TIME FOR A CHANGE:
Multilateral Development Bank
Energy Investment in
Central and Eastern Europe

Regional Report

April 1998
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1. Introduction

This study is an overview of Multilateral Development Bank (MDB) investment in Central and Eastern Europe (CEE). The CEE countries include: Albania, Bulgaria, Belarus, Croatia, the Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Macedonia, Moldova, Slovenia, Slovakia, and Ukraine.

Four countries, Bulgaria, Hungary, Lithuania and Ukraine, were chosen for detailed study in this report. The choice of these countries was based on the following criteria:

- The country is receiving, or will be receiving, a relatively large amount of MDB loans, and
- the geographical, social and economic diversity of the countries.

These studies have also been prepared in their respective national languages are being published together with this report.

Through the detailed analysis of MDB energy lending policies in these countries, this report aims to show overall trends in these policies in the region. Based on this analysis, it suggests recommendations for future MDB policy in the region. It will attempt to show that the recent record of MDB lending in the region has not reflected an adequate concern for sustainable development.

The report finds that the region as a whole has great potential for energy savings through such demand-side efficiency measures as energy conservation. Yet to date, this field has received relatively little attention from MDBs. Energy efficiency measures would be both cost-effective and environmentally acceptable, and could be implemented relatively easily, making them very economically attractive. In fact, many observers consider energy efficiency improvements economically necessary for the region. They could also quickly provide residents of the region with tangible benefits in terms of energy savings and reduced costs. Renewable energy is also a field which has strong prospects in the region, but this is another area which has not yet received much attention from MDBs.

The report finds that in certain cases, unsustainable energy technologies, such as nuclear power plants or large dam projects, are being supported by MDBs instead of more sustainable and cost-effective technologies. In these cases, serious questions are raised regarding the benefits of such large and controversial projects to the local inhabitants, as opposed to the benefits which accrue to the corporations contracted to do the work. It is our view that MDBs have a primary obligation to the inhabitants of the region to ensure that the projects they support are sustainable, economical, environmentally acceptable, and that they provide optimum benefits to the local and regional community.

The study concentrates on the 3 main Multilateral Development Banks active in the region:

- The European Bank for Reconstruction and Development (EBRD)
- The European Investment Bank (EIB)
- The IBRD and IDA from World Bank Group
2. Regional and Country Reports

2.1 Energy in the Central and Eastern European Region

The energy sector in CEE countries can be characterised by the word “inefficient”. Energy intensity is 1.5 to 6.4 times higher than in EU countries, and electricity use per unit of economic output is typically twice as high as in OECD countries. After the major political changes in Eastern Europe in the late 1980’s and the subsequent economic changes there, radical change was also expected in the region’s energy sector. Generally, this involved a decline in the consumption of energy in some sectors (most notably industry) and increased consumption in the commercial and residential sectors. Decline of energy consumption was smaller than the decrease in economic output, which thus resulted in an increase of electricity and energy intensity in the region.

Most CEE countries are limited in their traditional energy sources, and there is high dependence on the

Energy and Economic Figures for 1995 in CEE Countries¹.

<table>
<thead>
<tr>
<th>Country</th>
<th>GDP per capita at PPP</th>
<th>Primary energy consumption</th>
<th>Primary energy consumption per capita</th>
<th>Energy intensity</th>
<th>Gross electricity consumption</th>
<th>Gross el. per capita</th>
<th>Electricity intensity</th>
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¹ Application of the Current EU Air Emissions Standards to the CEEC, - An Integrated Assessment of the Environmental Effects, IIASA, Draft Report, 1997 (N.B.: In this table, “PPP” denotes “purchasing power parity.”.)
import of oil, gas and nuclear fuel from Russia. This is partially because of cheap Russian supply and a regional infrastructure that was geared primarily for import from Russia. The CEE countries were connected to the Unified Power System (UPS) that comprised all CEE national energy grids. In 1995 Poland, Hungary, the Czech Republic and Slovakia joined UCPTE, the west European system. Other countries were connected later. There are still insufficient interconnections to allow full and open trade to take place, but it will be only a few years before there is full “freedom of movement” of electricity.

The CEE countries of Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia have applied for membership in the European Union (EU). EU enlargement will be a key political process in Central and Eastern Europe in the coming years, and will definitely have an impact on the region’s energy sector. EU membership will require that all candidate countries make market and other reforms in their energy, transportation and environment sectors in order to comply with EU standards. This will be a difficult but necessary process. “Important investment will be necessary to adopt Community acquis,” especially in the fields of environment, health and safety at work, nuclear safety, energy security stock obligations, and public health. In a number of sectors, substantial restructuring or upgrading will be necessary, (in polluting industries, nuclear plants, transport and fishing fleets, energy companies, etc.)

56 bil. USD are expected to be made available for new member states through the EU Structural Funds and the Cohesion Fund. These funds are intended to promote economic and social cohesion, and to address the problems faced by rural areas and by regions experiencing low rates of economic development, decline of industries, and high unemployment. Starting in the year 2000, pre-accession aid to the applicant countries will be granted at a constant rate of 1,3 bil. USD per year. This aid will primarily focus on the infrastructure of the applicant countries. As the enlargement process continues, EIB investment is expected to play an increasingly important role, especially with the development of Trans-European Networks. The European Commission is also expected to increase its use of Euratom loans in Eastern Europe.

2.1.1 Nuclear Energy

Nuclear energy has a special position in the energy systems of most CEE countries. For some countries in this region, nuclear energy is the main source of electricity production. For example, it accounts for 40 percent of electricity production in Bulgaria, 42 percent in Hungary, 77 percent in Lithuania and 49 percent in Slovakia. In all of the countries of the region, there is also a very close relationship between governments and the nuclear industry, either informally, or on a formal basis (e.g. through state ownership). For example, all reactors in the region were built, either completely or partially, with huge direct or indirect state subsidies.

Safety standards in CEE countries have been much lower than those in Western Europe and the United States. The International Atomic Energy Agency has commissioned several studies that identify a number of safety problems with nuclear reactors in the region. Two types of reactors, the RBMK (Chernobyl type) and VVER 440/230 (old type of pressurised water reactors), were classified in these studies as ‘most dangerous’. These types of reactors are placed in a higher risk category by experts, and should not be kept in operation in the long term. The international community has called for these types of reactors to be shut down as soon as possible.

There are 14 RBMK reactors in operation in the region. They are located at: Ignalina in Lithuania, Chernobyl in Ukraine, and Smolensk, Sosnovy Bor, and Kursk in Russia. There are also eleven VVER 440/230 reactors located at Kozloduy in Bulgaria, Jaslovské Bohunice in Slovakia, Medzamor in Armenia, and Kola and Novovoronezh in Russia. There is also a newer generation of VVER 440/213 reactors, (of which there are 14 in operation), and VVER 1000 reactors, (of which there are 20 in operation). In addition, there is one Candu type reactor in operation in Romania, and one Westinghouse reactor in Slovenia.

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2 the obligations of membership as expressed in the Treaty
5 The Euratom programme is discussed in section 1.2.7.
2.1.2 Energy and Environment

The power sector contributes substantially to poor environmental quality and especially to high air pollution in the region. Low quality coal and oil, bad maintenance, and a lack of awareness about the environment during the Communist era have all contributed to these environmental problems, and all of these factors still play a significant role in the energy sector. Most governments in the region have declared improvements in their air quality, but usually consistent data to back up these claims are not available, and air quality measures are limited only to SO2 emissions. It is also true that “any improvements to date are limited primarily to the effects of reduced thermal power generation”\(^9\), caused by a recent fall in industrial production.

In most of the CEE countries, strict new environmental standards usually apply only to new energy sources. Regulations on existing plants usually lead to massive investment for desulphurisation units and partial rehabilitation of the existing plant. Aside from the positive effects of a reduction in SO2 emissions, it is evident that such investment creates new barriers for demand side efficiency. This is because investment in old coal-burning plants drains finances from new investment in energy efficiency and renewable energy technologies and perpetuates the use of non-renewable sources which contribute greenhouse gases to the atmosphere. This lack of action towards promoting demand-side efficiency has so far been a major contributing factor in the high energy intensity in our region.

2.1.3 Energy Efficiency and Renewables Potential

The countries of Central and Eastern Europe are notable in that they have plenty of energy supply capacity. Therefore, the major focus here must be on demand-side management to control carbon emissions. All of the countries of the region are major per capita emitters of greenhouse gases. They also have energy intensity rates (the ratio of energy input per unit of GDP) several times that of other OECD countries. Many countries in the region, among them Poland and the Czech Republic, rely heavily on soft brown coal for power generation, which causes particularly noxious air pollution problems. Others, such as Slovakia and Bulgaria, rely heavily on nuclear power, which carries with it the associated problems of waste, safety and nuclear weapons proliferation, and other negative environmental consequences. Future development of the energy sector in the region would benefit from shifting the fuel mix toward renewable sources of energy. However, before this can be done, it is imperative that the large inefficiencies in the region’s energy systems be addressed. It makes no sense to increase power supply, renewable or otherwise, in a region where such a large potential exits for energy conservation. The inefficiencies in the energy systems here should be viewed as a major power source, equivalent to achievable estimated savings of 20 to 40 percent. Recent studies have analysed this large potential for energy savings in the region. They note that in the region, two to seven times as much energy is used per unit of economic output as in OECD countries, while energy consumption per capita is similar to that in OECD countries.\(^10\)

From the data, it is clear that the potential exists to make these economies more energy efficient, and further, that it is in their economic interests to do so. While there will be initial costs to improving energy efficiency in the region, most of these will be offset within a relatively short period by savings in fuel costs. As regional fuel prices approach western prices and subsidies in the energy sector are eliminated, these savings will be substantial.

Generally, the technical potential for energy savings in the region is higher than energy savings which are considered economically feasible or realistic. Yet even taking into account that the full technical potential for energy savings is unlikely to be achieved in the near future (for economic and related reasons), we can estimated that energy savings of 30 percent can be realistically achieved by the year 2010. In certain countries of the region, economic pressures are expected to result in a substantial drop in carbon emissions, even without specific measures to reduce fuel consumption. For example in Ukraine, where imported energy is heavily relied upon, even a “business as usual” scenario predicts a 34 percent drop in carbon emissions in response to these economic pressures.\(^11\)

Heavy industry has historically played the dominant role in the region’s economies. This is changing

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\(^11\) Ibid., p.34.
however, as regional energy prices approach the level of world prices, causing older, inefficient industries to close down, and others to streamline. The shift from state planning to market economies has already started to cause this to happen, and regionally, carbon emissions from the industrial sector have dropped significantly since 1990 (see graph, “Czech Republic Energy and Greenhouse Gas Emissions Development”).

On the other hand, consumer demand for items like household appliances and private automobiles is expected to continue to rise, with a resultant rise in CO₂ emissions from the consumer and transport sectors. Indeed, although total CO₂ emissions have decreased during the period since 1990 (largely because of the failure of inefficient heavy industries), they have already risen in the transport and consumer sectors, and will continue to do so without policies to control fuel consumption in these sectors. Such policies include getting rid of energy subsidies, improving energy efficiency through improving insulation in buildings and using energy-efficient appliances, and efficient monitoring of consumer consumption of energy. Monitoring of energy consumption, together with sound energy pricing schemes, will provide incentives for consumers to conserve energy.

### 2.2 MDBs in the CEE Region

Multilateral financial institutions that operate in CEE include:
- EBRD (The European Bank for Reconstruction and Development)
- NSA (Nuclear Safety Account)
- EIB (The European Investment Bank)
- World Bank Group (IBRD, IFC, IDA, MIGA)
- Nordic Environment Finance Corporation (NEFCO)
- Nordic Investment Bank (NIB)
- EC Energy Programmes
  - EURATOM
  - PHARE
  - TACIS
  - THERMIE
  - SYNERGY
- The Project Preparation Committee (PPC)

The Multilateral Development Banks are among the key players in the energy sector in the CEE region because:
- They are large-scale and long-term lenders. While direct foreign investment during the period from 1989 to 1996 in the studied countries totalled 31,8
bil. USD, the approved loans from the WB, EIB and EBRD totalled 25.4 bil. USD.\(^\text{12}\)

- They play a significant role by advising CEE countries in the development of their energy sectors, and in many cases, CEE governments rely on their advice.

- Cash-strapped utilities in CEE are primarily concerned with purchasing fuel to meet demand, and they lack funds to finance measures related to environmental and nuclear safety issues.

In many cases, MDBs also demand privatisation and advise to governments in this matter.

2.2.1 The World Bank Group

The IBRD (International Bank for Reconstruction and Development) was the only MDB to lend in the CEE region before the recent political changes there. More recently, during the period from 1991 to 1996, the total investment of the IBRD and IDA (International Development Association) in CEE and the Former Soviet Union (FSU) was 18.6 billion USD. Of this amount, 11.3 bil. USD were invested for 138 loans in the countries covered by this study. Of the 17.2 billion USD from the IBRD, 1.3 billion USD were spent on projects in the electricity and power sector, and 1.6 billion USD on oil and gas projects.\(^\text{13}\)

In the period from 1991 to 1996, the World Bank has approved 25 loans in the energy sector totalling 2809.3 mil. USD in the studied region. The biggest investment in the energy sector has been made in Poland (795 mil. USD for four projects) and in

| Table of Direct Foreign Investment (FDI) and MDB lending in CEE countries during the period 1989-96\(^\text{14}\) |
|------------------------------|-------------------|----------------------|-------------------------|------------------------|--------------------------|----------------------|------------------------|----------------------|
| FDI in mil. USD | FDI per capita in USD | Total EIB loans number/$ | Energy and global EIB loans number/$ | Total EBRD loans number/$ | Energy EBRD loans number/$ | Total WB loans number/$ | Energy WB loans number/$ | Total All Banks loans number/$ | Energy All Banks loans number/$ |
| Albania | 92 | 3/42.8 | 2/21.4 | 8/76.9 | 2/28.1 | 22/272.5 | 2/34.5 | 33/392.2 | 6/84 |
| Belarus | 110 | 11 | 0/0 | 6/206.6 | 1/49.4 | 3/170.2 | 0/0 | 9/376.8 | 1/49.4 |
| Bosnia & Her | N/A | N/A | 0/0 | 1/34 | 0/0 | 3/30 | 1/20 | 4/64 | 1/20 |
| Bulgaria | 450 | 54 | 5/360.4 | 1/56.7 | 18/265.9 | 1/51.5 | 10/839 | 1/93 | 33/1465.2 | 3/201.2 |
| Croatia | 564 | 118 | 0/0 | 15/427.1 | 1/41.1 | 6/279.5 | 1/246 | 21/706.6 | 2/287.1 |
| Czech R. | 6606 | 642 | 9/1249.9 | 4/519.1 | 21/468.7 | 0/0 | 3/341.3 | 1/384 | 33/2059.9 | 5/557.5 |
| Estonia | 707 | 459 | 5/85.7 | 2/21.4 | 15/187.7 | 1/39.7 | 6/110.4 | 2/160 | 26/383.8 | 5/221.1 |
| Hungary | 13266 | 1288 | 9/1048.3 | 3/119.7 | 47/1350.7 | 3/69.3 | 11/1330 | 2/160 | 67/3729 | 8/349 |
| Latvia | 585 | 234 | 2/31.5 | 2/20.2 | 13/214.2 | 2/76.7 | 8/150.3 | 1/14 | 23/396 | 5/110.9 |
| Lithuania | 308 | 83 | 5/80.6 | 2/25.2 | 12/214.2 | 2/48.5 | 9/160.5 | 3/42.3 | 26/455.3 | 7/116 |
| Macedonia | 38 | 18 | 0/0 | 9/185.2 | 2/68.3 | 7/239.8 | 0/0 | 16/425 | 2/68.3 |
| Moldova | 150 | 35 | 0/0 | 8/157.3 | 1/23.8 | 7/231 | 1/10 | 15/368.3 | 2/33.8 |
| Poland | 4957 | 128 | 15/1645.6 | 4/495.2 | 49/1176.8 | 1/39.1 | 18/3272.5 | 4/795 | 80/6094.9 | 9/1392.2 |
| Romania | 1434 | 63 | 8/573.3 | 3/170.1 | 30/1047.1 | 3/137.8 | 12/1916 | 2/285.6 | 50/3564.8 | 8/593.5 |
| Slovakia | 767 | 144 | 8/444.8 | 4/331.4 | 19/554.4 | 3/95.9 | 2/135 | 0/0 | 29/1134.2 | 7/427.3 |
| Slovenia | 731 | 366 | 2/151.2 | 0/0 | 16/410.8 | 2/102.7 | 2/103.9 | 1/237.3 | 20/665.9 | 3/126.4 |
| Ukraine | 1187 | 23 | 0/0 | 18/517.9 | 3/183.3 | 7/1015.8 | 4/476.8 | 25/1533.7 | 7/930.1 |
| Regional | N/A | N/A | 0/0 | 26/894.6 | 4/211.3 | 0/0 | 26/894.6 | 4/211.3 |
| Czechoslovakia | N/A | N/A | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 |
| Yugoslavia | N/A | N/A | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 | 0/0 |
| Total | 31750 | 69/5714.1 | 27/1780.4 | 331/3870.2 | 32/1266.6 | 138/11347.7 | 25/2809.3 | 538/25432 | 84/5856.2 |

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\(^{12}\) See Table of Direct Foreign Investment.


Ukraine (731 mil. USD for three projects), where the World Bank has especially focused on energy sector projects. In addition to the three World Bank projects under implementation in Ukraine described in this report, there are another four energy projects in the pipeline.

2.2.2 The European Bank for Reconstruction and Development (EBRD)\textsuperscript{15}

The EBRD is the youngest of the MDBs operating in the CEE region. It was founded in May 1990 to promote and facilitate the transition to a market economy in CEE countries “committed to and applying the principles of multi-party democracy, pluralism and market economies.”\textsuperscript{16} By the end of 1996, the EBRD had approved 12.6 billion USD for 450 projects and had disbursed 9.7 billion USD for 405 projects.\textsuperscript{17} 1.372 million USD of this total went to the energy sector, accounting for 13 percent of total EBRD investment in the CEE region.\textsuperscript{18}

In the studied countries, the EBRD has approved 331 projects (totalling 8370 mil. USD,) from which 1266 mil. USD were used for 32 projects in the energy sector. In addition to country loans, the EBRD has also often set up regional loan schemes. This model was also used for four energy-efficiency projects approved in 1996.

In the end of 1994, the EBRD established the Energy Efficiency Unit, with the aim of stimulating investment in energy efficiency, particularly in demand-side efficiency. In 1996, this decision resulted in 7 seven approved loans focusing on energy efficiency in the studied region, totalling 278 mil. USD. In the same year, there were only two “traditional” energy loans in the region, totalling 152 mil. USD. EBRD loans for the year 1996 totalled 3562 million USD; thus Energy Efficiency Unit loans represented approximately 7.8 per cent of this total.

\textsuperscript{15} Readers can find information on the EBRD at the Bank’s web-site: http://www.ebrd.com/
\textsuperscript{16} Article 1, The Agreement Establishing the European Bank for Reconstruction and Development, 29 May 1990.
\textsuperscript{17} EBRD Annual Report 1996, EBRD, 1997, p.3.
\textsuperscript{18} Ibid., p.20.

2.2.3 The European Investment Bank (EIB)\textsuperscript{19}

The European Investment Bank is currently the world’s largest multilateral lender. In 1996, the EIB lent a total of 29.2 billion USD.\textsuperscript{20} Established in 1958 under the Treaty of Rome, the EIB’s main aim is to support European Union objectives, and it is owned by the European Union member states. In 1996, the EIB’s investment outside the European Union was 2.9 billion USD, which accounts for 10 % of all EIB loans, of which 1406 million USD (4.9% of the EIB’s total investment) were invested in CEE countries.\textsuperscript{21} (The EIB invested 3.5 billion USD outside the EU in 1995.)\textsuperscript{22} Total investment in the CEE region between the years 1991 (when the EIB started to invest in the CEE) and 1996 was 5714 mil. USD for 69 loans.\textsuperscript{23} Of this, 27 loans totalling 1780 USD were approved for energy sector projects and for global loans which could be partially applied to energy efficiency projects.

Global loans are financed by the EIB via local banks. The EIB claims that these loans have a strong environmental component, and they also usually include energy conservation measures. However, the EIB refuses to provide a list of loans financed through the its global loan scheme, and the local banks use confidentiality rules. It is therefore virtually impossible for interested parties to obtain any information on how these global loans have actually been used.

2.2.4 Nordic Investment Bank and Nordic Environment Finance Corporation

The Nordic Investment Bank (NIB) was established in 1975 and is owned by the 5 Nordic countries of Denmark, Finland, Iceland, Norway and Sweden. The Bank provides medium- and long-term investment for projects of Nordic interest. The NIB’s authorised capital amounts to 3.2 billion USD. In addition, there is a special Project Investment Loans lending facility of 2.5 billion USD earmarked for projects in creditworthy developing countries and in

\textsuperscript{19} Readers can find information on the EIB at the Bank’s web-site: http://www.eib.org/
\textsuperscript{20} EIB Press Release, 6 February, 1997.
\textsuperscript{21} EIB Press Release, 6 February, 1997.
\textsuperscript{23} EIB Financing in Central and Eastern Europe, December 6, 1996.
the CEE region. For the Baltic states, the NIB has a special lending facility for small- and medium-size projects. The NIB has been involved in co-financing for energy efficiency projects in Poland and for a geothermal project in Slovakia.24

The five Nordic countries founded the Nordic Environment Finance Corporation (NEFCO) in 1990 to support environmental investment in CEE. It focuses primarily on Poland, the Baltic states and Northwest Russia.

2.2.5 The Project Preparation Committee

The Project Preparation Committee (PPC) represents the intersection between financing from MDBs, multilateral grant programs, and direct country investment in Eastern Europe. The PPC members are Austria, Denmark, Finland, France, Germany, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, the USA, the European Commission, the EBRD, the Nordic Environment Finance Corporation, the World Bank, the EIB and the IFC.25 The PPC was established in 1993 to help implement the goals of the Environmental Action Programme (EAP) for Central and Eastern Europe. The EAP aims to integrate environmental concerns into the economic reconstruction process in CEE, and thereby to ensure sustainable development in the region.

The PPC helps donors and international financial institutions (IFIs) to “identify and fund priority projects” within the framework of the EAP criteria.26 It facilitates investment in environmental projects through co-ordination between IFIs and donors in the CEE region. The PPC usually ‘matches’ selected projects from IFI portfolios with donor funds for technical assessment and project preparation. Less frequently, projects with committed donor funds are proposed for co-financing from IFIs.

Between the years 1994 and 1996, the PPC helped to implement 33 projects, of which seven projects were related to energy, representing a total investment of 251 million USD.27 Projects for the rehabilitation of district heating and the replacement of coal boilers with facilities using gas or geothermal energy were undertaken in Decin in the Czech Republic, Parnu and Talin in Estonia, Klaipeda in Lithuania, and Pirzyce in Poland. Other projects include the rehabilitation of hydro-power plants in Albania, a study on optimising the use of energy from the paper mill system in the Czech Republic, and coal to gas replacement in Slovenia. All of these projects are oriented towards the improvement of energy efficiency, mostly on the supply-side.

At the beginning of 1997, the PPC had 69 projects under preparation, of which 17 were related to energy issues. This represents an investment of at least 1.5 billion USD. These projects include four municipal energy projects in Hungary that will substitute coal with biomass and natural gas fuels. Poland is looking to switch from coal to geothermal energy in three projects, and a similar project is under preparation in Slovakia.

Naturally, all PPC projects that have been implemented or are currently under consideration have either included supply-side energy efficiency or the use of alternative energy sources. (Less often, they have included demand-side management components.) This focus on energy efficiency and sources of renewable energy is due to the fact that the projects must comply with Environmental Action Program criteria. Although it is difficult to prove that without PPC involvement the projects would not have been prepared, there are signs that it has had a positive impact. The PPC model could be useful for projects supported by grants for technical assistance, but which have had difficulty in getting funding for implementation, or for projects where the lender needs some kind of grant support. For example, in the Klaipeda (Lithuania) geothermal project, the IBRD loan amount is 5.9 mill USD, out of the total cost of 18 mil USD. The remaining financial resources come from the GEF and multilateral aid from Denmark, Sweden and Switzerland.28

2.2.6 Phare and TACIS (DG1)

The EC operates five major financial programs in the energy sector in the CEE region. They are: Euratom, Phare, TACIS, Thermie and Synergy. Phare and TACIS are operate through the DG1A.29

25 “PPC-the Networking Mechanism for Environmental Investment”, EBRD Factsheet.
27 Consolidated PPC Project List, 3-4 April 1997, PPC Table A, PPC, 1997.
29 the Directorate responsible for external relations with Europe and the Newly Independent States (NIS)
The Phare program was established to assist CEE countries to achieve membership in the European Union.\textsuperscript{30} The grand total grand commitment under this program was 8.3 billion USD for the period from 1990 to 96.\textsuperscript{31} In 1994, the energy share accounted for 5.85 percent of the total Phare Budget.\textsuperscript{32} As the EU is enlarged, Phare funding is expected to increase to 1.9 bil. USD annually, and 70 percent of Phare funds are proposed to be used for investment.\textsuperscript{33} The main objectives for Phare Energy projects\textsuperscript{34} are:

- to update energy policies in accordance with EC guidelines
- to develop pro-active energy efficiency strategies
- to increase nuclear safety
- to encourage market orientation
- to improve the security of energy supplies
- interconnection with EU energy networks

TACIS is the EC initiative for the countries of the Commonwealth of Independent States (CIS) and Mongolia.\textsuperscript{35} Between 1991 and 1995, TACIS financed more than 2200 projects totalling 2.8 bil USD.\textsuperscript{36} Energy sector grants accounted for 9 percent and nuclear projects for 17 percent of total TACIS funds.\textsuperscript{37}

Nuclear safety projects in the CEE region, which accounted for 166 million USD from Phare and 533 mill USD from TACIS in the years during the period from 1991 to 1995, have been very controversial.\textsuperscript{38} In addition to safety improvements at existing plants, significant financial support was used for completion of plants under construction. For example, in 1994 and 1995, 39 million USD were spent in Ukraine on projects that led to the completion of the Zaporozhe nuclear power plant, and to the continued construction of two units at Khmelnitsky and Rivno (K2 and R4).\textsuperscript{39}

The Phare and TACIS programs are linked to all IFIs activities in the region, although the closest collaboration exists with the EBRD. There is a formal agreement between the EBRD and Phare and TACIS, referred to as the Bangkok Facility. Under this facility, Phare and TACIS provide grants to support technical assistance operations. 75 percent of all Phare operations under this technical cooperation have supported or led to EBRD investment.\textsuperscript{40}

2.2.7 Euratom, Synergy, Thermie and Altener

DG 17 (The Directorate General for Energy) is in charge of three major programs related to the energy sector in the CEE region. They are: Euratom, which supports nuclear projects, Synergy, which is especially aimed at developing international energy co-operation, Thermie, which supports technological innovation, and Altener, which supports renewable energy projects.

Euratom was established in 1957 as a vehicle for the European Community to finance nuclear power stations within the European Community. In 1994, it was expanded to allow for Euratom loans of up to 1.4 billion USD, covering up to 50% of total project costs for safety improvements and upgrades of nuclear facilities in the CEE and NIS regions.

One rationale for Euratom’s expansion was, paradoxically, a slow-down in nuclear investment in Western Europe. In the EU, as in other industrialised countries, the nuclear power industry has been in decline, due to lack of public support for nuclear power. European and other Western firms with an interest in nuclear power are therefore looking to other areas, including the CEE and NIS regions, as possible new markets for the nuclear power industry. The CEE and NIS region has a large number of Soviet-designed reactors which do not meet Western safety standards. It is thought that they can be made

\textsuperscript{30} Phare operates in Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.


\textsuperscript{33} For a Stronger and Wider Union, Agenda 2000- Volume II-, -Communication, European Commission, 1997 pp. 72-. 73.


\textsuperscript{35} Tacis operates in Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan and Mongolia.


\textsuperscript{38} Press Information, EC Delegation in Moscow, 19/4/96.


safe with the addition of Western technology, and thus Western firms are eager to get contracts to upgrade nuclear power plants in the region.

The authors of this study do not believe that such plants can be made safe, and that nuclear and other unsustainable technologies should not be developed in this region. Euratom has not yet been used for investment in Eastern Europe, but a number of projects are currently under preparation, including Rovno and Khmelnitsky in Ukraine, Kozloduy in Bulgaria, and Kalinin and Rostov in Russia.

The safety analysis for proposed Euratom projects is undertaken by an Expert Group under the direction of DG1A. Economic and financial review of projects is the responsibility of the European Commission, which takes into account recommendations from the European Investment Bank.
3. Country Profiles

Following are reports describing MDB energy-related projects and activities from the four countries - Bulgaria, Hungary, Latvia and Ukraine - selected for detailed study in this report.

3.1 Bulgaria

In the past, Bulgaria has followed a very intensive development strategy, based on imported fuels and Soviet-designed power plants. Most of these plants did not meet international standards of safety, environmental protection and efficiency. This strategy resulted in heavy dependence on fuel imports, leading, after the collapse of the communist block and a number of external shocks, to widespread energy shortages and unsustainable high energy import bills. In response, the Government partially liberalised petroleum fuel prices and sharply raised the prices of other energy items. It also initiated the preparation of a least-cost programme and several studies on the rehabilitation and safety improvement of the power system. Nevertheless, a number of key issues remain unresolved:

- Inadequate organisation and regulatory set-up of the Bulgarian energy sector
- Monopoly control of the generation, distribution and trade of electricity
- Subsidised energy prices
- Inadequate dispatch and control systems, resulting in a relatively unstable electricity supply and high costs
- Problematic, highly inefficient supply links
- Inefficient end-use technologies
- Urgent need for rehabilitation of a number of power plants
- Concerns over the safety of the Kozloduy nuclear power plant\(^\text{41}\)
- Urgent problems with radioactive waste from Kozloduy

In Bulgaria, the average electricity price covers 83% of domestic production costs and just 32% of the cost of imported electricity.\(^\text{42}\) Energy subsidies in the electricity sector have had a distorting effect on seasonal load curves and have increased the overall costs of the system. In the last two years, energy prices have risen drastically from $0.016/kwh to $0.042/kwh. This drastic increase in energy prices, together with high levels of inflation, appear to be a heavy burden for local governments and citizens.

During the last seven years there have been many changes in the structure of the energy sector. Originally, there was an Association of Energy, then a Committee, then a Ministry and finally, again a Committee. Each had different rights and obligations regarding the country’s energy management.

Now, coal mining and some district heating companies fall under the rules of the Committee of Energy. The Council of Ministries is the principal of the NEK (the National Electricity Company), which is the national monopoly in the generation, transmission, distribution, trade, export and import of electricity. Another company, Bulgargas, imports and supplies gas for the industrial and household sectors.

In late 1992, an independent Agency for Energy Efficiency was established, but in the beginning of 1993, the Committee of Energy included that Agency in its structure and later closed it down. In the spring of 1997, the agency was re-established and is now governed directly by the council of ministers. There is also a special committee -the Committee on the Use of Atomic Energy for Peaceful Purposes (CUAEP) -which implements state policy on nuclear and radiation safety in all its aspects.

On the legislation front, a new energy law is being prepared and was submitted to the Parliament in late 1997. A draft energy efficiency law is in the process of preparation and is to be discussed in Parliament sometime in early 1998. There have been several energy strategies adopted in the last few years in Bulgaria. Different institutions, including successive governments, energy authorities and even companies have prepared their own energy strategies, and there has been no consistency among those strategies. It is expected that soon the present government will submit a new energy strategy for Bulgaria.

In general, there are no legal incentives for energy efficiency in Bulgaria. Legislation in the nuclear

\(^{41}\) In addition to the general problems associated with the old type reactors at units 1 - 4 of Kozloduy, a major accident occurred in September 1992 at Unit 6 during reactor tests.

energy field is also woefully insufficient: safety procedures in the case of accidents are lacking, and there is no independent organisation taking full responsibility for the radioactive waste from Kozloduy.

3.1.1 Electricity Generation and Use

The total installed capacity of Bulgarian power plants is 13189.4 MW, which includes 4950 in thermal power plants, 3760 MW in nuclear power plants, 2407.2 MW in hydro power plants, 1060.2 MW in thermal power plants owned by industrial companies, and 1012 MW in others (including combined heating plants, or CHPs).

Since 1989, the demand for electricity in Bulgaria has decreased significantly. This is because of a financial crisis for consumers and industry, which resulted from a combination of the unstable political and economic situation in the country, lack of experience with a market economy and a disparity between existing industries and the competitive international economy.

In 1992-1993, energy end-use was about 50% of what it was in 1989. After including Unit 6 of the Kozloduy nuclear power plant in the energy system of the country (1993), the share of nuclear energy increased to approximately 40%. For 1996, this share was 42.7%. The share of energy from thermal power plants decreased from 60% in 1991 to about 47% in 1996. The share of hydro power remained almost the same during the period, at about 7%.

3.1.2 MDBs and Energy Policy

Bulgaria has received substantial financial support from IFIs for re-structuring its energy sector. There are five projects under implementation financed by IFIs in Bulgaria totalling 247.2 m. USD, and five more projects in the pipeline, totalling 675.5 m. USD. The loans are mainly directed towards rehabilitation, upgrading and improving the efficiency and safety of the district system, the Maritza East II coal power plant, the Chaire pump storage plant, the Belmeken and Chaire dams, and the Kozloduy nuclear power plant.

The EBRD's Strategy for Bulgaria gives the power and energy sector an important role: "The Bank's involvement will mainly be directed at...selective support for the development of power and energy and municipal infrastructure." The EBRD envisages developing a Demand-Side Energy Conservation Programme to finance energy-saving projects in the public and private sectors.

The World Bank has published several studies on Bulgaria’s energy sector. In 1993 a report entitled “Bulgaria - Power Demand And Supply Options” was published. In the study, six nuclear electricity supply scenarios are developed, ranging from immediately shutting down all nuclear units (including VVER 1000s), to running all units to the end of their design lives after safety upgrading.

The main conclusions from the analysis in the study are: (1) It does not appear to be economically feasible to close the VVER 1000 units of Kozloduy (the safer units), although these should undergo safety upgrading. (2) The least-cost electricity supply option for Bulgaria is to run all the nuclear units to the end of their design lives after safety upgrading. (3) It would be technically feasible for Bulgaria to replace some or all of the VVER 440 (the less safe units) with alternative supplies and energy saving measures by the mid to late 1990s.

The World Bank has a Country Assistance Strategy (CAS) for Bulgaria, which has not previously made publicly available. According to Mr Z. Savov, Project Officer Energy & Enterprise Sector, the World Bank Sofia Office, the CAS for Bulgaria was prepared in mid-1996, but in November 1996, it was not in the World Bank's Public Information Center, nor was it in the Bank's local office in Sofia.

CAS’s are not public documents, so the Bank is not obliged to make the Bulgarian CAS available through the PIC or its local office. However, this policy has changed during the last year under pressure from NGOs. NGOs have met with World Bank representatives and the new draft CAS was presented to them. Recently, the draft CAS matrix has also been made available to NGOs.

The fact that CASs have not been public documents seems to contradict the World Bank’s own policies on public participation in environmental decision-making. The World Bank itself has identified public participation as an important element in environmental management: "Any form of environmental management should include and encourage a variety of procedures for public

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44 Personal communication, May 1997.
participation in decision-making, if for no other reason than this participation will encourage public ownership of the enforcement and economic implications of responsible environmental decision-making." To be effective, public participation in decision-making must also include adequate access to information about environmental and energy policies, and this should include access to Country Assistance Strategies.

The overall objective of the World Bank’s energy projects is to assist with financing the Bulgarian electricity subsector’s medium-term core investment program. This in turn is designed to enhance Bulgaria’s non-nuclear electricity supplies at the lowest cost while reducing associated pollution, as well as facilitating gradual retirement of the four older units at Kozloduy.

The Bank has produced two documents on Bulgaria’s environmental strategy: “Bulgaria Environmental Strategy Study”\(^47\), and “Bulgaria Environmental Strategy Study Update and Follow-Up”.\(^48\) The 1992 document is an overview of the environmental situation in Bulgaria after the fall of the communist regime. Although the study is structured to help the government in its near-future environmental policy, it also includes some elements which are closely related to energy policy. The document identified power plants as major sources for high concentrations of dust particulates and SO\(_2\) in the air. Unfortunately, the study failed to include the Committee of Energy\(^49\) among the key institutions involved in environmental and health protection in Bulgaria. Nor did it mention energy efficiency as a tool for decreasing pollution.

3.1.3 Energy Prices

The World Bank study also suggested that energy price reform be completed by 1995 as an element of economic policy restructuring. This reform has become perhaps the biggest problem in further negotiations between the Bulgarian government and IFIs about energy sector lending projects.

The pricing mechanism accepted by the World Bank did not relate closely to Bulgaria’s inflation rate, dramatically devaluated the currency, and proved to be inadequate for the country’s current unstable economic and political situation. The mechanism depended on political circumstances and required formal governmental approval. Prices were set by the Commission for Energy State Regulation without public knowledge or input.

Even now, there is still no public information available on the pricing mechanism, although a special commission responsible for the price mechanism and headed by trade minister has been established. The commission proposes energy prices to the Council of Ministers, who then vote on the commission’s proposals.

With the rapid inflation and high exchange rates in 1996 and first half of 1997, electricity prices rose in the Bulgarian currency, but their equivalent in USD decreased. The prices were socially oriented, meaning that prices are kept below real market rates. This pricing practice has precluded re-investments.

Currently, the government is keeping prices at 3.5 US cents/kWh. At the same time, government officials continue to call for new loans for nuclear and coal capacities. Instead of encouraging consumers to waste energy by effectively subsidising energy prices, the government should be promoting real prices which would reflect the actual costs of energy production and supply, together with a system of incentives for energy efficiency and energy conservation.

3.1.4 Energy Efficiency and Renewable Sources of Energy

The consequences of Bulgaria’s investment decisions in energy efficiency and other aspects of its energy policy are highly dependent on whether it chooses the “basic scenario” of development (following the country’s existing energy development trend) or the

\(^{45}\) Bulgaria: Environmental Strategy Study, March 17, 1992, Report No. 10142, World Bank, p. 4


\(^{47}\) 17 March, 1992.

\(^{48}\) 30 December, 1994.

\(^{49}\) The Committee of Energy has the following functions which are closely related to environmental protection: “the Committee develops long-term programs for the energy sector which include…..use of local energy resources with maximum environmental and human protection, energy savings and optimum use of renewables” [art. 2, point 1, annex to art. 1 (1), regulation 315 from 1 August, 1997.] It also carries out “research for ….. renewables and environmentally friendly technologies…” and “monitors the impacts of their implementation on the environment” [art. 3, point 4 , annex to art. 1 (1), Regulation 315 from 1 August, 1997]. These functions are important enough for the Committee to be included in the environmental strategy of the Bank.
"energy efficiency scenario" (based on improvements in energy efficiency and consumption reduction).^50

A 1995 Bulgarian Government study found a potential of more than 10% of projected energy demand could be avoided through energy conservation by the year 2000, and 16% by 2020. The building sector has a large potential for energy efficiency investment. Over ninety percent of residential building stock is privately owned.\(^51\) This is an advantage, as private owners have higher incentives to reduce their energy consumption and can do so through building improvements.

According to a Danish-Bulgarian study, energy efficiency improvements in apartments - such as windows seals, insulation, balcony retrofits and improved blinds, would have payback periods from one to four years (assuming heating with electricity). The electricity savings from these measures is estimated to be around 33% of total electricity consumption. As different studies have underlined, there are many possibilities for increasing end-use efficiency.

For specific comparisons, Bulgaria consumes eleven times more energy in its industrial and residential sectors per unit of output than the EU. Bulgarian energy costs as a percentage of GDP amount to around 33%. About 10 -15% of energy use could be saved at little or no capital investment (with pay-back periods lower than 6 months) through general housekeeping, simple controls and employee awareness training.\(^52\)

According to PHARE, the total potential for energy efficiency of the industrial, transport and services sectors is estimated at about 12% of total energy consumption by the year 2000.\(^53\) The study\(^54\) concludes that the potential for energy use savings can reach 35% (i.e. a 35% decrease in total energy and fuel consumption) simply by decreasing energy intensity in industry, construction, agribusiness and forestry.

### 3.1.4.1 Some Concrete Examples of Proposed Programmes:

The Household gasification (the installing of gas heating systems) programme, which will result in decreasing of peak load in energy system of 1060 MW and saving of electricity - about 3080 million kWh/year (about 50 m USD/year at net price of 1.88 US cents/kWh and a market price of 3,5 US cents/kWh).

**Individual measurement and regulation of heat usage in substances of public buildings.** This programme will cost 313 m BGL (about 15 m USD) and will save 793 660 MWh/year at a very low specific cost per kWh saved - 0.39 BGL (0,0156 USD).

The Improvement of operation of heating boilers in public buildings programme will cost 30,3 m BGL/year (1,212 m USD/year). The specific costs per kWh saved are 0,42 BGL (0,0168 USD). The project will result in savings of 71500 MWh/year.

Introducing of individual measurement, regulation and pricing of heat consumption in the households with central heating systems. The required investments are estimated at 1161 m BGL (46 m USD), and the specific costs per kWh saved are 1,35 BGL (0,054 USD). 740540 Gcal/year will be saved by this project.

Improvement of lighting in households and public utilities sector.

- for households: investments are 77,18 m USD and saved energy will be 673 m kWh for 17 m USD/year (under 3,5 US cents/kWh);

- for public utilities: investments are 3,78 m USD and saved energy will be 703,7 m kWh for 21,4 m USD/year year (under 3,5 US cents/kWh);

### 3.1.4.2 Renewable Sources of Energy

According to a proposal for energy policy by Bulgaria’s Minister of Energy, Bulgaria "has a 15 to 19% proved, potentially expedient reserve of renewables."\(^55\) A study financed by PHARE\(^56\) asserts

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\(^{56}\) Technical and economic assessment of renewable energy sources in Bulgaria - Summary, Energy For Sustainable Development (UK) and Ekoterm Engineering (Bg), Sofia.
that according to different scenarios, renewables could account from 1.9% (base scenario) to 7.6% of Bulgaria's total energy. The total energy potential of biomass (wood, agricultural, household) is estimated at 1,668,000 Gcal/year. According to this study, economic efficiency of renewable energy in Bulgaria will be reached when the average price of electricity becomes 8 US cents per kWh. But that assessment does not include the "ecological" value of renewables.

3.1.5 MDB Lending in Bulgaria

In addition to EBRD, EIB and World Bank lending, there is also a 30 million USD grant under the terms of the NSA, which is not included in the above figures. Bulgaria has also received important support from the PHARE and USAID programmes.

There are four IFI projects currently under implementation in the Bulgarian energy sector. These include the "Energy I" and "District Heating Pilot Project" funded by the IBRD, "Maritza East II" funded by the EBRD with co-financing by the EIB and PHARE, and the EBRD’s NSA grant for Kozloduy Units 1-4.

The difficult economic and political situation which Bulgaria has faced for the last 5 years has had a major influence on the process of initiating and implementing projects by IFIs in the country’s energy sector. Some of the main objectives of the loans currently under implementation have not been fully met.

These unfulfilled objectives include de-monopolisation and restructuring of the energy sector, real energy pricing reforms, retirement of the first four units at the Kozloduy NPP, and assisting the development of alternative sources of energy. Little has been done to promote demand-side efficiency, or the use of energy efficient and renewable energy technologies. The only project described above which would improve supply-side energy efficiency is the district heating pilot project. In addition, there has been in general very little public consultation regarding the present IFI projects. These unfulfilled objectives should be addressed in planning future IFI-funded energy-related projects in Bulgaria.

3.1.5.1 EBRD

Projects Under Implementation:

Maritza East II Project The borrower and beneficiary for this project is the NEK. Total Project Costs are 140.4 million USD, consisting of a 50.9 million USD EBRD loan, a 56.7 million USD EIB loan, 31.5 million USD from PHARE, and 1.3 million USD from the NEK. Maritza East II is Bulgaria’s only energy sector project under implementation which is financed by the EBRD. The environmental category of the project is B/I.

The Maritza East II project was initiated in 1992 by the Bulgarian government. The loan was to help finance the completion of a 215 MW lignite-fired generation unit and the addition of sulphur dioxide removal equipment. During the process of negotiations, the Bulgarian government succeeded in convincing the EBRD to reduce the interest rate for the loan from LIBOR+2.5%, to LIBOR+1.9%. Unit 8 (215 MW) was commissioned in December 1995 and since then has functioned as a part of the Bulgarian energy system. The extension of a coal handling facility is also under way, and was supposed to be finished during 1997.

There has been significant delay in the installation of flue gas de-sulphurisation technology. This technology is being used for the first time in Bulgaria. There are concerns about its ecological performance, as low quality gypsum results as a by-product of the process. In addition, the technology would only clean SO\textsubscript{2} from its emissions, but not SO\textsubscript{3} or NO\textsubscript{x}. This technology does not represent best available technology, as other technologies currently exist which do not have gypsum as a by-product, such as the electronic-radiant process.

The beginning of construction work on flue gas desulphurisation at Maritza East II is included in the NEK’s 1997 Investment programme. However, the auction for completion of this sub-project has not been held yet. The situation became more complicated after 30 June 1996, when the grace period finished and Bulgaria started to pay back the loan. Now negotiations for extending the project timetable are under way.

NSA Grant Agreement This agreement was signed in June 1993. The grant amount is 30 million USD, to be used for short-term safety improvements for reactors 1-4 at the Kozloduy nuclear power plant. There has been considerable delay due to unanticipated problems with the Kozloduy Project Management Unit (PMU) and the Government.
main commitment of the agreement is the completion of a set of power sector investments which will make possible the transition from unsafe nuclear reactors to other energy sources, assuring an adequate level of energy supply. So far, this commitment has not been met. One of the main reasons for this is strong opposition from the nuclear lobby, which has an interest in halting the development of alternative energy projects.

Despite Bulgaria’s commitments under the Grant Agreement, during the past 5-7 years, no attempt has been made to close down Units 1-4 of Kozloduy. To date, little progress has been made on developing replacement capacity, or for supporting programmes and projects for energy efficiency, conservation and renewables. In addition, the National Agency for Energy Efficiency was suddenly closed in 1993, and ongoing discussions about how much the country will soon need a second nuclear power plant have been promoted in the Bulgarian media.

The Bulgarian authorities have adopted the view that the country’s energy situation does not allow for the closure of Units 1-4 at the Kozloduy nuclear power plant in the medium term. It is significant that there has been no public involvement in the implementation of the Agreement’s requirements.

The nuclear lobby’s strategy is based on the following argument: very soon Bulgaria will need more energy for its industrial restoration. This will either require that the old nuclear units are kept in operation, or that the Belene NPP should be completed. The authorities rely on the results of questionable research - for example, on the cores of units 1 and 2 - to argue that the old units are safe enough, and they maintain that with financial support the reactors could reach western standards.

The economic predictions on which the government relies to promote nuclear power do not reflect the reality of the country’s economic situation. There are several economic forecasts for Bulgaria, and they all differ from the nuclear lobby’s forecast. There is currently no clear consensus among officials, politicians and other experts on the country’s economic future. However, the economic situation is clearly not as robust as the nuclear lobby suggests in its forecasts.

The government does not even have a short term economic strategy. In addition, all forecasts appear to rely on information from various special interests rather than on objective data. At the same time, since 1993, the government has not yet made the investments required by the grant agreement. To some extent, this is also a result of the work of pro-nuclear persons and companies.

The case of the NSA grant for Kozloduy points out weaknesses in the mechanism of the NSA. It does not take into account such important issues as political and economical pressure (especially from the nuclear industry), corruption, and a lack of transparency and public involvement in the operations of the Bulgarian energy authorities. These in turn have a major influence on the NSA’s implementation process.

**EBRD Projects in the Pipeline:**

**Power Sector Refurbishment Project**

The borrower is the NEK. The beneficiaries are the NEK, and the Maritza East 3 and Varna thermal power plants. Estimated total project costs are 263 m USD, of which the EBRD Loan Amount is 75 m USD. The project will be co-financed with the EIB and Export Credit Agencies. The environment category is determined as B/1. The project aims to:

- facilitate the closure of dangerous nuclear reactors;
- improve supply and demand-side efficiencies;
- improve environmental performance of thermal power plants;
- encourage progress towards a competitive market-oriented industry structure.

The project is to be re-appraised sometime in early 1998 and is still far from implementation.  

**Energy Conservation Investment Programme - Phase I**

The borrower for the project is Toplofikacija - Sofia AD. Estimated project costs are 55,244 m USD. The EBRD has not yet determined the project's environment category. The objective of the project is to implement demand-side measures to save energy by modernising and automating substations and by improving the insulation of the pipeline network of the company.

**Creating an ESCO (Energy Saving Company)**

This project is still under negotiation. It is expected that the EBRD, a French company (related to “Compagnie Generale Des Eaux”) and the municipality of Sofia will create a joint-stock ESCO. This will be part of a region-wide project in the private sector for such purposes, financed by the EBRD.

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58 Letter from Tim O’Neill (Resident Representative for Bulgaria), October 7, 1997
### 3.1.5.2 The International Bank for Reconstruction and Development

The IBRD has financed two projects in Bulgaria's energy sector. Both financed energy projects total 105 m USD and represent approximately 19% of total IBRD lending in Bulgaria to date.

**IBRD Projects Under Implementation:**

**Energy I Project** The Government of Bulgaria initiated the negotiations in 1991. The beneficiaries are the NEK and electricity consumers - industrial and households. The IBRD loan amount is the equivalent of 93 m USD. An additional 33m USD is contributed by the NEK. By the end of March 1997, disbursed moneys amounted to 23.7 m USD.

The project was approved on May 21, 1993 and has been in effect since August 11, 1993. The expected completion date was December 31, 1996, but the completion time of the project was changed twice during a one year period. The first change extended the completion date to December 30, 1997 and a second extension moved the date to December 30, 1998. The initiator for these changes in both cases was the NEK. The project has very ambitious objectives, which were addressed to the needs of the country at the time of initiation.

The main difficulties with the project came from the Bulgarian side during the implementation process and were primarily of a financial nature. They included pricing, funding money for special purposes, and other related problems. There were additional issues of an organisational and technical nature, including the establishment of an independent pricing mechanism and the delay of the completion of the Chaira pumped storage plant.

Considering these difficulties, we conclude that the NEK is an inadequate structure to meet the requirements of the country’s new energy policy. The problems of the project show that Bulgaria needs another type of organisation to manage its energy sector. The NEK's role should be limited to being the single buyer, while there should be independent and de-centralised producers and distributors.

**District Heating (Pilot Project)** At the beginning of 1997, at the request of the Bulgarian government, the World Bank agreed to re-allocate money from a Water Companies and Modernisation Project (Loan No 3739) to a District Heating pilot project.

The borrower is the Ministry Of Energy And Energy Resources (MEER), and the beneficiaries are 15 district heating companies. Total project costs are 12 m USD, all of which is in loans. According to the project summary document, the project is expected to be classified in environmental category B. The District Heating pilot project is designed to provide essential information on district heating consumption. This information would be used to:

- design comprehensive system rehabilitation projects, financed by different IFIs (EBRD, WB) and other sources (PHARE);
- improve system operations;
- provide management control on the customer side;
- provide incentives for reduced heat consumption;
- provide district heating companies bills for actual heat consumed not including losses incurred in the system;
- improve district heating companies’ financial performance.

This emergency project is a good example of how existing sources could be used in a flexible way. The project is oriented toward the basic problems of the district heating sub-sector. These include inadequate or lacking measuring systems, large losses of heat and financial problems. Preliminary results are expected during the upcoming winter season. So far, public involvement has been nil, due to a lack of access to information about the project.

**IBRD Projects in the Pipeline**

**Energy II Project** Again, the borrower will be the NEK. Total project costs are 220 million USD, of which 100m USD will come as an IBRD loan, 50m USD from the NEK, and 70m USD must be found from other sources. The project is classified in environmental category “B” (which does not assume major environmental impacts). The overall objective is to assist with financing the Bulgarian electricity sub-sector's medium-term core investment programme, which in turn is designed to enhance Bulgaria's non-nuclear electricity supplies at the lowest cost, while reducing associated pollution.

This includes: (a) rehabilitation of part of the NEK lower cost non-nuclear generating capacity; (b) reducing NEK’s currently very large losses in distribution; (c) improving electricity transmission. It is likely that the project will also include a component to replace about 500 000 - 600 000 of Bulgaria’s existing electricity meters over 5 years. The environmental categorisation of this project is highly controversial, as it is contains components which will have major environmental impacts, such as the
rehabilitation of one or two thermal power plants. Therefore, at least this part of the project should be classified in the higher “A” environmental impact categorisation.

A group of Bulgarian NGOs met in November 1997 with Mr. J. Moose (the task manager of the project) to discuss environmental categorisation and other aspects of the project. At that time, Mr. Moose told the group that the project was still at a very early stage and its exact components were not yet clear. Indeed, according to Mr. Moose, was it not entirely sure that the project would go forward at all. According to information from the latest update on the project from the WB, the rehabilitation of TEC Varna may not go forward at all, as the plant might be privatised soon.

District Heating Project The borrower is the MEER (The Ministry for Energy and Energy Resources) and the beneficiaries are the Sofia and Pernik District Heating Companies. Total project costs are 475m USD, 100m USD of which come as an IBRD loan. The project is considered to be in environment category "B". The objectives of the project are:

• to rehabilitate the Sofia and Pernik district heating systems, reduce heat losses and increase efficiency;

• to reduce costs in the district heating systems and gradually raise the prices so that the district heating companies can be financially self-sustaining and will no longer have to rely on subsidies; and

• to assist with closing units 3 and 4 at Kozloduy by rehabilitating and converting the district heating plants to combined cycle operation, as specified in the NSA Agreement.

For the Sofia system, the project would involve the replacement of those sections of pipe with the highest heat leakage (around 200 km) and the replacement of most of the older substations. Similar steps would be taken for the Pernik system, which is only 15% as large and not as well studied. The two largest district heating plants in Sofia - “Sofia” and “Sofia East” - and the “Republica” plant in Pernik would be rehabilitated and converted to combined cycle operation.

3.1.5.3 The European Investment Bank

The EIB participates as a co-funder of two projects headed by the EBRD: "Maritza East II" (57 million USD) and "Power Sector Refurbishment" (in the pipeline). The Bank has no office or representative in Bulgaria so far and does not work with the public. It is also not clear what kind of energy policy they follow for the country.

The EIB is also responsible for carrying out economic analyses for the Euratom loan for safety upgrades at units 5 and 6 of the Kozloduy nuclear power plant.

3.1.5.4 Euratom

Euratom is currently preparing a loan for safety upgrades at Kozloduy units 5 and 6. The project will be implemented by a European consortium, including Siemens, Framatome and several Russian companies. The total costs of this modernisation project is expected to be 325 m USD. The Euratom loan would cover a maximum of 50 % of the total costs.

As of yet, the technical description of the project has not been made available by NEK or by the European Commission. There are serious concerns regarding the quality of the project, as most of the measures and technologies included in it are not those which are most urgently needed, but rather those which will tend to increase the budget. The most important and urgent measures for technology replacement are not included in it, and the project is mainly focused on theoretical programs and consultancy work which would mainly profit the companies implementing the project, including Siemens, Framatome and Atomenergo.

3.2 Hungary

3.2.1 Energy Policy

The current state of Hungary is a good illustration of the difficulties facing transitional economies. The long process of transforming the social-economic system involves a high degree of uncertainty, and changes are as likely to take a positive as a negative direction in a number of areas.

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59 minutes from the meeting with J. Moose, 13.11.1997.
60 Toplofikacija Sofia AD and Toplofikacija Pernik AD.
Hungary has scarce mineral resources, so more than half of her primary energy demands have had to be supplied by imports. Energy policy makers have therefore had to concentrate primarily on ensuring a safe energy supply. This was fairly easy in COMECOM. Natural gas and crude oil came smoothly through the “Friendship”, “Fraternity” and “Adria” pipelines, and Hungary was also spared the impacts of oil crises. While local resources were explored and exploited, they played a relatively minor role in overall resource allocation. One exception to this is coal mining, which until recently played a major role in employment policy. Therefore, the recent sudden abandonment of mining has proven extremely difficult economically and socially.

As the recent political and economic changes came, Hungarian energy policy shifted towards the free market. Hungary was the first country in the region to start the long process of creating the legislative and institutional background for privatising its energy industry. In the spring 1994, the Parliament passed bills regulating the gas and electricity industries, and the Hungarian Energy Office was established accordingly.

Hungary’s electricity privatisation legislation generally followed the British model, albeit in a completely different social and economic environment. At the same time, there were some crucial differences between the Hungarian and the British approaches. One of the most important differences between the two systems is how access to the grid is managed. While in Britain, distribution utilities have free access to the supply grid and are allowed to sell electricity all over the country, in Hungary, regional electricity distributors control their own territory. This results in the maintenance of regional distribution monopolies. The second major difference is that under British privatisation, the new owners of the energy utilities were at least initially British; in Hungary, they are foreign investors.

Generally speaking, the electricity industry in Hungary has been vertically segmented. That is, production, transmission and distribution activities became separated, with the aim of making the electricity sector transparent. The sole exception to this is the Paks Nuclear Power Plant, which alone provides 43% of Hungarian electricity production. This plant is still a part of the Hungarian Electricity Works (MVM Rt.) and forms one economic unit with the high voltage grid. Currently, the installed capacity for electricity production in Hungary is 7200 MW.

The gas industry was segmented into regional distribution companies and the rest (exploration, importing, storage, transmission and trade) remained with the Hungarian Oil and Gas Company (MOL Rt.), which is one of the biggest companies in Central Europe. MOL Rt. controls the Hungarian transmission capacities (pipes), although other companies are also allowed to import oil and gas into the country, since there is relatively little to export.

In late 1996, a new nuclear law was accepted by the Hungarian Parliament. Essentially, it makes possible the privatisation of the already existing nuclear power plant in Hungary and allows private entities to build new nuclear facilities in Hungary. Moreover, the law establishes a nuclear fund for long term waste problems and decommissioning.

Unfortunately, this nuclear fund is unfortunately insufficiently regulated. There is no regulation regarding the timing of the money-flow, and there are no figures for the total needed funds at the end of the nuclear power plant’s lifetime. The management of the fund is similar to that of other state funds which are subject to the annual state budget. Considering these problems, it is doubtful whether the fund will fulfil its mandate.

The government is currently planning to start debate on a district heating bill, although this has been an issue for years. Since the electricity bill does not clearly regulate the cogeneration plants which currently operate throughout Hungary as district heating plants, the short- and long-term economic situation of these plants is extremely insecure. The lack of a clear regulatory scheme means that these plants sell electricity on a day-to-day and rather uncertain basis.

To date, the majority of the shares in gas and electricity distribution utilities have been sold to foreign companies (including Electricite de France, Bayernwerk, and RWE.) The generation capacity is only partly sold, as many of the power plants are very aged (reaching the end of their useful life).

The only parts of the electricity industry in which the state still holds majority ownership are the high voltage grid, three coal-fired power plants in the western part of the country, and the Paks Nuclear Power Plant Company. The gas industry is almost fully privatised. The majority of shares in the gas distribution companies are owned by German, French and Italian utilities. MOL Rt. has been privatised only to financial investors on the stock exchange, in order to avoid the unbalanced market which would
have been created, had this huge company been sold to one investor.

Official Hungarian energy policy ostensibly favours energy efficiency, but at the same time, 4000 MW of new capacity has been planned to “replace” 3000 MW of aged capacity by the year 2010. This does not reflect least-cost planning requirements. Officials are ready to confess that this is just an “exception” now, because they have to hurry to secure capacity for the near future. 1996 was the first year since 1987 in which energy consumption did not decrease, so this could be a turning point, providing a good argument for decision makers to point out the correlation between economic development and energy demand.

New legislation on the public participation process is under development in Hungary. This will have an effect on new power plant construction and other energy-related projects as well. This is currently an area of very weak regulation, as it does not provide for public involvement in environmental decision-making, but rather only informs the public about the possible effects of decisions regarding proposed projects and their environmental impacts.

3.2.2 Energy Efficiency and Renewable Sources of Energy

In late 1995, the Government approved the Energy Saving Action Program (ESAP). This document is based on a long study, prepared by the Ministry of Industry and Trade under the same title in 1993. The ESAP represented an official acknowledgement that by using energy more efficiently, potentially 25-30 percent of energy can be saved, and energy sector energy efficiency can be increased, by efficiency improvements to power plants, reduction of grid capacity loss, and related energy conservation measures.

As heavy industry in Hungary almost totally collapsed, overall industrial output became statistically more efficient than it had been. In other words, Hungarian energy intensity has actually increased. At the same time, the share of residential and public consumption has been increasing. As western examples show, these sectors, rather than the industrial sector, will be the most important energy users in the near future. It is likely that most industries will take the necessary energy efficiency measures, but huge energy saving potentials still remain in the agricultural, public and residential sectors.

According to the government-approved ESAP, “If the necessary conditions are created, the current 2.5-3 percent proportion of renewable energy resources can be increased to 10%.” There is a strong potential for the use of thermal solar energy in public and residential buildings, as well as for the use of passive solar techniques. There is also a huge potential for the use of biomass and geothermal energy sources. Wind in Hungary is not strong, regular or frequent enough to use it for mass electricity generation, but small-scale wind power could be used locally in some places. There are also possibilities for small hydro projects in certain areas. Taking advantage of all of these potentials could result in a higher share of total renewable energy consumption for Hungary, but unfortunately, no study has yet been carried out to prove this.

In December 1995, the government accepted a short-term action plan (the ESAP) as a reassurance, and gave deadlines for implementation all of the plan’s steps. These included energy conservation measures such as energy labelling of large household appliances, and implementation of new standards for residential buildings. Most of the deadlines for implementation of the plan have not in fact been met and have been delayed until well past their original target dates.

Despite legal authorisation, the Government has not appeared keen to develop the energy efficiency potentials described in the approved ESAP, which regards least-cost planning (LCP), integrated resource planning (IRP) and demand side management (DSM) as key elements. The Plan will remain just another report on the shelf unless an appropriate financial environment is created for its implementation, and detailed guidelines are formulated for new owners of the reorganised electricity system. A proposal by the Energy Klub intends to start discussions on introducing IRP in Hungary. This proposal describes an integrated resource planning approach that takes general and region-specific disincentives to energy efficiency into account, and effectively helps to implement energy efficiency and environment-friendly energy policy as a whole.

Adopting IRP in Hungary is likely to create several problems, although this should be by no means be


considered an excuse for the responsible organisation, the Hungarian Energy Office, not to develop a useful proposal. The proposal is all the more urgent, since devising a power plant building strategy based on least cost planning is required by law. As is mentioned above, the government has already committed itself to build three to four thousand MW of capacity in the next decade.

### 3.2.3 Previous Lending Activities

The International Bank for Reconstruction and Development (IBRD) started to work in Hungary in the field of energy in the 1980’s. The early credit lines and loans were connected to energy rationalisation through the Hungarian National Bank and later on, through the Hungarian Electricity Works. These early credit lines, which were supposed to support energy saving and efficiency investment, were in fact used primarily for importing the necessary materials for factories which were short of hard currency under the socialist regime.

After the political changes and the start of liberalisation, these companies could manage to secure their needs without such loans. At this point, Hungarian companies began to find World Bank loans relatively expensive when compared with the offers of the new commercial banks, and therefore IBRD loans became less attractive, and to an extent unnecessary. This is why the last World Bank credit lines were not disbursed in the early 1990’s.

According to one official from the Hungarian Electricity Works (MVM Rt.) one of the reasons why the IBRD wanted to have projects with the MVM Rt. in the middle of the 80’s was to gain more information on the Eastern European electricity industry as a whole, and Hungary was a good place to get a good overview of it. Therefore, the Hungarian Government and the MVM Rt. were convinced by World Bank officials as to the importance of these projects.

Eventually, the involved parties realised that these huge projects were not economical, so the funds which were left over were put into a smaller power station investment in Kelenfold. There were also some additional positive (but unexpected) “externalities” of these projects. In particular, the management of the MVM Rt. have had the opportunity to travel to the West, and their knowledge of progressive energy management has been broadened through their exposure to different types of electricity structures.

### 3.2.4 MDB Lending in Hungary

#### 3.2.4.1 The World Bank Group

**The International Bank for Reconstruction and Development**

The IBRD has approved four energy loans since 1989 and started the preparation of the fifth one in 1997.

**Energy Sector Loan** This sectoral loan for energy sector development is an energy saving project for 10 million USD. The money was to be disbursed through the Hungarian National Bank, but 85% of the loan remained unused, so it was recently cancelled.

**Gas Sector Loan** The second loan was given to the gas industry (MOL Rt.) Energy and Development for gas grid development in Hungary totalling 100 million USD. The project is still under implementation.

**Hungarian Electricity Works** The third is a complex project totalling 100 million USD titled Energy and Environment at the Hungarian Electricity Works. 40 million USD have been assigned for a communication and information system development within the Hungarian Electricity Works and the National Grid system. This is still under development. Another 40 million USD were allocated to finish an 80 MW gas fired combined cycle power plant (Dunamenti G-II.). The rest of the money will be used for educational purposes for the management and other employees of the Hungarian Electricity Works (MVM Rt.), developing an environmental plan for the company and emission-monitoring systems in the heavy polluted part of the country.

Since these projects are not expected to exceed four million USD, the MVM Rt’s intention is to use the rest (around 16 million USD) for grid efficiency and development. According to information from an interview with one of the investment directors at the MVM Rt., they were quite successful in the tendering process and were able to negotiate for a lower price, which is why so much money was left over.

Since the Hungarian grid has connected to the Western European Electricity Network (UCPTE),

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several requirements have had to be fulfilled in a relatively short time. These include requirements that the system keep the electric frequency within a narrower range, and that the Hungarian grid be cut off from the Ukrainian and other less reliable networks.

Another requirement is that 440 MW be kept in reserve as secondary capacity. This is equivalent to the size of the biggest unit in the Hungarian electricity system, or one reactor at the Paks nuclear power station. The World Bank is therefore currently financing two small gas turbines, which amounts to half of the required secondary reserve; the other half will be imported if it is needed.

**Quick Start Gas Turbine** The loan for these gas turbines was approved and signed in July 1997. The Hungarian government had intended to involve PHARE in this project (5.8 million USD). The two organisations have different tendering procedures and requirements for the contractors. After long negotiations, the MVM Rt. decided not to use this money, as it could have slowed down the whole process, meaning that the project could not be started before the autumn of 1997. The IBRD’s share of the loan totals 60m USD.

**Biomass Project** The latest project in the pipeline from the IBRD is a feasibility study for three cities of the western part of Hungary on the potential of biomass. This Renewable Energy and Regional Development Program has a budget of 1.2m USD. The project is financed by several governments, including those of Switzerland, Austria, Japan, Germany and Denmark. It is led and co-ordinated by Helmut Schreiber of the World Bank’s staff. If these pilot projects are successful, proving the feasibility of the plan, then the WB will be willing to put some money into pilot biomass projects in Hungary in the short term and to do the same for other cities. This support will come with a relatively large contribution from the GEF (Global Environmental Facility), which would improve the project’s financial viability.

However, if the result of this rather high profile World Bank project is negative, meaning that is not feasible or is financially impracticable, this could set a dangerous precedent and create a long term backlash on renewables in Hungary. There is a danger already that the sponsors want to see relatively big projects which according to some experts, would not be suitable for the circumstances.

It is also worth noting that the Energia Klub and other NGOs are involved (at least ostensibly) in the project as a result of the new World Bank policy on public involvement. Unfortunately, as of early 1998 the World Bank and the contracted companies have failed to make real public involvement and participation happen, although the project theoretically began in March 1997.

**The International Finance Corporation (IFC)**

**Hungary Energy Efficiency Guarantee Fund** At the end of May, the International Finance Corporation signed a contract with UNIC Bank, and the door was opened for the Energy Efficiency Guarantee Fund in Hungary. This is one of three future sources from which private companies can have guarantees for energy efficiency projects which would not be possible without this type of support.

The Energy Efficiency Guarantee Fund is financed by the GEF and provides only for leasing contracts. An important new aspect of this project is that the IFC establishes an Advisory Board which includes some NGO representatives in addition to officials from the related government ministries. This body is used to solicit new ideas. Even more importantly, it acts as an advertising channel for the fund throughout the country. The Advisory Board does not have a veto right or a strong influence on decisions. Still, the IFC understands that working with the Advisory Board can significantly improve a project’s chances success.

**3.2.4.2 The European Bank For Reconstruction and Development**

The EBRD has approved three energy-related projects in Hungary to date.

**MOL Zsana Gas Storage** This project is aimed at assisting the Hungarian Gas and Oil Company to establish greater gas storage capacity in Zsana. The total project cost was 83.9 million USD, and the EBRD has financed practically one third of this amount (24.7 million USD).

**Prometheus ESCO Financing** This second loan was prepared in 1995 to strengthen the ESCO (energy service company). The contract was for about five million USD, and 80% of this amount has already been disbursed. The project is therefore going as planned to date, and Prometheus is one of the

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69 #HUPA45251.

70 Another potential source is likely to be the IFC itself, and the other leasing company INNOTRADE is under assessment now.
success stories of the EBRD’s energy efficiency unit to date. They are planning to sign a new contract with Prometheus for the next couple of years. The owner of Prometheus is a French company, General de Chauffe.

**General Purpose Credit Line** An energy efficiency credit line project (37.8 million USD) has been approved, but some of its conditions remain unclear, and the agreement with the selected bank has still not been signed. The EBRD will open a credit line in a Hungarian commercial bank, Budapest Bank Ltd. exclusively for energy efficiency financing. This credit line is connected to PHARE, which is planning to open an energy efficiency revolving fund. The revolving fund can only be used together with IFI money, such as from the EIB and the EBRD, as a condition to be able to provide longer term financing facilities.

Because of PHARE’s contribution, the interest rate of the package will be around 16-17%, making it “softer” than current Hungarian market rates. Originally, an amount of 6.3 million USD (5 million ECU) was discussed; this was raised to 9.5 million USD (7.5 million ECU) to be shared by three banks. Many uncertainties still remain regarding connections between the banks, the matching funds and the conditions of the whole EBRD-PHARE project. For example, it is not clear which organisation will be responsible for the technical parameters of the various projects. But since both the EBRD and the PHARE handle the project secretly, it is nearly impossible to get any information about it.

### 3.2.4.3 The European Investment Bank

The EIB has had five energy-related loans in Hungary. The EIB provides funding for energy efficiency projects only through global loans, as there are no other types of energy-efficiency related programmes supported by the Bank. It is not possible to tell the number of the projects or the total amount spent on energy efficiency through global loans, since there is no information available about these loans which also includes environmental and other infrastructure-related projects.

**Global loans** These multi-sectoral loans can be used for industry, tourism, energy efficiency and environment-related investments. The total fund for Hungary was 32 million USD in 1990, and 100 million USD in 1991. As the money goes to commercial banks, it is very hard to follow it. Moreover, energy efficiency is only one of four possible fields to which the money can go. However, it is safe to say that there is a fairly low chance that it has gone to energy efficiency projects.

**Hungarian Electricity Enterprise I and II.** In 1990 and 1993, the EIB financed grid-connected as well and more complex projects in the Hungarian Electricity Works with loans of 19 million USD and 25 million USD, respectively. This was for grid rehabilitation and for feasibility studies on grid connection to the Western European system.

**Kelenfold Thermal Power Station Rehabilitation** In 1991, another loan was initiated for rehabilitation at the Kelenfold Thermal Power Station. (44 mil. USD)

**Gas Turbine Plant** Financing of a new gas turbine power plant on the site of a former power plant at Lörinci, 1997. (43 mil. USD)

### 3.2.4.4 Summary

In conclusion, although international financing institutions (IFIs) have supported a number of initiatives on energy efficiency in Hungary, the amount allocated by the IFIs for generating capacity or other types of supply side projects is still much greater than that allocated for sustainable energy. We have also observed that even when they are supporting environmental friendly projects, the IFIs have shown a lack of transparency in their energy related activities and operations.

### 3.3 Lithuania

#### 3.3.1 Energy Generation and Use

Before Lithuania re-established its independence, its power system was an integrated part of the north-western United System, and this in turn was part of the Soviet grid. Although oil, natural gas, coal and uranium were imported, Lithuania was a net exporter of electricity.

The total installed capacity of the Lithuanian power plants is 6324 MW, including the Ignalina nuclear power plant (NPP) with 3000 MW of installed capacity (later reduced to 2500 MW for safety reasons) and the Lithuanian thermal power plant (TPP) with 1800 MW of installed capacity, along with significant combined heat and power plant (CHP) installations, and some hydro power.

Until 1991, significant amounts of electricity generated in Lithuania were exported to Belarus, Latvia and Russia (the Kaliningrad region). As a consequence of a recent deep economic crisis,
electricity demand within the country decreased sharply in 1992. At the same time, an economic recession in neighbouring countries and problems with payments reduced demand for electricity exports.

The characteristics of the main Lithuanian power plants are shown in the table, right.

**Ignalina Nuclear Power Plant.** The plant has two reactors, each with a capacity of 1500 MW. The reactors are of the RBMK type (the same model as at Chernobyl). The first reactor was commissioned, and the station started to produce electricity, in 1984. The second reactor was put into operation in 1987. Ignalina generates about 85% of Lithuania’s total electricity demand and operates about 3940 hours per year. (The average annual load of the plant is 45%)

**Conventional Thermal Power Plant (CTPP).** The first unit at the Lithuanian thermal power plant was commissioned in 1963. Total installed capacity is now 1800 MW (four 300 MW capacity units and four 150 MW capacity units). All 300 MW units are condensing units (used for electricity production only), and two of the 150 MW units also supply heat to the surrounding area. Two 150 MW units of the Lithuanian TPP have been refurbished, and further modernisation is planned, based on the results of a recent pre-investment feasibility study. Despite its huge potential, the thermal power plant is in a so-called “cold regime” and operates only about 306 hours per year (average annual load 3.5%). Maintenance of doubled electricity generation capacity (just for replacing of Ignalina in case of emergency) at other sources puts a huge financial burden on the state economy.

**Combined heat and power plants (CHPs).** There are three large, modern CHP plants in Lithuania (Vilnius, Kaunas and Mazeikiai). There are also several small, older public CHPs and industrial co-generation plants. The plant at Mazeikiai is oil-fired, and all the other plants are dual-fired from oil or gas. Due to the same problems affecting Lithuania’s TPP, the average annual load of CHPs is only about 11.5%.

Industrial co-generation plants are located within industries where there is a demand for process steam. The plants are in mineral fertiliser factories in Joanna (24 MW capacity) and Kedainiai (10 MW), and in paper mills at Grigiskes (5 MW) and Klaipeda (12 MW). The total installed capacity of these plants is 51 MW.

**Hydro and pumped storage plants** The only large hydro- power plant is at Kaunas on the Nemunas river; its installed capacity is 100.8 MW. The plant was constructed in 1960, and replacement of turbine runners, generator windings and other equipment would increase its lifetime by 30 years. The average annual load of the plant is 40.3%.

The Kruonis Pumped Storage Power Plant was erected in 1992 and now comprises three units of 200 MW each. The fourth unit is under construction. The was designed for 1600 MW of capacity, based on the assumption that four reactors at the Ignalina NPP would be in operation. With the reduced capacity at Ignalina, however, no further increase in capacity at Kruonis is expected in the near future.

There are also 11 small hydro- power plants located in different parts of the country, with a total capacity of 5.25 MW.

### 3.3.2 Organisational Structure of the Lithuanian Power System

The recent parliamentary elections in Lithuania have brought about some reforms in the country’s energy sector. One of these was the establishment of the Ministry of National Economy in April 1997, which took over the functions of three former ministries: Energy, Industry and Trade, and Economics. The Energy Agency (founded in October 1993) will

<table>
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<th>Characteristics of the Lithuanian Power Plants</th>
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<tr>
<td>Power plant</td>
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<td></td>
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<tr>
<td>1. Lithuanian power plant</td>
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<td>2. Vilnius CHP - 3</td>
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<td>3. Vilnius CHP - 2</td>
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<td>4. Kaunas CHP</td>
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<td>5. Petrasuiunai CHP</td>
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<td>6. Mazeikiai CHP</td>
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<tr>
<td>7. Klaipeda CHP</td>
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<tr>
<td>8. Kaunas HPS</td>
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<tr>
<td>9. Small HPS</td>
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<tr>
<td>10. Kruonis HPPS</td>
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<tr>
<td>11. Ignalina NPP</td>
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<tr>
<td>12. Other power plants</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
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</table>
continue its activities, though it will be reorganised. Therefore, the institutional structure of the energy sector still remains very centralised and complicated.

At present, the major energy sector institutions can be divided into two parts: Regulatory Institutions and Administrative Institutions.

**Regulatory Institutions**

- The Nuclear Power Safety Inspectorate (VATESI)
- The State Energy Inspection
- The State Commission of Energy Pricing and Energy Activities Control
- The Competition Board

**Administrative Institutions**

- The Government represents the highest level of policy-executing institutions.
- The Parliament is the highest body of state power in Lithuania. The Parliament has appointed several Committees relating to energy sector management. However, a special committee for the energy sector has not yet been established.
- The Ministry of National Economy is responsible for all issues concerning energy supply and relations with other countries on energy problems.
- The State Company Energy Agency
- The Lithuanian Energy Institute
- The “Lithuanian Energy” Joint Stock Company
- The Ignalina Nuclear Power Plant
- The “Lithuanian Oil”, “Lithuanian Gas”, and similar Joint Stock Companies

At the moment, there are three main energy policy documents in force in Lithuania:

- **The Energy Law** (passed by the Parliament in March 1995).

### 3.3.3 Potential for Renewable Sources and Energy Efficiency

Lithuania is almost entirely dependent on energy imports. In 1990, Lithuania’s indigenous energy resources (hydro, peat, firewood) supplied only about two to three percent of energy demand. In 1994, this percentage increased to some four to five percent. However, there is a potential to improve the use of indigenous energy. There is some potential for the use of renewable energy, especially from geothermal, hydropower and biomass. Specifically, opportunities exist for small hydropower rehabilitation, and conversion of heat-only systems to CHP (combined heat and power) using wood waste and wood chips.

The country also has some other indigenous energy resources, including onshore and offshore oil, peat deposits and natural gas, but these amounts are either insignificant, or their exploitation could have negative environmental consequences.

Lithuania’s hydro power output has averages 320 GWh per year, and it makes up only 10% of technical harnessable hydro power resources. Only Lithuania’s two biggest rivers, the Neris and Nemunas have total potential capacities of more than 100 MW. Medium and small rivers are estimated as having about 120 MW of potential capacity. Total hydro power potential is estimated at 6000 GWh, of which 3600 GWh per year is technically feasible.

The use of economically harnessable hydro-power resources would help to cover from 15% to 20% of all electricity demand. In Lithuania there are about 40 neglected small hydro power plants which could be easily rehabilitated. Because of existing dams and water storage, rehabilitation would require only about 2/3 of the capital cost. Such construction could prove to be economically interesting, and could yield 16 MW total capacity. Electricity production from such rehabilitated small hydro power plants is estimated at 60 GWh per year.

There is an even bigger potential for using small and micro hydro power plants, from which about 500 GWh could be produced annually. Unfortunately, the National Energy Strategy considers the economic viability of new hydro capacity economically restricted, and rehabilitation of only 8 MW of small hydro power capacity has been planned by the year

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74 Ibid., p. 18.
Fortunately, in the last few years, some private companies have expressed an interest in rehabilitating 13 small hydro power plants, and they are looking for loans from the EBRD.

Lithuania has a strong potential for the use of biomass fuels. The annual potential of firewood fuels from Lithuanian forests is 33.8 PJ. Using this wood for electricity production would account for approximately 52% of the present annual gross electricity consumption in Lithuania. Lithuania also has an annual energy potential of about 3.5 - 15.5 PJ from cereal residues. This accounts for 5.2 - 23.2% of the annual gross electricity consumption in Lithuania.

Moreover, biomass should be economically competitive with both coal and oil, even without considering the environmental advantages of using biomass fuel. The costs of imported coal and oil in 1994 were 5.9 USD/MWh and 9.7 USD/MWh respectively, while forest residues (branches, tops, stumps, etc.) cost only 0.72 USD/MWh (collecting costs not included). Shavings from sawmills cost 1.44 USD/MWh, and fuel wood (wood chips, sold by sawmills for heating of private houses) cost 5.7 USD/MWh. With support of the Nordic countries, a small number of boilers heated by wood chips have already been introduced in Lithuania as pilot projects.

The technical potential of geothermal energy within Lithuania's borders is about 96 x 10^9 MW h. The economical potential is about 64 x 10^9 MWh. Of this amount, about 69% is located in the Devon stratum (800 - 1200 m). In terms of fossil fuel, this would correspond to 6.8 billion tons of oil equivalent (TOE), or an economic asset value of approximately 640 billion USD based on the current fuel price of 95 USD per ton.

The Klaipeda Geothermal Demonstration Project (18.02 million USD) is funded by the World Bank, GEF, EU-PHARE and Ministry of Energy of Denmark. It is aimed at demonstrating the feasibility of developing the indigenous Lithuanian geothermal energy resources, decreasing dependence on imported fossil fuels, and reducing emissions of greenhouse gases. This project was heavily criticised by specialists from the Lithuanian Energy Institute and by some independent experts, because not enough investigations of geothermal resources were done, and for that reason, the benefits of the project are unclear.

Yet although the final results of the Klaipeda Geothermal project remain questionable, it should be kept in mind that it is a demonstration project, and more than half of total project budget will be covered by grant money. Moreover, the project could have positive consequences by limiting environmental impacts: both the impacts of local air pollution through reduction of such pollutants as sulphur dioxide, and in broader terms, it would also limit emissions of greenhouse gases.

Investigations and calculations of the National Energy Efficiency Program have shown that approximately one quarter of currently consumed energy supplies could be saved over the next ten to fifteen years by the introduction throughout the country of energy saving measures expected to be realised in the National Energy Efficiency Program and in the National Energy Strategy.

According to these calculations, total energy savings potential is about 25 TWh annually, which represents 30% of all primary energy consumed. Insulation of buildings could save about 10 TWh of this potential, but it demands relatively large investments. Other measures, including implementation of energy accounting and improvements in management could be introduced with comparatively small expenditures with very good economic returns.

Unfortunately, not enough energy saving measures have been introduced to date, and not enough attention has been given to this field in Lithuania. The World Bank’s Energy Efficiency/ Housing project (10m USD), related to the National Energy Efficiency Program, is the only demand-side project to date. It is aimed at increasing energy efficiency in residential and public buildings. But project implementation is not optimal, due to problems with internal regulations and high interest rates charged by local commercial banks.

### 3.3.4 MDBs and Energy Policy

#### 3.3.4.1 The World Bank

The World Bank’s operations in Lithuania are oriented toward the macroeconomic level. The Bank’s objective is to assist the Government to accelerate the country’s further economic transformation towards a market system, along with a recovery of living standards and output and export growth. For implementation of these objectives, the

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Bank mainly assists in the implementation of set government policies. In the energy sector, the Bank provides the Lithuanian Government with some sectoral investigations, provides loans for energy sector projects, and conducts the country’s structural adjustment loan. The Bank’s policy advice provides an analytical review of the energy sector as well as needs and possibilities for future lending, but it is mainly oriented toward traditional energy sector development and supply-side management.

Recommendations concerning the development of the energy sector and corresponding national energy policy have followed from the Bank’s studies. The Bank has not yet pushed the Government to look for non-nuclear alternatives to energy generation. Its position has been to simply investigate different scenarios set in the National Energy Strategy and find the most “beneficial” means of power generation.

According to the G-7’s Power Demand and Supply Options study, the “high nuclear” scenario is the most efficient in economic terms, as the option demanding the lowest investments. This “high nuclear” scenario would allow both units at Ignalina to operate to the end of their useful economic lives. However, as the most feasible option, the Bank proposes to retire one of Ignalina’s units earlier, and the second unit by the year 2000.

In the World Banks’ policy advice studies, little attention is paid to energy efficiency and the development of renewable sources of energy. The only general recommendations on energy sector development concentrate on rehabilitating existing facilities and retiring, in a planned manner, those that are unneeded, inefficient, obsolete or unsafe. Only two bank projects address the development of renewable energy sources, energy efficiency and demand side management. These are the Energy Efficiency/Housing Project (10 million USD) and the Klaipeda Geothermal Demonstration Project (5.9 million USD), and they form only 6.3 % from all Banks investment in Lithuania.

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**Energy Projects Under Implementation**

**Power Rehabilitation Loan** (26.4 million USD) The main objective of the project is to improve operating safety, efficiency, reliability, and environmental performance of the thermal electricity generating system, thus reducing the amount of imported fuels needed for its operation and facilitating the retirement of the Ignalina nuclear plant.

**Klaipeda Geothermal Demonstration Project** (5.9 million USD) The main objective of the project is to demonstrate the feasibility of developing indigenous Lithuanian geothermal energy resources, thereby decreasing the dependence on imported fossil fuel for heating purposes, which in turn would reduce emissions of greenhouse gases and sulphur dioxide.

**Energy Efficiency/Housing** (10 million USD) The objective of the project is to increase demand side energy efficiency in residential and public buildings and to support the implementation of governmental policies on the privatisation of housing, enabling increased private initiative in housing maintenance.

**Structural Adjustment Loan** (80 million USD) Lithuania received half of this loan in the Autumn of 1996. Another part will be given this spring if accepted conditions are met and expected economic indicators are achieved. This agreement also provides recommendations on how Lithuania’s economy should be developed and the role of the Lithuanian energy sector in its economy.

**Project in the pipeline**

**The Energy II Project** (under preparation) The project may include the modification of network connections in the Klaipeda District Heating System. This would comprise the replacement of obsolete equipment, including the installation of new thermostats and circulation pumps. It would also provide for the establishment of a workshop for the assembly of sub-stations, and supervision of equipment installation.

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76 **Lithuania: Energy Sector Review**, World Bank, 1994, P. 79 (Table 7.3).
78 Economic newspaper **Litas**, “Foreign Loans of Republic of Lithuania as of 1 October 1996”.

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**3.3.4.2 The European Bank for Reconstruction and Development**

The EBRD’s official position concerning energy sector operations in Lithuania is based on the rational use of energy, security of supply, and nuclear safety. Theoretically, this corresponds to the set national energy policy, but both EBRD operations in Lithuania’s energy sector have problems, which are outlined below.
The **Necessary Investments in the Energy Sector** project was devised for the improvement of energy efficiency, commercialisation of the energy sector, improvement of environmental performance, and related issues. But the actual usage of this loan unclear, because no one in the Energy Agency could explain what exact measures for energy efficiency improvement or for better environmental performance were taken and where the money was used. About 5% of the loan was used for investments to improve energy sector performance, and the rest was used for purchasing of fuel and other operational and consumption costs.\(^79\) In Lithuania, about 25% of total foreign loans for energy issues was used for investment projects, while 75% went for operational consumption.\(^80\)

**Ignalina Nuclear Power Plant Safety Upgrades**

According the Grant Agreement (signed on 10 February 1994) for 42 million USD for safety upgrades at Ignalina, the Lithuanian Government and Ignalina made commitments not to extend the lifetime of either nuclear reactor beyond the time at which its fuel channels should be replaced, and to stop electricity generation at Ignalina’s first unit by 30 June 1998, unless the VATESI\(^81\) issues a new license after the implementation of recommended safety and other measures.

At the time of writing, the Lithuanian Government was negotiating with the EBRD to prolong the licensing term for the first unit at Ignalina until May 1999, due to a delay in setting safety measures.\(^82\) At the same time, official statements in the media have been promoting the myth of cheap nuclear energy and claiming that the Ignalina NPP is necessary and important for Lithuanian economy. For example, the Minister of National Economy Vincas Babilius said: “Today it is difficult to imagine Lithuania’s future without the Ignalina Nuclear Power Plant, which provides about 85% of electricity produced in the country...”\(^83\)

In the National Energy Strategy, operation of the nuclear power plant is closely connected with the country’s economic development. It is very clear that if the export of electricity becomes possible for Lithuania, operation of both Ignalina units will be extended as long as possible.

Recently, the government has been looking for possibilities to join the European electricity grid (UCPTE), and has very actively promoted the export of electricity. At several rounds of high level negotiations on joining UCPTE, a few possibilities were discussed. These included a scheme through the Nordic countries (laying cable under the Baltic sea) and another through Poland.

Finally, in the beginning of 1998 the Ministry of Economy proclaimed an international tender for construction of a 110 kV electricity transmission line to Poland (Kruonis - Alytus - Elk). According to the tender’s conditions, the winning bidder, in addition to paying for construction of the transmission line, will have to purchase 6 TWh of electricity annually during a ten year period. Electricity export is anticipated to start in the year 2002, meaning that the Government is planning to operate both units at the Ignalina NPP at least until the year 2012.

**EBRD Energy Projects**

**Energy Sector Emergency Investment** (46.25 million USD). In December 1992, the EBRD made a loan to address urgent problems in Lithuania’s energy supply and to improve the country’s energy use efficiency. The project began the process of commercialising the operations of Lithuania’s energy utilities, by improving financial management in the sector. The project will also have a significant impact on environmental performance. Technical assistance has been provided to help with commercial re-orientation of the energy sector.

**Ignalina Nuclear Power Plant Safety Upgrades**

In February 1994, a grant of 42 million USD was made from the Nuclear Safety Account (NSA) for urgently needed safety upgrades to the Ignalina Nuclear Power Plant. The NSA was established in 1993 at the request of the G-7. It is funded by 13 donor countries and the European Community, and it is administered by the EBRD. Prepared in close cooperation with the G-24 Secretariat and bilateral assistance programs, in particular with Sweden, the project is helping to implement a Safety Improvement Program by providing equipment for operational and technical safety improvements and by funding project management and engineering experts.

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\(^79\) Personal communications, Lithuanian Energy Institute, 1997.


\(^81\) Nuclear Safety Inspectorate of the Republic of Lithuania.

\(^82\) derived from the *In-depth Safety Assessment Study*

3.4 Ukraine

3.4.1 Background Energy Situation in the Country

3.4.1.1 The Situation in Ukraine’s Energy Sector

The energy sector in Ukraine includes five major institutions that are subordinate to the deputy minister of the fuel and energy complex:

- The Ministry of power engineering and electrification (Minenergo)
- The State Committee on Nuclear Energy
- The Ministry of Environmental Protection and Nuclear Safety
- The Ministry of the Coal Industry
- The State Committee on oil, gas and refineries

The energy industry in Ukraine includes the coal, oil, gas, peat and refinery sectors. Ukraine has large coal reserves, as well as oil, gas and other fossil fuel resources, but their extraction is not currently sufficient to meet domestic demand and their share of domestic primary energy products is relatively low; it reached 44.4% in 1995. The main figures for primary energy supply and consumption are shown in the table, Primary Energy Supply and Consumption.

3.4.1.2 The Power Industry in Ukraine

Government Decree No. 244, “On the Market Transformation of the Power Sector of Ukraine” was issued in May 1994. This document stipulated the restructuring of the power sector of Ukraine and the development of a competitive national wholesale market for electricity. As a result of the Decree and other acts of government, today Ukraine’s power sector comprises the following elements:

- four joint stock companies that own and operate the 14 largest thermal power plants;
- two joint stock corporations that own and operate eight hydropower stations on the Dnieper river and three hydropower stations on the Dniester river;
- a state grid company that owns and operates the high-voltage network (220 kV and above);
- 27 joint stock companies (oblenergos) that own and operate the low-voltage networks, some generation in the 25 oblasts (regions), and two city administrations (Kiev and Sevastopol);
- the nuclear generation company (Ukrenergoatom)

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</thead>
<tbody>
<tr>
<td>Total PRODUCTION (Mtoe)</td>
<td>116.77</td>
<td>102.10</td>
<td>97.02</td>
<td>88.44</td>
<td>78.81</td>
<td>73.11</td>
</tr>
<tr>
<td>Total IMPORT (Mtoe)</td>
<td>150.56</td>
<td>145.13</td>
<td>121.88</td>
<td>98.06</td>
<td>84.79</td>
<td>87.16</td>
</tr>
<tr>
<td>Total EXPORT (Mtoe)</td>
<td>28.30</td>
<td>18.83</td>
<td>11.45</td>
<td>3.15</td>
<td>4.28</td>
<td>3.63</td>
</tr>
<tr>
<td>Primary Energy Consumption (Mtoe)</td>
<td>239.02</td>
<td>228.40</td>
<td>207.45</td>
<td>183.35</td>
<td>159.32</td>
<td>156.64</td>
</tr>
<tr>
<td>Annual percentage change [% to 1990]</td>
<td>[100%]</td>
<td>[-4.4% [95.6%]</td>
<td>[-9.2% [86.8%]</td>
<td>[-11.6% [76.7%]</td>
<td>[-13.1% [66.7%]</td>
<td>[-1.7% [65.5%]</td>
</tr>
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</table>

Table: Power Capacity Mix in Ukraine\(^{85}\)

<table>
<thead>
<tr>
<th>Generation type</th>
<th>Nuclear</th>
<th>Thermal [CHP]</th>
<th>Hydro</th>
<th>Industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed capacity, MW</td>
<td>12,800</td>
<td>32,400 [3,800]</td>
<td>4,700</td>
<td>2,240</td>
</tr>
<tr>
<td>Part in UPS, %</td>
<td>25</td>
<td>62 [7.3]</td>
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The installed generation capacity of the Ukrainian Power System (UPS) is 52,122 MW. It includes nuclear, thermal (fossil fuel), hydro- and industrial power plants (see table, Power Capacity Mix in Ukraine). The total effective generation capacity of the system is about 50 thousand MW, due to the de-rating of older power plants.

Electricity generation in 1995 was 193 TWh. Electricity generation, domestic consumption and exports all declined by 35%, 23% and 88% respectively during the period from 1990 to 1995.

3.4.1.3 Energy Policies in Ukraine
The official policy for Ukraine’s energy sector has the following main goals:

- the development and implementation of a policy that promotes energy conservation
- economically and environmentally justified utilisation of domestic energy sources;
- restructuring of the economy to reduce the energy intensity of production;
- increasing reliance on alternative (renewable) energy sources.

For the power industry, the priorities are:

- extensive rehabilitation of existing thermal power plants;
- promotion of new technologies for the clean burning of low quality coal;
- utilisation of efficient gas turbine equipment;
- building of new nuclear units and reconstruction of already existing ones;
- capacity-building in nuclear waste management;
- completion of new hydro-power plants and pump storage plants and utilisation of small- and medium- size rivers for power generation;
- rehabilitation of existing hydro-power plants.

3.4.1.4 Potential for Energy Efficiency and Renewable Sources of Energy
Energy intensity in the Ukrainian economy is three to four times higher that in OECD countries, mainly due to the large share of heavy industry and poor energy efficiency in the country.

The National Energy Program gives the following estimates for energy efficiency potentials in Ukraine. During the next two years, it is possible to reduce energy consumption by 10% without additional expenses or with only small investments. This is equivalent to 30 mil. tce (tonnes of coal equivalent) annually. With extensive controls for energy resource utilisation, new pricing policies and additional investments, energy savings could be 1.5-2 times higher than that.

The National Energy Program also includes figures on the potential for development of alternative and renewable sources of energy such as solar, wind and geothermal, small hydro and sea power, and the utilisation of biogas and mine methane (see table, below).

The State Program of Energy Conservation was approved by Parliament in 1996. According to this Program, the “estimated general potential for energy efficiency in Ukraine on the basis of 1990 is 145-170 Mtoe per year, which includes 42-48% of primary energy resource consumption.” (see table, Estimated Potentials for Energy Conservation in Ukraine on the Basis of 1990.)

3.4.2 MDB Lending in Ukraine

3.4.2.1 Memorandum of Understanding (MOU) and MDB Energy Lending in Ukraine
The International Bank for Reconstruction and Development (the IBRD, or World Bank), and the European Bank for Reconstruction and Development (EBRD) both lend in the Ukrainian energy sector.
World Bank papers state: “In collaboration with EBRD, the Bank assisted the G-7 Nuclear Safety Working Group to develop an Action Plan that includes the phased closure of capacity at Chernobyl, the completion of replacement nuclear capacity, the safety upgrade of the remaining nuclear units, the rehabilitation of non-nuclear power plants and energy efficiency improvements. The Bank actively participated in the work of a joint Ukraine/G-7 Task Force that prepared the MOU signed in Ottawa in December 1995.”

That MOU was signed by the government of Ukraine, the governments of the G-7 countries and the Commission of the European Communities and contains an agreement on the elaboration and implementation of a Comprehensive Program to support the decision of Ukraine to close the Chernobyl Nuclear Power Plant by the year 2000: “Ukraine and the G-7 will work with the international financial institutions as well as foreign and domestic investors to prepare loan-financed projects based upon least-cost planning principles.”

Because of the MOU agreement, MDB energy investment packages in Ukraine contain elements of the “Comprehensive Program” proposed in the MOU, and their importance is that implementing such projects will directly or indirectly support the closure of the Chernobyl nuclear power plant. At the same time, such projects must be worked on with maximum attention from both MDBs and Ukrainian officials in order to effectively use the opportunity to develop and improve the Ukrainian energy sector.

### 3.4.2.2 The World Bank

The World Bank has been involved in the Ukrainian energy sector since early 1992. An Energy Sector Review was issued in 1993, leading to the Energy Strategy Conference held in Kiev in June 1993. At the Conference, an understanding was reached that the Bank would focus on power generation, gas transmission, and gas distribution. It was also determined that lending operations should focus on the rehabilitation of existing assets rather than on capacity expansion, while supporting initiatives that

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increase the financial and operational autonomy of enterprises and foster competition.

The World Bank’s Strategy for Ukraine

“The Bank’s overall objective is to support Ukraine’s efforts to accelerate structural reforms, and to promote efficient investments in high priority sectors in order to complete the country’s transition to a market economy, accelerate its rate of economic growth, and increase efficiency. This will require strengthening key financial institutions; accelerating privatisation; extending the openness of the policy environment; rehabilitating and re-orienting the country’s physical infrastructure; and extending the social safety net and the efficient delivery of social services.”

Current World Bank Loans

The project descriptions listed in the present chapter are extracted from the Bank’s official Project Information Documents and Staff Appraisal Reports, where available.

Hydropower Rehabilitation and System Control Project (114 mil. USD, total 117 mil. USD) This project includes the near-complete implementation of the rehabilitation program of the Kakhovka hydropower station; and partial implementation of the rehabilitation program for the Kiev, Kanев, Kremenchug and Dniprodzerzhinsk hydropower plants, installation of dam safety monitoring systems, upgrading of communications, dispatch, system and protection, and generating unit controls and assistance for project implementation, and optimisation of use of the reservoirs on the Dnieper river.

Coal Sector Adjustment Loan (300 mil. USD) The project supports implementation of economic restructuring of the coal sector including corporatisation, price, trade and export liberalisation, decommissioning of unprofitable mines and investment into profitable corporatised mines and social mitigation.

Electricity Market Development Project (317.0 mil. USD, total 377.6 mil. USD) The project includes building up fuel stocks at 14 thermal power plants to levels that are consistent with standard industry practices (about 40 days of stocks for coal and mazut), as well as building up the stocks of spare parts and carrying out deferred maintenance at the plants. It also includes installation of metering and communications equipment to improve recording and building of electricity flows at key wholesale market delivery points, and technical services and training for project implementation, financial management, and the development of a privatisation program.

In 1995, the Government of Ukraine asked for support from both the EBRD and the World Bank for the Electricity Market Development Project. The EBRD loan came first and is now signed and under implementation. In 1997, the World Bank suspended credits for its $317m loan for the Ukrainian power sector due to the Ukrainian government’s refusal to introduce a 10-20% price differential between residential and commercial energy tariffs to reflect the higher cost of residential energy delivery, as was specified in the agreement for the loan. The Electricity Market Development Project was designed to address the following issues:

- improvements in payment collection at the level of oblenergos (Local power distribution companies) in order to stop the haemorrhaging of financial resources;
- provision of working capital for the generation companies in order to enable the power system to provide electricity to creditworthy customers;
- upgrading metering of electricity flows in order to improve the recording and billing of transactions between market participants;
- improving financial management in the power industry, particularly in the National Dispatch Centre (NDC). 96

The objective of the project is to support the development of a competitive electricity market by providing working capital to thermal power generators for the purchase of fuel and spare parts, and installing the metering and communication equipment needed for proper functioning of the settlement systems.

Of the project’s four components, the most costly is the building up of fuel stocks at 14 thermal power plants. For each of those plants, estimates were made for actual and required fuel stocks of coal, gas and mazut; this included estimates of how much of these fuels were required to have fuel inventories for a minimum of 40 days.


96 Ibid., p.14.
The second component includes maintenance and building up the inventory of spare parts and equipment in the following categories:

- coal storage and transportation equipment;
- water demineralisation equipment;
- boiler and mechanical equipment;
- electrical equipment;
- instrumentation and control equipment; and
- environmental impact mitigation and monitoring equipment.

The third component of the project, metering and communication, involves purchasing and installing the equipment needed to measure and record hourly energy flows and the equipment needed to forward the necessary information for commercial settlements and accounting.

The fourth component involves technical services. This foresees both project implementation support and institutional building, including:

- fuel and spare parts procurement;
- metering and communications implementation support;
- operation of the wholesale market;
- privatisation program.

A group of recommendations and agreements on pricing reached during negotiations on the loan are also include in the project.\(^{97}\) As noted above, these pricing measures were a major reason that the World Bank suspended funding for the project, as the price differentials had not been achieved by the specified dates. Some of the project’s recommendations and agreements are listed below:

- Adjustment of household electricity prices in order to achieve a 10% difference between average industrial prices and household prices by the end of 1996, and a 20% difference by the end of 1997;
- The introduction of consumption norms limiting the amount of subsidised electricity for privileged household consumers in 1996;
- A mechanism for setting wholesale electricity prices, including provisioning for bad debts, temporary support to generation companies, and the recovery of the cost of subsidies to privileged consumers;
- Following the rescheduling of payables and receivables accumulated before 1996, the generation companies’ and NDC’s payables and receivables will not exceed 40 days in 1996, 35 days in 1997, and 30 days thereafter;
- Commitment of the NDC and the generation companies to maintain a debt service coverage ratio of at least 1.5 during the term of the Bank loan;
- Auditing requirements for NDC and generation company accounts.

**IBRD Projects in the Pipeline**

**Gas Distribution Rehabilitation** (100 mil. USD)
The project will support rehabilitation and upgrading of the gas distribution system in four areas, installation of gas meters for customers in the residential/services sector, rehabilitation and/or replacing sections of the pipeline networks, and an institutional support program.

**Dniester Hydropower Pump Storage Project** (260 mil. USD) The aims of the project are completion of three units of the Dniester Hydropower Pump Storage Plant (DHPSP), completion of the after-bay (buffer) hydropower plant at the lower dam of the DHPSP, strengthening of the transmission system, further priority upgrades of the dispatch control and communications systems, and technical assistance for project implementation.

**Kiev District Heating Improvement** (200 mil. USD) The project includes rehabilitation and introduction of technologies and materials to the heating system in Kiev and support for the commercialisation and strengthening of project district heating companies. By December 1997, appraisal for the project was completed, and the EBRD was to provide co-financing.

**Krivoy Rog Power Plant Rehabilitation Project** (160 mil. USD) The project will facilitate general station rehabilitation at a major coal-fired thermal power plant to extend service life, increase efficiency and to reduce environmental impact, including boiler and turbine-generator rehabilitation at units 6,7,8, and replacement of the generator for Unit 2.

3.4.2.3 The European Bank for Reconstruction and Development

The EBRD’s Strategy in the Ukrainian Energy Sector

The EBRD's objectives in Ukraine are to help reduce the economy's energy intensity, facilitate the closure of Chernobyl, and improve overall environmental performance in the energy sector.

Priorities are to:

- Improve performance, efficiency and environmental performance of power generation and in commercially-structured projects sponsored by private investors;
- Promote improved end-use efficiencies, and more rational use of energy through price reform and energy efficiency initiatives;
- Help to improve the reliability of the power and gas transport systems;
- Support re-organisation of the sector; and
- Assist in the development of domestic fossil fuel reserves.

This strategy will provide direct support to the G-7 Action Plan for Ukraine, which proposed a comprehensive package of nuclear safety upgrades, tariff increases, rehabilitation of thermal plants and completion of modern nuclear plants under construction to facilitate the earliest feasible permanent closure of Chernobyl.98

EBRD Projects Under Implementation

Power Market Development Project (61.9 mil. USD, total 72.5 mil.) The National Dispatch Centre (NDC) will on-lend the funds to four generating companies for important short-term repairs and maintenance at the main thermal power stations and to provide new meters and equipment for the new electricity wholesale market.

Poltava oil and gas extraction Project (8 mil. USD) EBRD financing is being used for the drilling of four new wells, connecting these wells to the operation and production base, and constructing a pipeline and rail export facilities.

Starobeshevo Power Modernisation Project (113.22 mil. USD, total 163.20 mil. USD) Replacement of an old coal-fired boiler with the installation of a 210 MW fluidised bed boiler with ancillary equipment at Unit 4 of the Starobeshevo Power station in Eastern Ukraine. The new boiler will use circulating fluidised bed boiler technology, which can burn low-quality coal and slagm efficiently and cleanly.

EBRD Projects in the pipe-line

Lviv District Heating Commercialisation Project (total 62 mil. USD) This is a project to commercialise the district heating supply service in Lviv. Investments will assist the municipality in developing its utilities on a commercially and financially autonomous basis, enabling private agents to handle customer services, metering, billing and collection.

Kiev District Heating Rehabilitation (total 124 mil. USD) This project will finance the rehabilitation of the transport and distribution district heating grid of Kiev.

Krivoy Rog Power Plant Rehabilitation Project (total 290 mil. USD) The project consists of rehabilitating three units at Krivoy Rog, improving their efficiency, and reducing emissions of air pollutants.

Ukrainian Energy Saving Company (UkrESCO) Project (total 33 mil. USD) This is a project to establish the first Energy Saving Company (ESCO) in Ukraine and implement a range of energy saving projects in the public and private sectors.

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4. MDB Energy Policies

4.1 The European Bank for Reconstruction and Development

The EBRD is the first MDB to have an explicit environmental mandate. The EBRD’s charter includes as a major goal to “promote in the full range of its activities environmentally sound and sustainable development”. Further, the charter calls for the EBRD to “place environmental issues at the forefront of its efforts to promote sustainable economic growth at the regional and national level”.

The Agreement of the EBRD also declares the EBRD’s commitments to the “fundamental principles of democracy, the rule of law, respect for human rights, and market economies”. Additionally, the EBRD’s charter requires it to lend primarily to the private sector.

4.1.1 Energy Operations Policy

From the new EBRD Energy Operation Policy of March 1995, we can see marked improvements over the first energy policy which was introduced in March 1992. The main criticism of the initial policy was its lack of emphasis on demand-side efficiency. Instead, the major emphasis was given to efficiency of energy supply operations, countries’ energy security, and also to increased energy exports.

The EBRD’s energy sector objectives are now:

- to increase energy efficiency and cost effectiveness in both energy supply and demand
- to support and accelerate the establishment of competitive and efficiently regulated energy markets
- to facilitate the integration of countries of operations in international energy markets
- to improve energy sector environmental performance
- to improve the safety of nuclear power plants

One problem with the EBRD’s current assessment process is that Environmental Assessment (EA) and least-cost analyses are conducted separately. Because of this, the least -cost analysis cannot evaluate all of the impacts identified in the EA, and the EA does not assess all options considered in the least-cost study.

The EBRD supports Integrated Resource Plans (IRPs) and sector least-cost plans only selectively. If the EBRD wants to promote sustainable development, then it will be necessary to require countries to prepare IRPs as a binding condition for all energy loans, and these should be made public documents. A regional Integrated Resource Plan should also be developed as part of the Bank’s Sustainable Development Policy.

4.1.1.1 The Energy Efficiency Unit

The EBRD’s new energy policy represents a positive shift, because it puts a strong emphasis on energy efficiency: “the project consistent with the first objective [to increase energy efficiency and cost effectiveness] will be given a higher priority. Although supply-side efficiency projects are likely to play a significant role in the short run, the longer-term emphasis will be increasingly on demand-side projects.” Further, “the EBRD will invest directly to reduce the energy intensity of demand, develop local production of energy efficiency- related equipment, develop local financial intermediaries, energy service companies (ESCOs) and third-party financing instruments.”

A key element in implementing this strategy into real bank practice was the EBRD’s establishment of the Energy Efficiency Unit in 1994. In 1997, the Energy Efficiency Unit planned 500 mil USD in energy efficiency investment in the CEE region. Framework agreements for energy service companies (ESCOs) will lead to the creation of approximately 10 ESCOs in CEE. This indicates that the EBRD has been effective in institutionalising the energy efficiency elements of its policy, and that energy efficiency has received more attention from EBRD staff since the Bank’s establishment of its Energy Efficiency Unit. This model is in contrast with the World Bank, where much detailed policy for energy conservation was prepared in 1992, but very few of its objectives have yet been implemented.
partially because no structure similar to the EBRD’s Energy Efficiency Unit exists at the World Bank.

4.1.1.2 Nuclear Policy and the Nuclear Safety Account

The Energy Policy has a special section on nuclear energy, as the EBRD is the only MDB which supports nuclear projects. The Bank operates in the nuclear sector through the administration of the Nuclear Safety Account (NSA) and through the Technical Cooperation Funds Programme.104 The EBRD has also been approached for loans for finishing nuclear power plants at Mochovec in Slovakia and Rovno and Khmelnitsky (R4 and K2) in Ukraine.

The EBRD’s Energy Policy specifies that “the Bank may also assist from its ordinary resources projects to complete or upgrade modern nuclear stations (of VVER 213 and 1000), provided that they are directly linked with the closure of high-risk reactors in the country concerned. Such projects have to meet the same least-cost criteria (including review of supply-demand-side energy alternatives) as non-nuclear projects...”105 In the case of Mochovec and R4 and K2, the review of such non-nuclear alternatives was insufficient and has been heavily criticised by independent experts.106

In 1996, the EBRD commissioned an Independent Panel to review the economics of completing the two nuclear power plants at Rovno and Khmelnitsky. The Panel consisted of seven international experts plus a secretariat and was asked to undertake an “analysis...to ensure that Ukraine has the least cost power to meet its future needs, taking into account, among other things, opportunities for energy conservation. The analysis will help determine whether completing the two reactors to internationally recognised safety standards is economically justified”.107 The Panel was considered necessary due to the sensitivity of the issues involved as well as the “economic due diligence” requirement: “[a]n International Panel of experts will therefore be commissioned to conduct this economic due diligence”.108

The Panel concluded categorically that "K2/R4 are not economic. Completing these reactors would not represent the most productive use of $US1 billion or more of EBRD/EU funds at this time.”109 Despite these findings, the EBRD continue to evaluate and assess the project. The Bank has commissioned two further analyses to assess the economics of completion of K2 and R4. Both of these analyses seek to undermine the conclusions of the Panel and to facilitate the involvement of the EBRD in projects which have clearly been shown, by its own expert Panel, to contravene Bank lending policy.

Safety aspects for nuclear power plants are also addressed in the EBRD’s energy policy: “Standards applied for construction, management and operation of the plant would have to be fully in line with fundamental principles set out in IAEA documents” and “plant safety assessment will be based upon an approach demonstrably equivalent to good Western practices”.110 This rather vague definition has allowed the application of lower standards than would be applied for the same type of reactors in Western Europe. Instead, the EBRD should use the best available technology standard as defined by its President Jacques Larosiere: “The safety of any nuclear plant we would be working on would have to be at the highest existing standard.”111

The EBRD has been criticised for its very close links to the nuclear industry.112 While it is true that, in order to provide assistance in the nuclear field, the Bank would need nuclear experts on staff, there has been a feeling among the EBRD’s critics that the Bank was not as independent as it might be in this regard. Perhaps in response to these criticisms, the EBRD has carried out least-cost analyses by an Independent Panel, as was done in case of Rovno and Khmelnitsky. Such independent analyses should be a condition for any EBRD lending in the nuclear sector.

104 For example, the EBRD financed 380 000 USD for the Mochovec nuclear power plant in Slovakia. Source: NPP Environmental Assessment and Audit from Technical Cooperation Fund Programme, Environment in Transition, EBRD, Spring 1996, p. 9.
106 See, for example, Katalog Argumentov (Catalogue of Arguments), Energia 2000, 1995, chapter. 1.00.
107 EBRD Press Release, 4 September 1996.
108 Economic Assessment of the Khmelnitsky 2 and Rovno 4 Nuclear Reactors, EBRD, 1997, p.76.
109 Ibid., p.68.
111 Statement of President at Sofia Annual Meeting, April 1996.
112 For example, the formal Director of Nuclear Safety at the EBRD, Manfred Banashick, had close links to GRS, a private German firm involved in nuclear safety analyses (Source: Nucleonics Week, March 27, 1997, p.1), and there has been a strong influence at the Bank from the French nuclear industry.
In 1993, the G-7 countries proposed a new mechanism to address nuclear safety issues in CEE, the Nuclear Safety Account (NSA). The NSA was planned to be effective until 1996, and it was extended for another three years. By the end of 1996, pledges to the NSA totalled 324 million USD from the European Community and 14 other countries. The EBRD functions as the administrator of the NSA and provides technical and other services.

As of December 1996, grants for projects in Bulgaria, Lithuania, Russia and Ukraine had been approved by the Assembly of Contributors, and the grant agreements had been signed. In Bulgaria, 30 million USD were approved for a project for Units 1-4 of the Kozloduy Nuclear Power Plant, 44 million USD were approved for two units of the Ignalina Nuclear Power Plant in Lithuania, 149 million USD were approved for the Chernobyl Nuclear Power Plant in Ukraine, and 38 million USD were approved for two nuclear power plants in Russia.

The intention of the NSA is to reduce the risks posed by VVER 440/230 and RBMK reactors by “short-term and cost-effective safety improvements.” Finance from the NSA is not to be used to extend the operational lifetime of these reactors, but in fact in all cases the governments which received grants from the NSA later expressed their intention to continue operations of their nuclear reactors. For example, the NSA Agreement entered into in 1993 by Bulgaria provided funds for the closure of the four units at Kozloduy. The necessary work was to be completed by the end of 1998. However, in the middle of 1997, the European Commission estimated that units 1 and 2 would be closed in 2001, and units 3 and 4 in 2002. Currently, these grant agreements are kept secret. Instead, they should either be released to the public, or they should be followed by a Memorandum of Understanding or other public document, similar to that between the G-7 and Ukraine. Making documents available to the public would facilitate public scrutiny and debate on planned projects.

4.1.2 Environmental Procedures and Policy

The first EBRD Environmental Procedures were adopted in January 1992, and although the procedures were reviewed (most recently in September 1996) and strengthened, there are still a number of problems, especially in the area of monitoring of the public participation process and in addressing sustainable development issues.

4.1.2.1 Sustainability

The EBRD is the first MDB with a clear mandate to promote sustainable development. However, many of its current projects, although they do support some environmental improvements in the shorter term, actually have negative environmental impacts in the long term or in broader contexts.

For example, the EBRD has been criticised for financing and expanding the ZSNP aluminium-smelter plant in Slovakia. The plant has already damaged the environment in the region. It was one of the biggest polluters in Slovakia and is that country’s largest single consumer of electricity.

The reconstruction of the plant improved its environmental performance, but the plant will still emit large quantities of dust, arsenic, nickel, and chromium. Furthermore, because of its newly expanded capacity, the plant actually increased its consumption of electricity.

Nearly one quarter of electricity in Slovakia is produced by the nuclear power plant at Bohunice units 1 and 2 (VVER 440/230), which is listed as one of the most dangerous reactors in the CEE region. The EBRD required the closure of the Bohunice nuclear power plant as a condition for the proposed loan for the Mochovce nuclear plant. On the other hand, continued operation of Bohunice did not prevent the EBRD from financing the loan for the ZSNP aluminium smelter, which led to increased electricity consumption in a country which has very limited energy resources.

4.1.2.2 Environmental Standards

The EBRD tries to support improvements in environmental standards throughout the region: “EBRD operation will be structured to meet national and existing EU environmental standards or, where EU standards do not exist, national and World Bank

standards.” At the same time, it allows projects to begin before standards are in place by saying that, “If these standards cannot be met at the time of Board approval, operation will include a programme for achieving compliance with national and EU or national and World Bank standards.”118 All standards for any project financed by the EBRD should be binding at the time of loan approval.

4.1.2.3 Public Participation and Access to Information
Public consultation is one of the major elements of the EBRD’s mandate to promote democracy. The EBRD has Environmental Procedures, which also include requirements for the consultations with the public. These procedures require Environmental Impact Assessment for all level “A” (major) projects, including provision for public consultation and a timeframe for it.119

Yet even where the process has been improved by revisions of environmental procedures and by the adoption of a policy on disclosure of information in 1996, some elements are still missing:

- The project sponsor or, where appropriate, the EBRD or its agents should be required to respond in writing to all comments.
- The EBRD should also set a timeframe for the scoping process.
- Significant problems in the public consultation process in the cases of both Mochovce and Rovno and Khmelnitsky confirm the necessity to establish mechanisms for the EBRD to monitor the public participation process in all of its projects.

A policy on the disclosure of information was approved in April 1996 and became effective in September of that same year. For the first time, information on projects was made public through Project Summary Documents (PSDs). PSDs on private sector projects should normally be released at least 30 days before Board Consideration, but there is still a possibility that information could be kept confidential if the client or co-finance have some reasons for it.120 Also, a shortened version of the Board report and factual technical information of public sector projects should be made available to the public under the Disclosure Policy.

It is a positive development that the EBRD is starting to be very active in posting information on its World Wide Web site, as this will markedly increase public access to information. However, documents such as Integrated Resource Plans are not available to the public,121 and the EBRD should require project sponsors to publish such documents.

The New Transport Policy that was adopted in the beginning of 1997 also shows that the EBRD did not allow for full public participation in this case. Aside from ENVAC (Environmental Advisory Council) members, neither the broader NGO community nor general public had any chance to see or comment on any draft version of the Policy.122 This kind of oversight should be remedied as soon as possible.

4.1.3 Summary
Although the EBRD’s mandate requires it to promote “environmentally sound and sustainable development”, in practice it has so far fallen short of this goal in certain aspects of its operations. In the case of loans for “short-term and cost-effective safety improvements” to VVER 440/230 and RMBK nuclear reactors, the EBRD should ensure that financing from the NSA is not used to extend the operational lifetime of these reactors. The 1995 Energy Operation Policy is a positive development, and efforts to increase energy efficiency, especially on the demand side, and well as to improve environmental performance in the energy sector should continue.

It is positive that the Bank conducts environmental assessments of potential projects in addition to least-cost assessments. However, it should coordinate these

118 Environmental Policy in Environmental Procedures, EBRD, 1996, p. 29.
119 Level “A” projects are defined in Environmental Procedures, European Bank for Reconstruction and Development, 1992, revised 1996, Annex 4, “Environmental Screening Categories”. Projects are classified according to environmental screening categories include category “A”, requiring environmental impact assessment (EIA), category “B”, requiring a “project-specific ‘B’ level Environmental Analysis unless location, scale or other factors require an ‘A’ level EIA”, and category “C”, “which do not require an environmental assessment.” Annex four includes the caveat that, “Regardless of the “A”, “B”, “C” categorisation for environmental assessment, operations may require an Environmental Audit.”

121 Personal communication with Mr. Murphy, Head of the EBRD Environmental Unit, EBRD Annual Meeting, April 1997.
assessments instead of conducting them separately, as it currently does. This would allow Bank officials to take into account potential environmental impacts of projects as well as all alternatives from least-cost analyses at the same time. The Bank should also make good its commitment to sustainable development by not financing projects which do not contribute toward sustainable development and by strictly requiring projects to adhere to the highest standards and best available technologies and as a condition for loans. Finally, the Bank should increase its efforts in the dissemination of information on proposed and current bank projects, and it should provide for increased public participation regarding loan decisions, not only by ENVAC members, but by NGOs and members of the public at large.

4.2 The World Bank Group

A World Bank paper recently stated: “Energy solutions for development in all countries must be created in the context of energy efficiency in the short- and medium-term, and in the longer term, a large-scale transition to non-fossil energy will be required.” These are laudable goals which are necessary for the sustainable development which the World Bank is committed to support. Unfortunately, they do not accurately reflect the Bank’s recent lending record and policies in Central and Eastern Europe or indeed globally.

In the areas of privatization energy price reform, the Bank has been effective in promoting reform in the energy sectors of its client countries. However, in other aspects of its energy lending policies, its performance has not been in line with its commitments to sustainable development and the promotion of renewable and alternative energy sources made since the 1992 Earth Summit in Rio de Janeiro.

In fact, the Bank continues to support the continued extraction and use of fossil fuels in most of its projects. Moreover, a number of recent studies have shown that the vast majority of recent World Bank energy projects have primarily benefited powerful transnational corporations, rather than residents of its client countries.

4.2.1 World Bank Energy Policy

4.2.1.1 Sustainable Energy Initiatives

Despite its overall lending and policy record, there are many examples of promising World Bank initiatives which give the impression that the Bank is a major supporter of sustainable energy. These include:

- The Energy Sector Management Assistance Program (ESMAP), established in 1983, provides technical support for the implementation of energy efficiency technologies.
- The FINESSE program (Financing Energy Services for Small-Scale Energy Users, included in ESMAP since 1989) supports the development of small-scale power options which complement electricity supplies to the grid.
- The Photovoltaic Market Transformation Initiative (PVMTI) of the International Financial Corporation will competitively award $30 million to companies promoting solar PV through the Global Environmental Facility (GEF).
- The Renewable Energy and Energy Efficiency Fund (REEF, another IFC project) is a commercial debt and equity fund, capitalized at between $150 to $240 million, to promote small renewable and energy efficiency projects.
- The World Bank, the International Financial Corporation, US- based private foundations and others are proposing the Solar Development Corporation (SDC). The purpose of the SDC is to provide business development services to local solar entrepreneurs, and to provide credit for both solar businesses and for purchasers of solar home systems.
- The World Bank and several cooperating institutions have also completed a Carbon Backcasting Study that demonstrates how the recent energy portfolio of the World Bank would be impacted by the incorporation of a “shadow value” for carbon emissions.

These initiatives are steps in the right direction, but they are very small compared to the Bank’s overall

123 The World Bank and Climate Change: Issues and Opportunities, distributed at the Kyoto Climate Summit, December 1997.

124 IFC- the Bank’s private sector lending arm

125 The political question of whether the shadow cost should be met by developing countries or by donor countries has not yet been resolved, and the Bank has not yet decided whether it will incorporate a shadow carbon value into the economic analysis of proposed projects.
energy lending portfolio. Since the 1992 Earth Summit, a number of independent reports have shown that recent World Bank projects overwhelmingly promote the use of fossil fuels. The latest, “The World Bank and the G7: Changing the Earth’s Climate for Business”, points out that loans made by the Bank since the Earth Summit (Fiscal Year 1993) will add at least 36 gigatons of carbon dioxide to the Earth’s atmosphere, or “an amount equivalent to more than ALL current annual GLOBAL fossil fuel emissions.”

### 4.2.1.2 Privatisation and Market Liberalisation Policies

The World Bank’s overall strategy for development is based on globalisation and liberalisation, and its roots are political. Bank officials cite public ownership of most of the largest power utilities in client countries as a major impediment to reform. For this reason, the Bank does not propose any direct measures to promote sustainable energy, but rather focuses almost exclusively on privatisation, price reform and related issues in its energy projects.

The Bank justifies this strategy on economic grounds, claiming that liberalisation of the energy sector leads to greater economic efficiency and greater access to capital for much needed investments. It also claims that this strategy has environmental benefits, because commercialisation and the removal of state subsidies will force power companies to minimise transmission and distribution losses, improve power plant performance, and buy energy from competitive energy generators, including those promoting renewable energy technologies and cogeneration.

Although in principle this is true, for renewable energy and cogeneration to be competitive in today’s marketplace, market biases against them must be removed. This is an issue which the Bank admits, but does not address in its lending policies. The World Bank admits that “despite expected positive long-term effects of deregulation, unregulated electricity markets are likely to put renewable energy technologies at a disadvantage in the short-run because they favour the cheapest energy as determined purely by price, but do not capture environmental and social externalities. Investors in unregulated, short-term markets favour low-capital-

cost fossil fuel technologies over renewables that tend to be more capital-intensive, even if they may produce more cost-effective power over their lifetime.”

The Bank has yet to seriously address this issue. New and renewable energy technologies are still perceived by most investors as having large commercial risks, so they are relatively expensive to finance. Also, energy efficiency and renewable technologies are disadvantaged by the massive subsidies with which governments support the fossil fuel and nuclear industries. In Western Europe alone, these subsidies are worth close to $US 15 billion per year. Therefore, deregulation of the energy sector in fact tends to favour conventional fossil fuel technologies, which offer the most profit in the short term, while placing renewable energy and energy efficiency technologies at a disadvantage.

Also, it is mainly transnational energy corporations based in the industrialised countries which are in the best position to benefit from the new global energy marketplace, and these corporations have vested interests in fossil and nuclear energy technologies. Since the 1992 Earth Summit, 90% of the energy loans awarded by the World Bank have actually gone to such companies.

### 4.2.1.3 The “Power Paper” and the “Efficiency Paper”

The World Bank’s policies of globalisation and liberalisation culminated in a new “reform agenda” contained in a document approved by the Bank’s Board of Executive Directors in 1992, known as the “Power Paper”. This document lays out the Bank’s plans to move away from supporting “the single national electric utility operating as a public monopoly (in developing countries)”, and to “aggressively pursue the commercialisation and corporatisation of, and private sector participation in, developing-country power sectors.”

Early drafts of the Power Paper were produced in 1991, one year before the United Nations Earth Summit. These

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127 Cogeneration is the combined production of heat and power.

128 World Bank responses to comments received via the virtual consultation on the energy and environment strategy paper discussion paper of July 22 1997, section 33.


drafts were criticised by NGOs and others for their lack of attention to environmental issues.

In response to these criticisms, the Bank produced an accompanying document, the “Efficiency Paper”, to deal with environmental concerns. The Efficiency Paper recommends that energy efficiency and renewables should be better integrated into the Bank’s general country policy dialogue with developing countries, that the Bank should give “high-level, in-country visibility” to energy efficiency and demand side management, and that it should give “greater attention to the transfer of more energy efficient and pollution reducing technologies in its sector and project work.”

Unfortunately, the Bank has failed to follow the recommendations contained in its Efficiency Paper, as is pointed out in a 1994 report by two US based NGOs. That document, “Power Failure” showed that out of 46 power loans under preparation by the Bank at the time, only two loans complied with the sustainable energy commitments in the Bank’s 1992 policies. One of the report’s key findings was that “there is a perception by many Bank power staff, that other power sector reforms, such as pricing and privatisation, deserved higher priority than do measures designed explicitly to improve end-use energy efficiency.”

4.2.1.4 Changes in Bank Energy Policy

Bank staff continue to vacillate on Bank energy sector policy. For example, a January 1997 review of the Bank’s lending in the energy sector predicted that, “as the role of the private sector expands in the traditional areas of the power sector, the Bank will likely increasingly focus its effort to social areas and... the transition to modern, environmentally sound fuels, and the funding of innovative decentralised, renewable, and environmentally sustainable energy projects.” The review also mentions the need to recruit more staff with sustainable energy skills. However, these predictions and policies continue to be treated as secondary to the Bank’s primary focus on promoting its goals of privatisation and price reform.

In 1996, the Bank effectively downgraded its 1992 energy policies by converting them to non-binding “Good Practice” documents. Moreover, crucial elements of the 1992 policies, relating to sustainable energy, were not included in the Good Practice documents. This move prompted twenty-eight NGOs from North America, Latin America, Western Europe, Central and Eastern Europe, Africa and Asia to send an open letter to the Bank’s President, James Wolfensohn in August 1996, in which they stated, “the Bank’s actions reflect a lack of commitment to sustainable energy – in stark contrast to its stated goals.”

Jean Francois Rischard, the Vice President of Finance and Private Sector Development, replied to the NGOs in a letter dated September 1996 that “there has been no downgrading of the Bank’s energy policies. The Bank policies on electric power and energy efficiency continue to be those detailed in the two documents approved by the Board in 1992 (the Power Paper and the Efficiency Paper). These two Bank Policy Papers state the Bank’s policies: they were circulated to staff and are widely used and referred to in our energy operations.” Rischard also reaffirmed the Bank’s commitment “to follow a consultative process in implementing our energy policies” and its intent “to continue...[its] outreach efforts in that respect.”

These statements notwithstanding, the Bank clearly downgraded the status of its 1992 policies in July 1997 with the publication of its Provisional Draft Energy and Environment Strategy Paper. The 1997 paper contains a statement that the Power Paper and

133 The Environmental Defense Fund and the Natural Resources Defense Council.

136 The Bank had committed to converting all relevant Operational Directives (OD), and the earlier Operations Manual Statements, to a new format of Operation Policy (OP), Bank Procedures (BP) and Good Practices (GP). The older documents were so long and involved that Bank staff couldn’t tell the difference between mandatory policy and statements of intentions. The commitment to streamline the older documents was made as a result of an independent report commissioned by the Bank called Effective Implementation: Key to Development Impact, which was produced in September 1992. This report was prepared by a specially established Task Force on Portfolio Management, chaired by Willi Wapenhans, a former Vice President of the Bank, and became known as the Wapenhans Report. It was highly critical of various aspects of the Bank’s operations and was concerned, among many other things, that it was almost impossible to hold Bank staff accountable for following Bank policies.
137 GP4.45 Electric Power Sector, GP4.46 Energy Efficiency.
This statement makes it clear that the Bank is seeking to distance itself from any mandatory requirements to implement the sustainable energy recommendations in its 1992 energy policy.

4.2.2 Summary
The World Bank focuses on promoting privatisation and price reform in its energy sector projects, and such reforms can contribute to improvements in energy efficiency. However, privatisation and price reform alone are not enough to encourage demand-side energy savings, nor do they contribute to the development of clean, alternative technologies and renewable energy sources, which remain at a disadvantage in today’s marketplace. Indeed, deregulation of energy markets actually creates a bias against investment in sustainable energy technologies, as opposed to fossil fuel and nuclear technologies, as Bank staff freely admit. The Bank needs to address this issue in its future energy projects in CEE and globally.

The World Bank has a mandate to alleviate poverty and protect the environment. It also has a commitment to sustainable energy and is making much of its various sustainable energy initiatives. Yet these initiatives are very small compared to the Bank’s overall energy lending portfolio, which overwhelmingly promotes the use of fossil fuels. As 90% of the World Bank’s energy loans since 1992 have been awarded to politically powerful transnational energy corporations, it is reasonable to assume that vested corporate interests are interfering with the objectivity and independence of the Bank’s overall strategy decisions for the energy sector. This is an area which needs further independent research.

The Bank’s political reform agenda in its client countries is leading to changes in the control of power production (from the state to the private sector) rather than to changes in the means of power production (from conventional to sustainable energy technologies). The Bank continues to give its political reform agenda a higher overall priority in its operations than any direct non-pricing measures to promote new and renewable energy technologies. Before the Bank can meet its sustainable energy goals, it will need to detach itself from the ideological promotion of market forces, and take an approach which is focused on the sustainable energy needs of the majority of people in each of its client countries, rather than the economic needs of transnational energy corporations and those that serve them.

4.3 The European Investment Bank

4.3.1 EIB Energy Policy
The European Investment Bank has a very different set of procedures and policies from those of the World Bank and the EBRD. Only one policy has been adopted which has a direct impact on energy projects, the Environmental Policy Statement. The EIB does not have an energy policy, and similarly it has no set of procedures to ensure full public participation or access to information regarding EIB loan policies and other activities. Theoretically, the EIB is subject to overall policy direction by the European Union and to all EU policies.

Because the EIB’s policies are largely not specified in written form, and the Bank is obligated to comply with broad and complicated EU legislation and other international treaties. This makes it nearly impossible for EIB staff, who are specialised in economics and engineering, to properly fulfil their mandate in all relevant aspects.

4.3.2 EIB Environmental Policy
The EIB adopted its first Environmental Policy in 1984, and this policy was reviewed in 1996. The EIB’s main aim in the environmental field is to support projects which lead, among other goals, to the reduction “of atmospheric pollution; especially from power stations and industrial plants” as well as to “the improvement of the quality of life in urban areas”.

The Environmental Policy states that “consideration of environmental issues is an integral part of all phases of the investment cycle...” However, this “consideration of environmental issues” can only be fairly superficial, as the EIB has clearly declared in its Environmental Policy that the EIB “does not have a body of staff of designated ‘environmentalists’ as such” and that environmental issues “are the collective responsibility of all members of any

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139 Environmental Policy Statement, EIB, 1996, p. 4.
This “project team” usually consists of a lawyer, a financial analyst and an engineer and/or economist from the Project Directorate, which usually takes the lead on environmental issues.\textsuperscript{141}

The EIB claims that in the years from 1990 to 1995, it invested 596 million USD in environmental projects in the CEE countries.\textsuperscript{142} Its biggest project was the installation of de-sulphurisation equipment at lignite-fired power plants in the Czech Republic, a loan of 252 million USD.

The EIB recognises that in many countries the legal framework is “unsatisfactory”, but in “countries aiming for EU membership, notably the CEE countries, European Community legislation is an obvious guideline.” Specifically, the Directive on Environmental Impact Assessment (85/337/EEC) is the EIB’s most significant legislative tool in field of environment.\textsuperscript{143}

\section*{4.3.3 Summary}

The EIB limit their responsibilities in the environmental field, leaving them with the project’s promoter. “The promoter is responsible for compliance with legal obligation and standards relating to the environment, including the obligation to carry out EIA and the associated public consultation and to respect emissions and quality standards during the operational phase of the project.”\textsuperscript{144}

An environmental investigation procedure should be part of the EIB project preparation process and should include the following aspects:

\begin{itemize}
  \item identification of potential environmental risks of proposed projects and adoption of appropriate mitigation measures
  \item identification and, as far as possible, assessment of the economic and financial costs and benefits of environmental investment
  \item review of the project in light of present and likely future environmental legislation, as well as the results of the EIA process
\end{itemize}

\textsuperscript{140} \textit{Ibid.}, p. 9.
\textsuperscript{141} In 1996, the EIB hired one person to deal specifically with its environmental agenda. Source: \textit{Some Notes on the European Investment Bank}, James Barnes and Sandrine Bretonniere, 1996.
\textsuperscript{142} \textit{Ibid.}, p. 11.
\textsuperscript{143} \textit{Environmental Policy Statement}, EIB, 1996, p. 6.
\textsuperscript{144} \textit{Ibid.}, p. 7.
5. Consistency / Evaluation of Portfolios

The basic infrastructure of the Energy sector in CEE countries was developed during the communist regime, and therefore most of it was built using lower technical and environmental standards than are used in the OECD countries. In addition, maintenance of energy infrastructure in the region has generally been poor. For this reason, most energy sector investment in CEE is oriented towards the rehabilitation and reconstruction of energy systems. This usually leads to increased supply side efficiency. On the other hand, such investment creates new barriers to attempts to change the structure of the energy system. It postpones replacement of these sources with modern technologies and limits possibilities for other investment, as the countries and investors have limited financial resources.

The International Institute for Energy Conservation has assessed that the EBRD’s end-use energy lending in the years from 1992 to 94 was two percent of its total lending in the energy sector, and in 1995 this was increased to 7.5 percent. End-use energy lending accounted for 2.6 percent of total EIB energy sector lending in the years 1993-95, and for three percent of the World Bank’s total energy sector lending in the CEE region in the years 1991-95.145 With the exception of the EBRD, these figures did not radically change in 1996.

Below is an overall analysis of MDB lending in the CEE region from 1989 to date.

5.1 The World Bank146

In the period from 1991 to 1996, the IBRD and IDA approved 25 loans totalling 2809.3 mil. USD in the energy sector of the studied region. IDA energy lending in the studied countries was limited only to Albania.147

The World Bank’s loans often include components addressing various aspects of the energy sector. The major investments went to energy sub-sector reform programs in Bulgaria, Poland, Romania, Ukraine and Albania (1069 mil. USD). These reform programmes usually include energy pricing reforms, privatisation and upgrading of distribution systems.

A major portion of investments (989 mil. USD) went for the rehabilitation and building of thermal power plants in the Czech Republic, Lithuania, Ukraine and the former Yugoslavia, and for the building of new gas generation capacity in Hungary (160 mil. USD). The IBRD also supported switching from coal to gas and the extension and improvement of gas distribution in Moldova, Poland, and Slovenia (284 mil. USD), and rehabilitation of the electricity transmission system in Poland (160 mil. USD).148

The IBRD has so far approved only one demand-side energy efficiency project in Lithuania (10 mil. USD). It also approved rehabilitation of hydro- power plants in Ukraine (114 mil. USD), and in Bulgaria (as part of a broader World Bank loan), and financed a 5.9 mil. USD Geothermal Demonstration Project loan in Lithuania which is also supported by the GEF. The World Bank has supported district heating reconstruction projects in Bosnia and Herzegovina, Estonia, Latvia, Poland (117,4 mil. USD). This is a positive sign, as these projects include strong components for improving supply-side efficiency.

The World Bank states that twelve projects totalling 1379,9 mil. USD have an energy efficiency component,149 but all of the projects listed by the Bank are oriented only towards supply-side energy efficiency (usually involving the reconstruction of existing facilities). With the exception of rehabilitation of transmission systems, which is a component of several of these loans, the increase in energy efficiency is a only side-effect of the instalment of new equipment.

5.2 The EBRD150

Of the EBRD’s 32 energy projects in the CEE countries (totalling 1266 mil. USD), there are four regional projects for energy efficiency facilities.

147 two loans totalling 24.5 mil. USD.
148 This rehabilitation is also part of the sector loans.
150 Loans from EBRD financing in CEE, EBRD, April 1997.
151 The CEE countries include: Albania, Bulgaria, Belarus, Croatia, the Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Macedonia, Moldova, Slovenia, Slovakia, and Ukraine.
The biggest portion of this investment went to completion and rehabilitation of power plants in Belarus, Romania, Ukraine (365 mil. USD) and to the reconstruction or completion of electricity transmission systems in Albania, Croatia, Macedonia, and Poland (155 mil. USD). Energy sector emergency investment programs in the Baltic (121 mil. USD) which include both production and transmission components could also be included in the same category.

Similarly to the EIB, the EBRD also prioritised the oil and gas sectors. The EBRD invested 74 mil. USD in gas distribution and storage facilities in Hungary, Macedonia, and Slovenia, 106 mil. USD into modernisation of oil production and distribution facilities in Romania and Slovakia, and 9 mil. USD for development of an oil and gas field in Ukraine.

The EBRD also invested in water power plant rehabilitation in Albania, Slovenia and Latvia (144 mil. USD), and these were the only renewable resource projects in the Bank’s portfolio. One district heating rehabilitation project was funded in Moldova (24 mil. USD).

Since it established the Energy Efficiency Unit, the EBRD has started to support energy efficiency projects much more actively, especially ESCO companies. In 1996, the Bank approved loans for four regional multi-project facilities to finance energy service companies, and a regional ESCO project was started in Hungary (total 217 mil. USD). The Bank also established two special credit lines for energy conservation projects in Slovakia and Romania. In Hungary, a credit line totalling 67 mil. USD was also established to finance energy efficiency projects. Additionally, the Bank supported production of insulation products in Lithuania (7 mil. USD).

### 5.3 EIB

Twenty-seven EIB projects totalling 1333 mil. USD were made in the energy sector. In addition, global loans (part of which could be applied to energy efficiency) totalling 447 mil. USD have been made in 8 countries since 1989.

The major portion of the EIB’s energy investment went into fossil fuel projects (mainly for gas distribution and electricity supply). The EIB has financed rehabilitation and expansion of gas networks in Lithuania, Poland, Romania, and Slovakia (214 mil. USD), and gas storage facilities in Poland and Slovakia (296 mil. USD). In the electricity sector, the main investment went to rehabilitation and upgrading of thermal power stations in Hungary, the Czech Republic, Romania and Slovakia (416 mil. USD), to completion of a coal-fired power plant in Bulgaria (57 mil. USD), and to electricity network upgrades in Albania and Hungary (101 mil. USD). The EIB also financed the building of a new oil pipeline in the Czech Republic (126 mil. USD).

More environmentally beneficial EIB projects include rehabilitation of district heating systems in Estonia and Romania (84 mil. USD), and one industrial combined heat and power plant in the Czech Republic (69 mil. USD). The EIB’s only renewable resource project in the region is rehabilitation of a hydro-power plant in Latvia (6 mil. USD). The EIB has not approved any project in CEE whose main aspect would be demand-side energy efficiency.

Global loans are a special scheme used by the EIB. In the CEE region, the EIB has so far approved 447 mil. USD for its global loan scheme. The EIB does not provide any information about distribution of money from global loans. In the case of the Czech Republic, partner banks refused to provide lists of projects financed through global loans but confirmed that no energy efficiency projects had been financed to date. As the experiences of other countries are similar, we infer that energy efficiency is a only small part of the EIB’s global loan scheme.

### 5.4 In- country Experience with MDB Lending

#### 5.4.1 Bulgaria

##### 5.4.1.1 The World Bank’s “Energy I” project in Bulgaria

The Energy I Project is financed by the World Bank (IBRD). The project was initiated by the Bulgarian Government in 1991 and is sponsored by the NEK (Bulgarian Utilities). The Project was approved on May 21, 1993 and has been in effect since August 11, 1993. The expected completion date of December 31, 1996 was extended twice during a one year period, first to December 30, 1997, and later to

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153 Letter from Mr. Messner and Ms. Berghosorst, April 1997.

154 Personal communication with officials at Komercni Banka, Creditanstalt and International Nederlanden Bank.
December 30, 1998. The initiator for these changes in both cases was the NEK, which cited problems with project implementation.

Total project costs are estimated at 126 million USD. The IBRD’s contribution is a loan of 93 mil. USD. As of 15.08.1996, 34,2 million USD had been distributed for materials, 25,4 million USD for construction, 7,8 million USD for interest and loan maintenance, and 8,2 mil. USD had not yet been distributed. The NEK is to invest 33 million USD. By the end of March 1997, 23,7 mil. USD had been disbursed.

The Project’s Objectives are:

- Improvement of the operating efficiency and reliability of the system;
- Reduction of the need for electricity imports to meet peak demand;
- Realignment of electricity tariffs to rationalise consumption, reduce imports and pollution (including CO\textsubscript{2} emissions), and mobilise resources for the NEK;
- Improvement of voltage and frequency control;
- Enhancement of the organisational efficiency of the NEK and de-politicisation of the process of setting energy tariffs;
- Improvement of safety at the Belmeken and Chaïra dams.

The Energy I Project is separated into several sub-projects, which are oriented towards:

- Improvement of the supervisory control and transmission systems of the electricity grid through installation of improved communication equipment, advanced computer software and training, and improvement of grid reliability.
- Completion of the already 90 % completed units 3 and 4 of the Chaïra pumped storage plant (PSP), along with strengthening of the associated dams. This will provide an additional 432 MW of peak capacity.
- Provision of technical assistance for re-orienting the NEK’s operations along commercial lines; improvement of financial management,

establishment of a modern accounting system and computerised management information, billing, collection and cash management systems; and building the skills necessary for monitoring the dam.

The basic idea for completing the Chaïra power plant had been to have a stable peak-time working power plant which would make it possible to avoid running the Kozloduy nuclear power plant at full capacity during peak times because of safety reasons. But some experts fear that it is possible that after the completion of units 3 and 4 of the Chaïra pumped storage plant, demand will be stimulated for completion of the nuclear power plant at Belene.

The loan’s main conditions associated are:

- Maintenance of average electricity prices at 3.5 US cents as an interim measure
- Establishment of an independent price setting mechanism and maintenance of the price at the level of long-run marginal costs,
- The NEK is to gradually increase its provisions for depreciation to be in line with its re-valued assets by the end of 1997;
- Implementation of a set of measures for the NEK to improve its financial situation and financial management.\textsuperscript{156}

The expected Project benefits are:

- Lower costs and increased stability of the electricity supply, resulting from an increased capacity for active load management, automatic generation control, as well as reduced losses.
- Improved economic and managerial efficiency of the NEK.
- Increased dam safety, as well as a slight reduction in emissions related to electricity generation.\textsuperscript{157}

The Energy I Project is aimed towards directly addressing some of Bulgaria’s basic energy problems. The completion of the Chaïra pumped storage plant (initially treated as a means of avoiding energy shortages) became part of a possible programme for the rehabilitation and building up of

\textsuperscript{155} Information from Mr. Lulin Radoulov, former Chairman of the Committee Of Energy, May 1997.

\textsuperscript{156} For example, after 31 December 1992, the NEK must establish funds from its own resources at a rate of not less than 30 % of its yearly average capital investments, made or expected to be made during the present and the next fiscal years. Thus since 1993, for every subsequent fiscal year, the NEK’s net income must equal 1.5 times all debts served during the same year.

\textsuperscript{157} World Bank Lending Program, updated March 1997.
electricity capacity to replace the first four units at Kozloduy. Thus the main sub-projects are directed towards these problems. Other sub-projects were directed towards improving the electricity distribution system and management of the entire electrical system.

5.4.1.2 Project Evaluation

Initially, there was a long delay in project implementation, caused by a lack of willingness on the part of the Bulgarian government to increase electricity prices to 3.5 US cents per kWh. This is part of a larger problem involving energy pricing. The World Bank wanted the problem of subsidised energy pricing, which does not reflect actual costs, to be solved administratively. The Bank’s point of view was that the suggested price of 3.5 US cents would allow for a decrease in losses and waste of electricity and for the addition of new capital for investments from the beginning.

The de-politicisation of electricity tariffs is one of the World Bank’s main objectives. To date, energy-pricing mechanisms in Bulgaria have been largely dependent on political circumstances, and the process by which prices are set has remained opaque. None of the Bank’s plans relating to price reform were implemented after mid-1996, when the government adopted new higher prices. It was clear that such price “reform” would only vent the money into the ineffective economy. The lack of a real, functioning market and legislative incentives and restrictions, as well as the total impoverishment of the people, allowed the NEK to retain its monopoly and to develop its work without public or state control. In that situation, it became clear that real progress towards sustainable energy development could not be expected.

The first criticism of the project is therefore that real market reforms and de-monopolisation were exchanged for an administrative “creation” of the market. Instead of supporting the development of independent power production, the World Bank has strengthened the NEK’s monopolistic position and highly inefficient and opaque organisational structure. Another problem resulted due to the project’s delay. The completion of the Chaira pumped storage plant represents part of the capacity which will replace old units 1-4 at Kozloduy. The delay in the completion of units 3 and 4 of the Chaira plant thus will result in postponing the date for closing the old units 1 and 2 at Kozloduy. The lack of a clear capacity replacement strategy from the Bulgarian side has already led to an EBRD freeze on energy sector projects in Bulgaria. The World Bank’s principles will also be put to the test on this issue.

A further criticism of the World Bank’s energy lending activities in Bulgaria regards the lack of binding agreements for an energy programme. Such agreements are to be followed by the government and would be financially supported by IFIs, and the World Bank in particular. Also, there has lack of dialogue with the public. Only one part of the completion of the Chaira power plant project was evaluated by an EIA, and even this involved very poor public participation. The lack of dialogue with the public has contributed to the problems outlined above.

Although the several elements of the project are at different stages of implementation, some preliminary conclusions can be made.

- The significant delay in project implementation due to Bulgarian non-compliance with some commitments exposes the problems of direct state control of the energy sector, as well as the necessity of de-monopolising and delimiting of functions within the sector. The Energy I Project example clearly illustrates the problems resulting from the NEK’s monopoly. It is now clear that this type of “closed monopoly” does not work, even with financial support;

- Some of the objectives of the project were reached or will be met by the time that the project is completed. They are: (i) reduction in the need for electricity imports to meet peak demand, (ii) improvements in voltage and frequency control, and (iii) safety improvements at the Belmeken and Chaira dams. But certain other objectives, such as enhancement of the organisational efficiency of the NEK and de-politicisation of energy tariff settings, cannot have significant and continuous effects, because of the NEK’s position as a state monopoly.

The WB objective to “enhance the organisational efficiency of NEK” proved to be contradictory with the objective of “encouraging independent power production”. This last goal can not be achieved by strengthening of the NEK, which as the state monopoly is highly inefficient and non-transparent in its procedures. Because the NEK has been included this year in the list of state organisations that fall under state security, the public cannot get any type of official information from them, including figures on how money from IFIs has been spent.
• The project is consistent with the basic principles of the IBRD's energy and environmental policies. However, the general question remains regarding the time by which EIA procedures have to be fully completed (i.e. before ratification of the Project by the Parliament, or later.)

• It is doubtful that the project will be successful from the point of view of the general Bulgarian energy situation. There will be additional peak capacity, but the problems associated with the Kozloduy nuclear power plant will also remain. Only an unambiguous agreement between the Bulgarian government and donors, supported by programmes and projects for investments in energy efficiency, energy conservation, renewables, and rehabilitation of existing hydro- and thermal power plants, and monitored by public structures, could lead to a reduction of nuclear risks.

• The project is not fully consistent with the principle of public involvement. Except for the public discussion under the EIA procedures, there were no other project issues where people other than governmental officials and NEK staff were involved. Insofar as the project is a part of a so-called “set of investments” that the Government should prepare in order to replace Kozloduy’s old units, the participation of independent experts and other interested groups would have been indispensable. As it was, information made available to the public was insufficient during the entire project preparation and implementation period.

The World Bank’s Energy II and District Heating Projects should provide verification as to whether the Bank will change its public involvement policy and support public awareness about energy and environmental problems. Both projects should address the basic problems of Bulgaria’s energy sector. These include nuclear safety and climate change, as well as the public’s welfare.

5.4.2 Hungary

Since 1989, 14 energy-related IFI projects have been approved or are under consideration in Hungary. Interestingly, exactly half of the projects were supply-side oriented, and the other half were dedicated to energy efficiency and renewables. However, if one scrutinises the numbers in greater detail, one finds that the amount spent on supply-side projects is five times greater (~USD 400 million) than the amount which will hopefully be spent on efficiency and renewables (~USD 70 million).

A trend can be observed that the IFIs are shifting towards more sustainable energy projects. In the beginning, huge investments were made in the energy sector. While the banks were giving smaller amounts for supply-side projects (mostly in favour of rehabilitation- type projects), they were turning to efficiency, and some attention was even given to renewable energy. In the following years, energy efficiency received more emphasis in the EBRD and the World Bank, when their new energy policies were accepted and adopted. In the case of the EBRD, a new Energy Efficiency unit was established.

Still, much more remains to be done. The proportion of allocations for supply-side capacity building and demand-side efficiency options should be reversed, in favour of demand-side projects. Also, the decision-making process within the IFIs seems to be heavily influenced by politics. This serves to detract from the overall desired performance of the allocated money (it could be disbursed more efficiently through other banks or in other ways, for example), in addition to creating a suspicion that corruption could be involved.

Every MDB has its own particular speciality on the financial market. The World Bank requires government guarantees; the EBRD is considered to be relatively expensive; the EIB, as an AAA+ lender, is slightly cheaper. Still, all of them are more expensive than the most commercial banks operating in Hungary. Therefore, the IFIs need state funds, or PHARE money to soften their energy-efficiency loans. For instance, the EBRD-EIB-PHARE trio results in a much higher interest rate than there would have been if two of the MDBs were not involved, and the money had gone through Hungarian banks. The average PHARE revolving contribution is 25%. 10% self financing is required, and the rest (up to 65%) can be financed the EBRD/ EIB. It should be pointed out here that PHARE regulations in this case require the borrower to have a contribution from an IFI (EIB and EBRD) in order to be involved in the projects.

Transaction costs are very high for all of these banks, and this is certainly part of the problem. They generally hire huge international companies for feasibility studies, environmental assessment, and other studies. These consulting firms often do not live

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158 Such as the Central Environmental Protection Fund, the government fund for lowering the interest rate, the Hungarian Entrepreneur’s Development Fund and others.
up to their reputations in the Hungarian market, which is not as stable as those that they have experienced in the West. They therefore often make mistakes in bank selection, with priorities, and with other issues.

This problem has implications for both the costs and the results of the projects. For example, a contracted advisor selected several banks in Hungary to disburse the PHARE energy efficiency revolving fund. These banks had no experience in this field, while other banks which have this kind of experience were not selected.

There is a problem of special interests of the in-country banks, leasing companies,ESCOs,PHARE, and other related institutions. For example, the EBRD has an economic interest as a shareholder in certain companies and banks in Hungary through its energy efficiency credit line, and other banks are involved in the PHARE revolving fund.

The Budapest Bank, in which the EBRD holds 32% of shares, won the EBRD energy efficiency credit line and is also one of the beneficiaries of the PHARE revolving fund, since IFI money is a condition for the PHARE financing. The selection process was long and the agreement is still not signed. It is clear that the EBRD has been pushing its own bank to win the credit line with the PHARE fund, which would make the EBRD money softer. Unfortunately, it is hard to justify such a decision, because the Budapest Bank was not able to show any references on energy efficiency projects. However, PHARE nonetheless agreed to raise the original ECU 5 million by 50 per cent and to put this amount next to the EBRD credit line in the Budapest Bank. This type of political tendering mechanism is called ‘fine tuning’ at the Hungarian EU Delegation.

These big institutions do not often use local human resources and knowledge, even though plenty of experienced and skilled local talent is available in Hungary. This is the case with the IBRD co-ordinated and GEF-sponsored renewable project. The total budget for the entire feasibility study, including all “accessories” is about 1.2 million USD, but local experts will only receive 320-330 thousand USD out of it, although it is clear that they will be doing most of the work. The majority of the budget will support Austrian and US consulting firms and a self-styled “NGO” from Washington, DC. (the Center for Clean Air Policy). This last organisation is actually a Washington-based think-tank working on policy issues, which is much closer to a consulting firm than to a civil organisation.

The new policy which encourages the World Bank to involve local NGOs in projects leaves open many questions concerning information flow, the payment of NGOs, as well as their influence in the process of project planning and implementation. As has happened several times, the contracted foreign consulting companies get most of the needed information from one or two NGOs. It is significant that in most cases, these NGOs, with the help of other national organisations, could complete pre-feasibility studies without any foreign help.

5.4.2.1 Hungarian Project Evaluation

Most of the IFIs active in Hungary support energy efficiency programs in the country with at least some activities. Because of this, one might expect that Hungary will become one of the most energy efficient countries in Europe within a couple of years. The shift of IFI resources towards more sustainable energy projects, such as renewables and energy efficiency, is a positive change in IFI strategy. Yet unfortunately, the picture is more complicated than it initially appears, as the following case studies will highlight.

Take, for example, the EBRD- financed ESCO, the Prometheus Company. The philosophy behind ESCOs is to design long- or medium-term performance contracts for different types of energy services, but primarily for heating systems in buildings. The ESCO is responsible for the continuous and efficient provision of energy services, and the costs are built into the price of energy. Ideally, this should have both financial and environmental benefits in the long term.

Prometheus is one of the very few ESCOs in Hungary. The company was established in 1969 and privatised in 1992. The French General de Chauffes company then bought a majority of shares in the company. The annual turnover has been constantly growing since 1993. The usual contract period is ten years, and the pay-back period is usually 5 years.

One of the first Prometheus projects within the framework of the EBRD loan was the complete rehabilitation of the heating system of the Papa Hospital. This continues to be touted as the major success story for both the company and the EBRD.

199 Just to give a picture of that magnitude, in 1993, annual turnover was 25m Hungarian Forints (HUF); in 1994, 299m HUF; in 1995, 320m HUF; and in 1996, 400m HUF. Even more growth in is expected in 1997: around one billion HUF, or 6 million USD.
However, the repeated discussion of the same project at every conference or seminar for 3 years (without reference to newer projects) tends to raise questions, as otherwise the discussion about energy saving or efficiency is an ongoing process.

There is to date no environmental assessment of the performance of the Prometheus company’s activities. It would be very worthwhile to learn what benefits have accrued to the environment through these activities, such as the reduction in CO₂ emissions to date. It would also be beneficial if a variety of measures (regarding appliances, financial techniques, etc.) for different types of investments were assessed, in order to ascertain the best practice, which mistakes should be avoided in the future, and what investments are most beneficial for the environment. As public money was used for these projects, conclusions drawn from them should be made public. Unfortunately, neither Prometheus nor the EBRD has any specific material on this, although such information would significantly raise the credibility of the projects’ success.

5.4.2.2 Phare

Phare grants play a major role in most IFI projects. There were originally two Phare co-financed projects on energy in Hungary. Both of them have been mentioned above. Phare was originally going to finance a small portion (5.8 million USD of 100 million total) of one of the two secondary reserve, quick start gas turbines. This would soften the World Bank loan. According to an official at the Hungarian Electricity Works, the World Bank and Phare were incompatible, because of their different tendering procedures and their different client (contractor) lists. This view is supported by the fact that the Phare will not now be involved in the project. The Hungarian Electricity Works decided not to take this money, as it would have played only a marginal role in the investment, and at the same time would have slowed the whole process down significantly. This money was recently re-allocated to the energy efficiency revolving fund, allowing four Hungarian banks to take part with a Phare soft loan of 3.2 million USD (2.5 million ECU) each.

The next Phare-related project is connected to the EBRD and EIB-supported energy efficiency credit lines. Again, the Phare contribution helps to sell or soften the IFI loan; otherwise it would not be financially feasible in the Hungarian market.

The EBRD has long been criticised for not having enough energy efficiency projects, even after its energy efficiency team was created. Under existing financial conditions, it has been very difficult to find any energy efficiency projects which could be financially viable in this region. Therefore, the only possible remaining solution is to use local channels (such as local banks, which know the Hungarian market better) to disburse money for this reason.

The Hungarian financial infrastructure is almost up to western standards, so there are no technical barriers to such a solution. But here again, the general problem of IFI money being relatively expensive compared with other possible sources in Hungary was encountered. Phare provided the answer to this dilemma. The Phare fund has a zero interest rate and can thus significantly soften loans. In addition to that, the EIB also has a relatively low interest rate. It is possible that the Phare fund could have been used for softening the Hungarian commercial bank’s loans or state credit lines, making them even cheaper.

The following discussion involves the selection process of the Hungarian banks. A feasibility study was commissioned by Coopers and Lybrand on the various disbursement possibilities. It is not clear exactly who ordered this study, or whether there was more than one such study. Unfortunately, neither the EU-Phare delegation nor the EBRD gives sufficient information on this. During the so-called “fine tuning”, the number of banks was raised from two to four. This appeared to be a compromise between the EBRD and Phare and some hidden players, such as commercial banks and the government. Also, a significant amount of the Phare money was raised without a newer market assessment or feasibility study.

Most of the banks based in Hungary are owned or partly owned by Western banks. The Hungarian financial institutions are already “half-selected”, meaning that it is general knowledge which banks will participate, although this is not officially acknowledged. The banks are Raiffeisen UNIC Bank, OTP Bank Rt., Kereskedelmi és Hitelbank and Budapest Bank. The EBRD has a relatively large share or bond interest in the latter two banks.

Uncertainty still remains about this structure. There seems to be a conflict between Phare and the EBRD regarding which commercial bank will have the right

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160 at Liter and Sajoszoged
to disburse this money, and how many such banks can ultimately be involved in this project. There are also other contracts with subcontractors. Although these contracts have already been signed, the subcontractors cannot start to work until the conditions of the larger agreement are met. There is also time pressure on the players: if they do not get some projects signed before the heating season starts, they will have to wait another year for the next possibility, while the money sits in the banks.

It has been clear for a long time that such political manoeuvring significantly slows down the project implementation process. One result is that the other involved financial institutions are must wait another year to see the project through, and take the seasonal effects of energy efficiency project financing. This example illustrates that even the projects have been given the most “hurrahs” from the green non-profits have significant implementation problems. These include problems with the transparency of decision-making, as well as the possibility of manipulation, although this is not easily provable.

Phare, as the financial aid arm of the European Union to the less developed Eastern countries, is supposed to help at those points where these countries are short of capital, expertise, and the like. But in reality, as the two previous examples show, Phare helps to create a better environment for IFI money.

There is another element of the Phare programme which can be used for energy-related projects, the Environmental Credit Line, which also covers nuclear safety projects. It is very difficult to find out anything about spending for the Environmental Credit Line; the EU delegation, the related ministry, the nuclear authority and the actual beneficiary have all failed to provide NGOs with any information regarding the programme.

5.4.2.3 The World Bank’s NGO Co-operation in Hungary

In 1995, the Hungarian and the Austrian governments, together with the World Bank, decided to work on renewable sources of energy in Hungary. The preparation process was long, but finally all administrative barriers were abolished, and the GEF expressed interest in being involved in the project. The GEF became the main financial supporter of the ongoing feasibility study. There was a call for tenders, with the deadline set for the middle of December, 1996.

Three cities were to assess whether biomass was a realistic alternative for the replacement of their heating systems. Two consortia were formed, led by Austrian companies. One of them has high NGO involvement from all of the selected cities. They have fairly good connections and local expertise on renewables, as well as a co-ordinator NGO from the capital, the Energia Klub. This NGO has extensive knowledge of Hungarian legislation and the political background on the country. However, this consortium was not selected, despite the fact that all the involved companies showed very good references from throughout the region, especially from the Czech Republic, whose energy situation and regulatory regime are the most similar to Hungary’s.

In May 1997, the World Bank, the E.K.F.M. consulting firm (an Austrian-Hungarian consulting company), and the Washington DC-based Center for Clean Air Policy, came to Hungary to discuss the project. The Bank wanted to involve Hungarian NGOs, but did not have any idea what their role should or could have been. Moreover, it generally takes months for interested NGOs to receive the materials which would be crucial to NGO involvement.

These problems cast considerable doubt on the World Bank’s intention to work with local, grassroots NGOs. Bank staff seem much more eager to work with consultant organisations from Washington DC, illustrated by the fact that the budget allocated in the project for NGO involvement has gone to such consultant organisations instead. This contradicts the Bank’s new policy on increasing the involvement of local grassroots NGOs, and is clearly a misuse of this budget-line.

It is difficult to draw any conclusions regarding the World Bank’s biomass project at this point, since the project is only at the half way mark to date. However, one danger is already apparent. The World Bank proposes bigger facilities than the Hungarian experts would build. This could cause local supply problems for the plant, as there might not be enough fuel at certain times of the year. It could also ruin the economic figures for biomass heating plants in general, which would appear to “prove” that biomass is hopeless in the region. Hopefully, with more NGO involvement and input in the process, as well as more consultation with other interested parties, this problem will be resolved. It is significant that as of March 1998, the contract for the project had still not been signed. This could be interpreted as a sign of lack of interest from the Bank in implementing a renewable energy project.
5.4.3 Lithuania

As a heritage from the Soviet economy, Lithuania has a huge and obsolete energy sector. For increased efficiency in energy generation, transmission and use, it is necessary to modernise obsolete equipment and to make changes in energy sector management. Due to an economic recession, modernisation of the energy system is impossible without foreign investments.

The most important issue is efficient use of investments. As of 1 October 1996, foreign loans to the energy sector amounted to 356.41 million USD. Energy-related investment projects (with the exception of a 42 million USD grant and Structural Adjustment Loan) made up only 88.6 million USD. The remaining 267.9 million USD were simply used for ordinary operational needs without any tangible economic effect. In other words, investment projects made up only 25% of total foreign loans, while fuel imports accounted for 75% of the total. Moreover, official statistics show that in comparison with other industries, energy sector lending is dominant and makes up 21% of total foreign loans on behalf of Republic of Lithuania, as of 1 October 1996.

Without an in-depth analysis, it is difficult to formulate the clear economic consequences of such “investments”, but it is absolutely clear that there are no consequent governmental policies for demand, distribution and usage of foreign loans in the energy sector. The above chart shows an evaluation of energy-related foreign loans and their influence on the state economy. As the chart below illustrates, loans used for ordinary consumption raise energy prices and negatively influence the state balance of payments, while investment projects have a positive influence on the state economy.

These facts demonstrate that in comparison with all energy lending, investment projects make up a relatively small share. They therefore can not tangibly increase efficiency of energy generation and use, nor can they visibly improve environmental performance. In general, energy-related investment projects in Lithuania are neither particularly bad or particularly beneficial, as all of them are relatively small, ranging from 6 to 46 million USD.

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5.4.3.1 World Bank Energy Investment in Lithuania

The present World Bank is oriented towards institutional, regulatory, and financial reform issues that are essential in improving power sector performance. These issues are based on five guiding principles which are to be reflected in specific action programs. In Lithuania, the Bank follows these guiding principles through its operations and technical assistance, but results are not yet visible. This is because the Bank urged the Government to bind itself with set commitments during the negotiations stage, but it did not urge it strongly enough to properly implement these commitments in a timely fashion. In the end, some very good initiatives were not implemented properly, and for that reason, no corresponding policies were set by the Lithuanian government.

In response to Bank pressure, the Lithuanian Government issued a Statement of Energy Sector Development Policy and Strategy during the negotiations on the Power Rehabilitation Loan. The Statement set policy, regulatory and strategic principles for energy sector reform, and a Plan of Action for the power sector (which will serve as a model for the other energy sub-sectors). The Plan of Action includes planned measures for power sector institutional reform and privatisation during five phases.

According to this Plan of Action, some institutional changes were carried out, such as a shift in the commercial status of the Lithuanian State Power System from a state-owned enterprise to the “Lithuanian Energy” joint-stock company, with about 90% of shares in state ownership, as well as privatisation of some energy companies and energy services.

Not all measures in the Plan have been implemented in a timely fashion. The transfer of district heating systems to municipal or private ownership has been delayed, as have other important restructuring measures. The transfer of district heating systems to municipal or private ownership has not yet been completed; nor have other important restructuring measures. Some institutional changes in the energy sector were carried out for political reasons. For example, after the recent elections, the Ministry of Energy was incorporated as a separate division of the newly created Ministry of National Economy. It is not yet clear whether these changes have positively or negatively affected future development of Lithuania’s energy sector.

The Bank, through its technical assistance and project loans, has had some positive influence on changes in regulatory and legislative issues regarding the Lithuanian energy sector. During its investigative work, the Bank, together with Danish Energy Agency, participated in the preparation of a Draft Energy Law and other energy-related legal documents, and it has brought significant improvements to them. By dealing with energy projects, the Bank has also recommended implementation of the following regulatory measures:

- Establishment of an energy regulatory agency to oversee both pricing and technical standards in the energy sector.
- Separation of the roles of government as policy maker and regulator from those of owner and manager of enterprises.
- Development of a proper regulatory framework to protect the interests of consumers and ensure the final viability of energy enterprises.
- Development of a legal framework for each energy sub-sector.
- Separate electricity, gas and heat distribution from production and transmission.

As is often the case of institutional reform, these regulatory measures have not yet been implemented, although some of them are currently in the process of implementation. An Energy Agency has been created to help collect data and draft policy for the Government. An interim body, the Energy Pricing Council, has also been established to submit pricing proposals to the Government. Other planned measures will hopefully also be implemented in the near future.

Through its dealings with Power Rehabilitation and Structural Adjustment Loans, the World Bank has recommended the following changes in Lithuania’s energy sector pricing policy which should affect the country’s national energy policy:

- Abolishment of subsidies.
- Continuation of pricing reform.
- Correction of the state financial policy.
- Introduction of economic measures for avoidance of debts.
These issues are more strongly supervised by the Bank, because they are closely connected with macroeconomic policy in general, and can be measured by established economic indicators. But aside from increasing energy prices, no results are yet visible. Consumers are still indebted to the “Lithuanian Energy” joint stock company, while “Lithuanian Energy” is indebted to the Ignalina nuclear power plant, and the cycle of debt continues.

To date, the World Bank’s energy-related projects in Lithuania have concentrated on the supply side. Despite the Bank’s stated priorities of promoting demand-side energy efficiency, relatively little attention has been paid to that issue. A loan for an Energy Efficiency/Housing Pilot Project is the only demand-side oriented project supported by the Bank to date, and it is unfortunately not the best example. This is because project implementation is not optimal, due to problems with internal regulations and high interest rates of local commercial banks.

The Bank’s principle of encouraging private sector investments in the power sector is also not well-developed in Lithuania. The Bank tries to create a better environment for private investments, but only through technical assistance on regulatory and legislative issues. So far, it has given no financial resources to support programs to facilitate the involvement of private investors.

5.4.3.2 EBRD Energy Investment in Lithuania

The EBRD’s Energy Policy is aimed towards assisting countries to re-orient their energy sector development towards more efficient and “least cost”-based options. Also, the EBRD gives priority to private sector projects, but in Lithuania there is still no lending to private energy projects. The EBRD has only two operations in energy sector in Lithuania, and neither of them are typical projects. They are described below:

- **Necessary Investments in the Energy Sector**
  
  According the official version, these investments were addressed for improvements in energy efficiency, commercialisation, and environmental performance improvements in the energy sector. This version corresponds with the EBRD’s Energy Operation Policy, but there are no data available regarding the introduction of concrete energy efficiency or environmental measures. According to a source within the Lithuanian Energy Institute, this loan was used only for fuel purchasing and solving other day-to-day maintenance problems of power plants.163

- **Ignalina Nuclear Power Plant Safety Upgrades**
  
  This is a G-7 grant through the Nuclear Safety Account. The Bank functions as the administrator of the Nuclear Safety Account, provides technical and other services, and regularly liaises with the European Commission, but this project is not directly funded through the EBRD.

  The EBRD has a specific operational objective to assist countries with improving the safety of existing nuclear plants in the region. According the Grant Agreement, the Lithuanian Government commits itself to safety enhancement at the Ignalina NPP in accordance with the Safety Improvement Program, to preparing an in-depth safety assessment of both nuclear units, and not to extending the lifetime of either nuclear reactor beyond the time at which its fuel channels should be replaced. The planned deadline for re-licensing of the Ignalina Nuclear Power Plant is 30 June 1998.

  The Ignalina Safety Panel was convened in order to prepare an in-depth safety assessment, consisting of Western, Lithuanian and Russian nuclear specialists. The Panel holds the view that the most important safety issues in design and operation must be resolved without delay, and recommends that neither unit should be re-started beyond its 1997 extended maintenance outage, until the most important safety issues identified in the Panel’s recommendations are addressed.

  According the Panel’s recommendations, about 120 million USD are needed for safety upgrades at Ignalina. The Lithuanian Government accepts the Panel’s recommendations, but has planned to extend the re-licensing date for the plant. Moreover, it plans to extend the period for Ignalina’s use, and these plans can even be found in the government’s energy policy documents. Recent plans to export 6 TWh of electricity also clearly demonstrate the government’s determination to prolong operation of Ignalina for another 15 years.

  To date, the EBRD’s position has more or less corresponded to its stated objective of seeking nuclear safety improvements. But the Bank could be more forceful in pushing the government to stop operation of those nuclear units at Ignalina, which the Ignalina Safety Panel has concluded are unsafe. It appears that the Ministry of Economy, in its

163 Personal communication, 1996.
negotiations with the EBRD, succeeded in prolonging the term of Ignalina’s re-licensing until May 1999, thus indicating that the Bank is not holding forcefully enough to its position on nuclear safety improvements in Lithuania.

The future realisation of government plans also directly depends on the EBRD’s position. If the Bank yields to the Lithuanian government’s wishes, it might allow an extension of Ignalina’s life-time by some 15 years. If, on the other hand, the Bank firmly insists upon the upholding of its stated commitments, at least the first unit at Ignalina will be closed by the agreed-upon time.

5.4.4 Ukraine

5.4.4.1 Integrated Energy Resource Planning/ Least Cost Planning

A recent World Bank report states that “An analysis of the Ukrainian power system development for the period 1996-2010 has been performed to assess future investment strategies to maintain the system’s ability to supply expected electricity demand. The analysis was performed using the least-cost methodology.”

The World Bank Energy Policy states that “World Bank lending in the energy sector should be based on and, where necessary, support as part of country assistance strategies the development of integrated energy strategies that help borrowing countries take advantage of all energy supply options, including cost effective conservation-based supplies and renewable energy sources.”

It is crucial that Integrated Resource Planning include energy conservation options and renewable energy sources. However, these were not included among other options (such as various thermal generation options, pump storage plants and three nuclear units under construction) in the above-mentioned analysis. Therefore, the analysis only recommended investments to the Ukrainian energy sector’s supply side. Both current and proposed projects by the World Bank follow the recommendations of this analysis, while ignoring the issue of demand-side management.

A least-cost analysis of the Ukrainian power sector was performed for the EBRD by Lahmeyer International in July 1995, but the EBRD strategy for Ukraine for 1995-1996 had already been approved in February 1995. The analysis’ findings coincided with the Bank’s major strategies for Ukraine, and the EBRD’s proposed projects generally reflect this.

Another least-cost analysis was issued for the EBRD by an independent panel of experts in February 1997 in order to evaluate whether completion of two nuclear reactors at the Khmelnitsky and Rivne nuclear power plants would be the least-cost option. The EBRD was committed to finance the project under a Memorandum of Understanding if it were identified as the least-cost option. The panel concluded: “We conclude that K2/R4 are not economic. Completing these reactors would not represent the most productive use of USD 1 bil. or more of EBRD/EU funds at this time.” In spite of this, the EBRD still has not made a final decision on the Rivne/Khmelnitsky project.

The panel also recommended using the huge energy efficiency and energy conservation potential in Ukraine for solving its current energy problems. Ukrainian NGOs are committed to focusing on the promotion of energy efficiency in Ukraine, but unfortunately this new policy has still not been approved by the Ukrainian government, probably because of problems associated with the decision on financing the K2/R4 project.

5.4.4.2 Energy Efficiency Projects in Ukraine

Several studies have been issued estimating energy efficiency potential in Ukraine. Their main findings are presented in the Report of the International Institute for Energy Conservation for the OECD Environment Directorate.

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168 Notes from the Meeting of Ukrainian NGOs Representatives with the Delegation of Executive Directors of the EBRD, Kiev, 22 February 1997.  
The OECD Study includes a detailed analysis of approved and proposed projects to be funded by the World Bank and EBRD which address various aspects of energy efficiency. Following is a summary of the results of this analysis:

- None out of six World Bank- and EBRD- signed projects can be classified as a completely demand-side energy efficiency project.
- Only two signed projects include secondary measures to increase supply-side energy efficiency, and one project includes secondary energy-efficiency components for both the demand- and the supply-side. These include a hydropower rehabilitation and system control project, and an electricity market development project.

An overview of the projects in the pipe-line gives a more optimistic picture:

- Six of the projects presented invest directly in energy efficiency measures.
- Four of the projects address demand-side efficiency, and two projects address both demand- and supply-side efficiencies. Four of these are EBRD projects, and two are World Bank projects. The total loan amount is about USD 510 million.
- Some projects, however, such as the Dniester Pump Storage Project (Ukraine Hydropower-II), and the Coal Restructuring Project, include no apparent energy efficiency components.

5.4.4.3 Missed Opportunities

Electricity Market Rehabilitation Project (World Bank) Although this project includes components to improve both demand- and supply-side energy efficiency, these are really only indirect results of the Project’s main implementation objectives, which include fuel quality improvement and installation of metering and communications equipment. Due to an insufficient least-cost analysis, such opportunities as fuel switching and special demand-side efficiency measures were not even analysed and were therefore not included in this project.

Heat Supply and Energy Efficiency Project (World Bank) Insofar as one of this project’s objectives is the rehabilitation of existing heat generating capacities, this could have been a good pilot project for the promotion of efficiency-improvement measures, such as co-generation. Unfortunately, this opportunity was missed.

One of the two beneficiaries for this project is Kievenergo. It owns one of the biggest heating systems in the Ukraine district and operates both heat generating and combined heat and power units. According to a survey issued by the International Energy Agency, the percentage of electricity generated by the system is low. Kievenergo supplies only 5% of power consumption in Kiev. This is because initial investments were forwarded to the development of heat generation capacities, instead of to cogeneration.170

The survey also concludes: “The effectiveness of the Kiev heating system depends generally on the successful modernisation of coal-fired heat boilers...and switching to co-generation with boilers using natural gas [65% of total capacity]”.171 The project does not include any proposal for switching to cogeneration, what makes it less efficient. The project is intended to prolong the lifetime of the boilers, which creates an additional barrier to future investment in co-generation.

Energy Saving Company (ESCO) Establishment Project (EBRD) Based on the experience of EBRD-financed ESCO projects in Hungary and Romania, it is possible to conclude that private ESCOs, when working effectively, clearly demonstrate the benefits that can be gained through energy saving measures. The ESCO project under preparation for Ukraine should play an important role in the promotion of energy efficiency in the country.

One foreseeable problem with this project may involve the choice of a proper partner for the project. The Ukrainian ESCO will be created by the State Committee on Energy Conservation. This Committee has been criticised for its activities, which have largely been directed at issuing administrative command-style decrees, and for a lack of concrete achievements during its two years in existence.

Doubts remain regarding the ability of this committee to successfully implement the project. Vasiliy Stepanenko, the technical director of the ESCO-Skhid (one of the first privately owned Ukrainian

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171 Ibid., p. 120.
ESCOs) expressed the following opinion on the matter: “The capacity of the State Committee on Energy Conservation is not adequate for attractive and efficient implementation of the UkrESCO project. The loan should be focused towards the local level and based on existing programs of private ESCOs, which are able to ensure a cash return. At the same time, the lack of transparency during the preparation of the project leads to suspicions among parties not involved in it.”

In other words, the ESCO loan should not be concentrated in Kiev so that other regions can benefit from its innovation potential. Energy efficiency programmes would probably be more effective if they are based on those of already-existing, financially stable ESCOs. In addition, private companies might have greater incentives than the state to ensure that debts are repaid, and they could be more effective than the state in this respect, as they have a wider range of debt collection measures at their disposal.

### 5.4.4.4 MDB Investment and Climate Change in Ukraine

The Climate Convention was adopted in 1992 with the aim of reducing greenhouse gas emissions. As Ukraine has the world’s highest CO₂ emissions per GDP, and the eighth highest emissions per capita, it is clear that to improve plant performance, measures to reduce their GHG emissions must first be included. Possible measures for GHG emissions reductions proposed by the World Bank Environment Department are listed in detail in Annex 1. The following analysis aims to determine whether those measures are present in the listed projects.

**Coal Beneficiation:** The Electricity Market Development Project (WB) favours the use of higher-quality over the low-quality coal used before in thermal power plants. Although this measure can be considered “Coal Beneficiation”, no proposals for coal preparation or cleaning have been presented, and estimates for GHG reduction are modest.

The Starobeshovo Power Plant Modernisation Project (EBRD) includes coal preparation measures together with the installation of a boiler which will allow the burning of low-quality coal with reduced environmental impact.

Three thermal power plant rehabilitation projects (Krivoy Rog and Lugansk - WB and Krivoy Rog - EBRD) do not use such technologies, although measures for GHG control and reduction are included.

**Fuel Switching in Electricity Generation:** The Electricity Market Development Project (WB) includes components to measure and improve generation efficiency and reduce emissions. This simply involves switching from low-quality to higher-quality coal. No proposals for coal-oil, coal-natural gas, coal/mazut-natural gas are presented, and it would appear that the Least-Cost Planning analysis did not consider these options.

The rest of the projects also exclude this measure.

- **Electric Conversion Efficiency Improvements:** Due to the limited amount of available information, it is difficult to say for sure whether or not this measure is included. It is only possible to assume that some of the projects include this measure as a secondary element.

- **Re-powering:** This measure does not appear in any of the projects.

- **Cogeneration/Combined Heat and Power:** This option, although very effective, is difficult to apply to existing large power plants, due to their industrial electricity-supply orientation and their high power capacity. The only project that could and should introduce this option could be the Heat Supply and Energy Efficiency Project. Unfortunately, the opportunity to do this was not taken, leaving the project at the same low level of sustainability as other supply-side projects, its attractive name notwithstanding.

- **New Electric Power Capacity including Renewable Resources:** The existing portfolio has no such project.

### 5.4.4.5 Public Participation

Because of sound democratic MDB policies on public participation, affected groups in Ukraine should be able to get access to the decision-making process. Yet to date, practical experience by NGOs in the decision-making process has been less than ideal.

The Public Participation Process (PPP) for the Rivne/Khmelnitsky nuclear project, in which the EBRD was involved, provides a good example of that process in action. The main principles of public
participation were ignored during the process of organising the scope meetings in Kiev, Rivne and Ostrog:

• There was virtually no notification about the start of the process—only a small article in a local newspaper with low circulation.

• There has been a general lack of information presented to the public throughout the process, and many interested groups received no information regarding the public participation process at all.

• Most interested NGOs were not officially invited to the scoping meetings.

• Only a few interested organizations were invited to the scoping meetings, and those which were invited were given insufficient time to prepare. For example, the Eco Club 174, a local NGO in Rivne, received an invitation by phone just one day before a meeting. NGOs got copies of the scoping paper from Greenpeace-Ukraine a week after the meeting was held.

• The EIA scoping meeting documents were in Russian, rather than Ukrainian, and to date no Ukrainian language material has been prepared.

• NGOs that were not involved to the scoping meeting, but which sent requests for registration in the public participation process, got no responses to their requests.

• NGOs in other CEE countries sent their requests to the respective Ukrainian embassies, asking that their requests be registered for the public participation process (PPP), but after six months they had yet to receive any responses.

In February 1997, Ukrainian NGOs met with the delegation of EBRD Executive Directors in Kiev. The NGO representatives were assured that if EBRD continues to work on the K2/R4 project, the required procedures for the Public Participation Process (PPP) would be followed. As major violations in the PPP have already occurred within the scoping process, it would be logical to expect the restarting of the entire PPP from the scoping procedure.

Yet even after the February meeting, PPP irregularities have continued. After the Environmental Impact Assessment was issued in April 1997, information regarding a new scoping meeting was not made public until an announcement in mid-August for an additional scoping meeting in Kiev. Although conducting that scoping meeting could be considered an improvement in the PPP, the short notice presented a major problem, and Ukrainian NGOs still have many serious concerns regarding the process. Following is a list of these concerns:

• Only a limited number of groups were informed about meeting, and these were mostly NGOs located in Kiev. For example, an NGO named the “Eco-Club” from Rivne was not invited again, although they sent several requests for registration for the PPP.

• The date for conducting the meeting was set for the end of summer vacations and holidays, making attendance by some interested participants problematic or impossible.

• The invitations for the meeting were sent by mail only two weeks prior its date. (This means that affected parties received them just one week before the meeting.)

• There was no information about restarting the PPP and conducting the additional scoping meeting in the press. 175

• NGO representatives who participated in the scoping meeting were limited in their opportunities to speak and ask questions by meeting organisers. 176

• The organisers of meeting declined to discuss procedures for consultations with public, although this issue is supposed to be one of the main topics to be discussed during the scoping meeting.

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174 Eco-Club Rivne is an environmental NGO which works on raising awareness of environmental problems of the Rivne region. It focuses especially on nuclear energy issues.

175 Organisers explained that as they sent press-releases to around 40 news agencies and newspapers, they could not be held responsible for the fact that the information was not published. However, the press release which was distributed to news agencies was written such that it was very difficult to understand, as no attempt was made in it to clarify the information it contained. Because of the poor quality of the press release, the media were understandably not very interested in using it. It is therefore not surprising that the information was not published.

176 Nikolay Oberkovich, a representative of Energoatom who facilitated the meeting, announced at the beginning of the meeting that only one representative of each NGO would have the opportunity to speak. He also set a time limit for speakers, who were rudely interrupted if they exceeded this time limit. This rudeness was especially marked in the case of Professor Polischuk from the NGO “Zeleny Swit”.

5.4.4.6 Renewable Energy Projects in Ukraine

The National Energy Program of Ukraine includes special plans for the development of alternative and renewable sources of energy such as wind, solar and geothermal energy, coal methane utilisation, and biogas production. Unfortunately, although the EBRD and World Bank welcome projects on renewable energy, they have yet to consider even one such project for preparation in Ukraine.

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6. Conclusions

- **The MDBs do not always follow their mandate to support the building of democratic procedures in CEE countries.**

  Very often project sponsors proceed through the public participation process on a formal, rather than substantive basis, following the letter, but not the spirit of public participation procedures. While procedures may be followed on paper, public and NGO participation in the process is not what it could or should be. There are also a number of cases where the project sponsors have not fulfilled MDBs procedures, as occurred in the case of the EBRD’s loan for K2/R4 in Ukraine. Mechanisms for monitoring compliance with the public participation process are not sufficiently developed by the MDBs. Because of language and cultural barriers, the local population has also had problems expressing their dissatisfaction with the process to MDB staff.

- **MDB investment supports an increase in greenhouse gas emissions.**

  Of the 5.4 bil. USD in MDB energy loans in the studied countries, more than 1.8 bil. USD went to completion or rehabilitation of coal-fired power plants, and 1.0 bil. USD went for oil and gas development. This is in addition to support for fossil fuel energy production, which was a component of a number of sectoral loans.

- **To date, the World Bank has not managed to transform its Energy Efficiency Policy into practice.**

  Although the World Bank does have an Energy Efficiency policy, which it adopted in 1992, the Bank has not managed to convert it into the practice. Demand side energy efficiency is a very small portion of WB energy investment portfolio. Most of the demand side energy efficiency and renewable projects with which the WB is involved are financed through the GEF, rather than through the standard IBRD pipeline.

- **The MDBs have not used many of the opportunities available to them for energy conservation in Eastern Europe.**

  With the exception of the EBRD’s 1996 energy investments, all of the Banks continue with their traditional lending, which is supply-side and fossil fuel oriented. The EIB has not financed a single project which would support demand-side energy efficiency, and it has financed only one renewable energy project within the CEE region.

- **There is not enough support for renewable-resource energy projects from the MDBs.**

  The MDBs rarely invest in renewable energy sources, with exception of hydro-power. The main energy investment in CEE countries continues to go to fossil fuel energy, especially for the rehabilitation of existing fossil fuel plants.

- **The EIB is the only MDB which does not have an energy policy.**

  Although the European Investment Bank has started to invest outside of European Union and to act as the development bank, it has not developed an energy policy for such investment.

- **There is a lack of MDB documents in the local languages of Central and Eastern Europe.**

  Most MDBs policy papers are available only in English; a few are also available in Russian, although many people in CEE speak neither English nor Russian. This makes it very hard for the public to react to documents which have a direct impact on their countries’ development.

  - The Banks’ policy papers can not be transferred into lending portfolios until the Banks develop structures to apply progressive elements of their energy policies, such as supporting energy efficiency or the use of renewable energy sources.

  The example of the EBRD’s Energy Efficiency Unit clearly shows that institutional structures can and should reflect energy efficiency priorities. Although the EBRD had energy efficiency as a priority for the development of energy sector since the adoption of its energy policy in 1992, its demand-side energy efficiency projects were only developed after 1995, when the Bank set up its Energy Efficiency Unit. The promotion of energy efficiency requires different expertise and a different philosophy from commonly found in energy departments which focus on traditional energy sources. Standard energy departments can therefore scarcely serve as a good basis for the adoption of energy efficiency policies.
• The Banks do not inventory GHG emissions data for their loans.

The MDBs’ energy sector investments do not reflect the adoption of the principles of the Climate Convention in 1992. The Banks have continued to invest primarily in fossil fuel projects, and they do not even monitor the climate impacts of the projects in their portfolios.

• Projects are not evaluated for their energy efficiency potential.

Most non-energy projects are not screened for their energy efficiency potential.

• Demand-side management and integrated resource planning are not considered binding principles for projects.

None of Banks operating in CEE require integrated resource planning as a condition for their energy projects. This leads to the realisation of projects that are in fact not needed for energy sector development. Demand side management is not used.

• Energy sector development is not based on a sustainable development strategy for the whole economy, but only on the expected growth of demand.

The MDBs do not have sustainable development strategies for individual countries or for the region. Energy strategies are therefore based on national forecasts, which are usually based on the traditional assumption that economic growth must be supported with growth in energy consumption.
7. Recommendations

In this section we try to specify our recommendations to each of the Banks, but it is necessary to note that these recommendations have different levels of specificity. The EIB lacks even basic documents such as an energy policy, and therefore it is only possible to make relatively general recommendations in this case. For the EBRD, which has made progress in lending for energy efficiency projects, we are able to suggest more detailed recommendations that can further improve the EBRD’s lending.

- Each Bank should work out guidelines for NGO involvement and involve the NGOs in this process as well.

There can be different types of cooperation, for example, control, advising, technical and legislative background knowledge, as well as other possibilities. NGOs should be paid for their time, efforts, information and expertise, if these play a significant role in the process.

- NGOs should be involved in the process of developing and updating MDB energy sector policies.

The public in the CEE countries should have opportunity to participate in energy lending policy development. Such participation could be done through the environmental impact assessment of these policies.

- Phare and TACIS grants should not be used to soften IFI loans for non-environmental reasons.

- The Banks should implement a policy of seeking out and using local talent, companies and firms more extensively than they currently do.

Where possible, Bank cooperation with local companies, as opposed to western firms, should be encouraged, although we recognise that the capacity of some local companies may need to be further developed. We believe that the MDBs can play a positive role in this building of local capacity.

- The MDBs should limit their investment in supply-side energy projects to renewable-resource projects only.

The Kyoto protocol to the Climate Convention as well as the convention itself were written with the aim of reducing CO₂ emissions. MDBs should radically change their lending portfolio and serve this aim in their lending policies.

- The energy efficiency potential of each project should be evaluated.

The MDBs should develop standard procedures for evaluating each of their projects for energy efficiency potential. Proposals for the use of more efficient technologies which can come from such screening should be offered to the project sponsors together with an economic evaluation.

- All MDBs should prepare their own sustainable development strategies or policies for the region.

Such sustainable development strategies should assess and take into account the long-term implications of MDB investment in the various sectors in the CEE countries. Specific sustainable development plans or strategies should be prepared in co-operation with all IFIs for each country, and should be a condition for IFI investment. The Project Preparation Committee could facilitate this process.

A regional Integrated Resource Plan should be developed as part of the Sustainable Development Policy.

7.1 Recommendations to the EIB

- The EIB should adopt an Energy Policy.

This policy should emphasise the need to increase energy efficiency in CEE countries, and to foster the development of renewable energy sources.

- The EIB should develop a policy on Access to Information and for Public Participation

From our experience, the EIB needs to rapidly improve its standard of access to information, especially regarding projects in the pipeline. The Public Participation Process has to be clearly defined, especially in the Environmental Impact Assessment of EIB projects.

- The EIB should set up a special unit that will prepare energy efficiency and renewable resource projects.
The EIB should recognise the need for demand-side energy efficiency and renewable projects in CEE and should stimulate this by establishing this specialised unit.

- The EIB’s Environmental Policy should reflect the Climate Convention and Kyoto Protocol.

The Bank’s Environmental Policy should address climate change and should not support any projects that lead to an increase in greenhouse gas emissions. The screening of greenhouse gas emissions should be a requirement for all EIB projects.

7.2 Recommendations to the EBRD

- The EBRD should require countries to prepare long-term Integrated Resource Plans as a condition for EBRD energy sector loans.

These documents should be made publicly available. Preparation of such documents will stimulate public discussion about energy sector policies in the CEE countries.

The EBRD should prepare a Regional Energy Sector strategy based on an Integrated Resource Plan which includes an Environmental Impact Assessment.

- Least-cost analyses should be required for all energy projects.

- The EBRD should abandon lending for nuclear projects.

- For NSA grants, agreements and Memoranda of Understanding should be made publicly available.

The EBRD should put pressure on the client governments to implement NSA agreements on time, and it should not allow re-negotiation of agreements. The EBRD should not agree to the extension of deadlines for closing reactors that are included in the NSA.

- The EBRD should establish a mechanism to monitor the public participation process in all of its projects.

A clearly defined public appeal mechanism should be prepared for cases in which the public or NGOs are not satisfied with the public participation process. The EBRD should establish a transparent mechanism for monitoring these processes.

7.3 Recommendations to the WB - IBRD

- The World Bank should establish an Energy Saving Team and evaluate and reward them on the basis of the amount of CO2/energy saved.

Establishment of an Energy Saving Team could be based on the experiences of the EBRD’s Energy Efficiency Unit.

- The WB should require all-source bidding for energy services. This should be also part of its country assistance strategy.

Bidding requirements should be specified in terms of energy services, rather than MW of installed capacity. This would allow the inclusion of demand-side investment, and such projects as combined heat and power could be part of a competitive bidding process.

- NGOs should be involved in the preparation of energy sector strategies in the framework of the Country Assistance Strategies.

For this recommendation to be effective, it is necessary that Country Assistance Strategies be made public.

- The World Bank should prepare a Sustainable Development Policy for the CEE Region.

The World Bank should start to reflect the needs for sustainable development in the region. Such a strategy should be developed in collaboration with the national governments as well with other MDBs and the European Union.

- The World Bank should prepare a Regional Energy Sector strategy which is based on an
Integrated Resource Plan and which includes an Environmental Impact Assessment.
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### 9. List of Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tbody>
<tr>
<td>BGL</td>
<td>Bulgarian levas</td>
</tr>
<tr>
<td>CAS</td>
<td>Country Assistance Strategy (World Bank)</td>
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<tr>
<td>CEE</td>
<td>Central and Eastern Europe</td>
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<tr>
<td>CFB</td>
<td>circulating fluidised bed boiler technology</td>
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<tr>
<td>CHP</td>
<td>combined heat and power plant</td>
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<tr>
<td>COMECOM</td>
<td>Council for Mutual Economic Assistance</td>
</tr>
<tr>
<td>DG1A</td>
<td>European Commission Directorate General 1 A for External Relations: Europe and the Newly Independent States</td>
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<tr>
<td>DSM</td>
<td>demand side management</td>
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<tr>
<td>EAP</td>
<td>Environmental Action Plan (for Central and Eastern Europe)</td>
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<tr>
<td>EBRD</td>
<td>European Bank for Reconstruction and Development</td>
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<tr>
<td>ECU</td>
<td>European Currency Unit</td>
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<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>EIB</td>
<td>European Investment Bank</td>
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<tr>
<td>ENVAC</td>
<td>Environmental Advisory Council (EBRD)</td>
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<tr>
<td>ESCO</td>
<td>energy service company</td>
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<tr>
<td>EURATOM</td>
<td>European Atomic Energy Community</td>
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<tr>
<td>FSU</td>
<td>Former Soviet Union</td>
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<tr>
<td>G-7</td>
<td>Group of Seven (Canada, France, Germany, Italy, Japan, UK, USA)</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>GEF</td>
<td>Global Environment Facility</td>
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<td>GHG</td>
<td>greenhouse gas</td>
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<tr>
<td>HPPS</td>
<td>pumped storage plant</td>
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<tr>
<td>HPS</td>
<td>hydro-power plant</td>
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<tr>
<td>HUF</td>
<td>Hungarian forints</td>
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<tr>
<td>IBRD</td>
<td>International Bank for Reconstruction and Development (The World Bank)</td>
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<tr>
<td>IDA</td>
<td>International Development Agency</td>
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<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
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<tr>
<td>IFI</td>
<td>international financial institution</td>
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<tr>
<td>IIEC</td>
<td>International Institute for Energy Conservation</td>
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<tr>
<td>IRP</td>
<td>integrated resource planing</td>
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<tr>
<td>K2/R4</td>
<td>Khmelnitsky 2/ Rovno 4 nuclear power plants (Ukraine)</td>
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<tr>
<td>MDB</td>
<td>Multilateral Development Bank</td>
</tr>
<tr>
<td>MIGA</td>
<td>Multilateral Investment Guarantee Agency</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<td>--------------</td>
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<tr>
<td>MOL Rt.</td>
<td>Hungarian Gas and Oil Company</td>
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<td>MVM Rt.</td>
<td>Hungarian Electricity Works</td>
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<tr>
<td>MW</td>
<td>Megawatts</td>
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<td>NEFCO</td>
<td>Nordic Environment Finance Corporation</td>
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<td>NEK</td>
<td>National Electricity Company of Bulgaria</td>
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<td>NERC</td>
<td>National Electricity Regulatory Commission (Ukraine)</td>
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<tr>
<td>NGO</td>
<td>non-governmental organization</td>
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<td>NIB</td>
<td>Nordic Investment Bank</td>
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<td>NISA</td>
<td>Newly Independent States</td>
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<td>NPP</td>
<td>nuclear power plant</td>
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<tr>
<td>NSA</td>
<td>Nuclear Safety Account</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
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<tr>
<td>PHARE</td>
<td>EU grant programme for Central and East European countries</td>
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<td>PJ</td>
<td>petajoule</td>
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<tr>
<td>PMU</td>
<td>Project Management Unit</td>
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<tr>
<td>PPC</td>
<td>Project Preparation Committee</td>
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<tr>
<td>PPP</td>
<td>Purchasing power party/ public participation process</td>
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<tr>
<td>PSDs</td>
<td>Project Summary Documents</td>
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<tr>
<td>PSP</td>
<td>pumped storage plant</td>
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<tr>
<td>RMBK</td>
<td>graphite-moderated pressure-tube type boiling-water reactor (Chernobyl-type)</td>
</tr>
<tr>
<td>SYNERGY</td>
<td>THERMIE programme for research, technology and development</td>
</tr>
<tr>
<td>TACIS</td>
<td>EU technical assistance programme to the CIS states, Georgia and Moldova</td>
</tr>
<tr>
<td>THERMIE</td>
<td>European demonstration component of the non-nuclear research and development programme, Joule-Thermie</td>
</tr>
<tr>
<td>toe, Mtoe</td>
<td>tons of oil equivalent, millions of tons of oil equivalent</td>
</tr>
<tr>
<td>TPP</td>
<td>thermal power plant</td>
</tr>
<tr>
<td>TWh, MW, GWh</td>
<td>Terawatt hours (10^{12}) Wh, Megawatt (10^6) W, Gigawatt hours (10^9) Wh</td>
</tr>
<tr>
<td>UCPTE</td>
<td>Western European Electricity Network</td>
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<tr>
<td>UPS</td>
<td>Unified Power System</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<tr>
<td>USD</td>
<td>US Dollars</td>
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<tr>
<td>VATESI</td>
<td>Nuclear Power Safety Inspectorate (Lithuania)</td>
</tr>
<tr>
<td>VVER</td>
<td>pressurised- water reactor</td>
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<tr>
<td>WB</td>
<td>World Bank</td>
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This report was prepared by CEE Bankwatch Network as a part of the MDB Energy Project and was realised in collaboration with BothEnds (NL).

**CEE Bankwatch Network** organises environmental NGOs from nine countries in Central and Eastern Europe (Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Poland, Romania, Slovak Republic and Ukraine).

Our main goals are:

- To create public awareness about the activities of International Financial Institutions (IFIs) in Central and Eastern European (CEE) countries, and their impacts on the environment.
- To promote public participation in IFI decision-making processes, policies and projects on the local, national and regional levels.
- To help environmental non-government organisations (NGOs) and citizens’ groups to monitor IFI activities in Central and Eastern Europe.
- To propose alternative policies and projects that are more consistent with a sustainable development path.

**The MDB-Energy Project** was initiated in June, 1996 by a group of 21 non-governmental organisations (NGOs) from Latin America, Africa, Asia and Central & Eastern Europe. The overall goal of the project is to make a long term contribution to efforts that reorient energy sector investments of the Multilateral Development Banks (MDBs) towards sustainable energy future.

The MDB-Energy Project aims to:

- Enhance the capacity within existing NGO "MDB networks" to promote sustainable energy lending.
- Undertake independent monitoring and evaluation of MDB energy policies and operations by gathering information, conducting research, and preparing case studies.
- Systematically pool information, knowledge and resources in an international, concerted, and focused attempt to reform the energy sector activities of the MDBs.
- Undertake national, regional, and inter-national level advocacy work relating to the energy sector investments of the MDBs.
- Reach out to and strengthen informal national networks of NGOs working on energy and MDB issues.
- Collaborate with existing international NGO networks working on issues relating to sustainable energy, climate change, and Multilateral Development Banks.
- Maintain a constructive dialogue between NGOs, parliamentarians, academics, MDB officials, and private firms in relation to the MDBs energy sector activities.

Focus increased media attention on MDB energy operations and sustainable energy alternatives.