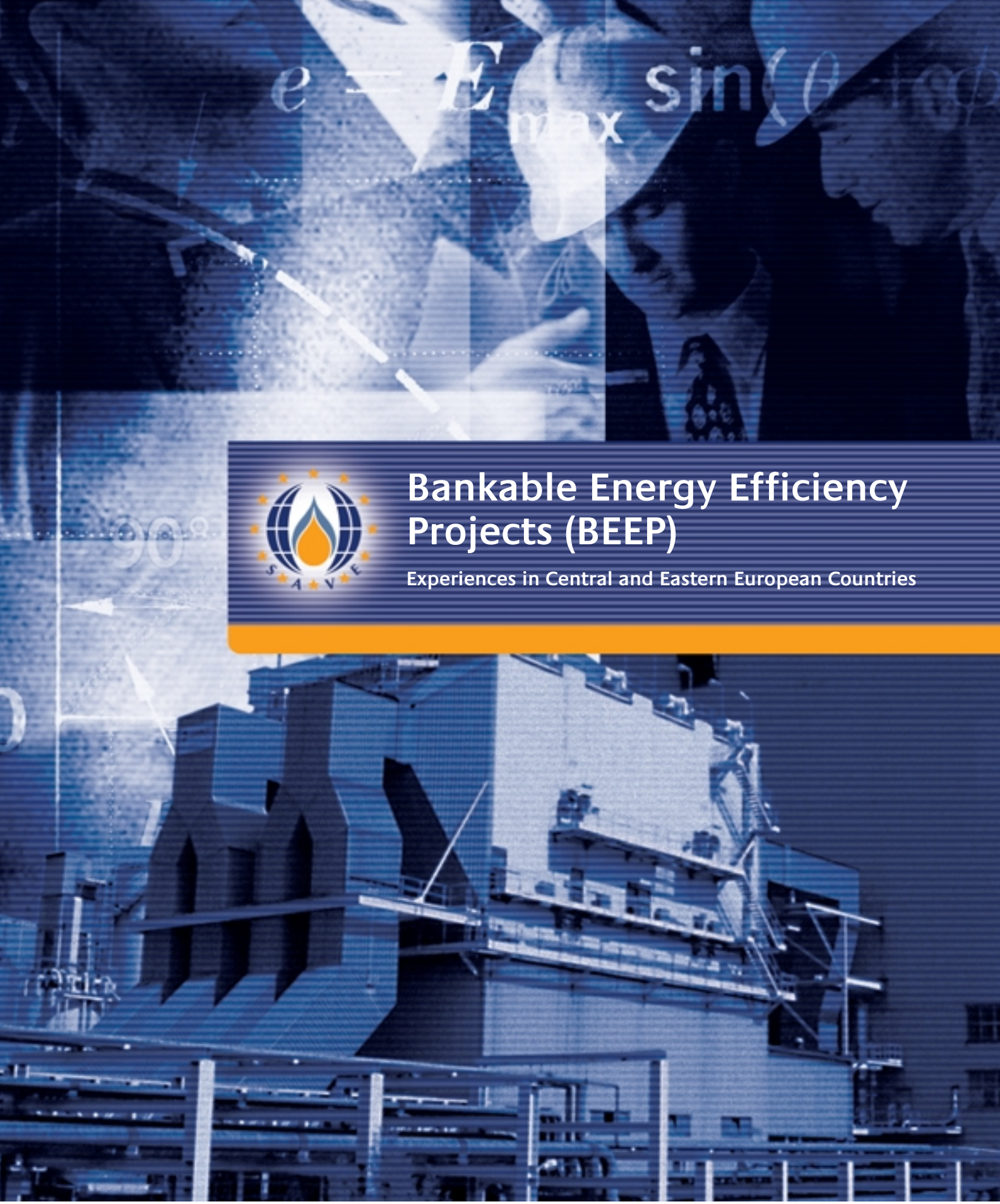

Bankable Energy Efficiency Projects (BEEP)

Experiences in Central and Eastern European Countries

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Deutsche Energie Agentur
Project Coordinator

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Imprint

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Introduction

Energy efficiency measures provide an important potential for reducing the dependence on fossil fuels and mitigating climate change. High energy efficiency standards must be considered an important building block for a sustainable future energy system. Especially in Central and Eastern Europe (CEE), large energy efficiency potentials are still waiting to be exploited. Even though many of these energy efficiency projects are economically viable, the identification, development and financing process faces substantial barriers which often hamper their implementation.

This brochure is designed to provide support in surmounting these barriers. It is addressed to all actors interested or already active in energy efficiency markets. The brochure builds on the results and experiences of the EU-funded scheme "Bankable Energy Efficiency Projects (BEEP)", which was implemented during the period from January 2003 through December 2004.

The BEEP scheme was designed to develop bankable investment projects for improving energy efficiency in various Central and Eastern European (CEE) countries (Poland, the Czech Republic, Slovakia, Bulgaria and Romania). One energy efficiency project was selected in each participating CEE country, and was developed towards financial closure. The projects thus had to meet the standards of the European Bank for Reconstruction and Development (EBRD), or of other well-known financial institutions.

The BEEP scheme was coordinated by the German Energy Agency. Moreover, the project consortium comprised the following institutions: SEA (Slovakia), ENVIROS (Czech Republic), ISPE (Romania), EEA (Bulgaria), KAPE (Poland), IFE (Norway), CRES (Greece) and E.V.A. (Austria). The scheme was supported by a Steering Committee consisting of the European Bank for Reconstruction and Development (EBRD), the KfW-Group, the United Nations Development Programme (UNDP) and the Basel Agency for Sustainable Energy (BASE).

Detailed information concerning the BEEP scheme and the respective institutions can be obtained from the project's website: www.save-beep.org.

The brochure will develop the experiences gained by the BEEP consortium along the entire value chain of energy efficiency projects, in order to provide stakeholders and market participants with the opportunity to profit from them in their own activities.

As a basis for selecting projects with a realistic prospect of implementation, the EBRD requirements concerning the financing of energy efficiency projects will be outlined in Chapter 2. The internationally accepted EBRD standards can be considered as representative for other relevant financial institutions as well.

National framework conditions concerning energy efficiency projects and their significance for EBRD requirements will be described in Chapter 3, where the reports conducted on this issue within the BEEP scheme will also be summarised.

Within the BEEP scheme, a standard project fiche and a precalculation model has been developed in order to allow for an objective project assessment. These tools and their appropriate application will be illustrated in Chapter 4.

In order to qualify for international financing, preselected projects must be elaborated in the form of a business plan. The BEEP consortium has developed a business and financial plan format based on the EBRD criteria. The key aspects of this standard format and its application for presenting bankable energy efficiency projects will be outlined in Chapter 5.

Chapter 6 will elaborate the difficulties encountered and lessons learned in the context of the identification, selection, development and financing process of the project.

Towards the end of the BEEP scheme, the experiences gained and results achieved were discussed with relevant market participants and stakeholders in the framework of the respective workshops in all participating CEE countries. The key results of the workshops will be summarised in Chapter 7.

Finally, the brochure will present overall conclusions concerning the experiences gained in the BEEP project.

In the Annex, addresses of financial institutions and potential investors who are generally interested in participating in energy efficiency projects in Central and Eastern European countries are listed.

2. EBRD Requirements Concerning the Financing of Energy Efficiency Projects

The European Bank for Reconstruction and Development (EBRD) is one of the main market participants in financing energy efficiency projects in Central and Eastern Europe (CEE). It sets standards which can be considered representative for international and national financial institutions. Therefore, it is to be recommended that project characteristics identified be crosschecked with the EBRD criteria at an early development stage, in order to allow for an appropriate project selection based on a realistic assessment of the prospects of implementation. The main EBRD criteria concerning energy efficiency projects will be outlined as a guideline for this pre-check. Further information can be obtained from the EBRD website www.ebrd.com.

It should be noted that extensive due diligence, such as financial viability, may be required before a number of these criteria can be finally deemed to have been fulfilled. Most of these criteria are not pass/fail type, and early consultation with the EBRD can clarify doubts.

2.1 Project Must Fall within Certain Sectors/Segments

- District heating (DH) rehabilitation
- Public sector (schools, hospitals, etc.)
- Energy Service Companies (ESCOs)
- Power sector (retrofitting plants, reduction of transmission/distribution losses, etc).
- Electricity and heat metering
- Industry (process, inside-the-fence cogeneration, outsourcing; etc)
- Waste-to-energy
- Renewable energy sources (RES).

2.2 Technical Feasibility, Economic Rationality and Least-Cost Solutions

The technology must be well proven, able to be physically implemented, and well adapted to the region/country. The financial internal rate of return of the project – with savings valued at current prices, or future prices if these can be reasonably predicted – should be in excess of 10% over the life of the project.

The project should be a least-cost solution that is the most cost-effective option for the end consumers based on a comparison of longrun costs at the user level for different, feasible and competitive heating sources. This analysis should be part of the feasibility study, which should also:

- Identify and evaluate the project's main components: location, volume, foreign and local cost;
- Calculate the expected savings from each component;
- Assess the duration of implementation of each component; the physical implementation period should not be longer than four years for the entire project;
- Provide all inputs needed for the financial analysis: amortisation and replacement of assets, operating and maintenance costs, changes in company structure/ownership, forecast energy prices, etc.

In most cases, feasibility studies will be carried out by foreign consultants. However, the EBRD can accept studies performed by local consultants, if their capability and experience meet EBRD standards. In some circumstances, the EBRD can mobilise Technical Co-Operation Grants to fund the feasibility study and related studies.

2.3 Project Must Be Financially Viable

- The EBRD finances projects whose projected cash flow will be sufficient at all times to service the EBRD loan and other debt.
- In certain circumstances, revenues may include subsidies paid by a public entity to the project company. While the EBRD's policy is that energy utility rates should be set at cost-recovery levels, operating subsidies to an energy supplier are permissible if they are transparent, temporary, necessary from an affordability point of view, and provide the right incentives. This is especially pertinent for district heating projects in some countries.
- All key risks must be identified, and the project should be robust towards changes in key assumptions for quantifiable risks, such as foreign exchange and energy prices, as shown by a sensitivity analysis. Alternatively, it should be possible to mitigate risks, for example through a completion guarantee or manufacturer's warranty.
- Loans are provided to public or private credit-worthy entities.
- Loans can also be provided to limited recourse projects if the sponsor bears a significant share of the risk, through equity or partial recourse – for example a technical guarantee from an ESCO – to the lender. A limited recourse project refers to a special purpose company established to implement the project with little or no financial support from the parent company.
- For projects whose cash flow primarily relies on an off-take agreement, the credit-worthiness of the off-taker and validity and enforceability of the contract are to be ascertained.
- For DH only, rates must remain affordable, or a social safety net must be set up to protect lower income groups. The affordability ratio – the total heat bill/average household income in a city, region or country – varies between countries. For heat, it should normally not exceed 8%.

2.4 Project Must Be Located in an EBRD Country of Operation

Projects that are financed by the EBRD should generally be implemented in one of the following countries.

Countries generally eligible for EBRD finance		
Albania	Georgia	Romania
Armenia	Hungary	Russia
Azerbaijan	Kazakhstan	Serbia & Montenegro
Belarus	Kyrgyz Republic	Slovak Republic
Bosnia & Herzegovina	Latvia	Slovenia
Bulgaria	Lithuania	Tajikistan
Croatia	FYR Macedonia	Turkmenistan
Czech Republic	Moldova	Ukraine
Estonia	Poland	Uzbekistan

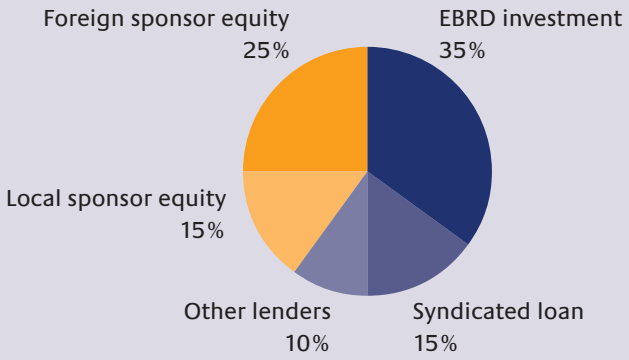
2.5 EBRD Funding Criteria

- Generally, EBRD participation in projects ranges from €5 million to €250 million.
- Significant equity contributions in cash or in kind are required from the project sponsor.
- The project must benefit the local economy.
- It must satisfy the EBRD's environmental standards as well as those of the host country.
- Smaller projects are almost always financed through financial intermediaries. In exceptional cases, the EBRD can consider financing smaller projects.

2.6 Project Structure

- The Bank tailors solutions to client and project needs, and to the specific situation of the country, region and sector. It assigns a dedicated team of specialists with expertise in project financing, the region and sector involved, the law and the environment.
- The EBRD funds up to 35% of the total project cost for a greenfield project, or 35% of the long-term capitalisation of an established company.
- Additional funding by sponsors and other co-financiers is required. The EBRD may identify additional resources through its syndications programme.
- Typical private sector projects are based on at least one-third equity investment.
- Significant equity contributions are required from the sponsors. Sponsors should have a majority shareholding or adequate operational control. In-kind equity contributions are accepted.

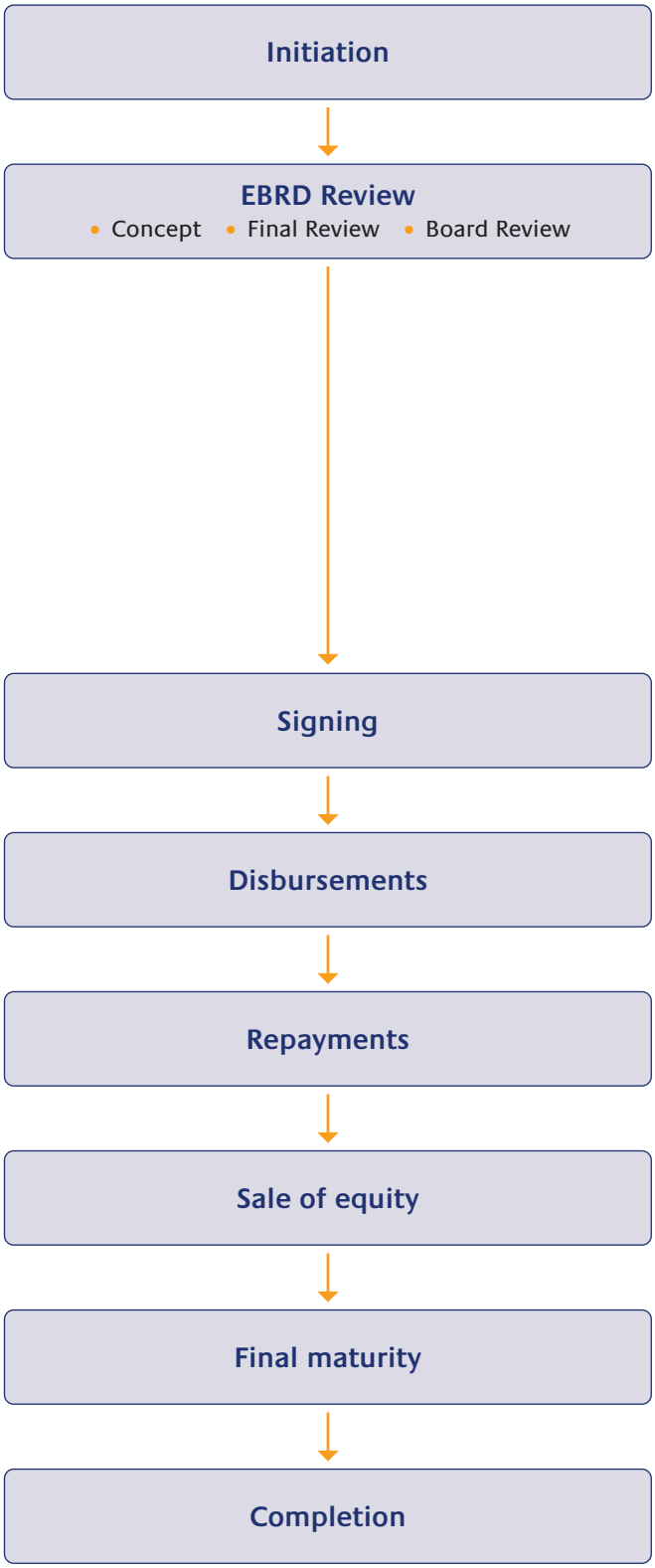
Illustrative capitalisation structure



When the EBRD has all the necessary information, a deal typically takes three to six months from initial contact to signing. In some cases, however, this can be shorter. The total project cycle, from initiation to repayment, can range from one year for working capital or trade financing projects to fifteen years for long-term sovereign infrastructure projects.

2.7 Project Cycle

The EBRD project cycle consists of the following stages:



Concept Review – The EBRD's Operations Committee (OpsCom) approves the project concept and overall structure, including the proposed financing structure and supporting obligations. At this stage, the EBRD and the client sign a mandate letter, which outlines the project plan, development expenses and responsibilities.

Final Review – Once the basic business deal (including a signed term sheet) has been negotiated and all investigations have been substantially completed, the project receives a Final Review by OpsCom.

Board Review – The EBRD President and operation team present the project to the Board of Directors for approval.

Signing – The EBRD and the client sign the deal and it becomes legally binding.

Disbursements – Once repayment conditions are agreed upon and the Bank's conditions have been met, funds are transferred from the Bank's account to that of the client.

Repayments – The client repays the loan amount to the EBRD under an agreed-upon schedule.

Sale of equity – The Bank sells its equity investments on a non-recourse basis.

Final maturity – The final loan amount is due for repayment to the Bank.

Completion – The loan has been fully repaid and/or the EBRD's equity investment divested.

Operations Committee – The Operations Committee consists of senior management from Banking, Finance, the Office of the General Counsel, the Office of the Chief Economist, Evaluation, and Operational and Environmental Support.

3. Summary of National Framework Conditions and their Significance for EBRD Requirements

In this summary, which is compiled by the CEE partners participating in the BEEP project, national framework conditions for financing investments in energy efficiency are presented. This covers the respective national policy or strategy for the energy sector as well as the environment. Moreover, the current legal framework for measures in the context of energy efficiency is described. In the economic frameworks subchapter, the energy balances of the countries are briefly described, coupled with an overview of mainly demand side heat and power pricing. Subsequently, an introduction to national financing conditions for energy efficiency investments is provided. Finally, a description is given of the target sectors of the BEEP project.

The full reports of national framework conditions are downloadable from the BEEP project website: www.save-beep.org.

3.1 Bulgaria

3.1.1 Energy Policy and the Position of Energy Efficiency

The development of the energy sector in Bulgaria over the past three years has been marked by one main objective: the harmonisation of Bulgaria's steps and measures with the requirements and criteria of the European Union (EU). Evidence of this is the conclusion of negotiations on the Energy Chapter in 2002.

Bulgaria imports more than 70% of its primary energy sources. The Bulgarian economy continues to consume twice as much energy per unit of GDP as the economies of Western Europe. That is why the key strategic objective of the economy should be the rational use of energy sources.

The Energy Strategy of the Republic of Bulgaria, approved in July 2002, outlined the country's energy policy and the principal reforms envisaged for the sector, where the leading priority is, in effect, the establishment of a competitive energy market. A substantial portion of the energy efficiency measures proposed in the National Strategy refer to the supply side, particularly the rehabilitation and modernisation of generation plants and district heating systems. Energy efficiency measures on the demand side focus on regulation and standards.

3.1.2 Environmental Policy and the Position of Energy Efficiency

The Ministry of Environment and Water is responsible for the environmental policy of Bulgaria, which is based on the Environmental Protection Law adopted in 1991. It defines the financial mechanisms for supporting environmental projects, including energy projects. The energy industry is the main source of emissions of carbon dioxide and sulphur oxides in the country.

In 1995, Bulgaria ratified the UN Framework Convention on Climate Change. In accordance with the Kyoto Protocol signed under this Convention in December 1997, Bulgaria made a commitment to reduce anthropogenic emissions of greenhouse gases by 8% during the period 2008-2012, compared to the 1988 emissions level.

3.1.3 Legal Framework for Energy Efficiency.

As an integral part of energy policy of the country, the state policy on promotion of EE is implemented by the Minister of Energy and Energy Resources. The measures and activities on EE enhancement are implemented by the Executive Director of the Energy Efficiency Agency to the Minister of Energy and Energy Resources, together with the central and territorial bodies of the executive authority and other state offices.

The key document for the implementation of the national energy strategy is the Energy Law (EL) adopted in Dec. 2003. It establishes the overall legal framework under which all other energy-related legal and regulatory acts must follow, and creates the parameters for sector operation as a whole and for promotion of generation from renewable sources and CHP in particular. It sets in place a regulatory environment under which the key regulatory responsibilities (licenses, energy prices and rates) are vested with the State Energy Regulatory Commission.

The Energy Efficiency Law adopted in Feb. 2004 regulates the public relationships connected with the conduction of the state policy for improvement of EE. In particular, it settles the elaboration and the implementation of long and short term national, sectoral, regional and municipal programmes and projects for realisation of EE policy.

3.1.4 Economic Framework for Energy Efficiency

Electric power supply: The total installed power generating capacity of Bulgaria is 12,668 MW, including:

- 6556 MW in the thermal power plants (TPPs), or 51.7%;
- 3760 MW in the Nuclear Power Plant, or 29.7%;
- 2352 MW in the hydropower plants (HPPs) and the pumped storage HPPs, or 18.6%.

Of the thermal power plant generation, about 1240 MW comes from co-generation power plants owned by large industrial enterprises, and about 793 MW from those owned by district heating companies. The utilisation of these capacities depends on the existing thermal and industrial load, and has shrunk by more than half in recent years.

Heat supply: The district heating sector accounts for about 22-23% of the energy balance sheet at the level of final consumption. Heat generation, based mainly on burning natural gas, represents the main type of heating and the most cost-effective and environmentally friendly option for

densely populated urban areas with multi-storey buildings. Local gas fired heating plants and direct combustion of natural gas are a serious alternative to district heating, but the development of new gas networks is not competitive, compared with the already existing district heating networks. In the long run, significant growth in heat energy consumption is not to be expected, either in the industrial or in the household sector.

Natural Gas: The gas sector plays an important role in the economy of Bulgaria. A large share of the natural gas is used for energy, mainly by thermal power plants and co-generation units. The use of natural gas for household purposes is negligible. Its share in the energy balance sheet is approximately 12%.

3.1.5 Energy Pricing Policy

The Bulgarian government has adopted a timetable according to which prices of electricity and heat for households are to cover the cost of their production and supply to end-users plus a reasonable rate of return by the end of 2005. In this context the energy savings measures have to be seen not just as measures minimising energy intensity, but also as a very important factor mitigating the economic and social consequences of price reform. The energy heat prices for household consumers are still subsidised by the state budget.

The EL states that the transport or distribution companies must purchase the power produced by renewable sources or from CHP stations at preferential prices. The actual purchase price for electricity from HPPs is 70,24 or 80 Leva/MWh depending on the type of the plant; from wind generators with capacities of up to 10 MW, it is 120 Leva/MWh; and from CHP stations, it is at an average of 80 leva/MWh. The purchase prices from conventional power stations range between 38 and 62 leva/MWh (1€ = 1.95583 leva).

Concerning the introduction of financial incentives for electricity generation from RES in a competitive electricity market, the EL stipulates the introduction of a system for issuing of and trade with green certificates (TGC system), which is to replace the feed-in rates (preferential pricing) for electric power from RES.

3.1.6 Financing Framework for Energy Efficiency

Lack of capital and other investment restrictions are among the main barriers to the realisation of energy efficiency projects in Bulgaria. The lack of commercial financial resources and interest on the part of private investors is due to the high risk and low awareness. The main approaches to overcoming these barriers could be: state guarantees or international financial support, together with commercial loans.

National financing: To date, local commercial banks have no traditions of financing of EE or RES projects. They have no specialised teams for the assessment of such projects, and usually use the services of external consultants for this purpose.

Currently, when applying for financing by local commercial banks, the investor of an EE or RES project has to comply with the general conditions for providing loans, which are similar to the conditions for any other area of financing (at an interest rate of about 12-15%, collateral required on loans is usually 150% of the principal).

USAID and the United Bulgarian Bank's lending facility for Municipal Energy Efficiency Projects provide loans, under which 30% of the loan principal is guaranteed by USAID through the application of the Development Credit Authority mechanism in Bulgaria.

The Bulgarian Energy Efficiency Fund (BEEF) will start its activity in early 2005, providing loans and guarantees for EE projects in almost all end-use sectors.

There is as yet no company in Bulgaria with a strong position which functions as an energy service company (ESCO), nor is there any EE services market. In most cases, the projects implemented are at the municipal level, and are not the result of increased market demand, but rather the consequence of local initiatives.

Foreign financing: Single energy efficiency projects are usually not of interest to such international financial institutions as the World Bank, the European Bank for Reconstruction and Development, or the European Investment Bank, because of the small size of the required investment.

The Kozloduy International Decommissioning Support Fund (KIDSF), established at the EBRD in 2002, focuses international support on essential investment projects for Bulgarian energy sector development and improved energy efficiency.

With KIDSF participation, the EBRD has designed the Energy Efficiency and Renewable Energy Credit Line Facility to support the new Bulgarian EL by overcoming market imperfections which hamper the energy conservation market in Bulgaria.

National or international funds and programmes that provide possibilities for loans or grants for EE or RES projects include: the Enterprise for Management of Environmental Protection Activities, the National Trust Ecofund, the State Fund "Agriculture", the Social Investment Fund, the Global Environmental Facilities (GEF), and the international programmes of the EU (PHARE, SAPARD), the USA (USAID), or of Germany, Austria, Denmark, the Netherlands, the UK and Japan.

3.1.7 End-Use Sectors

Industry: The industrial sector continues to have the highest share in the balance of final energy consumption, and generates about 25% of the Bulgarian GDP. The specific energy consumption per unit of production is increasing, and in the various sub-branches it is around 15-30% higher than in European Union countries.

The preliminary expert's analysis shows an energy savings market potential of at least 30% of the energy consumption of the industrial sector. By means of implementation of target-oriented measures for improvement in EE, a reduction in the energy intensity of the GDP share produced by the industrial sector by 15% by 2005, and by 25% by 2010, is envisaged.

Buildings: The majority of the buildings in Bulgaria were built during the years when energy prices were low, so that external structural components have real heat transmission coefficients three to five times higher than the standards for new buildings, which were established in Bulgaria in 1999.

Concerning the rehabilitation of the existing building stock, a reduction of the specific energy consumption of concrete-plate buildings from more than 200 kWh/ sq.m./yr. at least to approx. 150 kWh/sq.m./yr. (a reduction of 25%) is expected.

It is assumed that the specific energy consumption of the new building stock will not be more than 100 kWh/sq.m./yr., a reduction of about 40% of current energy consumption. The new EE Act provides for some financial incentives aiming at encouraging the households to implement measures for energy savings in buildings: A tax relief for the buildings that received a certificate, issued by the order of the EE Act for a period of 5 to 10 years depending on the category of building. Low-interest loans for residential EE will be provided soon by the BEEF and under a new Residential EE Credit Line Facility which is being designed by the EBRD with the support of the KIDSF.

District heating systems: Based on the comparative characteristics of alternative heating methods, it appears certain that the existing heating infrastructure, after appropriate rehabilitation and modernisation, would be the most effective instrument for meeting major heating needs at the lowest cost to society.

The heat supply services of the heating companies are used by some 20% of the population (approx. 570,000 residential units), while public and production buildings have a heating volume equal to that of 273,000 residential units. That heat represents 10-11% of final energy consumption.

The potential for fuel consumption reduction by district heating power plants is greater than 40%. It is assumed that implementation of energy efficiency measures could reduce the energy consumption of these plants by 20% by 2005.

3.2 Czech Republic

3.2.1 Position of Energy Efficiency at the State Level

The Czech National Energy Policy was approved by the Government of the Czech Republic in January 2004. Energy policy is closely related to the economic and raw material resource policy of the country (co-ordinator: the Ministry of Industry and Trade), and respects the objectives and priorities of state environmental policy (co-ordinator: the Ministry of the Environment).

The policy emphasises requirements for ensuring environmental protection and respect for the principles of sustainable development, security of energy supplies and economic competitiveness. Within this framework, quantified objectives of the policy have been established for energy intensity reduction and increased use of renewables, in addition to the completion of energy sector reform and the promotion of a fuel mix that avoids excessive dependence on imports. Details of this policy are described in the full National Report (p. 2).

The key issues regarding energy efficiency and related environmental aspects within the Czech Energy Policy are to continue a system of support for energy savings, and maximisation of energy efficiency in production, transport and use of energy. As regards energy supply, the policy defines the objectives of achieving an 8% electricity production share for renewables by 2010, of optimising production of nuclear power, and of the promotion of the use of domestic resources. Legislation has already been harmonised with the EU, and, through the Energy Management Law, energy efficiency standards for appliances, new and rehabilitated plants, buildings and distribution networks have been introduced, in addition to mandatory energy audits and an authorisation scheme for energy auditors. The enhanced environmental protection in the Czech Energy Policy have been supported by the National Programme for Energy Efficiency and Use of Renewable and Waste Energy Sources (Programme approved by the Government in May 2001 for four years, after which it is to be replaced by an updated one.), whose specified priorities are described in detail in the full National Report (p. 3).

The general objectives of the environmental policy (incl. environmental impacts of energy conversion and end use) are to implement the principle of sustainable development; to employ direct and indirect policy tools to systematically protect and improve the status of all components of the environment; to increase the effectiveness of economic instruments in environmental protection; to enforce compliance with the requirements of harmonised legislation on environmental protection in practice, and to check compliance at the national, regional and local levels; to participate in international co-operation, and to contribute to resolving global environmental issues; to deal with environmental issues closer to their source by transferring an appropriate part of substantive decision-making to the regional authorities and municipalities;

and to strengthen the role of research and development in the area of environment protection.

Regarding national climate change strategy targets (CO2), the Czech Republic acceded to the UNFCCC in 1993. In December 1997, the Kyoto Protocol was adopted. Within the Climate Change Strategy of the Czech Republic, two key instruments for reducing CO2 emissions have been adopted: increased energy efficiency of energy production, distribution and end use; and wider use of renewable energy sources. In 2004, the National Programme for Climate Change Abatement was adopted as a requirement of the Clean Air Law (No. 86/2002 Coll.). This programme developed new national targets for the reduction of greenhouse gas emissions, even though the expected emissions in 2012 will be approx. 67% of the 1990 the level. Measures to achieve further CO2 reductions have been specified for each sector of the economy, and mainly include energy efficiency increases and extended support for renewable energy for both electricity and heat production and for transport.

During the period from 1990 to 1999, consumption of primary energy sources decreased by about 26%, and the energy intensity of the economy by 23%. Total emissions of pollutants dropped dramatically, particularly for such major pollutants as dust, SO2 and NOx, and have decreased steadily since 2000, with the aim of achieving national emissions ceilings in 2010. A table showing this tendency is available in the full National Report (p. 5).

The Emissions Ceilings set for the Czech Republic (according to the new Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone to the UNECE CLRTAP) foresee 265 kt p.a. for sulphur dioxide, 286 kt p.a. for nitrogen oxides, 220 kt p.a. for volatile organic compounds and 80 kt p.a. for ammonia. The Czech Republic does not as yet meet the ceiling set for nitrogen oxides (incl. NO2). About 62% of the NOx emissions originate from transport.

3.2.2 Legal Framework for Energy Efficiency

There are several acts in force, which apply to sub-sectors of the energy production sector and to energy end users:
A detailed list of relevant legal norms is described in the full National Report (p. 6).

- Law No. 458/2000 Coll. on Business Conditions and Public Administration in the Energy Sectors (the Energy Law);
- Law No. 406/2000 Coll. on Energy Management;
- Clean Air Law (Law No 86/2002 Coll.); and
- Law on IPPC (Law No 76/2002 Coll.).

Regarding licensing, the Law states that natural or legal persons may do business on the territory of the Czech Republic in the energy sector only on the basis of state approval, i.e., with a licence issued by the Energy Regulation Office. A licence is issued for a set period for generation of electricity and gas, transport of electricity and gas, distribution of electricity and gas, storage of gas, and generation and distribution of thermal energy. The licences are issued for at least twentyfive years. In addition, licences are also issued for trade in electricity and gas for a fixed period of at least five years.

The Energy Law has introduced a state authorisation system for select types of investment, which covers construction of generating units of electricity with total installed capacity of 30 MW and more, direct power lines, direct gas pipelines, underground gas storage reservoirs, gas pipelines connecting the gas system with foreign gas systems, gas pipelines with pressure levels higher than 0.4 MP, and heat production units with a total thermal output of 30 MW or more.

Incentive tools for the utilisation of renewable energy sources include the mandatory purchase of electricity from RES generation by the distribution system operator (“DSO”), a regulated price for this purchase as a minimum price stipulated by the Energy Regulatory Office Price Resolution, and priority rights of access to the grid for electricity generated from renewable energy sources, or in cogeneration directly connected with heat production.

The Energy Management Law sets out the obligation to formulate a “National Energy Policy”. According to the Law, the National Energy Policy is a strategic document with a twenty-year perspective, which expresses the goals of the state in energy management in accordance with the needs of economic and social development, including the protection of the environment. The Law stipulates mandatory Regional Energy Plans for all fourteen regions and for all corporate towns (currently 14). The Law also stipulates the necessity to prepare a “National Programme for Energy Efficiency and Use of Renewable and Waste Energy Sources”. The Programme is subject to approval by the government, and is valid for four years. The Law stipulates minimum energy efficiency standards for new or reconstructed plants and networks for electricity producer/suppliers and heat producers and suppliers. In the production of household appliances, labelling has been made mandatory by the Law. The Law also introduced energy efficiency standards for new and reconstructed buildings (in addition to technical standards), and rules for their energy efficient heating. Energy auditing became mandatory for legal persons with energy consumption above specified thresholds, private bodies with annual aggregated consumption greater than 35,000 GJ, and public bodies with the consumption greater than 1500 GJ.

The sub-chapter dealing with environmental regulation contains a brief review of legal requirements on operators of energy production and distribution facilities (i.e. compliance with environmental standards). For the power and heat production sectors, two applicable major acts came into force in 2002: Law No. 86/2002 Coll. on air quality protection, which updated the Czech legal requirements already set in the CR for combustion processes (strict emission limit values for all boilers with installed capacities above 0.2 MW had already been in place for years), and harmonised Czech law with all relevant EU directives; and Law No 76/2002 Coll. on integrated pollution protection and control, that regulates pollution of energy production facilities and energy efficiency improvements for all installations subjected to the Law on IPPC.

Average end-user prices of electricity		
Year	Electricity-industry CZK/kWh	Electricity-households CZK/kWh
1990	0.53	0.48
1991	1.24	0.48
1992	1.46	0.81
1993	1.53	0.85
1994	1.62	0.93
1995	1.61	0.99
1996	1.61	1.04
1997	1.64	1.17
1998	1.67	1.60
1999	1.67	1.77
2000	1.66	2.10
2001	1.62	2.27
2002	1.62	2.49
2003	n/a	n/a

Note: the electricity price for industry does not include VAT (VAT is refunded; the price for households includes VAT. Prices for 2002 are averages for the first two quarters of 2002.
Source: Ministry of Industry and Trade, quarterly reports to the IE

Average end-user prices of district heat	
Year	District heat-households CZK/GJ
1995	154.84
1996	170.12
1997	208.85
1998	289.33
1999	298.15
2000	309.44
2001	330.77
2002	339.61

Note: The price for households includes VAT.
Source: Czech Statistical Office

Average end-user prices of coal			
Year	Brown coal – industry* CZK/t	Brown coal – power generation** CZK/t	Brown coal – households*** CZK/t
1990	235	134	272
1991	338	195	585
1992	389	212	597
1993	417	226	727
1994	424	239	804
1995	445	256	880
1996	434	268	606
1997	471	282	660
1998	509	306	837
1999	525	333	924
2000	558	308	997
2001	579	306	1031
2002	591	279	1101
2003	n/a	n/a	n/a

Source: Ministry of Industry and Trade, quarterly reports to the IEA
* Brown coal, industrial mixtures, 14.5 - 17 GJ/t
** Brown coal, industrial mixtures, 9 - 13 GJ/t
*** Brown coal, sorted (orech 1), 14.5 - 17 GJ/t

Average end-user prices of natural gas		
Year	Natural gas-Industry* CZK/kWh GCV	Natural gas-households CZK/kWh GCV
1990	0.187	0.098
1991	0.351	0.228
1992	0.330	0.228
1993	0.329	0.239
1994	0.340	0.276
1995	0.359	0.286
1996	0.383	0.307
1997	0.415	0.351
1998	0.443	0.492
1999	0.425	0.551
2000	0.490	0.711
2001	0.510	0.762
2002	0.514	0.805
2003	n/a	n/a

Source: Ministry of Industry and Trade, quarterly reports to the IEA

Average end-user prices of light fuel oils		
Year	LFO-Industry* CZK/t	LFO-households** CZK/t
1990	3569	774
1991	4551	1476
1992	4842	2130
1993	5270	5534
1994	4900	5586
1995	7835	9559
1996	6469	9561
1997	6869	10049
1998	6951	10222
1999	7996	11499
2000	11546	13275
2001	9115	12913
2002	7410	10834
2003	n/a	n/a

Source: Ministry of Industry and Trade, quarterly reports to the IEA
* excl. VAT, excl. excise tax (refundable)
** incl. VAT, excl. excise tax (refundable)

3.2.3 Financing Framework for Energy Efficiency

The experience of the banks with energy projects differs. For most banks, energy projects involve either plant and/or distribution network reconstruction, or greenfield construction. Energy efficiency projects, being mostly of smaller size, are usually included as a standard credit, with low attention paid to reliability of project revenue, or project cash-flow assessment. The assessment of energy projects by commercial banks has improved. For banks, large cities seem to be more reliable clients (higher tax revenues) than small municipalities or businesses. By law, state organisations cannot borrow from banks. In the full National Report (p. 24 et seq.), the concepts of leasing, equity financing and TPF are described in more detail. Also, a comprehensive overview on available grants for EE capital costs and available soft loans for EE can be found in the full National Report (p. 26 et seq.).

3.2.4 SAVE II BEEP Target Sectors

Final consumption of energy is largest in industry (including manufacturing, the energy sector and the construction industry), and industrial energy efficiency has become a priority, too, under the programming document for the EU Structural Fund support available from 2004 to 2006. Energy efficiency is to contribute to an overall increase in the Czech SME sector, and to an improvement of its competitiveness, and to bring environmental benefits. Increased energy efficiency in industrial SMEs and in public DH boiler houses is to be achieved mainly by investment in new technology introduction, plant and distribution pipe reconstruction, increased regulation, metering and control device installation, increased thermal insulation qualities of industrial buildings, compressed air systems, heat recovery, driver modernisation, and increased managerial capacities in the field of energy. In the National Energy Efficiency Study, the potential for energy efficiency improvements in the building management sector in the Czech Republic has been established, as have targets for individual sectors, based on economic evaluation of available technical measures. To realise a part of this potential, energy efficiency requirements for new and renovated buildings are contained in several laws and other regulations.

District heating is widely used in the Czech Republic as source of heat for apartment blocks and offices. The surplus heat from these heating plants can be effectively used for electricity generation. However, this is not the case in many smaller Czech towns, and cogeneration presents a significant energy savings potential. In the rehabilitation of district heating systems, the need for retrofitting was huge, and was called for by new air protection legislation in 1997 and by the need to modernise obsolete coal-based structures with a steam distribution network which had high losses. The barriers that existed in the DH systems to financing reconstruction have been mostly overcome by the use of ESCOs, privatisation of the systems, and especially by increases in heat prices allowed by the regulation. With CHP technologies, capital intensity is high compared with other heat supply solutions. Compared to heat-only solutions, CHP plants require higher investments: by 30-40% for coal fired plants, and by 300-400% for natural gas units. Further improvement of the current situation will involve fuel switching, refurbishment of boiler plants and implementation of CHP technology. Rehabilitation of district heating pipes and a switch from steam to hot water systems will be an option for improving both energy efficiency and the economic viability of district heating.

3.2.5 Economic Framework for Energy Efficiency

The Czech electricity market is in the process of step-by-step liberalisation. The schedule, set by the Energy Law, provides for the following steps: 2002 was the start of the opening of the electricity market. In 2003, the market for consumers with consumption above 9 GWh was opened. In 2005, the market will be opened for consumers with consumption above 100 MWh. In 2006, all customers will be allowed to choose their suppliers.

In the heat market, there have been no state subsidies of district heat prices since 1998. The price of district heat for commercial consumers has been regulated using the cost-plus regulation method since 1991, and since 1 June 1998, cost-plus regulation of district heat prices has been used for households as well. The price of district heat depends significantly on the type of the district heating source, its age, and the fuel used. In general, the most expensive heat is produced in systems based on oil-fired (up to 450 CZK/GJ) and natural gas-fired sources (300-400 CZK/GJ), while the cheapest heat is from coal-fired sources (200-300 CZK/GJ).

The mechanism of pricing for natural gas is the same as for electricity. Cross-subsidies have already been removed, and prices for both the household and retail sectors reflect the technical conditions of supply. Deregulation follows market opening, which for gas has been specified by Part 2 (gas) of the Energy Law. The market is to open in 2005 for all gas based electricity production and for consumers with annual consumption of more than 15 mil. m^3 in 2003. In 2006 the market will open also for other consumers with the exception for households, who will become eligible for open market in 2007.

Currently, coal prices in the CR are deregulated and market based. Prices of coal were regulated in the CR until 1994; the deregulation of coal prices for various groups of consumers occurred gradually between 1990 and 1994.

The oil and liquid fuels market has been entirely liberalised in the Czech Republic – crude oil is now purchased at international prices, and as of 1994, price controls on oil products were abolished.

All fuels/energy carriers in the Czech Republic are subject to value-added tax (VAT). No carbon/energy tax has been applied so far. In 2003, all energy sources for end use have been subject to the basic VAT rate of 22%, except heat and biomass fuels, which are subject to a reduced rate of 5%. For heat VAT of 19% will apply in 2007. Light fuel oil is subject to an excise tax, which is refundable if the fuel is used for heating. The details regarding applied types and levels of taxes are presented in the tables. There are tax exemptions/incentives for renewables-based generation of heat and electricity.

3.3 Poland

3.3.1 Position of Energy Efficiency at the National Level

Transformations in the economy and restructuring of industrial sectors have resulted in a change in energy consumption patterns. Between 1988 and 1991, consumption of primary energy dropped by 23 per cent (or 29 MTOE, million tons of oil equivalent) and stabilised at the level of 96 MTOE. Basic indices for the past decade are presented in Table 1 in the full National Report (p. 4). In fact, very little is yet known about energy efficiency in Poland. The available data is very scarce and hardly compatible with international standards.

General barriers to improvement of energy efficiency identified in Poland are management know-how problems, a lack of legal regulations which reflects the state of governmental organisation, a lack of any political lobby supporting a rational energy use policy, a lack of any effective and broad-scale organisational structure responsible for realisation of government policy in the field of energy efficiency and conservation, a lack of sufficient awareness on the part of actors, a lack of information relating to economic tools adapted to the national energy economy, low cost-effectiveness of energy efficiency projects, a lack of economic incentives for the introduction energy efficiency measures, difficulty in access to appropriate capital sources, and technical barriers.

The main barriers to energy efficiency investment in industry found by the KAPE survey are lack of funds for improvement, out of date equipment, lacking or inadequate governmental measures for promotion, uncertainty of benefits stemming from investment in equipment improvement, insufficient information on energy conservation policy, indefinite prospects for future production, an insufficient number of measurement instruments, and low awareness of energy conservation on the part of employees.

The second Polish Environmental Policy defines short-term (by 2003) and medium-term (by 2010) goals, tools and instruments for realisation. The document presents neither investment nor non-investment activities.

For Poland's national Climate Change Strategy, the most important commitments for the Polish energy system are those set by the UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol and the Geneva Convention on Long-Range Transboundary Air Pollution, and its Protocols.

The most important pollutants emitted by the energy system in Poland are SO2, NOx and CO2. The national emissions limits, resulting both from the Current and Stringent Environmental Policies are described in detail in the full National Report (p. 16).

3.3.2 Legal Framework for Energy Efficiency

On 10 April 1997, the Polish Parliament adopted new Energy Law, which deals with the security of national energy supply, efficient and rational use of energy and fuels, utilisation of renewable energy, introduction of competition, protection of consumer interests and minimisation of costs. In the full National Report, the purpose of the act, its stipulations, its general mechanisms and the basic goals of Polish energy policy are explained in detail (p. 18 et seq.). With the implementation of this act, a free competitive market is to be created for the production and trade in electric energy, with all issues relating to the energy economy to be supervised by the Energy Regulatory Authority. The new Energy Law has changed the formal and legal bases for the functioning of the power sector in comparison with the previous legal state regulation, the Law of 6 April 1984 on the Energy Economy. It imposed new duties upon power companies, with provision for the protection of the interests of customers against unjustified price increases and growing requirements in the field of environmental protection. Energy efficiency itself is deeply embedded in the Energy Law.

The Law creates conditions for sustainable development of the country, and also has the goal of establishing a competitive market and regulatory framework for the regulation of monopolies. The effect will be to bring Poland in line with the direction of changes embodied in the Energy Charter Treaty.

The Law on Support for Thermo-Modernisation Investment in Buildings defines rules for supporting thermo-renovation activities aiming at decreasing energy consumption for heating and hot tap water production supplied to private homes, residential buildings and public buildings, reducing energy loss in district heating networks and energy sources, and total or partial replacement of conventional energy sources with renewable and other alternative energy sources. After realisation of the investment, a so-called "thermo-renovation award" is granted, covering 25% of the credit.

The Environmental Protection Law defines energy installations which require no authorisation for emission of gases and dust into the air, i.e. coal fired heating installations with nominal capacities of less than 5 MWt, heating installations with nominal capacities of less than 10 MWt fired by coke, wood, straw and/or oil, and gas fired heating installations with nominal capacities of less than 15 MWt. The installation operator applies for blanket permission to an environmental organ. This permission is granted for a period of less than ten years. The three decrees of the Minister of Economics are described in detail in the full National Report (p. 21f).

3.3.3 Economic Framework for Energy Efficiency

A comparison of prices of electric power, gas, fuel oil and heat supplied from networks in Poland and in the EU countries, respectively (shown in Table 11 in the full National Report, p. 23), shows that electricity prices in Poland are lower than EU prices: for industrial customers by 43-46%, and for households by 150%. Natural gas prices in Poland are generally higher than EU prices: for industrial customers by 55-93% and for trade and services by 15%, but lower by 15-86% for households. Oil prices in Poland are lower than EU prices: for industrial customers by 4%, for trade and services by 8%, and for households by 6%. Finally, district heat prices in Poland are lower than EU prices by 87-150%.

Consumer heat prices vary widely in Poland, depending on the size of the heat supply system, the technology and many other factors. The highest consumer price is several times higher than the lowest consumer price. The range of average heat prices in various municipalities is shown in Tables 13-15 in the full National Report (p. 26). On average, the heat price in 2001 was 5.94% higher than in 2000.

As regards the energy pricing mechanism, heat prices were

liberalised as of January 1999. Approval of the rates by the Energy Regulatory Office is required. The energy pricing process field includes two kinds of mechanism: 1) regulated pricing, whereby agreed-upon prices for electric energy, lignite, gaseous fuels and heat are subject to state control, and the Energy Regulation Office approves and controls the rates and the agreed-upon prices; and 2) competitive market pricing, whereby the Energy Regulation Office may release an energy enterprise from the duty to submit rates for approval, and contracts on the energy spot market can be concluded without state approval of prices.

A new mechanism for setting energy prices has been established. The government has gradually moved away from centrally fixed prices towards prices based on competition and determined by energy producers under the supervision of the ERO.

Regarding taxation, the table below shows VAT rate changes for fuels and energy in Poland, 1993-2002:

VAT rates for fuel and energy in Poland, 1993–2002

Energy carrier	1993–1995	1996	1997	1998	2002
bituminous coal, electricity, heat, light fuel oil, LPG	7%	12%	17%	22%	22%
liquid fuels	22%	22%	22%	22%	22%
electricity	0	0	0	0	22%

3.3.4 Financing Framework for Energy Efficiency

Energy efficiency and renewable energy sources projects are financed by ecological funds, investors' own sources and bank credits, the central budget, local budgets, and foreign financial support. The various types of EE and RES project financing available on the market may be divided into financial obligations (credits, loans, leasing); capital shares (stocks and shares); and subsidies.

Investors on the financial EE and RES market include national environmental funds, the Environmental Protection Bank (BOS SA), the Bank of National Economy (BGK), commercial banks, agencies and support programmes, TPF-ESCOs, leasing institutions, international financing institutions, and international financing programmes.

A chart showing the financial EE/RES scheme is included in the full National Report (p. 31).

The National Fund for Environmental Protection and Water Management, the central environmental fund in Poland, was established to protect the Polish environment on the basis of the amendment Law of 27 April 1989 on the management and protection of nature. The main objective of the National Fund is to finance projects which serve the protection of the environment. These projects have been described in the National Environmental Policy adopted by the Polish Parliament in 1991 and specified in the Implementation Programme for the National Environmental Policy by 2000. Priorities range from 1) protection of bodies of water from contamination; 2) protection of the air from contamination through the prevention and reduction of pollution emissions and conservation of raw materials and energy; 3) protection of the air, soil and water through the prevention of waste generation, waste treatment and the re-cultivation of degraded land; and 4) application of environmentally friendly technology to ensure cleaner and more energy efficient production. More detailed elaborations on each of these priorities can be found in the full National Report (p. 32 et seq.). For more information, see www.nfosigw.gov.p.

The EKOFUNDUSZ is a foundation established in 1992 by the Minister of Finance for the purposes of the effective management of funds obtained through the conversion of a part of the Polish foreign debt, with the goal of supporting environmental protection-related endeavours (so-called debt-for-environment swaps). The task of the Foundation is to provide co-funding for environmental protection-related projects, both at the regional and national levels, supported by the international community at the global and European levels (in connection with other funding support); the transfer of the best technologies from donor countries to the Polish market; and to stimulate development of the Polish environmental protection industry.

Its five priority sectors are 1) the limitation of transboundary fluxes of sulphur dioxide and oxides of nitrogen, and the elimination of all low emission sources of these gases (i.e. air protection); 2) the limitation of the flow of pollutants into the Baltic Sea, and the protection of drinking water resources (i.e. water protection); 3) abatement of the emission of gases causing global climate changes (climate protection); 4) conservation of bio-diversity; and 5) waste management and reclamation of contaminated soil. EKOFUNDUSZ provides grants from 10 to 30% of the total project costs (for the private sector), and exceptionally up to 50% (for municipalities). The rest of the funding has to be a combination of the investor's own funds, commercial bank financing, or soft loans from the national or regional environmental funds. The EKOFUNDUSZ provides financial support in the form of preferential loans and/or non-refundable grants.

The Environmental Protection Bank is a universal commercial bank specialised in financing activities connected with environmental protection and water management. Soft loans are provided for projects of real environmental benefit, including construction of small sewage treatment plants and sewage systems, use of renewable sources of energy and heat, utilisation of waste products, purchase of environmental protection equipment and products, and upgrading household energy efficiency. Loans are also provided to companies involved in environmental projects as third party contractors and environmental project consultancy. For additional information, see www.bosbank.com.pl.

The Bank of National Economy (BGK) provides thermal modernisation premiums for energy efficiency projects in the housing and public buildings sectors as well as for local heat sources and local networks. Premiums are provided under the Thermal Modernisation Law, and can be granted immediately after completion of the investment under the following conditions: 1) the commercial credit granted for realisation of the investment does not exceed 80% of total investment cost, and the repayment period does not exceed ten years; and 2) monthly instalments of capital and interest repayment are not higher than monthly energy cost savings. The crediting bank can arrange with the investor for higher repayment instalments. The premium cannot exceed 25% of the credit amount.

Commercial banks constitute the biggest national source of investment financing. Banks are gradually extending their offers, including soft loans for environmental investments (funds, foreign support). The credits come from financial sources accessed by the banks, and the funds subsidise the investments at the interest rate level.

Agencies and support programmes offer grants and subsidies which are the desired most by environmental users and are at the same time the most limited form of co-financing environmental investments. Table 19 in the full National Report (p. 38f) shows an overview of funds and support programmes in the energy efficiency and environmental protection area.

In Poland, there is no system for comprehensive monitoring of the activity of ESCO companies for third party financing. According to the information available on the market in general, about fifteen companies are in operation, and an unknown number of smaller companies provide energy services within the ESCO or TPF area. Most of them (about eight to ten) operate mainly as Polish branches of foreign companies (e.g. Landis & Steffa, Siemens, etc.).

Leasing is among the best developing forms of financing in Poland, and is ever more popular for EE and RES projects.

The international financial institutions with which Poland has dealings include the World Bank and the EBRD. It also participates in the following international financing programmes: the EU Pre-Accession Funds, the ISPA Programme, the SAPARD Programme and the EU Structural Funds/ Cohesion Funds. Background information on all of these institutions and programmes can be found in the full National Report (p. 40 et seq.). The EBRD is the largest single investor in Central and Eastern Europe and the CIS, and has committed more than € 20 billion to over 800 major projects. Small projects are almost always financed through financial intermediaries. By supporting local commercial and micro-business banks, equity funds and leasing facilities, the EBRD has helped finance some 200,000 smaller projects.

3.3.5 BEEP Project Target Sectors

As regards industry, a report on the status of energy consumption in the main industries in Poland was developed with the participation of KAPE, based on priorities identified by the government of Japan. This “Master Plan of Energy Savings in Poland” established the basis for foundations to develop policy in the area of rational energy use in industry. The energy savings plan contained in the report anticipates a 30% reduction in power consumption in industry within a three year period commencing at plan implementation, assuming that only the organisational and low-cost projects are implemented. Two policy scenarios, i.e., the Energy Conservation Scenario (EC) and Accelerated Energy Conservation (AEC), were envisioned for each of the four components: “improvement of energy management,” “improvement of equipment,” “effects of modernisation and rationalisation,” and “economic incentives”. Each scenario is to assess energy conservation effects as of 2000 and 2003, respectively.

The energy savings potential in buildings are influenced by individual thermo-modernisation projects. Table 20 in the full National Report (p. 49) shows exemplarily the average energy savings values in multifamily buildings. Generally, it can be assumed that with full and technically proper thermo-refurbishment, energy savings will vary between 30% and 55%. KAPE has performed primary studies on energy savings potentials in the educational and health care sectors. The simulation showed that in schools, a reduction in consumption by approx. 30% of today’s level is possible, while in the health sub-sector, energy consumption can be reduced by 50%.

Heat supply (district heating) is one of the most important sectors in the Polish energy economy, as approx. 50% of primary energy is used for heating purposes. Simultaneously, space heating and hot water constitute approx. 80% of energy consumption in buildings. Heat production and distribution both play a key role in energy balances in cities. The average energy efficiency of public CHP plants is approx. 82%, and approx. 77% and 67% for autonomous (industrial) CHP plants and for autonomous and municipal heating plants, respectively.

3.4 Romania

3.4.1 Energy Policy and the Energy Market

The sources of electricity generation in Romania are broken down as follows: 56% from thermal-fired plants (oil, gas, coal), 34% from hydropower plants, and the remainder from the Cernavoda nuclear power plant. Detailed information on total energy production and consumption of oil, natural gas, coal, nuclear power, hydroelectric power, other renewable energy sources and electricity is provided in the full National Report (p. 9 et seq.). The Government Programme of the present administration takes into consideration Romania’s Medium Term Economic Strategy and also the National Programme for Accession to the European Union

(PNA on 2002-2005), agreed upon with the EU. The main objective of the National Strategy for Development of the Romanian Energy Sector is to create an efficient energy market in accordance with the EU rational use of energy and environment protection stipulations. In this context, the National Authority for Energy Regulation was set up in 1998, with the mission of creating and applying the regulatory framework for the electricity and heat markets. It establishes all the rules and regulations for the operations and relations between all the partners involved in the energy field. Romania is also a signatory to the Kyoto Protocol on Climate Change, and has undertaken to cut greenhouse gas emissions by 8% relative to 1989 levels by 2008-2012. It also ratified the Energy Charter Treaty in August 1997.

Current mechanisms of the energy market foresee that all the players on the energy market (except the captive consumers) are to obtain authorisations/ licenses from the ANRE certifying they meet the technical and economic requirements for operation in the national power system. In the current stage of market opening, 60% of total forecast energy consumption is still sold and purchased on the basis of regulated contracts. The existing "mix" of regulated and free market elements, and the organisational structure of the energy producers, as well as the difficulties of the economy, have led to some abnormal cases, and to the conclusion that price regulation requires more versatility, that regulated prices must be based on producers costs and world-wide reference values, in order to preserve the sector's viability, and that more restructuring measures should be implemented to enable competition on the energy market.

At present there are two distinct markets, the wholesale market for electricity and system services transactions between market participants, and the retail market for transactions with electric power end-users. A comprehensive description of Romanian energy market players, i.e. producers, transporters, suppliers and distributors, companies for electricity import/export, consumers and commercial operators is provided in the full National Report (p. 15 et seq.).

An institutional framework allowing for the promotion of measures of efficient energy use in Romania was created by setting up the Romanian Agency for Energy Conservation (ARCE; a company description can be found in the full National Report). In addition to ACRE, another relevant actor in the promotion of measures of efficient energy use is the Romanian Energy Efficiency Fund (FREE; for a detailed description see the full National Report, p. 21 et seq.), an institution designed to manage the financial resources received by Romania from the Global Environmental Facility (GEF) through the International Bank for Reconstruction and Development (IBRD). Romania's environmental policy is established in the Law on Environmental Protection. The law replaced an environmental law of 1973, which was never fully enforced. Romania is also a party to international environmental agreements on air pollution. Measures designed to promote competitive cogeneration sources and district heating systems are planned in order to increase energy efficiency and protect the environment.

3.4.2 Legal Framework for Energy Efficiency

In Romania, the field is regulated by Law No 199/2000, amended by GO 78/2001, on the efficient use of energy. The law entered into force in 2002, after the methodological standards were approved. GO 78/2001 strengthens the ARCE's responsibility in the field of energy efficiency in accordance with the priorities of the National Strategy for Energy Development, and the GD 941/2002 establishes the new statute of ARCE, stipulating its organisational and operational rules. The full National Report (p. 28 f) gives an overview of the provisions of the energy efficiency directives provided by Romanian legislation.

The Romanian Agency for Energy Conservation (ARCE, see above) is the specialised body at the national level in the field of energy efficiency.

In order to achieve its energy efficiency policy objectives and commitments, Romania plans to undertake the following measures:

- Co-financing from the Special Fund for the Development of the Energy System of projects for the efficient use of energy;
- Establishment of the National Energy Observatory as a unique, credible and efficient data base, which will permit calculation of principle energy indices, monitoring of energy consumption, and dimensioning of the national programmes for energy efficiency increase;
- Improvement of management in the energy field, and licensing the personnel involved according to the MIR Regulation No. 20/2002;
- Creation of demonstrative areas for energy efficiency;
- Development of a national programme for the adjustment and measurement of heating for the consumers connected to the urban heating systems, in co-operation with the European Union; the first stage of this programme is to be implemented in the winter of 2003-'04.

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3.4.3 Economic Framework for Energy Efficiency

During the period 1998 - 2002, average electricity prices for the end-users were between 43.6 and 51.38 €/MWh (403,160 - 1,448,359 lei/MWh)

Average electricity prices, Romania

Year	Period beginning	Average price for end-users	
		€/MWh	lei/MWh
1998	1 May 1998	43.60	403,160
1999	15 Feb. 1999	42.64	498,611
	6 June 1999	41.38	618,278
2000	15 Oct. 1999	36.82	640,000
	18 June 2000	43.55	861,000
2001	14 Aug. 2000	49.02	951,475
	17 Apr. 2001	42.73	1,018,639
	11 June 2001	48.38	1,171,434
2002	13 Oct. 2001	43.53	1,213,606
	1 Mar. 2002	51.38	1,448,359

Source: ANRE

A detailed description of the various available rates for industrial consumers, residential consumers, transport, system operations and market administration, as well as the structure of the average price of the electricity delivered to consumers, is presented in the full National Report (p. 31 et seq.).

In the heat market, according to national statistical data, 30.9% of the Romanian dwellings are heated by district heating. With this structure, Romania is in fourth place, after Ukraine, Poland and Germany, in the number of homes connected to the district-heating system. In 2002, the rate for heat generated by Termoelectrica increased to $4.78/GJ ($20/Gcal) and, for the first time, heat costs estimated at $4.65/GJ ($19.46/Gcal) were fully covered by the end of the year. A methodological basis for establishing both electricity and heat rates was also completed. The regulation of heat prices and rates in 2002 focussed on 1) The completion of the regulatory framework with appropriate heat pricing methodologies based on rate-setting principles laid down in GEO 63/1998 (the principle adopted involved the separation of costs for generation, transmission, distribution and supply, and the implementation of binomial rates for industrial consumers); 2) The establishment, review and adjustment of prices and rates according to the established methodologies; and 3) The substantiation on the basis of the existing data of the National Heat Reference Price (PNR) for district heating, and the determination of the subsidies required at the local level to cover the differences between the national reference price and local prices.

Heat demand in Romania is predominantly residential. In 2001, 179 localities in Romania were supplied with heat from centralised district heating systems; in them, 2,353,506 residential units were supplied by district heating systems, of which 2,330,012 were in the urban sector. The rate for the heat delivered to residential consumers by SC Termoelectrica SA approved by ANRE Order No. 39/19.12.2003 is € 21.77/ Gcal (887,400 lei/Gcal).

The heat market (process steam and/or heat) is and will remain a local market, which will develop towards local demonopolisation. This market is created at the level of the locality and the surrounding industrial area. The transport and distribution activities will remain regulated. Existing cogeneration power plants are gradually being passed from SC Termoelectrica to the local authorities, with local rates.

3.4.4 Financing Framework for Energy Efficiency

There are some banks (both domestic banks and the Romanian branches of foreign banks) that can give commercial loans for project financing (new investments or development and rehabilitation projects), which are considered “business projects”. These credits usually have a limited value and a short or medium-term credit return (maximum: five years). There are nine main banks which award commercial loans for financing investments that can lead to increased environmental protection; they are described briefly in the full National Report (p. 40 et seq.). Currently, there is one investment fund, the Environmental Investment Partners, which is active in the environmental protection area. The other funds are oriented towards productive investment. An overview on these funds (of both categories) is given in the full National Report (p. 42).

There are three state funds. 1) The Environmental State Fund, an economic and financial tool with the priority goal of supporting the objectives of major public interest contained in the National Action Plan for Environmental Protection. This fund operates under Law No. 73/2000 and Government Order No. 93/2001. 2) The Romanian Fund for Energy Efficiency, established under Government Order No.126/2001 and GEO No. 188/2002. Its main activity is to manage the financial resources given to Romania by the Global Environmental Fund through the International Bank for Reconstruction and Development, based on the Grant Agreement between the IBRD and the Romanian Government. 3) The Special Fund for Energy System Development, established by Government Decision No. 29/1994. This fund can be used for achieving energy conservation projects. All three funds are presented in more detail in the full National Report (p. 43 et seq.).

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The principal international loan providers are the EBRD, the EIB, the World Bank Group and the IFC. More details on each organisation, with their relevance for Romania, can be

found in the full National Report (p. 45 et seq.). Also, there are two national programmes that promote research in the main sectors of the economy, the Orizont Programme, an annual programme that offers 100% financial support for research projects in many areas of the national economy, and the MENER Programme, a research programme that operates in the environmental and energy area. The financial support offered can cover a maximum of 50% of total project value. Relevant EU financial programmes are PHARE, ISPA, and the Energy and Environmental Protection Programmes (FP-5, including EUROATOM, LIFE III, SAVE, SYNERGY, SMEs, ALTENER II, SURE, ETAP). There is also bilateral assistance to Romania from several member states of the European Union. Details on bilateral co-operation with Denmark, Italy, Germany, the Netherlands, Great Britain and the United States are described in the full National Report (p. 50 et seq.).

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3.4.5 Energy Efficiency in Target Sectors

The Romanian economy, like that of most transition countries, has traditionally been very energy intensive. In 2001, Romanian energy intensity was of 0.67 TOE per $1000. An essential objective of the Energy Development National Strategy is to increase energy efficiency throughout the natural resource path: production – transmission – distribution – end-user. The main directions of national policy in the energy efficiency field are: to increase energy efficiency in the national economy as a whole; to promote new financial mechanisms designed to stimulate energy conservation investment; to encourage private initiative; to develop energy services; to implement new technologies with less energy consumption and higher energy efficiency; and to encourage the co-operation between Romanian companies and foreign countries with great experience in the energy efficiency field.

In industry, energy consumption in Romania has decreased steadily since the early 1990s. The energy intensity structure of the national economy and of industry in particular, combined with a certain degree of energy inefficiency, have made energy costs an important share in the total cost of the basic products of the national economy. The greatest energy potential lies in the industrial sector. The financially feasible savings potential in the most energy-consuming industries is estimated at 10 to 50%, depending on the production sector: cast iron: 20%; steel: 20%; ammonia: 10-30%; sodium hydroxide: 15-30%: petrochemicals: 12-50%; cellulose and paper: 25-45%.

Energy consumption in the building-management sector and the related environmental pollution is one of the most important issues. A sustainable development economic policy means the promotion of energy efficiency and rational use in the building-management sector, which is a major consumer in Romania. Romanian policies for increasing energy efficiency in buildings generally follow the model of developed European countries.

In Romania there are two main categories of apartment buildings, in terms of their thermal protection performances: 1) Apartment buildings built before 1985 (about 83%), mostly five to nine storeys high, with heat loss of approx. 1 W/cu.m. K, which corresponds to an average thermal resistance of 0.6-0.65 sq.m. K/W; and 2) Apartment buildings built after 1985, but before the new regulations were issued, with a heat loss of about 0.8 W/cu.m. K, corresponding to an increased average thermal resistance of 0.9 sq. m. K/W. For these buildings, heat consumption rates for heating and domestic warm water consumption are double those in the EU under the same conditions. The rehabilitation of the existing residential buildings is one of the main actions stipulated in the governance programme 2001-2004. The legal framework established by the GO No. 29/2000 on the Thermal Rehabilitation of the Existing Residential Buildings and Incentives for Thermal Energy Saving approved by Law No. 325/2002.

District heating in Romania has 31% share of the heat market. The rehabilitation of the district heating systems in many important cities in Romania has been addressed by the EBRD, the PHARE programme, the EIB and other international institutions and financing programmes. At present, there are two main competitors on the space heating market: the district heating and cogeneration plants owned by the companies that took over from the old National Electricity Company, and the independent district heating plants, usually municipally-owned. The problems that Romanian district heating has faced for the past decades can be easily explained by the fact that before 1989, the authorities showed almost no interest in maintaining the systems in good condition. Law No. 199/2000 institutes requirements and provides incentives for efficient use by energy producers and consumers. The necessary investments for the district heating systems belonging to the local authorities during the period 2002-'07 are € 6.9 billion, of which € 4.7 billion are for production, € 1.0 billion for transport and € 1.2 billion for distribution.

3.5 Slovak Republic

3.5.1 Position of Energy Efficiency at the National Level

The strategic goals set by the Energy Policy are: to satisfy the energy needs of society in a reliable, safe, effective and ecologically acceptable manner, with the required energy types and forms; liberalisation of the electricity and natural gas markets; harmonisation of Slovak legislation with that of the EU; and fulfilment of international agreements in the area of the ecology, nuclear safety, investment and energy trade. In this respect, energy efficiency is interlinked with all three major strategic goals of the Energy Policy, and is an integral part of its general framework, with the concrete content being left to the legislature. The support of energy efficiency can be considered a priority area, and is reflected in all major conceptual documents. As for the concrete EU "acquis communautaire" relating to energy efficiency, it has proven to be efficient to adopt specific laws or government decrees which implement particular EC Directives i.e. in the case of energy labelling. The recently adopted directives on energy efficiency of buildings, or on promotion of CHP based electricity are being transferred into the Slovak legal system by means of an on-going amendment process of the Energy Law 70/1998.

3.5.2 Legal Framework for Energy Efficiency

The principle legal standard for the performance of business activities within the energy sector is the Energy Law (Law No. 70/1998 C.o.L.), which establishes the scope of regulated activities in the electricity, natural gas and heat supply industries, the rights and duties of the legal entities involved, and also the manner of supervision (State Energy Inspection). In this respect, there are presently (10/2004) three new legal proposals, on heat, energy and regulation of network industries, respectively, which are expected to be passed by the Parliament by the end of 2004.

Energy Law No. 70/1998 requires that all entities involved in regulated activities in the energy sector hold a licence. These licences are necessary for all commercial operators of energy sources with an installed capacity of over 0.5 MWt or 0.5 MWe, and for all who engage in energy supply on a contractual basis. The Office for Regulation of Network Industries is responsible for making decisions on granting, amending or withdrawing licences, and can grant a licence either separately for each of activity, or for several activities within one energy sector, or for several activities in several energy industries. The licences are granted for a minimum period of twenty years.

According to Energy Law No. 70/1998, the Office for the Regulation of Network Industries has to issue preliminary approvals for the construction, renewal or decommissioning of energy plants, or for the change of the fuel basis of an energy plant in compliance with energy policy. In case of an environmentally justified source, such as CHP, up to a threshold capacity of 5 MWt, a liberalised procedure for obtaining the preliminary permission can be requested.

Regarding Public Energy Networks, the electricity and gas sectors were characterised by a monopolistic structure until 2000. According to the state energy policy, it was expected that the decisive share of power consumption increase in the future would be covered by independent producers, whereas their share of power production could increase from the current 13% to 23% by 2010, depending on the actual development of domestic consumption. In order to support this development, the Energy Law No. 70/1998 included provisions to support the access of independent power producers to the grid, obliging the holders of licences for power purchase and distribution to feed into the grid the power produced by all environmentally friendly sources, and also obliging the holders of licences for heat generation, purchase and distribution to purchase heat from environmentally friendly plants, whenever this would not increase the price at the direct consumer level, or reduce the energy efficiency of other heat sources within the system. Energy Law No. 70/1998 mandates that the costs of connections be born by the independent producers. The price for energy fed into the system is to be negotiated by the parties involved, the CHP operator and the utility.

Aside from the above mentioned fundamental laws, the Slovak Government has approved a number of legal measures to support low emissions processes; hence, energy efficient utilisation of fuel is in line with the basic idea of energy efficiency. The full National Report (p. 7f) contains the relevant standards for workplace health and safety and environmental protection.

3.5.3 Economic Framework for Energy Efficiency

Electricity prices have been continually on the increase, particularly households prices, compared to those in industry and other sectors. Natural gas prices have also shown a continual increase, and prices are substantially higher for households. Energy prices are subject to regulation by the Office for the Regulation of Network Industries, which took over from the Ministry of Economics in 2001.

The Regulatory Office for Network Industries thus regulates the calculation of maximum prices of heat, natural gas and electricity by special ordinances. In the course of liberalisation of the electricity market, the electricity prices are to be deregulated by the beginning of 2005, except for household rates.

Regarding feed-in rates, current law does not allow for setting price minimums, so that the calculation formula is defined by the Ordinance of the Office for the regulation of network industries, which adjusts the feed-in rates in accordance with the inflation rate semi-annually. Besides this regulation, there is no binding rule on how to calculate the feed-in rates. The ongoing amendment of the legal framework is to result in the possibility to set minimum feed-in rates for selected technical installations (good quality CHP, RES); these are expected to be in force by mid-2005.

As of 1 January 2004, in accordance with the reform in the taxation system, the applicable VAT rate will be 19% for heat,

electricity and natural gas, and the income tax rate for both physical and legal entities will be 19%. Energy services, i.e., heat and/or electricity supply, will be subject to the same taxation rules as the usual heat and/or electricity supply.

3.5.4 Financing Framework for Energy Efficiency

Concerning debt financing, the Slovak financial market during the mid-1990s was characterised by a scarcity of long-term funds and high interest rates, which in turn led to low suitability of debt capital for financing of long term investments. Since 1998, the banking sector had been revitalised by means of priority reforms, which were introduced by the government. This structural change, accompanied by a simultaneous change of official priorities of the National Bank, and the fact that the state used the funds gained from this process to repay outstanding commitments, resulted in an overall improvement of the conditions of the Slovak capital and money markets. These are now approaching EU standards in terms of loan granting procedures and availability of long-term loans. With the entry of the Slovak Republic into the European Union, it is estimated that basic financial parameters will be fully consistent with €-zone level standards by approximately 2008. Meanwhile, further positive developments in the increased willingness of local banks to enter infrastructural – i.e. energy – projects are evident. This even involves specially tailored products – basically "project financing" schemes, which are evaluated on the basis of project structure and generated free cash flows, rather than of the clients' credit-worthiness. The most significant foreign lenders present are the World Bank, the IFC, the EIB and the EBRD.

Since 1994, the Slovak entities have been gaining experience with development and implementation of alternative project financing methods. In Slovakia, projects financed by ESCOs address mostly overall system solutions. They are mostly funded by the ESCOs themselves, while these are refinanced by their stakeholders, their shareholders and debt providers, banks (mainly foreign), bank consortia, supplier credits, grants, or the state programme for the improvement of energy efficiency.

As of 2004, massive subsidy schemes were launched in order to support the investment costs of energy efficiency projects. The most significant are the de minimis Programme for Energy Savings and RES, and the State Aid Programme for Energy Savings and RES, which are implemented under SOP IS, with the support of the ERDF.

3.5.5 SAVE II BEEP Target Sectors

The industrial sector is the most significant consumer of energy, with 277,015 TJ in 2001. Industrial energy consumption is affected mainly by process fuels and heat, which amount to 80,507 TJ, or 85% of final energy consumption in the sector. A part of the heat produced in industry, approx. 7000 TJ, is delivered to municipal district heating systems. Electricity consumption amounts to 11,351 GWh, of which about 1,500 GWh are generated through own production of electricity, while the rest is supplied from the public grid. On the supply side, the dominant fuel is natural gas, followed by coking and steam coal, and brown coal and lignite. Liquid fuels are on the retreat. The main areas for energy saving are process heat and electricity consumption. The list of measures on the consumption side includes the introduction of energy management and monitoring systems (M&T), recovery of heat from production processes, utilisation of efficient control systems and up-to-date production technologies, and thermal insulation of heat distribution related components. On the energy supply side, the respective measures are fuel switching accompanied by the utilisation of state-of-the-art energy production and distribution technologies, utilisation of core production residuals (special gases, biological waste) for energy production, and implementation of CHP.

The tertiary sector includes organisations which provide public and commercial services. The former include education, culture, health care and administration run by the state, regional administrative authorities and municipalities. With respect to the objectives of the SAVE II BEEP, the focus is on projects in the public sector which are sufficiently large to meet the EBRD criteria of minimum investment size, and which meet affordability and other criteria. Due to long-term under-capitalisation and chronic budgets shortages in the public sector, there is an insufficient investment rate in the energy supply and distribution related areas, and consequently a great need for action. In this context, there are two possible groups of projects that make economic sense: 1) single site projects, involving a few large buildings with sufficiently high potential and high number of operational hours per year; and 2) single owner projects, involving pools of smaller project sites that are grouped under one administrative body, whereas the smaller projects basically meet the same economic justifiability criteria as the single site projects, but differ in the size of investment needed per project, so that only in combination do they achieve the requisite size.

The consumption of heat in the residential sector, which includes mostly households, amounts to 101.1 PJ, or 18.5% of total final energy consumption. Of this, district heating covers 38%, and individual sources 62%. Total final consumption of energy in the sector includes heat consumption for space heating and warm water as well as electricity consumption for lighting and electric appliances. With respect to the objectives of the BEEP project, the barrier to implementation of relevant energy savings measures at the level of final consumers – flat owners – is the size of the investment required, which automatically excludes all individual projects in single-family houses, unless specific credit lines can be accesses; but these are not available. The main target sector for a BEEP project at the final consumer level is therefore pools of apartment buildings wholly owned and/or administrated by economically sound organisations.

The development of district heating systems in urban areas has a very long tradition, with over 90% of all apartment buildings being supplied with heat in this way.

The increase of prices and the regulation of the distribution system as well as of the consumer side has led to a decrease of utilisation of heat sources, so that they are in some cases over-dimensioned. Hence, the potential energy savings strategy at present targets mainly the production of heat by re-dimensioning the supply to match the demand, thus increasing overall operating efficiency. Other measures involve changing the fuel base. Some potential is also still seen in regulation of the heat distribution system. The traditional barriers in this sector were the regulated heat prices that did not cover operating costs. New energy pricing regulations adopted by the newly established Regulatory Office are making the economic framework more stable for investments. Barriers for implementation of the measures mentioned above refer to their capital intensity and payback periods, which require long-term financing. The owners of the devices usually lack either sufficient know-how or equity. In the latter case, debt financing comes into consideration, whereas the provision of long-term loans is tied to the economic standing and creditworthiness of the applicant. If a lack of experience and know-how is the barrier, the natural solution is either the establishment of a single purpose company or implementation of an ESCO concept.

4. Project Assessment Tools

Before embarking on a detailed description of a single project in a business plan that the respective partner identified, the consortium discussed ways for distinguishing good projects from less favourable ones. In a number of countries, there were not only alternative projects proposals to be pursued further, but also various rehabilitation options for the same project owner. Therefore, it was decided to carry out an early screening of the project alternatives, which took into account the fact that relevant project data which might be obtained for the elaboration of a full business plan, would be lacking at this early stage of project preparation. This trade-off between the need for as much information as possible in order to make a correct choice on the one hand, and on the other, the lack of time and resources needed to elaborate a fully detailed description for each project proposals, turned out to be critical for the further work.

In order to ensure that sufficient information was provided to make the correct choice between competing projects or alternatives within the same project, it was decided to prepare a project fiche with relevant qualitative information about the project, and a preliminary economic feasibility analysis of each project proposal under consideration.

4.1 The Project Fiche

4.1.1 Introduction

It is necessary at the initiation of any investment to have a broad picture or description of what is being proposed. This is the morphological part of any project initiation, in which the need for the investment should stand out, and the basic data be provided. It is often at this very first stage that decisions are taken to move forward with business and financial plans in detail. The alternative possibility, a decision not to move forward, requires that this stage provide a clear picture. Hence, the project fiche must be structured carefully so that it can serve as the basic tool for comparing alternative investments/projects. On the other hand, a fiche is useful not only for project comparison purposes, but as a project-structured entity that helps interested parties have a clear initial picture of what is being proposed.

The structured fiche should provide at least the following information on four or five pages:

- Title of the project
- Status of the project
- Sector/ segment
- Applicant's name, legal status and profile (project developer and/or sponsor)
- Project Location
- Brief Technical Summary:
  - Objective
  - Description of the current status
  - Technology to be employed and its availability, technical improvements to be made
  - Future status
- Project economics
  - Investment cost estimate
  - Project revenues: origin and size (heat sales or cost savings)
  - Project lifetime
- Implementation dates
- Preliminary manner of project financing

- Major risks to implementation of the project and to the economics of the project
- Evaluation of impacts on the project host's major field of business, environmental benefits.

What must emerge from the fiche is a guide to the important characteristics of a project, in a standardised format. The need for quality using standard documents (e.g. the project economy summary from the fiche shown below) is essential, especially if it is necessary to rank alternative projects/investments through this initial identification phase.

Economic Summary from Fiche		
Total project investment costs estimate	€	
Operation and maintenance costs	€/a	
Power generation costs	€/MWh$_{net}$	
Heat production costs	€/MWh$_{net}$	
Annual energy savings – heat	€	MWh
Annual energy savings – electricity	€	MWh
Annual operational costs savings	€	

4.1.2 Basic Evaluating Structure

The following structure can be used in order to screen the fiches by using a marking scheme (e.g. from 1-10) or a "good-fair-poor" assessment. It is evident from the evaluation list that the information presented in the fiche must be carefully filled in, as it provides a structure for preparing energy efficiency projects, together with the groundwork for seeking finance. If there turns out to be a lot to be written in the "Comments – Missing Data" column, this is usually the mark of a poor fiche (not of a poor project).

A typical list of criteria for project fiche evaluation				
	EVALUATION MARKS			
CRITERIA	Good	Fair	Poor	Comments Missing data
Budget				
Purpose – payback – protection				
Viability-competence				
Risk assessment*				
Regulation**				
General risks – sponsor's strength				
Environmental screening				
Transition impact				
Affordability level				
Feasibility study – savings & payback				
Operating expenses				
Technical & non-technical losses				
Use of RES – carbon credits				
Energy rates – present and trends				
Data from client***				
OVERALL STATUS				

* Risk Assessment: Demand, cash collection, operating cost, planning approvals, competition
** Regulation: Construction and Implementation, exchange and interest rate
*** Data from client: Historical financial statements, future changes, legal documents

That said, the fact remains that project developers/ sponsors are not always willing to share all the information necessary even for pre-assessment, so that a sound fiche is not always easy to prepare.

4.1.3 The Assessment Procedure

Checking and marking the above table requires a clear picture of the investment, energy and social environment of the country where the proposed project is to be implemented. Usually there are Country Reports prepared by financial institutions (e.g. the EBRD updates such country reports). Knowledge of the local market conditions is essential in order to avoid the need (at least at this initial stage) of entrepreneurial qualities. It is obviously somewhat early to look into the entire investment picture at this early stage, but seeking financing often means meeting the following criteria required by capital providers:

- Project validity
- Financial and managerial competence of the borrower
- Strength and commitment of the project owner (equity contribution)
- Risk assessment and risk mitigation measures
- Existing regulation – does it make things easier?
- Affordability level – average household income
- Existence of feasibility studies
- Operational costs
- Technical, and even more important, non-technical losses.

Project delivery strategy, i.e. the framework within which the capital investment is to be made, must also be as clear as possible. Hence the assessment procedure should indicate clearly (but not detailed):

- WHAT is required? – the project definition
- HOW is it to be acquired ? – contracting arrangements
- WHO will supply the requirements? – contractor selection procedures
- WHICH project organisations are to be used? – owners' responsibilities.

At the end of this phase, the project must be clearly defined in its technical details and the project proponents should be reasonably confident that the project is feasible in order to proceed to detailed definition, including feasibility analysis.

The project fiche format is available at the BEEP website www.save-beep.org

4.2 Project Incremental Cash Flow

The quantitative analysis of the project proposals was drafted using an incremental cash flow model, where the key parameters are initial capital outlay, and – over the project horizon – savings or return achieved due to implementation of the project. For the sake of comparison, a base case for the project owner for each project under consideration was elaborated, which assumed a "business-as-usual" perspective, i.e. the development of the unit over time assuming the investment were not carried out. This comparison would, by finding the project's net present value, internal rate of return and discounted pay-back, enable a judgment as to whether the investment would be in the interest of the project owner or not. It did not, however, attempt to go into detail as to the financial implications of the investment. Neither was there any intention to provide possible financial parties with a forecast of the return on invested capital. In other words, the incremental cash flow model set out to identify only the relevant changes in project owner cash flows stemming from implementation of the investment. Relevant cash flows are those that are a consequence of making the investment, compared to those flows if no project were carried out.

Broadly, and with some disregard for conceptual problems that might arise from the attempts to structure a base case scenario, the difference between the "project case" (the forecast with implementation of the investment project) and the

"base case" (the forecast without the project) is the focus of the model.

The incremental cash flow model is available at the BEEP website www.save-beep.org

In the following, a description of the step-by-step approach to forecasting cash flow is provided:

As a first step, the initial cash flow should be elaborated. Initial cash flow is basically the cash flows stemming from capital outlays for the purchasing of equipment, machinery, licences, labour etc., during the initial phases of the investment's lifetime. Here, a start-up year for the investment project is asked for. The model assumes that cash flows occur at the end of each year. The year selected constitutes the base year for the investment, the year to which future cash flows are to be discounted. Also, the name of the currency used should be entered here.

Then, capital outlays for the investment should be entered for the years when these occur. Some indirect categories of outlays are automatically calculated according to standard percentages, but these functions can be replaced by manual inputs in case of deviations. The validity of assumptions is to be checked as carefully as possible, in spite of the early phase of the project preparations.

Furthermore, all cash effects from disinvestments of old facilities arising from implementation in the project case are required. Moreover, opportunity costs (gains) from the project should be entered here. For instance, when evaluating the base case scenario, additional investments in rehabilitations might be necessary to keep the base case scenario running. When carrying out the project investment, these otherwise "necessary" investments are avoided and therefore, in this analysis, they result in opportunity gains, i.e. a positive cash flow. Finally, other side-effects or externalities from the investment should be entered as initial cash flows, if they are not included elsewhere.

In Step 2, Operating Cash Flow is to be established. Operating cash flows are to be understood as changes in total revenues, plus changes in total variable costs, plus changes in total fixed costs, plus changes in total overhead, plus changes in depreciation tax shield, plus changes in taxes. These are cash flows occurring each year throughout the lifetime of the investment.

Calculating the change in revenues demands a considerable effort: base case and project case demand volume and prices should be estimated, and a decision must be taken as to whether the prices should be real or nominal (this is valid for the rest of the input as well). The model allows for two categories of revenues, for instance from heat and/or power sales, and calculates the cash flow difference between the cases over time. Price increases should be estimated if the nominal price perspective is taken.

Addressing the results of the actual work with the model, price forecasts as a rule turned out the same in both project and base cases, whereas volumes (demand, or expected output) could vary due to higher plant capacity under the project case scenario. Most often, the forecasts were made using real prices.

From a technical point of view, only project case revenues might be entered in the model – but then, comparison with the base case would have to be incorporated in these figures ("increased earnings", instead of "project case minus base case").

Likewise, changes in total variable costs are estimated for the project and base cases. The same principles as above apply here with basically two categories of main cost items (representing main fuels), and fluctuations in costs and volumes

allowed. For changes in labour and other costs, net change was asked for. Subsequently, net change in total fixed costs and total overheads is required.

To conclude the operational cash flow part, the marginal tax rate for the company (plant) should be entered into the model, and net operating cash flows calculated. Then; working capital is automatically calculated in a separate worksheet after some additional input (see Step 3, below).

Step 3 concerns change in working capital. Some simplifications have been allowed here. Two options are possible for the model: either the average inventory, credit and account payable days are known from the current activity of the plant, or not. If the first is the case, then it might be assumed that the same will be the case for the project case scenario, and these should be entered. In the second case, some standard figures from previously developed studies of similar plants are used and entered as defaults. Another simplification is that these average figures are assumed not to change throughout the investment lifetime.

Change in inventory is calculated from variable cost (fuel; see operating cash flow sheet filled in above), change in accounts receivable from total earnings, and change in accounts payable from goods sold.

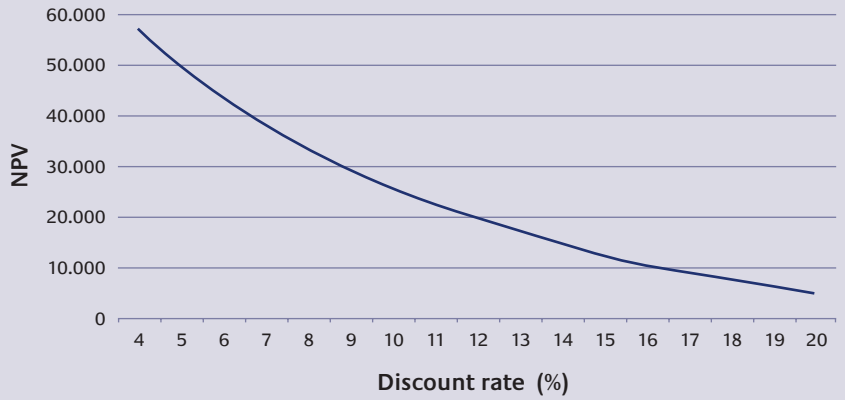
In Step 4, depreciation is calculated in a separate sheet for the various categories of the investment. The depreciation periods for these categories, if they differ, are asked for, and book value of fixed assets and annual, straight-line depreciation is calculated. In the event that other depreciation methods are preferred or required due to national legislation, manual inputs are allowed in the model.

Step 5 addresses Terminal Cash Flows, and takes into account the possibility that any of the assets related to the investment could be divested after the assumed lifetime of the investment (twenty years). Even though this option is less likely due to the nature of these investments, which are likely to have a technical lifetime considerably longer than the period we have decided to analyse from an economic point of view, it has been included in the model, as it might have an effect, albeit marginal, on the discounted cash flow. Therefore, if any assets are assumed to be divested after the twenty-year period, the estimated sales value should be included here. The tax effect from possible profit from the sale is calculated automatically. There also remains the possibility of entering other divestments in the Initial Cash Flow sheet for the years they assumed to occur, but then the tax effects must be calculated manually. After conclusion of the investment, working capital tied up/released as a result of the project goes back to the base case level. This assumption may be overlooked in the model.

After having completed Steps 1 through 5, the model summarises initial, operating and terminal cash flows year by year; net amounts are discounted back to the base year, and a net present value of the investment is provided. With regard to the applicable discount rate, two alternatives are possible: 1) if the discount rate used by the project owner as an expression of his capital cost/opportunity cost of capital is known, this rate is used; 2) if not, a range of NPV values is presented in tabular form, calculated from discount rates of 4 through 20%, and the question as to which discount rate to use for a correct project NPV would be left until later in the process.

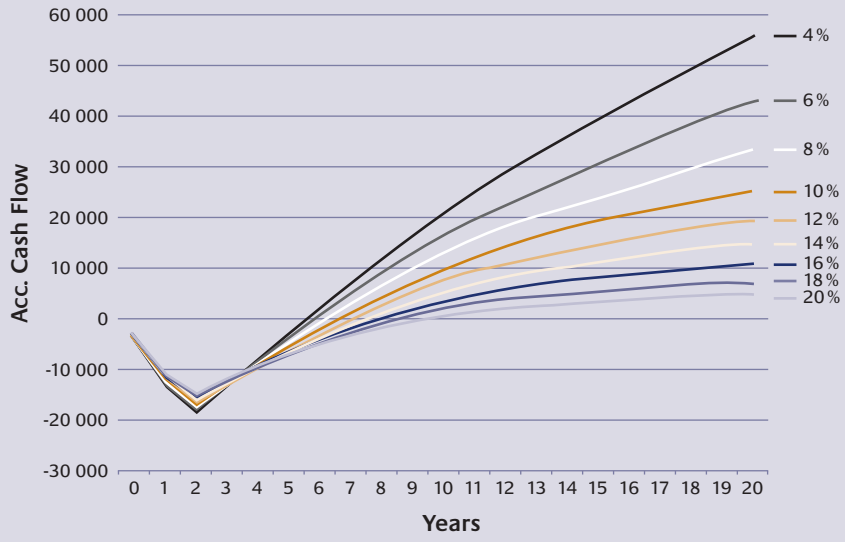
The following examples of NPV and IRR calculations are from the Romanian Development, Rehabilitation and Operation of Timisoara Centru CHP and Timisoara Sud CHP Plants as of March, 2004.

NPV and IRR of early Romanian proposal



The discounted payback (the time it takes for the investment to break even, given discounted cash flows) was illustrated with the following graphs (same project):

Discounted cash flow, early Romanian project proposal



Even though the intention of this early screening process was to avoid having to work with several project proposals simultaneously, other external factors proved to have an impact on the process – factors beyond the control of the Consortium. This made it necessary for some of the countries to work on more than one alternative beyond the screening phase, in order to obtain more information not only about the project itself, but also about the readiness of the project owners to disclose confidential data beyond a certain stage, and their willingness to go ahead with actual investment project preparations.

Moreover, when the evaluation on the basis of data collected and analysed under this early phase was not sufficiently clear regarding which project was preferable, more time was devoted to work on parallel projects. A better economic return in one case could be deemed a less important factor than other variables, where an alternative case scored higher on, for instance, various risk factors or better environmental performance. In these cases, the best project to go ahead with was identified at a later stage.

5. Key Aspects of Business and Financial plans

When the final choice of one project per CEE partner country was made with a view of the best available qualitative as well as quantitative data at hand at the early screening stage, a fuller description of the nominated project was on the agenda. A standardised business plan format was prepared for the purpose of facilitating the presentation to external stakeholders, mainly financial institutions, and also the subsequent work of deepening the understanding of the planned investment. In order to make it easier to evaluate and compare the projects, it was seen as vital to follow a single format. This format was an attempt to take into account the recommendations of EBRD as presented at the preceding London seminar on EBRD energy sector investment policies.

5.1 Business Plan

The investment criteria of the EBRD were presented in Chapter 2. In the following subchapters, a review of the business plan format is presented, with the requested information which has been worked out by the BEEP consortium.

5.1.1 Project Summary

Each business plan starts with a brief summary which provides an overview of the main stakeholders in the project and a short description of the business entity which is to assume the role of project owner. With a view to the investment, the economic upside is described briefly, along with the size of the investment, the underlying economic assumptions, and the expected time schedule for implementation.

5.1.2 Introduction to the Business

The character of the activity of the plant or the energy provider, and the line of business in which the investment is planned to be implemented is described in this chapter. The aim is to identify the relevant market characteristics, the key factors on this market, such as the national framework, competitors, suppliers and customers.

The strengths of the investment have been addressed, as have the risks that the entity may face when carrying out the investment.

5.1.3 Nature of the Project

A thorough technical description of the investment project in its preparatory and subsequent phases is the topic of this section. This presupposes a view on the organisational background, the scope of the project in relation to previous activities, and a description of the physical and legal environment, as well as the environment and the arrangements to be made with regard to the technological infrastructure in place.

5.1.4 Benefits

Here, the upside in the project is described in words and figures: energy savings and environmental improvements, the potential for export promotion and import substitution, and job creation, productivity improvements, technology transfers and management development.

As most projects may be limited to a national setting, due to their limited size or to their place in the market or the energy system, it has been difficult to estimate the long-term impact on imports and exports, other than, possibly, the direct consequences of supplying the necessary imported physical equipment for the investment.

5.1.5 The Sponsor

The sponsors, i.e the direct participants in the project, are described with key characteristics in Chapter 5 of the business plan. Contact details of the project owner are provided.

5.1.6 Project Costs and Timetable

The assumptions and forecasts of cost items related to the investment itself are presented in Chapter 6, as is the timetable of expected disbursements.

Key players designated to manage various components of the investment are listed here, and the manner in which possible cost contingencies have been accounted, and the procurement process, are described.

5.1.7 Products, Services and Markets

A presentation of the assumptions underpinning sales prices and volumes and variable and fixed costs is essential as a decision-making support, especially for the cash flow model depicting the investment in figures over its lifetime. Current prices and costs, and a comparison with historic trends and forecasts of the future development are also included.

Savings ratios are as a rule inferred from technical data of the new equipment to be installed. Figures on expected sales are worked out with an eye towards the development of the population, as well as the competitive aspect of alternative provision of heat and power services. A geographical description of the company's market is included, and attempts have been made to describe customer characteristics and behaviour where deemed relevant. Also, external factors with a potential for affecting demand have been illuminated.

5.1.8 Regulations and Environmental Information

The legislative/regulatory aspect of the investment is the focal point here. Thus, the key regulations pertaining to the investment as put in place by authorities at the municipal, regional, national or EU levels, as well as key necessary permits, are addressed. In addition, the environmental regulations are to be described. If environmental impact analyses or environmental audits have previously been submitted or are required for implementation of the project, summaries of the results are asked for or referred to. For rehabilitation projects, the corporate environmental policy of the project owner is to be presented, as well as other material addressing environmental concerns that may fall outside the mentioned categories.

5.1.9 The Role of the Bank

A vital part of the project preparations concerns the mechanisms relating to the financial aspects of the investment. A description of the role of the bank participating either as a direct investor or as an intermediary in any form for the transaction of investment funds is necessary. Therefore, the project developers are asked to discuss whether the bank, be it the EBRD or any other, would participate in a capacity as lender, syndicator of loans to other lenders, guarantor, underwriter, equity investor and/or financial and investment advisor.

5.1.10 Financial Plan

Related to the role of the bank involved in the project is the attraction of actual funds to finance the project; these are described in a financial plan. Therefore, the amount of financial resources available compared to projects costs and, accordingly, the origin of and the ratio between own funds, debt and equity is to be clarified. The assumptions are as a rule presented in local currency and euros. See also Chapter 6.2 for a thorough description

5.1.11 Cash Flow Projections

The actual cash inflows and outflows are described in tabular form in this chapter. A brief descriptive summary of the most relevant parts is expected to accompany the prognosis. The cash flow is generally compiled in local currency, and in real, not nominal, figures.

5.1.12 Energy Savings

This chapter presents the energy savings to be achieved by the project in numbers –specifically, the project heat and power generation costs as compared to output volumes. The information presented is given in standardised tabular form, and shows project totals as well as annual figures.

5.1.13 Environmental Benefits

The final chapter addresses environmental benefits, such as reduction of CO2 and other greenhouse gas emissions, by comparing plant emissions before and after the investment project.

5.2 Financial Plan

A financial plan must demonstrate that the project is economically viable, and also show what assumptions were made during its preparation. These assumptions must be credible and verifiable. A financial plan must contain:

- proposed conditions (technical, financial, etc.) for investments;
- the financing structure: the amount to be invested by the project owner, the need for loans and, if applicable, equity;
- a detailed overview of assumptions made, e.g. fuel costs, development of market and expenses, how much heat will be sold and at what price, the impact of inflation;
- a projected future income statement, balance sheet and cash flow, at least during the financing period; these can be provided in appendices to the business plan.

The major types of financing are:

- Project owners own resources: the financial institutions will often require that the project owner cover at least 15-20% of the project costs. The financial institutions will be looking to see their own risk minimised, and may therefore require more than 20%.
- Supplier: the supplier may extend credit for the purchase of necessary materials.
- Local loans: these loans may come from local banks.
- Foreign loans: these generally include loans from financial institutions such as EBRD, or international commercial banks.
- Foreign equity: cash from other investors.
- Others: these may be grants, cash contributions or new financial instruments, which are a combination of debt and equity, such as convertible bonds.

The layout of the financial plan should be as in the example of the two tables below:

Schematic financial plan, Version 1

FINANCIAL PLAN				
Financing source	Local financing	Foreign financing	Total	% of total
Own resources Loans Equity Others (Grants, Subsidies, etc.)				
Total Project financing				

Schematic financial plan, version 2

FINANCIAL PLAN					
Financing source	Amount in Local Currency	Local financing in €*	Foreign financing in €*	Total in €*	% of total
Sponsor's own resources (default: 30%)					
Investment (support/ subsidy*)					
Foreign bank loans (EBRD: max 35%)					
Local long-term loans					
Foreign equity					
Supplier					
Others:					
Total Financing					
* Exchange Rate: € 1.00 =					
Local currency =					

Period of foreign bank loan	see: Assumptions to Financial Projections
Interest rate on foreign bank loan	see: Assumptions to Financial Projections
Period of local long-term loan	
Interest rate on local long-term loan	

Type of financing required from the foreign bank/investor	Amount in Local Currency	Local financing in €*	Foreign financing in €*	Total in €*	% of total
Foreign bank loans (EBRD)					
Local long-term loans					
Foreign equity					
Other					
Total					
* Exchange Rate: € 1.00 =					
Local currency =					

* Exchange rate (1 €) as per "Table of average exchange rates" dated on ...

The purpose of the Table is to identify the major financial contributors to the project, and its goal is to help the financial institutions assess the quality and adequacy of the financing.

The financial plan should describe the most significant risks of the project (the development of prices of individual types of fuel, the possibility that part of the customer base will switch to other fuels, meeting emission limits, technical failure of energy efficiency measures due to improper installation, etc.). Furthermore, it should describe the means for managing and minimising these risks. However, it is necessary to carefully weigh the manner in which risks are presented in the plan. The goal here is to make it clear to the lender or the investor that the project developer is well aware of the risks of the project, is prepared to face them, and is capable of estimating their impact on the economic aspects of the project, and minimising them.

On the basis of the layout of the financial plan, the second version was used as the basis for financial plans for the investments of the BEEP projects.

The business and financial plan format is a available at the BEEP website www.save-beep.org

6. BEEP Project Experiences

The BEEP project has involved a number of phases and activities. Firstly, the task was to identify and conceptualise energy efficiency projects that demonstrated a potential for being further developed into a bankable investment proposal. Secondly, this proposal had to be worked out as a detailed business plan, ready to be presented to a wide range of interested parties. Thirdly, the project had to prepare the setting for the investment projects to be financed.

The experiences made by the BEEP consortium during all these phases – identification, business plan development, the project financing process – are presented in this chapter. Difficulties encountered and lessons learned are listed for each participating CEE partner and each consecutive phase of the project.

6.1 Bulgaria

6.1.1 Project Identification Process

During Phase 2, "Selection of appropriate energy efficiency projects", investment projects in the field of energy efficiency were identified and selected, mainly using the EEA database. The preliminary selection and pre-assessment of these potential projects were carried out according the EBRD criteria

Difficulties encountered

- At the outset, the selection was limited by the minimum EBRD funding criteria of € 5 million (in some cases lower EBRD financing, but not below € 3 million) which implied project costs of at least € 8.6 -14 million. The project cost of the single EE or RES projects, implemented in Bulgaria to date, does not exceed $1 million (usually below $100 thousand). Projects above $3 million are an exception. This was the reason for the selection of too short a list of potential projects, mainly in the district heating sector.
- All the identified investment projects belong to public entities (municipalities, ministries, state companies). As a result of our co-operation with the Bulgarian Industrial Association, we noted that it was difficult to collect information about the EE & RES projects in the private industrial sector. The project owners in this sector are not willing to share information on their investment plans and intentions.
- It is difficult to predict sponsor risk, especially in the case of public entities. There is no readiness or firm commitment on the part of public entities (sponsors) to provide sufficient equity contributions to the project, or the collateral required in case of debt or grant financing.
- The selection process was based on the outdated feasibility studies of the identified investment projects, drawn up three to four years beforehand, which required updating. In this particular case, the necessary updates of the feasibility study take time and are costly, since the structure and content of the preliminary assumptions, as well as the cash flow projections, have to be revised and updated.
- In the case of municipally owned projects, it is sometimes difficult to specify the baseline of the energy (power and heat) consumption due to the lack of reliable information provided by the sponsors of the project. This impedes the pre-assessment of the energy savings to be generated by the project. The same applies to the findings of some ESCOs on this issue.

Lessons learned

- At the beginning of the identification and selection process, it is necessary to take sponsor risk into consideration, especially equity commitment, which is closely associated with completion risks. The ability to provide of a sufficient own contribution to the project, as well as collateral exposure in case of debt funding, is conditio sine qua non for the bankability of the investment project. This is the case with the projects "Introduction of a CHP System in the DHC-Bourgas", and "Geothermia – Development of a Geothermal District Heating System in the Town of Zlatograd".
- The early pre-assessment of the overall risk factors contributes to better project understanding and project development.
- The analysis of the technical feasibility, economic sense and financial viability of the project must be based on an up-to-date feasibility study, which is precondition for the elaboration of a convincing business plan.
- The decisive factor for the success of the project implementation is the sponsors' firm commitment at all stages of project development.

City of Zlatograd

6.1.2 Project Development Process

The economic pre-calculation for the geothermal district heating system of Zlatograd showed remarkable profitability in comparison with the previously utilised individual

boilers, due to the high price level of fossil fuels in Bulgaria. Therefore, the implementation of the project appeared comparatively easy at the outset. However, several unforeseen difficulties appeared during the project development process.

City of Zlatograd

Difficulties encountered

- Due to banking requirements, the selling of the heat had to be sustainably assured. Some of the buildings involved were owned by the municipality, which was also the project owner. Thus, the long-term demand for heat was obvious and ensured. However, in order to achieve a sufficient amount of heat sold, it was necessary to connect several industrial buildings to the planned geothermal grid, and to obtain the agreement of these industrial clients to participate in a form acceptable as security to the financing institutions. The difficulty in this regard appeared to be the fact that in Bulgaria, the heat exchanger systems are owned by the heat consumers. Therefore, the potential industrial clients would need to calculate their necessary investment costs for the installation of additional heat exchangers in order to be able to determine the attractiveness of being connected to the geothermal heating system. Due to budget constraints, it was not possible to contract for these calculations from external consultants, and bill the project owner. One result was a certain reluctance on the part of potential clients to sign respective letters of intent which on the other hand were urgently needed for the financing negotiations. Furthermore, in order to provide these clients with a concrete long-term offer for heat delivery, the pre-feasibility planning would have had to be deepened.
- Here, a typical project development problem emerged: Before financial closure can be achieved for a project, detailed planning and development activities must be pre-financed. As a result, the need for additional budget items and activities restrained the municipality, which led to further delays.
- As a solution, a two-step approach was followed. The potential industrial clients were asked to sign unspecified letters of intent which merely indicated that they would be willing to be connected to the geothermal heating system if economic advantages would result. Based on the business plan and this letters of intent, financial institutions and the Energy Service Companies (ESCOs) were approached in order to win interest for the project. The aim was to involve additional project partners in order to be able to pre-finance further project development costs and to make the project bankable. In the next step, long-term selling contracts would be negotiated with the industrial heat clients in order to be able fulfil the banking requirements.

Lessons learned

- A major lesson learned was the necessity to carefully analyse the project development steps and the required budget through financial closure at the beginning of the project development process. In this regard, early consultations with financial institutions concerning their requirements are important.
- Furthermore, it is important to discuss these issues with the project owner at an early stage and to secure his commitment to the project. The task sharing between the project owner and the project developer should be clearly defined in order to avoid disagreements, and therefore obstacles in the project development process.

City of Zlatograd

6.1.3 Project Financing Process

The determination of the capitalisation structure of the investment project encountered difficulties that are common for most municipal energy efficiency and renewable energy projects in Bulgaria.

Difficulties encountered

- The main sponsor of the project, the Municipality of Zlatograd, is not in a position to provide the needed significant own equity contribution to the project. For greenfield projects, like the Zlatograd project, Bulgarian banks require an even higher percentage of the sponsor's own contribution (30% of the total project costs). In

order to overcome this barrier, various schemes have been examined. The idea of the issue of municipal bonds offered to the public to provide the necessary resources was not accepted due to the relatively long payback period of the project, and partly because of the lack of experience in dealing with this kind of financial instrument. This is why a substantial equity financing from other national and/or foreign sponsors (investors) has been required for the financing and implementation of the project through the establishment of a public-private partnership. The local ESCOs (Techem Services, Brunata-Bulgaria and others) were not interested in the project. For well-established foreign ESCOs (like Dalkia) the project is not of interest, because it is too small (€ 2.2 million), by their criteria.

- The possibility of attracting potential industrial and commercial energy consumers as shareholders in a public private partnership with a majority shareholding and adequate operational control of the Municipality of Zlatograd is under consideration.
- The preliminary negotiations with the United Bulgarian Bank, which offers a lending facility for municipal energy efficiency projects, have shown another difficulty. Under the Energy Law, in cases of the connection of industrial consumers or entities financially supported by state or municipal budgets, the connection heat pipelines, related facilities, and the user's station are to be installed by and at the expense of the consumer, and become his property. In the view of the banks, letters of intent issued by the potential users are not sufficient security for the loan application. The pre-installation of the users' substations and related facilities is required as a pre-condition for project funding.
- The provision of additional sources of co-financing in the form of a grant from the local National Trust EcoFund was subject to preliminary negotiations. The Zlatograd project complies with the priority area of the EcoFund (reduction of the greenhouse gases emissions), but the support is extended only for commercially non-viable investment projects with direct environmental benefits which are not of interest for bank funding. As a result, the above-mentioned requirement for the type of supported projects reflects a low possible level of support, which would be limited to a portion of project costs.

Lessons learned

- The financing structure of the investment project has to be agreed upon at an early stage of project development. First of all, the sponsors have to ensure their continuing equity commitment. In case of lack of sufficient own capital input into the project, the sponsor should consider setting out the future ownership of the business, for example, a joint venture with public and/or private elements. The involvement of other shareholders (investors) has to satisfy the common requirement for significant sponsors' own contribution to the project. The availability of sponsors' own resources is sine qua non for the further steps in the funding process.
- The approach to different financing entities (lenders, equity investors, grant providers, ESCOs, suppliers, others) must be in accordance with their requirements and criteria. The contents of the application form for a loan (in the form of business plan) and the related negotiations with a bank or other loan provider should not be the same as the respective contents of the application for a grant offered by a fund. Each investment project is a complex of concrete commercial, environmental and social aspects; therefore, the application for financial support must be appropriate to the specific requirements of the financial entity.
- Applying for financial support, the sponsors must have a clear vision of the specific risks relevant to the proposed project, with the aim of presenting a clear plan of how to mitigate them.

City of Zlatograd

6.2 Czech Republic

6.2.1 Project Identification Process

Even at the beginning of the BEEP project, ENVIROS started looking for suitable projects. An advertisement and a call for projects was announced on the ENVIROS website. E-mails with the Call for Projects and SAVE-BEEP project information were sent directly to a number of addressees at institutions and companies, which included:

- Banks
- State grants providers (State Environmental Fund, Czech Energy Agency)
- ESCOs
- Municipalities
- Czech Power Company
- EON Bohemia
- Transgas
- District heating companies
- Distribution companies
- Partners in consultancy
- Private industrial companies and municipal buildings audited by ENVIROS

Several institutions addressed ENVIROS whose projects were later found not to meet the SAVE-BEEP criteria; in other cases, the beneficiary was not allowed to accept credit (e.g. the state-owned National Library). For the National Library, ENVIROS nevertheless co-operated to investigate whether

the involvement of an ESCO might be possible.

For a number of years, ENVIROS has been involved in the town of Mariánské Lázně, developing energy audits, first for the operator of the Mariánské Lázně district heating system, later for private owners of the spa buildings, and recently for the municipal schools and other public facilities of the town. An agreement between the town representatives and ENVIROS was signed on business plan development for a new hospital building and refurbishment of the old hospital building.

The town endorsed the presentation of the Business Plan to the SAVE-BEEP project partners and the Steering Committee, and also the presentation of selected data and information to the publicly available Brochure.

Hospital of Marianské Lázně – Main Building

The reasons why certain project proposals could not be selected into the SAVE – BEEP project were numerous, and can be roughly assigned to the following categories:

Difficulties encountered

- Some of the project proposals failed to satisfy the BEEP project approval criteria and did not generate direct and sufficient energy savings. These were the new greenfield heating plants based on cogeneration from biomass. These projects are financially very robust, but their revenues were not high enough to allow for commercial funding. Grants of about 80% of the project cost would have been needed, and the approval of the grant or commitment of the project owner was difficult to guarantee.
- Many of the project proposals provided by the Czech Energy Agency were already being implemented (if the project is good and its host reliable and committed, access to financing exists).
- Short project implementation periods: A two-year cycle for project development is based on the procedures of the EBRD, while in other circumstances and mainly in case of smaller projects, this period is much shorter (which usually is the case for small DH plants and probably all demand-side projects). If energy auditing had already revealed significant potential for energy savings, the project owners did not want to wait for a complex financial analysis, and invested immediately during the summer. This was the case for most of the “good” projects identified.
- Other contacts and partnerships of the project owner which have already been developed.
- Other priorities of most of the local banks: If the project owner has good financial standing and especially if the project is relatively small, the banks are not interested in the business plan for the project itself, since the cost of such a business plan development is high, and the owner of the project would prefer to start negotiations with other banks on project development per se.
- Little importance of economic and financial requirements of the project to the project owner: Technical parameters and their necessity are more important to the facility owner than investment revenues. Energy efficiency projects do not really exist for facility owners –technology upgrade, buildings refurbishment, immediate need, etc. are the factors which determine investment.
- Interest in inclusion in the SAVE BEEP process low: Many project owners saw no benefits in the project’s more detailed development despite our explanations, since they often had unrealistic ideas as to the procedures necessary for obtaining subsidies from EU SF funds.
- Lack of interest of the project owner in extending the energy audit into the business plan and other BEEP project outputs: This was the case in some of energy audits directly performed by ENVIROS

Lessons learned

- Too much importance was given at the first stage to project status and size. More attention could have been paid to a wide range of small sized and underdeveloped ideas. The limitations were imposed by the budget of the SAVE-BEEP project, which did not allow for developing the project from scratch.
- Little progress was made in the Czech Republic in better understanding the benefits of sound investment preparation: There is still little or no need for the development of a business plan that would substantiate energy efficiency investments in the investment environment. Investments are made when the necessity arises and then the question of revenues is of low importance. Little consideration for the financial aspects of capital expenditures is fairly common for public sector investments.
- In small projects, the cost of project development cannot be too high – then it would be even more difficult to pay back the cost with energy cost savings. That is why the banks cannot pay too much attention to detailed assessment of the project parameters in case of small projects.
- In energy efficiency, single implementation of might be maximised. This is also a common obstacle (at least to our understanding) to energy performance contracting.
- Grants and subsidies are prioritised by project owners, and these were not yet clarified during the preparation period of the SAVE-BEEP project.

6.2.2 Project Development Process

The objective of the project was to implement energy saving measures in the existing buildings belonging to the Mariánské Lázně Hospital, and to achieve energy savings of nearly 30% of current consumption. Other objectives of the project included assistance to the town in fulfilling its legal

obligations under the Energy Management Law No. 406/2000 Coll. in its current version (the Law stipulates the requirement for the municipality to have the energy audit performed and implemented within a timescale prescribed by the State Energy Inspectorate on energy saving measures, as recommended by the energy audit.).

Fairly importantly, the objective addresses reliable and efficient energy supply to the new and refurbished hospital buildings through implementation of measures improving the technical status of the current energy supply network (both internal power distribution and the heating system). Energy efficiency measures will require capital investments of € 345,150, which will become a part of an overall investment for the total rehabilitation of the existing buildings and construction of a new part of the hospital.

The final agreement on co-operation between ENVIROS and the town of Mariánské Lázně was signed by the Mayor of the Town of Mariánské Lázně at the end of 2003. The services of ENVIROS as specified in the agreement included:

- detailed evaluation of the potential for energy savings in the old part of the hospital, slated for refurbishment and general reconstruction;
- evaluation of options for new heat supply in the project design;
- suitability of the project for BEEP activities;
- development of the business plan and provision of other documents required by the BEEP project;
- review of possible involvement of an ESCO into heat supply provision to the hospital (both financing and managerial option).

At the time of the conclusion of the agreement, the Mariánské Lázně Hospital project was developed into a project design. Since then, the services of ENVIROS have been extended in order to make the energy efficiency project economical, more robust, and viable.

Difficulties encountered

The difficulties encountered are listed in order of importance:

- Difficulties in identifying sufficient project revenues: These were addressed by involvement of other facilities of the hospital, for which energy audits were already available, and even at the stage of the financing preparation, still other facilities are being reviewed (schools and other town property, audited earlier or currently), with the intention of extending the project.
- Lack of detailed data in the energy audits of the hospital building necessary for business plan development: Personal visits took place, but it was still not possible to make a complete update of the audited facilities.
- Timing of the project: Largely delays in planning proceedings. The planning decision for the new part of the hospital has not yet been taken, which means that the documentation for this part has not been developed in the details of the building permit documentation (with consequences for heat balance availability, heat and electricity requirements calculations, etc.).

Lessons learned

In addition to the importance of a good relationship with the project owner, some further aspects of the development process should be noted:

- The procedure for the development of a viable, robust, attractive and financially sound project is fairly complex, time consuming and requires extensive technical and economic capacities on the part of the project developer.
- The development process includes procedures in which delays may occur, and thus the timing of an investment project has to be made with sufficient reserves.
- This may be even more important in case of a municipal project in which investment needs compete with other important municipal expenditures and investments, and planning has to be done well in advance.

Hospital of Marianské Lázně – Taormina Building

6.2.3 Project Financing Process

Initially, the available financing sources had to be analysed. The first grants available from either the national budget or from EU support programmes were analysed. Due to the fact that the Czech Republic is still below 75% of the European Union's average GDP in terms of purchasing power parity, its cohesion regions (Nomenclature of Territorial Units – NUTS II), with the exception of Prague, were classified as Objective 1 units, and are thus able to draw on the support of the EU Structural Funds. The contribution of the Funds in Objective 1 areas cannot exceed 75% of total eligible cost and, as a general rule, at least 50% of eligible public expenditure. In exceptional and duly justified cases, the Community contribution may rise to a maximum of 80% of total eligible cost. That is why the Community Support Framework (CSF) ultimately agreed to formulate the basic strategy for socio-economic development of the cohesion regions. The CSF for the Czech Republic is based on the National Development Plan (NDP) approved by the Government in Resolution No. 1272/2002 of 16 December 2002. The global strategy of the CSF is to be implemented under specific strategies described in five Operational Programmes (OP). These and their supplements have been carefully studied.

The probability that the municipality will decide to partially or fully finance rehabilitation of the hospital buildings was also discussed, as was the municipal annual investment budget. Second, national programmes to support renewable energy sources and energy efficiency increases were analysed and their potential amendment based on the European Directive on Energy Efficiency in Buildings was examined.

A third possibility, that of a soft loan from the Energy Saving Fund, has been confirmed, as has the rough financial position of Mariánské Lázně municipality. The fourth option is the possibility of ESCO involvement, i.e., that of the Czech TPF service providers, if the initial BEEP project is expanded to include several additional public buildings; it has been discussed with the latter.

The fifth possibility for commercial debt financing, a soft loan product via the Ministry of Industry and Trade and PHARE, which has for years been managed by the CSOB, the major banking house of the Czech Republic, has already been reviewed as a loan standardised product. Since the size of the Mariánské Lázně hospital project is small at this stage, available products of international financing institutions were not analysed in any greater detail.

Hospital of Marianské Lázně – Main Building

Difficulties Encountered

There are many elements that will have to be detailed if the financing process is to be successful. The final criteria for financing from the EU Structural Funds were approved between the Czech Republic and Brussels in June 2004. These criteria were crucial for the decision making process, since they establish the eligibility of the beneficiaries and projects under the specific programmes. Only in July 2004 were we able to conclude that the project in Mariánské Lázně would not be eligible for any of these grant schemes.

The clear definition of the project in the overall reconstruction context: The new town hospital construction is to be financed mainly by the town itself. The share of debt financing has not yet been approved. Only after the new hospital pavilion has been built will the old part of the building reconstruction be started. Nevertheless, other building energy modernisation projects are to be launched in 2005. The CSOB Energy Saving Fund loan can be used, with proper specification of the instalments in which the energy modernisation of the three buildings is to be financed. The timing is co-ordinated with the overall hospital modernisation plan.

Other investment needs: The limited municipal budget may threaten the investment. This risk is increasing, due to the municipality's needs for other energy modernisation, in maternity schools and basic schools. That was why alternative financing possibilities have been examined in greater detail, e.g., including more buildings in the project, thus increasing the project size and the energy cost savings. Financial indicators of this alternative showed the possibility of attracting third party financing, which we consider the opportunity for the municipality to accelerate the energy modernisation process, avoid further losses in the buildings involved, minimise the need for input capital investment, and reduce the risk of not obtaining the revenues expected. This option has started to be discussed with ESCOs due to the fact that energy audits required by law are being carried out for a large number of the municipal buildings.

This option has been discussed quite recently, and would require that the project be extended to include several additional buildings (four maternity schools, three administration buildings, four basic schools, a cinema and a theatre). In case this approach is approved by the Town Council, a tender could be organised for an EPC project immediately after the energy audits currently under development are finalised.

Lessons Learned

Financing issues need to be discussed and evaluated from the outset:

Every source of financing yields different results, and has its own set of pros and cons. To make use of its advantages, the project should be developed accordingly (if possible by its nature). Alternatives in financing the Mariánské Lázně project include:

- Financing with the use of a soft loan mechanism – CSOB and the PHARE energy savings fund (as specified in the financing plan); and
- Financing that would make use of external project implementation under an energy performance contract.

The second alternative would bring several additional benefits to the town: The number of buildings that could undergo energy rehabilitation would be increased, energy cost savings would be guaranteed, capital investment by the town could be lower, or would allow the rehabilitation of more buildings, etc. Due to the fact that the municipality decided to launch additional energy audits only in the spring of 2004, this alternative began to be discussed only after the Business Plan for the Hospital buildings had been developed.

Strategic thinking and management is important, especially in investment planning. Understanding of project development is never sufficient, and the need for flexibility is

immense. Nevertheless, the development process has to be adequate to the size of the project and relevant to the requirements of the financing resources. In the case of the Mariánské Lázně Hospital Buildings, a Project Verification Study for the buildings, required by CSOB can be quite easily developed on the basis of the Business Plan, and financing has been evaluated as feasible.

Commitment and the ability to finance if the project is developed could have been one of the project selection criterion. Financial participation in the project development procedure could increase the commitment of the project owners.

Hospital of Marianské Lázně – Westmunster Building

6.3 Poland

6.3.1 Project Identification Process

Although several of the Polish project proposals have from the very outset of the project development process showed a potential for selection as BEEP projects, difficulties expected or experienced with regard to the further development of a number of these has had an impact on the final choice. This was independent of the initial assessment phase, where six different projects with investment values ranging from €10 to 84 million were considered potentially feasible.

The Bielsko-Biała project was selected due to expected good performance, both in the technological and economic parameters. The project addresses modernisation measures at Heat and Power Plant No. 2 (EC 2) of the Bielsko-Biała Heat and Power Generating Plants Group (ZEC Bielsko-Biała). More specifically, these measures aim at decreasing heat and power generation costs in the BC 50 block by improving the effectiveness of alternative fuels:

1. The heat and power turbine set 13UP55 as well as the cooling system will undergo modernisation. The aim is to assure economical operation at a wide range of heat loads.
2. Facilities for the preparation of bituminous coal and sludge mixtures are to be built. This will enable the use of alternative fuels (biomass, waste deposits etc.) in order to lower fuel costs.

The main beneficiary of the project, PKE SA, or Południowy Koncern Energetyczny SA (Southern Power Industry Concern PLC), is a heat and electricity producer and one of Poland's largest power production companies. The company's share of domestic electrical power output exceeds 17%, while its share of the local heat production market is 16%. PKE SA consists of the Blachownia Power Plant, the Łaziska Power Plant, the Jaworzno Power Plant, the Halemba Power Plant, the Siersza Power Plant, the Katowice Heat and Power Plant and the Bielsko-Biała Heat and Power Plants Group.

At present, the Bielsko-Biała project is one of most important activities of PKE S.A. The technology of energy production for heating dates back to the '80's and '90's, and is characterised by high production costs and environmental fees.

Difficulties Encountered

The main problem of the first phase was the identification of investments that could be financed by commercial national and international financial market sources, and would be of a sufficient scale – in excess of €10 million.

- The majority of the identified investment projects in the area of energy efficiency required support in the form of financing by national institutions which fund environmental protection through grants and subsidies.
- A few projects identified had investment costs significantly lower than a10 million, and required significant support from the environmental protection funds, even up to 50% of total investment costs. The majority of investment projects in the area of energy efficiency are described as of medium size, with costs ranging from € 5 to 10 million.

Combined Heat and Power Plant Bielsko-Biała

Lessons Learned

The main experience gained in the process of identifying the investment projects in the area of energy efficiency is knowledge as to which investment would have a high probability of implementation with funding from the Polish financial market for environmental protection.

Energy efficiency investment projects generate broad interest among environmental protection funds. However, they have to meet basic requirements for ecological investment financing that is to have a measurable ecological effect.

Depending on the characteristics of the ecological effect, a defined level of financing is allocated in the form of a preferential loan.

6.3.2 Project Development Process

Difficulties Encountered

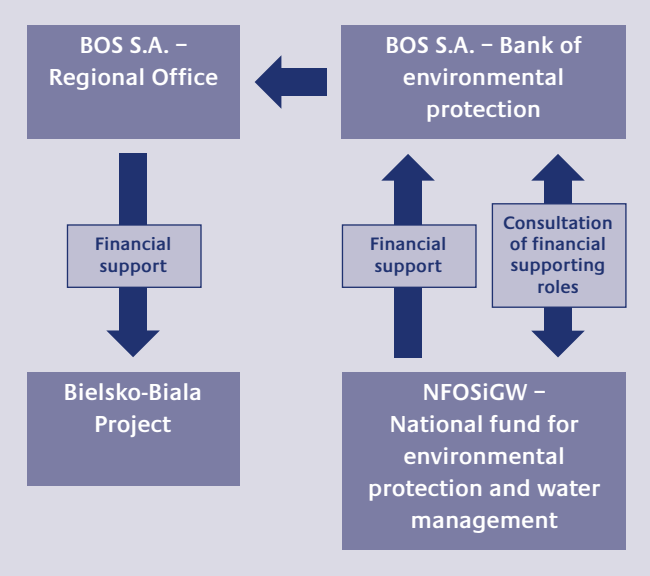
In the case of Bielsko-Biała, the main problem of the project development phase in using the environmental protection funds from the national financial market, such as the National Fund of Environmental Protection and Water Management (Narodowy Fundusz Ochrony Środowiska i Gospodarki Wodnej) and the Environmental Protection Bank (Bank Ochrony Środowiska), has been compliance with tender procedure requirements. These are the most frequent cause for delays in investment implementation.

Lessons Learned

- The specificity of large energy efficiency investment projects in Poland requires active engagement of numerous financial and advisory institutions.
- In order to fulfil the scale requirements of projects, in accordance to BEEP project assumptions according to which the investment project should exceed a 10 million, a number of important activities must be undertaken. One such activity was to focus on creating an energy efficiency investment consisting of a few compact investment activities.
- The investment project in Bielsko-Biała also required merging two activities into a single investment project with one energy efficiency objective. The two activities presented as a part of the Bielsko-Biała investment are compact in the area of expertise and the objectives of the energy efficiency to be realised. Thus, a multi-investment project that fulfils all requirements of the BEEP Project was created in the case of the Bielsko-Biała investment.

6.3.3 Project Financing Process

The following is a model of the Bielsko-Biała project financing structure, with the consortium consisting of the NFOSiGW and the BOS S.A. Bank:



Based on arrangements made in the Environmental Protection Bank (Bank Ochrony Srodowiska S.A.), KAPE S.A. undertook activities to fund the investment project in Bielsko-Biała, basing on financing from consortium of two financial institutions: the Environmental Protection Bank and the Environmental Protection National Fund (Narodowy Fundusz Ochrony Srodowiska). Together with the Southern Energy Syndicate S.A. (Poludniowy Koncern Energetyczny S.A. – PKE S.A.), KAPE turned to the BOS-NFOSiGW consortium with the request to co-finance the investment of the Southern Energy Syndicate S.A. for the "Modernisation of the 13UP55 turbine set and the cooling system in Heat and Power Plant No 2 (EC 2) of the Bielsko-Biała Heat and Power Generating Plants Group (ZEC Bielsko-Biała)".

Combined Heat and Power Plant Bielsko-Biała

Difficulties Encountered

The main task to the implementation of energy efficiency investment is engaging interested financial institutions in financing difficult and demanding investment undertakings.

- In case of investment costs in excess of € 10 million, an efficient financing process requires a strong financial consortium, able to cover around 35% of project costs.
- In the case of the investment realised in Bielsko-Biała, a consortium was created that included the most important national financial institutions for environmental protection. An application for energy efficiency investment financing in Bielsko-Biała was then prepared in accordance with the requirements for such a consortium.

Lessons Learned

Apart from preparation of a business plan and financial plan for the investment as a part of the BEEP Project, major efforts must be devoted to the preparation of additional materials regarding application for financing, including all required attachments.

6.4 Romania

6.4.1 Project Identification Process

The projects that ISPE set out to identify were chosen from the existing project portfolio, taking the EBRD criteria into consideration. ISPE initially proposed five energy efficiency projects in two main fields: district heating rehabilitation and retrofitting of plants. All proposed projects had pre-feasibility studies or feasibility studies previously elaborated by ISPE. All project beneficiaries were clients of ISPE.

Combined Heat and Power (CHP) Plant Timisoara Sud

The project selected – Development, Rehabilitation and Operation of the Timisoara Centru CHP and Timisoara Sud CHP Plants – fulfilled all the EBRD's requirements, the project beneficiary being COLTERM Timisoara.

Difficulties encountered

- The size of the energy efficiency investment (more than € 15 mil.);
- the requirement to cover about 20% of the total investment from the project beneficiary's own funds;
- in the field of municipal district heating systems, some of the energy efficiency projects were still not included as priority projects in the local development strategy, so that they did not have sufficient budgetary funds to develop this kind of investment;
- insufficient support for the national legal and regulatory framework regarding the promotion of the energy efficiency investments in general, and the CHP system in particular;
- insufficient state financial support for accessing necessary funding (grants) for the development of large energy efficiency projects; to date, only small energy efficiency projects have been financed;
- the instability of the heat demand in some of the existing district heating systems due both to the artificial heating rates and low operational efficiency.

Lessons learned

- the important role of the information process in energy efficiency investments and the advantage of their development;
- an energy efficiency investment has to be regarded by the beneficiary as a business – the investment can be repaid from the energy savings;
- the important role played by a local energy strategy for promoting energy efficiency projects and encouraging energy savings;
- the possible beneficiaries can be convinced of the necessity to develop large energy efficiency projects which bring important advantages from an energy savings point of view.

6.4.2 Project Development Process

Difficulties Encountered

The EBRD has a sound structured procedure for judging which proposals are bankable, in order to proceed with financing according to internal Bank standards. In BEEP, it became obvious that some EBRD limitations were screening out some of the projects presented for initial selection. Therefore, too much importance, and hence time, was attributed to the EBRD's limitations at the initial stage of project selection, particularly with regard to project status and project size. In the real world, the market forces decide where, when, how and what is bankable, so the committed project developer should be alert to make his/her move "just in time".

The dynamic status of the legal framework in most evolving economies, like that of Romania, complicates contractual needs and standards, resulting in a time lag. Additionally, the Romanian project selected in Timisoara belonged to the real business world, where changes in plans are anticipated throughout the whole process, especially as projects get closer to contractual conclusion.

Steam Turbine at CHP Plant Timisoara Centru

Lessons Learned

Project development procedures are fairly complex and time consuming, and require extensive technical and economic capacities from the project developer, especially if a new procedure is to be followed. However, standardised procedures are valuable, and thanks to the EBRD, there has been substantial capacity built up among all the partners, which has resulted in important successes for BEEP.

In comparison with other EU-funded projects, the BEEP scheme has been very ambitious and challenging, due to the inclusion of real investment projects, and hence the exposure to real world project development. Therefore, it

has been no surprise that it has been more difficult than envisaged to identify, select and develop appropriate projects for Romania within BEEP.

The planning procedure for acquiring financing status (approvals, letters of intent, negotiations, legal documents, etc.), a financing plan (structure, conditions, etc.), and identified potential project partners has been complex due to the dynamic business evolution in the country, but the structured EBRD methodology followed has yielded positive results.

The analysis of a techno-economic feasibility study of the proposed project has had to be based on up to date and solid data. It is important to discuss project development issues with the project owner at an early stage to secure commitment, and to clarify project characteristics and sound task sharing between the owner and the developer. The decisive factor for success in project implementation is the sponsor's commitment at all stages of project development.

6.4.3 Project Financing Process

The project financing process contained the following main steps:

1. Identification of the possible financing mechanisms available for the Romanian project. The following main financial sources were considered:
   - EBRD support
     Romania remains one of the largest countries of operation for the EBRD. The distribution of the portfolio is broad, with no single sector dominating. The largest exposure is in the infrastructure sectors, at about 49% (energy and municipalities, 27% and transport, 22%); investments in telecommunications represent another 21% of the total portfolio. The Bank has a better than average disbursement rate (around 74%).
     According to the EBRD's strategy for Romania, the Bank will continue to address the key transition challenge deriving from the heightened need to rehabilitate the aging energy infrastructure, in order to bring it closer to EU standards. Specifically, the EBRD will engage in asset rehabilitation, optimisation and reorganisation, though loans and investments in the areas of gas, crude oil and oil products transportation, electricity distribution, transmission and generation, and district heating. The Bank will work closely with the government to enable the commercial and financial reform of municipal district heating companies and to raise financing for the rehabilitation of these entities, and to increase their attractiveness to private sector investors.
   - Commercial loans
     Some local banks are interested in co-financing energy projects. Taking into consideration such project characteristics as beneficiary type, investment sector and the social component of the project, it became clear that the most appropriate solution would be a long-term loan (ten to fifteen years).
   - Special Fund for the Energy System Development
     The funding of the energy efficiency projects from the Special Fund for the Energy System Development has been approved by the government in accordance with the proposal of the Romanian Agency for Energy Conservation (ARCE), together with the synthesis of the energy efficiency programmes as set forth in the Energy Efficiency Law 199/2000 and the National Strategy for Energy Efficiency 163/2004.
   - Environmental Investment Mechanism
     To date, the Romanian Government has signed Memoranda of Understanding for Joint Implementation projects under Art. 6 of the Kyoto Protocol with the Netherlands, Sweden, Denmark, Austria, Norway, Switzerland, and the Prototype Carbon Fund. These Memoranda of Understanding apply to procedures to facilitate the development and implementation of emission reduction projects in Romania, and the transfer to the other Party of the agreed part of emission reduction units (ERU) resulting from those projects.

Combined Heat and Power (CHP) Plant Timisoara Sud

The Romanian side will facilitate the development and implementation of projects by supporting the potential beneficiaries interested in carrying out emissions reduction, both by providing information and by giving formal approval to those projects which meet all national Joint Implementation requirements under the Protocol. The Romanian contracting party will ensure that proceeds from the sale of ERUs will be used to finance those specific projects from which the ERUs originate.

2. Identification of Possible Investors
   Since 2003, COLTERM representatives together with the ISPE team have begun to identify possible investors:
   - In 2003, the application forms for obtaining co-financing from the Special Fund for Energy System Development managed by ARCE were submitted for the rehabilitation of the third hot water boiler of TCCHPP. In 2004, ARCE allowed a grant to COLTERM representing about 5% of estimated cost (0.6% of total project cost).
   - In 2004, ISPE together with Neweuropepartners AG of Switzerland elaborated a proposal regarding the TSCHPP plan for JI projects in a Swedish programme framework launched by the Swedish Energy Agency.

That proposal was approved by the STEM as a JI project. The Project Design Document was elaborated and approved by the Swedish side. After signing, the next step will be to conclude the Option and Sales Agreements.

- This year, COLTERM has received a confirmation letter from the Raiffeisen Bank regarding their interest in involvement in the development of the COLTERM project (TSCHPP plan).
- During the coming period, discussions and negotiations will follow between EBRD representatives and the COLTERM and ISPE teams regarding the possibility of EBRD project co-financing. At the same time, the project will be promoted to other possible investors (commercial banks), in order to obtain necessary financial resources for the entire project.
- The City of Karlsruhe, a twin city with Timisoara, intends to start a Joint Venture to develop the TCCHPP project.
- The First Union Capital Group of Greece is interested in involvement in both existing and new COLTERM projects, through equity contributions or a credit line.

City of Timisoara

3. Elaboration of the Project Financing Plan containing the possible financing schemes (own sources, local and foreign credits, grant).

The following Financing Plan structure is planned:					
	2004	2005	2006	2007	Total
Own sources	1.3%	7.7%	8.5%	6.5%	24%
Grant	0.6%	1.2%	1.2%		3%
Local bank loans		14.1%	30.8%		38%
Foreign bank loans		4.2%	30.8%		35%
TOTAL	1.9%	27.2%	40.5%	30.4%	100%

Difficulties Encountered

- Termocet 2000 and Caloris RA merged to form COLTERM at the beginning of 2004, which led to some difficulties in the project financing process. After this date, all bankable documents elaborated by the working team were updated for the new technical, administrative and financial conditions.
- The amounts allocated from state or local budget as grants or subsidies for maintaining the energy efficiency projects are not sufficient to cover all needs.
- There are difficulties in obtaining project guarantees, both state and municipal. Banks often require these types of guarantees, which is an important obstacle to financing in Romania.
- It is very difficult to activate and involve local banks in financing large-scale projects in the energy efficiency field.
- The limited resources of project owners are a major obstacle to larger projects.
- The lack of knowledge concerning the applicability of advanced financial schemes involving ESCOs, Joint Implementation, and joint ventures represents another obstacle to developing major projects.
- It has been difficult to convince companies of the business aspects of energy efficiency measures; this attitude will change after the energy market is 100% liberalised.

Lessons Learned

- It is necessary to spend considerable time to create a complete and correct database regarding the financial aspects of the project beneficiary.
- All documents required by financial institutions must be of very high quality.
- In Romania there are large potentials for developing energy efficiency projects; the development process depends on management experience and company strategy.
- The company (project beneficiary) financial statement must be positive.
- The project development process requires time and flexibility.

6.5 Slovakia

6.5.1 Project Identification Process

Difficulties encountered

The major obstacle in the project identification phase was limited availability of information on projects that:

1. matched the originally intended EBRD criteria (investment size, environmental aspects, social impact and transition effect, non-competing);
2. did not belong to the category of projects known to be non-viable because of certain organisational, institutional or economic features;
3. did not yet have their funding and/or their investors secured;
4. were not blocked by confidentiality considerations;
5. had a development and implementation schedule fitting the BEEP schedule.

- On the other hand, the limited availability of information on large scale energy investments is also due to the limited potential for projects that meet the EBRD criteria. In general, only very few investments of the size required under SAVE II BEEP (10MEUR) can run at the same time in a limited market like Slovakia.
- The already short list of pure energy efficiency investments gets shorter still when one considers the restructuring of the Slovak banking sector, which has resulted in a number of solid and competitive financial institutions, with which the EBRD does not want to compete. The non-competition criterion virtually excludes all project sponsors who can negotiate optimal financing conditions with local commercial banks. It should be noted that this was not the case during the drafting of the BEEP proposal, when the conditions on the Slovak financial market were substantially worse than those in the euro-zone.
- Basically, after excluding potential project carriers with short-life prospects, those sectors which are still interesting in terms of EBRD financing present the legal entities with a maximum uncertainty parameter: the companies, i.e. utilities, which are in the process of privatisation, or the newly formed legal entities; and the regional administrations, which receive the tax revenues but also have the responsibility for management of public functions and property in their territory. The latter segment is presently in a phase of reconstruction, i.e., highly understaffed and lacking the capacity for in-house development of such large scale energy projects. Due to shifts in responsibilities and the changing shape of the territorial units, there have been virtually no projects prepared in the past which might now be implemented.
- Furthermore, the limited availability of information on large scale energy efficiency investments is also due to existing legal restrictions on providing information. It follows from the requested investment size that the projects under consideration will be supply rather than demand-side oriented. In case of energy efficiency improvements, this would relate to reconstruction of existing energy supply facilities of a certain size, which, according to the Slovak Energy Management Law require so-called preliminary permits from the Regulatory Office. However, the Regulatory Office is bound to treat the information contained in the application for such permits confidentially, which implies, that no such information may be forwarded to third parties. For this reason, no access of data to the EBRD project pipeline via the EBRD office in Bratislava or similar financial institutions was possible.
- Last but not least, it should be noted that the limited potential for large-scale energy efficiency investments was also due to a lack of incentive mechanisms which might have supported the development of projects in this segment. This situation has changed however, due to the implementation of structural funds following Slovakia's accession to the EU in May 2004.

The selection of the appropriate project was influenced by the following adverse factors:

- The first project for improvement of energy efficiency in 116 schools in the Kosice region by the introduction of the ESCO model was identified thanks to the EBRD office in Bratislava. Although it met the EBRD criteria, it was cancelled as a BEEP project at the request of the BEEP coordinator due to perceived low preparation status at the time of identification, leading to uncertainty at project maturity for starting negotiations with EBRD by the end of the BEEP project period. It should be noted that the activation of the Structural Funds in Slovakia sped up the project preparation, and after a wave of audits, an application for investment subsidies for the pool of buildings was submitted to the responsible implementing agency, SEA, in August 2004.
- The second of the identified projects targeted was the renovation of a former coal based power plant in central Slovakia. The project had to be cancelled due to the unwillingness of the project participants to change the project philosophy concerning cash flow generation within the project. Although the project would potentially have met the EBRD criteria, it was not feasible given its main economic assumptions. At present, the project has been restructured, and a new energy supply concept is under development, which will result in a number of small projects in the area.
- Involvement in the finally selected project was subject to prior clarification of decision-making structures within the project sponsor, Slovenske elektrarne, where a restructuring process has been going on. The first information on the project was provided via intermediaries – a consortium in charge of organising grant financing for the project. However, identification of the correct communications channel to Slovenske elektrarne took some time.

Lessons learned:

- In general, there is no autonomous demand for energy efficiency, but energy efficiency investments are often part of larger investments by big companies, e.g. in the framework of the modernisation of the whole production process with new energy supply and energy management systems. This makes the identification of an appropriate EE investment, which would meet the terms of the BEEP

contract, very difficult from the point of view of an energy agency. These difficulties have been underestimated in the proposal. It would be easier if banks, funding institutions or the EBRD would request existing applicants for financing to ask the SEA to make an energy audit and proposals for optimising energy efficiency. This approach has been used successfully in the EBRD-CEI Energy Audit Programme, in which TA is provided to applicants for EBRD funding.

- Some general lessons from the project identification and selection include:
  1. Everything can be solved, it just needs time and a professional attitude (no panic). And a little luck and courage.
  2. Because Slovakia is a small country, everyone knows everyone, and information flows, through not always as rapidly, as one would like.
  3. Pushing things to stay on schedule does not necessarily contribute to the quality of project results.

Thermal Power Plant Nováky

6.5.2 Project Development Process

Difficulties encountered:

- The restructuring process has impact on the responsibilities of individual departments and their willingness to initiate new types of action. In view of the ongoing restructuring, it was not easy to identify the correct approach and to offer the BEEP assistance in the correct manner.
- The practice of separate responsibilities within a company like the Slovenske elektrarne means that the department responsible for the technical preparation of the project communicates with the department responsible for financing of the investment only via the decisions of the Board of Directors, but that there is little or no direct flow of information. Nevertheless, inputs from both departments are decisive for producing a good business plan. Therefore, it was necessary to communicate the BEEP mission in a direct, comprehensive and transparent manner to the correct persons – the decision-makers inside both departments – and to convince each of them separately of the value of the service.
- Furthermore, the preparation of the business plan was influenced by the existing tasks of both departments (e.g. preparation of a company bond issue, development of power supply scenarios through 2020), as well as by the ongoing processes which affected the whole company, i.e. restructuring, privatisation, etc. Especially the latter factor led to uncertainty regarding moving further with the investment projects, which had to be decided by the company board and took a certain time.
- This made it a great challenge to enter into the main stage of business plan development during the summer. As a result, longer periods were required between the single steps of the process.
- One difficulty regarding equipment which appeared during the process was the inadequacy of the ProCHP calculation tool, which had originally been designed for CHP projects, for a power plant project. This made necessary a gradual upgrading of the existing tool, to meet the needs of Slovenske elektrarne.
- Furthermore, the structure of the business plan is very well suited for simple projects, but it requires a slightly different approach when describing a company like Slovenske elektrarne, (SE a.s.) and its project ENO A, as each of them has a very concrete set of features.
- In this respect, it was challenging to combine the BEEP business plan with other documents that present the project sponsor, SE a.s.

Lessons learned:

- Prior to communicating the objectives of a project like BEEP, it was necessary to identify not only the responsible departments, but also the key information flows and the concrete decision-makers inside the company. It is vital to obtain as much information on the target as possible prior to initiating direct contact.
- From that point on, everything is the matter of arrangement between the two parties.
- The project development process requires both flexibility and patience, especially during the summer.
- Matters of value take time.
- Some general lessons:
  1. It is not easy into enter the closed circle of suppliers for a large company, but with determination, it can be done.
  2. Our performance in the local market is measured by the satisfaction with the service that we provide the local client – he is the decisive factor.
  3. However, although there is always something that can be written better, it is necessary to bear the schedule in mind.

Final remark: SE intend to use the business plan and the upgraded ProCHP model as standard tools for the presentation of the company and its projects (ENO B), not only to the EBRD EET, but e.g. to the Ministry of Economics of the Slovak Republic and/or the new advisor of Bohunice International Decommissioning Support Fund (BIDSF), which is administered by EBRD.

6.5.3 Project Financing Process

At present, the Slovenske elektrarne, a.s., expects to raise up to 50% of the investment volume for the ENO project by activating the investment subsidies available within the framework of the BIDSF - Bohunice International Decommissioning Support Fund.

The BIDSF scheme is managed by the European Bank for Reconstruction and Development, which administers the funding in accordance with the principles outlined by the Fund Board, representing the donor countries. The projects submitted to the scheme are subject to evaluation by an independent consultant, appointed by the bank, and their consequent approval by the BIDSF Board.

This form of project processing was approved by the BIDSF board in May 2004, and the EBRD is presently selecting the independent consultant to be in charge of the project evaluation. In this respect, Slovenske elektrarne, a.s., has prepared a list of relevant studies and documents to be processed by the independent consultant, once he is appointed.

The provision of a loan is to be refined in accordance with the investment plan and the availability terms of the contribution from the BIDSF.

The respective negotiations on the loan are presently going on between the Slovenské elektrárne and the Power Team of EBRD, which has already gained good knowledge of the Slovenské elektrárne.

In accordance with the present financial policy, the SE, a.s., would prefer the lender to provide a loan on the basis of accepting the risk associated with the Slovenské elektrárne, a.s., i.e. to borrow on their rating.

The main difficulties encountered and lessons learnt relate to the complexity of factors which can play a role in financing negotiations of large scale investment projects. This is especially the case of project sponsors who are active in a highly regulated and political sensitive area, and who are going through the privatisation process – both of which applies to Slovenské elektrárne, a.s. Furthermore, in case when different sources of finance are being considered, it is to be stated that unless the respective contracts on financing are conducted, every envisaged source of finance is to be considered as being exposed to a certain level of uncertainty and this fact has to be properly communicated in the business plan.

7. Summary of the Country Workshops' Results

7.1 Bulgaria

The Bulgarian BEEP Country Workshop was held on 16 December in Sofia. A wide range of participants demonstrated an interest in the issue of energy efficiency in Bulgaria.

The first block of presentations dealt with topics also elaborated in the project brochure. As an introduction, an overview of the objectives and the results of the BEEP scheme were presented by Mr. Volker Jaensch / German Energy Agency (dena). The national framework conditions in Bulgaria for the implementation of energy efficiency projects (see Chapter 3.1) were presented by Mr. Valentin Dimitrov/ Bulgarian Energy Efficiency Agency (EEA). Mr. Ognian Markovski/ EEA provided the participants with a summary of the experiences drawn from the development of the Zlatograd project (see Chapter 6.1). He also presented an overview of the EBRD's criteria for financing energy efficiency projects in CEE countries.

BEEP Workshop Sofia

Sources of financing for energy efficiency projects were the overall topic of the second block of presentations:

Mr. Nikolai Zhechkov/ Brunata Bulgaria OOD, provided an overview of the concept of financing energy efficiency investments via the involvement of Energy Service Companies (ESCOs) and explained the experiences of the ESCO Brunata in Bulgaria. Brunata Bulgaria OOD is a subsidiary company of the Danish company Brunata, which has been active in Bulgaria since 1992. Brunata sees a major market potential for ESCOs in Bulgaria; however, due to administrative barriers, their exploitation is still difficult. The legislative framework does not provide appropriate incentives yet, but improvements are to be expected. Mr. Nikolai Zhechkov stressed that project partners who are committed to the project and are ready to take responsibility are a key factor for success. Brunata is currently preparing several biomass projects for district heating systems, the potential in this field of activities is considered very promising.

BEEP Workshop Sofia

The presentation of Mr. Ilian Jeliazkov/ ESD Bulgaria Ltd. dealt with the background and the potential for the utilisation of the Kyoto Protocol's flexible mechanism in Bulgaria. Under the Kyoto Protocol, Bulgaria is to reduce its climate change emissions in the first commitment period by 8% compared to the 1988 level, or to a maximum of 144 million t/a of CO2 equivalents (1988: 157 million t/a). However, due to the economic transition process, CO2 emissions are currently at a level of only 50% of the base year, 1988. Therefore, Bulgaria has a strong potential for utilising the Kyoto protocol's flexible mechanisms. Current trading shows a price level of € 3 - 8 per CO2 equivalent in Bulgaria. An appropriate risk sharing between seller and buyer is intended as the basis for the sales contracts. Memoranda of Understanding (MoUs) have been signed so far with the Prototype Carbon Fund, the Netherlands, Switzerland, Austria and Denmark. A Joint Implementation Unit has been established at the Ministry of Environment and Water. Some ten JI projects are already nearing the implementation phase.

Mr. Dimitar Nenkov/ National Trust EcoFund provided an introduction to the EcoFund which is being supported by Switzerland. The purpose of the Fund is the management of environmental issues. Sixty-seven projects have been financed so far, of which fifty-four have been already realised and thirteen are currently being implemented. The Fund's average project participation is at a level of 19%; however, a rise to 30% is possible.

The concept of the Bulgarian Energy Efficiency Fund (BEEF) was presented by Mr. Lyulin Radolov/ Black Sea Regional Energy Centre. The implementation of the Fund is currently being prepared, and the operational start is planned for early 2005. The Global Environment Facility is providing $10 million to the capital of the Fund. The BEEF is entirely focused on energy efficiency projects and will provide loans, guarantees and technical assistance. The payback period of the projects should be in the range of three to five years. Currently, a fund manager is being selected via an interna-

tional competition. BEEF will be a revolving fund, meaning that free capital will be reinvested.

Mr. Stefan Vassilev/ United Bulgarian Bank (UBB) presented the activities of UBB in the field of energy efficiency. Via an EBRD credit line, loans are being provided to private companies for financing energy efficiency and renewable energy projects. The maximum loan amount is fixed at € 1.5 million. Interest rates are in the range of 9-12%, depending on the risks related to the project. The United Bulgarian Bank (UBB) provides a new lending facility for municipal energy efficiency projects under USAID's Development Credit Authority programme. The facility will provide for up to $10 million in loans to be issued by the UBB, with partial guarantees provided by USAID. The projects will enable municipalities to lower energy costs, improve the quality of services delivered, and reduce harmful emissions.

The lively question and answer sessions during the workshop demonstrated the relevance of the presentations for the workshop participants.

7.2 Czech Republic

The Czech country workshop took place on 19 November 2004 in the town hall of Mariánské Lázné. The workshop was hosted by the municipality of Mariánské Lázné, which is the project owner of the BEEP project selected. By this approach, an excellent possibility was provided to disseminate the BEEP project experiences and to discuss financing issues of energy efficiency projects with relevant stakeholders and market participants.

BEEP Workshop Marianské Lázně

The workshop was opened with a welcoming address by the mayor of Mariánské Lázné. The first block of presentations dealt with issues elaborated in the project brochure.

BEEP Workshop Marianské Lázně

Mr. Jiri Urbanec/ Municipality of Mariánské Lázné provided an overview of the framework conditions for energy efficiency projects in the Czech Republic (see Chapter 3.2). The objectives and results of the BEEP scheme were presented by Mr. Volker Jaensch/ German Energy Agency. Ms. Vladimira Henelova/ ENVIROS explained the experiences gained from the project identification and selection process within the BEEP scheme. Moreover, her presentation covered the difficulties encountered and the lessons learnt from the development and financing process of the selected Mariánské Lázné hospital project (see Chapter 6.2).

Ms. Tána Dutkevicová/ Czech Energy Agency provided an overview of the measures and support schemes for energy efficiency projects available in the Czech Republic. Actual information can be downloaded from the homepage of the Czech Energy Agency (www.ceacr.cz).

The following block of presentations dealt with the background and experiences of Energy Service Companies (ESCOs) in the Czech Republic.

Mr. Vladimir Sochor/ Siemens explained the preconditions for Siemens regarding an engagement in an Energy Performance Contract (EPC). The payback time has to be in a range of four to eight years, and the operational costs have to reach a level of at least 1 million Czech Crowns per year (approx. € 30,000 per year). Typical investments are construction measures and technology measures. For technology measures, the savings have to be guaranteed by the contractor. Moreover, there is a distinction between energy contracting and energy performance contracting. Energy contracting deals only with the operation of technical installations, such as a boiler house, while energy performance contracting includes guaranteed savings on the demand side. Various examples of such energy efficiency measures in schools, in a bakery and in a home for mentally disabled people illustrated the range of Siemens' activities in the field of energy performance contracting in the Czech Republic. The average contract period in the projects mentioned was five to six years.

Mr. Miroslav Marada/ MVV Energie CZ stressed that the necessary effort for preparing the project documentation for EPC contracts has to be considered in the price tender. Moreover, the associated risk of the contract has to be carefully evaluated and assigned a monetary value. MVV Energie CZ was involved in the first energy performance project in the Czech Republic which was implemented in 1994 in the hospital of Jilemnice. The estimated payback period was eight years. However, the project turned out to be more effective than expected, which led to a higher profitability for all involved project participants.

BEEP Workshop Marianské Lázně

The final block of presentations covered financing possibilities for energy efficiency projects in the Czech Republic.

Ms. Miroslava Novotná/ CSOB provided an overview of the PHARE Energy Savings Fund. The Fund was established in 1997 and is based on a contract between CSOB and the Czech Ministry for Industry and Trade providing for management of the Fund by CSOB. The project criteria are defined in this contract; however, CSOB has final responsibility for the assessment of client eligibility. One third of loans for financing energy efficiency investments are provided by the Fund's capital and two thirds by CSOB. As a result, the client has to pay only 67% of the commercial interest rate. In the framework of a financing application, a project verification study has to be presented to the Fund. Generally the following criteria apply to the Fund's project participation:

- The share of the total investment provided by the Fund must be at least 60 %;
- At least 20 % of the total investment must be co-financed by the project owner;
- The remainder can be co-financed via the Czech Energy Agency or respective other sources;
- At least 40% of project revenues must be generated by energy savings;
- Only demand side projects are eligible (no green-field projects);
- The interest rate can be fixed or floating;
- The maximum contract period is ten years.

So far, forty-four energy efficiency projects have been financed by the PHARE Energy Saving Fund. Moreover, the Fund is providing loans to ESCOs (in eight cases so far). All financed projects are subject to an ex-post evaluation.

Mr. Lukás Vácha/ Ceská Sporitelna provided an overview of his institution's approach in the field of energy efficiency projects. In this area, Ceská Sporitelna is co-operating with the International Financial Co-operation (IFC), with the IFC providing loan guarantees of up to 50%. The minimum size for investments is 2 million Czech Crowns. Credits are only provided to private companies or special purpose companies founded by municipalities; direct loans to municipalities are not possible. Mr. Lukás Vácha stressed the advantage of contacting the bank at an early stage of the project development phase. Potential mistakes in structuring and assessing the project can be avoided by this approach. Equity requirements are usually around 30% of total investment, depending on the risks of the project.

The subsequent lively question and answer session demonstrated the relevance of the workshop for the participants. Details of the presentations were clarified and the importance of rapid implementation of the Mariánské Lázné hospital project was stressed.

7.3 Poland

On Tuesday 9 November, a one-day workshop arranged by the BEEP partner KAPE (Polish National Energy Conservation Agency) with the title "Preparation and Financing of Energy Efficiency Investments" (Przygotowanie i finasowanie inwestycji efektywności energetycznej) was held in the premises of the MDM Hotel in Warsaw.

The workshop was attended by about eighty representatives, mainly from municipalities all over Poland, and also from companies and other institutions with responsibility for or a stake in energy supply at the local level, and with an interest in investment opportunities with regard to energy efficiency.

Ryszard Wnuk, the Polish co-ordinator of BEEP, welcomed the participants, and informed them of the current status of energy efficiency policy of Poland.

BEEP Workshop Warszawa

The seminar consisted of two sessions. The first discussed the possibilities of financing energy efficiency projects by Polish financial institutions. The following three presentations were held:

1. "Energy Efficiency Investments", by Mr. Jerzy Janota-Bzowski, a representative of EkoFund;
2. "The Role of the Environment Protection Bank in Energy Efficiency Projects Financing", by Grażyna Kasprzak, of the Environment Protection Bank; and
3. "Financing of Energy Efficiency Projects by the National Fund for Environmental Protection and Water Management", by Włodzimierz Mazurek, of the National Fund for Environmental Protection and Water Management.

BEEP Workshop Warszawa

The second part of the seminar concerned dissemination of BEEP project results. Mr. Tomasz Bańkowski – representative of KAPE S.A., presented the overall results of BEEP project in Poland, including the pilot energy efficiency investment in the Bielsko-Biała CHP plant. The experiences of the BEEP project consortium with regard to the identification, development, and financial solicitation process of bankable BEEP investment projects in CEE countries (except Poland) was presented by Mikael Brodin, IFE, and interpreted into Polish. A short description of the projects identified (technical characteristics, rationale, project owner, economic and financial aspects) was provided, along with a project status review. Moreover, the problems encountered and lessons learnt from developing the project proposals were discussed.

The seminar concluded with a discussion of the future of energy investment in Poland.

7.4 Romania

The Romanian country workshop took place on 19 November 2004 in Bucharest, at the conference Hall of the Hotel Johann Strauss. The event was an excellent opportunity to disseminate the results of the BEEP project experience, and to discuss financing issues of energy efficiency projects between consultants, energy agencies, ministries, energy managers, contractors and financing institutions, and representatives of private investment funds.

The participants at the Romanian workshop were:

- BEEP partners: ISPE Romania and CRES Greece;
- BEEP Steering Committee: EBRD Romania;
- Consultants: SIEMENS Romania, ENINVEST S.A.;
- Energy Agencies: Romanian Agency for Energy Conservation (ARCE), ABMEE Brasov (SAVE Agency);
- Ministries: Romanian Ministry of Administration and the Interior (MAI), Romanian Ministry of the Economy and Commerce (MEC);
- Energy managers and contractors: COLTERM S.A., Brasov CHPP, Iasi CHPP, Zalau Cogeneration Plant S.A., Termica Botosani, TERMOELECTRICA, ELCEN Bucuresti.
- Financial Institutions: FREE Romanian Fund for Energy Efficiency, BRD – Société Générale, First Union Capital Group Greece FUC.

The workshop was opened with a welcoming address by the ISPE representative, Ms. Carmencita Constantin, Head of the Studies and International Programmes Department. It was structured as three presentation sessions followed by a networking session.

BEEP Workshop Bucharest

The first session of presentations was dedicated to a general overview of energy efficiency issues in Romania. Here, the representatives of MAI, MEC and ARCE presented the new national strategies for promoting energy efficiency projects from the producer's, distributor's and consumer's points of view, respectively. Mr. Aureliu Dumitrescu, the MAI Counsellor (www.mai.ro) provided an overview of the framework of the market strategy of district heating systems. The representative of MAI stressed the existence of in-progress negotiations with the World Bank regarding the financing of energy efficiency projects (public building rehabilitation and implementation of 2004/8/EC Directive) in fiscal 2005. The general conclusion from the presentation stressed the existence of favourable technical, social and economic framework conditions for commercial rehabilitation of existing DHSs and development of new ones in Romania. In order to achieve this objective, the following condition were also to be met:

- Improvement in the economic and technical performances of the existing DHSs;
- Completion of heat metering equipment at the distributor and consumer level;
- Development of cogeneration as an energy source for DHSs.

BEEP Workshop Bucharest

ARCE Vice-President Mr. Corneliu Radulescu presented the Agency's main priorities in promoting energy efficiency in industry and municipalities. For the municipalities, the strategic measures are: thermal rehabilitation of buildings, rehabilitation of local and district HSs, metering (heat meters and controllers, level thermostat valves, heat allocators), public outdoor and indoor lighting, and modernisation of potable water systems. According to data provided by Mr. Radulescu, within the last two years there have been some ninety-five new investment projects, with a total budget of about € 60 million, which have received approx. € 7 million in state funding, with total energy savings of approx. 32,000 toe. According to the Governmental Ordinance No. 89/2004 on activities for allocation and efficient use of earnings from special projects in the energy field, the energy efficiency projects co-ordinated by ARCE for the next year will be partly financed directly from the state budget, according to the initial financing plan. The ARCE conclusions were the followings:

- The essential characteristic of the present situation of the Romanian energy sector is that energy savings represent the cheapest available resource, in terms of adopting an integrated resource planning method.
- The most important tool of energy efficiency policies is the reduction of primary energy intensity, estimated at 40% for the period 2004-2015, assuming an average annual GDP growth rate of 5.4%.
- The reduction of energy intensity could be accomplished by promoting the most competitive technologies, such as energy efficiency and the structural adjustment of the economy.

Updated information can be downloaded from the ARCE homepage (www.arceonline.ro).

The second session of the workshop was dedicated to the BEEP project presentation. Ileana Constantinescu of ISPE (www.ispe.ro) presented the general overview of the BEEP project, including participants, scope of the project, expected results, the project work plan and direct results.

- Adriana Milandru of ISPE presented the experiences gained from the project identification and selection process, including the difficulties encountered and the lessons learnt from the development and financing process for the project selected.
- Evangelos Mathas of CRES (www.cres.gr) presented the teamwork experience, taking into consideration the role of the EU partner in each team, and emphasised the importance of know-how transfer between experts from EU and CEE countries.
- Mr. Cristian Mitu of COLTERM SA (www.colterm.ro), the BEEP beneficiary, presented the company developments and the current status regarding technical, economic and financial performance. He also provided information on efforts to find financing sources for project implementation.
- Mr. Marko Kecman, the representative of EBRD Romania (www.ebrd.ro), provided a short presentation of the EBRD's main options for financing energy efficiency projects: ESCOs, energy efficiency credit lines and carbon credit lines, including a case study developed for CEE countries for each financing option. Ms. Carmencita Constantin presented the current situation of COLTERM project financing, and the future possible alternatives for covering the total estimated investment.

BEEP Workshop Bucharest

The ensuing session of presentations dealt with the background and experiences of the financial institutions represented by FREE and BRD – Groupe Société Générale.

- Mr. Mihai Voronca – FREE's Executive Director (www.free.org.ro) provided information regarding FREE's mission, and the market actors, tools and eligible clients for this fund. Romanian Fund for Energy Efficiency (FREE) is an independent institution established by Emergency Ordinance No. 124/2001, approved by Law No. 287/2002, with $10 million seed capital obtained as a grant from the Global Environment Facility (GEF) through the World Bank. FREE is a specialised institution for financing energy efficiency projects. One of its main goals is to promote energy efficiency in municipalities. Mr. Voronca noted that the Fund expects new energy efficiency project proposals due to the existence of available funds and the advantages of FREE financing.
- Ms. Victoria Durucay, Counsellor of BRD – Groupe Société Générale (www.brd.ro), provided a general overview of BRD and the actual conditions requested by the bank for financing energy efficiency projects. She noted that other COLTERM projects could also be of interest to the bank.

The final part of the Romanian workshop was a networking session. Here, each interested energy efficiency project

developer was able to contact and discuss with the representatives of the financial institutions or with other present organisation representatives. Thus, the FUC and Siemens Romania representatives were interested in discussing project financing options with COLTERM Timisoara and ISPE Bucharest, including such issues as equity contributions, credit suppliers, etc. Other energy producers from the cities of Botosani, Brasov and Zalau were interested in setting up further meetings with the aid of ISPE experts to jointly discuss and develop future energy efficiency projects.

7.5 Slovakia

The Slovak country workshop took place on 16 November 2004 in the Consulting and Information Centre of Energy Sector, SE, a.s., in Bratislava. The aim of the workshop was to disseminate the results of the SAVE II BEEP project and to present the possibilities available for funding of energy efficiency projects in Slovakia.

The workshop was opened by a welcoming address by Mr. Martin Bella, the SEA project manager responsible for organising the event. The first block of presentations dealt with the introduction of the SAVE II BEEP and with a description of tools developed within the project.

BEEP Workshop Bratislava

After the introduction into the agenda of the event by Mr. Bella, Mr. Geisslhofer of the Austrian Energy Agency E.V.A. presented the outline and the results of the project. Consequently, Mr. Martin Bella presented the forms of financial assistance for energy efficiency projects developed by the EBRD, and its criteria for such projects. Furthermore, he illustrated the manner of presenting the investment of SE, a.s. by means of the comprehensive BEEP business plan.

After the first coffee break, Mr. Bella continued with the presentation of the ProCHP tool, which was adopted within the BEEP project to meet the specific requirements of the investment project SE, a.s., ENO A. At this stage, the interplay between the BEEP business plan structure and the outputs provided by the ProCHP tool was also stressed, which was of great interest to the participants.

BEEP Workshop Bratislava

The next presentation dealt with the definition of requirements for energy efficiency projects from the viewpoint of EETEK, a CEE-wide active energy service company which is partly owned by EBRD and DEXIA. Mr. Kovacs, the CEO of EETEK provided some highly interesting insights into the risks of energy efficiency projects as perceived by ESCOs, and how to mitigate them i.e. by making proper contractual arrangements, or by transferring skills between the project stakeholders. By illustrating the different approaches, the products and services offered by EETEK were presented.

After lunch, Mr. Starinsky of SEA presented the possibilities for funding energy efficiency projects under the framework of Structural Funds in Slovakia, and how to implement them in future. At present, no quantitative data on the number or amounts of investment of projects supported in this way could be provided, as the first calls for projects was only terminated on 15 November 2004. However, the basic philosophy on distributing the available amount of ERDF support over the remaining period from 2005-2006 was presented.

The next speaker, Mr. Stasik, presented an overview of the process of investment project analysis by DEXIA in general, and specifically on the risks related to energy efficiency and renewables projects. Furthermore, he explained how the specific product offered by DEXIA, the establishment of a specialised single purpose project financing company, could help overcome the technological, operational and economic risks of heat and/or power supply projects. Thereafter, Mr. Stasik presented the results of Dexia's activities in the funding of energy efficiency projects:

Year	Number of projects	Investment costs in SKK	Loans provided by Dexia in SKK
2002	8	467 159 000	348 500 000
2003	11	564 967 000	422 412 000
2004	16	1 271 905 000	660 061 000
Total	**35**	**2 304 031 000**	**1 430 973 000**

The next presentation, by Mr. Ploechl of the Austrian Kommunalkredit, dealt with the possible effects of JI/CDM

on the economic performance of energy efficiency projects. In this respect, he presented the Austrian JI/CDM programme, which is administrated by the Austrian Kommunalkredit, and provided a view of the project criteria and selection process under this scheme. Besides focusing on the credibility of baselines, Mr. Ploechl also explained the political background behind the scheme, i.e. the concentration on the need for mutual agreement between countries accepting the JI mechanisms. In this respect, it was mentioned that Slovakia is not really taking part in the process.

The next presentation was given by Ms. Pammesberger of the Austrian Wirtschaftsservice, who illustrated the different forms of support, i.e. guarantees provided to Austrian exporters of energy efficient services and technologies, thus reducing their risks and increasing their competitiveness compared to other foreign suppliers.

BEEP Workshop Bratislava

Thereafter, Mr. Behul of the Vseobecna uverova banka, Gruppo Intessa B.C.I. demonstrated the effect of the availability of Structural Funds on the growing market with financing of energy efficiency investment, the specific position of the VUB as one of the major actors in the Slovak banking sector, and the resulting strategy and products of the bank. In this respect, the VUB is able to offer the clients bridge financing throughout the project implementation period, i.e. until the support is paid off, as well as long term loans to cover the remaining part of the investment.

Finally, Mr. Klukan, an independent consultant active in the area of project development, presented his experience in raising financing for energy efficiency projects. Mr. Klukan noted that there are a number of state schemes, which are generally not considered significant for energy efficiency or RES investments, but which can in fact be used for such projects, once it is made clear that the energy efficiency project will lead e.g. to improved competitiveness of a small scale enterprise, or present an innovative technology in the segment. Interestingly, support for energy efficiency projects under the latter schemes can be higher than in the case of special energy efficiency support programmes, as shown in the following table.

Subsidy Scheme	Energy Saving GJ/yr	Subsidy SKK	SKK/GJ
Scheme for support of energy savings	6 576	1 315 600	200
Scheme for support of innovative technologies	4 404	2 180 000	495

Furthermore, Mr. Klukan also referred to the presentation by Mr. Ploechl of Austrian Kommunalkredit, and presented the results of the Kommunalkredit in supporting projects in CEE, showing the progressively increasing number of projects that have been positively evaluated by the Kommunalkredit as well as the correspondingly increasing amount of support gained from this source.

Each presentation was followed by a short discussion round, in which the thirty-seven participants had the opportunity to raise questions, and to clarify notes and details of the presentations.

8. Conclusions

There still exists a great potential for energy efficiency projects in CEE countries, which is worth tapping. However, success will require careful consideration of the framework conditions, and a consistent approach. To focus on projects with a realistic chance of implementation is crucial. But even promising projects have to be presented to financial institutions and potential investors with documentation of a high standard, in order to achieve financial closure.

The experiences gained in the BEEP scheme concerning project identification, selection, development and financing have proved to be very valuable in this regard. Moreover, the elaborated project assessment tools as well as the business plan format have been tested and can be recommended for further utilisation. All standard formats are available for downloading at the BEEP website www.save-beep.org.

It has been the aim of this project brochure to provide market participants with the possibility to draw from the experiences and results gained in the BEEP project. By this approach the BEEP consortium expects to facilitate the implementation of energy efficiency projects in CEE countries and to initiate new project incentives.

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This project brochure has been prepared by the BEEP project consortium as a concluding activity within the framework of the EU-SAVE BEEP project. It aims at providing a broad audience with the results and experiences gained in the context of identifying, developing and financing energy efficiency projects in Central and Eastern European countries.

The brochure addresses investors, consultants, project owners and other interested parties of energy efficiency measures in Central and Eastern Europe.

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