

Öko-Institut

Institut für angewandte Ökologie
Institute for Applied Ecology
Institut d'écologie appliquée
Instituto de ecología aplicada
Институт Прикладной Экологии



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

Country Report Czech Republic

**Final Report to the R&D Project No 298 97 336
for the Umweltbundesamt**

April 2000

SEVEN⁷

**Stredisko pro efektivni
vyuzivani energie, o.p.s.**

The Energy Efficiency Center

Ivana Svojtikova

Stanislav Travnicek

Jirí Zeman

Ecoconsulting

RNDr. Martin Bursík

Martin Cames (Öko-Institut)
Dr. Felix Chr. Matthes (Öko-Institut)
Stefani Bär (ecologic)
Dr. Sebastian Oberthür (ecologic)
Michael Krug (FFU)
Dr. Lutz Mez (FFU)
Sybille Tempel (FFU)

Öko-Institut

Novalisstr. 10

D-10115 Berlin

☎ 030-280 486-83

☎ 030-280 486-88

cames@oeko.de

ecologic gGmbH

Pfalzburger Str. 43-44

D-10717 Berlin

☎ 030-868 80-118

☎ 030-868 80-100

oberthuer@ecologic.de

FFU

Innstraße 22

D-14195 Berlin

☎ 030-83 85 55 85

☎ 030-83 85 66 85

ffu@zedat.fu-berlin.de

This country report is an unedited compilation of information provided by the respective co-operation partners. The authors of the Final Report are not responsible for its content.

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	4
2.1.3	Energy Taxation	6
2.1.4	Large Combustion Plant Directive (and Proposed Revision).....	7
2.1.5	SAVE Directive	10
2.1.6	Directives on the Labelling of the Consumption of Energy	13
2.1.7	Directives on Energy Efficiency Requirements for Household Appliances.....	13
2.1.8	Directive on Integrated Pollution Prevention and Control	14
2.2	Decisions and Programmes.....	14
2.2.1	R&D Programmes: Energy Framework Programme (1998 - 2002).....	14
2.2.2	Coal Subsidies	15
2.3	Environmental Agreements	16
2.4	General Policies and Strategies for the Future.....	16
2.4.1	Combined Heat and Power (Co-generation)	17
2.4.2	Renewable Energy Sources	17
2.4.3	Energy Efficiency.....	17
2.5	Planned and Proposed Activities.....	18
2.5.1	Integrated Resource Planning Directive	18
2.5.2	Feed-In Directive (Renewables).....	18
2.6	Conclusion.....	19
3	Patterns of Regulation and Implementation.....	20
3.1	Political Instruments.....	20
3.1.1	A Lack of Political Concepts.....	20
3.1.2	Ministerial Jurisdiction in Energy and Environmental Policy	21
3.1.3	Implementing EIA Procedure When Debating Conceptions	21
3.1.4	State Environmental Policy	22
3.1.5	State Energy Policy.....	23
3.1.6	Conflicts between Environmental and Energy Policies	24
3.1.7	Other relevant Government programs	25
3.1.8	Legislation on Energy Use and Production.....	27
3.1.9	The Czech Republic Screening Results, Chapter 14, ENERGY.....	28
3.1.10	The subvention of electricity for the population; an absence of economic instruments	29
3.2	Policy style.....	29
3.2.1	The strong position of the energy sector	29
3.2.2	The high demands of energy	30
3.2.3	State energy production, state distribution, state regulation	30

3.2.4	The Links between the MIT and CEZ.....	30
3.2.5	The Problematic Completion of the Temelín Nuclear Plant: A Determining Factor for Energy.....	33
3.2.6	Electoral Programs of the Political Parties 1998 — Energy Policy	37
3.2.7	The Role of Non-Governmental Environmental Organisations.....	38
3.2.8	Trade Unions	39
3.3	The Prospects for Environmental Policy and the Pushing Through of Innovations	39
3.3.1	What Should Czech Energy Policy Be?	39
3.3.2	Proposed Approach to the (NON-) Privatisation of Energy Companies and CEZ	40
3.3.3	Environmental Tax Reform.....	41
3.3.4	The creation of an environment for the pushing through of an active policy	43
4	Existing Co-operation	44
4.1	Best Practise Projects.....	44
4.1.1	PHARE Energy Saving Fund	44
4.1.2	Programme/ Fund MUFIS (Financing of Municipal Infrastructure).....	44
4.1.3	Energy Efficiency Centres	45
4.1.4	Project Development	45
4.2	Best Practice Programmes.....	46
4.2.1	European Union programmes	46
4.2.2	Co-operation with international finance institutions.....	50
4.2.3	Activities Implemented Jointly / Joint Implementation - Grant Assistance.....	51
4.2.4	Country specific support programmes	53
5	References	56
6	Appendix.....	60
6.1	Energy and Environment Data.....	60
6.2	Monitoring of Accession Process.....	66
6.3	Screening of Co-operation Project.....	72

Tables

Table 1:	Excise taxes on energy products in Czech Republic	7
Table 2	Minimum Taxes on solid Fuels.....	42
Table 3	Minimum Taxes on Motor Fuel.....	42
Table 4	Minimum Taxes for Heat and Energy Production	43
Table 5:	Evaluation of the Best Practice Projects.....	46
Table 6:	Socio-demographic and Economic Data.....	60
Table 7:	Energy Data, Energy and Electricity Balance.....	61
Table 8:	Energy Markets	62
Table 9:	Greenhousegas and Airborne Emissions.....	63
Table 10:	Socio-demographic and Economic Data.....	64
Table 11:	Environment and Energy Indicators, Driving Forces	65
Table 12:	Accession Process Monitoring Table	66
Table 13:	National Law or Policy Initiatives	71
Table 14:	Co-operation Project Screening Table.....	72

Figures

Figure 1:	SO ₂ Emission Limits for Fossils Fuels	8
Figure 2:	NO _x Emission Limits for Fossils Fuels.....	9

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

Changes after 1989 have contributed to creation of conditions, which have significantly influenced the solution to environmental problems. The condition and development of the environment, as well as the level of its protection, in the Czech Republic are compared with conditions of EU member states rather different. Gradual levelling of these differences depends not only on the modification of the Czech legislation but also on the volume of investments necessary for achievement of the technical level of environmental protection in the EU.

The Czech Republic has been preparing for accession to the European Union since the early 1990's. The harmonisation of the Czech legal order with EU legislation, and adaptation to EU policies commenced in 1992. A great help in the adoption of domestic market norms has been the EC "White Paper". Approximately 60 % of Czech legal regulations are now fully compatible.

2.1 Directives

2.1.1 Liberalisation of the Electricity Market

In 1994 the Czech Republic has adopted a new energy legislation, the law number 222/1994 „On Conditions for Business and the Performance of State Administration in Energy Sectors and on the State Energy Inspectorate“. This law covers electricity and gas as well as district heating industry.

2.1.1.1 Objectives/Substantive Requirements

The main goal of this law was to adjust the energy legislation to a new economic situation during the transition from a centrally planned to market economy, and to provide a legal framework for competition in the electricity, gas, and district heating markets. The former electricity, gas, district heating laws and other legislation were designed for a monopoly, state owned and centrally planned energy industry. The law 222/1994 and the relevant bylaws created a legal framework for doing business for new private companies and legalised their competition to traditional utilities.

Transmission means the transport of electricity on the high-voltage interconnected system to the final customer or the distributor whereas the distribution mean the transport of electricity on a medium or low-voltage distribution system to final customers.

In Accordance with the Directive 96/92 EC, the production of electricity is open to independent producers and autoproducers. Practically 100 % of the wholesale market is open for competition. Retail market is practically not open for competition, except for customers using direct lines. The Directive does not specify what market should be opened for competition. If only the wholesale market is considered (as in Denmark) the Czech

law would support system similar to negotiated third party access, but the law does not guarantee a non-discriminatory and transparent behaviour.

The Czech law in contrast with the Directive does not guarantee transparent and non-discriminatory third party access.

2.1.1.2 Institutional Requirements

State authorisation - is compulsory obligation for production and distribution and transmission. The Ministry of Industry and Trade is obliged to issue the licence when the specified conditions are fulfilled.

Concerning the transmission system, for the duties of the system operator is responsible CEZ, a.s. which established a daughter company CEPS, a.s. for transmission and dispatching services.

The eight regional distribution companies are responsible for the distribution system in their specific regions.

2.1.1.3 Procedural Requirements

In principle, the law is very liberal, although the EU directives concerning common rules for the internal market with electricity and gas were not in place approving the 222/94 energy law, it did allow third party competition to enter electricity, gas, and district heating markets both in generation and trade, as well as in electricity, gas and heat distribution, including

The law 222/1994 in accordance with the Directive that was passed two years later introduced licenses/authorisation procedure for doing business in energy industry. The operational licenses are to be issued by the Ministry of Industry if the specified requirements are met.

The law did not specify any exclusive monopolistic rights for traditional utilities and thus competition of new market entrants was allowed in electricity, gas, district heat trade and in distribution (transmission). Third party access to the grid, and construction of direct and parallel lines were allowed (respectively not forbidden). However, the law has one single major weakness that significantly reduces effectiveness of any potential competition. The law does not guarantee a fair, transparent and non-discriminatory third party access to the grid as the Directive requires. It only allows third party access and leaves the conditions of the third party access on the bilateral negotiations between the grid owner and a new competitor.

The law supports negotiated third party access in accordance with the Directive, but its non-discriminatory and transparent application is not guaranteed which is in contrast with the Directive.

In practice several independent energy traders have arisen and there have been several cases of third party access to the grid in electricity and gas industries. However, independent traders reported serious problems during negotiations regarding conditions of third party access, and the required fees were so high that it effectively stopped the competition, except for several cases.

2.1.1.4 Monitoring and Reporting

State regulation - was defined and a Ministry of Industry and Trade (MIT) was accredited to perform the duties of the regulatory body. The regulator appointed with the MIT submits proposals for price regulations to the Ministry of Finance which has the power to regulate prices.

The Regulator appointed with MIT, the Ministry of Finance, the Antimonopoly office, and courts are appropriate places for solving disputes.

There are no formal provisions on monitoring and reporting in the law 222/1994 „On Conditions for Business and the Performance of State Administration in Energy Sectors and on the State Energy Inspectorate“. However, the impacts of the law are monitored regularly by both market participants and the Ministry of Industry and Trade and meetings and discussions take place on its effects.

A „small novel“, an update of the energy law had been planned and actual work started, but than a decision has been made to create a completely new energy legislation. The new legislation would be in full accord with the EU directives concerning common rules for the internal market with electricity and gas. A first draft of the new energy law that is compatible with the EU directives was prepared in June 1999 and now is circulated to collect comments.

2.1.2 Liberalisation of the Gas Market

The law number 222/1994 „On Conditions for Business and the Performance of State Administration in Energy Sectors and on the State Energy Inspectorate“ covers electricity and gas as well as district heating industry.

2.1.2.1 Objectives/Substantive Requirements

The main goal of this law was to adjust the energy legislation to a new economic situation during the transition from a centrally planned to market economy, and to provide a legal framework for competition in the electricity, gas, and district heating markets. The former electricity, gas, district heating laws and other legislation were designed for a monopolistic, state owned and centrally planned energy industry. The law 222/1994 and the relevant bylaws created a legal framework for doing business for new private companies and legalised their competition to traditional utilities.

In the Czech Republic there are no important producers of gas. In contrast with the Directive the production of gas is not open to independent producers and autoproducers. Gas eligible customers are not defined. In accordance with directive, each distribution shall operate, maintain and develop under economic conditions a secure reliable and efficient system with due regard to the environment.

2.1.2.2 Institutional Requirements

State authorisation - are compulsory obligation for production and distribution and transmission. The Ministry of Industry and Trade is obliged to issue the licence when the specified conditions are fulfilled.

In accordance with the directive, authorities responsible for the settlement of disputes on negotiations on the access to the systems and on the refusal of access are designated (The Ministry of Finance, Antimonopolistic office, Regulation offices, courts).

System operator is established, Transgas s.p., in accordance with the directive.

Concerning the transmission system, for the duties of the system operator is responsible Transgas, s.p..

The eight regional distribution companies are responsible for the distribution system in their specific regions.

2.1.2.3 Procedural Requirements

In principle, the law is very liberal, although the EU directives concerning common rules for the internal market with electricity and gas were not in place approving the 222/94 energy law, it did allow third party competition to enter electricity, gas, and district heating markets both in generation and trade, as well as in electricity, gas and heat distribution, including transmission.

The law 222/1994 in accordance with the Directive that was passed two years later introduced licenses/authorisation procedure for doing business in energy industry. The operational licenses are to be issued by the Ministry of Industry if the specified requirements are met.

The law did not specify any exclusive monopolistic rights for traditional utilities and thus competition of new market entrants was allowed in electricity, gas, district heat trade and in distribution (transmission). Third party access to the grid, and construction of direct and parallel lines were allowed (respectively not forbidden). However, the law has one single major weakness that significantly reduces effectiveness of any potential competition. The law does not guarantee a fair, transparent and non-discriminatory third party access to the grid as the Directive requires, it only allows third party access and leaves the conditions of the third party access on the bilateral negotiations between the grid owner and a new competitor.

The law supports negotiated third party access in accordance with the Directive, but its non-discriminatory and transparent application is not guaranteed which is in contrast with the Directive.

In practice several independent energy traders have arisen and there have been several cases of third party access to the grid in electricity and gas industries. However, independent traders reported serious problems during negotiations regarding conditions of third party access, and the required fees were so high that it effectively stopped the competition, except for several cases.

2.1.2.4 Monitoring and Reporting

State regulation - was defined and a Ministry of Industry and Trade (MIT) was accredited to perform the duties of the regulatory body. The regulator appointed with the MIT submits proposals for price regulations to the Ministry of Finance which has the power to regulate prices.

The Regulator appointed with MIT, the Ministry of Finance, the Antimonopoly office, and courts are appropriate places for solving disputes.

There are no formal provisions on monitoring and reporting in the law 222/1994 „On Conditions for Business and the Performance of State Administration in Energy Sectors and on the State Energy Inspectorate“. However, the impacts of the law are monitored regularly by both market participants and the Ministry of Industry and Trade and meetings and discussions take place on its effects.

A „small novel“, an update of the energy law had been planned and actual work has started. But after than a decision has been made to create a completely new energy legislation, that would be in full accord with the EU directives concerning common rules for the internal market with electricity and gas. A first draft of the new energy law that is compatible with the EU directives was prepared in June 1999 and now is circulated to collect comments.

2.1.3 Energy Taxation

Excise taxes on products are specified in the act 587/1992 on Excise taxes. The Act on taxes specifies duties of taxpayers, commodities, and levels of excise taxes.

At the present time there are only excise taxes imposed on the mineral oils (no excise taxes on electricity or solid energy products (as the proposal of the relevant EU directive requires),

2.1.3.1 Objectives/Substantive Requirements

Excise taxes on energy products in Czech Republic (there are no other excise energy products taxes charged):

Table 1: *Excise taxes on energy products in Czech Republic*

	Czech Republic	EU (actual)
	- ECU/1,000 l -	
Petrol	273	287
Gas Oil	219	245
Petrol mixtures, light furnace oils	219	245
Other fuels	0	different

The main gap in the current taxation system and the EU is the rather different approach. Levied excise taxes on mineral oils in the Czech Republic are paid back to consumers if they prove the utilisation of oils for heating purposes and electricity generating. This fact is not adequate to any EU requirement.

2.1.3.2 Institutional Requirements

Excise taxes are a component of existed system of taxes. Administrators of taxes are competent financial authorities. It fulfils the EC requirements.

2.1.3.3 Procedural Requirement

There are no procedural requirement.

2.1.3.4 Monitoring and Reporting

Competent financial offices monitor the charge and collection of all taxes, including the excise duties. There are no substantial barriers to fulfil reporting requirements.

2.1.4 Large Combustion Plant Directive (and Proposed Revision)

Current acts in force embody partial accord with Large Combustion Plant Directive.

The essential gaps are:

- different definition of source size,
- Czech Republic-thermal output power,
- EU-thermal input power
- the linear relation between emissions limits on size of source
- missing legal frame for creation of programme and
- action plans for air quality improvement

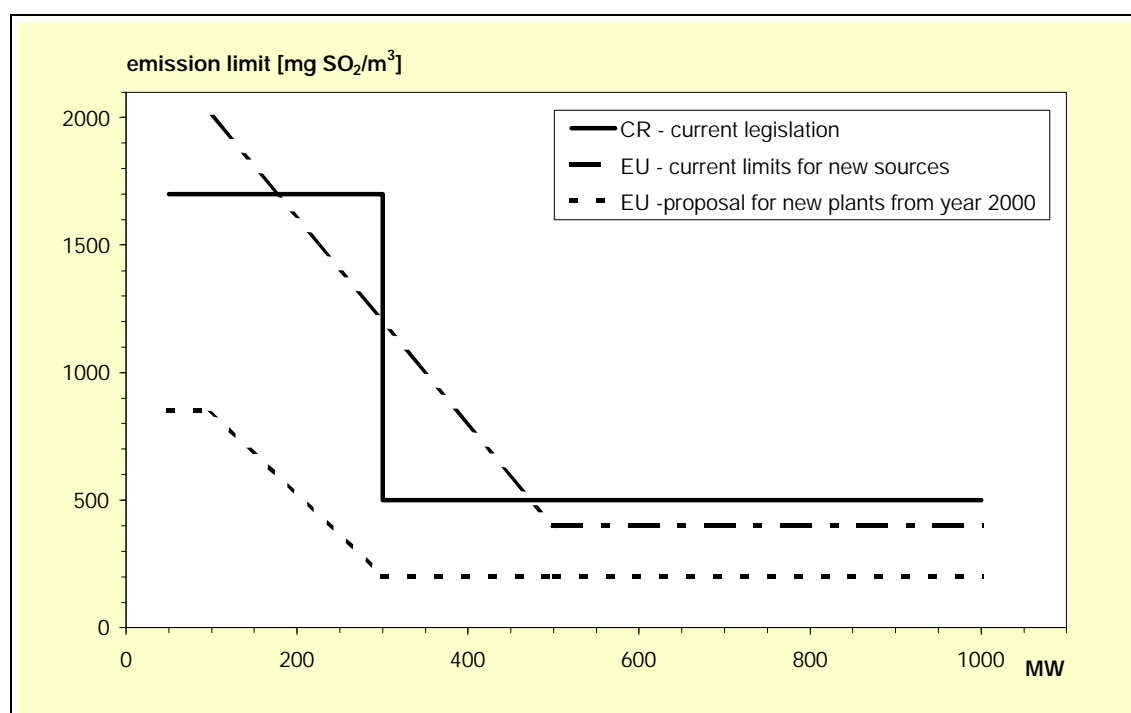
2.1.4.1 Objectives/Substantive Requirements

Act No. 309/1991 Coll. on Air Protection against Pollutants (the Clean Air Act), amended by of Act No. 218/1993 Coll. and Act No 158/1994 Coll. The full wording, is in Act No. 211/1994.

Act No. 389/1991 Coll. on State Administration of Air Protection and Pollution Fees amended by No. 212/1994 Coll. and by Act No. 86/1995 Coll.

Decree of Ministry of Environment No. 117/1997 coll. in the wording of Decree No. 177/1997 Coll., published in Amendment 41/1997 Coll., setting emission limits and other conditions (method of emission measurement, quality of fuel etc.) of operating stationary sources of air pollution and protection.

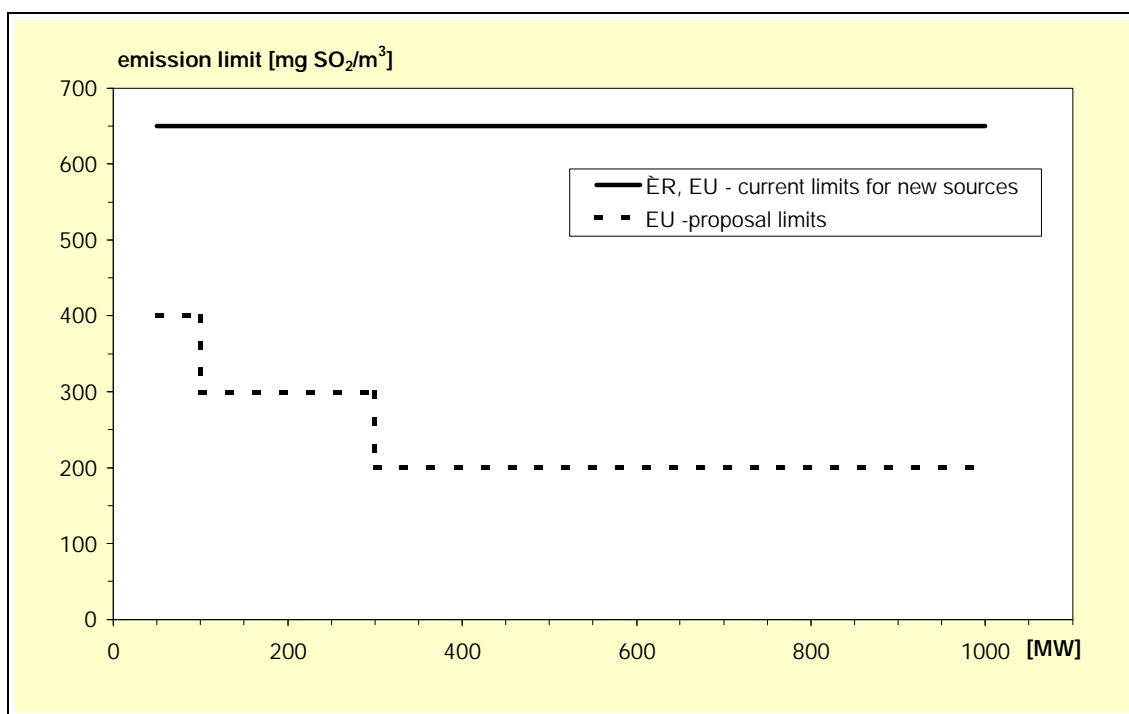
Figure 1: *SO₂ Emission Limits for Fossils Fuels*



In contrast with the directive, in the Czech Republic, the sources are differentiated according to the thermal output, not thermal input.

The interpretation of gaps in the field of emission limits is quite difficult. The graphs below show the example of difference between emission limits for new sources in EU and Czech Republic.

Figure 2: NO_x Emission Limits for Fossils Fuels



Czech Republic draw up programmes for the phased reduction on total annual emission based on the joining the CRLTAP protocol. The programmes are mainly supported through State Environmental Fund.

2.1.4.2 Institutional Requirements

State treatment of air protection executes Ministry of Environment, Czech Inspectorate of Environment and district offices and municipalities.

In contrast with the directive, there are no undertakings in force relating to the requirement to consult neighbouring countries in case of transboundary effects. The UN/ECE Convention on Transboundary effects was signed but hasn't been ratified yet.

2.1.4.3 Procedural Requirements

In the Czech Republic there is system which required authorisation. The obligation of emission limits abidance follows from the law 117/1997.

2.1.4.4 Monitoring and Reporting

Large and middle sources of emission have obligation to measure emissions.

In contrast with the Directive, emissions from all plants of more than 150MW (EU 300MW) must be measure on continual basis, other plants are measured regularly, as approved by competent authority.

The Czech Inspection of Environment monitor abundance of pollutant emissions limits, in accordance with the Directive.

Operators of combustion plants have to inform the authorities of the results of the continuous measurements and scientific institutions are approached to monitor on behalf of the government.

There are no gaps in the monitoring and reporting.

2.1.4.5 Recent Developments Related to the Directive

Directive will be involved in the new Directive 117/97 Coll. on Emission Limits and in the new Act on Air Pollution. The Act is on legislative programme of the government and should be effective from year 2001. (Ministry of Environment status). It is assumed that the new Act will close all existing gaps.

2.1.5 SAVE Directive

2.1.5.1 Objectives/Substantive Requirements

The SAVE directive 93/76/EEC to limit carbon dioxide (CO₂) emissions by improving energy efficiency (SAVE) has in the Czech conditions a few local instruments to achieve the goals. These includes both legislative and policy instruments.

At the legislative level the most important is the proposal of the Energy Management Law. The prospective approval of the proposal would adopt some of the SAVE Directive requirements, namely in the form of obligatory energy audits for the public buildings. Moreover it would define the activities of the Czech Energy Agency and State Energy Inspection. The beginning of the adopting process of this law is planned for the year 2000.

Existing tools and policies can be divided in two following parts:

- activities of Czech Energy Agency and State Environmental Fund
- requirements given by the current legislation

2.1.5.2 Institutional Requirements

The major actor is the Czech Energy Agency (CEA), the main task of which is to encourage activities leading to energy conservation and reduced energy intensity, including support to ESCO industry development, as well as to support greater utilisation of renewable and secondary sources of energy. The only income of the CEA for financing projects is the state budget. The State Environmental Fund (SEF) active uses its own

income based on the collected emission charges. There is not one agency, independent of different ministries that would co-operate CEA and SEF.

In organisational terms, the Czech Energy Agency is a part of the Ministry of Industry and Trade. The centre of the agency's activity lies primarily in programs of stimulation through state subsidies. The focus of individual programs is following:

- energy efficient operation of residential buildings, schools, hospitals, buildings used by community services and public institutions
- utilization of renewable and secondary sources of energy and cogeneration
 - for optimization of energy supply to residential areas
 - for energy conservation in industry, transportation and agriculture
- consulting and education to reduce energy consumption and promotion of energy efficiency activities
- energy plans
- Energy Performance Contracting

Thus the Czech Energy Agency covers the SAVE Directive requirements with the above-mentioned supportive programs, which contribute to the CO₂ emissions reductions by the energy savings. Concerning the areas highlighted in the directive, it promotes the thermal insulation in new buildings, the Third Party financing in the public sector and the energy audits of enterprises

Further, this year the Agency co-operated in preparation of the new Energy Management Law that is focused on these areas:

- Energy policy
- Energy plans of regions
- Energy audits
- Combined electricity and heat production
- Energy labels and standards
- State programs of energy efficiency.

The State Environmental Fund provides the financial support to pollution abatement measures (at the production side – boilers and heating systems) and the utilisation of the renewable energy. It helps to fulfil the SAVE directive requirements by the promotion of the energy efficiency and the use of the fuels with the lower content of the CO₂. However it does not implement any program highlighted in the directive. The conditions for the granting of SEF resources are set out in a directive of the Ministry of the Environment, so the responsibility for the program design lies with the Minister of the Environment. The State Environmental Inspection controls the fulfilment of the environmental legislation.

2.1.5.3 Procedural Requirements

It can be declared that the SAVE Directive objectives are or in the near future will be implemented on the Czech conditions, usually with small differences which can be easily corrected.

- Energy certification of building

Energy certification of the buildings is on voluntary basis in the Czech Republic. No legal measures are planned in the field of certification, standards are prepared.

The last proposal of the Energy Management Act includes the obligation of house owners to meet minimum efficiency requirements for new and reconstructed buildings. Details are presented in edicts. If a house-owner can prove that he/she can not meet the given requirements technically or economically through an energy audit, an exception will be made.

- Billing of heating, air-conditioning and hot water costs calculated on the basis of actual consumption

All consumers have installed individual hot water meters. Metering of heat depends on the source of heat. The electricity, natural gas and other fuels are individually metered, district heating systems have one meter installed in each of the supplied building. The individual bills are set up according to the number of the square meters or according to heat indicators.

The proposed Energy Management Act prescribes individual metering for all end-users. Details will be given in edicts. According to the proposal the owner of the given building is obliged to install this equipment within three years.

- Third party financing

Third party financing in the public sector is financially supported by the Czech Energy Agency. Moreover, the Agency provided the preparation of the official manual for these activities. However, in the budget public organizations, it is still not possible to implement the Third Party Financing because of the legal barriers.

- Thermal insulation of new buildings

Financial support for thermal insulation of the buildings is provided by the CEA. New buildings shall meet certain requirements for thermal insulation (see energy certification of buildings).

- Regular Inspection of boilers

Regular inspections of boilers are declared in the Czech technical standards, though there has not been any efficient control mechanism developed. Only the Clean air act defines some emission control mechanism.

- Energy audits of undertakings

The last proposal of the Energy Management Act includes the obligation of energy audits provision for the following types of undertakings:

- Private entities with a yearly energy consumption above 15,000 GJ
- Public entities with a yearly energy consumption above 1,000 GJ
- Heat producers with an installed capacity of 5 MW and more and electricity producers with an installed capacity of 10 MW and more that did not install a cogeneration unit.
- Physical and legal persons applying for state support by CEA.

The mentioned public and private entities will be obliged to carry out the audit within three years. The Act further prescribes the contents of the energy audit and specifies who is qualified to carry out an audit.

The State Energy Inspectorate can instruct public entities to follow the requirements given in the energy audit

The CEA supports energy audits when they are part of an Energy Performance Contracting project. There are no other programs to support energy audits.

2.1.5.4 Monitoring and Reporting

There is no formal provisions on monitoring and reporting on the SAVE Directive base. All the current processes [for instance reporting of the Czech Energy Agency to the government] can be adapted to the structure of the EU monitoring and reporting schemes.

2.1.6 Directives on the Labelling of the Consumption of Energy

There is no obligation for labelling or standards for electric appliances. The proposed Energy Management Act announces the introduction of labels and standards for electric appliances. Legislation for labelling is in preparation for those appliances that the EU has introduced labels for.

The new Act will mark fully accord to the requirements of the EU directives concerning labelling, it will be harmonised with.

2.1.7 Directives on Energy Efficiency Requirements for Household Appliances

At present, the Ministry of Industry and Trade is preparing an Energy Management Law for approval by the government that includes an article introducing this requirement. Following passage of the law by the parliament of the Czech Republic, the Ministry will need to issue the relevant regulations harmonised with EU legislation.

The new Act will mark fully accord to the requirements of the EU directives concerning the requirements, it will be harmonised with.

2.1.8 Directive on Integrated Pollution Prevention and Control

IPPC or similar legal measure is not in force in The Czech Republic yet.

Commensurate acts and directives:

Act No.17/1992 on Environment specifies the actions liable to impact environment review and specifies penalties for environment damages

Act No. 309/1991 Coll. on Air Protection against Pollutants(Air Quality Act), amended by of ACT No. 218/1993 Coll. and Act No 158/1994 Coll. The full wording, is in Act No. 211/1994.

Act No. 125/1997 on Waste specifies treatment of waste, specifies fees and penalties for waste deposition. Responsible authorities are Ministry of Environment, State Environment Inspectorate, custom offices, district offices, and municipalities.

Act No. 50/1976 Coll. on Territorial Planing and Building Rules (Building Law) Act determines the rules for building permissions issuing, specifies construction documentation and legal frame for building. Responsible authorities are local authorities (municipalities, district offices, towns) – Building offices. For larger territorial planning the Ministry of Local Development or Ministry of Defence are responsible.

The IPPC will replace in stages all relevant component directives in Czech Republic. IPPC will be included into Act on the Environment. Permissions will be issued by Ministry of Environment or districts (depends on range of permission). Body of expert advisors will evaluate all documents necessary for proceeding. The Czech Inspection of Environment or Agency of Environment (not established yet) will supervise the conditions abidance.

Czech Republic will probably ask for three years transition period for exclusion of existed facilities from IPPC implementation (Ministry of Environment opinion).

The Czech Republic legislation will be in force in times of fully EU joining.

2.2 Decisions and Programmes

2.2.1 R&D Programmes: Energy Framework Programme (1998 - 2002)

The total amount of money given by the EU Framework programme to solution providers from the Czech Republic has been estimated as CZK 20 - 30 million up to now. The Czech Republic acted in the role of associate members or receivers of financial help. From 1999 the Czech Republic has become a fully-fledged participant in the fifth framework programme with many rights as well as duties, including paying the member allowance, the amount of which is determined according to a country's GDP.

At the moment, no national state program exists for the stimulation of research and development in energy efficiency. The Czech Energy Agency, however, provides subsidies

of up to 40 % of investment costs for demonstration projects in the field of energy efficiency and renewable energy.

According to an agreement between the EC Association Council and the Czech Republic from 27 November 1998, the Czech Republic can participate in the SAVE II programme. For the 1998 project round four projects from the Czech Republic have been accepted for SAVE II funding.

The Ministry of Industry and Trade is considering the possibility of the Czech Republic's official participation in the programme to support renewable sources of energy, ALTERNER II.

Czech Republic is already familiar with the instruments under the Energy Framework Programme. The national centre for the Energy Framework Programme exists.

2.2.2 Coal Subsidies

In the 1992 Government of the Czech Republic adopted resolution No. 691 concerning of creation the right conditions for restructuring and privatisation of the Czech Republic's coal industry. In the structure defined by the State, the principle of state participation in the contraction of inefficient mining operations was approved, covering in particular the following problems:

- social demands of an obligatory nature
- technical liquidation of mines
- assuaging damages caused by mining activity in the past

As the original assumptions reflected in the Government resolution changed in connection with the gradual change in the conditions in the manufacturing and consumption of electricity and heat and thus on the fuel market too, the contraction had to be extended beyond the scope of the approved contraction programme. The government therefore passed resolution No. 558/95, amending the concept of the contraction of the coal mining industry and making more precise the programme for closing down mines and quarries with extended state participation in the costs of contraction until 31.12.1998.

In December 1998 the Government adopted resolution No. 814, which approved the continuation of state subsidies for phasing out and the liquidation of mining capacities in 1999. At the same time it demanded that a general concept of phasing out production in the coal and ore mining industry in line with the Czech Republic's energy policy and EU requirements, and resulting steps from the year 2000 onwards be drawn up and presented to the Government by 30 June 1999.

Amounts of resources that are spent for attenuation process in recent years (when the attenuation process culminated) are on the same level as the amounts spent on the initial of the attenuation process.

The current coal subsidy policy of the Czech Republic and provision of subsidies come out from similar criteria, mentioned in the Decision 3632/93/ECSC. There are no difficulties expected in getting the current subsidy scheme approved by the Commission upon accession.

2.3 Environmental Agreements

Environmental Agreements are mentioned between suggested policy instruments in current and prepared State Environmental Policy. The main barrier to enforce environmental agreements in Czech Republic is unstable economic environment, not complete privatization and uncertain future of some industry companies. The stable economic and legislative situation is the crucial condition for EA implementation.

The only one agreement realized in the Czech republic concerned of the phosphate reduction in washing powders in 1996. Agreement was concluded between producers and the Ministry of Environment.

In the Czech Republic there are no important national producers of household appliances, for example, the only one Czech producer of refrigerators & freezers and washing machines – Romo ZEROWAT has 2 % share on the market of refrigerators and 8 % share on the market of washing machines.

More than 80 % of electric household appliances on the today's market have origin in the EU member states, most of producers have exclusive sale agencies in the Czech Republic. Wholesales and main distributors buy their products through these agencies.

The first pilot projects concerning environmental agreements with industries can be anticipated between 2002 - 2005.¹ For implementation of environmental agreements will be responsible Ministry of Industry and Trade, Czech Energy Agency and also regional authorities and municipalities.

2.4 General Policies and Strategies for the Future

In the Czech Republic, there is still no real general policy or strategy in force in the field of energy conservation, renewables or co-generation, which reflects fact of the Czech Republic approximation to relevant conditions in the EU.

But this situation is to a great extent reflected in the proposals of the new Energy Policy and the Energy Management Law. The new Energy Policy has to be in force after 1 December Y2K and the Energy Management Law after Y2K1 (according the legislative programme of the Government).

¹ This conclusion follow from The National Energy Efficiency Study financed through World Bank and prepared among others governmental institutions for Ministry of Industry and Trade.

Thus descriptions of future policies and strategies below in this field are based on anticipation of acceptance of these proposals by the Czech Government.

2.4.1 Combined Heat and Power (Co-generation)

As the Energy Management Law will be adopted and this act will probably contain the following obligations for heat and electricity producers:

- A heat producer with an energy sources above 5 MW (heat) that plans to reconstruct the installation is obliged to install CHP.
- A producer of electricity through heating processes with a sources above 10 MW (electricity) that plans to reconstruct the installation is obliged to install a heat supply source.

This part of the energy act is, however, still under heavy discussion and could be limited to the obligation of carrying out an energy audit and considering CHP.²

2.4.2 Renewable Energy Sources

The objectives determined by the Ministry of the Environment is to achieve a 6 % share of renewable resources (stated in the Energy Policy) in the total consumption of primary energy resources by 2010 (mainly by higher utilisation of biomass).³ Current utilisation of renewable sources (including small and large hydro power plants) exceeds 1,4 % share on the current total energy utilisation.

2.4.3 Energy Efficiency

The Energy Management Act is now under preparation and discussion: On the energy field it addresses the relevant EU legislative norms and included also relevant measures for energy efficiency. By this law and its implementing acts will be applied the directives: 79/531/EEC, 92/75/EEC, 94/2/EC, 95/12/EC, 96/60/EC, 97/17/EC, 98/11/EC. Environmental Management System can improve energy efficiency. The Government in 1998 has established the authority, responsible and competent for EMAS. The objective of this activity is to increase of competitiveness of inland products on the EU market.

Since December 1998 the Czech Republic became an official participant in the SAVE II programme.

² The last proposal of Energy Management Act from 30. August 1999 contains mentioned obligations concerning CHP.

³ This objective seems to be too excessive, the more realistic consumption of renewables in Czech Republic by 2010 was assessed 3.5 % of total consumption of primary resources (Energy Efficiency Study, conducted by ECN Netherlands, SRC Czech Republic, SEVEN).

In Resolution No.843 adopted on December 16, 1998 the Government approved the State programme to support energy savings and the use of renewable sources, whereby all the funds provided to this area from the budget of individual ministries will continue to be co-ordinated.

Providing the support in the area of increasing energy efficiency is mainly the work of the Czech Energy Agency (CEA). Apart from CEA, the State Environment Fund also supports energy-savings measures and use of secondary energy sources.

2.5 Planned and Proposed Activities

2.5.1 Integrated Resource Planning Directive

The Integrated Resource Planning appeared in Czech Republic as policy intent in early ninetieths. With the start of the restructuralisation process together with beginning of creation necessary steps leading to open market in energy sector this measure in Czech Republic doesn't have support in the current energy policy.

2.5.2 Feed-In Directive (Renewables)

The Senate of Czech republic refused in 1998 the proposal of act of Guaranteed feed-in prices for renewables. The matter of proposal was build on the guaranteed tariff for electricity from renewables that is twice to three time higher (CZK 2 - 3/kWh) then the redemption price for primary sources. The act is not in compliance with liberalised market rules (TPA model which is proposed in the recent Energy Policy draft). The measure is in principle equivalent with taxation and probably will not be approved.⁴

State supports utilisation of renewable sources through grant programs of the Czech Energy Agency, the State Environment Fund and the Ministry of Agriculture.

Additional support of renewables exists through exceptions in the tax laws. A reduced VAT rate (under Act 588/92) applies to biofuels, water and wind turbines and wood waste. Operators of renewable energy sources are also exempted from income tax for the first five years following commissioning of the equipment (Act 586/92). Buildings for renewable energy production purposes are relieved from the construction tax (Act 338/92).

There is now evidence that there will be other government support steps of renewables undertaken at an early date and no other steps are considered.

In the present time, there are some voluntary agreements in force between distribution companies and renewable energy producers. Redemption price for renewable sources (it concerns especially water power plants) is now approximately 10 % higher than for other

⁴ SEVEn opinion

sources of energy. These agreements don't have direct connection to government policy or legislative.

2.6 Conclusion

In late 1980s, the energy sector used to be the most polluting one. Between 1990 and 1998, considerable improvement has been achieved in terms of pollution reduction but the national values of major energy related environmental indicators are still worse than those typical for the EU countries (especially CO₂ emissions per capita or per unit of GDP). Further increase in energy efficiency will contribute to further improvement of the environment.

The Czech Republic energy policy is based on principles comparable with those described in the White Paper on Energy policy for the EU. The Czech Republic is a member of OECD and seeks to become a member of the International Energy Agency; it has already met most of the conditions for membership. The Czech Republic has ratified the Energy Charter and additional protocols to it.

3 Patterns of Regulation and Implementation

3.1 Political Instruments

3.1.1 A Lack of Political Concepts

Internal policy in the Czech Republic in the period 1993 - 1997 (from the establishment of the Czech Republic to the end of the Klaus Government) was marked by a lack of conceptual material that would have been accepted by the Government, received public support, and would then have been systematically developed by the Government for its eventual implementation. The first economic policy was approved by the Government only in 1998. The Czech Republic has no approved policy on natural resources. After seven years of waiting, energy policy was finally taking into consideration only on 23 June 1999 on the condition that by the end of 1999 it is to be presented to the Czech Parliament in its definitive version.

There are several chief reasons for the five-year conceptual vacuum. Until late 1992 it was the Federal Government, as opposed to the Czech or Slovak governments, which had the authority in key matters. The period saw a number of struggles over authority between all three governments. Nevertheless, from the point of view of environmental policy this period was exceptionally productive, particularly concerning the drawing up of legislation by the ministries of the environment, which laid the foundations of the system of environmental legislation for the state. The Czechoslovak federation ceased to exist in 1993, and authority in environmental policy (as in other spheres) devolved fully to the two sovereign successor states, namely Slovakia and the Czech Republic.

The second reason for the reluctance to prepare conceptual material was the political atmosphere of the time, typical of which was the unreserved support for the economic transformation based on the dominance that the ministers of the economy held in the Government. The Government's program was based on establishing a market free of any state intervention. The divided, sectoral conception of policy put the Ministry of the Environment in the position of the agent who was slowing down the transformation and complicating the change. The period was clearly unfavourable for the making, passing, and implementation of policy. Though in 1995 the Government adopted the State Environmental Policy, but experts outside the Government considered the document obsolete even while it was being debated by the Government. Neither the Government's Program Statement nor the state policy on the environment contained the expression 'sustainable development'.

The turning point was January 1998 when a government of experts was established to surmount the political crisis that had reached a peak. The new Government in its program statement declared that it supported sustainable development and greater use of renewable energy resources. It adopted several state programs in the area of the envi-

ronment, including the Conception of the State Program in Support of Energy Conservation and Alternative Sources of Energy.

3.1.2 Ministerial Jurisdiction in Energy and Environmental Policy

The division of jurisdiction among the central organs of the state administration is set out in the 1997 Division of Powers Act (no. 122/97Sb.). The Ministry of Industry and Trade (MIT) is, among other things, the chief organ of the state administration for energy, power and heating, natural gas, mining, the refining of solid fuels, and radioactive raw materials. It is responsible for a consistent policy on raw materials and the exploitation of mineral resources.

Related to energy policy, the important powers of the Ministry of the Environment (MoE) are in the area of environmental protection, the protection of mining areas, including the protection of mineral resources, ecological supervision of mining, and Environmental Impact Assessment (EIA). The MoE is responsible for the state's environmental policy.

Energy production and, related to it, the mining of non-renewable resources present, together with transportation, the greatest burden on the natural environment. The tendency of the MoE to influence energy policy and intervene in it, in order to reduce demands on energy both on the side of production and of consumption, and to increase the proportion of renewable resources, to mobilise potential energy savings, and so on, is easily justifiable. There are naturally tensions between the MIT and MoE. It is safe to assume that as soon as the Government decides to co-ordinate the policy of sustainable development at the level of the Commission for Sustainable Development, the tension will dissipate. For the time being, however, an atmosphere of strong competition predominates.

3.1.3 Implementing EIA Procedure When Debating Conceptions

A relatively newly employed authority of the MoE is the implementation of procedures for assessing various influences on the natural environment (that is, Environmental Impact Assessment or EIA) under Section 14 of the 1992 Environmental Impact Assessment Act (no. 244/92Sb.), whereby EIA procedure is presented for approval at the level of the central organs of the state administration. The procedure includes the publishing of draft conceptions at least sixty days before they are to be debated.

This authority was first used when debating the energy policy presented by the MIT in 1998. The Government decided that EIA is an essential condition to be met before presenting the definitive version of the policy to the Government. The Center for Effective Energy Use (Stredisko pro efektivni vyuzivani energie, SEVEN) worked on the procedure together with non-governmental environmental organisations. The procedure included a public hearing. Ultimately three versions for the period to the year 2010 were evaluated.

Variant A is based on Czech sources of fossil fuels without the active mobilisation of potential savings and the development of alternative sources of energy. Variant B counted on increased use of natural gas, increased imports of electricity, putting the Temelín nuclear plant into operation in the year 2005 and with a moderate saving of electric energy. In the course of the public debates on policy a third alternative, Variant C, which included a substantial reduction of demand for electricity and the marked exploitation of potential energy savings and the alternative sources supported by the introduction of a fiscally neutral tax. It was clear from the beginning that among the existing variants a realistic mix of these alternatives was lacking, and, moreover, the underneath it all lay the unresolved question of the completion or cancellation of the Temelín nuclear power plant project. The Government of the Czech Republic, whose mandate was limited to the time before the early elections, lacked the time to debate energy policy. Apart from having set the precedent of applying the EIA procedure, a clear advantage was collaboration between the MIT and the MoE in preparing the document.

3.1.4 State Environmental Policy

In April 1999 the Government debated the draft State Environmental Policy, and noted that by 31 December 1999 the Minister of the Environment is to present a 'clarification of aims and tasks, the agencies responsible for them, and deadlines'. The resolution itself reacts to the weaknesses of the State Environmental Policy, namely the absence of concrete aims, instruments for achieving the aims, division of responsibility between ministries, and supervision of policy implementation.

The main principle of the state environmental policy is sustainable development. The policy sets out three criteria for sustainability:

- minimisation of demands on the exploitation of non-renewable resources and the frugal use of renewable natural resources, including energy, and the minimisation of annexing land;
- minimisation of negative influences on the environment, such as emissions into the air and water, soil contamination, the waste production, noise pollution, and the minimisation of potential risks and accidents;
- thorough protection, a possible increase in basic natural and human capital.

In the chapter on energy use and production the state environmental policy sets out the following environmental requirements for energy policy:

- to formulate state energy policy, including variants of development scenarios, and to judge them in the EIA process;
- to adjust, as part of the finalisation and possible amendment of regulations under the 1997 Atomic Energy Act (18/1997Sb.), the requirements of the relevant EU regulations listed in The Environmental Acquis (EURATOM guidelines 80/836, 84/466, 87/600, 89/618, 90/641, 92/3, 96/29, in the versions of later amendments and ad-

denda and the EURATOM ordinances 87/3954, 90/737, 93/1493 in the versions of later addenda);

- to prepare and present (together with the MIT) to the Government and the Parliament an Energy Conservation Bill by the year 2000;
- to support effective energy use and the introduction of low-emission means of energy production;
- to use to a greater degree renewable and secondary sources of energy on the basis of the State Program for Support for the Conservation and Use of Renewable Sources, with the aim of having roughly 6% of all energy produced from renewable sources by the year 2005;
- to support the increased effectivity of energy cycles;
- to initiate an alignment of energy prices and to remove all forms of subsidy;
- to initiate with education a change in models of behaviour of consumers towards the effective use of energy;
- not to build other nuclear sources on the basis of nuclear fission.

3.1.5 State Energy Policy

The European Union, the Czech public (expert and lay), business men and women in the energy sector, and non-Czech energy companies long expected that the Czech Government, after no less than seven years, would finally present its draft State Energy Policy. That finally happened, and on 23 June 1999 the Government debated energy policy. The presenters of the document maintain that the policy of the document has a perspective of fifteen to twenty years, and its implementation will be evaluated at least every two years. Because the presentation of the policy to the Government was not proceeded by the - submission of any variant to the EIA procedure and the policy was not presented in different variants, the Government considered the document bearing in mind that it would have to approve it by the end of the year.

3.1.5.1 Aims

Among the principle aims of the energy policy for the creation of conditions for the Czech Republic becoming a full member of the European Union are the following:

- completion of the process of adjustments of price levels and the tariff structure;
- the effective privatisation of the state's shares in key energy companies (while maintaining the appropriate measure of state influence on the use of energy resources and the energy infrastructure, with a combination of owner's rights and legislative instruments,
- the setting of a clear regulatory framework;

- enabling the emergence of competition in the area of energy production and supply, with the gradual opening up of possibilities of choice of supplier for individual groups of buyers in connection with developments in the EU and in countries applying for EU membership, while respecting the state and development of an import export balance.

3.1.5.2 *Time Scale, Concretisation of Systemic Measures*

- | | |
|---|------------|
| a) remove energy price subsidies for the population, change the tariff structure | 2002 |
| b) prepare a program for the completion of the privatisation of energy distribution companies | Sept. 1999 |
| c) prepare a program for the privatisation of CEZ | Sept. 1999 |
| d) commence the work of independent regulatory body | 2002 |
| e) a schedule for the gradual opening up of the electricity market | 2000 |
| f) a new Energy Act | 2000 |
| g) an Act on the Energy Industry | 2001 |
| h) energy price and tax policy | 2001 |
| i) the gradual application of EU guideline 92/96 on rules for the domestic market | 2000 - 3 |
| j) ensure the modernisation of the Dukovany nuclear power plant | 2000 - 10 |
| k) propose measure for the implementation of possible energy surpluses | 2000 |

3.1.6 **Conflicts between Environmental and Energy Policies**

The MoE, in commenting on the draft State Energy Policy, started from the draft of the State Environmental Policy. Among the latter's main reservations were the following:

- though the Government set itself the task of assessing energy policy as a conception from the point of view of influence on the natural environment, the proposed policy does not allow for this because it was not worked out in several variations;
- the energy policy has not considered the introduction of ecology-oriented reform of the tax system and the inclusion of externalities in energy prices;
- the proposed energy policy is counting on an 'adjustment of energy prices' by the year 2002, and that is too slow;
- the energy policy is counting on the construction of other blocs of nuclear power plants, and that is unacceptable;
- the energy policy is avoiding the setting up of independent regulatory bodies;

- the MoE lacks the instruments to achieve the aims of the state energy policy, the responsibility for its implementation, and determining priorities; it has demanded it be supplemented with concrete aims, deadlines, and instruments for the exploitation of energy conservation, the use of renewable sources of energy.

3.1.7 Other relevant Government programs

3.1.7.1 *The state program for support of energy savings and alternative sources*

The program was prepared by the MoE together with the MIT. Its aim is to make a considerable contribution to the solution of the following problem areas:

- reducing the demands energy places on the economy, by creating the conditions for the effective and above all rational use of primary energy sources;
- reducing the burden on the natural environment from energy processes and the prolongation of the lifespan of domestic supplies of fossil fuels;
- meeting international obligations in the areas of protection (the protocol of the Kyoto Conference of the Umbrella Agreements of the UN on Climate Changes, the Agreement for the European Energy Charter and the Protocol on Energy Conservation, the recommendation of the Commission to ensure that by the year 2010 renewable sources constitute 12 % of all energy sources used);
- the co-ordination of financial means spent from the state budgets for energy conservation and the use of renewable sources, the co-ordination of the use of foreign means in connection with the preparation of the Czech Republic for membership in the EU;
- the unification of the selection criteria and methods of evaluating the effectiveness of existing support programs now being used in the area of energy conservation and the use of renewable sources.

The study identified technically and economically realistic viable potential energy savings and the production of energy from alternative sources in the amount of about 390 PJ (that is, 33 % of the total consumption from primary energy sources). Of this, electricity accounts for 11.4 TWh (that is, 21 % of electricity consumed). In 1997 the total production of energy from renewable sources was 12.7 PJ (1.1 % of the total consumption of primary energy sources).

The state program for the support of conservation and alternative sources includes a Catalogue of Measures, which introduces, on the basis of experience with existing projects, various kinds of investment programs, including specific investments for ensuring the GJ of energy acquired in this way.

The Program also includes support measures of a non-investment nature, such as the following:

- the purposeful allocation of finances in instalments (energy performance contracting),
- the identification of energy-saving consumers,
- the introduction of energy standards for the consumer,
- the introduction of energy standards (the insulation and heating qualities of buildings) as conditions for allowing electric heating,
- the revision of reimbursements for surface water for the operation of heat pumps,
- the establishment of the principle of a minimum sales price of electricity from renewable resources,
- a reduction of the amortisation rate for an energy-saving installation,
- increasing the possibilities for depreciating part of the investment from one's basic tax base from the current 10 % to from between 15 and 25 % for investment into energy saving and renewable sources of energy,
- the gradual introduction of taxes on fuels and energy.

The support should be provided from the program in the form of long-term low-interest loans with deferred payment and, to a limited extent, in the form of subsidies. At the same time, the person in charge of a project should ensure part of the investment moneys from his or her own sources. The program set up an inter-ministerial co-ordinating commission that would ensure the co-ordination of the work of the Czech Energy Agency (in the co-ordination and direction of the MIT) and the State Fund for the Natural Environment (in the co-ordination and direction of the MoE). The program assigned the working out of methods of selecting projects, to issue a unified method for the implementation of the Energy Performance Contracting (EPC) method. During the first four years the program was meant to bring energy savings or production to the amount of roughly 74 PJ. The burden on the natural environment would be reduced by 4 million tons of CO₂, 0.9 million tones of ash, and 68,000 tons of SO₂.

3.1.7.2 The National Energy Efficiency Study

The study was ordered by the MoE and was supported by the MIT, the Government of the Netherlands and the World Bank. The National Study is in fall 1999 in the form of a draft and work is underway on the an Energy Efficiency Action Plan and a Renewable Energy Action Plan. The Study's conclusions identify technical potential energy savings of 40 % are identified, market potential of 18 % at a return of 6 years and 13 % at a return of 3 years. The economic potential, which reflects the social and macro-economic perspective is calculated with two levels of discount rates and with a period of return that does not exceed the viability of the installation. This calculated average economic potential is 20 %.

In late 1999 the Government passed an updated version of the State Programme for Support for Energy Savings and Alternative Sources of Energy for the Year 2000. In-

stead of the planned finances in the amount of 0.01 % of GDP, that is, the Government budget will provide CZK 1.9 billion (EUR 526 million): CZK 219 million (EUR 6 million) will come from the budget allotment to the MoE, and a total of CZK 400 million (EUR 11 million) from the budget allotment for the MoE (State Environmental Fund). The benefit of the programme is the preparation of the method for supporting projects; the disadvantage of the method is the absence of space for the use of non-investment measures such as Energy Performance Contracting (EPC), the introduction of energy standards for electric appliances, the labelling of energy-saving appliances, reducing tax deductions for energy-saving technology and so on.

3.1.8 Legislation on Energy Use and Production

The legislative time-table of the energy policy aims includes:

- a) a new energy act (for which the MIT and MoE are responsible); this will stipulate the following:
 - the status, rights, and responsibilities of independent regulatory bodies,
 - the extent, manner, and approach of regulation on the part of the state,
 - the timetable for the introduction of economic competition in the electric energy industry,
 - the creation of transparent and non-discriminatory condition for doing business in the energy industry,
- b) an act on energy use (for which the MIT and MoE are responsible) which will:
 - stipulate the means and instruments for achieving aims in energy saving,
 - stipulate the means and instruments for achieving aims in renewable sources,
 - stipulate the means and instruments for achieving aims in electricity and heat production (co-generation),
 - stipulate the approach to used in the working out of an energy policy in the country.
- c) an act on emergency supplies of oil,
- d) other technical regulations and secondary EU legislation.

Till the Government solves the conflict over whether to set out as soon as possible on the road to liberalisation of the energy market or to strengthen the CEZ monopoly, the basic philosophy for drafting the required legislation will be absent. What will be of importance will be the reaction of the European Commission to the demand of the MoI to prolong the deadline for opening the electricity and natural gas markets.

3.1.9 The Czech Republic Screening Results, Chapter 14, ENERGY

(The electricity market (Directive 96/92) – Final text as transmitted to the Council 03/99)

In preparation of the Transposition and implementation of Directive 96/92/EC a revised version of the Energy Act is in preparation. A first amendment to this Act will be introduced in April 2000 that will achieve partial harmonisation with Directive 96/92/EC. The Czech delegation explained that no full alignment can be reached by this date due to the current situation of the Czech electricity sector which is characterised by important restructuring need and price distortions stemming from social reasons.

Full legal transposition is expected to be achieved with the adoption of the new Energy Act, which is scheduled for the end of 2001, and of its implementing regulations. This Act will include provisions regarding the third party access regime for networks (it is expected that a regulated third party access regime will be chosen), a time schedule for market opening, the definition of eligible customers, provisions for the management of the third party access regime and an authorisation system as regards the building of new capacity. Practical implementation of this *acquis* will also require the completion of the institutional reforms, including the development of the Regulatory Administration towards an independent body, as required by the *acquis* on the internal energy market.

In addition to the above-mentioned legal and institutional arrangements, the following measures should be taken by the end of 2002 in preparation of the implementation of the *acquis*:

- the electricity market will undergo restructuring: at present, the National Electricity Company (CEZ), which is 67 % state owned vertically integrated company, holds monopolies for transmission (as grid owner), transit imports and exports and is the dominant electricity producer. On 1 January 1999, a new dispatching centre has been set up as a 100 % owned subsidiary of CEZ, implying a separation of the production and transmission accounts. Distribution companies were separated from CEZ in 1990,
- changes of the electricity prices being analysed by the Energy Regulatory Administration with a view to full cost recovery will be finished by the end of 2002. Responsibility for pricing regulation is expected to move away from the Ministry of Finance to the Energy Regulatory Office. On the legal front it will be connected with the new Energy Act, which will probably come into force by the end of 2001, and with the changes in the Act of Competencies.

Owing of the magnitude of the tasks lying ahead, the present state of the Czech electricity sector and particularly to the social aspects of price increases, the Czech delegation considered that full alignment with the *acquis* could not be reached by 1 January 2003, i.e. the working date set by the Czech authorities for accession on the EU. The Czech authorities would request a transitional period regarding Article 19 (market opening) of the Electricity Directive, as follows:

- market opening would be started from 2003, and in the period 2003 - 2004, two gradual opening steps would be taken, that would only be applicable to Czech companies,
- the full application of the market opening provisions of the Electricity Directive would take place by the end of 2005. If experience gained from the first internal liberalisation process were to prove positive, the alignment with the provisions of the Directive could be speeded up, i.e. by ensuring that alignment would take place earlier or by proceeding to a larger market opening.

3.1.10 The subvention of electricity for the population – an absence of economic instruments

The price level for electricity of a household is far below expenses, and is, except for the situations in Latvia, Russia, and Slovakia, unique. The problem lies not only in price but also in the disadvantageous rates structure, which does not use economic instruments for the regulation. In the Czech Republic there are no discounts for buying electricity at no peak hours or, conversely, higher prices for the winter season. The price policy is in conflict with the rules of the European Union, and as a result cross-subsidies between various groups of consumers are impossible. The price level burdens the opening up of the energy market to competition, because that would concentrate on the large consumer and today's energy companies would be left with non-economic supplies to small-consumers.

In March 1998 the Government decided to raise the regulated prices of gas and electricity by 24 %. The original plan of the Government counted on an increase of gas and electricity prices by 9 % in the year 1999; but there was no increase at all throughout 1999. On the other hand, in November 1999, the Government passed a three-year schedule for gradual deregulation. Prices of electricity for households will rise by 15 % in the year 2000, 14 % in 2001, and 13.1 % in 2002. The prices of gas will raise by 15 % in the year 2000, 10.7 % in 2001, and 7.5 % in 2002.

3.2 Policy style

3.2.1 The strong position of the energy sector

The Czech economy has over the long-term been characterised by the exceptional representation in it of energy demanding industries such as mining, building materials, and chemicals. The strong position of the energy sector continues, and has during the past ten years (the period of economic transformation) remained almost untouched. The energy industry has an extraordinary and important influence on the political process.

3.2.2 The high demands of energy

In the Czech Republic, the high energy demands, expressed as the consumption of primary energy sources per unit of GDP, is 6.5 times higher than the average EU values. In using the a re-calculation of purchase power parities, in the Czech Republic it is 2.3 times higher than in the countries of the European Union. The continuing high energy demands are closely related to the conception of economic reform that was asserted at the beginning of the 1990s. The reform was based on the quick change of the structure of ownership (that is, with quick privatisation and the dispersion of ownership among participants in the voucher-privatisation scheme), and was not accompanied by the restructuring of industry. The conception of economic transformation was the subject of a heated political debate, and proponents of the project that was based on leaving the responsibility to the Government during the search for foreign partners for key companies (from the point of view of GDP) lost.

3.2.3 State energy production, state distribution, state regulation

The dominant producer of electric energy is the joint-stock company CEZ (National Electricity Company), which produces 72 % of all electrical energy of the Czech Republic. The National Property Fund, that is to say the state, owns 67 % of CEZ. By a mandate agreement the National Property Fund transferred the execution of ownership right to the MIT. That ministry, or actually its Regulatory Administration, sets prices for energy. Ceska Prenosova a.s. (CEPS) which was created as a daughter company of CEZ, has been operating since 1 January 1999. CEPS owns and operates a high-voltage network of 400 and 220 kV). CEPS. and CEZ are two separate entities only in the accounting books.

The state thus appears in three roles: it is the regulator of prices, the principal shareholder of the dominant electricity producer and monopoly regional distributor of electricity, and it is the maker of the state's energy policy. On the one hand, as an owner it ought to be trying to develop the energy company; on the other, as a regulator it ought to be acting as a break on the company's development by a policy of inexpensive energy for private households.

3.2.4 The Links between the MIT and CEZ

The Ministry of Industry and Trade holds out a protective hand over CEZ, the dominant energy producer, and in fact has resigned itself to the execution of the state's ownership rights. The Czech Government has always been a weak partner for CEZ. Though the Government made an exception in 1998 and decided to influence the decision of the annual stockholder's meeting of CEZ and demanded that it postpone its investment program decisions and the reconstruction of coal-burning power stations until the passing of the state's energy policy, the result was a decision to ignore the Government's demand. The MIT is carrying out the Government resolution and regularly presents reports on the completion of the Temelín nuclear power plant so that MIT signs the document made by

CEZ. Nothing is changed by the fact that the information of one report contradict the information contained in the previous one.

The inter-linking of MIT and CEZ often leads to irrational decisions that are far removed from economic considerations. The day before the Government adopted the energy policy, for example, the annual stockholders' meeting of CEZ signed an agreement with the Czech mining company Diamo, which makes it possible for CEZ to buy nuclear fuel till the year 2005. Meanwhile, CEZ itself admits that the deliveries of Czech uranium are disadvantageous for it because the price of Czech uranium is as much as three times higher than world market prices. CEZ was conciliatory towards the intention of the Minister of Industry and Trade, who wanted to put pressure on his colleagues in the Government to accept the further mining of uranium. The Czech Republic, however, has promised the EU that by the year 2001 there will be less uranium mined, and trade will be liberalised.

The beginning of unusual relations between the current Ministry of Industry and Trade and the electric company CEZ go back to the days when the predecessor of today's joint-stock company began to become important for the economy of the state. After 1946, seven energy companies were created in Czechoslovakia, and were run by the General Headquarters of Czechoslovak Energy Works with a regional directorate for Slovakia. A dispatcher for the whole state, to which two provincial dispatchers were subordinated, was also created under the General Headquarters.

In 1949 the distribution of electricity was separated from electricity production, and independent national energy companies were established for the production of energy — a Bohemian, a Moravian, and a Slovak. The next year the two largest electricity systems, the Bohemian and the Moravian-Silesian, were merged. With the linking of the Ostrava region and central Slovakia today's united electric system was created, also enabling collaboration with other countries.

In 1969 the energy companies were divided into the Czech Energy Works (CEZ) and the Slovak Energy Works (SEP).

From that time onwards CEZ was restructured a number of times. Till 1 July 1990 it was a fully vertically integrated electric energy company. After that date the distribution of electricity was separated from it, and eight independent companies were established for the supply of electricity. In the period before 1 January 1991, some producers, primarily for the production of heat but also one machine-tool enterprise, were detached and given independent status. Lastly, in January 1992, units whose business activity was not directly related to the production and supply of electricity, were given separate status, and in May 1992 the joint-stock company CEZ was established.

It is clear that in the years before the collapse of the Communist regime in 1989, a strongly centralised enterprise with a monopoly position in perhaps the most important sector had to be controlled by the equally centralised power of the state and the Communist Party. A very strong structure was thus formed, which is, as turned out after 1989,

almost independent of politics. The approaches that had been applied in energy before 1989 can be easily observed even after that year, with a very odd and unpleasant relapse after the 1998 general elections. A number of energy projects that had been begun before 1989 have survived to this day, as is clear from the most monstrous of them, the Temelín nuclear power plant. Concerning the individual actors in the energy sector, one can observe their 'flowing over' from one entity of the structure to the other, whether one is talking about energy companies, organs of the state administration, or political subjects, and only very rarely those outside this system. This has assured continuity, an unshakeable nature, and long-term maintenance of the structure.

Entirely within this framework is the fact that the National Property Fund transferred by means of a mandate agreement the execution of ownership rights to 67 % of the shares of CEZ to MIT. This only strengthened the existing structure. All the more, then, does it prevent the changes that would have been brought about by privatisation of energy companies and the deregulation of the energy market. This can be seen in the approach of the MIT on the issue of recent privatisation preparations, which are marked by an attempt to postpone privatisation and liberalisation as far into the future as possible.

The following survey of data on persons employed in the statutory organs and management of CEZ in recent years is clear evidence supporting the aforementioned. For this illustration, only persons who have had direct contact with the ministries with authority in energy policy have been chosen.

Milan Cerny, since 5 January 1999, Chairman of the Board and General Director of CEZ, a. s. In the years 1993 - 1996 employed at the MIT as Deputy Minister for Energy. After leaving the MIT, employed in Chemapol Group, a. s., as Director of the Strategy and Projects Division. Later, adviser in the energy sector. Has also been on the supervisory boards of CEZ, Mostecká uhelna společnost [the Most Coal Co.], Severočeská energetika (North Bohemian Energy), Vodní stavby Bohemia (Bohemian Hydro — the general contractor of Temelín nuclear power plant), Spolana, Golf and Country Club.

Zdenek Vorlicek, since 5 January 1999, Member of the Board of CEZ. In the years 1992—6 deputy of the Czech Parliament (member of the Levy bloc [Left bloc — a now separate wing of the Communist Party]) where he sat on the Economics Committee. Since August 1998 Deputy Minister of Economics at the MIT.

Ivan Novak, from 13 June 1996 to 5 January 1999, member of the Supervisory Board of CEZ; from 17 July 1996 to 29 January 1998, Deputy Chairman of the Supervisory Board, then elected member of the Supervisory Board. From 10 March 1998 to 5 January 1999 was Chairman of the Supervisory Board. From 1993 to March 1999, in charge of department of nuclear energy at the MIT. From 1 April 1999 free-lance consultant, whose clients include the General Director of CEZ.

3.2.5 The Problematic Completion of the Temelín Nuclear Plant: A Determining Factor for Energy

The completion of the Temelín nuclear power plant is a rewarding topic of debate on society and politics in the Czech Republic. For almost ten years the background to the debate has been formed by the difference between the official statements of politicians and CEZ on the one hand, and reality in the form of a total of ten postponed deadlines for the completion of Temelín and increased budgets for its completion on the other. Temelín is clear evidence of the fact that the state, specifically the MIT, is unable and unwilling to supervise effectively the way CEZ is managed. The chief obstacle to judging whether completion or cancellation of the Temelín construction project is more efficient policy has been the fact that it was CEZ that was the monopoly supplier of information to the Government. It is no coincidence, that until the year 1998 one government after another approved the report on the completion of the nuclear plant, even though they were operating with fictitious information, and this is further evidence of the close linkage between the joint-stock company CEZ and political structures. It was only the 'government of experts', formed in the spring of 1998, that began to put pressure on CEZ. This resulted in the forming of an international team of experts whose task was to verify the information provided by CEZ. The report of the team was not a direct recommendation to continue or to cancel construction of Temelín, but in the important arguments the view predominated that completing Temelín nuclear plant was ineffective and risky. The Government gave the MIT and MoE the task of each working out a variant for the continuation and the cancellation of the Temelín project. Paradoxically, the MIT returned to the original data of CEZ wherever the data of the independent team of experts were unusable for the argument to continue with the Temelín project.

Among the main arguments for cancelling the Temelín project were the following:

- the project is on the very margin of competitiveness; production costs for Temelín are 1.06 CZK/kWh (EUR 0.2929/kWh) at a 5 % discount and forty years of operation; with sunk costs the project is beyond the margin of competitiveness,
- the market for a basic and unforced performance is almost saturated — the maximum drain of electrical systems in the years 1992—7 is less than 11,000 MW; the reserve should come to 1,650 to 2,200 MW. By 31 December 1997, however, the installation performance came to 15,072 MW and continues to rise,
- despite the scenarios of CEZ, electricity consumption has been declining for the third consecutive year (a 5TWh decline in consumption has been estimated for 1999, that is 44 % of the instalment performance of the Temelín nuclear plant), and its growth will, in view of the high demands placed on electricity by Czech industry, have to be considerably slower than the growth in GDP,
- the alternative of renewing the market strength of CEZ can be realised with lower risks than any alternative based on the operation of the Temelín nuclear plant.

In May 1999, while the Government was deciding on whether the Temelín nuclear plant should be completed, politically motivated arguments dominated. The Czech public, which had long been fed the hope that the Temelín nuclear plant had almost been completed, accepted the opinion that held ‘when so much has already been invested into it, why not finish it’. So far, 74 billion Czech crowns (EUR 2.04 billion) have been invested in it; from today’s budget, roughly 110 or 126 billion crowns (EUR 3.04 or 3.48 billion). If the Government had decided to cancel the Temelín project, it would be taking direct responsibility for renewing the renewal of CEZ’s market strength and would also have to negotiate actively with foreign banks for the state guarantees that CEZ provided. Cancelling the Temelín project would improve CEZ’s cash flow, which would be good news for the banks, even though the Government opted for the easier solution at the given moment. Influential deputies of the Czech Social Democrat Party, which forms the present minority Government in the Czech Republic, are members of the Supervisory Board of CEZ.

The construction of the Temelín nuclear power plant represents perhaps the clearest link between the pre-1989 energy industry and the industry after the collapse of the Communist regime. It expresses the continuity of the structures in that sector, which are independent of the political and social order in the state at any given moment. One can observe clear cases in which the Temelín project is used to provide reasons why no changes can be made in energy industry, and also cases in which the kinds of conditions are created in the energy sector which are used to provide reasons for the continuation of the project.

The first debate about the point in continuing with the Temelín nuclear plant arose immediately after the collapse of the Communist regime in late 1989. The result was a halt to the construction of the third and forth blocs of Temelín.

Another attempt at removing obstacles to carrying out changes in the energy sector can be dated to the period when Petr Pithart was Prime Minister of the Czech Government, the first half of 1990. The actors in the nuclear energy sector were at that time, however, already so consolidated that they managed with relatively questionable data to convince ministers of the Czech Government that it was now impossible to cancel the Temelín nuclear plant project. Faced with the dramatic decrease in the consumption of electricity, it was very difficult to justify the need for a new source of electricity; CEZ therefore created a new system of rates, which was very advantageous for the use of electricity for the production of heat, and successfully endeavoured to get the Minister of Finance to approve this system. The public was appealed to in a campaign to change over to the “environmentally friendly electric heaters”. The result was that the trend in electricity consumption turned round, and consumption increased to such an extent that it was not difficult to demonstrate that electricity from the Temelín nuclear plant would soon be a necessity, and without Temelín the electricity system would collapse. This new trend broke only after the price of electricity had been raised several times. Now, for the third year in a row, a mild decrease in the consumption of electricity can be observed. In the

meantime, however, construction of Temelín nuclear plant had reached such a stage that it is easy to influence the public to believe that there is no point in cancelling the Temelín project. Apart from a large part of the public, less intelligent politicians also tend to accept this view. Consequently, during the last attempt to stop the problematic project the Government approved its continuation.

A considerable role was played here by the state guarantees for loans to CEZ for the construction of the Temelín nuclear plant. These guarantees were undoubtedly successfully negotiated also owing to the fact that proponents of the project, thanks to state participation, would have insurance that the project would go on. The arguments at key moments in the discussion only confirm this assumption.

The Temelín nuclear plant, however, is damaging to CEZ itself. The economic burden on CEZ, as a result of putting the Temelín nuclear plant into operation, without having the possibility of finding market for its product in the Czech Republic or elsewhere, will necessarily (in the current system of price controls) lead to undesirable economic consequences, with a direct or indirect influence on the drawing up of the Czech budget. To compensate for the increased expenditures is possible:

- either with a rise in the price of electricity by more than 10 % (that is, by 100 Czech crowns/MWh (EUR 2.76/MWh)), with the concomitant growth in expenditures per household, production costs, and a fall in the competitiveness of Czech producers,
- or with a reduction in the annual gross profits by 5.6 billion Czech crowns (EUR 154.7 million); in other words a loss of revenue to the state budget in the amount of 2 billion (EUR 55.26 million) crowns; a reduction in the market value of CEZ of about 35 billion crowns (EUR 967 million) (in other words, a fall in the state revenues from privatisation by about 20 billion crowns (EUR 552.6 mil)). It must be added that the rating of companies without nuclear plants tends to be higher — on average A2 —, while companies with nuclear plants tend to have a lower rating.

In the Czech Republic the price in a monopoly environment is regulated according to the formula *price = real costs + reasonable profit*. In the whole production-transportation-distribution-supply chain the setting of prices can be influenced with the addition of an increase in costs to any one of these parts of the chain. In the conditions of a deregulated market, however, this calculation is limited only to activity related to the transportation and distribution of energy, not to its production and sale. The production of electric energy therefore enters into the standard competitive process, where profit is determined by achieving the market price with an acceptable costs. The operation of the Temelín nuclear plant will, however, very likely in the conditions of a deregulated market lose its competitiveness (mainly owing to the amount of the yearly depreciation of total investment).

The introduction of competition into the production of electric energy, according to the EU Guidelines 96/92, in other words will considerably change the existing level of profitability of the material investment of the assets, because sunk costs of the investment and

the investment a great part of which consists in operation and maintenance, can no longer fully become a part of the final price as they once had been, and therefore have zero value (even if there were billions of crowns on the books).

It has also turned out that CEZ and the Temelín nuclear plant can not be advantageously privatised. One possibility is therefore to separate Temelín from CEZ, but this variant is also accompanied by problems: the foreign investors might not agree with the separation, and the state would have to provide guarantees.

From this follows the extreme unwillingness to accelerate in any way the deregulation of the energy market and the privatisation of energy companies. The MIT is counting on being able to negotiate from the EU a longer transition period for introducing EU Guideline 96/92. Opening up the market would thereby be postponed to the year 2006. It will be difficult to convince the EU that there are good reasons to allow the Czech Republic to prolong this transition period. Temelín is one of the reasons for postponement given in the official documents, and there is the problem of state guarantees for loans to CEZ for the construction of Temelín are waved about as a warning. The state is becoming a hostage of the Temelín nuclear plant, or rather the entities interested in its completion.

The introduction of an energy market and the privatisation of energy companies will clearly once and for all destroy a structure that has survived for decades.

The Temelín nuclear plant might even become a brake on the Czech Republic's endeavours to become a member of the EU. The Temelín nuclear plant project is not in a state that would not prevent criticism from EU representatives, or representatives of EU member states. The first signal that the critical statements about Temelín by various European politicians were not merely pre-election proclamations might be seen in the WENRA (Western European Nuclear Regulators' Association) report of March 1999 — Report on Nuclear Safety in EU Applicant Countries. The report was prepared by the organs supervising nuclear safety of several European countries (Belgium, Finland, France, Germany, Italy, the Netherlands, Spain, Sweden, and Great Britain) requested by the European Commission. Concerning the Temelín nuclear plant the authors of the report state that there is a lack of information upon which to base a thorough investigation of the project. Here, too, one can see the results of the non-information policy of the joint-stock company CEZ. The WENRA Report also states that there are doubts that the ambitious program to increase the safety of the Temelín nuclear plant will be fully implemented. The authors point to the problem of the complex changes of the project, the long time it has taken to complete Temelín, and the need to integrate technology of very different origins. It is fair to expect that it will have to be demonstrated that serious malfunctions will not happen at Temelín or that, if they do, they will be managed. In the extreme conditions stated in the WENRA Report, however, there is a risk that it will not be possible to demonstrate this beyond a doubt.

The recent scandal related to the implementation of the PHARE and TACIS programs in the area of nuclear safety illustrate that the future requirements for nuclear safety in the candidate countries will only be made stricter by the EU, and the overall climate will in the question of nuclear plants of the candidate countries less favourable.

At present there is overproduction of electricity and in the event that Temelín begins operating its production will only be at the expense of other CEZ power plants. It cannot be said with any certainty how long this state of affairs last, but some analyses demonstrate that it will probably remain the same till the year 2010. It follows from modelling calculations that in that event not only investment in Temelín as a whole (that will be loss-making in any case), but also the remaining investment in its completion, which might still be decided by the Government, will be loss-making (The Final Report of the Expert Team for Independent Evaluation of the Completion of Temelín, 1999).

3.2.6 Electoral Programs of the Political Parties 1998 — Energy Policy

In their election programmes the political parties devote surprisingly little space to energy policy. Nevertheless it is clear that raising energy efficiency of the economy is the prerequisite for the competitiveness of the Czech Republic after becoming an EU member. The fall in the mining of coal for energy use is creating unemployment, which in the Czech Republic is manifesting itself most precisely in the regions of north Bohemia and north Moravia, that is, in the traditional coal-mining regions. There may be various reasons for the passivity of the political parties, but the main ones are probably their connections to the dominant producer of electric energy, CEZ.

The Czech Social Democratic Party (CSSD)

- in the case of natural monopolies to push through amendments to legislation that would enable the regulation of profits so that they would not be unreasonable,
- carry out price deregulation carefully,
- adopt a new policy on energy, orientated to reducing the demands of energy in business and in private households.

The Christian Democrats (KDU—CSL)

- prevent unjustified price rises set by monopolies,
- work out a state energy policy that would set out the rules of doing business in the energy sector,
- adjust the price relations of energy between customers,
- complete the privatisation of energy providers,
- connect the completion of Temelín with Government debates on energy,
- privatise the regional providers in the gas industry,
- modernise existing power plants,

- introduce clean coal technologies (CCT),
- support the building of local sources s the combined production of electricity and heat,
- support programs of energy saving and use of renewable energy sources, including the setting of a minimum purchase price of electric energy from renewable sources.

Civic Democratic Party (ODS)

- actively support energy savings by way of introducing modern technology and using renewable sources of energy.

Freedom Union (US)

- achieve the final adjustment of energy prices,
- ensure regulation of existing monopolies and equal conditions for entry to transportation systems,
- desulphurisation of thermal plants [in 1998, they were, in fact, desulphurised] and introduce new, more effective technology,
- initiate a fact-based discussion on the reasons for completing the Temelín nuclear plant [in 1998, this was initiated].

The Communist Party of Bohemia and Moravia (KSCM)

- stop further rises in the price of electric energy,
- reduce the energy demands of production and limit harmful technology with a gradual transition to alternative technology and sources, including the careful use of nuclear technology.

3.2.7 The Role of Non-Governmental Environmental Organisations

In the nascent civil society, in which non-governmental environmental organisations (NGO) are laboriously creating favourable environment to work in, the role of NGO has been extraordinarily important: it is no exaggeration to say that the energy program of Hnutí Duha (Rainbow Movement), which is part of the Friends of the Earth organisation, was the most successful program in the post-November 1989 period. Between the year 1993 (when the Government decided in favour of the completion of the Temelín nuclear plant) and March 1998 (when another Government inaugurated a critical discussion about the completion of Temelín), Environmental NGO were, with few exceptions, the only partners in the limited dialogue with the Government. Apart from opposition to the completion of the Temelín nuclear plant (South Bohemian Mothers, Greenpeace, Children of the Earth) NGO have taken part in a number of energy projects. The Partnership Foundation offers grants of up to 10 million Czech crowns per year for the development of renewable sources and energy savings. The Calla Association in South Bohemia has charted out the situation in the region, and has compiled an atlas of renewable energy

sources. The Rainbow Association regularly works in the field on a program of energy savings, and systematically lobbies in the Czech Parliament, because, rather paradoxically, the topic of energy has not become a major issue of the political parties, NGO involved in environmentalism have become almost the only opposition to the Government.

3.2.8 Trade Unions

The trade unions first became actively involved in the energy debate during the debate over the completion or cancellation of the Temelín nuclear energy plant in April 1998. Completion of Temelín means, from the point of view of the trade unions, the prospect of creating 1,700 jobs in the operation of the power plant and related jobs. Putting the power plant into operation, which would annually produce 11.3 TWh, means a decrease in the annual mining of about 11 million tons of brown coal, that is about 21 % of the coal mined in 1997. While maintaining the productivity level, the decrease in mining means a loss of about 5,000 jobs in the mining and processing of coal. In related fields and services another 12,500 persons, according to optimistic variants, would also be affected. In all, there would be a rise in unemployment of 17,500 persons, which would be in one of the two regions with the worst unemployment rate. The head of the trade unions was well aware of this, and came out for the completion of the Temelín nuclear plant.

The alternative to that, namely the cancellation of the Temelín project, would mean a loss of up to 5,000 jobs, mainly in the supplier organisations, which will, one way or another, disappear after the nuclear power plant was completed.

The trade unions can be considered a partner of the MIT in pushing through the investment program in North Bohemia, which would gradually replace the out-model coal-burning power plants (with effectivity of the transformation of primary energy sources into electricity 27 - 28 %) with modern CCT with effectivity of about 42 - 45 %. In this way jobs would be preserved and the lifespan of coal supplies which at the present rate of exploitation are usable till the year 2030. Similarly, the employment factor in the pushing through of various kinds of alternative energy sources and savings is an interesting subject for the trade unions.

3.3 The Prospects for Environmental Policy and the Pushing Through of Innovations

3.3.1 What Should Czech Energy Policy Be?

In connection with the deregulation of the European electricity market the Czech energy sector will not be able to avoid profound restructuring. Apart from the adjustment of energy prices and the removal of the rates deformations, that will mean the separation of transportation and distribution systems from the producers. The management of energy systems has to be separated in terms of ownership from production and trade, such that

the present situation is overcome, where the operator of the transmission system endeavours to give priority to power plants with a favoured producer. All the consumers, including households, should have a choice of electricity supplier, they ought to be real customers. A fundamental step would be the drafting of new Energy Act to supersede the current legislation (no. 222/94Sb.). That Act ought to become the basis for the creation of a regulatory office and an electricity pool (or exchange). With the separation of the delivery and transmission system of CEZ, the role of the state as the major shareholder of CEZ should come to an end, and ought approach the completion of privatisation.

The problem of adjusting prices is not merely the absolute amount of the price but also the inappropriate rate structure. In the short term we cannot avoid a marked rise in the price of electricity for households, which will be caused by the removal of cross rates. The state has an instrument in the form of specifically target social assistance for the worst-off groups of the population. The pressure of competition after the opening up of the market should have an affect, similar to that in the British experience, of leading to a reduction in costs and a real decrease in prices. The adjustment of prices for households will be motivation to a more frugal use of energy, and will put a complete halt to direct electric heating. A competitive environment creates space for investment into new power plants which are more economical and more environmentally friendly. Gradually they will force out obsolescent, ecologically less frugal technology. A competitive market will put an end to all considerations about the construction of new nuclear power plants, for purely economic reasons.

3.3.2 Proposed Approach to the (NON-) Privatisation of Energy Companies and CEZ

In June 1999, the Government accepted in its document The Energy Policy of the Czech Republic an obligation to prepare a program for the completion of the privatisation of distribution companies and the privatisation of CEZ in the September 1999. The program has been prepared, but has not yet been debated by the Government. The material recommends postponing privatisation preparations till the year 2001; the firms should have new owners by the year 2002. The MIT and the Ministry of Finance see the greatest danger stemming from privatisation in the import of less expensive electricity to the detriment of local production. The dominant producer, CEZ, is not, as itself admits, currently capable of competing with European producers. One of the reasons is because it carries the burden of subsidised supplies of electricity for the population. Converted into Czech crowns the price of electricity on the European market moves between 736 and 828 Czech crowns/megawatt-hour (EUR 20.3/MWh and EUR 22.88/MWh. CEZ's costs come to 1,018 Czech crowns (EUR 28.13). The domestic price is not the market price; it is determined on the basis of cost analyses of the Ministry of Finance; nevertheless, CEZ does not have the appropriate profits, even at these bureaucratically-set prices.

Another problem is the ministries' fear of the Government revitalisation program. A number of businesses owe the electricity distribution companies for energy; for instance, the Czech Railways (Ceske drahy) owe roughly 11 million EUR, and one of the largest metallurgy companies, Vitkovice, and one of the largest machine-tool companies, CKD Praha, are also big debtors. The state bureaucrats have come to the conclusion that they cannot privatise the electricity distribution companies, because they are suppliers of large industrial enterprises, which the Government has decided to revitalise. Briefing material for the Government states outright that 'it is fair to assume that the real owner of the energy companies will not be willing to continue with supplies of energy without being paid.' That requires no further comment.

The report prepared for Government talks proposes 'considering strengthening CEZ with another renowned company'. At the same time it admits that the situation is complicated by the unfinished nuclear energy plant Temelín. While CEZ had until recently stated that electricity from Temelín will be the cheapest in the state, they now say that electricity from Temelín will be roughly as expensive as that from coal sources, but will be burdened with high fixed costs owing to depreciations.

In its conclusion the Government report states that CEZ ought to devote all its efforts and financial means to reducing production costs, with the aim of making CEZ competitive. A commentator of the economics weekly journal *Euro* summarised the Government report, which he called the 'NON-Privatisation Program', as follows: 'we cannot for the time being privatise the electric-energy companies, because domestic production is not competitive. Electricity in the Czech Republic is produced too expensively, because we have still not let in the competition. Both statements are true, and it is now up to the Government to decide which of the two it considers more important.' The Government postponed the decision till late February 2000. The reason was the lack of agreement between the Minister of Finance and the Minister of Industry and Trade. The former is pushing for the privatisation and faster liberalisation of the energy market, while the latter proposes strengthening the vertical structure of CEZ, which means that the state will sell to CEZ its share of three out of eight distribution companies at a symbolic price. CEZ, in exchange, will sell off its 50% plus one share of the CEPS to the State Property Fund, again at a symbolic price.

In the middle-term the idea of liberalising the energy market will triumph, but in late 1999, according to available information, the Minister of Industry and Trade, with his conception of strengthening the monopoly of CEZ, has the stronger position.

3.3.3 Environmental Tax Reform

The MoE in the summer of 1999 put together a team for the preparation of an environmental tax. The group, which also contains representatives of the economics ministries, is discussing the form of the environmental tax reform. The MoE presented for discussion a version of reform based on the following principles:

- the removal of all forms of subsidies of fuel and energy prices;
- a gradual increase in the tax on fuel and energy as part of the law on consumer taxes;
- compensation for the increased tax burden, by reducing flat rates or the introduction of compensatory bonuses (for businesses and households).

The proposal divides the reform into several phases. In the first, all subsidies should be removed, and at the same time a low tax should be imposed on coal (coal prices are currently not regulated — relatively low, because they contain practically no externalities connected with the mining or burning of coal). In the second phase, liquid oil fuels should be taxed as well as electricity from thermal and nuclear power plants. In the third phase, a tax should be levied on natural gas and on electricity generated from natural gas. In the second and third phases, plans are being made for tax neutrality. As at January 1, 2001 the following minimum taxes should be implemented:

Table 2 Minimum Taxes on solid Fuels

	1.1.2001	1.1.2003	1.1.2006	1.1.2010
	- CZK/1,000 kg -			
Hard coal, anthracite	20	100	200	400
Brown coal, lignite	20	100	200	400

As at 1 January 2003 the following minimum taxes should be implemented (2nd and 3rd phase):

Table 3 Minimum Taxes on Motor Fuel

		1.1.2003		1.1.2006		1.1.2010	
		CZK	EUR	CZK	EUR	CZK	EUR
Petrol	1,000 l at 15°C	14,000	387	16,000	442	17,500	484
Motor oil	1,000 l at 15°C	10,500	290	12,000	332	13,200	365
Petroleum	1,000 l at 15°C	10,500	290	12,000	332	13,200	365
Liquid propane, butane	1,000 kg	4,000	110	5,400	149	6,700	185
Natural gas	GJ	50	1.4	110	3.0	135	3.7
Ethylalcohol, methylalcohol	1,000 l at 15°C	3,300	91	4,500	124	5,600	155

Table 4 Minimum Taxes for Heat and Energy Production

		1.1.2003		1.1.2006		1.1.2010	
		CZK	EUR	CZK	EUR	CZK	EUR
Heating oil	1,000 l at 15°C	250	6.9	600	16.6	1,250	34.5
Light, ultralight heating oil	1,000 l at 15°C	250	6.9	500	13.8	1,150	31.8
Medium-light heating oil	1,000 l at 15°C	550	15.2	850	23.5	1,500	31.8
Heavy heating oil	1,000 l at 15°C	800	22.1	1,500	31.8	2,000	55.3
Nuclear energy	MWh	20	0.55	40	1.1	80	2.21
Propane, butane, propane-butane	1,000 kg	0	0	200	5.53	400	11.1
Natural gas	GJ	0	0	4	0.11	8	0.03
Hydroelectric power above 10 MW	MWh	0	0	20	0.55	40	1.1

The proposal of the MoE differs from the proposal EU-COM 97 primarily in that it taxes the output of the electricity producers; the onset of the tax rates is anticipated for the period 1 January 2001 to 1 January 2010, which is roughly double that of the EU-COM 97.

Although the relatively new tax system, which has been applied in the Czech Republic since 1 January 1993, contains as one the tax items an environmental tax; but it was never implemented, and the debate on the environmental tax reform is still in its very beginning stages. The MoE is in the phase of explaining its partner ministries that this is not a matter of introducing another tax but of tax reform. The political environment, moreover, is also not sympathetic to an environmental tax reform. The MoE instructed the team to make sure that the subject of its work not continue to be environmental tax reform, but the greening of the Czech tax system.

3.3.4 The creation of an environment for the pushing through of an active policy

From the political point of view, it is absolutely necessary to push through privatization as a process that is defined in terms of time and subject matter. It is absolutely necessary to concentrate the political will for the creation of an regulatory office as an organ independent of ministries in the fields of energy and the environment. It would be very beneficial to push through politically the assessment of energy as an inter-disciplinary field, in other words beyond the framework of the jurisdiction of the individual ministries.

4 Existing Co-operation

4.1 Best Practise Projects

4.1.1 PHARE Energy Saving Fund

In March 1997, an Energy Saving Fund was launched with PHARE funds to support SME which introduce energy efficient technology, thus aiming to stimulate business opportunities in the energy saving sector which will decrease energy consumption in the long-term.

Soft loans are available for bankable energy efficiency projects - debt service is expected to be repaid from cost savings. The European Commission allocated ECU 4,7 million from the PHARE Energy Programme to the Ministry of Industry and Trade to establish a revolving fund. The fund is managed by Ceskoslovenska Obchodni Banka, selected in a tender. The bank is obliged to managed the fund for 10 years and provide medium term and long-term investment loans with a preferential interest rate for financing small and medium sized energy saving projects (CZK 2 - 50 million). The bank is being remunerated for administration of these loans. The preferential interest rate results from blending PHARE funds resources and CSOB resources in the loan in the ratio 1:1 (The interest rate is constructed as 1/2 Prime rate + 3.5 % max) The interest rate as of February 1999 was 7 - 8 %, loan duration up to 8 years. Within the overall cost savings achieved by the project, the energy cost savings have to amount to at least 40 %. The client is, nevertheless, also allowed to repay the debt from other sources if project payback time exceeds the duration of the loan. The fund is open to any creditworthy client and no sector specification has been made. Project verification study based on an energy audit has to be developed by the applicant proving financial viability of the project in addition to the standard bank requirements. Supporting scheme has been developed for the bank and the clients to ensure quality of the projects financed.

The fund is revolving. The initial instalments have been disbursed. Repayments of awarded credits are re-capitalised and allow further financing (sufficient only for several projects a year). The scheme proved to be successful, no further instalments are expected, though. The scheme has been useful for all actors to learn about energy efficiency projects development, financing and benefits. With current interest rates the bank might finance some EE projects commercially.

4.1.2 Programme/ Fund MUFIS (Financing of Municipal Infrastructure)

This projects belongs to specific country programmes.

A Daughter Bank of the Czech-Moravian Guarantee & Development Bank manages the MUFIS fund. The fund represents a kind of loan amounting USD 100 million within 1994 - 1998 from private US financial sources with state guarantee from the US and Czech governments. Loans with long term pay back period can be given from the fund to

municipalities through commercial banks under beneficial conditions for municipal infrastructure development. Loans amounting CZK 3 up to 100 million can be given to municipalities or municipal utilities with interest rate 12 % and pay back period within 7 up to 15 years in case supply of households represents more than 50 % of the project costs.

4.1.3 Energy Efficiency Centres

Since the beginning of nineties have been in the Czech Republic established several energy efficiency centres. The best experiences and the best benefits in the terms of contribution to energy efficiency in the country, education of national experts etc., follow from the energy efficiency centres established through international co-operation. These centres (e.g. SEVEN) were established on the base of concrete project to perform, with the time-limited financial support. The national experts are enabled through these pilot projects get familiar with the aspects of performing energy projects the way, that is effective and follows from long-term experience in the supporter country. Foreign supporters do not manage the energy efficiency centres, the centres are only advised how to perform project, how to obtain information, how to manage the business connected with energy efficiency enterprise etc.

The time-limited financial support and approach based on independence in decision making in the contrast with the flat subsidy and direct foreign management appeared the main reason of success many of these centres.

The main goal of established national centre in the initial is to obtain experiences from the pilot project to continue and manage the energy efficiency activity after the time-limited financial support expires.

4.1.4 Project Development

As the experiences with energy efficiency projects in the Czech Republic grows, it seems to be very beneficial to share these experiences. There is still lack of awareness and information that help to develop energy projects the way, which is well known and time verified in the advanced countries.

Between the activities that appeared effective in the terms of enhancement of awareness that leads to more performed energy efficiency projects belongs inter-active workshops. For example inter-active workshops for municipalities, performed by SEVEN, are aimed on the competent authorities in town, to provide them information about energy project development, financial background and help them to identify appropriate financial sources.

Other tools that helps to enhance the interest of energy projects are financial manuals that help to manage energy projects. Very useful seems to provide information of available financial sources in the lists with explanation of accessibility conditions of these sources.

The explanation of the principles of the energy efficiency implementing help to create environment where competent authorities and energy entrepreneurs are informed and able to utilise know-how and information for energy efficiency project implementation both in governmental and private sector.

Table 5: Evaluation of the Best Practice Projects

Project	ESF	MUFIS	EE Centres	PD
Broad Impact	++	++	++	++
Replicable	++	++	++	++
Innovative	+	+	++	+
Building int. cap.	++	++	+	++
++ criteria are highly fulfilled, + criteria are fulfilled				

4.2 Best Practice Programmes

This part reviews some existing international support programmes in the field of energy and environment that have been carried out in the Czech Republic since the early nine-ties. The work package also includes the description of the best practice projects implemented through these programmes.

4.2.1 European Union programmes

4.2.1.1 PHARE

The main European Union support programme for Central and Eastern Europe since 1990 has been the PHARE fund. The PHARE fund has been supporting projects in the Czech Republic and focused in its first years on supporting the transformation from central planning to a market economy.

Since 1997, the PHARE programme started to focus on the following objectives:

- Adopting the EU *acquis communautaire*
- Integrating the infrastructure of the Czech Republic with that of its member states
- Strengthening the Czech economy in its integration to the internal market.

The PHARE programme consists of several sectoral programmes, one of them the PHARE Energy Programme. The main objective of the PHARE Energy Programme is to assist the Czech government in the implementation of their energy policy. The PHARE programme assisted in the transformation of the energy sector, increasing efficiency in energy supply and use, diversification of energy supply, support in integration towards

the EU and training for employees. Between 1991 and 1997 total amount of ECU 10.365 million was spent in the Czech Republic.

Main fields of attention:

- Energy policy (low-cost management, creating regulatory institutions, information systems)
- Effective energy use (studies, investment projects)
- Clean coal burning technologies
- Regional energy studies (eg. Prague, Ostrava, Most, Karlovy Vary)
- Training and education

4.2.1.1.1 The PHARE Energy Programme contribution to the Czech energy sector

The PHARE Energy Programme started in '91 with financing energy policy studies for the Czech state administration to adapt the energy sector to the new market situation. Another part existed of demonstration projects to energy efficiency, mainly in the building sector. A lot of attention was given to training of experts and exchange of experience and know-how.

The programme continued in '92 with regional energy studies for districts and municipalities. Another part was focused on energy efficiency in the Czech industry. Since 1992 Czech consultants gradually started to participate in the PHARE programme.

The PHARE Energy Programme continued until 1997 when it was replaced by the PHARE Energy Savings Fund. PHARE energy saving fund is described in the chapter including the best practise projects.

4.2.1.1.2 PHARE project "Black Triangle"

One of the more recent PHARE projects in the Czech Republic has been the Black Triangle Demonstration Project, carried out between September 1997 and December 1998. This project had a so-called integrated energy-environment approach. Its main objectives were to decrease air pollution in the "Black Triangle" area (North Bohemia) and increase energy efficiency at the same time. Another important feature was that Czech firms participated in the demonstration projects.

The following three demonstration projects were realised in North Bohemia:

- Installation of a Co-generation unit in the Swimming Pool
- Thermal Rehabilitation of a residential Building
- Gasification and Thermal Rehabilitation of an Elementary School.

To monitor the project development and outcomes of the project a Logical Framework Analysis concept has been developed. This analysis consisted of selection, preparation and implementation of demonstration projects and dissemination of results.

4.2.1.1.3 *Evaluation PHARE ESF*

After initial slow disbursement the ESF has allocated 21 loans for EE projects and nearly disbursed all funds initially available. In the evaluation of the fund objectives and its real operation, following has been found:

- Average loan size CZK 12.5 million (Euro 357,000) - objective met to finance small projects
- All sectors financed (buildings - blocks of flats, schools, a hospital), industries, heating plants
- ESF funds are appreciated financial source for ESCOs
- Average loan duration 6 - 7 years
- With the exception for projects in blocks of flats, savings are sufficient to repay the debt service
- In the total cost savings, in average 78 % comes from energy savings.

As it follow from the contract with CSOB the initial instalment of ECU 4.5 million will be turned back (in CZK of 1997) to the Ministry of Industry and Trade in 2007 unless the contract is extended. The European Union does not intend to increase the capital. Repayments of awarded loans are reinvested into new projects (about CZK 40 - 50 million annually), but this amount is not sufficient to satisfy applications submitted to the fund at the moment. Obviously, if the bank has to postpone further applications due to lack of funds, the raised interest in this type of finance will diminish.

4.2.1.2 *SAVE II*

SAVE II is the European non-technological programme aimed at promoting the rational use of energy within the Community. The programme is the follow-up of the original SAVE programme which ran from 1 January 1991 until 31 December 1995. The SAVE II programme was adopted by the Council of Ministers on 16 December 1996.

SAVE II has been designed to complement the efforts of the Member States in improving energy efficiency. A major element of the programme is the use of measures and actions which ensure the addition of value at Union level for the rational use of energy. In view of budgetary limits, the programme will not provide funding for real or so-called hardware investments. The purpose of the programme is rather to create an environment in which investments in energy efficiency will be accelerated and whereby energy efficiency will be recognised as a market opportunity.

The SAVE II programme has the following elements:

- labelling, standardisation and other actions in the area of energy using equipment;
- targeted pilot actions aimed at accelerating energy efficiency investments and/or improving energy use patterns;
- dissemination of information;

- monitoring of energy efficiency progress at national and EU levels;
- specific actions in favour of greater cohesion between Member States in the field of establishing policies aimed at efficient energy management;
- specific actions aimed at improving energy management at regional and urban levels;
- actions aimed at establishing energy efficiency as a criterion within existing EU programmes.

SAVE can give up to a maximum of 50 % support for a pilot action or information dissemination activity. Studies aimed at the implementation of Union measures, information activities and monitoring of energy efficiency progress may be funded up to a maximum of 100 %.

All legal entities domiciled in the European Union and the European Economic Area may apply for support under the SAVE II programme. The European Union also invited associated countries to participate in the programme so that legal entities from these countries can also apply for SAVE II funding. According to an agreement between the EC Association Council and the Czech Republic from 27 November 1998, the Czech Republic can participate in the SAVE II programme.

For the 1998 project round four projects from the Czech Republic have been accepted for SAVE II funding, these are:

- Good practice guides for local authorities in the Czech and Slovak Republics – aimed at improving energy management in cities and municipalities without major investments
- Analysis of obstacles to CHP implementation in the Czech and Slovak Republics – proposals will be made to support cogeneration by adapting current legislation
- National Programme for monitoring and targeting in the Czech and Slovak Republics – adopting a system of monitoring and targeting of energy consumption in industries and public buildings
- Study to support the introduction and implementation of legislation concerning the energy efficiency labelling and standardisation – Supporting the Czech and Polish governments in adopting directives regarding labelling and standardisation.

4.2.1.3 European Investment Bank (EIB)

The European Investment Bank prioritises loans in the energy sector for projects where there is a need for restructuring and technological modernisation or where investments are aimed at saving energy and securing supply.

In December 1996, ECU 200 million was lent to CEZ a.s., the Czech power utility, to help finance its large environmental programme which will bring the six largest lignite-fired power stations in compliance with international standards. The investments mainly concern flue gas de-sulphurisation. They will reduce sulphur-dioxide emissions by more than 90 % and have a major impact on air quality in the “Black Triangle” region (the area

between Lower Silesia in Poland, Southern Saxony in Germany and Northern Bohemia) where nearly half of the electricity for the Czech Republic is generated. Benefits will be felt across the border in both Germany and Poland.

A loan of ECU 55 million was provided to replace the combined heat and power plant which serves the city of Mlada Boleslav and the Skoda factory there.

In addition to these large direct EIB loans, the EIB also offers indirect financing facilities via intermediary banks which can fund smaller-scale infrastructure projects in the area of energy production and energy saving. These types of loans are generally designed for projects with a total project cost of ECU 40,000 to 25 million, with the EIB financing up to 50 % of the costs.

4.2.2 Co-operation with international finance institutions

4.2.2.1 IFC – International Finance Corporation (World Bank)

The International Finance Corporation (IFC), a member of the World Bank, was established in 1956 in order to support business activity in developing countries. The IFC finances projects in the private sector and helps them to get additional sources of financing on the international financial markets. It provides technical assistance and advisory services to both the private and public sectors.

Among the financial products which the IFC offers in developing countries are:

- long-term loans in major currencies, at fixed or variable rates
- equity investments
- quasi-equity instruments (subordinated loans, preferred stock, income notes)
- guarantees and standby financing
- risk management (intermediation of currency and interest rate swaps, provision of hedging facilities)

The IFC charges market rates for its products and does not accept government guarantees. Financed projects must be profitable and must comply with strict environmental guidelines. Although the IFC is oriented primarily towards the private sector, it may provide financing for a company with some government ownership, provided the business is operated on a commercial basis. The IFC finances up to 25 % of project expenses; it may provide up to 35 % of the equity capital for a firm, provided that it will not become the majority shareholder. IFC investments typically range between 1 - 100 million dollars.

A basic feature of the IFC is the integration of environmental considerations with investment strategies. The long-term rate of return of a project must be linked to preservation of or improvement in the quality of the environment.

The first major investment in the power Sector in Central and Eastern Europe that was facilitated by the IFC involved the Energy Centre Kladno. The Project encompassed

taking an old and polluting district heating plant, which used to generate some power as a by-product of heat generation but which is not able to meet new emission limits as of 1998. The installation will be turned into a power plant that will continue to meet the heat needs of the town, within emission limits. The plant is privately owned with the Central Bohemian Grid (STE) having an 11 % share in the project. The total project cost is USD 400 million with the IFC lending USD 85 million with a repayment period of 15 years.

Another interesting project is the Efficient Lighting Initiative. The project involved consulting related to local utilisation of efficient lighting and a specific proposal for an international project to support efficient lighting in the Czech Republic.

4.2.3 Activities Implemented Jointly / Joint Implementation - Grant Assistance

A pilot phase for Activities Implemented Jointly was established during the first meeting of the Conference of Parties in Berlin in 1995. The emission reduction realised during this pilot phase cannot be added to the emission reduction target of investing countries. Furthermore, a number of criteria were defined for AIJ projects. (CoP1, 1995, Decision 5/CP.1), stating:

- That activities implemented jointly should be compatible with and supportive of national environment and development priorities and strategies,
- That activities implemented jointly should contribute to cost-effectiveness in achieving global benefits and could be conducted in a comprehensive manner covering all relevant sources, sinks and reservoirs of greenhouse gases;
- That all activities implemented jointly under this pilot phase require prior acceptance, approval or endorsement by the Governments of the Parties participating in these activities;
- That activities implemented jointly should bring about real, measurable and long-term environmental benefits related to the mitigation of climate change that would not have occurred in the absence of such activities;
- That the financing of activities implemented jointly shall be additional to the financial obligations of Parties included in Annex II to the Convention within the framework of the financial mechanism as well as to current official development assistance (ODA) flows;
- That no credits shall accrue to any Party as a result of greenhouse gas emissions reduced or sequestered during the pilot phase from activities implemented jointly.

4.2.3.1 Joint implementation in Central and Eastern Europe

Several countries in Central and Eastern Europe, including the Czech Republic, have become involved in AIJ/JI pilot activities. In several countries national AIJ/JI offices have been established to co-ordinate these pilot activities and to facilitate the communi-

cation with the investing country partners and the secretariat of the UN FCCC. In the Czech Republic this office works under the auspices of the Ministry of Environment.

The reason why the Czech Republic and other CEE countries could be interested in AIJ/JI projects are the following:

- The lack of capital - AIJ/JI projects can provide the countries with additional capital to assist them in developing policies and measures to support their national (environmental policies)
- The potential to trade emission reductions – In CEE a relatively large potential exists for cost-effective GHG emission reduction measures
- AIJ/JI's potential to contribute to solving locally specific environmental problems. GHG abatement is not the main priority, but JI could contribute to meeting other environmental or economic priorities, such as reducing air, water or soil pollution, creating employment etc.

4.2.3.2 Experiences with AIJ projects in the Czech Republic

The first AIJ project started in the Czech Republic was the Decín-Býnov project and consisted of fuel switch in a Decín district heating plant from coal to gas, including the installation of a cogeneration unit and investments in efficiency improvement.

The Decín-Býnov project has been initiated and developed by CCAP (Center for Clean Air Policy, US NGO) and co-financed by three US energy investors.

The first phase, Agreement in Principle, was signed by the mayor of Decín and the US utilities in Washington in Presence of the US Energy Secretariat in April 1994. It must be stressed that municipalities and local authorities in the Czech Republic are not part of the Czech Government and they have therefore no legal relationship to the UNFCCC.

Subsequently, the US electric utilities signed a second agreement with the City of Decín in 1995 giving a no-interest loan of USD 600,000 for 25 years in return for 100 % of CO₂ reduction (on-site reductions of about 6,500 tons of CO₂/year) achieved directly after reconstruction.

The second agreement was neither negotiated with nor reported to the MoE. This time, the structure of the investment was as follows:

- the City of Decín, equity USD 0.98 million.
- Czech State Environmental Fund (50 % subsidy, 50 % 8 year loan, 7 % interest), USD 6.56 million.
- Danish grant (technical and engineering assistance), USD 0.908 million.

The total investment represents USD 9.058 million and US utilities loan therefore makes 6.62 % of the total. According to the second agreement the City of Decín will have to return the loan, if the Government of the Czech Republic does not agree with the transfer of emission credits to US investors by 1998.

Finally, an agreement between the MoE and the US DOE has been reached in April 1997 and the Decín project has been approved by the MoE (no credits will be given during the pilot phase). At present, the MoE develops a monitoring procedure fully compatible with national emission inventory (identical emission factors) and the procedure for the calculation of the baseline.

One of the issues that arose during the planning stage of the project was the question of who would have administrative jurisdiction over its AIJ/JI component (the credits). In a letter to the US participants the Czech government expressed support for the Decín-Býnov project, but it turned out that the sharing of the project's credits had already been arranged at the project level. The US companies had agreed on a contract with the Decín Municipality Office on the sharing of GHG emission reductions with the stipulation that all shares from the reduced GHG emissions would go to the US companies. In doing so, the Municipality Office clearly overstepped its authority which eventually led to a major misunderstanding and a refusal of the Czech Government to approve the project. Only on 3 April 1997, the Decín-Býnov project formally passed the Czech Government's new JI approval process. Shortly after signing the new agreement, the project was announced by the Czech Ministry of the Environment to the UN FCCC Secretariat.

The amount of AIJ projects in the Czech Republic is limited and experiences like with the Decín project may have a negative impact on the increase of AIJ/JI projects in the future.

The other approved AIJ project in the Czech Republic is the Krkonose project, which deals with afforestation in the Krkonose mountain area. The MoE sent the announcement of the first component of the Krkonose project to the UN FCCC Secretariat in 1996. An agreement on completing the second part of the project as an AIJ investment was signed on 6 June 1997.

Currently, a new AIJ project in Mladá Boleslav is in construction as part of an investment programme established by Skoda and the Volkswagen Company. This project concerns the reconstruction of a power / heating plant at the Skoda automobile plant.

4.2.4 Country specific support programmes

4.2.4.1 USAID

US assistance programmes have been administered by the United States Agency for International Development (USAID), an agency of the US Government created in 1961 to implement foreign assistance throughout the world. USAID opened an office in Prague in 1991.

The USAID's assistance programme to the Czech Republic was designed to emphasise economic reform and support to democratic institutions during the early stages of their development. After agreement with the Czech Government the following priority sectors were identified:

- privatisation;

- private sector growth;
- the financial sector;
- the municipal infrastructure finance system;
- democratic institutions, including municipal and national governments as well as non-profit organisations;
- quality of life which targeted the health and social needs of the disadvantaged, health care, the *environment* and *energy*.

USAID has helped the MIT and the MF to establish a government regulatory structure and a pricing mechanism for energy production and distribution systems. Technical assistance has also been given to help draft new legislation. Another important activity was the US Nuclear Regulatory Commission's work which included a review of the regulatory system, risk assessment evaluation, the development of emergency operating instructions and the training of nuclear power plant personnel. The US Department of Energy also worked on establishing western safety standards and operations for Soviet-type reactors in operation at Dukovany.

USAID has financed two regional energy studies in recent years, in Cesky Krumlov and Plzen. Aim of this study was not only to solve the energy supply at both locations but also to create close co-operation between Czech and US partners and to exchange information and experience.

It was one of the first energy studies that integrated so-called Demand Side and Supply Side Management. In the past, future energy supply was always estimated and based on growth of economic activity without any end-use analysis. This caused building of installation with a major over capacity.

The studies analysed barriers to energy savings that exist even with proved feasible energy savings. Furthermore, non-traditional ways of financing are presented, like Energy Performance Contracting.

4.2.4.2 Austrian Ecology Fund

This fund was established in 1993 to support the financing of environmentally protective measures in countries neighbouring Austria, including the Czech Republic. The Fund is administered by the Austrian Kommunalkreditbank. Public institutions, as well as small and medium sized enterprises, can receive up to 100 % financing of their costs. By June 1996, the Czech Republic had received ATS 401.86 million in assistance of this type.

Austrian bilateral assistance programmes have focused on sectors where:

- Austrian companies have a comparative advantage
- Austrian political and economic interests are strong
- Projects can be effectively implemented and sustained in co-operation with the recipient and other donors

The following priority sectors have been identified: energy, environment, education, public administration and European Union integration.

Between 1993 and 1998 about 70 studies / investment projects were carried out in the field of energy and environment, mainly in the Czech – Austrian border area (South Bohemia, South Moravia). Examples of projects are the following:

- Energy concepts for cities (Brno, Kladno, Trebon)
- Planning of heat supply in towns (district Prague South)
- Planning of cogeneration and biomass installations
- Installation of emission cleaning equipment in industries in border areas.

The Austrian Energieverwertungsagentur (EVA) analysed the current and possible future co-operation between Austria and the Czech Republic in the field of energy. Future co-operation could exist in the field where large Austrian know-how exists. Possibilities are biomass heating systems and cogeneration, but also energy management, restructuralisation of the energy sector and EU integration.

4.2.4.3 Other co-operations

At present time there are more project in the preparation stage or in the progress. The Netherlands indicates substantial activity in the Czech Republic within the range of bilateral or multilateral co-operation. Example is the Energy Efficiency Study, prepared for governmental institution in Czech Republic, conducted by ECN Netherlands with co-operation of SRC Czech Republic, SEVEN and others. The study is aimed to find and analyze new practical legislative measures and policies to promote utilization of renewables and increase energy efficiency.

Important co-operation was performed by Denmark partners, project aimed to energy audits and demonstration projects in buildings. Demonstration project in the field of effective utilization of gas heating system was performed by co-operation with British company. Co-operation partners from Canada conducted DSM study for the CEZ a.s., the main producer of electricity in the Czech Republic.

5 References

- Benestad O.1992: Towards a Categorization of Concepts for a Sustainable Energy Policy, Working Paper 1992.4, centre for Development and the Environment, University of Oslo, Oslo.
- Beranovský J./ Truxa J. 1998: Analýza potenciálu a ekonomické hodnocení OZE v ČR, Ekowatt, pro MPO, Praha.
- Beranovský J./ Vronský T. 1998: Reserse zahraničních podpurných programu úspor energie a OZE v zemích EU a dalsích vybraných zemích, Ekowatt, pro MZP, Praha.
- Callan S.J./ Thomas J.M. 1996: Environmental Economics and Management, IRWIN, U.S.
- Capros P. et al. 1996: Results from the General Equilibrium Model GEM-E3, Paper prepared for EC/IEA/OECD Workshop on „Instruments for Environmental Improvement with Structural and technological Change in the Electricity Sector“, Brussels, 9 - 10 September 1996
- COM (96)576 European Commission, 1996: Energy for Future: Renewable Energy Sources, Prague
- CSO (Czech Republic Statistical Office) 1999: Various Publications. Prague
- Dasek M./ Szomolányiová J. a kol.1998: Hodnocení Programu úspor energie 1998, SEVEN, Praha.
- DG XVII (Directorate General for Energy) 1998: Energy in Europe, 1998 – Annual Energy Review. Brussels
- Dusek, Libor 1998: Competition – The Way Towards Effective Electric Energy Production and Consumption, Liberal Institute, Prague
- ECEEE 1997: Sustainable Energy Opportunities for a Greater Europe, Part I-II, Proceedings of the 1997 ECEEE Summer Study, 9 - 14 June 1997, Spindleruv Mlýn, Czech Republic
- ECN (Netherlands Energy Research Foundation) 1999: Energy Efficiency Action Plan, Draft, Prague
- ECN (Netherlands Energy Research Foundation) 1999: National Energy Efficiency Study – Czech Republic, Draft Final Interim Report, Prague
- ECN (Netherlands Energy Research Foundation) 1999: Renewable Energy Action Plan, Draft, Prague
- European Commission 1992: Proposal for a Council Directive introducing a Tax on Carbon Dioxide Emissions and Energy, COM (92) 226 final.
- European Commission 1995: Revised Proposal for a Council Directive introducing a Tax on Carbon Dioxide Emissions and Energy, COM (95) 172 final.
- European Commission 1997a: Proposal for a Council Directive Restructuring the Community Framework for the Taxation on Energy Products, COM 1997a(97) 30 final.
- European Commission 1997b: Energy for the Future: Renewable Sources of energy, White Paper for a Community Strategy and Action Plan, COM (97) 599 final.

- European Commission 1997c: Level of indirect taxation on Energy Products applied in Member States as of 1 January 1997, DG XXI.
- European Commission 1998: Energy Efficiency in the European Community – Towards a Strategy for the Rational use of Energy, Communication from the Commission of the EC, COM (98) 246 final.
- European Commission, Task Force Accession Negotiations 1999: Screening Report on Chapter 14 – Energy
- Focus (Centre for Social and Marketing Analysis) 1999: Energy Policy in the Czech Republic – Opinion of the Czech Society, Brno, Czech Rep.
- Hruby, Zdenek 1999: Final Report of the Expert Team for Independent Evaluation of the Completion of Temelín (Prague, Government of the Czech Republic)
- 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/evpes.htm>, 21.12.98
- Jorgenson, D./Wilcoxon, P. 1990: Reducing U.S. Carbon Dioxide Emission: The Cost of Different Goals. mimeo, Harvard University, Cambridge.
- Jorgenson, D./Wilcoxon, P. 1993: Reducing U.S. Carbon Dioxide Emissions: An Assessment of Different Instruments. In: Journal of Policy Modelling, Vol.15, pp. 491 - 520.
- Karadeloglou, P. 1992: Energy Tax Versus Carbon Tax: A Quantitative Macroeconomic Analysis With the Hermes-Midas Models: In: European Economy: The economics of limiting CO₂ emissions, Special edition No 1, Belgium.
- Kubátová J.: Programy environmentálne orientovaného řízení, CEMC, Praha
- Laponche B. et al. 1997: Energy Efficiency for a Sustainable World, International Conseil Énergie, Paris.
- Lawrence Berkeley National Laboratory (LBL) 1998: Selling Green Power in California: Product, Industry and Market Trends, Berkeley, California.
- Ministry for the Environment Czech Republic (MoE) 1999: Screening B-List, Chapter 22, Environment, Prague
- Ministry of Finance and Ministry of Industry and Trade, 1999: Proposal for the Approach to the Privatization of Electricity Distribution Companies, CEZ and Transgas, Prague
- Ministry of the Environment Czech Republic (MoE) 1999: Screening A-List, Chapter 22, Environment, Prague
- Ministry of the Environment Czech Republic (MoE) 1999: The Conversion of the Temelín Nuclear Power Plant to the Alternative Use, Prague

- OECD (Organisation for Economic Co-operation and Development) 1999: National Climate Policies and the Kyoto Protocol. Paris
- OECD/IEA 1997: Energy Efficiency Initiative Volume I,II, Paris.
- Programy státních podpor při snizování spotřeby paliv a energie v České republice pro rok 1998, Obchodní vestník 47, Praha 1997
- Proost S./Regemorter D. van 1992: Carbon Taxes in the European Community: Design of Tax Policies and their Welfare Impacts: In: European Economy: The economics of limiting CO₂ emissions, Special edition No 1, Belgium.
- Seják J./ Kovár J.1997: Zpracování podkladu k systému poplatku za znečištění ovzduší pro období po r. 1998, oddelení environmentální ekonomiky Českého ekologického ústavu, Praha, prosinec.
- Sequens, Edvard and Halama, Martin, 1999: Atlas of Renewable Sources of Energy Instalments, South Bohemian Region, Environmental Partnership, Ceske Budejovice, Czech Republic
- SEVEN 1998a: Kvantifikace nákladu reálné využitelného potenciálu úspor energie v komunální sféře, průmyslu a distribuci energie, Praha.
- SEVEN 1998b: Posouzení vlivu energetické koncepce ČR na životní prostředí, pro MPO ČR, Praha.
- Smeloff, Ed and Asmus, Peter, 1997: Reinventing Electric Utilities, Safe Energy Communication Council, (Washington D.C.)
- SRCI CS: Reálné podmínky a možnosti využití obnovitelných a netradicních zdrojů energie včetně malé kogenerace v ČR do roku 2010, pro CEA, Praha 1998
- SRCI et al. 1999: National Energy Efficiency Study – Czech Republic, SRCI CS, SEVEN, RAEN, ECN, DHV AIB and DHV Czech Republic, March Consulting, SEO, plánovaný termín dokončení: srpen.
- SRCI/CS 1997: Podrobná analýza možností zavedení daní k ochraně životního prostředí, pro MZP ČR, Praha.
- SRCI/CS 1998: Katalog opatření ke snížení vysoké energetické náročnosti národního hospodářství ČR, Praha.
- Stead W.E./ Stead J.G. 1998: Management pro malou planetu, G plus G, Praha.
- Stead,W.E./ Stead, J.G.: An empirical investigation of sustainability strategy implementation in industrial organizations. In Research in corporate social performance and policy, Supplement 1Greenwic,CT:JAI
- Sucharovová D. 1998: Zavádění programu EMAS v ČR, Zpravodaj MZP c.6, Praha.
- Szomolányiová J./ Marousek J. a kol. 1998: Dlouhodobá strategie pro Státní programy na podporu úspor energie a využití obnovitelných zdrojů, SEVEN, pro MZP ČR, Praha.
- Szomolányiová Jana 1997: Modely incidence daní z energie, Diplomová práce, FSV UK, Praha.
- Szomolányiová Jana 1998: Specifikace doplňkových výběrových kritérií pro navrhovaný Státní program na podporu úspor energie a alternativních zdrojů energie, SEVEN, pro MZP ČR, Praha.

- Truxa J. 1996: Mozná opatření vládních orgánů ČR k podpoře obnovitelných zdrojů energie, vypracováno pro SEVEN, Ekowatt, Praha.
- UNFCCC (United Nation Framework Convention on Climate Change) 1999: Inventory Database, as of October 1, 1999. Bonn
- Veber J. 1996: Systém ekologicky orientovaného podnikového řízení, Vysoká škola báňská - Technická univerzita Ostrava.
- World Bank 1999: World Development Indicators on CD. Washington
- Wüstenhagen R. 1998: Jakou roli hrají ceny ekologických produktů ve skladbě energetické politiky?, přednáška z Konference EEBW, Praha.
- Zeman J. a kol. 1998: Konkurenční model české elektroenergetiky. Cílové usporádání a implementace, SEVEN, Praha.

6 Appendix

6.1 Energy and Environment Data

Table 6: *Socio-demographic and Economic Data*

	Unit	1990	1991	1992	1993	1994	1995	1996	1997
Socio-demographic Data									
Population	Million	10,4	10,3	10,3	10,3	10,3	10,3	10,3	10,3
Population aged 15-64, total	Million	6,8	6,9	6,9	7,0	7,0	7,0	7,1	7,1
Labor force, total	Million	5,5	5,5	5,5	5,6	5,6	5,7	5,7	5,7
Appartments									
Apartments	1,000	3.695	3.706	3.721	3.732	3.740	3.750	3.754	3.764
Occupants	No./App.		2,8						
Average Size	m ² /App.		70,5						
Heating Space	Million m ²		261						
Gross Domestic Product at Market Prices									
Current Prices									
CZK	Billion	567	717	791	911	1.149	1.349	1.533	1.649
US\$	Billion	32	24	28	31	40	51	57	52
Purchasing Power Parities (PPP)	Billion	103	91	89	90	94	103	108	108
Constant Prices 1995									
CZK	Billion	1.553	1.333	1.248	1.236	1.268	1.349	1.401	1.415
US\$	Billion	59	50	47	47	48	51	53	53
PPP US\$	Billion	118	102	95	94	97	103	107	108
GDP Deflator	1995 = 100	37	54	63	74	91	100	109	117
Money									
Exchange Rate	CZK/US\$	15,1	18,6	28,3	29,2	28,8	26,5	27,1	31,7
Inflation (Consumer Price Index)	%	9,6	56,7	11,1	20,8	10,0	9,1	8,8	8,5

Source: CSO 1999, VUPEK, KONEKO, World Bank 1999, calculations by Oeko-Institut

Table 7: Energy Data, Energy and Electricity Balance

	Unit	1990	1991	1992	1993	1994	1995	1996	1997
TPES (Gross Inland Consumption)	mtoe	47,2	36,8	40,9	39,8	38,9	39,5	40,8	40,6
Solids	mtoe	29,5	20,8	23,8	23,2	21,4	21,2	21,1	
Oil	mtoe	8,6	7,3	7,7	6,9	7,7	7,9	8,2	
Natural gas	mtoe	5,3	5,1	5,8	5,9	5,8	6,5	7,5	
Other (1)	mtoe	3,9	3,6	3,6	3,7	4,0	3,8	4,0	
Net Imports	mtoe	7,4	6,3	5,7	5,4	6,8	7,6	9,5	
Solids	mtoe	-5,9	-6,2	-7,0	-6,9	-6,6	-6,6	-6,1	
Oil	mtoe	8,5	7,2	7,5	6,8	7,6	7,8	8,0	
Natural gas	mtoe	4,8	5,5	5,5	5,7	5,8	6,4	7,5	
Gross Electricity Generation	TWh	62,6	60,5	59,1	58,7	58,4	60,6	63,8	
Nuclear	TWh	12,6	12,1	12,3	12,6	13,0	12,2	12,9	
Hydro & wind	TWh	1,4	1,3	1,6	1,4	1,5	2,0	2,0	
Thermal	TWh	48,5	47,1	45,2	44,7	44,0	46,3	49,0	
Own use	%				-13,7	-14,3	-13,4	-13,1	
Distribution losses	%				-8,2	-8,0	-7,9	-8,0	
Electricity Plants	TWh				47,2	46,8	47,7	50,0	
CHP Plants	TWh				11,5	11,6	12,9	13,8	
Electricity Import & Export Balance	TWh	-0,7	-2,5	-2,9	-2,1	-0,4	0,5		
Import	TWh	8,2	7,2	6,2	6,0	5,5	6,7	8,8	
Germany	TWh	0,3	0,4	0,3	0,4	0,1	0,3	1,6	
Poland	TWh	7,7	6,6	5,6	4,7	4,0	4,8	6,4	
Austria	TWh	0,0	0,2	0,2	0,2				
Slovakia	TWh				0,6	1,2	1,6	0,8	
Other	TWh	0,2		0,1	0,1	0,2	0,0	0,0	
Export	TWh	-8,9	-9,7	-9,1	-8,1	-5,9	-6,3	-8,8	
Germany	TWh	-2,6	-1,1	-0,8	-1,7	-1,2	-2,3	-3,0	
Poland	TWh	-3,0	-2,9		-0,1	-0,2	-0,2		
Austria	TWh			-3,3	-2,8	-2,7	-2,0	-2,2	
Slovakia	TWh				-3,4	-1,8	-1,8	-3,6	
Other	TWh	-3,3	-5,7	-5,0	-0,1	0,0	0,0	0,0	
Generation Capacity	GW	15,3	14,5	14,5	14,2	13,9	13,9	14,5	
Nuclear	GW	1,8	1,8	1,8	1,8	1,8	1,8	1,8	
Hydro & wind	GW	1,4	1,4	1,4	1,4	1,4	1,4	1,8	
Thermal	GW	12,1	11,3	11,3	11,1	10,7	10,7	11,0	
Fuel Inputs for Thermal Power Generation	mtoe	10,1	10,7	10,8	13,0	12,0	12,4	13,4	
Solids	mtoe	9,2	9,9	9,8	12,4	11,4	11,7	12,5	
Oil	mtoe	0,7	0,6	0,6	0,3	0,3	0,3	0,4	
Gas	mtoe	0,2	0,2	0,3	0,3	0,2	0,3	0,5	
Other	mtoe					0,1	0,0	0,0	
Net Electricity Generation by Fuel	TWh	48,5	47,2	45,4	44,6	44,0	46,3	50,0	47,4
Solids	TWh	48,5	47,2	45,4	44,6	44,0	46,3	49,0	46,0
Gas	TWh							1,0	1,4
Total Final Energy Demand	mtoe	33,6	25,0	26,9	26,4	24,8	25,9	25,8	
Solids	mtoe	17,4	9,8	11,5	8,4	7,4	7,2	5,8	
Oil	mtoe	6,0	5,4	5,5	5,7	5,0	5,5	5,6	
Gas	mtoe	4,2	4,1	4,3	5,0	4,9	5,2	5,9	
Electricity	mtoe	4,1	3,8	3,7	3,7	3,9	4,1	4,3	
Heat	mtoe	1,5	1,4	1,4	3,2	3,1	3,5	3,7	
Other	mtoe	0,5	0,5	0,5	0,5	0,5	0,4	0,4	
Final Energy Consumption	mtoe	33,6	25,0	26,9	26,4	24,8	25,9	25,7	
Industry	mtoe	16,5	11,8	13,1	13,9	12,4	13,3	12,8	
Transport	mtoe	3,1	2,5	3,2	3,3	2,6	2,8	3,8	
Tertiary-Domestic	mtoe	14,1	10,6	10,6	9,2	9,7	9,9	9,1	
District Heating									
Length of grid	km					4.101	4.065	4.085	4.112
Installed grid capacity	MW					22.352	21.997	21.369	20.415
Losses	%		13,8	13,8	13,6	13,2	12,9	12,7	12,0
Connected households	1,000		1.517	1.518	1.437	1.450	1.444	1.457	1.469
Heat Generation	PJ				167,3	174,2	175,9	191,1	
CHP Plants	PJ				121,3	124,1	126,9	138,3	
Heat Plants	PJ				46,0	50,1	49,0	52,8	

Source: DG XVII 1998, CSO 1999, IEA 1998a, 1997, 1996, VUPEK, KONEKO, SEVen

Table 8: *Energy Markets*

	Unit	1990	1991	1992	1993	1994	1995	1996	1997
Turnover	mil. CZK					108.741	119.013	140.475	140.933
Electricity	mil. CZK	24.652	58.335	64.849	64.706	62.353	64.056	70.267	69.231
Severomoravská Energetika	%	21,2	21,1	21,1	20,3	20,3	20,2	19,8	18,9
Jihomoravská Energetika	%	16,8	16,8	16,9	17,0	17,1	17,2	17,2	17,3
Středočeská Energetika	%	13,9	13,5	13,4	13,1	13,1	13,0	13,5	13,8
Gas	mil. CZK					18.267	23.582	35.987	37.258
South Moravian Gas	%					28,2	28,0	26,3	24,2
North Moravian Gas	%					21,3	20,9	19,4	18,7
Prague Gas	%					12,8	13,2	13,2	13,4
District Heat	mil. CZK					28.121	31.374	34.221	34.444
Moravskoslezské teplárny	%					11,2	11,6	11,6	12,3
Pražská teplárenská	%					11,5	11,7	12,0	11,1
CEZ	%					4,0	4,0	4,3	4,5
Energy prices, constant US\$@PPP1995									
Electricity									
Residential	\$/kWh	0,03	0,08	0,10	0,09	0,08	0,07	0,07	0,08
Services, Commercial	\$/kWh						0,16	0,15	0,14
Industry	\$/kWh	0,03	0,18	0,18	0,16	0,14	0,12	0,11	0,12
Fuel Oil									
Residential	\$/GJ		13,3	7,1	14,2	11,5	11,3	26,6	31,0
Services, Commercial	\$/GJ		29,3	15,9	14,9	13,5	16,5	29,1	27,3
Industry	\$/GJ	6,1	17,2	15,6	14,6	11,1	16,0	24,0	
Natural Gas									
Residential	\$/GJ	1,7	8,7	9,0	7,6	6,9	6,7	6,6	7,1
Services, Commercial	\$/GJ	18,8	22,6	11,0	9,7	8,3	7,7	7,3	9,9
Industry	\$/GJ	2,8	13,8	11,2	10,5	8,8	8,4	8,2	9,2
Heat									
Residential	\$/GJ	22,2	20,0	10,7	12,4	11,6	12,4	12,5	16,1
Services, Commercial	\$/GJ		26,1	17,2	16,2	14,1	13,8		
Industry	\$/GJ		26,1	17,2	15,8	14,1	13,8		

Source: Annual Reports, VUPEK, KONEKO, CSO 1999, IEA 1998b, World Bank 1999, calculations by Oeko-Institut

Table 9: Greenhousegas and Airborne Emissions

	Unit	1990	1991	1992	1993	1994	1995	1996	1997
CO₂	1,000 t	165.490	153.142	140.220	134.851	127.745	128.817	132.538	137.125
Fuel Combustion (Sectoral Approach)	1,000 t	160.073	148.807	135.629	130.661	123.631	124.647	129.516	133.925
Fugitive Emissions from Fuels	1,000 t							76	241
Industrial Processes	1,000 t	5.417	4.335	4.591	4.190	4.114	4.170	2.479	2.498
Solvent and Other Product Use	1,000 t							109	104
Agriculture	1,000 t								
Land-Use Change & Forestry	1,000 t	-2.281	-5.027	-6.041	-5.643	-3.943	-5.454	-4.479	-4.639
Waste	1,000 t							357	357
Other	1,000 t								
Memo Item: International Bunkers	1,000 t							459	407
CH₄ (Methane)	1,000 t	779	711	668	633	613	600	573	562
Fuel Combustion (Sectoral Approach)	1,000 t	59	50	41	39	44	32	34	31
Fugitive Emissions from Fuels	1,000 t	394	356	342	333	317	315	301	298
Industrial Processes	1,000 t	14	12	11	10	12	12	5	4
Solvent and Other Product Use	1,000 t								
Agriculture	1,000 t	204	186	169	148	139	139	134	129
Land-Use Change & Forestry	1,000 t	2	2	2	2	2	2	2	2
Waste	1,000 t	105	105	104	100	101	101	97	97
Other	1,000 t								
Memo Item: International Bunkers	1,000 t							0	0
N₂O	1,000 t	26	23	23	21	22	22	29	29
Fuel Combustion (Sectoral Approach)	1,000 t	20	19	17	17	17	16	4	4
Fugitive Emissions from Fuels	1,000 t								
Industrial Processes	1,000 t	3	3	4	3	3	3	3	4
Solvent and Other Product Use	1,000 t							1	1
Agriculture	1,000 t	2	2	2	2	2	2	21	19
Land-Use Change & Forestry	1,000 t	0	0	0	0	0	0	0	0
Waste	1,000 t								1
Other	1,000 t								
Memo Item: International Bunkers	1,000 t								
SO₂	1,000 t	1.876						946	701
Fuel Combustion (Sectoral Approach)	1,000 t							928	684
Fugitive Emissions from Fuels	1,000 t							5	5
Industrial Processes	1,000 t							14	12
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							0	0
NO_x	1,000 t	742	725	699	575	435	413	433	422
Fuel Combustion (Sectoral Approach)	1,000 t	721	706	682	559	427	404	413	406
Fugitive Emissions from Fuels	1,000 t							0	0
Industrial Processes	1,000 t	22	19	17	16	8	9	19	16
Solvent and Other Product Use	1,000 t								
Agriculture	1,000 t								
Land-Use Change & Forestry	1,000 t							0	0
Waste	1,000 t								
Other	1,000 t								
Memo Item: International Bunkers	1,000 t							3	2
VOC	1,000 t	311	243	234	229	263	241	282	274
Fuel Combustion (Sectoral Approach)	1,000 t	112	94	92	91	105	82	134	141
Fugitive Emissions from Fuels	1,000 t	10	9	10	11	13	13	5	5
Industrial Processes	1,000 t	15	13	12	11	11	12	24	15
Solvent and Other Product Use	1,000 t	175	128	120	116	133	134	118	113
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							3	3

Source: UNFCCC 1999

Table 10: Socio-demographic and Economic Data

	Unit	1990	1991	1992	1993	1994	1995	1996	1997
Socio-demographic Data									
Population	Million	10,4	10,3	10,3	10,3	10,3	10,3	10,3	10,3
Population aged 15-64, total	Million	6,8	6,9	6,9	7,0	7,0	7,0	7,1	7,1
Labor force, total	Million	5,5	5,5	5,5	5,6	5,6	5,7	5,7	5,7
Appartments									
Apartments	1,000	3.695	3.706	3.721	3.732	3.740	3.750	3.754	3.764
Occupants	No./App.		2,8						
Average Size	m ² /App.		70,5						
Heating Space	Million m ²		261						
Gross Domestic Product at Market Prices									
Current Prices									
CZK	Billion	567	717	791	911	1.149	1.349	1.533	1.649
US\$	Billion	32	24	28	31	40	51	57	52
Purchasing Power Parities (PPP)	Billion	103	91	89	90	94	103	108	108
Constant Prices 1995									
CZK	Billion	1.553	1.333	1.248	1.236	1.268	1.349	1.401	1.415
US\$	Billion	59	50	47	47	48	51	53	53
PPP US\$	Billion	118	102	95	94	97	103	107	108
GDP Deflator	1995 = 100	37	54	63	74	91	100	109	117
Money									
Exchange Rate	CZK/US\$	15,1	18,6	28,3	29,2	28,8	26,5	27,1	31,7
Inflation (Consumer Price Index)	%	9,6	56,7	11,1	20,8	10,0	9,1	8,8	8,5

Source: CSO 1999, VUPEK, KONEKO, World Bank 1999, calculations by Oeko-Institut

Table 11: Environment and Energy Indicators, Driving Forces

Unit		1990	1991	1992	1993	1994	1995	1996	1997
Energy Intensity									
TPES per Capita	toe/Cap.	4,6	3,6	4,0	3,9	3,8	3,8	4,0	3,9
TPES per GDP (PPP)	kg/US\$1995	0,40	0,36	0,43	0,42	0,40	0,38	0,38	0,38
Energy Prices, Current Local Currency									
Electricity									
Residential	CZK/kWh	0,12	0,35	0,85	0,85	0,92	0,98	1,06	1,24
Services, Commercial	CZK/kWh						2,13	2,14	2,17
Industry	CZK/kWh	0,12	0,78	1,47	1,52	1,61	1,62	1,60	1,81
Fuel Oil									
Residential	CHZ/GJ		59	59	137	137	149	383	474
Services, Commercial	CHZ/GJ		130	132	144	160	216	418	418
Industry	CHZ/GJ	25	76	130	141	132	210	346	
Natural Gas									
Residential	CHZ/GJ	7	39	75	74	81	88	95	108
Services, Commercial	CHZ/GJ	75	100	91	94	99	101	104	151
Industry	CHZ/GJ	11	61	93	101	105	111	118	141
Heat									
Residential	CHZ/GJ	89	89	89	120	138	163	180	246
Services, Commercial	CHZ/GJ		116	143	156	168	181		
Industry	CHZ/GJ		116	143	153	168	181		
Greenhouse Gas Emissions (GHG)									
GHG by Gas	1,000 t GHGE	189.837	175.323	161.221	154.710	147.291	148.103	153.579	157.816
CO ₂	1,000 t GHGE	165.490	153.142	140.220	134.851	127.745	128.817	132.538	137.125
CH ₄	1,000 t GHGE	16.349	14.927	14.026	13.287	12.881	12.590	12.032	11.808
N ₂ O	1,000 t GHGE	7.998	7.254	6.975	6.572	6.665	6.696	9.010	8.883
GHG per Capita	t/Cap.	18,3	17,0	15,6	15,0	14,3	14,3	14,9	15,3
GHG per GDP@PPP95	kg/US\$	1,6	1,7	1,7	1,6	1,5	1,4	1,4	1,5
Driving Forces									
CO ₂ /TPES	t CO ₂ /toe	3,5	4,2	3,4	3,4	3,3	3,3	3,2	3,4
TPES/FEC	toe/toe	1,4	1,5	1,5	1,5	1,6	1,5	1,6	
TFC/GDP	kgoe/US\$	0,3	0,2	0,3	0,3	0,3	0,3	0,2	
GDP/POP	1,000 US\$/Cap.	11,4	9,8	9,2	9,1	9,3	9,9	10,3	10,5

Source: Calculations by Oeko-Institut

6.2 Monitoring of Accession Process

Table 12: 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)						
	Energy Act No. 222/94, On Conditions of Enterprise in Energy Sector (02.11.1994 liberal, allows but does not guarantee a Third Party Access The Act has slightly opened the door for accession of independent third parties to the sector and for implementation of the competitive environment in the power industry, even though the access of new entrepreneurs in the sector to grid and network services has not been guaranteed (it is only legally allowed - not forbidden). Therefore, full competition has not yet developed. cross subsidies into the prices of electricity and gas for households	no	L1 new Energy Act removal	1 1. draft	2000	2001
Directive concerning common rules for the internal market in natural gas (98/30/EC)						
Objectives/substantive requirements	see electricity market					
Institutional requirements						
Procedural requirements						
Institutional requirements						

Source: SEVEN

Table 12: 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	Act No. 309/1991 Coll. on Air Protection Against Pollutant	no	new Directive 117/97	L3	2000	2001
Institutional requirements	Act No. 389/1991 Coll. on State Administration of Air Protection and Pollution Fees Decree of Ministry of Environment No.177/1997 coll. - rules of stationary sources of pollution operating					
Procedural requirements						
Institutional requirements						
Directive to limit carbon dioxide emissions by improving energy efficiency (SAVE) (93/76/EEC)						
Objectives/substantive requirements	none		L1			
Institutional requirements	new Energy Management Act will adopt most of the SAVE directives			1	2000	2001
Procedural requirements						
Institutional requirements						

Source: SEVEN

Table 12: 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	There are currently no labels neither standards for electric appliances.	-	L1	1	2001?	2002?
Institutional requirements			new act -	draft to be approved by government		
Procedural requirements	the Energy Management Act At present, the Ministry of Industry and Trade is preparing an Energy Management Law for approval by the government that includes an article introducing this requirement. Following passage of the law by the parliament of the Czech Republic, the Ministry will need to issue the relevant regulations harmonised with EU legislation to govern the labelling of individual categories of appliances.					
Institutional requirements						
Directive on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels (92/42/EEC)						
Objectives/substantive requirements						
Institutional requirements	none	-				
Procedural requirements	no standards					
Institutional requirements						
Directive on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof (96/57/EC)						
Objectives/substantive requirements						
Institutional requirements	none	-				
Procedural requirements	no standards					
Institutional requirements						

Source: SEVEN

Table 12: 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						
Institutional requirements	According to the Czech Energy Policy, a Third Party Access model with licensing for new capacities will be introduced in power industry (not a Single Buyer with tendering). Although an EU directive proposal on rational planning techniques exists, which includes IRP, this approach, in principal, is not compatible with an open third party access to the grid in liberalised energy markets. Not compatible with a TPA model with licensing for new capacities - a model that the Czech Energy Policy suggests to implement.	*)				
Procedural requirements						
Institutional requirements	*) The energy act #222/94 would have to be changed and replaced with a less liberal act that will not allow private investors to make their investment decisions on their own. Within few years the new Act would have to be replaced again with a new energy act that would introduce TPA competitive models in the power industry.					

Source: SEVEN

Table 12: 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
Feed-In Directive (Renewables) (COM(97) 69)						
Objectives/substantive requirements	none The Senate Proposal of the Electricity Prices Law - rejected (1998) The Senate Proposal of act on Guaranteed feed in tariff for electricity from renewables - rejected (1998)					
Institutional requirements	not in compliance with proposed TPA model in Energy Policy draft					
Procedural requirements						
Institutional requirements						
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	Ministerial order (MO)		0 No steps taken to date		
L1 Draft in process	GO2 Draft in process	MO0 No steps taken to date		1 Draft in process		
L2 Ministry approves	GO3 Ministry approves	MO1 Draft in process		2 ...		
L3 Government approves	GO4 Other relevant ministries approve	MO2 Draft in consultation		3 ...		
L4 After first reading in Parliament	GO5 Government approves and publishes	MO3 Ministry approves and publishes		4 ...		
L5 Fully transposed and publishes				5 Fully transposed and in force		
				- No transposition needed		

Source: SEVEN

Table 13: National Law or Policy Initiatives

	existing	proposed	planned
Decisions and Programmes			
Energy Framework Programme			
Objectives			
Institutional adoptions			
Procedural adoptions			
Monitoring and Reporting			
Coal Subsidies			
Objectives/substantive requirements	22/1999 Sb.		
Institutional requirements	15.01.99		
Procedural requirements	State Budget Law		
Monitoring and Reporting	coal mining reduction subsidies 70031ECU/y.1999		
Environmental Agreements, General Policies and Strategies			
Combined Heat and Power			
Objectives/substantive requirements		L1	1
Institutional requirements		new act	draft to be approved by government
Procedural requirements		the Energy Management Act, expansion and utilisation of energy efficient technologies, namely higher utilisation of cogeneration of electricity and heat	
Monitoring and Reporting		dtto	
Renewable Energy Sources			
Objectives/substantive requirements		support for utilisation of alternative sources of energy	
Institutional requirements			
Procedural requirements			
Monitoring and Reporting			
Energy Efficiency			
Objectives/substantive requirements		dtto	
Institutional requirements			
Procedural requirements			
Monitoring and Reporting			
Further National Decisions, Programmes, Policies and Strategies with regard to 'Environment and Energy'			
MIT is monitoring activities of individual Czech subject appl./participating in these programs			

Source: SEVEN

6.3 Screening of Co-operation Project

Table 14: Co-operation Project Screening Table

Name of the Projekt (Acronym)	Description	Objectives	Co-operation Partners (Institution, Country)	Total Volume	Start (mm/yyyy)	(Planned) End (mm/yyyy)	Evaluation Report Available	Results, Objectives Achieved
State of the Art of Cooling Household and other major Appliances Standards, Market and Technology in CEEC	Analysis of the market situation in the CR in the area of refrigerators, freezers, combined units, washing machines and lightning.	Analyzing market situation and technical side of the appliances used.	ISIS (Italy) SEVEn (CZ)		1998	1999		
National Energy Efficiency Study	Proposal for a energy efficiency and renewable energy policy for the Czech Republic	Indicating reasons for the high energy intensity in the CR and identify possible options to tackle this problem	Worldbank - GEF ECN (NL), SRCI, March Consulting, SEVEn (CZ)		September 1998	June 1999	1999	
Black Triangle Demonstration Project	Implementing Demonstration Projects in the "Black Triangle" focused on increasing energy efficiency and decreasing air pollution	Decreasing emissions of air pollutants Energy savings Opportunities for Czech firms	Phare Energy PMU CR t.r.b. GmbH (A) Austrian Kommunalkredit AG FEWE (PL) SEVEn (CZ)	270,000 EURO	September 1997	December 1998	1999	Realisation of three demonstration projects according to objectives
National Strategy for Joint Implementation	Study for the Ministry of Environment on implementing a Joint Implementation strategy	Indicating the possibilities for the implementation of JI projects in the Czech Republic	Worldbank - GEF CZ Ministry of Environment SCRI, SEVEN (CZ)		1997	1998		
Cooperation with Municipalities	Carrying out demonstration energy-saving projects under the EU Urban and Regional Energy Efficiency Program.		NOVEM (NL) CESEN (IT) SEVEn		1998			

Source: SEVEn

Table 14: Co-operation Project Screening Table, continued

Name of the Projekt (Acronym)	Description	Objectives	Co-operation Partners (Institution, Country)	Total Volume	Start (mm/yyyy)	(Planned) End (mm/yyyy)	Evaluation Report Available	Results, Objectives Achieved
Seminars on Municipal Energy Project Development	Developing and conducting six seminars for more than 100 municipalities on municipal energy planning		The Urban Institute (US) SEVEn		1995			
Demand Side Energy Resource Assessment	Analysis of energy consumption and its structure in the town of Cesky Krumlov	Providing the town of Cesky Krumlov with an energy scenario for the future based on an integrated demand-supply approach	Battelle, PNL (US) Tecogen, Inc.(US) SEVEn (CZ)		1993	1994		
District Heating System in the City of Plzen	Proposal of options and the most cost-effective way to meet the future energy needs of the City of Plzen		Pacific Northwest Laboratories, Gilbert Commonwealths (US) SEVEn		1994			
Reconstruction and modernisation of the Heating System at the Letna Housing Development in the Town of Mimon	Rehabilitation of the district heating system	Development of a market and financial analysis + business plan	UN ECE - as part of the Energy efficiency 2000 Project SEVEn		1996			
Energy Efficiency in Hospitals and Schools	Energy audits and methodology development for audits in schools and hospitals	Increasing energy efficiency in schools and hospital through energy audits	Phare Energy PMU CR Bouwcentrum International (NL) SEVEn		1996			
Revolving fund for Energy Efficiency in the Czech Republic	A preliminary evaluation of the possibilities for establishing the 5 million ECU Phare fund for energy efficiency in the Czech Republic		Phare Energy PMU CR SEVEn					

Source: SEVEn

Table 14: Co-operation Project Screening Table, continued

Name of the Projekt (Acronym)	Description	Objectives	Co-operation Partners (Institution, Country)	Total Volume	Start (mm/yyyy)	(Planned) End (mm/yyyy)	Evaluation Report Available	Results, Objectives Achieved
Energy Plan for the City of Prague	Design of energy efficient measures at Prague facilities and review of financial resources		Phare Energy PMU CR March Consulting Group (UK) SEVEn		1993	1994		
Dečín Býnov project	Coal-to-gas switching for district heating	Joint Implementation Pilot Project between US and CR Decreasing CO2 emissions at heating plant	Center for Clean Air Policy + three US Utilities Danish Ministry of Environment and Energy Municipality of Decin CZ Ministry of Environment	9,058 million USD	April 1997			Project still carried out. Before start disagreements between US and Czech partners on credit sharing
Emission abatement at Melnik power station		Decreasing air pollution at Melnik power plant to meet new emission standards	Austrian Kommunalkredit AE & E SGP/Waagnerburo GmbH (A) CEZ a.s. (CZ)	20 million ATS	1996	1999		
Planning of heat supply in district of Prague South			Austrian Kommunalkredit Austrian Institute for Energy Economics Prague Heating Company	18 million ATS	1995	1997		

Source: SEVEn