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Instruments and Options for Environmental Policy during the Accession Process of EU Associated Countries in the Area of Environment and Energy

Country Report Poland

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Contents

1	Introduction	1
2	Legal Gap Assessment	2
2.1	Directives.....	2
2.1.1	Liberalisation of the Electricity Market	2
2.1.2	Liberalisation of the Gas Market.....	6
2.1.3	Energy taxation	9
2.1.4	Large Combustion Plant Directive (88/609/EEC).....	13
2.1.5	The SAVE Directive.....	16
2.1.6	Directives on the Labeling of the Consumption of Energy	19
2.1.7	Directives on Energy Efficiency Requirements for Household Appliances	21
2.1.8	Directive on Integrated Pollution Prevention and Control.....	23
2.2	Decisions and Programmes.....	26
2.2.1	R&D Programs: Energy Framework Program (1998-2002).....	26
2.2.2	Coal Subsidies.....	27
2.3	Environmental Agreements	32
2.4	General Policies and Strategies for the Future.....	34
2.4.1	Combined Heat and Power Production (Co-generation)	34
2.4.2	Renewable Energy Sources	34
2.4.3	Energy Efficiency	36
2.5	Planned and Proposed Activities.....	37
2.5.1	Integrated Resource Planning.....	37
2.5.2	Feed-In Directive (Renewables)	38
3	Patterns of Regulation and Implementation.....	39
3.1	Policies and Measures	40
3.1.1	Basic Legal Framework.....	40
3.1.2	Policy Instrumentation	46
3.1.3	Public and Private Expenditure Analysis	50
3.2	Institutional Setting and Implementation Structure	55
3.2.1	Administration Structures in Poland in 1999	55
3.2.2	The Ministry of Environmental Protection, Natural Resources, and Forestry.....	57
3.3	Some Sectoral Policies Referring to Climate Protection.....	58
3.3.1	Energy Policy	58
3.3.2	Transportation Policy	60
3.3.3	Municipal Policy	61
3.3.4	Agricultural Policy	62
3.3.5	Forestry Policy	62
3.4	Regulation Patterns for Environmental Policy-Making.....	63
3.5	Policy Instrumentation	63
3.5.1	Policy Style.....	64
3.5.2	Configuration of Actors.....	66

3.6 Conclusion	68
4 Existing Co-operation	70
4.1 Polish Efficient Lighting Project	70
4.1.1 Overview	70
4.1.2 Background.....	70
4.1.3 Project objectives	71
4.1.4 Project description.....	71
4.1.5 Project results	72
4.1.6 Follow-up	73
4.2 City-wide Energy Efficiency Investments Plans.....	73
4.2.1 Overview	73
4.2.2 Background.....	74
4.2.3 Project objectives	75
4.2.4 Project description.....	75
4.2.5 Project implementation and preliminary results	76
4.3 Wood-waste Combustion.....	76
4.3.1 Overview	76
4.3.2 Background.....	77
4.3.3 Project objective.....	78
4.3.4 Project description.....	79
4.3.5 Project results (preliminary).....	79
4.4 Education and Training of Local Administrators.....	80
4.4.1 Overview	80
4.4.2 Background.....	81
4.4.3 Project objectives	81
4.4.4 Project description: TEMPUS CME	82
4.4.5 Project results	82
4.4.6 Project description: TEMPUS IB_JEP	83
4.4.7 Project results	83
4.5 Energie Cites.....	83
4.5.1 Overview	83
4.5.2 Project background.....	84
4.5.3 Project objective.....	84
4.5.4 Project description.....	84
4.5.5 Project result.....	84
5 References	86
5.1 Legal Gap Assessment.....	86
5.2 Patterns of Regulation and Implementation.....	86
5.3 Energy and Environment Data.....	88
6 Appendix.....	90
6.1 Energy and Environment Data.....	90

6.2 Monitoring of Accession Process	95
6.3 Screening of Co-operation Project.....	105

Tables

Table 1:	List of basic mineral oils, which are subject to excise duty	11
Table 2:	Structure of Liabilities of Coal Industry	28
Table 3:	Forecast of the Effects of Restructuring Process in Coal Sector	30
Table 4:	Pollution Charges in Poland	47
Table 5:	Emission Charges in CEE Countries as of End of 1997.....	47
Table 6:	Self-governmental administration	56
Table 7:	CFL Sales per Household.....	72
Table 8:	Peak Demand Savings from Grid and End-Use Models (kW)	73
Table 9:	Energy Data, Energy and Electricity Balance.....	90
Table 10:	Energy Markets	91
Table 11:	Greenhousegas and Airborne Emissions.....	92
Table 12:	Socio-demographic and Economic Data.....	93
Table 13:	Environment and Energy Indicators, Driving Forces	94
Table 14:	Accession Process Monitoring Table	95
Table 15:	National Law or Policy Initiatives	102
Table 16:	Co-operation Project Screening Table.....	105

Figures

Figure 1:	Sources of Investments in Environmental Protection, 1996.....	54
Figure 2:	Governmental administration.....	56
Figure 3:	Responsibilities of the National Government.....	57

1 Introduction

More than four years ago the European Union (EU) decided to start negotiations on accession with possible new member countries. The Czech Republic, Estonia, Hungary, Poland and Slovenia were the first countries to be accepted into the formal accession process. These countries are accordingly the called Accession Countries.

With regard to the leading role of the EU and of individual countries such as Germany in climate protection policies and strategies in general, it is important to consider the impact of the accession process on EU climate policy. CO₂ emissions of the Accession Countries amount to at least a fifth of the carbon dioxide emissions of all 15 EU countries. Accession countries' CO₂ emissions will not influence EU commitments for the first commitment period from 2008 to 2012. However, it is important to pay early attention to the Accession Countries, because they will be included in the European commitment for the second commitment period beginning 2013.

Taking this into account, the German Environmental Protection Agency (Umweltbundesamt) commissioned a comprehensive study to analyse the options and capabilities of the five Accession Countries in the field of environment and energy. This study was carried out by research institutes in Germany in co-operation with research institutes in the five Accession Countries. The study included the analysis of the most important issues, namely:

- Status quo and development of the energy sector and structural CO₂ mitigation options;
- Legal gap assessment and analysis of performance in the accession process;
- Identification of implementation patterns through detailed policy analysis;
- Evaluation of co-operation projects in the field of environment and energy in order to develop new projects that promote the accession process.

This volume includes the analysis with regard to each of these topics, which has been carried out by the co-operation partners in the accession countries. These contributions have been compiled to country reports for each of the five accession countries. Section 2 of this report shows the results of the legal gap assessment. In section 3 the results of the policy assessment are documented. Existing co-operation projects that have been identified as best practice are described in details in section 4. Additionally there are several tables of data relevant for the field of energy and environment and overview tables about the accession process and the screening of existing co-operation projects in the appendix to this report.

The overall analysis of all five accession countries has been compiled to the main report, which includes also the conclusion and recommendations that have been derived from this co-operative investigation and research process.

2 Legal Gap Assessment

2.1 Directives

2.1.1 Liberalisation of the Electricity Market

2.1.1.1 Introduction

The basis for introduction of electricity market in Poland is set by the new Polish Energy Law (an Energy Act) enacted in 1997 by the Polish Parliament (Sejm). The Law is of general character (*lex generalis*) and further executive regulations are needed to make it fully implemented. This determines the principles shaping energy policy and sets guidelines for regulations of energy and fuels use. It also defines the institutions responsible for energy and fuels management and some procedural requirements for the energy sector.

Another factor influencing the introduction of electricity market in Poland is the ongoing integration process with the European Union. A document "Polish Negotiation Position" contains a set of requirements to be met by Poland. These requirements aim towards full harmonisation with the EU structures, including energy issues, in particular electrical energy.

2.1.1.2 Objective/Substantive Requirements

The Energy Law sets the basis for a competitive market in electricity and aims towards breaking the natural monopolies in the energy sector. It contains several rules and mechanisms common to EU legislation. These are i.a. Third Party Access (TPA), Independent Power Producers (IPP), the mechanism of using non-discriminatory criteria and some solutions that will help promote renewable energies. Under the provisions of the Energy Law, the Ministry of Economy is obliged to prepare the long-term energy policy strategy. The strategy should be prepared in a manner promoting sustainable development and *inter alia* it shall describe the renewable energy development (art.15). Every two years, the Minister of Economy reports on the progress in the implementation of the strategy. As far as the problem of renewable energies relates to electricity markets, "The Energy Policy Strategy until 2010" contains only general statement on *creating conditions for rational use of renewable energy* [Energy Policy Strategy until 2010]. There exists also some (so far incomplete) secondary legislation to the Energy Law that helps bring in its general rules. These are mainly the executive regulations issued by the Minister of Economy.

The Energy Law sets an eight-year period for commercial electricity traffic liberalisation and extending the range of consumers allowed to access the grid (TPA principle). The following consumers groups will have access to the grid in the time period until 2005:

By the end of 1998, the final consumers with the yearly electricity purchase not less than 500 GWh obtained the right to access the grid

- Since 1 January 1999 final consumers purchasing more than 100 GWh
- Since 1 January 2000 final consumers purchasing more than 40 GWh
- Since 1 January 2002 final consumers purchasing more than 10 GWh
- Since 1 January 2004 final consumers purchasing more than 1 GWh
- Since 5 December 2005 – all consumers

The Energy Law sets limitations that will have to be eliminated before joining the European Union. For example, the article which requires transmission and distribution companies to provide the corresponding services to all parties, is applicable only to energy produced in Poland. This restrictive clause is set to protect the national market from competition of energy produced abroad. The Polish side has already declared the possibility to remove this limitation by the end of 2002. The new rules would enable Polish customers (with energy use of no less than 100 GWh/year) the direct energy purchase in the EU countries.

It is also worth noting that in order to protect the individual households' against "shock" increases in electricity prices, the increases are limited to the levels established by the Minister of Economy and the Minister of Finance. The executive regulation of the Minister of Economy defines the limits for the maximum increase in electricity prices, for 1999, amounting to 13 %.

Polish government completed the negotiation process with the EU in the energy field in May 1999. In the case of the electricity market Polish government declares to be ready to access the EU by the end of 2002. "Polish Negotiation Position" shows that most of the Polish legislation in that field is compliant with the EU legislation. It is mainly because this legislation was adopted after the decision to apply for the membership and the necessity of harmonisation was taken into account. Unlike other fields (natural gas field) transitional solutions are not necessary.

2.1.1.3 Institutional Requirements

For the construction of new generation capacity, Poland has opted for an authorisation procedure. The Energy Regulatory Authority (ERA) with a President appointed by the Prime Minister for a five-year period is the body responsible for issuing licenses, approval, and control of electricity tariffs and barring any monopolistic practices. Additionally ERA is responsible for settling disputes concerning disputable cases like: refusal of access to the grid; refusal of concluding the contracts of sale for energy; non-justified

discontinuation of energy supply and disputable terms of contract (Energy Law, art.23). The system of issuing the licenses by the President of ERA is in compliance with authorisation procedure contained in the Directive [Zerka]. The Energy Law contains the criteria and procedures of issuing these licenses (Energy Law, art. 33), which are also consistent with the Directives' provisions e.g. authorisation procedure.

Regarding the operation of the transmission system, the operator, Polish Power Grid Company was set up in 1990. In October 1998 the Minister of Economy issued executive regulation on "Specified Conditions of the Parties' Connection to the Energy Grids; Financing the Costs of Connection; Commercial Traffic of Electricity; Providing the Transmission Services; the Grid Traffic; the Exploitation of the Grid and the Quality Service Standards" (Official Journal of Law 1998, No. 135, item 881). The regulation defines the role of the national system operator. The provisions laid down in this regulation comply with the 96/92/EC Directive.

The transmission system operator is responsible *inter alia* for operating and ensuring the maintenance of the transmission system in order to guarantee its secure work and equal treatment of the parties (Art. 31). Additionally, the system operator is obliged to collect and publish information necessary to ensure the proper functioning of the grid traffic (Art. 31). These provisions comply with the 96/92/EC Directive. The distribution system is currently operated by 33 utility companies. The rules of operation of the distribution system are given in the aforementioned regulation, "Specified Conditions of the Parties' Connection to the Energy Grids; Financing the Costs of Connection; Commercial Traffic of Electricity; Providing the Transmission Services; the Grid Traffic; the Exploitation of the Grid and the Quality Service Standards"

Compared to the EU legislation, Polish legislation has different definitions of transmission and distribution of electricity. It will be an important issue during harmonisation process with the EU legislation. Transmission is defined as a transport of electricity with a grid and the distribution is delivering the electricity to the customers and distributors. Unlike the Directive, the Polish Energy Law does not differentiate distribution and transmission according to high, medium and low voltage grids.

2.1.1.4 Procedural Requirements

In the case of procedures in the electricity sector (as mentioned before), Poland has opted for the authorisation procedure. Regarding the construction of new generation capacity, the President of the Energy Regulatory Authority (ERA) is responsible for issuing licenses. The licenses should define specific conditions for implementation of the licensed activity and conditions to ensure environmental protection. The former relates to safety and security of the electricity system. The ERA publishes information about parties applying for licenses, decisions concerning the settlement of disputes and the approval of the electricity tariffs. These decisions and the rationale behind them are published in ERA Bulletin (Biuletyn URE). Such publication shall enhance objectiveness, transparency and non-discriminatory character of ERA activities.

Under provisions of the Energy Law access to the transmission and distribution system is based on regulated TPA (rTPA) rule. Companies dealing with transmission and distribution services estimate levels of the tariffs and then introduce them to the President of ERA for their approval.

The executive regulation of the Minister of Economy “Requirement of Electricity and Heat Purchase from Renewable Energy Sources” (Official Journal of Law 1999, No.13, Item 119) commits the commercial energy traffic companies to purchase electricity or heat from renewable energy sources in the quantities offered by their producers. However, distribution companies are not obliged to buy the electricity from renewable sources if the prices offered by their producers are higher than the highest existing tariffs in the distribution company. It should be noted that this regulation is limited only to energy and heat produced in Poland.

The Energy Law does not prescribe any exact formula for the development of the energy trade market e.g. whether it should be power stock exchange, contract market, or the so called SOREE (Electric Energy Offer System Market). There is still an ongoing process to shape the model of this market. It is highly probable that in the beginning of 2000, approximately 30 % of electricity will be traded through electricity stock exchange (power exchange). This amount of electricity would be then purchased directly from the producers. The role of the Polish Power Grid Company would be limited to transmission services. In the beginning of July 1999, the Energy Regulatory Authority organised the meeting of the representatives of the power generation sector, transmission and distribution sectors and the representatives of the Ministry of Economy. They agreed upon the order of activities to implement market mechanisms in the power sector. It should result in defining the shape of future electricity market (electricity stock exchange, development of competitiveness). Additionally, the Economic Committee of the Cabinet the session of June 21, 1999, accepted the document “The Energy Sector Reform. The Privatisation and Implementation of Electricity Market. Diagnosis and Action Plan”.

The consortium, which will operate the power exchange will be chosen by the end of September 1999. It is probable that Gielda Papierów Wartościowych (*Polish Stock Exchange*) and Polski Fundusz Kapitałowy (*Polish Capital Fund*) will be responsible for setting up the power stock exchange.

Provisions of the Energy Law described in this paragraph are in compliance with those introduced in the EU Directive. It regards both, to construction of new generation capacity (authorisation procedure) and access to transmission or distribution system (rTPA).

2.1.1.5 Monitoring and Reporting

Energy Regulatory Authority (ERA) is held, responsible for controlling monopolistic practices and predatory behaviour. The President of ERA, by approving and controlling electricity tariffs shall protect the customers’ interests against non-justified levels of

electricity prices. The electricity tariffs shall also ensure the payment of power utilities' environment protection costs (Energy Law, Art. 45).

Energy Law stipulates that design, production and operation of equipment, installations and grids shall ensure efficient use of energy with regard to:

- Reliable work with the grid,
- To security of supply and environmental protection,
- Separate legislation, in particular: Polish Norms, construction law, and technical supervision law.

Under provisions of executive regulation to the Energy Law connection to the grid is possible on basis of the contract of connection, and after fulfilment of the terms of connection (prepared by transmission and distribution companies). Terms of connection shall include *inter alia* technical requirements and provisions of, so called instruction for operation and use of the grid. The scope of technical requirements is described in the regulation. Instruction determines procedures and rules such as:

- Connection of equipment, installations and other grids,
- Scope, rules and terms of periodical control of grid and connected equipment, installations and other grids,
- Rules for operation of grid e.g. interoperability with installations, equipment and other grids.

Furthermore, the executive regulation states that terms of connection can not be more burdensome to the agent applying for connection than those determined by this regulation. The aforementioned regulation sets also qualitative standards for rendering consumers services.

The appropriate body for collection of information concerning technical requirements and standards is the president of ERA. President of ERA imposed such an obligation on the transmission and distribution companies that need to provide qualitative standards of their activity for approval.

Requirement of notifying the Commission about the technical rules and standards can be easily fulfilled by ERA, which is responsible for the collection of this information.

2.1.2 Liberalisation of the Gas Market

2.1.2.1 Introduction

The Polish gas market is dominated by the Polish Gas and Oil Company (PGNiG S.A.), which holds monopolistic position in this market. PGNiG S.A. operates extraction, transmission and distribution of gas. The restructuring process of the sector will be necessary to approach to the EU solutions Although there exists a piece of legislation, im-

plementing the provisions of 98/30/EC Directive, the harmonisation process is not as advanced as in the case of electricity market.

2.1.2.2 Objectives/Substantive Requirements

In the case of gas market the TPA rule is limited by the Energy Law to gas extracted in Poland. This rule does not comply with the EU requirements. However, Polish side declared to abolish this limitation on the date of joining the EU. Within this restrictive clause which is strongly criticized by some experts, the following customers have the right to use the distribution services on the TPA basis:

- since 1 January 2000 customers purchasing more than 25 million cubic meters a year.
- since 1 January 2004 customers purchasing more than 15 million cubic meters a year
- since 5 December 2005 customers purchasing than less 15 million cubic meters a year.

Compared to the 98/30/EC directive and its provision concerning *eligible customers*, the Energy Law assumes full opening of the gas market within eight years since the date this Law comes into force, i.e. - by 2005 [The executive regulation on the schedule of access to the transmission services by different groups of consumers; Official Journal of Law of August 20, 1998, No. 107].

Unlike the Directive, in Polish legislation power producers burning natural gas are not defined as eligible customers independently of their gas consumption. This gap will need to be eliminated.

Under provisions of the executive regulation to the Energy Law the obligations of the gas companies include to appoint the grid operators i.e. the distribution system operator and the dispatch system operator. The range of tasks of the operators of the grid is similar to that introduced by the EU legislation [the executive regulation of the Minister of Economy, of July 14, 1998].

Although the Energy Law and the executive regulations aim to adjust the Polish legislation in the field of natural gas market to the European Union legislation, it is still necessary to pass further secondary executive legislation such as:

- the regulation on detailed conditions for setting up and calculating the tariffs;
- the regulation on detailed rules for planning and financing the investments.
- These regulations are currently being prepared at the ministerial level and it is possible that they will be passed within the next few months.

In the field of gas market the Polish government has declared its readiness to join the EU by the end of 2002, although Poland will not be able to fulfil provisions of Articles 17 and 18 of the Directive by that date. In the case of these articles Poland asked for a transitional period. This is mainly caused by the current situation of the gas market in Poland,

which is not prepared to compete with the liberalised gas market in the EU countries. This notwithstanding the government emphasises the need of the restructuring and privatisation of the gas industry. Furthermore, after completing the restructuring process at least one additional year will be needed to enable the Polish entities to operate in the competitive domestic market (with market prices) before implementing the aforementioned provisions of the Directive.

2.1.2.3 Institutional Requirements

In the case of the natural gas market the Energy Regulatory Authority (ERA) is a body responsible for the control and approval of gas tariffs; issuing the licenses for transmission, distribution, production, storage and commercial traffic of natural gas. The president of ERA is also responsible for the settlement of disputes in negotiations on the access to the systems and on the denial of access (Art. 23 Energy Law).

The Energy Law stipulates that the design, construction and exploitation of facilities should ensure rational and efficient use of the fuels (Art. 51). The President of ERA is in charge of issuing the licenses for the construction of the facilities, for the transmission and distribution activities. The information on the technical, environmental protection and all other requirements that need to be fulfilled is made available for the general public. One could argue that the Polish system of issuing licenses by the president of ERA is in compliance with the EU authorisation procedure [Marek Zerka].

2.1.2.4 Procedural Requirements

Regarding the organisation of the access to the system, Poland has opted for the regulated access.

The Energy Law and the executive regulations to this Law set strict rules for granting or denying access to the gas network. The access can be denied when:

- gas delivery is not economically justified;
- gas fuels come from other than Polish sources;
- customer is not an *eligible customer*;
- transmission with the existing network is not possible without deteriorating the uninterrupted supply of gaseous fuels to the present customers;
- no means to measure the quantity and the quality of gaseous fuels delivered and received from the network exist;
- the access can cause deterioration of the gaseous fuels quality;
- the access can cause disadvantageous change of prices for gaseous fuels for the customers already connected to the network.

Procedures relating to the technical rules for connection to the system are specified in the regulation of the Minister of Economy. (“Specified Conditions of the Parties’ Connection to the Gas Grids; Financing the Costs of Connection; Commercial Traffic of Gas; Providing the Transmission Services; the Grid Traffic; the Exploitation of the Grid and the Quality Service Standards”). Connection of the facilities, other transmission and distribution systems and direct lines is possible after fulfilment of the technical terms of connection. The transmission and distribution companies define these terms. Such terms include *inter alia*:

- Place of the connection of installations and grids to the system and the technical parameters,
- Technical parameters for facilities,
- Sort of the fuel according to the Polish Norms,
- Minimal and maximal pressure for supply and receiving of gas etc.

These provisions are in compliance with the Directive.

2.1.2.5 Monitoring and Reporting

Concerning monitoring and reporting in the case of gas market, similar rules are in force to those described for the electricity market.

The Energy Regulatory Authority is the body, responsible for barring monopolistic practices and predatory behaviour, and controlling qualitative standards.

Appropriate authority for setting schedule for implementation of TPA rule is the Minister of Economy. The Minister passed the executive regulation on the schedule of access to the transmission services by different groups of consumers. The regulation was published in Official Journal of Law of August 20, 1998, No. 107. Definition of eligible customers included in this regulation is still in force. Any changes in the criteria for definition of eligible customers need to be included in the executive regulation of the Minister of Economy and published in the Official Journal of Law, therefore it should not be difficult to fulfil requirement concerning yearly publishing this criteria upon accession.

2.1.3 Energy taxation

2.1.3.1 Introduction

In Polish law there are equivalents of European Union Directives: 92/12/EEC on the general arrangements for products subject to excise duty and on the holding, movement and monitoring of such products, 92/81/EEC on the harmonisation of the structures of excise duties on mineral oils and 92/82/EEC on the approximation of the rates of excise duties on mineral oils.

The Parliamentary Act of 8 January 1993 on value added tax and excise tax (*Dziennik Ustaw* - Official Journal of 15/02/93 No. 11 Pos. 50) regulates general rules of excise taxation. The Minister of Finance Decree of 6 December 1998 on excise tax, with further amendment of 23 June 1999, establishes a structure and defines rates of excise tax for products manufactured in country or imported, including mineral oils.

2.1.3.2 Objectives and Requirements

The list of excise products includes oil products, synthetic liquid fuels, gas used for propulsion of vehicles and gas used for filling cylinders. On the grounds of the Parliamentary Act of 8 January 1993 on value added tax and excise tax, sales of excise products on the territory of Republic of Poland, import of excise products and some other activities concerning excise products are subject to excise tax.

Obligation of payment of excise tax rests with a manufacturer or importer of excise products. In case of oil products and synthetic liquid fuels tax obligation arises when the excise products are moved outside the curtilage of a producing establishment. The base of excise tax is sales turnover of excise products, and in case of imports, customs value increased by the duty due to be paid. The basic rate of excise tax for engine fuels is set at 80 % for manufacturers, and 400 % for importers. Sale of excise products for export is exempt from tax, apart from products carrying tax markings. Minister of Finance, by issuing a decree, has a right to either decrease the tax rate or establish a tax allowance for certain products. As a result, within boundaries established by the supervisory act, the Minister of Finance sets the rates of the excise duty.

Minister of Finance Decree of 6 December 1998 on excise tax, with amendment of 23 June 1999, includes a list of mineral oils, which are subject to excise tax and relevant tax rates. Products manufactured in Poland are classified according to *Systematyczny Wykaz Wyrobów* (SWW) - Systematic Register of Goods, published by *Główny Urząd Statystyczny* (Central Statistical Bureau). Imported goods are classified according to PCN code, which is equivalent to Combined Nomenclature code CN.

Table 1 includes the list of basic mineral oils, which are subject of Council Directive 92/81/EEC. The table shows minimum tax rates set by Directive 92/82/EEC, proposed by the European Commission COM97(30) and being in force in Poland.

Table 1: List of basic mineral oils, which are subject to excise duty

Energy product	Unit	Tax rates		
		Present in EC	COM 97(30) Proposed 1/3 phase	In Poland ³⁾
Unleaded petrol	EURO/1,000 l	287	417/500	268
Leaded petrol	EURO/1,000 l	337	-	290
Kerosene	EURO/1,000 l	245, 18 ¹⁾ , 0 ²⁾	310/393	305
Gas oil	EURO/1,000 l	245, 18 ¹⁾ , 18 ²⁾	310/393	197
Heavy fuel oils	EURO/1,000 l	13	18/28	22
Methane, LPG	EURO/1,000 l	100, 36 ¹⁾ , 0 ²⁾	141/224	24
Electricity	EURO/MWh	-	1/3	-
Solid energy products	EURO/GJ	-	0.2/0.7	-

¹⁾ Used in stationary motors, in respect of machinery used in construction or civil engineering, off the public roadway. ²⁾ For heating purposes. ³⁾ Valid from 1 September 1999. EURO exchange rate is the average rate of Polish National Bank (NBP) of 1 October 1998, 1 EURO = 4.2027 PLZ.

Excise rates in Poland were calculated per 1 tonne until 31 August 1999. From 1 September 1999 excise tax is calculated per 1000 litres of product at temperature of 15 degree Celsius, as requested by the relevant Council Directive.

In the previous two years, excise tax rates have been gradually risen in Poland. As Table 1 shows, excise rates for transportation fuels are lower than minimum rates being in force in the European Union. The difference is especially substantial for LPG and gas oil. As the result, LPG becomes more and more popular as engine fuel. On the other hand, heavy fuel oil for heating purposes and kerosene are taxed higher than minimum rates set by Directive 92/82/EEC. Governmental National Preparation Programme for Membership (*Narodowy Program Przygotowania do Członkostwa*) sets a target by the end of 2002 year to adjust Polish excise scope and rates to the EU requirements. White Book on taxation published in 1998 by Minister of Finance Leszek Balcerowicz also expressed intention to increase the percentage of fuel taxes in overall tax stake. The quick pace of increased fuel taxation was recently criticised by Polish Chamber of Transport Fuels (*Polska Izba Paliw Płynnych*).

According to Council Directive 92/81/EEC mineral oils, for which no minimal tax rates were established, should be subject to excise tax as for equivalent mineral oil. Excise rates depend also on application – whether for propulsion or heating purposes. In the Polish law the key criteria are characteristics (description) of the product and statistical (Polish SWW or CN) classification (except for red coloured, heavy fuel oil used as engine fuel). This implies that Polish taxation might not be in line with the EC Directive, namely in case when some specific product like CN2707 (e.g. benzol) are used as heating

fuel (engine fuels are taxed as default 80 % or 400 %). However, situation described above has very limited practical implications.

In case of fuels, excise tax obligation arises when the product is moved outside the curtilage of establishment where it is produced. Such a statement implies that consumption of mineral oils for the purpose of propulsion of engines within premises of the manufacturer of mineral oils is tax exempt. This would need to be changed to fulfil the EC requirements.

If crude oil is delivered to refinery by means of rail or road transport, the engine fuels and engine oils produced there are partly exempt from excise, in amount proportional to PLZ 65 per tonne of crude oil. Such a provision is not compatible with the Directive and makes the difference in fuel taxation even more significant.

Mineral oils used for the purpose of air navigation are not exempt from excise tax, but the taxpayer is allowed to deduct the amount of excise tax from VAT due. This provision is in line with the Council Directive 92/81/EEC. There are no exemptions, as stated in Article 8 of the Directive, concerning, among others, producing electricity or heat, inland water navigation, rail transport, agriculture, forestry and inland fisheries, vehicles used off the public roadway etc. However, these exemptions are not mandatory in EC law.

Excise rates are set with respect to environmental protection and include some incentives for using less polluting fuels. An example is significantly lower rate of excise for fuel oils obtained from used engine oils, and lower rates for gas oil with less than 0.2 % sulphur contents. Another environmentally oriented tax allowance is related with petrol with alcohol contents between 4.5 and 5 %, for which the tax can be reduced by PLZ 91 per tonne, since 1 September 1999 (however, this amount has been cut from PLZ 180 in year 1998). Environmental incentives positively influence behaviour of manufacturers and consumers, but also make further difference in energy products taxation between Poland and the EC.

2.1.3.3 Institutional Requirements

The main authority for tax collection for general budget purposes is the Ministry of Finance. The Ministry is responsible for fulfilling the requirements of the Parliament, in particular set by the yearly Budgetary Act. Department of Indirect Taxes within the Ministry takes care about everyday activities concerning excise taxes, i.e. monitoring tax collection, reporting, developing of new regulations, co-operation with other Ministries, supervising tax offices etc.

Excise tax is paid into an account of a relevant local tax office by a producer, or - in case of imported products - is collected by a customs office. All the duties, rights, procedures, and other details concerning relations between taxpayers and tax authorities are set by Tax Ordinance, The Parliamentary Act of 29 August 1997 (Official Journal of 13 No-

vember 1997, No. 160, Pos. 1083). In a similar way, collection of customs duty and excise in import and export is regulated in detail by Customs Code.

2.1.3.4 Procedural Requirements

There are no specific procedural requirements.

2.1.3.5 Monitoring and Reporting

Ministry of Finance charges and collects excise duties. When Poland joins the EC, the Ministry should be able to inform the Commission whether laws, regulations and administrative provisions comply with the relevant directives. The same concerns provision of information about tax neutrality of energy taxation.

At present, however, Polish administration and civil service suffer from lack of funds and good managerial experience to employ and keep high skilled specialists, who are needed to perform such tasks. This may, to some extent, negatively influence ability to comply with reporting requirements of the European Commission.

2.1.4 Large Combustion Plant Directive (88/609/EEC)

2.1.4.1 Objectives/Substantive Requirements

The objective of the Directive is to limit the emission of SO₂ and NO_x which are the main cause of acid rains as well as to limit particulate emissions. The Polish legislation on air protection and monitoring the requirements of air protection currently in force is included in the Act on Protection and Management of the Environment (APME) (Official Journal of Law 1994, No. 49, item 196 – consolidated text – as amended later) and the Act on State Inspectorate for Environmental Protection (Official Journal of Law 1991, No. 77, item 335). These legal acts do not constitute legal requirements compliant with the Directive. Regulations on air protection against pollution (mainly chapter 3 of the APME) do not refer to plants classified by their size or combustion output. The objective of the APME is to protect the air against pollution by means of preventing cases of exceeding permissible concentrations and limiting or eliminating the volume of pollution discharged by all kinds of emission sources such as for example production plants, vehicles etc. (Art. 25). In accordance with this APME, a *starosta* (the head of a local country community) takes the decision on the permissible emission by organisational units; there is an obligation to obtain permission to discharge emissions (Art. 30). There is lack of division into the already existing and new sources of emission on the level of an act. On the other hand two ordinances of the Minister of Environmental Protection and Forestry of September 3rd 1998 (Polish reference number: Dz.U.98.122.805) and of September 8th 1998 (Polish reference number: Dz.U.98.121.793) introduce a distinction between requirements concerning the already existing sources of emission and the planned ones with regards to methods of measuring the state of air pollution and permissible amounts

of polluting substances emitted into the air. Apart from this, in 1994, Poland signed the Oslo Protocol on further reduction of sulphur emission (the so called Second Sulphur Protocol). It obliges Poland to reduce its global emission of SO₂. 1980 is regarded as the 'basis year'. The Second Sulphur Protocol imposes an obligation upon Poland to reduce its sulphur emission by 37 % till 2000, by 47 % till 2005 and by 66 % till 2010 in comparison to the basis year. The Second Sulphur Protocol defined also norms concerning big stationary combustion installations. The said norms are obligatory for new installations; they should be introduced to the already existing ones if technical and financial means allow to do so. The norms of emission of these installations are identical with the norms of the Directive.

Ministerial draft of the new act on environmental protection (prepared for team of lawyers from The Polish Academy of Science, lead by Prof. Jerzy Sommer the so called "Sommer Team Draft") foresees defining installations whose operation would be allowed only on the basis of a decision specifying permissible emission.

Decision concerning the permissible emission is required for the operation of all installations except for installations in respect to which there is a notification obligation, installations in respect to which there is an obligation to obtain an integrated ecological permit and installations discharging combustion gasses produced in the processes of combustion in combustion engines (Art. 81). In this respect the Polish law on the level of domestic law as well as international agreements binding Poland transpose the requirements of the directive. Also the solutions proposed by the draft are compliant with the requirements of the Directive.

2.1.4.2 Institutional Requirements

In accordance with the Directive there must be a body competent to issue permits and control the operation of the system as well as report on the fulfilment of duties. In Poland the role of the body competent to issue permits defining discharge levels is played by *starostas* (heads of country administrations). If the decision concerns investments classified as particularly harmful to the environment, then the decision is taken by the voyevod (regional representative of the national government) (Art. 30). The functions of the body issuing permits on the permissible levels of emissions and monitoring the operation of installations are split: the control functions are assigned to the State Environmental Inspector and voyevodship environmental inspectors. The Directive presupposes that if an operation of a source of emission may influence the environment in a different Member State, then each Member State must ensure that the Member State is consulted in accordance with Directive 85/337/EEC on the environmental impact of some private and public projects (undertakings). Such an obligation is not required by the Polish internal law at present. On the other hand, Poland ratified the Convention on Environmental Impact Assessment in a Transboundary Context (Official Journal of Law 97.18.96) and requirements of the Directive must be executed on the basis of regulations of the Convention. In this respect the requirements of the Directive are fulfilled.

2.1.4.3 Procedural Requirements

The Directive foresees the existence of a system of permits issued for all existing sources of emission. APME currently in force in Poland introduces a requirement for each organisational unit discharging pollutants into the air to obtain a decision defining volume, limits and kinds of polluting substances which may be discharged (Art. 30 item 1). In this respect there are no legal loopholes. The ordinance of the Minister of Environmental Protection of September 8th, 1998 on discharging into the air polluting substances produced by technological processes and technical operations (Polish reference number: Dz.U.98.121.793 with later amendments) introduced a distinction between norms for sources which have been opened for use after March 28th, 1990 (appendix 1) and the ones which were in use before March 29th 1990 (appendix 2). In this respect the Polish law is compliant with the requirements of the Directive. Nevertheless there is a lack of conditions and procedures concerning breakdown or faulty operation of a system. In general there are no legal loopholes in this area. Solutions proposed by the draft eliminate non-adjustment of the Polish law currently in force in relation to procedures referring to the malfunction or breakdown or the abatement of equipment.

2.1.4.4 Monitoring and Reporting

The Directive requires that a competent body conducts regular monitoring of emission from sources defined by the said directive. This requirement is fulfilled by the Polish law currently in force. At present in Poland the control of fulfilment of the requirements of environmental protection is monitored by governmental administration bodies, in accordance with their competencies and regional coverage as well as by State Environmental Protection Inspectors. This control, however, is periodic rather than constant and is performed on selected installations and only in the, so called "justified cases"; (Art. 91 item 2). Also the Draft does not foresee the introduction of a constant or periodic emission monitoring. In compliance with Art. 30 of the Act. 9 APME, data concerning the types and permissible amounts of polluting substances discharged into the air are contained in decisions and available in publicly accessible registers. With certain co-operation of local governments and the central government, Poland will be able to prepare and submit to the European Commission reports on emission and requirements in the area of monitoring and reporting, in compliance with the Directive.

Generally speaking, Poland meets most requirements of Directives with some exceptions. The definition of 'new' installations is different; according to the Polish law 'new' installations are these ones, which have started to operate after March 28, 1990. It is also possible to say that in the area of emission norms, the Regulation of the Minister of Environmental Protection, Natural Resources and Forestry is more restrictive than the aforementioned Directive.

2.1.5 The SAVE Directive

2.1.5.1 Objectives/Substantive Requirements

In order to fulfil the international agreements on the reduction of *GHG* emissions, Poland has undertaken several legal and economic initiatives on energy efficiency. Some general rules concerning energy efficiency are given by the Construction Law (Official Journal of Law of August 24, 1994). Regarding energy efficiency, this act shapes rules for designing, construction and using of the buildings. The aforementioned processes shall ensure fulfilment of the basic requirements on energy efficiency (Art. 5).

Additionally, promotion of energy efficiency has its legal basis in The Energy Law and in the Act on the Support of Thermal Modernisation Investments (STI), which was adopted by Polish Parliament in 1998.

The STI act, aims to improve energy efficiency by:

- lowering specific energy use in the household sector and public buildings;
- lowering the waste of energy in local heat networks and local heat sources;
- partial conversion of conventional heat sources to non-conventional and renewable energy sources.

It should be noted that the Polish government declared full implementation of the SAVE Directive by the end of 2002 [Polish Negotiation Position, May 1999].

2.1.5.2 Institutional Requirements

First it is worth noting that the Polish government has set up a special institution responsible for promotion of energy efficiency: the National Energy Conservation Agency, KAPE (its activity is described in General Policy chapter).

The Minister of Internal Affairs and Administration is in charge of setting the rules for the construction process. The Minister adopts the executive regulations concerning the specific requirements for buildings, *inter alia* technical and energy efficiency requirements or parameters of the installations (regarding Polish Norms).

Furthermore, there is a body responsible for preparing, updating and adopting the Polish Norms.: the Polish Normalisation Committee. In establishing the norms the Committee co-operates with a range of academies, institutes and universities.

It should be noted that the appropriate bodies to enforce the energy efficiency programs do exist. However, further pressure from the different interest groups would be necessary to make them enforce such programs.

2.1.5.3 Procedural Requirements

Up to date, Polish legislation has not adopted any regulations or programs promoting energy efficiency by energy certification of buildings. Relating to the billing of heat and hot water on the basis of actual consumption, such programs start in October 1999. Since that time district heating companies and heat producers are not allowed to use lump sum fees for heat clearings. Such fees must be based on actual consumption. Heat producers and distribution companies are obliged to install appropriate measurement equipment. Problem emerges with the building cooperatives, where apartments are not equipped with "cost allocators". In such cases the cooperatives pay bills according to the new fees based on actual consumption but the particular households are charged according to the lump sum system. This system will have to be eliminated by implementing programs enforcing installation of such "cost allocators". No such problem exists with newly constructed houses because, according to the Construction Law each apartment must be equipped with the "cost allocator".

However, there is an increasing interest of heat users and building cooperatives to install the equipment to measure heat use. Furthermore, for the construction of new buildings, the Building Law imposes energy efficiency standards on all new buildings. These standards are contained in the Polish Norms: (i) for multifamily residential buildings it sets the upper limit on the specific yearly heat consumption in GJ per cubic meter, (ii) for public and industrial buildings in terms of the K-values of the thermal barriers (walls etc.) and (iii) for single family buildings either criterion may be optionally used. The standards have to be agreed by the developer as a condition for receiving a building permit. The heating equipment has to meet specified efficiency requirements, which are certified individually for each product by a designated agency or institute. Currently, there is a noticeable trend to develop stricter Polish standards and norms, in particular also in the field of energy efficiency.

Polish law contains several mechanisms to support the thermal modernisation investments (TI). The aforementioned STI act sets rules to establish the *Thermal Modernisation Fund* which distributes its resources among investors carrying out TI. The Thermal Modernisation Fund is established at the bank "Gospodarstwa Krajowego". The Funds' role is to pay out, the so called *thermal modernisation bonuses* to the banks granting the loans for the TI. The bonus is 25 % of the loan for TI granted by the bank (since the minimum own investor's contribution is 20 %, the bonus is maximum 20 % of the total investment cost).

The resources of the Fund consist mainly of the financial support provided by the national budget. The investor applying for the thermal modernisation bonus must meet the following conditions:

- as mentioned above, the amount of investor's own contribution is no less than 20 % of the costs of TI
- the pay back time is no longer than seven years;

- the basic formal condition is to present an energy audit that meets the defined standards set up by KAPE and is accepted by the bank;
- the investment must be cost effective. Profitability of the investment is determined by the energy auditor is another substantial requirement to apply for the bonus. The profitability is expressed by the *positive discounted net value* of the thermal modernisation investment.

Regarding regular inspection of the boilers, there is an obligation to monitor the polluting substances. The executive regulation of the Council of Ministers on the record of polluting substances released to the atmosphere, requires updating the records of the emissions every three months (Official Journal of Law, 1998 102.647). Sources burning hard coal or oil with thermal capacity up to 0.5 MWt and those fired with coke, wood or gas with thermal capacity up to 1 MWt must record the quantity of fuel used instead of monitoring the emissions. The polluters pay fees which are based on the emissions released to the air. However in case of CO₂ these fees are set at a low level so that they do not provide any strong environmental incentives. The environmental fees and fines are collected by the Environmental Protection Funds (national, regional and municipal). The range of polluting substances and the levels of fees are introduced in the executive regulations to the Act on Protection and Management of the Environment (APME). Council of Ministers approves the levels of fees and fines.

Energy efficiency is also promoted by the obligation to obtain the attestation certifying energy efficiency of heat installations such as mentioned before for boilers. This rule relates both to production of boilers and theirs' installation.

In addition, there is an executive regulation of the Minister of Internal Affairs and Administration on technical requirements for the buildings and their use.

Most provisions contained in Polish legislation are in compliance with the SAVE Directive. Among them, the STI act has a dominant position within the legislation promoting energy efficiency. However, further programs and regulations are necessary to fully implement provisions of the Directive, in particular, in field of energy certification of new buildings.

2.1.5.4 Monitoring and Reporting

The Council of Ministers is obliged to submit the evaluation of the process of realisation the Energy Policy Strategy (EPS) provisions to the Parliament every two years (Energy Law, Art. 13). On the other hand, however, the Council of Ministers is not obliged to present the adopted Strategy to the Parliament. According to some experts this is a legislative defect [Walaszak-Pyziol]. The EPS provisions contain *inter alia* the policy actions to rationalize the use of energy and fuels, particularly through the promotion of energy efficient housing (The Energy Law).

The aforementioned authorities such as the Ministry of Internal Affairs and Administration and the National Energy Conservation Agency are capable to enforce Directive's requirements. According to Polish government, these requirements will be fully implemented by the end of 2002.

2.1.6 Directives on the Labeling of the Consumption of Energy

2.1.6.1 Objectives/Substantive Requirements

After the Energy Law (Official Journal of Law 1997, No. 54, item 348) and the Ordinance of the Minister of Economy of February 18, 1999 defining requirements concerning energy efficiency which should be met by appliances and requirements on the labeling and supplying technical characteristics (Official Journal of Law 1999, No. 16, item 145) come into effect, the Polish law will become compliant with the Directive. The compliance is achieved on the level of objectives of the regulation, that is the harmonisation of the Polish law with Community legislation in the field of product labeling and energy consumption of a given product in order to enable consumers the choice of the most energy efficient product. Art. 2 of the Act Energy Law states that its objective is to create conditions for a sustainable development of the country, ensure energy security, fuel and energy saving and rational use, development of competition, counteract negative effects of natural monopolies, while taking into consideration the requirements of environmental protection and obligations resulting from international agreements as well as the protection of consumer interests and cost minimisation. In general obligations in the field of labeling and supplying technical characteristics are imposed by the Energy Law, in particular Art. 51-53. Detailed regulations are laid down in the Ordinance. In compliance with the Energy Law and the Ordinance, the obligation to label is imposed on appliances introduced to the domestic market' (Art. 52 item 2 of the Act and § 2 item 1 of the Ordinance). This obligation is imposed on all types of appliances. Polish law therefore imposes obligations on a wider group of appliances than Community Directives do. Unlike related directives, the Polish Ordinance of February 18, 1999 makes effective uniform conditions for all types of appliances. Polish regulations do not define a specific way in which the sign should look. They say only that the sign is to be placed on the external side of the appliance, in a visible place. This will allow to use in Poland the sign required by the EU directive.

All appliances enumerated in two related directives are enumerated collectively in Appendix no. 1 the to Regulation of February 18th, 1999. The requirements of the Directive have been transposed to the Polish legal system.

In accordance with the framework Directive, information on the consumption of energy and other relevant information about the product should be available for the consumer in the form of labels. The said information should be placed on each appliance's required by the Directive and offered on the market for sale, lease or exhibition to its end user. Polish Energy Law institutes a requirement towards producers and importers of appliances

which are introduced to the market to inform about the appliance's energy efficiency and technical characteristics on its label. Energy efficiency is defined as the size of consumption of fuel and energy, compared to the use effect of an appliance in typical usage conditions (Art. 52 item 2 and item 1). In accordance with the Ordinance, the label and technical characteristics of a product should be placed on the packaging by its producer or importer. The label must be placed in a visible place, on the external side of an appliance; in case the appliance is small in size and placing a label on it could cause diminishing its usage functions, the label should be placed on the package of the appliance or in the place of its exposition. If the appliance is introduced to the market in a way which makes it impossible to see it directly, information placed on the label should be additionally supplied, with the offer (§ 2 of the Ordinance). As far as the contents of the label are concerned, they should include information about the appliance, its producer, product characteristics, energy use and mark denoting its energy efficiency (§ 3 of the Ordinance). Apart from the label, it is also a necessary condition to include technical characteristic to enable the admittance of a product to the Polish market. Technical characteristics of an appliance should contain basic technical and operating data— supplied in the Polish language. These obligations fulfil the requirements of the framework Directive (Art. 4a).

2.1.6.2 Institutional Requirements

In compliance with the framework Directive, Member States are obliged to take necessary steps to ensure that the requirements of this Directive are fully implemented. In Poland they are currently being transposed into the domestic legislation and executed. The body responsible for the fulfilment of Directive requirements is the Minister of Economy.

2.1.6.3 Procedural Requirements

In accordance with the Directive, appliance suppliers are responsible for labeling and placing appropriate information concerning the product free of charge (art. 4b). Polish regulation imposes this obligation on producers and importers of appliances. They must inform about energy efficiency of an appliance on the label and in the technical characteristics (art. 52 item 2). A document confirming meeting obligations concerning energy efficiency is a certificate of conformity with these requirements issued on the basis of Act of April 3, 1993 on research and certification (Official Journal of Law 1993 No. 55, item 250 and of 1994 No. 27, item 96).

The Polish law does not currently require the supplier of an appliance to hold technical documentation together with descriptions of a product, test results, calculation results and so on for a period of 5 years as of the year of production of a given product (art. 2.3 and 2.4. of the Directive). Also the requirements of Art. 7 of the Directive concerning the conduct of educational and promotional campaigns by Member States to persuade consumers to take conscious responsibility for energy use are not currently fulfilled by Poland. Nevertheless, such campaigns can be started both by governmental institutions,

local governments or commissioned to NGOs after the necessary funds have been allocated. This can take place even before Poland enters the EU.

2.1.6.4 Monitoring and Reporting

The body responsible for the monitoring and correctness of certification of products in Poland is the Polish Centre of Research and Certification (Art. 4 of the Act on Research and Certification). Requirements in the field of communicating to the Commission the main regulations of domestic law can be fulfilled by the state administration authorities.

2.1.7 Directives on Energy Efficiency Requirements for Household Appliances

2.1.7.1 Objectives/Substantive Requirements

Directives aiming to increase energy efficiency of some appliances are transposed into the Polish law and executed in Poland. Requirements of the aforementioned Directives are met by the Act Energy Law (Official Journal of Law 1997, No. 54, item 348) and Ordinance of the Minister of Economy of February 18, 1999 laying down requirements on energy efficiency which should be met by appliances as well as requirements concerning labeling and supplying technical characteristics (Official Journal of Law 1999, No. 16, item 145).

General conditions concerning energy efficiency are detailed by the Act Energy Law (mainly art. 51-53). The Ordinance on the other hand imposes in its § 1 item 1 a general obligation concerning energy efficiency for appliances produced in Poland and imported. These requirements are detailed in Attachment 1 to the Ordinance.

In accordance with the Energy Law and the Ordinance, the obligation to supply information on energy efficiency concerns ‘appliances produced in Poland and imported; appliances introduced to the Polish market’ (§ 1 item 1 of the Ordinance). This obligation is imposed, in accordance with Attachment 1 no 1 on: boilers, air-conditioning systems, electric appliances, semi-automatic welders, welders, plasma cutters, coolers, coolers and freezers combined, household freezers, household dishwashers, household washing machines, household washing machines and dryers combined, household dryers, vacuum cleaners, flow water boilers, indoor heaters, thermo-ventilators, indoor oil heaters, microwave ovens, electric cookers, electric bakers, hot-water boilers fired with liquid or gaseous fuels, electric engines, halogen bulbs, other types of bulbs and fluorescent tubes. The number of types of appliances subject to energy efficiency requirements is therefore larger in the understanding of the Polish legal system, than the one required by European directives. The attachments details appropriate technical parameters and contains ratios of energy efficiency for given types of appliances. Both the list of such appliances and ratios of their energy efficiency are compliant with the discussed Directives. Article 52 of the Energy Law defines the term energy efficiency as ‘rate of fuel consumption specified

in the technical documentation compared to the obtained rate of use effect of a given appliance in typical conditions of use’.

In accordance with Art. 53 of the Energy Law it is illegal to introduce to the Polish market appliances which do not fulfil energy efficiency requirements stated on their labels, in technical characteristics or confirmed by a compliance certificate.

2.1.7.2 Institutional Requirements

Member States are obliged to take necessary steps to ensure that requirements of the said Directives are fully implemented. In Poland the requirements of Directives are currently being transposed into domestic law and executed. The body responsible for the fulfilment of requirements of the said Directives is the Minister of Economy. In compliance with Directive 92/42/EEC each Member State must institute a body responsible for the verification of compliance of boilers with efficiency requirements detailed in Art.5.1. Such a body must fulfil certain detailed criteria. Such a body which fulfils the criteria of objectivity and professionalism is the Polish Centre of Research and Certification created on the basis of Act on Research and Certification. Currently it is not a body commissioned by the state to verify the compliance of boilers with efficiency requirements. On the other hand, there is a possibility of entrusting it with such tasks before Poland enters the EU.

2.1.7.3 Procedural Requirements

At present due to the fact that Poland is not a member of the European Community such a labeling system compliant with the EU one has not been developed. On the other hand certificate of compliance with energy efficiency requirements is a document certifying that a given appliance was tested according a special procedure defined in the Act on Research and Certification. This Act, however, does not transpose the procedure defined in Annex III to Directive (92/42/EEC). In accordance with this Directive, Polish law requires that only appliances specially labelled can be introduced to the market. At the moment these are not symbols used in the EU. The same remarks concern the fulfilment of the Directive on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof (96/57/EC), because Polish law introduces common regulations for the above enumerated types of appliances.

2.1.7.4 Monitoring and Reporting

At present the requirements laid down by the Directives to notify the Commission and other Member States about the instituted bodies as ‘notified bodies’ (92/42/EEC art. 8 Annex V) do not apply to Poland due to the fact that Poland is not an EU member. The same can be said about the obligation to publish in the Community Official Journal a list of boilers meeting efficiency requirements. These requirements, however, may be easily fulfilled by Poland even before it is admitted to the EU.

2.1.8 Directive on Integrated Pollution Prevention and Control

2.1.8.1 *Objectives/Substantive Requirements.*

The objective of IPPC Directive is to achieve an integrated pollution prevention and control for certain kinds of industrial activities in order to ensure environmental protection treated as a whole. Polish law currently in force does not contain regulations which would fulfil the requirements of the IPPC Directive. APME does not have as its objective an integrated prevention of environment pollution of all media. The present approach of Polish legislation concentrates on the protection of particular elements of the environment which finds its expression in separate chapters of the Act devoted to the protection of green areas, air, protection against waste, against noise. For each of these media there are separate regulations and separate environmental permits. Moreover, this Act does not provide for the existence of an integrated environmental permit. Issues such as energy saving and water protection are regulated by separate Acts (Act on Water Law, as well as by the Act on Energy Law).

The situation will change the moment the new Environment Protection Act comes into force. The Sommer Team Draft is based on a different philosophy of pollution prevention, regulations compliant with the European ones. In Part III of the Draft entitled 'Pollution Protection' a whole chapter on installations requiring integrated ecological permit is included (Chapter 2).

In accordance with the IPPC Directive, integrated environmental permits are required, as planned by the Draft, for installations whose operation may cause polluting the environment as a whole and in particular of water, air and soil as well as after each significant modification of the installation (Art. 72 item 1 and item 3). Minister responsible for environmental issues will define by means of a ministerial ordinance the types of installations whose operation requires a decision concerning obtaining an integrated ecological permit taking into account environmental nuisance as a whole (Art. 79).

At present the requirements of the IPPC directive are not fulfilled. Nevertheless if Sommer's Draft together with its executive regulations comes into effect, Polish law will be compliant with this directive.

2.1.8.2 *Institutional Requirements*

The IPPC Directive foresees that countries must develop administrative structures to issue ecological permits and scientific potential to administer the said as well as to control requirements for ecological management for various sectors of industry. At present there are developed administrative structures, both governmental at the national level and in local governments, which issue various ecological permits. Due to the fact that there is no integrated ecological permit, there is also no body which would handle issuing such permits. Nevertheless, the moment the Draft comes into effect these functions will be taken over by environmental departments of *gmina*, *powiat* and *voivodship* (the smallest,

middle and largest regional administrative units) as well as by central administration which already now have an appropriate administrative apparatus and specialist knowledge. At present there exists an obvious legal loophole in this area. After the draft comes into effect, the institutional requirements of the IPPC directive may be fulfilled. Difficulties with the implementation of requirements of the discussed Directive will arise primarily from the costs associated with the use of the best available technology and conducting activities based on integrated permits and not from the adjustment of the law itself. It is estimated that this obligation will apply to about 4000 existing plants and additionally, about 300-400 new installations per year. Due to the old age of many production plants in Poland, and obsolete technologies, the introduction of the best available technology will be very costly for the Polish industry.

2.1.8.3 Procedural Requirements

The IPPC Directive introduces general requirements towards Member States in the field of specified industrial undertakings. At present Polish law does not know the concept of BAT (best available technology), nor is related to it legal requirements. On the other hand, the Draft contains requirements based on BAT. In compliance with the IPPC Directive all new and existing installations are required to obtain permits defining the limit of their emission and control based on BAT standards and multi-media approach. This approach is included in the Draft. In accordance with its Article 76 item 2, the integrated ecological permit includes requirements necessary to meet obligations arising from legal regulations on pollution protection, including regulations on preventing transmitting pollution from one environment element to another.

Norms of emission to environment resulting from the best available technology can be defined by a ministerial ordinance of the Minister of Environment separately for new installations and separately for the already existing ones. Persons applying for ecological permits must prove that emission discharged by a given installation (or emission which will be discharged) will comply with BAT requirements (art. 75). These requirements concern: norms of emission into the atmosphere – for an installation as a whole and its particular sources of emission, the maximum permissible time of existence of technologically justified operation conditions differing from the ordinary ones such as start-up or putting out of operation; permissible noise level produced by an installation and audible in the external; rules governing the process of storing information on the produced waste; requirements concerning dealing with waste; permissible levels of sewage discharge to water or to soil, technical and organisational means preventing soil and underground water pollution; requirements concerning emission measurement including methodology of measurements, their frequency and methods used to analyse the obtained data; requirements concerning methods of verification of data obtained from conducted measurements by independent laboratories, methods of operation in case of failure of measuring apparatuses, activities to be taken in case of termination of operation of an

installation, steps to be taken in case of local risks to environment connected to the operation of the installation (Art. 77 item 1 of the Draft).

Persons responsible for the operation of installations must obtain an integrated ecological permit and use all appropriate means, in particular those arising from the BAT preventing pollution, non-causing serious pollution, preventing waste production, and when impossible that waste will be utilised or disposed, ensuring an efficient use of energy, taking the necessary steps to prevent serious industrial and local failures and in the case operations are closed down, taking the necessary steps to avoid the risk of pollution and to ensure land reclamation (Art. 72 of the Draft).

The Draft also provides for public participation in issuing integrated permits; ecological organisations are entitled to take part in the process as a party in administrative proceedings, issuing a permit requires a hearing. The requirements of the IPPC Directive to make the application for a permit available to the public allowing for time to debate on it before the hearing by an appropriate body and that the decision on granting an integrated permit are included in the Draft in the frames of a more general regulation on the access to information and public participation in environmental protection. The whole Chapter III is devoted to these issues (II). An application to issue a permit and the decision itself are compliant with the Draft. Public issuing of permits must be preceded with a public hearing. The permit, in accordance with the IPPC Directive should be renewed periodically. The renewal is to take place not later than 10 years after the day on which decision on the granted integrated ecological permit came into effect (Art. 78 of the Draft). The requirements of the IPPC Directive to consult the application with neighbouring states in case of a possible cross-border influence of the installation is not foreseen in the Draft. Poland may partly fulfil these requirements only on the basis of the Convention on Environmental Impact Assessment in a Transboundary Context (The Espoo Convention), which was ratified by Poland in 1997 (Official Journal of Law 97.18.96). Currently only the above mentioned requirement of the Directive is in force in Poland. Apart from this, procedural requirements of the Directive are not implemented into the Polish law. The moment the draft comes into effect it will ensure full compliance with the requirements of the Directive.

2.1.8.4 Monitoring and Reporting

The requirements of the IPPC Directive to monitor regularly if installations operate in accordance with permit conditions (art.14) may be fulfilled by activities of the State Environmental Protection Inspectorate. In this area exists general regulations of the Act on State Inspection of Environmental Protection (SIEP) (Official Journal of Law 1991, No. 77, item 335) which conducts the monitoring of fulfilment of environmental protection requirements are in force. After the draft comes into effect, Poland – owing to the co-operation of the local government, the central government and special administration – will be capable of fulfilling the said requirements, that is to send every three years to a Commission representative the data on the limitation of volume of pollution for particu-

lar categories of industrial activities and BAT requirements, from which these figures are obtained.

A competent body to ensure the exchange of information may be nominated from among units subject to the Ministry of Environmental Protection. Currently the Institute of Environmental Protection is a body subject to said Ministry and capable of fulfilling these tasks.

In Poland the requirements of the IPPC Directive are currently neither transposed into the legal system, nor implemented. On the other hand, if the draft of the act comes into effect, these requirements may be fully transposed and fulfilled.

2.2 Decisions and Programmes

2.2.1 R&D Programs: Energy Framework Program (1998-2002)

On the July 17th 1995 Poland signed Additional Protocol to the already-binding European Agreement. Signing that Protocol gave Poland a possibility to participate, on the basis similar to the one applied to Member States, in some of the Union's programmes.

It is an important step towards Poland's integration with European Union's structures. Participation in such programmes helps to understand rules of European integration in Poland. It also helps to establish and deepen contacts with Member States.

Union's support under Additional Protocol forms additional source of funding to that which have been received through PHARE Programme existing since 1991 in Poland. Although Union programmes are generally intended for Member States, Poland may also receive such a support due to signing the Protocol mentioned above.

While Member States participate by definition in those programmes, governments of Associated States have to declare that they are going to submit annual membership fee, which goes to joint programmes' budget. Poland's government is also obliged to submit its declaration of willingness of participation although Polish annual membership fee is partly financed through PHARE Programme. Nevertheless PHARE's contribution will decrease over the coming years.

Those programmes are intended for particular national authorities, local governments and non-governmental organisations.

However it must be stressed here that joining procedure takes relatively long time before being entirely completed. Firstly Associated State has to declare a willingness to participate in specific programme. Such a declaration is subsequently accepted by the European Commission, given opinion by the European Parliament and deliberated by the Council of Association. The final decision on joining particular programme is made by the Council of Association.

Despite signing the above-mentioned Protocol, due to that relatively long procedure, Poland has not taken part in all programmes yet. In 1999 Poland has participated in 10 Union's programmes of which only SAVE II covers energy & environment area (efficient energy use).

Governmental institution Polish Agency for Energy Saving (in Polish: Krajowa Agencja Poszanowania Energii, KAPE) has been appointed for managing SAVE II in Poland.

Under SAVE II there were five different projects selected for financing in 1999/2000. These are as follows:

- National Strategy for Energy Efficiency and Environment Protection
- Third Party Financing in Industry
- Market Study of CHP's in Europe
- Energy Labelling, databases of home appliances, market development of energy-efficient appliances
- Third Party Financing Expert System to Support Energy Efficiency in Buildings

2.2.2 Coal Subsidies

2.2.2.1 Introduction

In the European Union subsidies for coal industry are regulated by Commission Decision 3632/93/ECSC of 28 December 1993. In order to qualify for approval any coal subsidies have to meet at least one of the following general conditions:

- the competitiveness of the coal industry is improved, with respect to coal prices on international markets, with the aim of reducing the subsidies;
- social and regional problems created by reductions in production will be solved
- the coal industry improves the environmental protection standards.

The coal industry in Poland is in the process of restructuring under the "Programme of Coal Mining Reform in 1998-2002". The main legal acts which introduce the reform are the Act of 26 November 1998 on adjustment of coal mining to functioning in a market economy and special rights and tasks of local communes (Official Journal of 30 December 1998) and the Budgetary Act for 1999 (and subsequent years in future).

2.2.2.2 Objectives and requirements

The Act of 26 November 1998 establishes the principles of the reform of the coal industry, which are necessary to achieve profitability of the sector. These provisions include:

- financial restructuring of coal mining undertakings;
- clearance of unprofitable coal mining undertakings;

- restructuring of labour force;
- specific rights and tasks of local administrative communes;
- financial sources and rules of financing the reform;
- management rules in coal mining undertakings;
- monitoring and control of the process of reforms.

The principle objectives of the reform are in compliance with the Commission Decision 3632/93/ECSC. Restoration profitability and competitiveness, solving regional problems and improvement of the environment are major goals of the programme. The “Pro-gramme of Coal Mining Reform in 1998-2002” predicts, that competitiveness of the coal industry will be archived through financial restructuring, labour cuts, reduction of output and management improvement. Regional problems are going to be solved by labour re-structuring and restoration of economic viability of the coal sector. Environmental stan-dards will be partially archived as the result of production output reduction, increased inflow of environmental charges and direct investments.

2.2.2.2.1 *Financial Restructuring*

Financial liabilities of coal mining establishments are subject to restructuring. The list of such liabilities include those to state budget, local communes (gmina), Social Insurance Fund (ZUS) and labour related funds, State Fund for Rehabilitation of Disabled Persons (PFRON) and environmental funds (NFOSiGW). Table 1 illustrates the structure of li-abilities by major creditors, as of the end of 1997:

Table 2: Structure of Liabilities of Coal Industry

Creditor	Million PLZ
State budget	929
Budgets of local communes	172
ZUS and other labour funds	2,534
State Fund for Disabled Persons (PFRON)	140
Environmental Funds (NFOSiGW)	4,129
Suppliers	2,086
Banks	1,213
Other liabilities	2,139
Total	13,346

Source: *The State Agency for Restructuring of the Coal Mining Industry (PARGWK S.A.), “Pro-gramme of Coal Mining Reform in 1998-2002”, Katowice 1998*

The present, inherited level of liabilities generate financial costs, which cannot be borne even after successful restructuring programme, including dramatic labour cuts, closing

the least profitable coal mines and reducing output to adjust to market demand. The restructuring programme includes measures to abolish, reduce or postpone due payments. The total amount of liabilities, which will be remitted equals to Polish Zloty (PLZ) 6.9 billion, including PLZ 3.3 billion due to NFOSiGW and PLZ 3.1 billion due to ZUS and other labour funds. The liabilities mentioned above can be reduced only if strictly defined conditions and procedures are fulfilled, according to individually developed restructuring plan. These subsidies could be regarded as being compliant with the Annex to Article 5 of Commission Decision mentioned earlier, especially in areas of social insurance and environmental liabilities. Tax liabilities may also be regarded as corresponding with “residual costs resulting from administrative, legal or tax provisions”, as stated in Annex to a/m Commission Decision. Remitted liabilities are to be entered in the books according to general accountancy standards. This means, that state aid will not be shown separately on profit and loss accounts, as requested by Article 2 of the Decision.

2.2.2.2.2 Clearance of Coal Mining Establishments

The programme of the reform of the coal industry will result in reduction of production from 137 million tonnes in 1997 to 112 million tonnes in 2002. The reduction will be possible only by clearance of several existing coal mines. The basic criteria for the clearance are high costs of extraction, permanent financial losses, scarcity of raw material and redundant technical infrastructure. Clearance of unprofitable coal mining undertakings is carried out in accordance with a clearance programme. In 1998-2002 external subsidies for clearance of the coal mines are planned to archive PLZ 1.5 billion. These subsidies are in compliance with Article 4 of the Decision of the Commission mentioned earlier.

2.2.2.2.3 Restructuring of employment

The coal industry reform creates a must to reduce (restructure) the employment from 243 thousand in December 1997 to 138 thousand in December 2002. There are several measures provided by the Act of 26 November 1998 to help employees to adopt to new circumstances. As mentioned before, over 100 thousand people will loose their jobs as the result of the restructuring programme. The support measures include:

- 5 years social welfare benefits paid to workers before they reach their statutory retirement age;
- 2 years social welfare benefits paid to workers who voluntarily leave their jobs;
- Bulk sum payments;
- Loans, free training and advisory service;
- Benefits in kind.

The total cost of restructuring of labour, estimated PLZ 4.3 billion, will be covered mainly by the state budget. The programme of restructuring of employment only partially fulfils the requirements of Commission Decision of 23 December 1993, expressed in Ar-

ticle 5. The social-welfare benefits, bulk sum payments and other above mentioned measures are available for all miners, not only for those who are employed in an undertaking, which carries out restructuring programme or will be liquidated (as required by the Article 5 of the Decision and the Annex). This has been recently criticised by Minister of Finance. Besides, state aid for social-welfare schemes significantly exceeds aid for other industries, contrary to Article 5 of the Decision.

2.2.2.2.4 *Environmental Protection Measures*

In the “Governmental Programme of Restructuring of the Coal Industry in Poland in the years 1998-2002” there are plans of several investments for environmental protection. These investments include installations for desalination of mining waters, coal washing (enrichment) works, installations for pumping back saline water into tectonic structure, reduction in solid waste dumping, regeneration of the landfills etc. The budgetary subsidy is expected to reach the level of PLZ 130 million, and the subsidy from the National Environmental Fund PLZ 210 million (banks together with the coal industry will provide the rest of the necessary resources). These subsidies are not in line with the relevant Decision, because according to Article 7 only fulfilment of new environmental protection standards could be supported. In Poland, existing law measures like environmental charges, fines or standards are hardly ever paid or met by the coal industry.

2.2.2.2.5 *Economic Viability*

The Table 2 below summarises **forecasted**, in the restructuring programme, effects of the reform of the coal sector:

Table 3: Forecast of the Effects of Restructuring Process in Coal Sector

Specification	Unit	1998	2000	2002
Average employment	1,000	232	177	144
Output	million t	121	114	112
Cost of extraction	PLZ/t	153	132	120
Net profit ¹⁾	million PLZ	-3,117	-142	831
¹⁾ without implications of remitting overdue liabilities				

Source: The State Agency for Restructuring of the Coal Mining Industry (PARGWK S.A.), “Programme of Coal Mining Reform in 1998-2002”, Katowice 1998

The forecast predicts that by the end of 2000 the coal industry should become profitable. Profitability will be archived through reduced employment, lower production and sales of not productive fixed assets and property. It is assumed that average price on domestic market will be 133 PLZ/t and export will decrease from 27 million ton to 20 million in 2002.

In reality, however, basic assumptions regarding the process of the coal industry reform has to be modified. Because of significantly lower domestic demand than forecasted (by 10 million tons) there is a growing surplus of coal on the market. The result is that price of coal has dropped to 113 PLZ/ton in May 1999, which in turn increased loss of the coal industry. Modified business plans predicts the overall loss of the sector at PLZ 2,890 billion in 1999, instead of PLZ 1,335 million as previously assumed. Total debt of the coal industry has exceeded PLZ 17 billion, including more than PLZ 10 billion to the state budget, mainly labour and environmental funds. There is a serious danger that the restructuring programme will not be successful, or will be more costly to a taxpayer.

It is important to note, that because of poor management and mighty trade unions, closure plans and reduction of output are not carried out at enough fast pace. As the result, the coal mine undertakings are selling coal for export at dumping prices. The indirect subsidy to export, mainly to the EU market, exceeds PLZ 50 per tonne and probably over 300 million USD in 1999 in total. This makes the restructuring programme as being contradictory to Article 3 and 4 of the relevant Commission Decision, which limits the operating aid and subsidies for reduction of activity to the level, which might cause distortion on the coal market.

2.2.2.3 Institutional Requirements

There are no specific institutional requirements from the European Commission. In Poland however, the situation is more complicated, due to importance of the coal sector in the economy. Apart from Government, Ministry of Economy and other ministries, the major institutions involved in the restructuring process include:

- Steering Committee appointed by the Prime Minister;
- The State Agency for Restructuring of the Coal Mining Industry S.A. (*Państwowa Agencja Restrukturyzacji Górnictwa Węgla Kamiennego S.A.*);
- Mining Employment Agency (*Górnicza Agencja Pracy*).

Detailed tasks of a/m institutions are set by the Act of 26 November 1998 on the restructuring of the coal mining sector.

2.2.2.4 Procedural Requirements

The subsidies will be transferred to a coal mining undertaking on the grounds of a written agreement (business plan) with the Minister of Economy. Donations, which are not used in accordance with the agreement, have to be returned. This is compatible with Article 9 of the relevant Commission Decision.

There are no specific procedures, which could be regarded as an equivalent of procedures for monitoring and reporting described in Article 9 of mentioned earlier Commission Decision. On the other hand, however, these procedures can be developed and im-

plemented, using the resources of Ministry of Economy and The State Agency for Restructuring of the Coal Mining Industry.

2.2.2.5 Monitoring and Reporting

The reports, required by Article 9 of Commission Decision 3632/93/ECSC, are not compiled in Poland. However, they could be prepared and submitted to the Commission if needed.

2.3 Environmental Agreements

Environmental Agreements concerning environmental protection and energy use signed between the European Union and producers as well as importers of television sets, video recorders of the 'stand-by mode' type as well as of washing machines may influence the scope of obligations imposed on Polish businesses producing or importing these appliances. Talks concerning dish washers as well as TV sets and video recorders of the 'on mode' type may bring about similar consequences.

This may also concern the market of TV sets and video recorders, quite well developed in Poland. The main producers or importers of these appliances are the following companies:

- Curtis Electronics,
- Domar S.A. Wielkopolska Spółka Handlowo - Usługowa, (trade and service company)
- Grundig Polska Sp z o.o., (Ltd.)
- Thompson Poland Sp z o.o., (Ltd.)
- Panasonic Poland Sp z o.o., (Ltd.)
- Philips Consumer Electronics Industries Poland Ltd,
- Sony Poland Sp z o.o., (Ltd.)
- Telestar Sp z o.o.j.v., (limited joint venture company)
- Tronica S.A.,
- Unimor Gdańsk Zakłady Elektroniczne, (electronics company)
- Univex S.A.

Unfortunately in the available sources there is no information allowing to differentiate between producers and importers of appliances (in many cases these companies are both producers and importers). There is also no differentiation between appliances imported from the EU member states and from other countries. Nor does the data available treat separately TV sets and video recorders of the 'stand-by mode' and 'on-mode' types. In general in 1998 in Poland the value of sale of electronic appliances of everyday use

reached the figure of about 1 mld USD. TV sets constitute the largest segment of the market of electronic appliances that is 51 % of the said. The largest shares in the market of TV sets in Poland are controlled by Philips, Sony, Thompson and Panasonic. Together these makes make up over 60 % of all TV sets sold in Poland. Share in the market of imported TV sets is currently (1999) about 44 %. For some years it has had a tendency to grow. In 1998, 15 % of the electronic appliances market was constituted by video recorders. Practically 100 % of this type of equipment sold in Poland was imported. Four companies dominate the video recorder market: Philips, Sony, Thompson and Panasonic. Products of these companies constitute over 75 % of video equipment sold in Poland.

European Union's ecological agreements defining standards of energy saving may also influence Polish industry of producers and importers of washing machines and dish washers. This sector of economy is also well developed in Poland. The following companies are the leaders on the market:

- Amika Wronki S.A.,
- Ardon S.A.,
- Candy Polska Sp z o.o., (Ltd.)
- Daewoo Electronics Sp z o.o., (Ltd.)
- Efekt Sp z o.o., (Ltd.)
- Elektrolux Sp z o.o.; (Ltd.)
- Myszkowska Fabryka Naczyń Emaliowanych "Swiatowid" (enamelled kitchenware producer, produces also automatic washing machines in co-operation with Eletrolux)
- Polar Wrocław, (Ltd.)
- Kenwood Polska Ltd,
- Whirlpool Polska Ltd,
- Wrozamet S.A.;
- Zelemer S.A.

Large dynamics of this market makes it impossible to show in a definite way which of the above mentioned companies are producers and which importers, nor does it show if goods imported by these companies originate from countries other than from the EU member states. In mid-1998 there were 38 producers of electronic home appliances which employed more than 50 persons. However, most are small companies. Four largest producers have almost 80 % share of income of the whole branch. These are: Amika Wronki S.A., Polar S.A., Daewoo Elektroniks Sp z o.o. and Zelmer. In a segment of this market, the so called 'white home appliances' (washing machines, dishwashers and refrigerators) of interest due to the ecological agreements which they have to observe, only three Polish companies have an important share: Polar, Amica Wronki, Wrozamet. On

the domestic market these companies have to compete with importers. Import meets about 25 % of the domestic demand for home appliances.

2.4 General Policies and Strategies for the Future

2.4.1 Combined Heat and Power Production (Co-generation)

Poland has a relatively large percentage of electricity produced in co-generation (14 %) compared to the EU average [Józef Pupka]. It should be noted that the Polish co-generation is based on existing thermal power plants, which are fired with coal. The gas fired co-generation plants in Poland are only entering the Polish market: the first thermal power plant in Poland fired with gas has been located in Nowa Sarzyna. The forecasts made for the preparation of the new energy strategy predict a remarkable increase of the use of gas in next few years. This should be accompanied with construction of the new CHP plants. The Second Sulphur Protocol and the air pollution law (which came into force in 1995) require substantial reductions in SO₂ and NO_x emissions. This should help to open the market for the gas based CHP investments. Maximisation of the share of energy produced in co-generation is one of the possible ways for the thermal power plants to achieve reductions of the gas emissions.

Although the “Energy Policy Strategy for Poland until 2010” emphasises the need to promote co-generation no particular economic or legal measures have been implemented, until now, to encourage it. There are no target levels for increasing the share of CHPs in total electricity production.

The Professional Association of Combined Heat and Power Plants (PTEZ) has been the principal group promoting co-generation in Poland. PTEZ associates 25 of the largest CHP plants in Poland.

2.4.2 Renewable Energy Sources

The, “Energy Policy Strategy until 2010” (prepared by the Ministry of Economy in 1995) and the “National Environmental Policy of Poland” (prepared by the Ministry of Environmental Protection in 1990 and accepted by Polish Parliament 1991) refer to the use of energy from renewable sources.

The former stipulates that “.. *an increased use of renewable energy, will be necessary when fossil fuels are exhausted or their combustion is prohibited with regard to the environment protection and simultaneously the nuclear energy sector is not able to ensure safe use of nuclear fast breeder reactors*”. Apart from this “encouraging” statement there are only a few general references to promotion of renewable energy.

The latter document, National Environmental Policy of Poland, notes the benefits of renewable energy sources, such as the reduction of CO₂, NO_x, SO₂ emissions; rationalisation of the fossil fuels management and creation of local labour markets. It puts the pro-

motion of renewable energy as one of the priorities. However, up to date there are only few political actions undertaken to implement these recommendations.

The Ministry of Economy that is responsible for energy policy, does not pay any significant attention to the development of renewable energy. Compared to the other European governments, the Polish government has not yet adopted any (even not binding) targets for the increase the share of renewable energy sources. The current share amounts to merely 1.5 %.

Furthermore, the use of renewable energies is influenced by the decisions and actions of central institutions such as the Ministry of Environmental Protection, Ministry of Agriculture or Ministry of Finance. The problem of renewable energy is a key issue for none of them and the activities undertaken are often not well co-ordinated.

Unlike the case of energy efficiency there is no government agency working on the renewable energy sources. Many observers put this fact among the basic institutional barriers for renewable energy development. An additional barrier is the fact that full external costs are not included in the fossil fuels prices.

Currently, Polish tax system does not contain many tax provisions for renewable energy e.g. tax differentiation or tax breaks. For instance, wood waste used for energy production is taxed at 22 % VAT rate. On the other hand, there is tax exemption for timber and wood sold by the State Forest Enterprise. Most remarkably, there are no tax differentials between the use of renewable and fossil fuels. Also, the environmental fees for emissions do not differentiate between greenhouse gas emissions from biomass and coal.

Although, no concrete targets to increase the share of "green energy" have been yet defined, there exists a piece of legislation that promotes this kind of energy i.e. the aforementioned executive regulation of the Minister of Economy entitled "Requirements for Purchase of Electricity and Heat from Renewable Energy Sources" (Official Journal of Law 1999, No. 13, Item 119).

The process of liberalisation the energy prices that has started on 1st January 1999 under the provisions of the Energy Law is expected to bring positive environmental effects. The Energy Law defines, that *"the tariffs for natural gas, electricity and heat should be established at the levels, which ensure covering the energy company's' costs, including the costs of environmental protection measures"*. Additionally, the tariffs can include the costs of co-financing, by the energy companies, of the investments to develop renewable energy sources.

Furthermore on July 21, 1999 the Polish Parliament published a resolution calling for an increased use of renewable energy sources and preparation - by the end of the year - of a strategy to achieve this goal (Monitor Polski, July 1999). The resolution emphasises the environmental, economic and social benefits of such a policy. It shows the need to broaden participation of the firms, local authorities and NGOs in the process of promotion "green" energy. The Parliament looks forward for the active role of the government in adoption of the legislation, financial mechanisms and strategies to promote renewable

sources (short, medium and long term strategies). Additionally, the parliament declared its readiness to start the work on new legislation in this area.

However, although some modest steps to promote renewable energy in Poland have been undertaken, up to date, there exists no comprehensive strategy for its development. It should be noted, however, that there emerges an organised lobby of a professional character. An example is recent creation (March 1999) of the Polish Biomass Association by several tens of academics and business representatives.

2.4.3 Energy Efficiency

The document: “Energy Policy Strategy until 2010” *anticipates “a substantial improvement of energy efficiency of the whole national economy”*. The Strategy enumerates the following factors as likely means to improve energy efficiency:

- changing the prices of energy up to their “real” values;
- enabling the energy companies to invest in the energy demand side (DSM) measures;
- state regulatory policy to replace the energy intensive equipment by modern efficient equipment;
- increasing public awareness about rational use of energy.

The first major government-initiated action to promote energy efficiency was establishment of the National Energy Conservation Agency (KAPE S.A.) in 1994. KAPE is an agency set up to promote energy efficiency through controlling and supporting energy efficiency projects. It is a joint stock company, owned in more than 50 % by the State Treasury.

Currently KAPE S.A. is involved in several programs, which help implement the provisions of the SAVE directive. These are:

- A ten year program of thermal modernisation of apartments (external wall insulation, modernisation of heating installations etc.). The program aims to make more energy efficient 2.4 million apartments over its duration and its budget amounts 5 billion US dollars;
- Promotion of various funding methods such as Third Party Financing or ESCO schemes, in which EBRD and other foreign financial institutions can be involved”, including Polish government finance (such as warranties and loans supported by the state budget). Energy efficiency in Poland is constantly improving but it is still much lower than in the EU countries. This improvement is mainly caused by changes in the structure of the economy (from heavy raw material industries, to more modern industries and services). Still, the Polish government has not adopted, up to date, any targets for increasing energy efficiency of the Polish economy.

Several actors play important role in promotion of energy efficiency in Poland. These are:

The National Fund for Environmental Protection and Water Resources (Narodowy Fundusz Ochrony Środowiska i Gospodarki Wodnej, NFOS). NFOS collects emission charges and fines and distributes them to different environmental protection activities including energy efficiency. There are also Voivodship Funds, which have supported the conversion of many small district-heat boilers and boilers serving public sector premises from coal to gas or oil;

The Bank of Environmental Protection (BOS) that provides loans for environmental protection and energy saving investments. Besides the commercial loans, BOS grants also the so called preferential loans. These are supported with the resources NFOS, (the interest rates are subsidised).

There are also non-government organisations that undertake the energy efficiency activities. One should mention, in particular:

- the Association of Polish Municipalities “Polish Network >Energie Cites<”;
- the Polish Foundation for Energy Efficiency;
- the National Agency for Energy Efficiency, NAPE (different than KAPE S.A.)
- the Energy Advisory Offices.

2.5 Planned and Proposed Activities

2.5.1 Integrated Resource Planning

Regarding the Integrated Resource Planning, The Energy Law (Art. 18 item. 1 and 2) defines responsibilities of the regional authorities (voievodes) and local- municipal level ones, (gminas) in the field of electricity and heat supply. Gminas are responsible for:

- planning and organisation of local heat supply,
- planning and organisation of public space lightning
- financing of public space lightning (excluding the highways)
- Gminas prepare the energy plans including:
 - actual and forecasted changes in energy demand
 - the investments to make the use of heat by the final users more efficient
 - the possibilities of using energy surpluses and local energy sources

The energy utilities are obliged to provide all information necessary to prepare such energy plans.

Gminas argue that the obligation to prepare is not binding and there are no restrictions for non-compliance.

Although, such plans should have already been prepared, most of the local authorities have not done it so far. Among the most serious obstacles the gminas complain about the very high costs of such plans and lack of specialists trained to prepare them.

The above mentioned provisions of the Energy Law comply with the integrated resource planning (IRP) methodology. However, the Polish government has not developed up to date any particular mechanisms to implement IRP planning techniques. This gap is partly filled by the non-governmental and academic institutions promoting energy efficiency, carrying out different demonstration or pilot projects and organising training seminars on IRP.

2.5.2 Feed-In Directive (Renewables)

The executive regulation of the Minister of Economy that requires electricity purchase from renewable energy sources, sets the rules for shaping "green" power prices. The rules stipulate that there is no obligation of purchasing "green" electricity if the prices offered by the producers are higher than the highest ones in the distribution company. Up to date no action has been undertaken to develop the rules to feed-in the power subject to minimum tariffs defined by the Energy Regulatory Authority (ERA).

The rule contained in the Energy Law (Art. 45), regarding the electricity tariffs stipulates that the levels of tariffs shall ensure covering of the "justified costs" of generation, transmission and the distribution, and the costs of modernisation and environmental protection costs.

3 Patterns of Regulation and Implementation

According to the *National Integration Strategy* agreed by the government in January 1997, Poland is continuously working on its preparation for full membership in the European Union. On the basis of the *Europe Agreement* which came into force on 1 February 1994, and with the aim of achieving full membership at 1 January 2003, considerable efforts are being made to meet the requirements of the *acquis communautaire* on all policy areas. According to the Commission's summary and conclusions from 15 July 1997, Poland will be able to achieve in the medium term the legislative and administrative structures necessary for the essential work of applying and enforcing the *acquis* effectively. Particular effort and investment however will be needed to meet the *acquis* in sectors such as environment, agriculture, and transport. Especially for the environment, the Commission expects full compliance with the *acquis* rather in the long term, because in this sector very substantial efforts will be needed, including massive investment and as well increased levels of public expenditure.

Particularly important for compliance of European environmental standards and as well of international commitments will be the future climate protection policy of Poland. The reduction of greenhouse gas emissions according to Poland's obligations as a party to the United Nations Framework Convention on Climate Change (UNFCCC) will be of crucial importance for contributing to protection of the global climate.

Greenhouse gas emissions in Poland primarily consist of carbon dioxide (CO₂), while other climate related substances like methane (CH₄), sulphur dioxide (SO₂), nitrogen dioxide (N₂O), and non-methane volatile organic compounds (NMVOC) play a minor role as parts of anthropogenic greenhouse gases. Sulphur hexafluoride (SF₆), perfluorocarbons (PFCs), or hydrofluorocarbons (HFCs) are not produced in Poland.

The aim of this study is to describe and analyse the political structures and regulation patterns of environmental protection policy in Poland referring also to policy instrumentation, policy style, and configuration of actors, and showing its present status and future process, particularly focussing on Poland's ongoing approximation to the European Union.¹

¹ For supporting me with comprehensive and useful information I am very grateful to Mr. Dariusz Szwed, President of the Environmental Lobbying Support Office in Warsaw.

3.1 Policies and Measures

3.1.1 Basic Legal Framework

The Constitution of the Republic of Poland, adopted by the National Assembly and approved in a national referendum, came into force in October 1997. Related to environment it contains the following articles:

- Article 5 refers directly to the concept of sustainable development and states: „The Republic of Poland protects independence, guarantees freedoms and rights and ensures environmental protection pursuing the principle of sustainable development“.
- Article 31 allows limitations to constitutional human freedoms for the purpose of environmental protection.
- Article 68 requires of public authorities, among other duties, the prevention of negative health consequences through environmental degradation.
- Article 74 grants several rights and provides several duties regarding environment. It reads as follows:
 - „1. Public authorities shall pursue a policy guaranteeing ecological safety to the present and future generations.
 2. The protection of the environment shall be the duty of public authorities
 3. Every person shall have the right to information about the state and protection of the environment.
 4. Public authorities shall support the citizens' efforts in favour of the protection and enhancement of the environment.“
- Article 86 requires, that „every person has a duty to take care of the environment and shall be held responsible for damaging it. Ordinary legislation shall specify the scope of this responsibility“.

The *National Environmental Policy*, adopted by the Council of Ministers in 1990 and accepted by the parliament of the Republic of Poland in 1991 (Resolution of the Sejm from 10 May 1991 on national environmental policy and Resolution of the Senate from 24 May 1991 on environmental protection), assumes implementation of eco-development strategy and incorporation of environmental protection requirements into all sectoral policies. A verified version is being elaborated presently, which is to consider new socio-economic conditions occurring with the EU integration process, and as well to adopt the fundamental requirements of the V Community Action Programme „Towards Sustainability“ (1995) in the scope of environment. It formulates short term goals to be reached by 2003 dealing mainly with the accession to the European Union. These goals include elimination or minimisation of negative impacts on environment and health of so-called „hot spots“, e.g. former Soviet military base sites, hazardous waste and substances dumps and the greatest polluters enlisted in the „list of 80“. Medium term goals until

2012 foresee full implementation of EU-standards and it is assumed, that by this time emissions of toxic substances, especially mercury, lead, and cadmium, will be reduced substantially. By the year 2005 leaded fuel as well as freons, halons, and other ozone depleting substances should be removed totally from the Polish market. During the next ten years untreated sewage and surface water pollution should be abolished in order to achieve river quality class III for all running and standing waters. In accordance to the European Programme Nature 2000, afforestation and diversification of species are medium term tasks, as well as enlargement of protected areas crucial for maintaining forest ecosystems, which are assumed to be of great importance for CO₂ absorption and internationally relevant sinks.

Long term goals until 2020 and later anticipate sustainable development in all political and social areas. Production and consumption patterns are to be changed or developed in a way which will avoid or at least minimize negative impacts of economic activities and development of civilisation on human health and natural environment. Promotion of tourism and protection of areas appropriate for recreation and relaxation accompanied by means of nature conservation will make the country an attractive place, since Poland already possesses one of the most ambitious national park programmes in the world.

3.1.1.1 Legal Acts

Among others the following legal acts refer to environmental policy issues:

- Act on Protection and Shaping of the Environment (1980), last amendment 29 August 1997, approved 1 January 1998,
- Act on State Inspectorate for Environmental Protection (1991),
- Act on Nature Conservation (1991),
- Act on Spatial Management (1994),
- Geological and Mining Law Act (1994),
- Act on Fees for the Economic Use of the Environment (1993),
- Act on the Extent, Principles and Procedures for Imposing Fines for Non-compliance (1995),
- Act on Protection of Agricultural and Forest Land (1995),
- Act on Waste (1997),
- Act on Energy Economy (1997),
- Act on Environmental Impact Assessment (1998).

Regulations of the Council of Ministers as well as of the individual ministers settle the execution modes.

The Act on Energy Economy is the basis for reconstruction and privatisation of the energy sector with the aim to create a competitive energy market and attract the investment necessary for industrial modernisation and environmental protection. It allows i.a. third party access to the Polish electricity transmission grid. In connection with the Act on Energy Economy in 1997 the **Energy Regulation Authority** was established, which is responsible for approval and control of electricity and gas tariffs, for issuing the licences for production, storage, transmission, and distribution. It is supposed to protect the interests of consumers against non-justified levels of energy prices and to stimulate competitive structures (WiRO 3/1999, p. 81 - 82).

3.1.1.2 *Strategies and Programmes*

The following strategies and programmes are the basis for present and future environmental policy performance:

The *Energy Policy Strategy for Poland until 2010* from 1995 (not yet adopted) formulates i.a. the need to promote both combined heat and power production (co-generation) as well as the use of energy from renewable sources, but until now no particular legal or economic measures have been implemented to encourage an increasing share of them in total electricity production. Renewables have a share of about 1.5 % of total energy supply which is intended to be increased to an amount of 6 % by 2010).

The *National Social and Economic Strategy* from 1995, a Governmental document which outlines the directions of social and economic development of the country, contains the „principle of sustainable development“ as an integral element.

The *National Strategy for Integration into EU* (NSI), adopted by the Parliament in 1997, formulates in its part concerning environmental policy, the *Ecological Strategy for Integration* (ESI), both the eco-development principle and the adjustment activity programme as its basic items. It is aimed at transfer of the environmental *acquis communautaire* into Polish legislation, its implementation and execution. It constitutes a summing up of the whole range of operations carried out in the environmental protection sector and the works conducted within the integration process and it defines directions of further actions.

In preparation are the *National Strategy on Environmental Education* and the *Country Strategy on Biodiversity*.

In March 1999 the Sejm adopted a resolution on a need for *Strategy for Sustainable Development of Poland until the Year 2025*, which is supposed to be presented to the Parliament by the Council of Ministers by the end of June 2000.

The *National Programme of Preparation for Membership in the European Union* (NPPM) is, in its part concerning environmental protection, directed at transforming the priorities recorded in the Accession Partnership, proposed by the European Commission in its screening reports (DG XI) as tasks of significant importance for integration. This

will concern not only the Ministry of Environmental Protection, Natural Resources, and Forestry (MEPNR&F), but also several other ministries like transport, agriculture, health etc.

Other programmes relevant for the environment and energy sectors are the following:

- The Executive Programme to the National Environmental Policy 1994 - 2000,
- the National Programme for Reducing Emissions of Sulphur Dioxide by 2010,
- the National Programme for Increasing Forest Cover 1995 - 2020,
- the National Programme of Environmental Monitoring,
- the Cleaner Production Programme since 1991 (SPP 1998).

A National Climate Programme is currently under preparation, as well as some regional programmes, in which Poland participates, e.g. ECONET, the European System of Protected Areas, aimed at covering the continent with a network of natural reserves, national and landscape parks, and other institutional forms of nature conservation in order to maximise long-term benefits resulting from sustainable socio-economic development. The Baltic AGENDA 21, initiated from the Swedish Government, is presently being elaborated with participation of Poland (DNR-P, p.3 - 4).

3.1.1.3 International Agreements

Poland is a party or signatory i.a. to the following international conventions:

- the 1979 Geneva Convention on Long-range Transboundary Air Pollution,
- the 1984 Geneva Protocol to the 1979 Geneva Convention on Long-term Financing of the Co-operative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe,
- the 1988 Sofia Protocol to the 1979 Geneva Convention Concerning the Control of Emissions of Nitrogen Oxides or Their Transboundary Fluxes,
- the „Sulphur“ Protocol to the 1979 Geneva Convention Concerning the Further Limitation of Sulphur Emissions, signed in 1994,
- the 1985 Vienna Convention for the Protection of the Ozone Layer,
- the 1987 Montreal Protocol on Substances Depleting the Ozone Layer including the London and Copenhagen amendments,
- the 1991 Espoo Convention on Environmental Impact Assessment in a Transboundary Context.
- the 1992 UN Framework Convention on Climate Change,
- the 1997 Kyoto-Protocol to the 1992 Framework Convention on Climate Change Concerning the Reduction of Greenhouse Gases,

- the 1998 Aarhus Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters.

In bilateral agreements on environmental protection Poland co-operates with neighbouring and other countries (agreements with Germany 1992, Ukraine 1992, etc. and also with Russia). So is e.g. the German-Polish Environment Council continuously working on joint projects concerning nature conservation, wastewater treatment, and air pollution reduction. In a trilateral project in the so-called „Black Triangle“, Poland, the Czech Republic, and Germany established in 1996 an air quality monitoring system and exchange continuously the immission data (BMU 1998, p. 198).

3.1.1.4 National Emission Reduction Targets

National total emission targets do not exist yet in Poland. Since 1998 teams of experts are working on the preparation of programmes and creation of conditions indispensable to implementation of the requirements according to the *environmental acquis*. In the revised version of the National Environmental Policy presently being elaborated is foreseen, that the Minister responsible for environmental issues will define by means of a ministerial ordinance permissible norms for emissions and types of installations.

The presently ongoing law harmonisation process sets the European emission targets for the „classical“ pollutants like SO₂, NO_x and particulates as obligatory for Polish emission reduction policy. The following EU-Directives targeted at air quality improvement and limitation of air pollution have to be incorporated into Polish environmental legislation:

- Council Directive 88/609 EEC on the limiting of emissions to air of some pollutants from large combustion plants, and its amendment Council Directive 94/66 EC,
- Council Directive 89/369 EC concerning the prevention of air pollution from new municipal waste incineration plants,
- Council Directive 92/72 EEC on air pollution by ozone,
- Council Directive 94/67 EC concerning incineration of hazardous waste,
- Council Directive 96/61 EC on integrated pollution prevention and control,
- Council Directive 96/62 EC on ambient air quality assessment and management,
- Framework Directive 96/62 EEC and daughter directives and amendments (NPPM).

Being a party to United Nations Framework Convention on Climate Change (signed 1992, ratified 1994) Poland is obliged to reduce greenhouse gas emissions by the budget period 2008 - 2012 at 6 %.

Monitoring of greenhouse gases is presently conducted in two stations far from man-made impacts.

The *Kasprowy Wierch* monitoring station for the atmosphere was organised by the Institute for Environmental Physics of the Department of Physics and Nuclear Technique

AGH as part of Mountaineous Meteorological Observatory on the Kasprowy Wierch, in co-operation with the Institute of Environmental Physics of the University of Heidelberg and the Institute of Nuclear Physics in Cracow. Since July 1996 the station is permanently measuring CO₂, CH₄, SF₆, and N₂O concentrations in the atmosphere. A number of research programmes are being conducted, aimed at:

- measurement of long-term changes and daily fluctuations of CO₂ and CH₄ concentration to define participation of local sources in the air on the Kasprowy Wierch;
- observation of long-term changes and daily fluctuations of isotopic composition of CO₂; this observations facilitate the assessment of quantity composition changes of gaseous concentration of the atmosphere and are necessary to formulate the model of air composition changes on the Kasprowy Wierch;
- measurement of CH₄ isotopic conditions and concentration of this gas; the results will serve as a basis for estimation of the methane circulation balance in Europe and Southern Poland;
- continuous registration of SF₆ concentration changes and interpretation of these changes in order to define origins of air-masses and their contamination.

The *Complex environmental monitoring station Puszcza Borecka* was established by the Institute of Environmental Protection and is located in Borecka Primeval Forest in the Mazurian Lakes. It is the first regional station in Poland monitoring background pollution of terrestrial environment. The main object of research is a long-term valuation of environmental quality changes related to human activity. Since 1992 systematic air and rainfall pollutant emission measurements have been taken. Since 1995 automatic daily measurements of meteorological components are being conducted. In 1996 the station began automatic tropospheric ozone concentration measurements and in April 1997 CO₂ measurements. This is to be extended including CH₄ and SF₆ concentrations and isotopic composition.

There are still very little monitoring stations for air pollutants though, and it seems, that in the draft version of the Act on Environmental protection the introduction of a constant or periodic emission monitoring is not foreseen. At present monitoring of air pollution is conducted by governmental administration bodies in accordance with their competencies and regional coverage, and by State Environmental Protection Inspectors. It is taken only selectively and only in the so-called „justified“ cases, and not periodically or regularly. Full implementation of the EU directives will require general yearly measuring and reporting the results to the Commission.

3.1.2 Policy Instrumentation

3.1.2.1 Regulatory Instruments

Setting of national standards for air emissions and effluent discharges as well as permits for utilizing and extracting natural resources is a task of the ministry of the environment.

Polish legislation on air protection and monitoring the requirements currently in force is included in the *Act on Protection and Management of the Environment* (Official Journal of Law 1994, No. 49, item 196) and in the *Act on State Inspectorate for Environmental Protection* (Official Journal of Law 1991, No. 77, item 335). These do not comply with the respective EU Directives, therefore standards and permits will in the now being revised act on environmental protection become newly defined. According to the draft version of this act, the Minister for the Environment will define by means of a ministerial ordinance permissible norms and types of installations whose operation requires a decision concerning permissible emission as well as situations justifying temporary modification of the said norms and limits of these modifications, as well as actions to be taken in case of failure of technological and operation processes or in the operation of treatment devices (Art. 84).

The *Act on Energy Economy* (1997) determines that the principal state authority in regard to energy policy is the Minister of Economy. The Minister's main tasks include among others the preparation of rules of state energy policy and co-ordination of its implementation. The Council of Ministers determines these rules (on request of the Minister of Economy) which should be in harmony with the sustainable development principle. They concern among others:

- the country's fuel and energy need prognosis,
- renewable energy sources development,
- concession policy for energy suppliers,
- price policy.

Much of the implementation of environmental policy is handled at the provincial government level. Each Voivodship has its own *Department of Environmental Protection* and a *Voivodship Inspectorate for Environmental Protection*, as well as a *Voivodship Fund for Environmental Protection and Water Management*. Voivodships issue facility permits which set limits on pollutant releases for all sources within a facility. They also may set stricter standards for emission and effluent limits than those required by the national government if these are necessary to meet ambient air quality requirements.

The new administrative order, introduced at the beginning of 1999, gives more competencies to the local level authorities. So e.g. counties (powiaty) now issue permits for waste and water management as well as noise limits. Only in cases of investments particularly harmful to the environment, permits are still issued by Voivodship Directorates for Environmental Protection.

Communes (gminy) are responsible for monitoring compliance and issuing permits at the local level. They also have authority over local planning and municipal services like municipal water supply, municipal waste water treatment and solid waste management as well as municipal heating systems. The communes' authority over planning seems to be rather problematic, since most of them do not have the resources to adequately conduct or enforce their policies. So they have generally not been able to combat the uncontrolled urbanisation of the countryside (MEP 1998).

3.1.2.2 *Economic Incentives and Taxes*

Environmental fees have existed in Poland since the 1970's, but they did not show much effect before the political change in 1989, because in an economy without market conditions plant managers had little incentive to pay attention to price stimuli. In the last ten years fees for pollution of the environment have been changed several times, some of them like the charges on SO₂ and NO_x emissions are among the highest in the world, so e.g. the SO₂ and NO_x emission charges were USD 94 per ton in 1997.

In comparison to this, charges for carbon dioxide and methane are very low:

Table 4: *Pollution Charges in Poland*

	SO ₂	NO _x	CO ₂	CH ₄
PLZ/kg	0.30	0.30	0.00015	0.00015

The following table shows the charges levied on emissions of SO₂ and NO_x of some CEE countries in USD per ton as of end of 1997 (REC 1999, p. 38).

Table 5: *Emission Charges in CEE Countries as of End of 1997*

	Czech Republic	Estonia	Latvia	Lithuania	Poland
	- USD per ton -				
SO ₂	29	2.3	17	52	94
NO _x	24	5.3	17	97	94

The Polish charge system, addressing the User Pays and Polluter Pays Principles, has generally become regarded as a model in the region for successfully implementing economic instruments for raising earmarked investment funds. The current system of economic instruments is applied to air emissions, water extraction, waste water discharge, solid waste disposal, and cutting trees and bushes. Fees and non-compliance fines are

usually collected once a year by the voivodships' environmental departments (in case of cutting trees and bushes by the respective municipal authorities) and directed to the National Fund for Environmental Protection and Water Management, as well as to the Voivodships' and Municipal Funds, and, since January 1, 1999, also to Powiat Funds for Environmental Protection and Water Management. These revenues are earmarked for investments in environmental projects or supporting environmentally sound technology. Since 1992 nominal charge rates are revised annually to account for inflation, so the real rate values are maintained.

Permits for emission of air pollutants are issued by the voivods. The permission expires on a fixed date and is issued on the basis of required documentation, i.e. description of the technology, types and amounts of pollution, and plans for pollution reduction. The State Inspectorate of Environmental Protection co-ordinates the activities concerning monitoring the environment (REC 1999, p. 236 - 237).

Air emission charges as having been introduced by the Regulation of the Ministers' Council on Fees for Use of Environment and its Modification on Dec 12, 1991 is levied on all legal entities with commercial and non-commercial activities. The charge rate is calculated according to the type of the polluter. A base fee is multiplied

- by zero in case of health service outlets and hospitals; schools, cultural and education centres; prisons and centres for young criminals;
- by 0.1 in case of introducing chlorofluorocarbon in the production of pharmaceuticals;
- by 0.15 in case of use of technologies reducing emission of motor fuels (if efficiency of reduction amounts to not less than 85 %).

Air emission non-compliance fees are based on the above mentioned Regulation of the Ministers' Council on Fees for Use of the Environment. According to that regulation the non-compliance fee for sulphur dioxide and nitrogen oxides is 10 times the base rate (i.e. USD 940/t).

The revenues from charges and non-compliance fees are distributed among the environmental funds: 20 % go to local (gmina) environmental funds, the remainder is split into 28 % (in case of NO_x 100 %) for the National Environmental Fund, and 72 % for the Voivodship Environmental Fund. The collection rates of fees and fines are in some cases quite high, so for instance the collection efficiency referring to sulphur dioxide emission amounted to 97 % in 1995, and 89 % in 1996 (ibid., p. 238).

Currently the introduction of a surcharge on energy agents and fuels is being considered which would be applicable to all mining energy agents and fuels (coal, gasoline, oil, and gas). One of the recommendations suggests a surcharge with the maximum rate of 8 % for all gasoline consumers together with charge exemption on reduced emissions of SO₂, NO_x, and CO₂.

Taxation and tax allowances play a rather marginal role in encouraging environmental investments, recycling, and consumption of „green goods“. The Parliamentary Act of January 8, 1993 on value added tax and excise tax (Dziennik Ustaw - Official Journal of 15/02/93 No 11 Pos. 50) regulates excise taxation. At present, the VAT regular rates are zero, 7, and 22 %. The Polish tax system provides a zero percent VAT rate for a number of products and services related to environmental protection. The Minister's of Finance Decree of December 6, 1998 on excise tax establishes a structure and defines rates of excise tax for products manufactured in the country or imported including mineral oils. VAT 1996 was 22 % for leaded and unleaded gasoline, as well as for diesel fuel, while excise tax differentiation was rather marginal. So is the difference between leaded and unleaded gasoline reflected in price much too small to function as incentive for changing the present pattern of gasoline consumption (2.85 PLZ/l for leaded and 2.82 PLZ/l for unleaded gasoline; November 1999).

Vehicle related taxes are also duties for automobile imports encouraging the import of newer, less polluting cars, as the amount of duty increases with car age. There is a complete ban on the import of cars over ten years old.

Road tolls were introduced with the Parliamentary Act on Highways from October 27, 1994 which provides guidelines for highway construction and licensing procedures for the companies contracted to build and operate the highways. The use of the highway is charged and the fees are set and collected by the respective licensee, that is a company which has been granted the right to construct and operate the determined section of the highway.

Currently in discussion is the introduction of a CO₂ tax. Tax allowances and exemptions are currently:

- Income tax allowances for farmers who invest in or modernise environmental protection equipment, renewable energy sources, installations to enhance water use,
- exemptions from real estate tax for water supply and sewage collection installations, land used for water retention reservoirs and hydro-power stations, and various categories of forest land,
- exemption from real estate sales tax if the sale was governed by the Act on Environmental Protection,
- administrative fee exemptions and income tax exemptions for non-profit organisations active in environmental protection,
- interest rate subsidy for farmers adapting their farms to ecological farming principles (REC 1999, p.248).

Incentives like eco-labelling and eco-auditing are being practised and compatible to EU law. So the mostly from EU countries imported long-lasting goods like washing machines, refrigerators, and television sets wear the eco-labels common in the European Union anyway, whereas the Polish eco-labels for some reason are different in looks.

Energy audits for industry and households seem to be enhanced at the time, in particular due to the successful work of energy efficiency centres and NGOs raising awareness for energy saving.

To date there are no incentives encouraging the development of renewable energy sources.

Presently taken into consideration by Polish environmental officials are the introduction of product charges and tradable permits, quite similar to the system of trading rights for emissions. The experiences made in the experiment of Chorzów power station and Kościuszko steelworks launched in 1991 show not only a remarkable reduction of pollution but also significantly low administrative costs, low maintenance costs, efficient plant operation, and a stable level of employment in both entities. Another project in the territory of Opole Voivodship and funded by PHARE means with the aim of researching the institutional and legal conditions needed to introduce tradable permit systems into the Polish environmental policy is currently being conducted.

Future environmental policy goals in Poland concerning economic instruments focus on further accenting the incentive effect of instruments, so e.g. by modifying pricing systems, simplifying the charge systems, i.e. reducing the number of pollutants covered (e.g. 62 air pollutants are to be reduced at about ten), introducing specific product charges and harmonising environmental spending with EU policies.

3.1.3 Public and Private Expenditure Analysis

3.1.3.1 Domestic Sources of Environmental Finance

The share of investment outlays on environmental protection in the national economy amounted in 1997 to 8.1 %, on water management on 2.0 %. The share of environmental protection in GDP in the same year was 1.6 %, in water management 0.4 % (SYRP 1998, p. 35). State budget with 5 % and municipal and commune budgets with 12 % in 1996 (REC 1999, p.236) play a rather minor role in financing ecological projects. The major environmental investment is granted by the rapid increase of revenue from pollution fees and non-compliance fines which have been earmarked for environmental investment via local, regional, and national environmental funds.

Spending from the *National Fund for Environmental Protection and Water Management* alone (representing 26 % of total national environmental expenditure) amounted to USD 491 million in 1996, in different forms of financial support:

- grants,
- preferential loans,
- subsidies to bank credits,
- partial amortisation (forgiveness) of loan,

- equity involvement.

The Fund can subsidise preferential loans up to 50 % of the project costs, in case of projects undertaken by local self-government authorities up to 70 %. Grants are allocated to support objectives determined by the law and by the Fund's Supervisory Board's project selection criteria (Lubinski 1998, p. 131).

Voivodships' Funds for Environmental Protection and Water Management have been active since 1993 and are independent institutions possessing a legal status. In 1996 they provided 20 % of the total national resources assigned to environmental protection (REC 1999, p. 236).

Municipal and Commune Funds for Environmental Protection and Water Management covered in 1996 about 6 % of the environmental financing (ibid.). They received a revenue of 240,4 million PLZ of which 205,4 million PLZ were recycled to the following areas:

water protection 39.5 %, air protection 16.5 %, water management and protection against floods 16 %, projects concerning utilisation and storage of wastes 7 %, creation and management of green and forested areas as well as parks in the countryside 8.5 %, environmental education and nation-wide promotion of environmentally friendly projects 3.5 %, other tasks serving the protection of the environment in local boroughs 9 % (Lubinski, p. 132).

The *EcoFund*, established as an independent non-profit foundation by Poland's Minister of Finance in 1992 with the purpose to manage resources originating from the debt-for environment-swap, supports by way of grants particularly important activities in the area of environmental protection in Poland. The grants go mainly to four sectors defined in the Statutes of the Foundation, and considered to be of high priority internationally:

1. limiting the greenhouse gas emissions, and the phase-out of substances depleting the ozone layer,
2. reducing the transboundary flow of sulphur dioxide and of nitrogen oxides,
3. reducing the pollution of the Baltic Sea,
4. biodiversity conservation.

The EcoFund may support projects referring to reduction of greenhouse gas emissions aimed at:

- energy saving,
- promotion of renewable sources of energy,
- elimination of methane emissions,
- chlorofluorocarbons' phase-out from industrial processes.

Concerning reduction of SO₂ and NO_x emissions projects can be supported like

- removal of sulphur from fuels,
- modern technologies in energy generation,
- removal of SO₂ and NO_x from flue gases.

Financial support by the EcoFund shall be provided only in the form of non-repayable grants which should make out 10 to 30 % of a project cost. In highly justified cases, when local governments, i.e. municipal or communal are investors, the grant may cover up to 50 % of a project cost, in case of nature protection projects providing no guarantee of investment return, the EcoFund share may increase even up to 80 % of a project expenditure.

In the years 1992 - 97 the EcoFund approved and co-financed 226 projects of a total amount of 301 million PLZ, from which over 50 % were awarded to 99 projects managed by local governments, and it provided 6 million PLZ to 29 projects managed by NGOs (Czyz 1998). According to the present agreements, the EcoFund will handle a total amount of around USD 500 million by the year 2010 (Sleszynski 1998, p. 37).

It is assumed that by the year 2009 the following financial assets will be entered onto the account of the Eco-Fund: equivalent to USD 370 million (USA), CHF 70 million (Switzerland), FRF 260 million (France). Since recently new agreements were signed with Sweden, Norway, and Italy, the real amount of contributions will certainly be higher. According to the agreement with Norway support will be provided to air protection projects of significance for Poland and the Scandinavian countries. This is the first agreement of the Eco-Fund which does not cover only the debt-for-nature swap, but also the management of entrusted foreign funds (Sobiecki 1999, p. 16).

The *Bank of Environmental Protection* co-operates with the National Fund which was one of its founders and is the major shareholder (the Bank's package of shares accounts for 55.7 % of the total capital involvement of the National Fund in commercial-law companies; Sobiecki 1999, p.19). The Bank of Environmental Protection SA provides preferential credits i.a. for projects leading to limitation of greenhouse gas emissions. In the years 1990 - 1996 the following projects were co-financed:

- 19 aimed at modernisation of heating systems (7,618 million PLZ),
- 124 at coal conversion to gas (31,409 million PLZ),
- 17 at gasification (3,228 million PLZ),
- 7 at use of renewable energy sources (0,410 million PLZ).

The total of the supported projects amounted to 42,665 million PLZ for 167 projects (NR UNFCCC 1999, p.21).

Domestic enterprises and investors' own funds provided in 1996 of own resources as well as of commercial loans around 27 % of total expenditure on environmental sector (REC 1999, p 236).

3.1.3.2 Foreign Environmental Assistance

International aid for environmental protection amounts to 4 % of the total expenditure in this sector. The National Fund handles the implementation of foreign aid for Polish environment activity. It manages funds from three sources:

The *PHARE Programme of the European Union* started in 1990 and provided until 1996 105 million ECU (374 million PLZ). Together with the bank interest on the funds allocated, the assistance granted within the framework of the PHARE Programme exceeded 106 million ECU. It is about 7 % of the total PHARE funds granted to Poland. The majority of this grants supported air protection (22 %), nature protection (21 %), monitoring system (16 %), and water protection (12 %). Less than 7 % of the funds were assigned to finance projects concerning soil protection, emergency hazards, environmental education, European integration, and environment management (Sobiecki, 1999, p. 22).

The *World Bank* credited Poland in 1993 - 1997 i.a. supporting forestry with USD 146 million, in 1996 it financed a project „Strategy of Environmental Management“ with USD 18 million (Sleszynski 1998, p. 39).

The *European Bank for Reconstruction and Development* granted credits promoting sustainable development which were focussed on

- studies on coal to gas conversion in heating in the Black Triangle,
- fore-design work on the waste water treatment plant in Wrocław,
- updating and finalisation of the design of the waste water treatment plant in Łódź,
- fore-design work on water and sewage management in Gdańsk and Gdynia (Sobiecki 1999, p. 23).

The *Global Environmental Facility* supports since 1991 biodiversity conservation, pollution reduction of international waters, and protection of the ozone layer. Poland has received USD 4.5 million for biodiversity conservation in the south of the country, and USD 25 million for projects dealing with the exchange of coal fuel for gas in local burning systems. A USD one million grant was given for the protection of the ozone layer. *Rzeczpospolita* reports that in this year's conference of the Steering Committee of GEF it was decided to give Poland another donation of USD 450,000 for the years 1999 - 2000 (August 19, 1999).

Minor financial aid comes from the Joint Implementation programme, Marshall Fund „The Environmental Partnership for Central Europe“, UNDP programme „Umbrella“, UNDP programme „Small Grants for NGOs - Global Environmental Facility“ (Sleszynski 1998, p. 39).

Bilateral agreements on grants supported in the years 1991 to 1997 329 environmental protection projects with USD 230 million, i.e. 48.1 % of the total received grants. Denmark has the largest share with 24.5 %, followed by the Netherlands with 18.9 %, Germany with 16.2, USA with 15.9 %, and Sweden with 9.3 %. Finland granted in the years

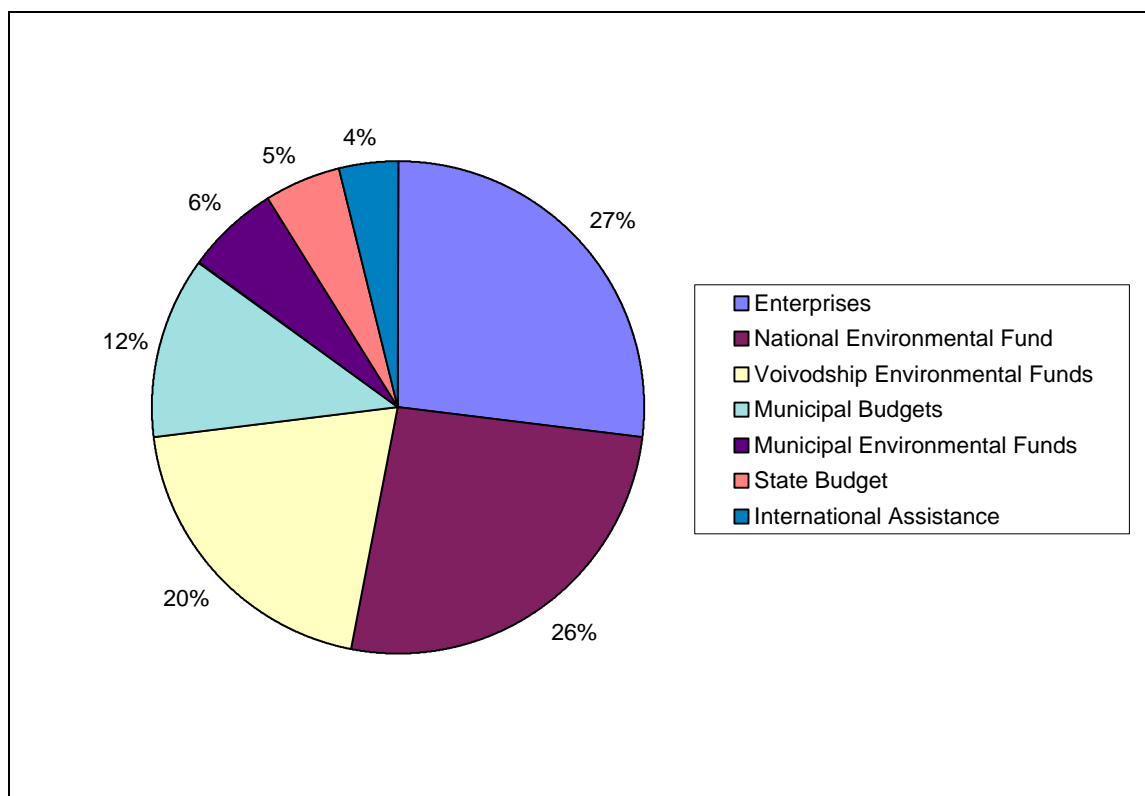
1991 - 1997 financial assistance for implementation of environmentally friendly projects of about USD 14 million (Sobiecki 1999, p. 23 - 24).

Bilateral financial help was mainly available for air protection (39 %) and water protection (26 %), not as much for soil protection (9 %), nature protection (7 %), and monitoring (7 %).

The German-Polish Environmental Council concentrates particularly on improving air quality and providing a framework of investigations into harmful environmental impacts. Under its auspices a government commission is preparing proposals for environmentally sound development in the border region, and drawing up a transboundary action plan for harrassing incidents. Joint projects like the waste water treatment plants in Swinoujscie and Gubin treating the sewage water from German and Polish communes are already successfully working.

During the 8th Session of the German-Polish Environment Council on 24 September 1999 the Ministers Jürgen Trittin and Jan Szyszko declared their willingness to intensify the co-operation also in the areas of nature and water protection, waste treatment, environmental education and environmental impact assessment (BMU PM 154/99 from September 24, 1999).

Figure 1: Sources of Investments in Environmental Protection, 1996



Source: Sobiecki 1999, p. 43

In general, international financing supports medium-term environmental policy goals. The most important areas of international co-operation are cleaner production, energy conservation, air protection, environmental monitoring, training, and environmental education. Direct environmental investment is still rather rare, but financial investments especially on the local level play an important role. Non-investment grants support NGOs, environmental individual and institutional skills, environmental management, and develop communities' environmental consciousness.

Activities Implemented Jointly according to the 1997 Kyoto conference to the parties of UNFCCC are presently being started. In order to meet Poland's commitments resulting from the Framework Convention on Climate Change 1992 with conducting international investment projects, in 1996 the Joint Implementation Secretariat was set up at the National Fund for Environmental Protection and Water Management in Warsaw. The funds obtained will be allocated for projects designed to reduce greenhouse gas emissions into the atmosphere. To date, Poland has signed a Joint Implementation agreement with the Netherlands. Several other countries are expected to follow.

3.2 Institutional Setting and Implementation Structure

With the elections to the Sejm in September 1997 the Polish government is formed by a coalition of Akcja Wyborcza Solidarnosc (AWS; 33.8 %) and Unia Wolnosci (UW; 13.4 %). The Minister of Environmental Protection, Natural Resources, and Forestry is a member of AWS, which is an alliance of parties and groups representing middle to right wing (even ultra-national) positions of society.

3.2.1 Administration Structures in Poland in 1999

With the spatial reform enforced in January 1999 administration structures in Poland have been changed. The re-introduction of counties (powiaty) has created a third administration level to the country.

The former 49 voivodships are now divided into 16 large regions each of them having a Voivodship Parliament (Sejmik Samorządowy) and a Voivodship Government, set in position by the Prime Minister and being responsible for implementation of national (also environmental) policy goals. This means that the self-governmental voivodships have to co-ordinate with the national government everything what goes over the voivodship level.

The re-introduction of counties as sub-regions with a governor (starosta) on top delegates some of the former voivod's responsibilities to a lower level (surveillance, facility permits, rule permits for water and waste management, imposing taxes for environmental purposes).

Tasks of the communes (gminy) are i.a. municipal water supply, municipal waste water treatment, municipal lightning etc., i.e. all practical tasks on the local level of self-

government. Competencies and responsibilities of the lower administration levels have been definitely strengthened by the reform.

Figure 2: Governmental administration

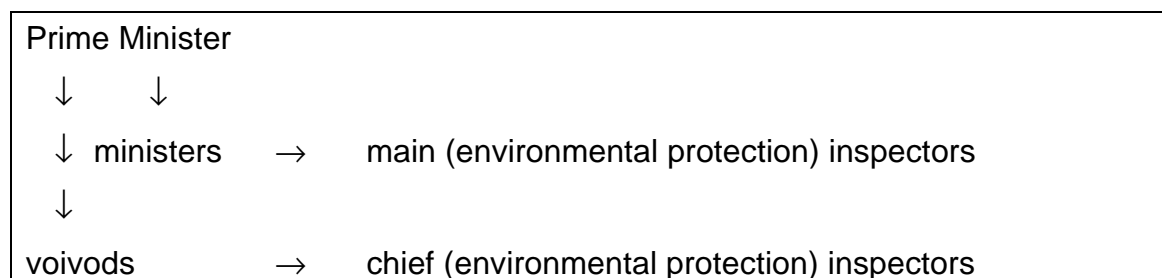


Table 6: Self-governmental administration

Law-making institutions	Administration (executive institutions)
Voivodship Parliament	Voivodship Government
(Sejmik Wojewódzki)	(Zarząd Województwa); marshal (marszałek)
Council of sub-region	Government of sub-region
(Rada Powiatu)	(Zarząd powiatu); governor (starosta)
Council of Commune	Government of Commune
(Rada Gminy)	(Zarząd gminy); city mayor or president (burmistrz, prezydent) or governor (wójt)
Village Assembly	Council of Village
(Zebranie Wiejskie)	(Rada sołecka); chairman (sołtys)
Council of District/Settlement	Government of the district/settlement
(Rada dzielnicy/osiedla)	(Zarząd dzielnicy/osiedla), chairman

This scheme does not include the specific structure of local government in Warsaw.

The Ministry of Environmental Protection, Natural Resources, and Forestry is the main government body responsible for environmental policy.

Figure 3: Responsibilities of the National Government

- environmental protection and pollution prevention and control,
- nature conservation,
- water management and protection against floods,
- protection and management of forests,
- mineral resource management, including exploration and mining concessions.

Also other ministries are responsible for several environment-related issues. So the Energy Law determines that the principal state authority in regard to energy policy is the Minister of Economy. His main tasks include among others: preparation of rules of state energy policy and co-ordination of its implementation. The Council of Ministers determines these rules (on Minister of Economy's request) which should be in harmony with the sustainable development principle and should determine among others:

- country's fuel and energy need prognosis,
- renewable energy sources development,
- concession policy for energy suppliers,
- price policy.

3.2.2 The Ministry of Environmental Protection, Natural Resources, and Forestry

According to the enforcement on April 28 1998 of its new Statute (Government Journal No 53, item 331), the Ministry of Environmental Protection, Natural Resources, and Forestry is now organised into the following internal organisation units:

1. The Minister's Political Office
2. The Minister's Secretariat
3. Department of Law and Legislation
4. Department of Ecological Policy and European Integration
5. Department of Environmental Protection
6. Department of Forestry, Nature Conservation and Landscape Protection
7. Department of Water Resources
8. Department of Geology
9. Department of Economics

10. Department of International Relations
11. Bureau of Administrative Jurisdiction
12. Bureau of Inspection
13. Bureau of Education and Public Relations
14. Bureau of Administration and Budget.²

The combination of environmental policy directly with European integration as it is manifest with the appointment of the Department of Ecological Policy and European Integration shows the serious will to achieve the goals necessary for complying with the environmental *acquis*. Among the many tasks of this department, co-operation with other ministerial organisation units, other relevant sectors and right public administration bodies, as well as with research and development units, is explicitly mentioned.³

Responsibilities of Local Authorities: Before the administrative reform the main environment-related responsibilities of the communes included: municipal water supply, municipal waste water treatment and solid waste management, local land-use planning and management, monitoring and observance of environmental regulations and issuing of location permits for local investment projects. In addition, local authorities may impose taxes for environmental purposes. The new administrative order has given more competencies to the local level authorities. So in case of water and waste management as well as noise rule permits are now issued by the starosta. Only in cases of investments particularly harmful to the environment, permits are still issued by Voivodship Directorates for Environmental Protection.

3.3 Some Sectoral Policies Referring to Climate Protection

3.3.1 Energy Policy

The Polish energy policy is task of the Ministry of Economy. It is based on the Act on Energy Economy, enforced at the end of 1997, and defining the principles for development of national fuel and energy policies. At the same time the Energy Regulation Authority was established whose aim is to control individual companies' activities dealing with the issues of power and gas supply.

CO₂ emissions in Poland are to a high extent caused by the energy sector. The country's energy supply depends highly on coal, (mostly hard coal, and, to a lesser amount, lignite), which provides 85 % of total energy consumption and even 98 % of electric power supply. In 1997 the total supply of hard coal amounted to 140,999 million tons, from

² Information from <http://www.mos.gov.pl/mos/publikac/structure.html>

³ Department of Ecological Policy and European Integration:
<http://www.mos.gov.pl/mos/komorki/dpeie-eng.htm>.

which 137,755 million came from domestic sources, 3,244 million tons from imports. Total lignite supply amounted in the same year to 63,180 million tons, from which 63,170 million tons stemmed from domestic sources, 10,000 tons from imports (RSRP 1998). All recoverable reserves come from about 70 underground mines.

Approximately 97 % of Poland's hard coal production comes from the Upper Silesian Basin in southern Poland, which is one of Europe's most important coal basins, the rest from basins in Lower Silesia and the Lublin region.

Natural gas covers about 40 % of total demands. The reserves in 1998 were 5.3 trillion cubic feet. In order to grant natural gas needs of 418 billion cubic feet in 1997, Poland added to its domestic production of 167 billion cubic feet another 251 billion cubic feet through imports, relying heavily on the Russian Federation. To help reduce this dependence in the country's gas supply and since domestic production is expected to increase only slightly (it is supposed to reach 42 % by 2010), Poland plans to build additional natural gas storage facilities and is considering importing liquefied natural gas from Qatar, Nigeria, Norway, and Algeria (US DOE 1998, 2).

Poland possesses only minor oil reserves (in 1998 they were estimated to be 40 million barrels, that would be about 2 % of the total energy supply). In 1997 oil production averaged only 6,400 barrels per day, while consumption of crude and petroleum products averaged approximately 322,000 barrels per day, the difference was met by imports, mainly from the Russian federation, but also from the United Kingdom, Iran, and Norway.

Nuclear power plants have not been put into operation because of a moratorium of the Bielecki-Government in 1991, and this seems presently to be maintained by the official policy actors, whereas by some authors it is considered to think about building nuclear power plants with Western technology in the years from 2010 to 2020. Some estimations say that in order to reduce SO₂ and CO₂ it will not be sufficient to install new co-generation and condensation plants, but additionally nuclear power plants providing almost 6,000 MW should be build (EEU-B 1998).

Renewable energy sources during the recent period provide only 1.5 % of the total supply. This includes primarily water power engineering, fuel wood and organic waste, and marginally such sources like wind power and geothermal energy. Also some hundred solar installations are presently in use (used generally to drying of crops and water heating), some dozen wind power plants, two geothermal heating plants, experimental rape bio-refinery, about a dozen rural and municipal biogas installations (processing liquid and solid manure at methane fermentation process and recovering energy from municipal waste disposal sites), and also heating plants fired with biomass (straw and fuel wood).

Although the Polish energy policy intends to reduce coal use for energy production in favour of natural gas and other energy carriers, it will remain highly dependant on its domestic coal supply. This means, that the Polish economy will also remain highly carbon intensive, due to the fact, that its industry consists to a great amount of heavy industry

with 75 % of the final energy consumed by engineering, metallurgy and the chemical industry. The energy related CO₂ emissions per capita amount to 10.9 tons compared to 12 tons on average for member countries of the OECD (NR-UNFCCC 1996, p. 3). Despite of a remarkable decrease of 25 % in the years 1989 to 1993, which was mainly caused by a substantial drop of economic activity because of the radical reforms, carbon dioxide emissions are increasing again. In 1996 total CO₂ emissions from combustion of fuels amounted to 373,200,000 tons (SYRP 1998), and they are supposed to be in 2000 on the same level as in 1988.

Coal use (including lignite) in Poland accounts for almost 90 % of sulphur dioxide emissions, 79 % of nitrogen oxide emissions, and over 98 % of particulate emissions. Only carbon dioxide and methane emissions are caused primarily (over 60 %) from the transportation sector's use of gasoline, diesel fuel, and kerosene (US DOE 1998, p. 6).

In the „Energy Policy Strategy for Poland until 2010“ (1995) the need to promote Combined Heat and Power production (CHP) as well as renewable energy sources has been emphasised, but to date no particular legal or economic measures have been implemented to encourage this. On July 8, 1999 the Sejm adopted a resolution calling for the Government to create suitable conditions for increasing renewable energy sources and declared its willingness to participate in the preparation of an Act on the utilisation of renewable sources of energy. In the above mentioned „Energy Policy Strategy ...“ an increase of renewables of 6 % until 2010 is foreseen. With the newly founded Polish Biomass Association in March 1999 by several academics and business representatives, the promotion of renewables will be enhanced in the national range.

The promotion of energy efficiency is certainly more developed, since in 1994 the National Energy Conservation Agency (Krajowa Agencja Poszanowania Energii) was set up as a joint stock company with Polish government owning more than 50 % of it. In order to build up a network of regional energy agencies, 17 regional energy agencies were founded to date. Several NGOs undertake activities concerning energy efficiency, in particular the Polish Foundation for Energy Efficiency, the Association of Polish Municipalities „Polish Network <Energy Cities>“, and the Energy Advisory Offices.

Privatisation of the industry is supposed to be completed in the year 2002, liberalisation of energy prices already by 2001, which both will have a strong impact on a rational energy consumption.

3.3.2 Transportation Policy

The transportation policy is the task of the Ministry of Transportation and Marine Economy. In the official *Transportation Policy*, adopted in 1995 by the Council of Ministers and approved by the Parliament, the development of the transportation sector in Poland is aimed, in accordance with requirements of market economy and towards new conditions for economic co-operation in Europe, at ecologically sound transportation branches and means, such as railway and combined transportation and public transportation. Pol-

icy instruments aiming at ecologically sound effects like imposing more stringent requirements on industries manufacturing transportation means in order to guarantee emission reduction of harmful substances, and also more stringent technical standards imposed on vehicles, are foreseen in this document. Economical and fiscal instruments like the introduction of fees for CO₂ emission caused by vehicles used for business purposes and the introduction of energy certificates for fuel saving vehicles both manufactured in Poland and imported are to be applied. The necessary radical improvement of the municipal transport will be supported by the state by creating favourable conditions for private investments in transport enterprises and endeavouring local self-government authorities to benefiting from existing legal opportunities to privatisation of municipal transport.

The transportation sector contributes to CO₂ emissions with 35.8 million tons (1996; SYRP 1998, p. 27). The volume of road traffic in Poland is expected to almost double by the end of the year 2000 with respect to the level of 1988. Since modernisation and reconstruction of the whole transportation system is planned, with building of 2,600 km of highways and 3,600 km of expressways, leading to large increases in road traffic for personal and even more for freight transport, it is certain, that emissions will also increase in the future. Whether the introduction of an ecological infrastructure fee for road traffic and improvements of efficiency as well as permission only of vehicles with catalytic reactor from 2000 on will help substantially to avoid the negative effects on climate, is not yet clearly visible.

3.3.3 Municipal Policy

The Polish municipal policy, elaborated in 1996 by the Ministry of Spatial Planning and Construction, is implemented through a division of competencies between state and local governmental bodies. The state is responsible for the creation of legal, economic, educational, and research tools, while the local self-governments have to define the policies suitable for local conditions. Based on the *Assumptions for state policy on rational use of energy in the municipal sector*, activities towards reduction of greenhouse gases are focussed on two main areas: energy conservation and management of municipal waste and municipal sewage treatment residues. Already implemented are the improvement of thermal insulation of residential buildings, improvement of efficient energy use in public buildings, energy efficient municipal lightning, and upgrading of local heat generators and heating sector. Municipal waste management aiming at greenhouse gas emission reduction is mainly concerned with municipal waste landfills generating landfill gas that consists primarily of methane and carbon dioxide. Scientific support for elaboration of a programme for *Monitoring of municipal waste landfills* is being provided by the Research and Development Centre for Urban Ecology from Lodz, preparing guidelines for design, construction and operation of landfill gas disposal installations. Some of municipal activities targeted at efficient use of energy sources and reduction of greenhouse gas emissions are co-financed by environmental funds, such as the National Fund for Envi-

ronmental Protection and Water Management, Voivodships Funds for Environmental Protection and Water Management, newly established Powiat and Gmina Funds for Environmental Protection and Water Management, and EcoFund.

3.3.4 Agricultural Policy

Agricultural policy as formulated in the *Assumptions for social and economic policy for rural areas, agriculture and food economy until the year 2000* by the Ministry of Agriculture and Food Economy in 1994, lists i.a. priority tasks related to greenhouse gas emissions as follows: activities towards development of research into abatement of greenhouse gas emission in agriculture containing elaboration of modern, cost-effective technologies of plant production, research into energy saving methods of drying, processing and storing agricultural products of various nature and use, controlling CO₂ and other gas balance in the atmosphere through relevant technologies in plant and stock production. Such priorities should be adopted by the Forest and Agricultural Science Department of Scientific Research Committee in agreement with the Ministry of Agriculture and Food Economy. Co-operation of actors from both policy and science is needed and intended, but it seems to be directed rather towards improving of existing production plants by end-of-pipe-solutions as well as towards creating modern high-intensive agricultural and food production facilities with regard to cleaner production in this sector.

Official policy does not seem to pay much attention on sustainable development in this area by enhancing of ecologically sound farming. There are no attempts being done to estimate externalities in agricultural sector and so far agriculture has not been covered by proposed new economic instruments in environmental protection, e.g. in form of ecological taxes on pesticides, artificial fertilisers or energy - in contrary, there is an ongoing debate on „agricultural fuel“ which aims at exempting fuel used in agriculture from excise tax. Whether this will be sufficient to keep up with existing conditions in the European market can be doubted.

3.3.5 Forestry Policy

Forestry policy in Poland declares as a superior objective the preservation of conditions to maintain sustainable multifunctional forests through enlargement of forest resources, improvement of their state and complex protection, and establish a more environmentally friendly, economically viable and multifunctional forest management. Afforestation and diversification of species as well as enlargement of protected areas are crucial for maintaining forest ecosystems which are assumed to be of great value for CO₂ absorption and internationally creditable sinks.⁴ Poland possesses one of the most ambitious national

⁴ Presently it is being doubted by several scientists whether a relevant CO₂ reduction by woods and therefore by increased afforestation could be achieved at all (Interview with H.-J. Schellnhuber PIK Potsdam, in: TSP from November 1, 1999, p. 28).

park programmes in the world, and nature conservation accompanied by further reduction of all chemical and physical pollutants affecting the environment is one of its priority tasks (NR-UNFCCC 1998, p. 6). In 1995 the Council of Ministers approved the National Programme for the Increase of Forest Areas. The Programme assumes an increase of afforested areas from the present 28 % (i.e. 28.7 % of the land area) to 30 % in 2020 and 33 % in 2050 (Agenda 21 in Poland, 1998).

3.4 Regulation Patterns for Environmental Policy-Making

Under the pressure of adjusting environmental policy in Poland to the *acquis communautaire* of the EU and of coping with the dynamically developing co-operation activities on the international stage, a variety of strategies and plans have been elaborated in the past ten years. The EU environmental legislative output includes over 300 legal acts which are aimed at the improvement of environmental quality, their majority focusing on environmental protection and elimination of potential trade barriers, which might arise because of lacking uniform ecological standards. It is assumed, that integration with EU, covering i.a. the adjustment in the field of environmental protection policy and law, will also result in stimulation of development of the Polish economy, and in turn, in positive changes in the field of environmental protection. Achieving the policy goals as formulated in the *National Environmental Policy* and the *Ecological Strategy for Integration* will take strong further efforts of all sectors. Crucial for their successful implementation by avoiding too many socio-economic consequences will be not only the restructuring and enforcing of necessary policies and measures, but also the choice of flexible instruments as well as the atmosphere and style of acting in this area.

3.5 Policy Instrumentation

Instruments and measures for executing sectoral policies as described in the previous chapters, i.e. legal and economic regulations, still seem to play a rather dominant role in implementation of environmental protection targets. Despite the incomplete enforcement of environmental fees and fines, the financial assets which they generate permit the efficient operations of funds for environmental protection and water management. These funds have become the „driving force“ of investments in the area of environmental protection, allowing a relatively high real investment level in the whole transition period to date. It is obvious that their fund-rising role is highly estimated by all stakeholders.

There is definitely a growing intention to be seen to use more flexible instruments like soft loan credits, preferential credits, and grants. Modifying pricing systems, simplifying the charge systems, introducing specific product charges and deposit systems as well as emission trading will additionally have a more incentive effect. The expansion of the range of tax reliefs encouraging environmentally friendly activities and behaviour, if the state budget allows it, will cause further incentive effects. On the other side continuation of the removal of energy price subsidies and the internalisation of environmental exter-

nalities are crucial for meeting requirements of market conditions compatible to EU countries.

Labelling as formulated in the Energy Law and relevant ordinances is in compliance with EU requirements, having an even wider scope than in EU.

To date there are no incentives promoting renewable energy sources.

The official policy of promoting the integration of energy efficiency in environmental and economic strategies encouraging investments in the energy demand side (DSM investments) by companies and also the regulatory policy to replace the energy intensive equipment in the industry by modern efficient technology are promising successful implementation of energy saving goals. The National Energy Conservation Agency (KAPE) as well as to date 17 regional energy agencies are concerned with this issue. The training of more than 500 energy auditors for the program for thermal insulation in buildings in co-operation with the Danish Energy Agency is a further step in energy saving (EEU-B 1998, p. 122). Intensified efforts of increasing public awareness about a rational use of energy are needed and should be achieved not only by environmental education and training but should be also supported by economic incentives.

Integrated resource planning as formulated in the Energy Law (Art. 18 item 1 and 2) defining responsibilities of local authorities which are held to set up energy plans, complies with IRP methodology, but to date the Polish government has not developed any particular mechanisms to implement rational planning techniques. Only NGOs and academics promoting energy efficiency are active in this area, carrying out different pilot projects and organising training seminars on IRP.

Voluntary self-commitments do not exist yet in Poland.

Despite of all these activities, there remains a widespread feeling that the majority of the measures taken are more of a declarative shape, with the existing legal instruments being relatively lenient in their treatment of obligations that the principles of sustainable development be heeded.

3.5.1 Policy Style

As before described, there is a co-operative policy explicitly intended in national programmes and strategy guidelines for preparation for membership to the EU. Despite of formulated intentions to co-operate with research institutions, business representatives, local authorities and environmental non-governmental organisations there seems to prevail, at least on the state level, still a more command-and control type of policy style. In contrary, a dialogue and consensus oriented approach is presently rather rare but is practised in single cases, so e.g. in consultations of nature conservation authorities with inhabitants and NGOs in the Białowieża region concerning national park issues of the „Green Lungs of Poland“, or in talks of government officials with business managers of some enterprises. Although an increasing number of documents are being consulted,

there are still no systematic and clear procedures for consultation on issues of proposed legislation, governmental programmes, and plans.

In 1998 Poland signed the Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters (Aarhus Convention), its ratification by the Parliament planned in the year 2000. The Convention's impact on matters may be precedentless especially in the area of access to information and public participation and should result in more open and clear procedures for those two areas of policy-making. Currently the Act on Access to Information and Environmental Impact assessment has been consulted with interested parties. The act, once imposed, will systemise consultation and participation of involved interest groups.

Conflicts between energy policy and environmental and nature protection do not seem to play a dominant role yet, the energy sector still being characterised by a „hard coal mono-culture“ receiving further investments and subsidies (the latter are being reduced in the future), and coal miners and their trade union being of great influence. This situation will certainly change, since the public reacts more and more very negatively to the fact of high level subsidising of the mining industry. Another area of conflict might be energy pricing as consumers expect low energy prices and sustainable development requires prices to be cost-true. As implementation of short and medium term goals has been mainly focussing on improvement of existing coal-based infrastructure introducing best available technology, policy has showed to be rather non-conflict oriented in this area. An additional reason for this are the socio-economic consequences of restructuring the mining sector, i.e. the prospective high unemployment rates in certain regions of the country. According to a government programme for completion of reforms, in the year 2002 only 40 to 50 mines of the 63 existing at the time will be in operation, then employing 115,000 miners compared to 200,000 to date (Gazeta Wyborcza from July 13, 1999, p. 15).

In the area of nature conservation the policy style is evidently decisive, pro-active, and ambitious, whereas in the energy sector it seems to be rather re-active insofar as there is more confidence in technological innovations (best available technology) and end-of-pipe solutions than in an integrated policy strategy.

As already mentioned, there is still very little integration of environmental protection goals into different policy areas (e.g. transport, industry, agriculture), but this situation should have a potential to improve as in September 1998 the Committee for Regional Policy and Sustainable Development of the Council of Ministers was established. The Committee is chaired by the Minister of Economy and gathers other ministers and heads of central institutions. Institutionally it has an equal position to the Economic Committee of the Council of Ministers chaired by the Minister of Finance and to the Social Committee of the Council of Ministers chaired by the Minister of Internal Affairs and Administration. Also the Committee's position in the governmental structure is much stronger than that of the former Commission for Sustainable Development (established 1994), because all new programmes, draft legislation, etc. associated with regional policy and

sustainable development have, before being proposed to the Sejm by the Council of Ministers, to go through the committee or have to be elaborated by the Committee itself to be recommended to the Council of Ministers afterwards. To date it is too early to evaluate Committee's role in strengthening policy integration.

However, environmental policy in Poland is calculable, reliable, and shows continuity in the pursuit of aims and objectives in respect to nature conservation and sustainable development, as well as the acceptance of responsibility for human health and an intact environment as a member of the global community.

3.5.2 Configuration of Actors

Vertical and horizontal policy integration is crucial for a modern, innovation-friendly implementation of political strategies and aims. Intra-sectoral co-operation in networks ideally provides a high effectiveness of policy execution. With the spatial reform enforced since the beginning of 1999 re-introducing counties (powiaty) as a third administration level, things are presently in a flow. So intra-sectoral co-operation will have to be established newly or re-established and the actors concerned have to build new or extended networks. Competencies and responsibilities of the lower administration levels have definitely been strengthened by the reform, which might promote the subsidiarity principle.

Whether intra-sectoral co-operation and networking on the different levels like the EU, national, regional, and local are already established and well functioning among authority actors, is yet too early to evaluate. But it is already obvious, that especially at voivodship level an increasing number of inter-regional contacts and co-operation also in regard to environmental issues (e.g. water management in the Odra River basin) are existing.

Inter-sectoral co-operation is in the EU-accession strategy explicitly defined as a prerequisite for optimal implementation of environmental policy. So ministries, ecological funds, environmental protection inspectorates, national parks and state forests, are held to create cross-section information systems and to popularise the data about environment.

The main body responsible for energy and environment policy integration is the aforementioned newly established Committee for Regional Policy and Sustainable Development of the Council of Ministers.

The Energy Regulatory Authority President's Consultative Council constitutes another energy and environment policies integration body where representatives of various interest groups appointed by the Prime Minister are present (among the 9 members one person is representative of an NGO).

Due to the short period of the existence of both institutions it is too early to estimate their role in achieving sustainable development goals.

Also co-ordination of policies particularly by environment, economy, and transport ministerial bodies is of great importance for a successful integrative strategy in coping with

the special problems of the Polish environmental situation. To date in most cases an insufficient integration of environmental policy with other policies is prevailing, so e.g. in transportation policy, which keeps supporting mass motorization while environmental policy tends towards support for railroad and public transportation. So in recent years a decrease in railroad transport of 50 % and in public transport of 33 % has been noted, while the rate of private motorization increased from 40 % in 1990 up to 62 % in 1995. Moreover, promotion of motorization can be proved with examples of privileges given to automotive enterprises like General Motors which has benefited from tax exemption for 10 years (DNR-PL 1997, p. 13). However, the recent meeting „Transport and the Environment“ united officials from the Ministries of Environment and Transport, representatives of Sejm and Senate, as well as NGO members. Whether this was the beginning of regularly held consultations of both sectors only will show the future activities.

Participation of domestic ministerial and non-ministerial research and development institutions like Environmental Protection Institute, Industrialised Areas Ecology Institute, National Agency for Energy Conservation, Polish Energy Networks, Energy Market Agency, is in parts already realised.

Consultations with the industry in particular sectors represented in chambers of commerce as well as with representatives of major energy producers is intended (NPPM 1998) and seems to have taken place in several cases. Since large companies and private sector have their own strategic divisions with an immense amount of business intelligence, data, and information, and furthermore are operating all over the region or even world-wide, building networks between them and government and as well civil groups will become more and more important.

Discussions including social partners like trade unions, local self-governments, non-governmental organisations on selection of optimal activity variants of each sector are eventually practised but have yet a rather informal and casual character because of a lack of formal procedures in this scope.

The influence of NGOs on decision-makers is rather sporadic and not really institutionalised. Although their importance is gradually growing as their institutional capacity is being improved, a generally functioning network is still lacking. The Environmental Lobbying Support Office, established in 1998 and located in Warsaw, is a step in the direction of enhancing efficiency and effectiveness of environmental NGOs' activities in Poland at the national level. Another example for building networks is the punctual establishment of environmental NGO coalitions for co-operation on specific sustainable development issues like agriculture, transport, nature conservation, environmental education, water management, animal rights, biodiversity etc. In the area of energy policy several organisations like the Polish Ecological Club, the Polish Foundation for Energy Efficiency, the Institute for Sustainable Development, the Polish Network „Energy Cities“, play an active role, but there is yet no country-wide NGO coalition on energy issues in Poland. Apart from this, the Polish Ecological Club has been co-ordinating the Climate Action Network for East and Central Europe since 1996.

However, under a certain pressure from EU-accession efforts, examples of inter-sectoral consultations in relation to sustainable development currently seem to increase, but there still seems to be a need for capacity building not only in government and local authorities (which is going on) but also in non-governmental groups and staff of small enterprises in order to encourage small scale projects on energy efficiency and energy saving, but also in environmental awareness raising. In particular, well-functioning networks of strategic actors from social groups and responsible managers and employers representing small and middle firms, both belonging to the stakeholders who are among the driving forces for innovation and modernisation in the field of environmental protection, will be of crucial importance in the political arena in Poland. The Business Council for Sustainable Energy Future, acting on the European level, might be a good model for capacity building in this special sector of society. Also networks of small and middle enterprises active in the environmental protection sector like the German organisation B.A.U.M. (Bundesarbeitskreis umweltbewußtes Management), which takes an active part in the campaign „Solar - na klar“ promoting solar energy, could certainly be helpful for sustainable development progress in Poland.

3.6 Conclusion

Poland stands out as the most successful of the countries in Central Eastern Europe in terms of environmental policy. There is a real de-coupling between economic growth and some of the air pollution parameters, especially SO₂ and particulates, but due to maintaining of coal resources as main energy supplier and to a transport policy leading to expansion of road traffic, parameters like CO₂, NO_x, and N₂O are still increasing.

There is no green party existing in Poland, therefore ecological issues have no direct representation in Parliament. Although environmental policy is being recognised by all parties and by the responsible actors of government as one of the main policy areas for compliance of the requirements of the *acquis communautaire* and for the prospective accession to the EU in 2003, economic and energy conditions of the country will afford a prolonged phase of adjustment. It is expected to be achieved only in a long term period. Liberalisation of the energy market and a pricing policy which includes external costs into energy prices (Kuba 1998, p. 115) in order to comply with polluter pays principle, enhancement of combined heat and power generation as well as of energy efficiency, and furthermore massive investments in the development of renewable energy sources, will be crucial for a successful, EU-compatible environmental policy. The Minister of Environmental Protection, Natural Resources, and Forestry estimates, that Poland must spend USD 550 million more each year on improving the environment to meet European Union standards by 2010, noting that in 1997 the country spent more than USD 2.2 billion on environmental measures (REC-MIS 1999). There can be no doubt that seriousness and reliability of Polish environmental policy are highly appreciated by European countries, which we find proved by the fact, that the Polish Minister responsible for this policy sector has been appointed for Chairman of the Fifth Conference to the Parties of

the United Nations Framework Convention on Climate Change taking place in October/November 1999 in Bonn.⁵

Since the general economic situation in Poland is developing in a favourable way, and international and bilateral financial support will be carried on - Poland has been the largest recipient of western environmental aid -, there should arise increased possibilities for investing in environmental protection.

⁵ Due to a restructuring of the Polish government the minister responsible for environment, Mr Jan Szyszko from AWS, was dismissed, but will fulfill his tasks as chairman of COP 5 as an authorised representative for environmental protection issues, appointed by the Prime Minister. Newly appointed Minister for Environmental Protection, Natural Resources, and Forestry is Mr Antoni Tukarczuk from AWS (information of the Embassy of the Republic of Poland from October 26, 1999).

4 Existing Co-operation

4.1 Polish Efficient Lighting Project

Title: Polish Efficient Lighting Project (PELP) - the DSM Pilot Project

4.1.1 Overview

- GEF funding USD 600,000
- Time: 1996 - 1998
- Impact: peak load reduction, energy use reduction, avoided supply-side costs
- Replicability: replicable especially in small towns or housing estates; presently undertaken by PNEC in three cities; moreover, the project is replicated world-wide (Argentina, Peru, South Africa, Philippines, Hungary, Latvia and Czech Republic) as Efficient Lighting Initiative (ELI)
- Innovation: coupon-based distribution and targeted information campaign
- Capacity building: PNEC is developing the follow-up projects on a commercial basis
- Recommendations: apply initial subsidies to lower the price by the effect of scale. Apply targeted campaigns (housing estates or small cities as targets)

4.1.2 Background

The household share in the total energy consumption in Poland is very high in comparison with highly developed countries, and holds the potential for hitherto only partially exploited energy savings. Consideration of this fact has given rise to the idea of reducing domestic electricity consumption by replacing traditional filament-bulb lighting with the compact fluorescent lamps (CFL). Although the CFLs save energy there is lack of consumer awareness that the replacement of an incandescent lamp by a CFL is a profitable investment.

As a result of a market study in 1993, an electricity conservation program: The Poland Efficient Lighting Project (PELP) was developed by the International Finance Corporation (IFC) and funded with 5 million USD from the Global Environment Facility (GEF). PELP was designed to greatly increase the sale of CFLs and was implemented in 1995 - 1998.

One of its main components was a demand-side management (DSM) pilot, which was designed to use CFLs to help introduce the concept of DSM to Polish electric utilities.

4.1.3 Project objectives

As mentioned above, the main objective of the project was to introduce the concept of using DSM to defer distribution and transmission investments and to demonstrate the potential benefits of a DSM program implemented in real field conditions. Specifically, the pilot aimed to reduce peak power loads in geographic areas where the existing electric power grid capacity was inadequate to meet existing electric loads or soon would be inadequate to meet future load growth.

4.1.4 Project description

Three cities, all members of the Association of Polish Municipalities: Polish Network “Energie Cities”, were selected to participate in the pilot: Chelmno (about 22,000 inhabitants) in north-central Poland, Elk (about 54,000) in north-east and Zywiec (about 35,000) in south-central Poland. The cities were selected because they had areas with grid capacity problems the DSM pilot was designed to address. While the entire areas of all three cities participated in the DSM pilot, several target areas within the cities were established for intensive CFL promotion and electric load analysis.

The backbone of the DSM pilot was a CFL subsidy coupon system, which was designed to persuade large numbers of people in the selected areas to purchase and install CFLs. The CFLs sold through the pilot were subsidised with USD 100,000 of PELP project funds. The subsidies were directed at participating CFL manufacturers in exchange for their agreement to certain negotiated wholesale prices and delivery arrangements.

The subsidised lamps were made available to the residents of the three cities using discount coupons. There were three types of coupons, labelled A, B, and C. The A and B coupons, which offered the highest price discounts (ca. 55, and 45 %, respectively), were delivered only to those residents living in the target areas. The C coupons (ca. 35 % discount) were delivered to all residents of the participating cities. The A and B coupons were valid only for the first two weeks of the pilot’s operation. This timeframe was established to encourage residents in the target areas to make their CFL purchases quickly so that it would be easier to measure the effect of a massive CFL installation on the electric grids in the target areas. The C coupons were valid for six weeks, after which the pilot CFL sales ceased.

A high level of CFL sales was achieved in the three cities: more than 33,000 CFLs were sold in six weeks. A large number of CFLs were sold per household, which is especially notable given the low average incomes of the areas involved. Table 7 shows the number of CFLs sold per household in the three cities. It is remarkable that the sales of CFLs per day continued to grow strongly until the supply limitation was encountered.

Table 7: CFL Sales per Household

Name of Area	No. of CFLs
Chelmno Target Area	5.36
All of Chelmno	1.82
Elk Target Area: 1	3.76
Elk Target Area: 2	1.78
All of Elk	1.10
Zywiec Target Area	9.66

4.1.5 Project results

Electric load reduction

The measurements were designed to determine the impact of the CFL installation on the distribution system, including the peak demand, load shape, and power quality impacts.

Table 8 compares estimates of demand savings on the peak for Chelmno. During the local peak hour of 20:00 on the peak day of the year (January 1). Two independent models were used to extrapolate the observed reduction of peak demand of the year: (i) a model based on grid data and (ii) model based on end-use data collected over 5 months in over 100 individual households. As can be seen in Table 8, both models give compatible results. The savings shown correspond to a 15 % - 16 % reduction in total electric peak demand for all three measurement points at low voltage, labelled P4, P5 and P6.

Measurements were also made to assess the power quality impact of the CFL installations in the areas of Chelmno and Zywiec that achieved the highest level of CFL penetration. Measurements in both cities do not reveal any significant influence on voltage distortion from installing CFLs. Measured increases of current on the neutral lines in Chelmno were small, and total current on the neutral lines was still well within safety standards.

Table 8: Peak Demand Savings from Grid and End-Use Models (kW)

Hour	P4		P5		P6	
	Grid	End Use	Grid	End Use	Grid	End Use
	- kW -					
0-17	2.7	2.6	0.66	0.32	0.31	0.37
18	22.2	22.0	3.83	3.18	3.32	3.43
19	24.5	22.1	3.60	3.19	3.28	3.45
20	20.8	24.1 ¹⁾	3.8	3.51 ²⁾	3.10	3.78 ³⁾
21	14.8	22.8	3.35	3.18	2.98	3.43
22	13.5	18.1	2.80	2.61	2.38	2.82
23	14.3	11.9	2.68	1.69	2.00	1.84
24	9.8	6.2	1.53	0.86	1.35	0.95
¹⁾ 15 % reduction in peak demand; ²⁾ 16 % reduction in peak demand; ³⁾ 15% reduction in peak demand.						

4.1.6 Follow-up

The project's features and successes can be replicated for other electricity end-uses, for example electric motors. Such project is being presently developed by FEWE drawing from the experience of the PELP/DSM Pilot.

The Polish Network "Energie Cites", has developed a project based on the methods and experiences of PELP/DSM, in which the massive CFL installation will be ultimately achieved without external subsidies. Measurements similar to those of PELP/DSM will be made to increase the statistics and answer some additional questions.

The PELP project provided also a model for the GEF-IFC Efficient Lighting Initiative (ELI) being currently developed in 6 countries (South Africa, Argentina, Peru, Philippines, Hungary, Latvia and the Czech Republic).

4.2 City-wide Energy Efficiency Investments Plans

Title: Development of City-wide Energy Efficiency Investments Plans for Cities, Demonstrations of Low-cost Energy Saving Measures and Professional Strengthening of Local SMEs towards Offering Thermal Modernisation Services

4.2.1 Overview

- USAID funding USD 533,000
- Time: 1997 - 2000

- Impact: reduction of CO₂ emissions from space heating, reduction of heating costs, more jobs
- Replicability: proved by the interest of cities not included in the project
- Innovation: linking energy efficiency with job creation for blue collars. Creating opportunity to save energy for low income households
- Capacity building: creation of local capacity for professional low-costs thermal renovation of buildings
- Recommendations: provide training in the low cost thermal improvements to local unemployed technicians and workers paid by the unemployment funds; provide low cost credits to the new companies; help to arrange orders to those companies for thermal renovation of public buildings primarily schools and multifamily residential buildings; involve the city administration in such effort

4.2.2 Background

The estimates show that about 30 - 40 % of energy in the residential and tertiary sectors in Poland is wasted. Using only fraction of this huge saving potential would lead to a major reduction of CO₂ emissions and significant economic benefits to occupants or users of the buildings and to the local communities as a whole. The biggest barrier to energy saving in Poland is lack of access to financial resources, which often prevents any action at all.

However, some of the energy saving measures do not require big capital expenditures and are affordable for most building owners or users within their present financial resources.

The other factor hampering the activation of this huge efficiency potential is that the municipalities do not have appropriate City-Wide Plans for Energy Efficiency Investments that would enable them to prioritise such investments and organise them in a manner leading to development of local small enterprises offering services in this area.

In fact, there exists a great human potential to create such SMEs in Poland based on the existing workshops or building maintenance teams, which would only need some re-training and restructuring. However, because the market for energy-efficiency improvements in buildings is very large indeed, the existing work-force in those enterprises may not be sufficient to meet the new demand in most places. This will lead to creation of new jobs, which is particularly important in the areas of high unemployment or in Upper Silesia where the need for retraining the miners becomes compelling. A particular value of this development would be that the jobs could be offered to people who are not highly-skilled, which is the major problem in most of the high unemployment areas.

The development of the SMEs offering heat saving services has thus ramifications reaching beyond their particular mission and is of a vital importance for the development of local democracy and prosperity of Polish municipalities.

4.2.3 Project objectives

The Project's aim is to demonstrate that the development of the new business activity in implementing low-cost heat saving measures in buildings brings benefits to the local communities in several areas:

- social: improved housing conditions, creation of new jobs, new economic activity;
- economic: reduction of energy or fuel bills, or avoidance of supply-side investment costs;
- environmental: locally, by reduction of emissions from low pollution sources.

4.2.4 Project description

Six cities are selected for the project. These are Krapkowice, Luban, Olsztynek, Nowy S'cz, Trzcianka and Bialystok. They represent different regions, population – size and character. Among the project cities, there are such with high unemployment and retraining needs.

The demonstration part of the project in each selected city consists of:

- complete heat audits performed by certified auditors in five selected buildings, with reports identifying possible measures and their cost-effectiveness;
- actual implementation of the recommended measures in those two buildings;
- post-demonstration heat-consumption data collection and analysis.

The buildings selected to the project include (for each city):

- a typical 4-5 story residential block;
- a school of a typical size.

The last step is elaboration of the City-Wide Plan for Energy-Efficiency Investments based on inspection of the existing building stock and heat sources, performed energy audits and results of the demonstration works. These plans list and prioritize the most needed and possible investments (according to the Least Cost Planning Principle).

The other three buildings create initial portfolio of orders for the created local SMEs.

The applied measures include such low costs improvements as window carpentry repairs, weather-stripping, insulation of attic space, installation of radiator shields, insulation of selected external walls.

The other major goal of the project is creation of jobs. For this purpose in each city 8-14 local blue-collars are selected, typically from among unemployed local workers, who are trained on job by FEWE technicians.

The involvement of the city government is essential. The total grant of USAID of USD 533,000 will be supplemented by cities' funds of USD 200,000. Moreover the cities as-

sign a local co-ordinating team, which creates a local managerial potential to design and run similar projects in the future.

4.2.5 Project implementation and preliminary results

From among the six cities the work has been completed in four: Krapkowice, Olsztynek, Nowy Sacz and Luban. The audits and training of LPM-teams have been completed in all six cities and the city wide plans are presently being elaborated. The results so far are encouraging and prove that the project has addressed important local issues. In the four cities over 40 local technicians have been trained in the low-cost measures to save heat energy and four small companies have been established by the previously unemployed trainees. One prospering small local company (in Nowy Sacz) has extended its scope of services to include the low-cost measures demonstrated in the project. One of the indicators is that the cities have exceeded their contribution to the project above the assumed 26%. Another indicator of success is that two other cities, having learned about the project, decided to send their technicians for training covering the costs of the training from their own resources. Companies from two other municipalities have asked for similar training on the same basis.

4.3 Wood-waste Combustion

Title: Integrated Approach to Wood-waste Combustion for Heat Production in Poland

4.3.1 Overview

- GEF PDFA phase (USD 25,000) - completed
- GEF Medium Size Grant Application (ca. USD 750,000) - prepared
- Time: 1999 - 2002
- Impact: reduction of CO₂ emissions by using renewable energy (biomass). Helping local economy by creating local revenue (biomass sales and maintaining of jobs)
- Replicability: large potential in Poland and in neighbouring countries
- Innovation: integration of energy efficiency with fuel conversion; maximisation of wood waste use by securing fossil based backups. Setting the market for scattered small wood waste suppliers
- Capacity building: creation of a model for local biomass district heat companies and local biomass markets. Creation of national biomass energy advisory centre; creation of a dedicated biomass project development company
- Recommendations: increase competitiveness of biomass energy by introduction of appropriate economic instruments (green taxes, tax differentials etc.); introduce obligation to include biomass based energy into (mandatory) periodical local energy sup-

ply plans; stop subsidising coal to gas or oil conversions from environmental funds if there exists economically viable biomass option, which should be subsidised instead; never implement a fuel conversion project without first improving the thermal efficiency of the building and its heating system

4.3.2 Background

About 80 % of energy production in Poland is based on coal and lignite combustion. Consequently, Poland is one of the leading countries in per capita emissions of greenhouse gases and sulphur dioxide. There are two areas where improvement is possible:

- increase in energy efficiency of Polish economy;
- more extensive use of renewable energies.

Energy Efficiency: The energy intensity of the Polish economy is 2 - 3 times higher than in the countries of Western Europe. The biggest conservation potential is in space heating which is estimated to be about 40 %. Out of this amount 15 - 20 % can be achieved cost-effectively at the present energy prices, with about 2 - 5 years pay-back time.

Renewable energies: In practice the only significant source of renewable energy in Poland is biomass. Although its total potential is rather limited (still, according to some estimates, up to ca. 8 % of total primary energy), biomass can be very important in many local applications where it can substitute for coal, bringing both environmental and economic benefits.

During field visits made by the Polish Foundation for Energy Efficiency within a THERMIE Project, several observations were made.

In most cases where wood or wood-waste is burnt to produce energy, a large fraction of the energy produced is wasted, either directly in inefficient burners (boilers) or at the end-use side. Moreover, frequently (if not mostly) the low efficiency is desired or even planned, because the real goal of burning wood waste is not to produce energy - but rather getting rid of the cumbersome by-product (saw dust, bark or wood residuals). Therefore, what is needed in Poland is an integrated approach which would take into account also the end-use efficiency in the projects of replacing coal by biomass. Such an approach would lend to an increased reduction of carbon dioxide and sulphur dioxide emission by the use of biomass.

It was also found during the in site visits that the allocation of waste wood as fuel is mostly far from optimal. For example, with a given amount of wood-fuel in a community the environmental benefits would be much greater if the fuel were used in a small or medium-size district heat boiler rather than in individual house ovens.

The third qualitative observation concerns the choice of the most appropriate technology (or technologies) for wood-waste combustion, which would secure; environmental protection, conversion-efficiency, fuel security and widespread market penetration. Most importantly, it has been noted that the potential users would seldom rely on wood alone.

They would rather prefer having a coal back-up in case of wood -fuel shortage or very cold winter.

These project ideas have proven interest both on part of the potential consumers and physical feasibility of coal to wood conversion. However, the feasibility and profitability of such projects has to be first demonstrated in real life, before the existing potential is widely used.

4.3.3 Project objective

The overall driving objective of GEF-MSG project is to overcome barriers to wider and better use of biomass, which have been identified in PDFA phase:

It is considered by decision makers as a marginal source, to which not much attention is worth to be paid (this is definitely not true from the local perspective of many municipalities or communities in Poland).

Wood is considered by the general public, and (often) by the decision makers alike, to be a “backward” solution. This is a cultural barrier of a rather psychological nature. Wood as fuel is associated with cumbersome, old fashioned technologies, used for heating and cooking in countryside in the past. Replacing wood by coal has been ingrained in the public awareness as an indicator of progress (!). Coming back to this fuel is often perceived as step backwards.

An extremely important barrier is fear that wood waste is seen as an unstable source of energy. This is an overwhelming factor which most often excludes from consideration any full fuel switch to wood waste. Coal supplies have been safe and stable for decades. Also gas supplies were practically never interrupted, which is an important factor in consideration of replacing coal by gas.

Lack of information about technologies and insufficient number of good practice in-country examples, that would encourage potential project developers to consider the wood waste option in fuel conversion experiments.

Competition of other fuels: coal, particularly cheap coal, as a low cost fuel, that may (and in fact does) eliminate biomass from its natural niches (rich wood supply) leading to “petrification” of old practices. Gas and oil are also winning over biomass, because they are easily available and their supplies are stable. Another factor is lower labour (operational) costs which often offset higher fuel costs.

Another factor is aggressive marketing and promotion of fossil fuels. This applies to coal, gas and oil alike. Coal dealers offer attractive terms of delivery and payment competing with each other. On the other hand, gas and oil boiler suppliers and installers (most often representing western companies) provide credits and accept delayed payments which often allows the investor to avoid troublesome procedures of obtaining equivalent bank loans.

4.3.4 Project description

The project will address four categories of situations identified in PDFA phase:

4.3.4.1 Situation 1

Single wood-waste supplier linked by a long-term contract with single wood-waste buyer.

- Trade: with wood-waste;
- Typically: small scale (a wood processing workshop and a school).

4.3.4.2 Situation 2

Single large wood waste supplier and a number of heat buyers (district heat system).

- Trade: with heat produced by a district heat company;
- Typically: a large timber mill and a village or housing estate in a rural area or small city.

4.3.4.3 Situation 3

Many small wood waste suppliers and many scattered wood waste buyers.

- Trade: with wood-waste via an organised local wood-waste market (run by a dedicated local company);
- Typically: forested southern Poland regions with traditional small wood industries.

4.3.4.4 Situation 4

Self-supply: the wood waste producer converts its heating system from fossil fuel to wood-waste, produced by himself.

- No trade;
- Typically: a city using its park maintenance wood waste, forest administration etc.

4.3.5 Project results (preliminary)

The first stage included demonstration of an integrated approach in the city of Krapkowice. A window carpentry manufacturer Golenia Ltd. has signed a ten-year contract with the city for wood waste supply to a grammar school, which was previously heated by coal.

The school was previously thermally renovated using the low-cost approach within the USAID project described separately. After the thermal renovation the fuel reduction and reduction of the costs of heating are remarkable (ca. 30 - 40 %). The analysis is still in progress as the wood waste boiler is operated only since the beginning of October.

A number of other prospective projects has been identified and financing and implementation for three more of them will be included in the MSG.

Regarding situation 2: several projects have been identified and the one in Ujście Gorlickie in Southern Poland has been selected for MSG. Since the project significantly exceeds the MSG funding, there was a need to find an investor who would invest the boilers and district heat network (ca. USD 3 million). Such an investor has been identified.

Regarding situation 3: Again, several locations have been considered. Finally a consortium of three rural municipalities: Maków, Zawoja and Bystra at forested foothills of Tatra Mountains has been chosen. The three local governments declared their readiness to sign an agreement and contribute financially and in kind (including providing terrain for the storage facility). Also the external investor willing to invest money in a wood-waste trade company has been identified.

Regarding situation 4: A number of candidates have been identified. The city of Gliwice has been selected for demonstration. Apart from heating their shelter for homeless animals, an option of a biomass gas turbine is contemplated.

Other good candidates representing all four situations will be included in the MSG Project to the possible extent. However, limited only to preparation of business plan.

4.4 Education and Training of Local Administrators

Title: Education and Training of Local Administrators in Sustainable Energy within the TEMPUS Project

4.4.1 Overview

- TEMPUS funding Euro 474,000
- Time: 1995 - 1996 and 1999 - 2001
- Impact: increased environmental awareness of local decision makers in the energy supply and demand area; energy efficiency projects designed in the municipalities, which trained their representatives; political impact: future mayors, dep. mayors, MPs and other high ranking officials trained in the project
- Replicability: courses were replicated by FEWE and PNEC in 1996-1998, also for Ukrainian mayors in 1998; presently another similar TEMPUS project has been approved
- Innovation: education effort targeted at local decision makers
- Capacity building: establishment of the department of Energy Use Problems at the Faculty of Fuels and Energy at the University of Mining and Metallurgy in Krakow
- Recommendations: establish a permanent university based training capacity for local decision makers in the area of energy sustainability

4.4.2 Background

Poland is a country where about 80 % of energy is based on coal and lignite. Increase of energy efficiency is thus directly related to Poland's ability to reduce greenhouse gas emissions and levels of other air pollution. To give an idea: the energy saving potential in space heating is estimated to be about 40 % almost 50 % of this huge energy efficiency potential can be realised in small and medium sized cities.

Energy efficiency projects, regardless where they are designed, are ultimately implemented locally. Therefore, the main political actors directly involved in the realisation of such projects are municipal decision-makers. It turns out, however, that the level of environmental awareness and knowledge about sustainability issues of those people is highly insufficient. A huge need exists for education and training of local governments, especially in small and medium sized cities, which lack potential and opportunity to train their cadres. The Polish Network >Energie Cites< (PNEC) was established to specifically address this target group.

Presently Poland is undergoing a fundamental reform of its local administration system. The two-stage territorial division of the country: gmina (municipality), województwo (region) has been changed by adding an intermediate level, powiat (county). Additionally, in September 1997, the local elections at all three levels, led to the emergence of a large number of new officials and councillors, who need to be trained in their new work areas. An area of particular importance is sustainable energy production and use. The importance stems from Poland's recent Kyoto Protocol commitment to reduce its greenhouse gas emissions by 6 %. Accession to EU, with its 8 % committed reduction, will make this target even more stringent.

This issue has to be brought to the local decision-making level because most sustainable energy projects are implemented by local administrators and business leaders. The EU countries have developed systems and methods to support local decision making in this area by consultancy and education. Those solutions have to be adopted more widely and rapidly in Poland.

4.4.3 Project objectives

The main project objective has been to increase the level of energy and environment awareness of local decision makers. The projects' aim has been also to provide those people the basic knowledge about technologies of CO₂ abatement and ways of developing and financing energy efficiency and renewable energy projects. The other objective is to help establish local capacity to develop and implement such projects.

Below a brief description is given of two TEMPUS projects co-organised by PNEC and University of Mining and Metallurgy in Krakow in co-operation with Foundation for Energy Efficiency and other organisations:

- TEMPUS-CME 1040/95 (EURO 200,000 with EURO 80,000 TEMPUS-funding; 1995/96)
- TEMPUS IB_JEP-14326-1999 (EURO 562,000 with EURO 394,000 TEMPUS-funding, 1999 - 2001)

4.4.4 Project description: TEMPUS CME

The main objective of the project was to create environmental awareness of the local government of small and medium-size cities in Poland, related to energy production and use. This objective was achieved by organising 16 training seminars in different parts of Poland dealing with four topics:

1. Strategic Energy Planning at the Municipal Level;
2. Possibilities of Financing Energy Efficiency;
3. Energy Saving in Lighting;
4. Heat Saving Potential and Measures in Buildings.

4.4.5 Project results

The total number of participants was 978 who represented 215 municipalities. Altogether 204 lectures were given. Among them:

- 33 were given by TEMPUS JEP 3293 graduates;
- 58 by representatives of universities and other scientific or research institutions;
- 43 by representatives of industry or consulting firms;
- 13 by representatives of local government agencies;
- 12 by representatives of national agencies;
- 18 by representatives of banks or other financial institutions;
- 12 by representatives of utilities;
- 15 by foreign lecturers.

A measure of the concrete knowledge how to identify and approach the energy problems has been the success of the cities, which trained their representatives in the CME seminars. Examples are cities of Elk, Chelmno and Zyrardow (PELP DSM Project); Tychy (Dutch PSO Project); Nowy Sacz, Luban, Trzcianka, Bialystok (USAID Projects) etc. The capacity to improve the energy efficiency at the municipal level created by the project is best reflected by the increase of the membership of PNEC: 9 at the beginning and 31 at the end of the project. It should be also noted that the trainees included people who were later promoted to new positions: 38 mayors or deputy mayors and five members of the Parliament.

4.4.6 Project description: TEMPUS IB_JEP

The success of TEMPUS CME has shown that a close co-operation of the universities with municipal organisations is best suited to promote the idea of sustainable energy among the local governments. The present project aims at developing higher education course materials on energy sustainability problems for local officials and businessmen. Additionally, within the project, at least 300 people will be trained in short-cycle courses, initiating such an education for the future. The project fits the development plans of the Polish partners:

1. the Faculty of Fuels and Metallurgy and Energy at University of Mining and Metallurgy (created after, and largely as a result of TEMPUS JEP 3293) is developing a strategy to provide extramural higher education in energy sustainability; and
2. promoting of sustainable energy is the statutory goal the PNEC, which has declared at the EU "Energy Cites" General Assembly in Barcelona in March 1998 to bring the message of the Kyoto Protocol to local governments in Poland.

The ultimate goal of the proposed project is to widely introduce in Poland the EU models of local energy policy-making with consideration of environmental factors and improve the environmental performance of local government in Poland by institutionalising the local Energy Policy Advisors, based on the EU-examples. The importance and attractiveness of higher education courses developed in this project will grow with time as the Kyoto deadlines become closer and Poland accession to EU become reality.

4.4.7 Project results

An application for TEMPUS grant was successful. A grant of EURO 394,000 was awarded for the two-year project 1999 - 2001.

4.5 Energie Cites

Title: Capacity building project of the French agency ADEME (Agence de l'Environnement et de Maîtrise de L'énergie): Creation of Polish Network >Energie Cites<

4.5.1 Overview

- ADEME funding FF 200,000
- Time: 1993 - 1994
- Impact: projects designed or implemented by the network
- Replicability: the growth in PNEC. Creation of similar networks in Romania, Bulgaria and Ukraine
- Innovation: creation of the first municipal network promoting sustainable energy in the countries in transition

- Capacity building: inherent in the project
- Recommendations: inspire and assist creation of similar municipal networks. Increase EU funding to support such networks

4.5.2 Project background

The most important level of policy making and implementation in energy efficiency and renewable energies is the municipal level. This fact has been recognised in the European Union where several networks of cities or regions have been created to jointly promote sustainable energy. The leading force behind this effort has been the French agency ADEME (Agence de l'Environnement et de Maîtrise de l'énergie). It has created a network of European Union cities called "Energie Cites" with headquarters in Besancon - France. The same importance of local policy making in the field of energy applies also to countries in economic transition. The importance and gravity of problems in this subject is even greater in Central and Eastern Europe, because it is only the past decade that the local governments have been given a say in any decision making, being previously practically fully commanded by the central state and party apparatus.

4.5.3 Project objective

The project objective was to create national capacity for joint actions aimed at promotion of sustainable energy policies at a municipal level.

4.5.4 Project description

The first step was to identify such municipalities, which required a substantial effort to make reconnaissance in whole country. Initially 8 cities (Tychy, Bielsko Biala, Bialystok, Dobczyce, Elk, Skala, Tychy and Zywiec) agreed to create the network

In 1993 FEWE Kraków received a grant of 200 000 FF to establish a network of cities in Poland whose governments showed interest in developing local energy policies aimed at minimising the impact of energy production and use on the environment.

The statutory goal of the >Polish Network Energie Cites< is the promotion of rational and more efficient use of energy, particularly in the areas, which can be influenced by local authorities, these are: heating, gas and electricity supply, transport and local industry.

4.5.5 Project result

Currently, there are 33 municipalities associated in the Network and the number of members is still growing. Eleven members of the Polish Parliament have been involved in the work of PNEC (including its President Mr. Leraczyk -MP).

PNEC has run or has taken part in a number of energy efficiency and sustainable energy projects (now, in the range of several hundred thousand USD). In particular PNEC has been partner in PELP-DSM and TEMPUS projects described separately.

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5.3 Energy and Environment Data

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- IEA (International Energy Agency) 1996: Energy Balances of Non-OECD Countries 1993 - 1994. Paris
- IEA (International Energy Agency) 1997: Energy Balances of Non-OECD Countries 1994 - 1995. Paris
- IEA (International Energy Agency) 1998a: Energy Balances of Non-OECD Countries 1995 - 1996. Paris
- IEA (International Energy Agency) 1998b: Energy Prices and Taxes. Paris;
Cited according to: E.V.A. (Energieverwertungsagentur) 1998:
<http://www.eva.wsr.ac.at/enz/preise/evp-es.htm>, 21.12.98
- OECD (Organisation for Economic Co-operation and Development) 1999: National Climate Policies and the Kyoto Protocol. Paris
- UNFCCC (United Nation Framework Convention on Climate Change) 1999: Inventory Database, as of October 1, 1999. Bonn
- World Bank 1999: World Development Indicators on CD. Washington
- EMA (Energy Market Agency)

Rzeczpospolita 1998: List of top 500 Polish companies

6 Appendix

6.1 Energy and Environment Data

Table 9: *Energy Data, Energy and Electricity Balance*

	Unit	1990	1991	1992	1993	1994	1995	1996	1997
TPES (Gross Inland Consumption)	mtoe	102.0	100.6	99.9	101.3	96.6	99.3	108.4	
Solids	mtoe	75.4	75.3	73.9	74.4	68.9	70.3	75.6	
Oil	mtoe	13.3	13.2	13.6	14.1	14.8	15.2	18.0	
Natural gas	mtoe	8.9	7.9	7.8	8.2	8.2	9.0	9.5	
Other (1)	mtoe	4.4	4.2	4.7	4.6	4.7	4.8	5.2	
Net Imports	mtoe	9.7	11.3	12.7	12.6	9.0	8.2	17.3	
Solids	mtoe	-18.9	-14.3	-14.8	-16.5	-19.3	-21.2	-18.1	
Oil	mtoe	14.3	12.8	13.7	14.5	14.2	14.7	17.7	
Natural gas	mtoe	12.9	11.5	13.0	13.6	12.8	13.0	15.0	
Gross Electricity Generation	TWh	136.3	134.6	132.6	133.7	135.3	139.0	143.1	142.7
Nuclear	TWh								
Hydro & wind	TWh	3.3	3.4	3.5	3.4	3.7	3.7	3.8	3.7
Thermal	TWh	124.8	131.2	129.1	130.3	131.6	126.8	131.1	130.9
Own use	%				-19.3	-21.0	-19.4	-18.8	
Distribution losses	%		10.4	-11.4	-12.8	-13.0	-13.2	-12.8	-11.6
Electricity Plants	TWh				1.5	1.7	1.9	1.9	
CHP Plants	TWh				130.3	131.6	135.1	139.2	
Electricity Import & Export Balance	TWh	-1.0	-2.6	-4.0	-2.4	-2.7	-2.8	-2.4	-2.2
Import	TWh	10.4	6.7	5.0	5.6	4.6	4.4	5.5	5.3
Export	TWh	-11.5	-9.3	-9.1	-8.0	-7.2	-7.2	-7.9	-7.5
Generation Capacity	GW	30.9	31.0	28.7	29.1	29.6	29.5	29.6	33.7
Nuclear	GW								
Hydro & wind	GW	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0
Thermal	GW	29.1	29.1	26.6	27.1	27.6	27.4	27.5	28.7
Fuel Inputs for Thermal Power Generation	mtoe	44.5	43.3	42.2	41.8	41.5	36.9	37.8	
Solids	mtoe	42.7	41.7	40.5	40.2	39.8	36.3	37.2	
Oil	mtoe	1.2	1.1	1.1	1.1	1.2	0.4	0.4	
Gas	mtoe	0.1	0.1	0.0	0.1	0.1	0.1	0.1	
Other	mtoe	0.4	0.4	0.5	0.5	0.5	0.1	0.1	
Net Electricity Generation by Fuel	TWh	117.5	116.1	114.2	114.4	116.3	119.7	123.6	123.0
Solids	TWh	114.2	112.7	110.7	111.0	112.6	116.0	119.8	119.3
Other	TWh	3.3	3.4	3.5	3.4	3.7	3.7	3.8	3.7
Total Final Energy Demand	mtoe	60.3	60.9	60.3	62.7	60.4	61.7	66.6	
Solids	mtoe	17.2	19.1	19.0	22.1	19.7	22.5	23.9	
Oil	mtoe	9.3	9.4	9.7	10.5	11.4	12.0	13.8	
Gas	mtoe	6.0	5.4	5.4	5.7	5.7	6.0	6.5	
Electricity	mtoe	8.3	7.7	7.4	7.4	7.3	7.7	8.0	
Heat	mtoe	15.6	15.5	14.5	12.7	11.9	8.8	9.2	
Other	mtoe	3.9	3.8	4.4	4.2	4.3	4.7	5.2	
Final Energy Consumption	mtoe	59.9	60.5	59.9	62.2	59.8	61.1	66.1	
Industry	mtoe	23.1	20.8	19.2	20.2	19.3	21.1	23.0	
Transport	mtoe	7.8	8.0	8.2	8.0	8.3	8.5	10.0	
Tertiary-Domestic	mtoe	28.9	31.7	32.6	34.1	32.2	31.6	33.1	
District Heating									
Length of grid	km	8,727	9,030	9,279	9,700	9,829	10,039	10,525	11,666
Heat Generation	PJ				602.5	565.1	420.8	444.4	
CHP Plants	PJ				396.1	383.8	224.4	224.5	
Heat Plants	PJ				206.4	181.3	196.4	219.8	

Source: DG XVII 1998, IEA 1998a, 1997, 1996, EMA, GUS

Table 10: Energy Markets

	Unit	1990	1991	1992	1993	1994	1995	1996	1997
Energy prices, constant US\$@PPP1995									
Electricity		2.50	1.10	0.85	0.72	0.71	0.65	0.60	0.63
Residential	\$/kWh	0.03	0.07	0.09	0.11	0.11	0.12	0.12	0.12
Services, Commercial	\$/kWh								
Industry	\$/kWh	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07
Fuel Oil									
Residential	\$/GJ								
Services, Commercial	\$/GJ								
Industry	\$/GJ	13.7	14.4	13.3	13.7	15.8	13.1	13.1	11.7
Natural Gas									
Residential	\$/GJ	1.4	4.2	8.2	9.3	9.4	10.3	10.9	11.1
Services, Commercial	\$/GJ								
Industry	\$/GJ	7.3	8.4	7.0	7.0	6.8	6.4	6.4	6.8
Heat									
Residential	\$/GJ				0.8	0.8	0.8	0.8	0.7
Agriculture	\$/GJ				13.6	14.0	12.3	11.7	12.3
Industry	\$/GJ				8.8	8.6	8.0	9.1	10.5
					10.2	11.4	9.4	8.8	9.1

Source: IEA 1998b, World Bank 1999, calculations by Oeko-Institut

Table 11: Greenhousegas and Airborne Emissions

	Unit	1990	1991	1992	1993	1994	1995	1996	1997
CO₂	1,000 t	380,697	376,144	371,591	371,590	371,588	372,059	372,530	361,626
Fuel Combustion (Sectoral Approach)	1,000 t	371,433	366,180	360,927	361,505	362,083	362,791	363,499	350,876
Fugitive Emissions from Fuels	1,000 t	52	57	61	72	83	88	94	86
Industrial Processes	1,000 t	9,212	9,908	10,603	10,013	9,422	9,180	8,938	10,664
Solvent and Other Product Use	1,000 t								
Agriculture	1,000 t								
Land-Use Change & Forestry	1,000 t	-44,663	-42,739	-40,815	-41,384	-41,953	-42,285	-42,617	-40,521
Waste	1,000 t								
Other	1,000 t								
Memo Item: International Bunkers	1,000 t						1,034	2,068	2,228
CH₄ (Methane)	1,000 t	2,801	2,638	2,474	2,471	2,467	2,360	2,252	2,279
Fuel Combustion (Sectoral Approach)	1,000 t	37	33	28	44	59	57	56	55
Fugitive Emissions from Fuels	1,000 t	994	894	793	845	896	919	943	937
Industrial Processes	1,000 t	13	11	8	10	11	11	11	11
Solvent and Other Product Use	1,000 t								
Agriculture	1,000 t	850	777	704	675	646	618	591	598
Land-Use Change & Forestry	1,000 t						0	0	0
Waste	1,000 t	907	924	941	898	855	753	652	677
Other	1,000 t								
Memo Item: International Bunkers	1,000 t						0	0	0
N₂O	1,000 t	63	57	50	51	50	52	54	54
Fuel Combustion (Sectoral Approach)	1,000 t	6	6	6	6	6	7	7	7
Fugitive Emissions from Fuels	1,000 t								
Industrial Processes	1,000 t	16	15	13	14	14	15	16	16
Solvent and Other Product Use	1,000 t								
Agriculture	1,000 t	41	37	32	31	30	30	30	31
Land-Use Change & Forestry	1,000 t						0	0	0
Waste	1,000 t								
Other	1,000 t								
Memo Item: International Bunkers	1,000 t						0	0	0
SO₂	1,000 t								
Fuel Combustion (Sectoral Approach)	1,000 t								
Fugitive Emissions from Fuels	1,000 t								
Industrial Processes	1,000 t								
Solvent and Other Product Use	1,000 t								
Agriculture	1,000 t								
Land-Use Change & Forestry	1,000 t								
Waste	1,000 t								
Other	1,000 t								
Memo Item: International Bunkers	1,000 t								
NO_x	1,000 t							1,154	1,114
Fuel Combustion (Sectoral Approach)	1,000 t							1,133	1,095
Fugitive Emissions from Fuels	1,000 t								
Industrial Processes	1,000 t							21	19
Solvent and Other Product Use	1,000 t								
Agriculture	1,000 t								
Land-Use Change & Forestry	1,000 t								
Waste	1,000 t								
Other	1,000 t								
Memo Item: International Bunkers	1,000 t								
VOC	1,000 t							766	775
Fuel Combustion (Sectoral Approach)	1,000 t							487	492
Fugitive Emissions from Fuels	1,000 t							61	63
Industrial Processes	1,000 t							48	50
Solvent and Other Product Use	1,000 t							136	134
Agriculture	1,000 t							35	35
Land-Use Change & Forestry	1,000 t								
Waste	1,000 t							0	0
Other	1,000 t								
Memo Item: International Bunkers	1,000 t								

Source: UNFCCC 1999

Table 12: *Socio-demographic and Economic Data*

Unit		1990	1991	1992	1993	1994	1995	1996	1997
Socio-demographic Data									
Population	Million	38.1	38.2	38.4	38.5	38.5	38.6	38.6	38.7
Population aged 15-64, total	Million	24.7	24.9	25.0	25.2	25.4	25.5	25.7	26.0
Labor force, total	Million	18.7	18.7	18.8	19.2	19.3	19.3	19.3	19.7
Appartments									
Apartments	1,000	11	11	11	11	12	12	12	12
Occupants	No./App.	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Average Size	m²/App.	59.6	59.9	59.9	60.1	60.3	60.5	60.6	60.9
Heating Space	Million m²	657	666	676	683	689	695	700	707
Gross Domestic Product at Market Prices									
Current Prices									
PLZ	Billion	56	81	115	156	210	289	363	445
US\$	Billion	59	76	84	86	93	119	135	136
Purchasing Power Parities (PPP)	Billion	179	167	176	186	200	221	237	252
Constant Prices 1995									
PLZ	Billion	259	241	247	256	270	289	306	327
US\$	Billion	106	99	102	105	111	119	126	135
PPP US\$	Billion	198	184	189	197	207	221	235	251
GDP Deflator	1995 = 100	22	34	47	61	78	100	118	136
Money									
Exchange Rate	CZK/US\$	0.9	1.1	1.4	1.8	2.3	2.4	2.7	3.3
Inflation (Consumer Price Index)	%	555.4	76.7	45.3	36.9	33.3	26.8	20.2	15.0

Source: World Bank 1999, GUS, calculations by Oeko-Institut

Table 13: *Environment and Energy Indicators, Driving Forces*

Unit		1990	1991	1992	1993	1994	1995	1996	1997
Energy Intensity									
TPES per Capita	toe/Cap.	2.7	2.6	2.6	2.6	2.5	2.6	2.8	
TPES per GDP (PPP)	kg/US\$1995	0.51	0.55	0.53	0.52	0.47	0.45	0.46	
Energy Prices, Current Local Currency									
Electricity		3	1	1	1	1	1	1	1
Residential	PLZ/kWh	0.01	0.03	0.06	0.08	0.11	0.15	0.18	0.21
Services, Commercial	PLZ/kWh								
Industry	PLZ/kWh	0.02	0.03	0.05	0.06	0.08	0.10	0.11	0.13
Fuel Oil									
Residential	PLZ/GJ								
Services, Commercial	PLZ/GJ								
Industry	PLZ/GJ	3.87	6.30	8.05	10.83	16.09	17.13	20.25	20.73
Natural Gas									
Residential	PLZ/GJ	0.40	1.84	4.96	7.41	9.61	13.46	16.90	19.72
Services, Commercial	PLZ/GJ								
Industry	PLZ/GJ	2.05	3.67	4.26	5.58	6.95	8.36	9.89	12.07
Heat									
Residential	PLZ/GJ				10.80	14.20	16.00	18.10	21.90
Services, Commercial	PLZ/GJ				7.00	8.80	10.40	14.00	18.60
Industry	PLZ/GJ				8.10	11.60	12.20	13.60	16.10
Greenhouse Gas Emissions (GHG)									
GHG by Gas	1,000 t GHGE	459,048	449,202	439,045	439,125	438,895	437,718	436,545	426,220
CO ₂	1,000 t GHGE	380,697	376,144	371,591	371,590	371,588	372,059	372,530	361,626
CH ₄	1,000 t GHGE	58,821	55,388	51,954	51,881	51,807	49,551	47,299	47,850
N ₂ O	1,000 t GHGE	19,530	17,670	15,500	15,655	15,500	16,108	16,716	16,744
GHG per Capita	t/Cap.	12.0	11.7	11.4	11.4	11.4	11.3	11.3	11.0
GHG per GDP@PPP95	kg/US\$	2.3	2.4	2.3	2.2	2.1	2.0	1.9	1.7
Driving Forces									
CO ₂ /TPES	t CO ₂ /toe	3.7	3.7	3.7	3.7	3.8	3.7	3.4	
TPES/FEC	toe/toe	1.7	1.7	1.7	1.6	1.6	1.6	1.6	
TFC/GDP	kgoe/US\$	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
GDP/POP	1,000 US\$/Cap.	5.2	4.8	4.9	5.1	5.4	5.7	6.1	6.5

Source: Calculations by Oeko-Institut

6.2 Monitoring of Accession Process

Table 14: Accession Process Monitoring Table

National responses to ...	Existing national law (name, date of adoption)	Fully in accord? (yes/no)	If not, how will transposing occur? ¹⁾	Status of trans- position ²⁾	Planned year of full trans- position	Planned year of full imple- mentation
Directives						
Directive concerning common rules for the internal market in electricity (96/92/EC)						
Objectives/substantive requirements	(1) The Energy Law (Official Journal of Law 1997, No 54, item 398); (2) Executive regulations to the Energy Law	No	MO1	Partially implemeted	31.12.2002	No data
Institutional requirements	(1), (2)	Yes		No transposition needed		ibid.
Procedural requirements	(1), (2)	No	MO1	Partially implemeted	31.12.2002	ibid.
Monitoring and Reporting		No		Not transposed yet		ibid.
Directive concerning common rules for the internal market in natural gas (98/30/EC)						
Objectives/substantive requirements	The Energy Law (Official Journal of Law 1997, No 54, item 398); Executive regulations to the Energy Act	No	MO1	Partially implemented	No data	ibid.
Institutional requirements		No	MO1	Not transposed yet	ibid.	ibid.
Procedural requirements		No	MO1	Not transposed yet	ibid.	ibid.
Monitoring and Reporting		No		Not transposed yet	ibid.	ibid.

Source: FEWE, IERP

Table 14: Accession Process Monitoring Table, continued

National responses to ...	Existing national law (name, date of adoption)	Fully in accord? (yes/no)	If not, how will transposing occur? ¹⁾	Status of trans- position ²⁾	Planned year of full trans- position	Planned year of full imple- mentation
Large Combustion Plant Directive (88/609/EEC)						
Objectives/substantive requirements	(1) Act on Protection and Management of the Environment (Official Journal of Law 1994, No 49, item 196- consolidated text - as amended later) (2) Act on State Inspectorate for Environmental Protection (Official Journal of Law 1991, No 77, item 335)	No	L1	Not transposed yet	31.12.2000	ibid.
Institutional requirements	(1),	No	L1	ibid.	31.12.2000	ibid.
Procedural requirements	(1),	No	L1	ibid.	31.12.2000	ibid.
Monitoring and Reporting	(1), (2)	No	L1	ibid.	31.12.2000	ibid.
Directive to limit carbon dioxide emissions by improving energy efficiency (SAVE) (93/76/EEC)						
Objectives/substantive requirements	(1) The Act on the support of thermomodernisation investments (Official Journal of Law 1998, No 162 item 1121, (2) Energy Law (Official of Law 1997 No 54 item 348) (3) Construction Law (Official of Law 1994 No89 item114)	Yes		No transposition needed		No data
Institutional requirements	(1),	Yes		No transposition needed		No data
Procedural requirements	(1), (2), (3)	No		Partially implemented	No data	No data
Monitoring and Reporting		No		Not transposed yet	No data	

Source: FEWE, IERP

Table 14: Accession Process Monitoring Table, continued

National responses to ...	Existing national law (name, date of adoption)	Fully in accord? (yes/no)	If not, how will transposing occur? ¹⁾	Status of trans- position ²⁾	Planned year of full trans- position	Planned year of full imple- mentation
Directive on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances (and daughter Directives) (92/75/EEC)						
Objectives/substantive requirements	(1) The Energy Law (Official Journal of Law 1997, No 54, item 348), (2) Regulation of the Minister of Economy of 18 February 1999 on energy efficiency requirements and labelling requirements. (Official Journal of Law 1999, No 16, item 145), (3) Act on Standardization (Official Journal of Law 1993, No 55, item 250)	Yes		Transposed		31.12.2000
Institutional requirements	(1), (2)	Yes		ibid.		ibid.
Procedural requirements	(1), (3)	Yes		ibid.		ibid.
Monitoring and Reporting	(1),	No		Partially implemented		ibid.
Directive on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels (92/42/EEC)						
Objectives/substantive requirements	(1) The Energy Law (Official Journal of Law 1997, No 54, item 348), (2) Regulation of the Minister of Economy of 18 February 1999 on energy efficiency requirements and labelling requirements. (Official Journal of Law 1999, No 16, item 145), (3) Act on Standardization (Official Journal of Law 1993, No 55, item 250)	Yes		Transposed		31.12.2000
Institutional requirements	(1), (2),	Yes		ibid.		ibid.
Procedural requirements	(1), (3)	Yes		ibid.		ibid.
Monitoring and Reporting	(1),	Yes		ibid.		ibid.

Source: FEWE, IERP

Table 14: Accession Process Monitoring Table, continued

National responses to ...	Existing national law (name, date of adoption)	Fully in accord? (yes/no)	If not, how will transposing occur? ¹⁾	Status of trans- position ²⁾	Planned year of full trans- position	Planned year of full imple- mentation
Directive on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof (96/57/EC)						
Objectives/substantive requirements	(1) The Energy Law (Official Journal of Law 1997, No 54, item 348), (2) Regulation of the Minister of Economy of 18 February 1999 on energy efficiency requirements and labelling requirements. (Official Journal of Law 1999, No 16, item 145), (3) Act on Standardization (Official Journal of Law 1993, No 55, item 250)	Yes		Transposed		31.12.2000
Institutional requirements	(1), (2)	Yes		Transposed		ibid.
Procedural requirements	(1), (3)	Yes		Transposed		ibid.
Monitoring and Reporting	(1),	No		Not transposed yet		ibid.

Source: FEWE, IERP

Table 14: Accession Process Monitoring Table, continued

National responses to ...	Existing national law (name, date of adoption)	Fully in accord? (yes/no)	If not, how will transposing occur? ¹⁾	Status of trans- position ²⁾	Planned year of full trans- position	Planned year of full imple- mentation
Directive concerning integrated pollution prevention and control (IPPC) (96/61/EC)						
Objectives/substantive requirements	(1) Act on the Protection and Management of the Environment (Official Journal of Law 1994, No 49, item 196- consolidated text - as amended later) (2) Act on Spatial Planning (Official Journal of Law 1994, No 89, item 415) (3) Building Act (Official Journal of Law 1994, No 89, item 414) (4) Act on Waste (Official Journal of Law 1997, No 96, item 592) (5) Geology and Mining Act (Official Journal of Law 1994, No 27, item 96) (6) Act on Energetic Law (Official Journal of Law 1997, No 54, item 348) (7) Act on Water Law (Official Journal of Law 1974, No 38, item 230) (8) Act on State Inspectorate for Environmental Protection (Official Journal of Law 1991, No 77, item 335)	No	L1	Partially implemented	31.12.2000	No data
Institutional requirements	(1), (2), (3), (4), (5), (6), (7)		L1	Partially implemented	31.12.2000	No data
Procedural requirements	(1), (2), (3), (4), (5), (6), (7)		L1	Partially implemented	31.12.2000	No data
Monitoring and Reporting	(1), (8)		L1	Partially implemented	31.12.2000	No data

Source: FEWE, IERP

Table 14: Accession Process Monitoring Table, continued

National responses to ...	Existing national law (name, date of adoption)	Fully in accord? (yes/no)	If not, how will transposing occur? ¹⁾	Status of trans- position ²⁾	Planned year of full trans- position	Planned year of full imple- mentation
Directive on the harmonisation of the structures of excise duties on mineral oils (92/81/EEC)						
Objectives/substantive requirements						
Institutional requirements	The Act on Value Added Tax and Excise Duties (Official Journal of Law 1993, No 11 item 50), Executives regulations	Yes		No transposition needed		
Procedural requirements	No specific proc. Requirements	No specific proc. Requirements	No specific proc. Requirements	No specific proc. Requirements		
Monitoring and Reporting		No		Partially implemented		

Source: FEWE, IERP

Table 14: Accession Process Monitoring Table, continued

National responses to ...	Existing national law (name, date of adoption)	Fully in accord? (yes/no)	If not, how will transposing occur? ¹⁾	Status of trans- position ²⁾	Planned year of full trans- position	Planned year of full imple- mentation
Planned and Proposed Directives						
Proposal for a integrated resource planning directive)						
Objectives/substantive requirements	No law exists	No		Not transposed yet	No data	no data
Institutional requirements	ibid.	No		ibid.	ibid.	ibid.
Procedural requirements	ibid.	No		ibid.	ibid.	ibid.
Monitoring and Reporting	ibid.	No		ibid.	ibid.	ibid.
Feed-In Directive (Renewables) (COM(97) 69)						
Objectives/substantive requirements	ibid.	No		ibid.	ibid.	ibid.
Institutional requirements	ibid.	No		ibid.	ibid.	ibid.
Procedural requirements	ibid.	No		ibid.	ibid.	ibid.
Monitoring and Reporting	ibid.	No		ibid.	ibid.	ibid.
Council Decision concerning the promotion of renewable energy sources in the Community - Altener programme (93/500/EEC)						
Objectives/substantive requirements				No transposition necessary		
Institutional requirements						
Procedural requirements						
Monitoring and Reporting						
¹⁾ How will transposition occur?				²⁾ Status or transposition		
Legislative act (L)		Government order (GO)				
L0	No steps taken to date	GO1	No steps taken to date	0 No steps taken to date		
L1	Draft in process	GO2	Draft in process	1 Draft in process		
L2	Ministry approves	GO3	Ministry approves	2 ...		
L3	Government approves	GO4	Other relevant ministries approve	3 ...		
L4	After first reading in Parliament	GO5	Government approves and publishes	4 ...		
L5	Fully transposed and publishes			5 Fully transposed and in force		
				- No transposition needed		

Source: FEWE, IERP

Table 15: National Law or Policy Initiatives

	existing	proposed	planned
Decisions and Programmes			
Energy Framework Programme			
Objectives	The Energy Law (Official Journal of Law 1997, No 54, item 398); The Energy Policy Strategy until 2010 (1995)	A document "The Polish Negotiation Position" should be adopted by the Cabinet by the end of May 1999. The document presents the current state of approximation with the EU structures and the future directions of this process.	(1) Energy Policy Strategy until 2020. The document is being currently prepared by the Ministry of Economy. (2) Works to set up the Electricity Stock Exchange.
Institutional adoptions	ibid.	ibid.	ibid.
Procedural adoptions	ibid.	ibid.	ibid.
Monitoring and Reporting	ibid.	ibid.	ibid.
Coal Subsidies			
Objectives/substantive requirements	The Energy Law (Official Journal of Law 1997, No 54, item 398); The Energy Policy Strategy until 2010 (1995); A Government Programme for Reform of the Coal Mining Industry from 1998 until 2002	The Polish Negotiation Position	Energy Policy Strategy until 2020. The document is being currently prepared by the Ministry of Economy.
Institutional requirements	ibid.	ibid.	ibid.
Procedural requirements	ibid.	ibid.	ibid.
Monitoring and Reporting	ibid.	ibid.	ibid.

Source: FEWE, IERP

Table 15: Accession Process Monitoring Table, continued

	existing	proposed	planned
Environmental Agreements, General Policies and Strategies			
Combined Heat and Power			
Objectives/substantive requirements	The Energy Policy Strategy until 2010	No data	Executives Regulations to the Energy Law
Institutional requirements	ibid.	No data	ibid.
Procedural requirements	ibid.	No data	ibid.
Monitoring and Reporting	ibid.	No data	ibid.
Renewable Energy Sources			
Objectives/substantive requirements	(1) The executive regulation of the Minister of Economy requiring the purchase of electricity and heat from renewable sources (Official Journal of Law, 1999); (2) The Framework Program "Energy Efficiency through Renewable Energy Sources" prepared by the Committee on the Identification and Removing the Barriers in Promotion of the Renewable Energy Sources (3) The Energy Law (Official Journal of Law, 1997 No 54 item 398)	The Polish Negotiation Position, Law on Environment Protection (draft in process)	"The Energy Policy Strategy until 2020". The document is being currently prepared by the Ministry of Economy.
Institutional requirements		ibid.	ibid.
Procedural requirements		ibid.	ibid.
Monitoring and Reporting		ibid.	ibid.
Energy Efficiency			
Objectives/substantive requirements	(1)The Act on the support of thermomodernisation investments (Official Journal of Law 1998, No 162 item 1121),	A project of the executive regulation of the Minister of Economy "In the Case of Detailed Range and Forms of Energy Audits and Algorithm of Worthwhile Thermomodernisation Investments"	ibid.
Institutional requirements	ibid.	The project of the executive regulation of the Minister of Economy on the Thermomodernisation Fund	ibid.;
Procedural requirements	ibid.	A project of the executive regulation of the Minister of Economy "In the Case of Detailed Range and Forms of Energy Audits and Algorithm of Worthwhile Thermomodernisation Investments"	ibid.
Monitoring and Reporting	No data	No data	No data

Source: FEWE, IERP

Table 15: *Accession Process Monitoring Table, contiued*

	existing	proposed	planned
Further National Decisions, Programmes, Policies and Strategies with regard to 'Environment and Energy'	National Environmental Policy of Poland (Warsaw, May 1991); A document "Execution of the Law on the Protection and Management of the Environment for 1994-1996"	Update of the National Environmental Policy (currently being prepared),	The Energy Policy Strategy until 2020. The document is being currently prepared by the Ministry of Economy.

Source: FEWE, IERP

6.3 Screening of Co-operation Project

Table 16: Co-operation Project Screening Table

Name of the Projekt (Acronym)	Institution	Objectives/ description	Co-operation Partners (Institution, Country)	Total Volume	Start (duration)	(Planned) End	Evaluation Report Available	Results, Objectives Achieved	Financed by
ENERGY CONSULTANCY SERVICES FOR END-USERS IN BUILDING SECTOR IN POLAND	KAPE S.A. (Krajowa Agencja Poszanowania Energii)	training of 35 buildings energy consultants; establishing the Energy Consultancy Point at KAPE (Krajowa Agencja Poszanowania Energii)	Danish Technological Institute Department of Energy Technology Gregersensevej	No data	1995	1996	KAPE S.A.		Danish Energy Agency, DEA
ENERGY EFFICIENCY ACTIVITIES BASED ON SWEDISH EXPERIENCE	KAPE S.A. (Krajowa Agencja Poszanowania Energii)	training of 20 energy consultants for medium and small size industries	AF Energiekonsult Stockholm AB	No data	1995	1997		KAPE S.A.	Swedish International Development Cooperation Agency, SIDA
MANAGEMENT AND ENERGY SAVING FOR HEAT DISTRIBUTION COMPANIES	KAPE S.A. (Krajowa Agencja Poszanowania Energii)	training programme addressed to managers from 700 district heating and heat distribution companies	BERENSCHOT B.V.	No data	1995	1997		KAPE S.A.	SENER, Agency of the Ministry of Economic Affairs in Netherlands
FINANCE FOR ENERGY EFFICIENCY IN POLAND	KAPE S.A. (Krajowa Agencja Poszanowania Energii)	identification of bank- able energy efficiency projects in Poland for EBRD, Preparation a pipeline of investment projects for the EBRD, defining financial and institutional mechanisms to support continued development and implementation of energy efficiency projects, transferable skills to KAPE relating to the development of an ESCO market	IIEC - Europe Consulting Limited	No data	1995	1995		KAPE S.A.	UK Know-How Fund

Source: FEWE

Table 16: Co-operation Project Screening Table, continued

Name of the Projekt (Acronym)	Institution	Objectives/ description	Co-operation Partners (Institution, Country)	Total Volume	Start (duration)	(Planned) End	Evaluation Report Available	Results, Objectives Achieved	Financed by
TURNING ENERGY EFFICIENCY POLICY INTO ACTION	KAPE S.A. (Krajowa Agencja Poszanowania Energii)		Energy Technology Support UnitHarwell	No data	1995 (2 months)			KAPE S.A.	UK Know-How Fund; the British Council
SUPPORTIN THE COOPERATIVE ORGANISATION OF REGIONAL ENERGY USE - SCORE	KAPE S.A. (Krajowa Agencja Poszanowania Energii)		NOVEM	No data	1996 (3 months)			KAPE S.A.	Nederlandse Onderneming voor Energie en Milieu B.V. - NOVEM
HEAT SUPPLY - REGULATORY AND LEGISLATIVE FRAMEVORK	KAPE S.A. (Krajowa Agencja Poszanowania Energii)		Ministry of Industries Government of Romania	No data	1996 (3 months)				PHARE Multi Country Energy Programme
THIRD PARTY FINANCING FOR ENERGY EFFICIENCY INVESTMENTS	KAPE S.A. (Krajowa Agencja Poszanowania Energii)		Energy Technology Support UnitHarwell	No data	1996 (2 months)				British Know-How Fund, The British Council
MASTER PLAN 2001FOR ENERGY COSERVATION IN POLAND	KAPE S.A. (Krajowa Agencja Poszanowania Energii)	identification of energy saving potential and economic effective investments in industrial sector with low energy effectiveness and high energy consumption -recomendations for the government on rational use of energy	Japanese Agency for International Cooperation JAICA; Institute for International Cooperation	No data	1996	1998			Japanese Agency for International Cooperation
SUPPORTING THE COOPERATIVE ORGANIZATION OF REGIONAL ENERGY USE - SCORE	KAPE S.A. (Krajowa Agencja Poszanowania Energii)		NOVEM	USD 1 million	1996				

Source: FEWE

Table 16: Co-operation Project Screening Table, continued

Name of the Projekt (Acronym)	Institution	Objectives/ description	Co-operation Partners (Institution, Country)	Total Volume	Start (duration)	(Planned) End	Evaluation Report Available	Results, Objectives Achieved	Financed by
TWINNING PROGRAMME FOR MINISTRY OFFICIALS IN CHARGE OF REGULATION IN THE ENERGY SECTOR	KAPE S.A. (Krajowa Agencja Poszanowania Energii)		NYKOMB SYNERGETICS AB (Sweden)	No data	1996				PHARE Multi- Country Programme Coordination Unit
NETWORKING/TWINNING PROGRAMME FOR ENERGY EFFICIENCY ORGANIZATIONS	KAPE S.A. (Krajowa Agencja Poszanowania Energii)		Energi Verwertungs Agentur E.V.A.	No data	1997 (10 months)				PHARE Multi- Country Programme Coordination Unit
Energy Management in the Housing Sector in Poland	KAPE S.A. (Krajowa Agencja Poszanowania Energii)	development of consultancy scheme in the KAPE S.A.	Danish Technological Institute Department of Energy Technology	No data	1997 (15 months)				Danish Energy Agency DEA
NATURAL GAS PRICING TARIFFS AND OPERATIONAL TWINNING	KAPE S.A. (Krajowa Agencja Poszanowania Energii)		SRC International Copenhagen Denmark	No data	1997 (6 months)				PHARE Multi- Country Programme Coordination Unit, Bucharest
POLISH EFFICIENT LIGHTING PROJECT (PELP)	FEWE - Kraków (Foundation for Energy Efficiency)	described in WP5		USD 600,000			described in WP5	described in WP5	Global Environment Fund (GEF)
Promotion of Small and Medium Enterprises offering low-cost energy services	FEWE - Kraków (Foundation for Energy Efficiency)	described in WP5		USD 140,000	1997	2000	described in WP5	described in WP5	United States Agency International Development (USAID)

Source: FEWE

Table 16: Co-operation Project Screening Table, continued

Name of the Projekt (Acronym)	Institution	Objectives/ description	Co-operation Partners (Institution, Country)	Total Volume	Start (duration)	(Planned) End	Evaluation Report Available	Results, Objectives Achieved	Financed by
Development of City-Wide Plans for Energy Efficiency Investments and Demonstration	FEWE - Kraków (Fundation for Energy Efficiency)	demonstration of low cost measures to save heat	Polish Network >Energie Cites<; Local Governments	723 000 USD	1997	2000		6 cit-wide plans; 30 buildings audited; 12 demonstration investments; jobs created	United States Agency International Development (USAID)
Postgraduate Course on Energy and Environment	University of Mining and Metalurgy - Krakow;	training of specialist	ADEME-France; CEEETA - Portugal, FEWE	20 000 USD	1992	1994	TEMPUS office	40 specialists trained	TEMPUS-PHARE
Training Seminars for Municipal Decision Makers	CEEETA - Portugal; Polish Network >Energie Cites<	creation of local decision making potential in energy planing	University of Mining and Metalurgy; ADEME,	EURO 80,000	1995	1996	TEMPUS office		TEMPUS-PHARE
Involvement of SMEs in Energy Efficiency Promotion: training for Ukrainian Specialists	University of Mining and Metalurgy - Krakow; FEWE	enhancement of knowledge, 25 Ukrainian experts trained by Polish experts	Academy for Educational Development	USD 32,000	1998	1998	USAID - Kiev,	25 experts trained	United States Agency International Development (USAID)
Training Seminar for Ukrainian Coal Experts: Coal Marketing in a Transition Economy	University of Mining and Metalurgy - Krakow; FEWE	enhancement of knowledge, 30 Ukrainian experts trained by Polish experts	Academy for Educational Development	USD 28,000	1997	1997	USAID - Kiev,	33 Ukrainian experts trained	United States Agency International Development (USAID)
Integrated Approach to Wood-Waste Combustion in Poland	FEWE - Kraków (Fundation for Energy Efficiency)	described in WP5		USD 25,000	1999	1999	described in WP5	described in WP5	Global Environment Fund (GEF)
Abatement of Low-Emission Air Pollution in Krakow	Bureau for Development of Krakow (BRK)	improvement of coal boiler performance for district heat; coal to gas conversion; energy efficiency in buildings	FEWE, City of Krakow, District Heat Company	USD 20 million	1990	2000	reduction of air pollution		USAID

Source: FEWE

Table 16: Co-operation Project Screening Table, continued

Name of the Projekt (Acronym)	Institution	Objectives/ description	Co-operation Partners (Institution, Country)	Total Volume	Start (duration)	(Planned) End	Evaluation Report Available	Results, Objectives Achieved	Financed by
Training Seminar for Representatives of Local Municipalities on "Energy Economics and Policies vs. Polish Commitments Following the Kyoto Protocol"	Polish Network >Energie Cites<	training of 30 representatives of municipalities associated in LGPP; elaboration of detailed educational materials	FEWE, University of Mining and Metallurgy	USD 16,900	1999	2000			United States Agency International Development (USAID) - LGPP Programme
Training Seminar on Energy and Local Policy			FEWE - Krakow	USD 9,000	1998	1998	Alliance to save Energy	33 Ukrainian high ranking city officials trained	Alliance to Save Energy, City of Brzozow, MPEC - Krakow, Electrotec Inc., USAID
Training Seminar on Energy Savings and Protection of the Environment. Renewable Energy Sources - Energy for Future	Polish Network >Energie Cites<	training of 60 participants on using of renewable energy sources, technologies of using renewable energy sources, examples of projects	FEWE, National Agency for Energy Conservation (KAPE),	USD 26,000	1999	1999	European Institute of Environmental Energy (EIEE)		European Institute of Environmental Energy (EIEE)
Targeted Distribution of CFLs	Polish Network >energie Cites<	increased instillation of efficient lighting	City Governments	USD 27,000	1999	2000		high saturation of households with CFLs	International Finance Corporation
Development of Energy Efficiency Service Capacity in Ukraine	Polish Network >energie Cites<	training of technicians and auditors	Alliance to Save Energy - USA	USD 11,000	1998	1999		6 technicians and 12 auditors trained	United States Agency International Development (USAID)

Source: FEWE

Table 16: Co-operation Project Screening Table, continued

Name of the Projekt (Acronym)	Institution	Objectives/ description	Co-operation Partners (Institution, Country)	Total Volume	Start (duration)	(Planned) End	Evaluation Report Available	Results, Objectives Achieved	Financed by
Campaign for the Promotion of Energy Efficiency in Krakow	Polish Ecological Club (PKE) coordinated by M. Zaborowski	press campaign growing awareness on energy efficiency in the housing sector (local press, TV and radio involved)	International Institute for Energy Conservation (IIEC)	USD 12,000	1996	1997	M. Zaborowski (Director of the Foundation for the Support of Environmental Initiatives)		IIEC, Krakows' Local Authorities, TV Krakow, Gazeta Wyborcza (daily paper)
TRANSFORM	National Agency for Energy Conservation S.A. (NAPE)	training of the experts in the field of preparation the energy plans for municipalities (such plans are required by the Energy Law)	Germany	No data	1996		NAPE S.A.		No data
	National Agency for Energy Conservation S.A. (NAPE)	calculation of the economic efficiency of the energy saving investments in small and medium industry sectors							PHARE FIESTA

Source: FEWE