homes and accommodated in public buildings and emergency shelters. The number of casualties reached 50. A land area of 230,000 hectares, 245 towns and villages were flooded. 1,387 km of roads, 22 sections of railway and about 50 schools and 161 bridges were damaged by the flooding. So indeed help was needed.

In July 1997, Denmark decided to provide emergency assistance to ensure the basic water supply resource. In October, the Danish Parliament's Finance Committee approved the document on the environmental assistance to the areas affected by flooding in Poland and the Czech Republic. The Committee provided a budget frame of DKK 30 million (USD 3,44 million) which was directed towards flood control, warning systems, emergency assistance for rehabilitation of water supply installations and waste water treatment plants.



## ASSISTANCE TO WATER SUPPLY

**After the floodings in the summer of 1997 Poland was left in a disastrous condition. In an attempt to rebuild the country all the help which could be achieved was needed. Denmark decided among other things to provide emergency assistance to ensure the basic water supply resources. It took only one week from the Polish application until 10,000 people were secured their daily essential drinking water supply**

Already on the 25th July 1997 a few days after the floodings the DANCEE released its first grant for rental, transport and operation of a mobile waterworks plant for the Polish city of Wroclaw. It was a result of an inquiry from the local water supply authorities.

**The objective:**

Originally, the plant was intended to provide clean drinking water for the hospitals in the town, but later it was decided also to ensure the supply of water to 10,000 households in a part of the town with no water supply.

**The procedure:**

The emergency aspect made a fast project execution essential. This required an efficient co-ordination between the involved parties and reliable equipment. Both requirements were fulfilled and contributed to the speedy initiation and execution of the project. Within less than 2 weeks the complete procedure was executed and the project was completed.

**The result:**

The project development demonstrates that time was usefully spent in order to commission the plant soonest possible. It took only one week from the application was made and until the supply to the consumers was established. Under the given circumstances, this must be considered the most expedient progress possible.

The plant was in operation for one week and produced totally 6,000 m<sup>3</sup> of the daily essential drinking water supply for 10,000 inhabitants.

## PREVENTION AND FORECASTING

**The floodings in 1997 left marks all over Poland. A lot had to be done to get things under control and to avoid a similar disastrous situation. There was a need for new flooding management technology including for instance mapping of the floods, flooding risk analysis and flood control studies. A lot of these problems were solved through a software programme, the MIKE 11, an advanced mathematical modelling system, which can be used for the simulation of water volumes and water levels in a river system**

Based on an inquiry by the Polish Ministry of Environment the DANCEE decided to grant support to the transfer of Danish technology and know-how concerning the prevention and control of flooding in Poland.

The need for the provision of new flood management technology in Poland was obvious. For operational purposes there is a

demand for timely and accurate forecasts of river flows and water levels within the flood prone areas. For planning and development purposes there is a need for a flood management system, which can be used for flood control studies, flood mapping; flooding risk analysis, selection of strategy for flood protection etc.



At the same time, the DANCEE decided to support a similar project in the Czech Republic.

**The objective:**

The objective of the project was to transfer up to date technology and know-how on flooding and river control to the authorities of both countries. It was also to ensure the co-ordination of the activities aiming at the prevention of flooding in the two countries as the river Oder runs through both countries.

**The procedure:**

The DANCEE has entered a contract for the supply of technology and know-how concerning floodings in the form of software-programmes, consultancy as well as training.

The software programme is an advanced mathematical modelling system called MIKE11, which can be used for the simulation of water volumes and water levels in a river system.

The computer model calculates flooding prevention data based on meteorological warnings of rainfall as well as information on the present condition in the river beds.

The project comprised the following main activities:

- Strengthening of the possibilities of modelling the flooding. This could be achieved through training courses in modelling of river systems, workshops as well as through on-the-job training in the local institutions.
- Implementation of a new prevention and control system for flooding for the upper part of the Vistula river (Poland).

- Development of a prevention and control system for flooding for the upper and middle part of the Oder river as well as the Morava river (Poland/Czech Republic).

**The result:**

The computer model identifies the long-term strategy for river control/monitoring as the model can be used to determine, in advance, which area should be designated as controlled flooding areas. On the long view this will prevent flooding or limit it to other areas where damage would otherwise be much more serious.

The project focused on strengthening of the Polish and Czech authorities technology and know-how concerning flooding by the use of MIKE 11. The training programmes workshops and on-the-job-training formed part of the project. The programme package, which contained an operational prevention system covering the upper part of the river system Vistula, the upper and middle part of the Oder river as well as the river Morava, was installed with the institutions of the local authorities.

## ENCLOSURE 1

# COUNTRY CHARACTERISTICS

Measured in terms of area and population Poland has a size, which is approximately seven times the size of Denmark. The GNP per capita is significantly higher in Denmark. However, a high GNP growth in Poland continues to reduce the existing difference in the economic capacity of the two countries.

The table below summarises the most important differences between Poland and Denmark in terms of size and economy.

Poland has applied for EU membership. The accession to the EU requires that Poland in the future allocates considerable financial resources to fulfil the EU legislation. Several estimates of the costs for this are given from various sources. The latest is in the range of 35 billion EUR and distributed as follows:

In the period from 1989 up to present Poland has been through a transformation to a modern democratic state. The reforms of the public administration in Poland, which were adopted by the Polish Parliament in 1998 and were into force by 1.1.1999 have been an essential step in this process.

The Republic of Poland is headed by the President and the Government, while the law-making bodies are the Polish Parliament, the

“Sejm” (the lower house), which has 460 members, and the “Senat” (the upper house), which has 100 members.

The administrative structure of the country consist of voivodships, districts and communes.

### Voivodships

Poland is divided into 16 voivodships. As a kind of province, a voivodship is governed by a Voivode, who performs tasks similar to those of the French Prefect. The Voivode is appointed by and accountable to the Prime Minister, as the Central Government representative in the voivodship. On the basis of powers established in laws, a Voivode has the right to impose local legal regulations, which are in force in the voivodship.

There also are elective local government bodies, at voivodship level called Sejmiki or Regional Assemblies. The executive body of the Assemblies is the Regional Voivodship Council, led by a Marshal. The Voivodship authorities (the Voivode and the Council) have numerous, legally established powers concerning the protection of the environment (they design environmental protection programmes, issue administrative decisions, etc.).

Characteristics of Poland and Denmark. Data from 1997 <sup>(2)+(3)</sup>

	Poland	Denmark
Area (km <sup>2</sup> )	312.7	43.1
Population (million)	38.7	5.3
GNP (million USD)	143,066	163,000
GNP per cap. (USD)	3,702	30,087
GNP increase (%)	6.8	3.0
Public environmental expenditures (% of GNP)	1.65	1.02

12 Danish Statistical Office - Web-site

13 Polish Statistical Office - Web-site

14 Compliance Costing for approximation of EU environmental legislation in the CEEC, EU DG-Enlargementa

### Districts (Counties)

Districts (Powiaty in Polish) were created on January 1st, 1999 and are self-governed Countylike structures. There are 373 in Poland (including 65 cities and towns with equivalent rights). District authorities comprise an elective Council and a District Board led by the Starosta. District authorities have considerable power concerning environmental protection. Amongst other things, they issue administrative decisions concerning the emission of air pollutants, water law licences, waste production licences, etc.

### Communes

Communes (Gminy in Polish) are the basic administrative units in the country. There are 2489 of them in Poland. They are self-governed entities with elective governments. Executive functions are performed by a Commune Board, led by a Chief Officer, Mayor or President. Commune authorities have

detailed powers concerning environmental protection. Amongst other things, they draw up and establish local physical development plans and basic documents concerning prevention of environmental threat. They also issue administrative decisions (e.g. concerning waste treatment, green space) and comment on practically all decisions of district and voivodeship authorities.

Within their basic powers districts and communes can impose local laws, including those concerning environmental protection. Local self-government in Poland has been functioning since 1990 in the gminas. The reforms in 1999 introduced the two other levels of self-government and reduced the central government's administrative presence at the sub-national level.

The reforms decentralised the competencies and finances to 308 democratically elected

#### Polish Voivodships

Voivodship	Area, km <sup>2</sup>	Population (1,000)
Dolnośląskie	19,948	2,985
Kujawsko-Pomorskie	17,970	2,098
Lubelskie	25,115	2,242
Lubuskie	13,984	1,020
Łódzkie	18,219	2,673
Mazowieckie	35,597	5,065
Opolskie	9,412	1,091
Podkarpackie	17,926	2,117
Podlaskie	20,180	1,224
Pomorskie	18,293	2,179
Śląskie	12,294	4,894
Świętokrzyskie	11,672	1,328
Warmińsko-Mazurskie	24,203	1,460
Wielkopolskie	29,826	3,346
Zachodniopomorskie	22,902	1,730

Costs for approximation of EU environmental legislation in Poland <sup>14)</sup>

Item	Investment, billion EUR
Air	13.9
Water Supply	4.4
Wastewater	13.7
Waste	3.3

Administrative division into 16 regions.



self-governments at the powiat level (county level) and to the authorities of 65 municipal gminas, which were granted powiat rights.

The reforms have reduced the number of existing voivodships (regional level) from 49 to 16.

For comparison Denmark is governed by the Danish Parliament, "Folketinget", which has 179 members. The 14 County Councils and

275 Municipalities are largely independent, each with their own administration and financial budget.

Denmark's membership of the European Economic Community was decided in 1972 by referendum.

# THE EU INSTRUMENTS – A LIFELINE TO POLISH ACCESSION

The EU operates primarily with three instruments, which shall ensure the introduction of the EU structural funds to the new member states. It is PHARE, ISPA and SAPARD. Until 2006 a total yearly amount of EUR 3.120 million (USD 2.663 million) has been reserved for these instruments.

## PHARE

PHARE 2000 has two main priorities: About 30 per cent goes to institutional strengthening in order to ensure the implementation of EU legislation and 70 per cent is earmarked to investment, with a view to strengthening the investments, which are directly related to the EU acquis.

In 2000 Poland received EUR 483 million (USD 412 million) from the PHARE programme, this was out of a total of EUR 1.380 million (USD 1.180 million).

## ISPA

The ISPA instrument is used for large infrastructural projects within the environment and transport sector. The total allocation is EUR 1,04 billion (USD 0,9 billion) annually out of which EUR 300- 400 million (USD 255 – 340

million) are allocated for Poland. Since half will be for infrastructure EUR 150-200 million (USD 130 –170 million) are left over for environmental projects every year.

## SAPARD

Finally there is the SAPARD programme which in particular is interesting for the Danish activities because it by focusing on rural areas mainly concentrates on agriculture and nature. The annual budget is EUR 520 million (USD 445 million) out of which Poland will be allocated EUR 170 million.

When it comes to the European Bank for Reconstruction and Development, EBRD and the World Bank none of them are acting as donors as such, but as financing institutions. This means that assistance is given for instance in preparation of project proposals or in connection with analyses of cost of EU-compliance.

## The future assistance

The bilateral assistance, which has been given for the last 10 years, seems to be changing in its present. The tendencies for assistance seems to be targeted more towards projects,

*PHARE projects in the years 1990-98 by sectors*

	<i>Number of projects</i>	<i>Amount million of EUR</i>	<i>Share in %</i>
<i>Protection of atmosphere</i>	36	28,6	15,1
<i>Water protection</i>	248	92,1	48,7
<i>Solid waste management</i>	31	20,2	10,7
<i>Nature conservation</i>	35	23,6	12,5
<i>Environmental monitoring</i>	19	13,7	7,2
<i>Other</i>	27	10,9	5,8
<i>Total</i>	396	189,2	100,0

*Input to revision of the Country Programme: "Environmental Programme Priority Areas 2000-2002 – Poland", DE-PA, 2000 (Internal report, not published)*

15 Input to revision of the Country Programme: "Environmental programme Priority Areas 2000-2002 – Poland", DEPA, 2000 (Internal report, not published)

Details of foreign financial participation by environmental sector<sup>(15)</sup>

Category	Number of Projects	Million USD	Percentage
Air protection	69	89.1	41.8
Water protection and water and wastewater management	184	81.6	38.3
Soil Protection	39	14.2	6.7
Nature conservation	14	2.8	1.3
Monitoring	16	7.4	3.5
Other	65	17.8	8.4
Total	387	213.1	100.0

in support of the EU accession process. It also seems like more donor countries try to develop loan programmes based on more or less commercial grounds and that the assistance will concentrate on various training activities and technical assistance projects. The types of

projects that have obtained financing in the past and may continue to get it in the future are those that relates to transboundary environmental problems, in particular to water and air pollution, as well as projects which objective is to protect the Baltic Sea.

### ENCLOSURE 3

# LIST OF PROJECTS CARRIED OUT 1991 - 2000

Ref. no.	Project Title	DANCEE Grant DKK	Responsible Danish Partner
124/000-0019	Cleaner Technology Project in a Slaughterhouse in Ostrow	917,150	Slagteriernes Forsknings institut
124/031-0001	Minimization of Environmental Impact of the Wielowies Klasztorna Reservoir	2,849,408	Ecological Modelling Centre
124/031-0002	Dedusting , Zeran Power Plant	5,584,000	Skandinavisk Miljø Service
124/031-0003	Detailed Design and Supervision of the Completion of the WWTP in Pultusk	3,774,509	Rambøll, Hannemann & Højlund A/S
124/031-0004	Introduction of Multiple-use Principles into Forest Management	5,000,000	Danagro Adviser A/S
124/031-0005	Wastewater Treatment Plant in Jelenia Góra	8,375,000	Carl Bro Miljø
124/031-0006	Polish/Danish Seminar on EU-approximation in the Water Sector	308,736	Vandkvalitetsinstituttet
124/031-0007	Kolobrzeg Water Supply, Bugocino Waterworks, Design and Construction	3,313,671	Krüger Consult A/S
124/031-0008	Wastewater Treatment Plant in Naklo nad Notecia	4,971,500	CowiConsult A/S
124/031-0009	Management of Groundwater for Strzelce Opolski Wastewater Treatment Plant	5,170,566	Krüger International Consult A/S
124/031-0010	Cleaner Technology in Polish Breweries	3,023,500	Danbrew Ltd. A/S
124/031-0011	WWTP in Konstanynow Lodzki - Feasibility Study	949,981	Monberg & Thorsen A/S
124/031-0015	Geothermal and Environmental Project, Podhale, Poland	7,165,000	Houe & Olsen A/S
124/031-0016	Extended Counter Current Operation in Continuous Processes	585,275	Instituttet for Produktudvikling
124/031-0018	The Polish Foundry "Zremb" as Cleaner Technology Company	1,001,381	Dansk Teknologisk Institut
124/031-0019	Putting a Waste Company into Operation in the South-Western Part of Warsaw	2,096,711	Rambøll, Hannemann & Højlund A/S
124/031-0020	Sanitary Landfill Project, Moszna	1,050,804	Rambøll A/S

<b>Ref. no.</b>	<b>Project Title</b>	<b>DANCEE Grant DKK</b>	<b>Responsible Danish Partner</b>
124/031-0021	Transfer of Danish Know-How within: Low Technology Wastewater Treatment to Poland	1,843,909	The Management Institute
124/031-0022	Polish-Danish Environmental Center in Starbienino	5,063,483	SFOFs Økologiske Klub
124/031-0023	Integrated Programme of Hazardous Waste Management in the South Region	3,288,490	Chemcontrol A/S
124/031-0024	Wigry National Park, Improved Environmental Monitoring Programme	2,706,788	Rambøll
124/031-0025	Maintenance and Rehabilitation of Water Streams etc. in the County of Bydgoszcz	4,041,000	P. Hauberg-Jensen
124/031-0026	Extension of the Existing WWTP in the town of Slupsk	5,081,000	NIRAS, Abrahamsen & Nielsen A/S
124/031-0027	Wastewater Treatment in Plock – Feasibility Study	1,902,000	NIRAS A/S Rådgivende ingeniører og planlæggere
124/031-0028	Solid Waste Mapping and Waste Planning Management in Kielce	1,583,000	Abrahamsen & Nielsen A/S
124/031-0029	Investigation of Diffuse Sources of Contamination	5,035,400	VKI
124/031-0030	Implementation of Environmental Management Systems based on ISO 14001 Standard and EMAS in Poland	1,688,000	Vandkvalitetsinstituttet
124/031-0032	Afforestation on Marginal Land	2,631,800	Hedeselskabet
124/031-0033	Narew River Basin WWTP Project, Phase II	5,181,000	Abrahamsen & Nielsen A/S
124/031-0034	Wastewater Treatment and Energy Supply – Salixbased Rootzone Plant and Energy Forest for Wood Chip Production	300,000	PMU
124/031-0035	Integrated Control of Lymantria monacha in Polish Forests	7,153,097	Novo Nordisk Plantebeskyttelse
124/031-0036	Reduction of Surface Water Pollution etc. in the Bydgoszcz-Torun area in Poland	6,004,300	P. Hauberg-Jensen

Ref. no.	Project Title	DANCEE Grant DKK	Responsible Danish Partner
124/031-0039	Clean/Low Waste Technologies in Meat Industry, Gdnyia, Poland, Phase II	645,469	Matcon A/S
124/031-0040	Supply for ICA/STAR System to Poznan Central Wastewater Treatment Plant	12,064,000	Krüger A/S
124/031-0041	Desulphurization Unit, Polaniec	15,000,000	FLS-Miljø
124/031-0043	Lomza Wastewater Treatment Plant	5,500,000	Abrahamsen & Nielsen
124/031-0044	EU-Approximation – IPPC – Poland	1,611,956	Kommunernes Landsforening
124/031-0045	Kujawy WWTP, Cracow	7,028,000	Krüger Consult A/S
124/031-0046	Wastewater Treatment Plant in Zielona Gora	1,611,956	Carl Bro as
124/031-0047	Hot Spot Remediation in the Wistula Lagoon, Polish and Kaliningrad Part	2,378,420	Vandkvalitetsinstituttet
123/031-0048	Completion of a WWTP In Kruszwica in Poland	1,601,400	Birch & Krogboe A/S
124/031-0049	Reduction of the Pollution from the Polish Fishing Industry in the Baltic Sea Area	2,957,000	Matcon A/S
124/031-0050	Establishment of a Controlled Landfill in Poznan, Demonstration Model	1,639,044	Rambøll, Hannemann & Højlund A/S
124/031-0051	Environmental Project for a Sustainable Development of Wojewodski w Bydgoszczy	1,185,057	Carl Bro Miljø A/S
124/031-0052	New Heat Station for the County Hospital in Gdansk – Demonstration Plant	2,850,000	Leif Hansen Rådg. Ingeniører A/S
124/031-0053	Reduction of the Environmental Impact from coal Heated Block Heat Stations in Gdansk	2,134,000	Leif Hansen, Rådg. Ingeniører A/S
124/031-0054	Establishment of a Biogas Plant at the Central Laboratory of the Feed Industry, Snopkow	2,30287	Hedeselskabet
124/031-0055	Waste Solutions for the Town of Lodz	3,250,000	BioPlan ApS

<b>Ref. no.</b>	<b>Project Title</b>	<b>DANCEE Grant DKK</b>	<b>Responsible Danish Partner</b>
124/031-0056	Transfer of Technology for the Reduction of the Water Consumption within the Textile Industry in Poland	2,587,500	Institut for Produktudvikling
124/031-0057	Extension of the Sludge Treatment on the WWTP in Sitkowka in Kielce	6,000,000	Nellemann Nielsen & Rauschenberger
124/031-0058	Wood Chip Project. Transfer of Know-How from the Danish to the Polish State Forestry	2,353,945	Skov- og Naturstyrelsen
124/031-0059	Detailed Design and Implementation Plan for the WWTP in the Municipality of Ozorkow	1,392,399	BioPlan A/S
124/031-0060	Cleaner Technology Transfer Programme for the Polish Galvano Industry	3,612,322	Institut for Produktudvikling
124/031-0061	Environmental Rehabilitation Project in the Jelenia Gora Region in the South West of Poland, Phase 2	2,011,233	Kommunernes Landsforening
124/031-0062	Modernisation of the Polish Fish Industry	2,437,000	Matcon A/S
124/031-0063	Supply of Drinking Water in Kielce. Assessments of Prevention Measures etc.	800,000	Abrahamsen & Nielsen A/S
124/031-0064	Design of Geothermal System in the town of Pyrzyce	3,000,000	Houe & Olsen A/S
124/031-0065	Assistance to the Polish Ministry of the Environment in connection with the Environmental Investment Plan for the Baltic Sea	389,027	Vandkvalitetsinstituttet, ATV
124/031-0066	Renovation of Boilers at the Cukrownia Ropczyce's in Poland	4,000,000	Simatek A/S
124/031-0067	Establishment of a WWTP in Szczecin Port	8,265,000	A/S Samfundsteknik (overtaget af Carl Bro A/S)
124/031-0068	Dzialdowo WWTP – Detailed Design and Construction	3,719,518	Krüger Consult A/S
124/031-0069	Coal heated Heat Unit "Millenum", Novy Sacz, Flue Gas Cleaning Unit etc.	797,111	Miljø Teknik International A/S
124/031-0070	Complete Mobile Incineration Unit	2,600,000	Chemcontrol A/S

Ref. no.	Project Title	DANCEE Grant DKK	Responsible Danish Partner
124/031-0071	Mapping and Management of Hospital Waste in Kielce	500,000	Abrahamsen & Nielsen A/S
124/031-0072	Kolobrzeg WWTP – Design and Construction	5,226,000	I. Krüger Consult A/S
124/031-0073	Establishment of Training and Information Centre for the Water Environment in Gdansk	2,460,000	Ferskvandscentret
124/031-0073T	Training and information – additional	80,000	Ferskvandscentret
124/031-0074	Wastewater Treatment in Lublin	8,761,000	COWI A/S
124/031-0075	Desulphurisation Plant, Dolna Odra	10,550,000	Skandinavisk Miljø Service A/S
124/031-0076	Removal of Heavy Metals, Dolna Odra	9,723,000	Skandinavisk Miljøservice
124/031-0076T	Removal of Heavy Metals, Dolna Odra	1,227,000	Skandinavisk Miljøservice
124/031-0077	Geothermal and Environmental Project, Podhale	6,610,950	Houe & Olsen
124/031-0078	WWTP in Gryfice, Trzebiatow and Nowogard in the Riga Region	8,333,042	Carl Bro A/S - Samfundsteknik
124/031-0079	Bagitz Airbase Environmental Site Restoration	499,205	Nellemann, Nielsen & Rauschenberger A/S
124/031-0080	Powder Varnishing Plant in Cracow	4,964,000	Dansk Teknologisk Institut
124/031-0081	Assistance in connection with the 1st Phase of a Geothermal System in Podhale	1,212,824	Houe & Olsen
124/031-0082	Supply and Running in of an AMINODAN Protein Recuperation System at KORAB in Ustka	1,692,817	AMINODAN Export ApS
124/031-0083	WWTP in Radom	750,000	Rambøll
124/031-0086	Cotton Dyehouse Teofilów, mplementation of Cleaner Technology and Water	3,996,000	Rinse ApS
124/031-0087	MetalPlast – The Clean Foundry	5,499,882	Georg Fischer Disa A/S
124/031-0088	Savings and Replacement of Environmentally Hazardous Chemicals within the Dying Industry in Poland	2,113,715	DTI Beklædning og Textil

<b>Ref. no.</b>	<b>Project Title</b>	<b>DANCEE Grant DKK</b>	<b>Responsible Danish Partner</b>
124/031-0090	Narew River Basin – Phase II – Environmental Monitoring and Management System	2,136,523	VKI
124/031-0092	Feasibility Study, Water and Wind Power, Podhale	872,700	BELT Electric
124/031-0095	Water Resource Planning and Conservation in the Rega Union	2,400,000	Danish Water Systems ApS
124/031-0101	Assessment of Two Projects in Poland carried out by the Company Poul Hauberg-Jensen	249,100	VKI
124/031-0102	Development of a Code of Good Agricultural Practice in Poland	955,894	Landbrugets Rådgivningstjeneste
124/031-0103	Amphibian Conservation in Poland	1,250,000	Amphi Consult, International Science Park
124/031-0107	EU Integration Seminar in Poland	183,796	Det Danske Europainstitut
124/031-0109	Emergency Water Supply in Wroclaw	570,123	Krüger International Consult A/S
124/031-0110	Assessment of Emergency Assistance in the Environmental Area – Mission Poland	259,825	Krüger International Consult A/S
124/031-0111	Completion of Protein Recovery System	1,424,129	Strøm & Pedersen A/S
124/031-0116	Production and use of Wood Residues, Phase 1, Gdansk	1,558,447	Rambøll
124/031-0117	Injection Problems at Pырzyce Geothermal Plant	739,000	Dansk Olie & Naturgas
124/031-0118	Establishing a Demonstration Wetland Reserve at Karsiborska Kepa	312,465	DOF-Birdlife Denmark
124/031-0119	Poland, Utilisation of Colliery Gas from Coal Mines	4,665,000	Viggo Folmer
124/031-0120	Cleaner Technology Transfer Programme for the Electro Mechanical Industry	4,393,429	Institut for Produktudvikling
124/031-0122	Upgrading of Legnica Regional Wastewater Treatment Plant	4,010,541	COWI
124/031-0124	Aeration System for Janowek WWTP, Wroclaw	553,225	Krüger International Consult A/S
124/031-0125	Sitkowka WWTP, Phase 3	4,010,000	NIRAS

Ref. no.	Project Title	DANCEE Grant DKK	Responsible Danish Partner
124/031-0131	Water Resources Management in Strzelce Opolskie	2,600,000	Krüger International Consult A/S
124/031-0134	Flood Management in Poland	6,323,190	Dansk Hydraulisk Institut
124/031-0137	Completion of Two Projects concerning Surface Water in Poland	1,022,000	Sønderjyllands Amt
124/031-0138	Project Formulation. "Protection, Public Awareness, Sustainable Management and Income Generation in the Bielowieza Forest, Poland	294,106	ANKERHUS Konsulenter
124/031-0142	Flooding Emergency Assistance 1	4,188,247	Krüger International Consult A/S
124/031-0143	Flooding Emergency Assistance 2	6,799,577	COWI Consulting Engineers and Planners
124/031-0144	Rehabilitation and Up-grading of the Kedzierzyn-Kozle WWTP	6,910,440	Rambøll
124/031-0148	Management of Ship Waste	3,099,197	Carl Bro A/S
124/031-0149	On our Way to the European Union	2,866,075	Danmarks Forvaltningshøjskole
124/031-0150	Huta Sendzimira, Air Pollution	6,00,000	Skandinavisk Miljø Service A/S
124/031-0151	Local Project Coordinator (LPC)	592,900	National Fund for Environmental Protection and Water Management
124/031-0152	Aarhus Convention Project – Poland	4,302,978	DARUDEC
124/031-0153	Protection, Public Awareness, Sustainable Management and Income Generation	81,574	NORDECO
124/031-0154	Sludge Treatment Plant on Opole WWTP	5,370,000	BioBalance A/S
124/031-0158	Restoration Project for the Narewka River at Bialowieza	726,494	Kampsax Consulting A/S
124/031-0161	Development of Centre for Nature and Forestry Education in Rogow	3,000,000	Danish Forestry College, Skovskolen
124/031-0165	Quality Assurance of Project ref. no. 124/031-0137	123,000	Hedeselskabet
124/031-0168	Morag WWTP	4,313,000	BioBalance A/S

<b>Ref. no.</b>	<b>Project Title</b>	<b>DANCEE Grant DKK</b>	<b>Responsible Danish Partner</b>
124/031-0172	Business and Environment Analysis of MKØ/IFØ and Nefco Projects	500,000	Investeringsfonden for Central og Østeuropa
124/031-0173	Upgrading of the Sludge Treatment in Radom	3,430,750	Rambøll
124/031-0177	Country Publication Poland, Cost-Effectiveness Indicators and a Toolkit for Water Tariff Systems	358,549	Krüger A/S
124/031-0178	Project Identification Mission, Municipality of Raciborz	162,588	Rambøll
124/031-0179	Short-term Legal Review, Polish EPA	65,400	Plesner & Grønborg, Advokatfirma
124/031-0180	Tender for Supply and Installation of District Heating Pipes in Zakopane	1,292,814	Houe & Olsen
124/031-0181	Modernising and Rebuilding of Opole WWTP	994,344	NIRAS
124/031-0182	Warsaw Municipal Water and Sewerage Service Improvement Programme	1,625,000	COWI A/S
1247031-0183	Bydgoszcz Water Supply and Sewerage Service Development	1,625,000	Rambøll
124/031-0184	Energy Audit, Industry, BELMA Bydgoszcz	495,909	COWI
124/031-0185	Registration of Polluted Sites in the Malopolska Region	5,155,900	Fyns Amt, Natur- og Vandmiljøafdelingen
124/031-0186	Poland, implementation of IPPC	18,589,753	COWI A/S
124/031-0188	Bialowieza Forest/Park Project	9,100,000	COWI
124/031-0189	Modernisation of Miechów WWTP	5,890,000	Krüger International Consult A/S
124/031-0190	Waste Management and Recycling in the Podale Region	4,997,000	Aaen Rådgivende Ingeniører ApS
124/031-0194	Protection of Biala Glucholaska and Nysa Rivers	7,292,947	COWI A/S
124/031-0195	Improvement of the Ilawa WWTP	9,349,693	COWI
124/031-0197	Polish Railways, Wroclaw	6,619,135	COWI
124/031-0201	Reduction of Air Emissions from the Czestochowa Steelworks	140,000	dk-Teknik Energi og Miljø
124-031-0202	Cleaner Technology – Fishing Industry	4,111,771	NIRAS
124/031-0203	Environmental System – Phase 3	2,765,000	VKI

Ref. no.	Project Title	DANCEE Grant DKK	Responsible Danish Partner
124/031-0204	Providing the Waste Dump in Domaszkowice with a Compacter	2,600,000	Dansk Genbrug Import/Export ApS
124/031-0206	Supply and Installation of the Hospital Waste Incinerator, Sandomierz	4,717,884	Envikraft A/S
124/031-0208	Data model for Polish National Parks	1,915,182	Ringkøbing Amt
124/031-0209	Parceta River Wetland Management	5,330,490	Water Consult
124/031-0210	Fact-Finding Mission to the Slaskie Region	386,889	HAP Consultants
124/031-0211	Sewerage Construction and Waterworks Raciborz	9,813,647	Rambøll, Miljø & Energi
124/031-0212	Fauna Passages under Selected Roads in Poland	1,766,722	Amphi consult
124/031-0213	Technical Assistance and Purchase of Equipment for Podale Geothermal Project	6,032,000	Houe & Olsen
124/031-0214	Bydgoszcz Feasibility Study, Phase II	1,957,159	Rambøll
124/031-0215	Zarzyn WWTP – Mission	422,996	Nordic Consulting Group A/S
124/031-0218	Protection of the Vistula River and its River Basin	3,350,000	Advanced Environmental Control ApS
124/031-0225	Ex-post Examination of WWTP in Poland	1,342,438	Danish Water Services
124/031-0227	Fact-finding Mission (Waste) to the Malopolskie Region	522,078	Rambøll
124/031-0230	Municipal Waste Treatment in Municipalities in the District of Bedzin	1,162,232	Rambøll
124/031-0231	Extension of Gryfino Waste Water Treatment Plant	6,047,539	COWI
124/031-0233	Local Project Coordinator (LPC) – Start-up	194,500	Agnieszka Rendemann
124/031-0235	IPPC, Poland, Desk Appraisal	40,000	Soil and Water Ltd.
124/031-0236	Mid Term Review, The Bialowieza Project	279,757	Rambøll
124/031-0237	Local Project Coordinator	970,000	National Fund for Environmental Protection and Water Management

<b>Ref. no.</b>	<b>Project Title</b>	<b>DANCEE Grant DKK</b>	<b>Responsible Danish Partner</b>
127-0007	Pre-Feasibility Study for a Central WWTP "Wschod" in Gdansk	960,000	Miljø Samarbejdet i Århus
127-0008	Wastewater Treatment Plan for the Rega River	7,340,000	A/S Samfundsteknik
127-0009	Environmental Rehabilitation Project for the Jelenia Gora Region in South-West Poland	1,474,772	Kommunernes Landsforening
127-0013	Pilot Project for the Improvement of the Urban Environment in Pradnik Czerwony, Cracow	889,958	Danvisor
127-0018	WWTP in the Municipality of Gryfino	2,655,078	COWIconsult A/S
127-0020	Investigation of Water Consumption and Water Saving Measures in Urban Areas in Poland	1,200,000	COWIconsult A/S
127-0024	Filtration of Solid Fuel Boilers	2,650,000	SIMATEK A/S
127-0030	Recipient Quality Plan etc. for the Upland of the Gasawka River	1,160,000	Det Danske Hedeselskab
127-0031	Pre-feasibility Study of a Genuine Environment Master Plan for the Port of Gdansk	430,000	Birch og Krogboe A/S
127-0033	Isotope technique in EIAs in Cooperation with the Institute of Physics, Cracow	837,100	Force Institutttet
127-0039	Waste Action Programme in Szczecin	1,435,000	Birch & Krogboe A/S
127-0042	Cleaner Technology in the Polish Food Industry	229,285	DIEU
127-0045	Transfer of Wind Power Technology and Know-How from Denmark to Poland	820,752	Danish Power Consult A-S
127-0046	Proposal for Wastewater Discharge and Treatment in the Town of Zielona Gora in Poland	1,760,000	A/S Samfundsteknik
127-0047	Sewers for the WWTPs for the Wolin Island	3,800,000	Krüger Engineering A/S
127-0049	Utilisation of Waste for the Production of Energy in the Town of Wyszkw	608,000	Bruun & Sørensen Energiteknik A/S

Ref. no.	Project Title	DANCEE Grant DKK	Responsible Danish Partner
127-0053	Energy Plan for the Town of Swinoujscie in the County of Stettin	371,000	Crone & Koch International A/S
127-0072	Transfer of Experience, Planning of Wastewater Systems, WWTP of Pultusk	1,364,531	Rambøll & Hannemann A/S
127-0073	Cleaner Technology for the Industry in Cracow	2,450,000	Dansk Teknologisk Institut
127-0082	Dzialdowo WWTP – Outline Design	694,328	I. Krüger Consult A/S
127-0091	Masterplan for the Reduction of Air Pollution from Polish Power Plants, Phase II	1,198,000	Danish Power Consult A-S
127-0104	Fluegas Cleaning Process for the Power Plant of Belchatow for the Reduction of SO <sub>2</sub> Emission	290,641	ABB Fläkt Danmark A/S
127-0106	Course, Institutional and Legal/ Economic Aspects of Environmental Management at Municipal Level	923,156	Vandkvalitetsinstituttet
127-0116	Application of Water Quality Models, Rega Pilot Study	1,327,000	Vandkvalitetsinstituttet
127-0123	Establishment of Environmental Supervision of Polluting Industries in Bytom	508,000	Birch & Krogboe
127-0124	Action Plan for Waste Management Improvements in the Municipality of Bytom	1,214,952	Birch & Krogboe A/S
127-0125	Design of Wastewater Treatment – Port of Stettin (Stettin Port Authorities)	2,030,000	A/S Samfundsteknik
127-0126	Pre-Feasibility Study for the Establishment of a Fund for Energy Saving Measures in Poland	675,000	COWIconsult A/S
127-0129	Establishment of an Organisation for the Protection of Birds in Poland	358,001	Dansk Ornitologisk Forening
127-0146	System for Management of Hospital Waste in Katowice	625,044	Danwaste Project A/S
127-0152	Reduction of Air Pollution and Energy Planning in Upper Silesia	2,857,850	Bruun & Sørensen Energiteknik A/S
127-0153	Plan for the Protection of Nature and the Environmental in the Municipality of Lubrza	1,845,360	Hedeselskabet

<b>Ref. no.</b>	<b>Project Title</b>	<b>DANCEE Grant DKK</b>	<b>Responsible Danish Partner</b>
127-0156	Pre-study for Geothermal Energy in the Counties of Pырzyce and Szczecin	252,400	Houe & Olsen A/S
127-0161	Nowogord Town Water Saving Project	599,772	Danish Water Systems
127-0170	Sustainable Development of the Municipal Infrastructure in the Town/Municipality of Buk in the County of Poznan	1,150,000	William Hansen & Co. A/S
127-0218	State Environment Monitoring Programme, Surface Water Monitoring (Phase 1B)	2,586,500	Vandkvalitetsinstituttet
127-0226	Demonstration Project Clean/Low Waste Technologies in Poland, Phase 1	1,349,985	Matcon A/S
127-0227	Wastewater Master Plan for Żywiec Brewery	116,868	Danbrew Ltd. A/S
127-0242	Feasibility Study for Main Sewer/WWTP for the Town of Sieradz	900,000	Comad International A/S
127-0243	Investigation of the Environmental Conditions in Putsk Bay – Rehabilitation and Protection Plan	139,823	WWF, Verdensnaturfonden
127-0250	Kolobrzeg Water and Wastewater System	709,000	I. Krüger Consult A/S
127-0251	Study and Renovation of WWTP in Sitkowka in Kielce	3,831,000	Abrahamsen & Nielsen A/S
127-0272	Use of Modern Heating Technologies for Solid Biofuel Boilers in Poland	711,00	Skeltek
127-0278	Management of Coal Fly Ash in the Gdansk Area	2,085,300	Birch & Krogboe A/S
127-0282	Plant for Filtration/Incineration of Wood at the Furniture Factory Glucholaska Fabryka	800,000	Dania Engineering/AGROvent A/S
127-0287	Improvement of the Removal of Industrial Waste in Lodz	799,835	Econet A/S
127-0289	Pre-study and Test Pumping for the Utilisation of Landfill Gas in Poland	944,000	Hedeselskabet

Ref. no.	Project Title	DANCEE Grant DKK	Responsible Danish Partner
127-0304	Feasibility Study for the Modernisation of WWTP in Lomza	2,001,950	Abrahamsen & Nielsen A/S
127-0308	Zychlin Incineration Plant	3,229,219	Krüger A/S
127-0310	Environmental Monitoring and Management System for the River Narew Basin – 1	2,943,000	Vandkvalitetsinstituttet
127-0312	On-line System for Analysis of Fly Ash during the Operation of Power Plant BEDZIN	1,401,000	M&W Asketeknik ApS
127-0319	Action Plan for the Future WWT in the Upland of the Narew River	2,703,500	Abrahamsen & Nielsen A/S
127-0321	2 Electro Filters for Coal Heated Power Plant "Dolna Odra Power Plant Complex"	5,500,000	Skandinavisk Miljø Service A/S
127-0325	Development of Cost Effective Programme and Programme for the Reduction of the Pollution within the Electricity Sector	1,579,000	Danish Power Consult A/S
127-0341	Demonstration Project – Wastewater and Waste from Canoe Meat Factory in Lodz	471,092	Burmeister & Wain Scandinavian Contractor A/S
127-0358	Investigation of the Geothermal Potential in Poland based on a World Bank Proposal	470,200	Houe & Olsen
127-0419	Flue Gas Cleaning Project for Kielce	378,246	Purex A/S
127-0423	Video Production concerning a Project in Bydgoszcz	50,000	Freelance Film
127-0426	Design and Establishment of a Sewer System and WWTP in Krolikowo and Gasawa	850,499	Hedeselskabet
127-0499	Michalowo – Purification Plant	1,040,000	AEC Advanced Environmental Control ApS
127-0500	Measuring Equipment for Flue Gasses, Ash Emissions and Flue Gas Volumes, the Dolna Odra Power Plant	3,370,000	Skandinavisk Miljø Service A/S
127-0502	Dolna Odra, Block 5 and 6	7,068,525	Burmeister & Wain Energi A/S

<b>Ref. no.</b>	<b>Project Title</b>	<b>DANCEE Grant DKK</b>	<b>Responsible Danish Partner</b>
127-0549	Concluding Seminar on Water Saving Measures for Urban Areas in Poland	156,000	Cowi Consult A/S
127-0553	Composting of Organic Waste in Lodz	610,000	BK-Consult
127-0574	Optimisation of WWTPs along the Narew River	1,709,568	Abrahamsen & Nielsen A/S
127-0612	Environment-friendly Measures on Bydgoskie Fabryki Mebli, Bydgoszcz	458,000	Agrovent A/S
127-0656	Conference for NGO's in Warsaw concerning Climatic Problems	250,000	Climate Network Europe
127-0682	Establishment of Splinter Heating Plant in Brovsk	-	Hedeselskabet
127-0697	Pre-Investigation Report, Desulphurisation Units – Dolna Odra Power Plant	1,452,150	Skandinavisk Miljø Service
129-0042	Evaluation of Waste Projects in Kielce	145,623	Rambøll A/S
129-0043	Assistance to the Update of "HELCOM-Joint Comprehensive Programme"	104,745	Rambøll A/S
129-0071	Rehabilitation and Up-grading of the Kedzierzyn-Kolze WWTP	149,604	Rambøll
129-0072	Mission to Flooded Areas in Poland	172,426	Krüger International Consult A/S
129-0118	Protection, Public Awareness, Sustainable Management in the Bialowieza Forest	158,800	Water & Power Planners A/S
129-0141	Aarhus Convention, Poland, Tender Consultant	198,124	Modus Consult
129-0189	IPPC, Poland, Tender Consultant	192,609	Modus Consult

## ENCLOSURE 4

# ENVIRONMENTAL EFFECTS FROM DANCEE PROJECTS IN POLAND

PART III

Priority Areas	Environmental Effect	Unit	1991 – 2000		
			Actual Effect	Estimated Effect	Total Effect
Ordinary waste	Reduction of waste volumes	t/y	32	30.000	30.032
	Establishment of deposits	T	-	230.000	230.000
	Treated soil	m <sup>3</sup>	-	3.000	3.000
Hazardous waste	Incineration capacity	t/y	-	1.500	1.500
	Energy production Other	t/y	-	64	64
	Carbon dioxide CO <sub>2</sub>	t/y	1.930	12.473	14.403
	Nitrogen oxide Nox	t/y	5.305	43	5.348
	Sulphur dioxide SO <sub>2</sub>	t/y	110.044	179	110.223
	Dust/particulates	t/y	85.430	27	85.547
	Other	t/y	4	-	4
Industry	Carbon dioxide CO <sub>2</sub>	t/y	63	-	63
	Nitrogen oxide Nox	t/y	20	-	20
	Sulphur oxide SO <sub>2</sub>	t/y	17	-	17
	Dust /particulates	t/y	101	-	101
	Solvents	t/y	7	-	7
	Other	t/y	4	-	4
Industrial wastewater	Reduction	m <sup>3</sup> /y	154.000	28.000	182.000
	Reduction of heavy metals	t/y	14	-	14
	Reduction of oxygen demand (COD)	t/y	453	-	453
	Reduction of oxygen demand (BOD)	t/y	-	60	60
	Wastewater Reduction of phosphorous (P)	t/y	295	1.473	1.768
	Reduction of nitrogen (N)	t/y	911	6.557	7.468
	Reduction of oxygen demand (BOD)	t/y	12.391	24.173	36.564
	Sludge treatment capacity, dry solids	t/y	20.000	54.110	74.110
	Other	t/y	65	-	65
	Environmental friendly energy	Carbon dioxide CO <sub>2</sub>	t/y	282.085	117.870
Nitrogen oxide NO <sub>x</sub>		t/y	1.067	348	1.415
Sulphur dioxide SO <sub>2</sub>		t/y	2.391	1.224	36.15
Dust/particulates		t/y	865	400	1.265
Other		t/y	65	-	65
Nature protection	Rehabilitation of water course	Km	-	9.000	9.000
	Nature protection	Ha	725.000	-	725.000
Drinking water/ Groundwater	Water saving	m <sup>3</sup> /y	800	2.400.000	2.400.800
	Volume of water	m <sup>3</sup> /y	9.125.000	-	9.125.000
Prevention of oil pollution	Reduction of oil pollution	t/y	-	4.000	4.000

Estimated Effect: As estimated in project application (on-going projects) Actual Effect: As measured/calculated after project implementation (completed projects)

## ENCLOSURE 5

# LIST OF ABBREVIATIONS

<b>BOD<sub>5</sub></b>	Biological Oxygen Demand (over 5 days)	<b>IØ</b>	Investment Fund for Central and Eastern Europe
<b>BOS</b>	Polish Environmental Protection Bank	<b>LPC</b>	Local Project Co-ordinator
<b>CEEC</b>	Central and Eastern European Countries	<b>MARPOL</b>	International Convention for the Prevention of Pollution from Ships
<b>DANCEE</b>	Danish Co-operation for Environment in Eastern Europe	<b>MKØ</b>	Miljøkreditordningen for Østeuropa – Environmental Soft Loan Programme for Eastern Europe
<b>DEPA</b>	Danish Environmental Protection Agency	<b>MoE</b>	Polish Ministry of Environment
<b>DESF</b>	Danish Environmental Support Fund	<b>MoEE</b>	Danish Ministry of Environment and Energy
<b>DKK</b>	Danish Kroner (for exchange rates see next page)	<b>NEFCO</b>	Nordic Environment Finance Corporation
<b>EEA</b>	European Environmental Agency	<b>NEP</b>	National Environmental Policy
<b>EBRD</b>	European Bank for Reconstruction and Development	<b>NGO</b>	Non-governmental Organisation
<b>EDRF</b>	Miljø- og Katastrofefonden - Environment and Disaster Relief Facility	<b>NIS</b>	Newly Independent States
<b>EIA</b>	Environmental Impact Assessment	<b>NO<sub>x</sub></b>	Nitrogen Oxides
<b>EKF</b>	Eksportkreditfonden – Danish State Export Credit Agency	<b>NPAA</b>	National Programme for the Adoption of the Acquis
<b>EU</b>	European Union	<b>NPPM</b>	National Programme for the Preparation of the Membership
<b>EUR</b>	Euro – (for exchange rates see next page)	<b>PHARE</b>	Action Plan for co-ordinated aid to Poland and Hungary (originally in French)
<b>FGD</b>	Flue Gas Desulphurisation	<b>PLN</b>	Polish Zloty (for exchange rates see next page)
<b>FUNDUSZ</b>	National Fund for Environmental Protection and Water Management	<b>PMoE</b>	Polish Ministry of Environment
<b>GDP</b>	Gross Domestic Product	<b>POP</b>	Persistent Organic Pollutant
<b>GEF</b>	Global Environment Facility	<b>SAPARD</b>	Special Accession Programme for Agriculture and Rural Development
<b>GNP</b>	Gross National Product	<b>SO<sub>2</sub></b>	Sulphur Dioxide
<b>HELCOM</b>	Helsinki Commission – Baltic Marine Environment Protection Commission	<b>TA</b>	Technical Assistance
<b>IPPC</b>	Integrated Pollution Prevention and Control	<b>UN</b>	United Nations
<b>IMO</b>	International Maritime Organisation IMWM Institute of Meteorological and Water Monitoring	<b>USD</b>	US Dollars (for exchange rates see next page)
<b>ISPA</b>	Instrument for Structural Policy for Pre-Accession	<b>WWTP</b>	Wastewater Treatment Plant

# LIST OF RELEVANT WEBSITES

The following is a list of useful Web-sites from which part of the information presented are acquired. Also the web-sites can be used for additional information on the subjects covered in the report. The addresses are in general the Home Page, since most web-sites are frequently re-organised and more detailed links would become "dead" within short time.

## DENMARK

### **DANCEE - [www.mst.dk/dancee](http://www.mst.dk/dancee)**

Information about DANCEE, programmes and projects, publications, procedures for application etc. *Danish/English*

### **DEPA - [www.mst.dk/](http://www.mst.dk/)**

Homepage of the Danish Environmental Protection Agency. Information about legislation, action programmes, publications etc. Has a "international issues" site. *Danish/English/Spanish*

### **MOEE - [www.mem.dk/](http://www.mem.dk/)**

The Ministry of Environment and Energy. Profile of Denmark and of Denmark's environmental policy. Presentations of the ministry's environmental agencies and research institutes. Overview of central publications in English. *Danish/English/German/French/Spanish/Arabic*

### **Miljøbutikken - [www.mem.dk/butik/](http://www.mem.dk/butik/)**

Miljøbutikken (The Environmental Shop) is the main information centre of the MOEE. Provides information on environment and energy and on Danish legislation and policies in these areas. Ordering of free brochures, action plans, legislation and policy papers. Possible to buy all publications issued by the Ministry. *Danish/English*

### **EKF - [www.ekf.dk](http://www.ekf.dk)**

Homepage of the Danish State Export Credit Agency (Eksport Kredit Fonden). Information about export credit and financing assistance etc. *Danish/English*

### **National Environmental Research Institute (NERI) - [www.dmu.dk](http://www.dmu.dk)**

Independent environmental research institute under the MOEE. Scientific information on environmental issues. *Danish/English*

### **Danish Forest and Nature Agency - <http://www.sns.dk>**

Agency under the MOEE. Has a division for International Cooperation. Information about assistance for implementation of International Conventions on Natural Resources Management. *Danish/English/German/French/Spanish*

### **Danish Energy Agency - [www.ens.dk](http://www.ens.dk)**

Agency under the MOEE. Internationally the agency promotes exports of know-how and energy technology by Danish companies and contributes to the transfer of technology to countries in Central and Eastern Europe. *Danish/English/German*

### **Statistics Denmark - [www.dst.dk](http://www.dst.dk)**

The central statistical office in Denmark. "Statistical Yearbook" and "Data on Denmark" available electronically. *Danish/English*

### **StatBank Denmark - [www.statistikbanken.dk](http://www.statistikbanken.dk)**

Site under Statistics Denmark containing free statistical information about e.g. environment and energy. *Danish/English*

## POLAND

### **Ministry of Environment - <http://www.mos.gov.pl/>**

Homepage of the Ministry. Contains legal acts, publications (e.g. Environmental Project Development Manual) presentation of sectors, news etc. *Polish/English*

**Institute of Environmental Protection - <http://ciu.warman.net.pl/alf/ios/>**

Independent institute under the MOE. Scientific research and applied work (programmes etc.), education. Databases on specific subjects, virtual library containing book and environmental journals etc. *Polish/English*

**National Fund for Environmental Protection and Water Management - <http://www.nfosigw.gov.pl/>**

Largest institution financing environmental projects in Poland. Overview over sources of funding, environmental investments, contacts for applications ect. *Polish/English*

**Eko-Fundusz - <http://www.ekofundusz.org.pl>**

The EcoFundusz is a foundation established by the Minister of Finance to manage the funds obtained through the conversion of a part of Polish foreign debt with the aim of supporting environmental protection. The homepage consists of a list of Polish projects in environmental protection, the EcoFundusz priorities and a description of the project financing conditions. *Polish/English*

**Central Statistical Office - <http://www.stat.gov.pl/>**

The Polish Official Statistics with news and indicators for the Polish society. Part of the Statistical Yearbook of Poland, data on the number and structure of population and Poland quarterly and annual indicators available electronically. *Polish/English*

**Inspekcja Ochrony Srodowiska - <http://www.pios.gov.pl/>**

The Polish Environmental Control. *Polish*

**UNEP/GRID-Warsaw - <http://www.gridw.pl/>**

United Nations Environment Programme. The Global Resource Information Database (GRID) in Poland collects, processes and provides information on environment in Poland and in neighbouring regions.

**Centre for EU information - <http://www.cie.gov.pl>**

The Polish Centre for EU information gives information about EU relevant for Poland. *Polish*

**Office for EU Integration - <http://www.ukie.gov.pl>**

The Polish Office for EU intergration and gives information about the Polish EU integration process. *Polish*

**Board of Polish National parks - <http://www.mos.gov.pl/kzpn/>**

The homepage gives a general introduction of the National Parks in Poland and a detailed description of each of the 23 Polish National Parks. *Polish/English*

**INTERNATIONAL**

**European Environment Agency - <http://www.eea.eu.int/>**

The EEA provides information to improve Europe's environment in a sustainable way. On the homepage there is different country information from the EU member states, news releases, speeches and different themes like e.g. air quality, climate changes and biodiversity. *English*

**HELCOM - <http://www.helcom.fi/>**

The governing body of the Convention on the Protection of the Marine Environment in the Baltic Sea Area is the Helsinki Commission, HELCOM. The homepage describes actualities, projects, conventions etc. *English*

**GEF - [www.undp.org/gef/](http://www.undp.org/gef/)**

The Globale Environment Facility (GEF) is a unit of UNDP. The foundation for GEF's efforts in four focal areas and 10 operational programs. The strategy incorporates guidance from two conventions for which GEF serves as financial mechanism: the Convention on Biological Diversity and the UN Framework Convention on

## ENCLOSURE 6 LIST OF RELEVANT WEBSITES

Climate Change. It also establishes operational guidance for international waters and ozone activities, the latter consistent with the Montreal Protocol on Substances that Deplete the Ozone Layer and its amendments. *English.*

### **UNEP/GRID-Arendal - <http://www.grida.no/>**

The United Nation Environment Programme. Regional environmental information including maps and graphics of the Arctic, the Nordic, the Baltic and the Central and Eastern Europe. City environment reports and state of the environment reports is available electronically. *English/Polish*

### **The Regional Environmental Center for Central and Eastern Europe -**

**<http://www.rec.org/>**

REC assist in solving environmental problems in Central- and Eastern Europe. The center encourage co-operation among NGO's, governments and businesses, supports the free exchange of information and promotes public participation in environmental decision-making. The homepage describes projects, calls for tender. Gives national environmental descriptions and up-dated environmental news. *English*

### **PHARE - <http://europa.eu.int/comm/enlargement/pas/phare.htm>**

PHARE is currently the main channel for the European Union's financial and technical co-operation with the countries of the Central and Eastern Europe. The Programme focuses on preparing the candidate countries for EU membership by concentrating its support on two priorities in the adoption of the acquis communautaire: Institution building and investment support. The homepages gives detailed information. *English*

### **ISPA - [http://www.inforegio.cec.eu.int/wbpro/ispa/ispa\\_en.htm](http://www.inforegio.cec.eu.int/wbpro/ispa/ispa_en.htm)**

ISPA is one of the EU financial instruments to assist the candidate countries in their preparations for accession. The instrument is especially target towards transport and environment. The site contains the official texts relevant for ISPA and a more detailed overview of how the ISPA works. *English*

### **SAPARD - [http://europa.eu.int/comm/agriculture/external/enlarge/index\\_en.htm](http://europa.eu.int/comm/agriculture/external/enlarge/index_en.htm)**

SAPARD is the special pre-accession assistance for agriculture and rural development. The homepage contains links to official documents concerning SAPARD, general information on enlargement and questions and answers on EU and the enlargement. *English/German/French*

### **Baltic Agenda 21 - <http://www.ee/baltic21/>**

Baltic Agenda 21 promotes sustainable development in the Baltic Sea Region - encompassing economic, social and environmental aspects. The homepage provides information about the goals, the commitments, the achievements and the people. *English*

### **EBRD - <http://www.ebrd.org>**

The European Bank for reconstruction and development fosters the transition towards open market-oriented economies and promotes private and entrepreneurial initiative in the Central and Eastern Europe and the Commonwealth of Independent States, CIS. *English/German/French/Russian*

### **World Bank - <http://www.worldbank.org>**

The World Bank is working in more than 100 developing economies, bringing a mix of finance and ideas to improve living standards and to eliminate the worst forms of poverty. The homepage describes the general assistance strategies and the regional initiatives. *English/French/Spanish/Portuguese/Russian/Japanese*

*ENCLOSURE 7*

# EXCHANGE RATES

List of Exchange Rates for Selected Currencies from the Danish National Bank as per 23.08.2001

100 DKK =	-	PLN 52,49	USD 12,34	EUR 13,43
100 PLN =	DKK 190,58	-	USD 23,52	EUR 25,59 100
USD =	DKK 810,06	PLN 425,16	-	EUR 108,80
100 EUR =	DKK 744,55	PLN 390,78	USD 91,91	-

## ENCLOSURE 8

# LIST OF REFERENCE

1. 10 years of activities of the National Fund of Environmental Protection and Water management, National Environmental Fund, 1999
2. A new state for new challenges, Prime Minister's Chancellery, 1998
3. Accession Partnership Poland 1998, EU DG-Enlargement, 1998
4. Accession Partnership Poland 1999, EU DG-Enlargement, 1999
5. Accession Partnership Poland 2000, EU DG-Enlargement, 2000
6. Agenda 21 in Poland, Progress Report 1992-98, MoE, 1998
7. Annual Report – 1999, National Environmental Fund, 1999
8. Annual Report for 1999, National Environmental Fund, 2000
9. Cleaner Technology Transfer to the Polish Textile Industry, DEPA 1999
10. Compliance Costing for approximation of EU environmental legislation in the CEEC, EU DG-Enlargement, 1997
11. Co-operation Development 1991-1996 and Programme Priority Areas, DEPA, 1998
12. Environmental Assessment Report no. 2: Environment in the European Union at the turn of the century, EEA, 1999
13. Environmental Performance Review, OECD, 1996
14. Guidelines to the hosted armed forces, MoE, 1997
15. Informationsbrev 1998-11 vedr. Polske regioner, EKF, 1998
16. Input to revision of the Country Programme: "Environmental Programme Priority Areas 2000 - 2002 – Poland", DEPA, 2000 (Internal Report, not published)
17. Landerapport for Polen. Evaluering af den danske miljøstøtte til central- og østeuropa., KPMG, 1998
18. National Environmental Policy of Poland, MoE, 1991
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22. National Programme for the Preparation of the Membership, Polish Government, 1997
23. Orientering nr. 16, DEPA, 1996
24. Project Cycle Management Manual, DANCEE, 1999
25. Regeringens Overordnede Strategi for Øststøtten – med særlig hensyn til Østersøområdet, Udenrigsministeriet, 1997
26. Strategi for Miljøstøtteordningen til Østeuropa 2001-2006, DEPA, 2000
27. Strategy for Environmental Activities in Eastern Europe, DEPA, 1993 Årsberetning for 1996, DANCEE, 1997
28. Årsberetning for 1997, DANCEE, 1998
29. Årsberetning for 1998, DANCEE, 1999
30. Årsberetning for 1999, DANCEE, 2000

## FURTHER INFORMATION ON THE DANISH ENVIRONMENTAL ASSISTANCE TO EASTERN EUROPE:

DANCEE releases successively various types of publications on the Danish environmental aid to Eastern Europe. Each type has its own colour.

### **DANCEE STRATEGY**

"Danish Strategy for Environmental Assistance to Eastern Europe 2001-2006"  
Describes DANCEE's general strategy up to year 2006. Danish and English. For free.

### **ANNUAL REPORT**

Contains a description of all projects launched and initiatives taken in connection with the Danish environmental assistance to Eastern Europe for the actual year.  
For free.

### **COUNTRY PROGRAMME**

DANCEE's strategy and priorities in the individual recipient countries are described.  
Country programmes are planned in co-operation with the recipient country. English and the recipient country's language. For free.

### **COUNTRY BOOK**

The country book describes the Danish environmental aid in each recipient country. It contains among others, description of the aid's progress and the environmental effects. It reviews typical projects within the different field sectors. English and recipient country's language. For free.

### **COUNTRY PAMPHLET**

A brief and popular version of the country book which, with focus on concrete projects, explains the Danish environmental aid to the recipient country. English and recipient country's language. For free.

### **THEMATIC REPORT**

Technically orientated report dealing with subjects of specific importance to the environmental aid, e.g. wastewater treatment or control instruments. Danish and English.

### **PROJECT PAMPHLET**

Describes a specific environmental project and is released typically in connection with the opening of the project. English and recipient country's language. For free.

The publications are available at:  
Miljøbutikken (The Danish Ministry of Environment and Energy's outlet)  
Læderstræde 1-3  
1201 Kbh K  
Tel.: 33 95 40 00  
Fax: 33 92 76 90  
DANCEE on the Internet: [www.mst.dk/dancee](http://www.mst.dk/dancee)

*Denmark is one of the biggest bilateral donor of environmental assistance to Poland. In this book the environmental co-operation between the two countries is described from the beginning and up to the year 2000. The book gives an overview of the policy, character, priorities, environmental effects, future perspectives etc. of the co-operation. It also presents a range of implemented project within the priorities: Air, water, waste, biodiversity, cleaner technology, awareness raising and EU-approximation.*

**DANCEE PUBLICATIONS:**

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**ANNUAL REPORT**

**COUNTRY PROGRAMME**

**COUNTRY PAMPHLET**

**THEMATIC REPORT**

**PROJECT PAMPHLET**

Ministry of Environment and Energy



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