

Evaluation



EIB Financing of Energy Projects

-in the EU

-in the CEE countries

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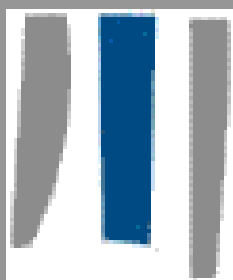
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Evaluation



EXECUTIVE SUMMARY	1
1. FINDINGS AND CONCLUSIONS	1
1.1. ENERGY PROJECTS WITHIN THE EU	1
1.2. ENERGY PROJECTS IN THE CEE COUNTRIES	2
2. RECOMMENDATIONS	4
A. FINANCING WITHIN THE EU	5
1. INTRODUCTION	5
1.1. PRESENTATION OF THE APPROACH FOLLOWED IN THE EVALUATION	5
1.2. ENERGY SECTOR AND POLICY TRENDS IN THE EU DURING THE 1990'S	6
2. EIB FINANCING OF ENERGY PROJECTS IN 1990-2000	7
3. PROJECT PERFORMANCE	9
3.1. IMPLEMENTATION PERFORMANCE	9
3.2. OPERATIONAL PERFORMANCE	10
3.2.1. Technical and economic performance	11
3.2.2. Economic performance	12
4. IMPACT, RELEVANCE AND EFFECTIVENESS OF EIB OPERATIONS IN THE ENERGY SECTOR	14
4.1. CONTRIBUTION TO THE COMMUNITY'S POLICIES	14
4.2. EIB'S CONTRIBUTION	14
5. BANK'S STRATEGIES, POLICIES AND PROCEDURES RELATED TO THE ENERGY SECTOR	15
5.1. PROJECT SELECTION	15
5.2. PROJECT APPRAISAL	16
5.3. PROJECT FOLLOW UP	18
B. FINANCING WITHIN CEE COUNTRIES	20
1. INTRODUCTION	20
1.1. EVALUATION APPROACH	20
1.2. ENERGY SECTOR AND POLICY TRENDS IN CEE COUNTRIES IN THE 1990'S	20
1.3. EIB FINANCING OF ENERGY PROJECTS IN CEE COUNTRIES SINCE 1990	21
2. PERFORMANCE OF THE EVALUATED PROJECTS	22
2.1. PROJECT IMPLEMENTATION	22
2.2. PROJECT OPERATION	24
2.3. ECONOMIC AND FINANCIAL PERFORMANCE	25
2.4. FUTURE OPERATION AND SUSTAINABILITY	26
2.5. ENVIRONMENTAL IMPACT AND CONTRIBUTION TO ENVIRONMENTAL POLICY	26
3. IMPACT, RELEVANCE AND EFFECTIVENESS OF THE EIB OPERATIONS ANALYSED	27
3.1. CONTRIBUTION TO EU ENERGY POLICY OBJECTIVES	27
3.2. EIB CONTRIBUTION	27
4. EIB STRATEGIES, POLICIES AND PROCEDURES	28
4.1. PROJECT SELECTION	28
4.2. PROJECT APPRAISAL	29
4.3. PROJECT FOLLOW UP	30

EXECUTIVE SUMMARY

1. Findings and Conclusions

The present evaluation covers energy projects financed by the EIB in the EU Member countries and in the Central and Eastern European (CEE) countries. In line with the Terms of Reference of the Evaluation Department, the general objective is to assess the quality, effectiveness and relevance of EIB operations in the energy sector, with emphasis on environmental issues. The approach used is as follows:

- Analysis of EIB's overall financing of energy projects since 1990, including the analysis of 86 project completion reports in the EU
- Review of the EIB's strategies, policies and procedures relating to the energy sector;
- In the EU a questionnaire was sent for projects that would not be visited for an in-depth evaluation (21 answers were received related to 32 projects);
- Individual in-depth evaluation of 19 projects in the EU and of 8 projects in the CEE countries

The general picture emerging from the study reveals substantial differences between EU and CEE countries. In the EU, the projects experienced relatively few problems and the EIB's impact was basically limited to providing some financially related benefits; while in CEE countries, the projects had some difficulties (at times even severe) in adapting to the rapidly changing environment, and the EIB made a significant contribution, not only by delivering financial benefits, but also by improving project implementation and operation.

1.1. Energy projects within the EU

During the period 1990-2000, energy lending in relation to total lending in the EU has gradually declined, from 18% in 1990-95 to 12% in 1996-2000. As the ratio between energy lending and overall investment in the sector remained more or less at the same level during this period, energy lending has followed investment trends in the sector. The majority of the energy lending (94%) corresponds to individual loans, covering 331 large projects/programmes, and only 6% went through global loans. The largest part of the EIB financing was granted for power stations (24%), including Combined Heat and Power (CHP) plants, followed by electricity grids (21%), gas grids (19%), renewable energy sources (11%), oil/gas fields (11%) and investments in refineries (6%).

A large majority of the projects analysed were implemented in line with initial expectations (cost, time and technical description). It is likely that the gradual deregulation of EU energy markets has directly or indirectly been a significant incentive to closely control costs and implementation time. Environmental considerations were a major element in the design and implementation of most projects. Some evidence was found that the initial design of several projects was changed in order to reduce their environmental impact; thus increasing the cost of the projects.

Serious technical operational problems were extremely rare (two cases in the projects for which information was available), **but a substantial number of project promoters considered the commercial/financial results unsatisfactory compared with initial plans.** These unsatisfactory results are related to changes in the energy context since 1985. Since the oil price collapse of end-1985, gas prospects have improved substantially, due mainly to its competitiveness and reduced environmental impacts. This has had considerable influence on the projects financed. In two out of the three gas network projects analysed, gas sales turned out to be higher than estimated at appraisal. In addition, the gas-fired power stations financed have produced electricity at a significantly lower cost than the alternatives. The competitiveness of other fuels has decreased in relation to gas, and most specifically coal - for instance, the average cost of electricity in six of the coal power stations financed is substantially higher than the electricity coming from those using gas. The lower oil and gas prices prevailing since 1986, compared to the period 1973-1985, have decreased the profitability of oil and gas production projects in relation to initial expectations. In the four oil/gas field projects analysed, the

financial rate of return turned out to be lower than foreseen at appraisal, although still remaining satisfactory in all cases.

Information gathered from the questionnaires sent to promoters and from the individual evaluations shows that **the main benefits of an EIB loan are to be seen in reduced borrowing costs, longer maturities and a broad range of available currencies. The EIB's impact on project implementation or operation seemed very limited.** This is linked to the fact that the promoters in the EU are generally very competent.

In general terms, during the period covered by this evaluation, the Bank's action in the energy sector was too broadly defined to steer activity to priority areas. Since 1999, with the adoption of the COP, a prioritisation of the activities in the energy sector has been established. Energy in the EU is no longer considered a COP individual priority objective per se¹, except for environmentally related energy projects, such as renewable and rational use of energy. However, **the activity is not yet fully aligned with the priorities established, as the Bank has financed a very low share of the 1990's substantial increase in renewable energy investments during the second half of the 1990's** particularly wind energy.

Upstream work, such as strategic framework and sectoral policy guidelines, was limited and decreased over time. **EIB appraisal work ensured, overall, the selection of solid projects, as ascertained by the subsequent performance analysis** The key variables in the appraisal, i.e. energy price scenarios and investment costs, were prudently estimated by the EIB and were often much closer to the actual situation than those of the promoters. However, some shortcomings in the project appraisal have been identified, mainly related to the limited analysis of investments programmes.

From the different appraisal reports consulted, it appears that the Bank's services analysed very closely possible environmental impacts of the projects and the need for mitigation measures and, **in some cases, exerted pressure on the promoters to adopt tighter environmental standards than those initially planned for the project.** However, external environmental costs were often not analysed in detail, despite the recent trend to incorporate them in the project analysis.

The information available on project follow-up was limited and decreased substantially over time. As a result, in the last few years information on project implementation was available for less than 50% of the energy projects completed in the EU, although it should be noted that this is the case for all projects - not only energy. For this reason the project follow-up did not detect a significant proportion of the problems that some projects experienced during implementation and operation.

1.2. Energy projects in the CEE countries

EIB lending to the energy sector in CEE countries amounted to 1.5 bn EUR over the period 1990-2000, representing 11% of overall EIB lending in these countries. The bulk of the financing went to rehabilitation/modernisation of existing energy installations. As within the EU, practically all the financing of rational use of energy concerned large CHP plants and the related district heating. The 8 projects analysed in-depth represent all those in the portfolio that were implemented and operational at the time the evaluation study was started in early 2000, with the exception of one project that has been completed in early 2001.

All the projects analysed experienced difficulties in adapting to the fast changing environment in the early 1990s. The promoters were generally not familiar with international competitive tendering procedures, and the application of such procedures was not without complications, especially for the earlier projects up to 1993. Despite changing conditions, the promoters were able to keep implementation costs reasonably under control and the final cost was significantly higher than planned for only three projects (20%, 25% and 50% higher respectively). As in the EU, environmental considerations were, directly or indirectly, important for the design and implementation of the projects; significant problems in this respect arose only in one case during implementation. Technical operation

¹ Therefore, lending to energy in the EU should be mainly supported by non-energy specific policy criteria, essentially environment, competition and regional development.

was generally in line with planned specifications, with only minor problems occurring, but **commercial operation was problematic in several cases. In most of such cases, demand turned out to be considerably lower than initially expected (the EIB was, in general, closer to the actual evolution than the promoters).** Four projects were severely hit by a lower than forecast energy demand. The unexpectedly low demand, in some cases combined with higher costs, reduced the economic and financial performance of many projects. **Five projects, including the four mentioned above, showed a substantially lower economic performance than initially expected, including three cases where the economic performance is very low at present, although all of them remain sustainable.** In addition, in two cases low energy tariffs created financial problems for the projects.

All projects contributed significantly, in one way or another, to the EU Energy and Environmental Policy objectives. **The EIB's intervention made a significant contribution to practically all the projects, not only by substantially reducing borrowing costs, but also in some cases by improving project implementation and operation.** The latter was achieved mainly by way of recommendations or requests to carry out additional studies or follow certain procedures relating mainly to procurement, environment or market considerations. The EIB identified weaknesses and risks for future operations in six of the projects and for all of these appropriate clauses were included in the finance contract. In all but one case it would have been difficult to finance the projects without the EIB's intervention (two would probably not have been realised or would have been seriously delayed). The EIB demonstrated a flexible attitude in cases involving institutional reforms and generally no problems were observed in the co-operation with other financial institutions.

Environmental considerations were an important issue in the discussion with the promoters on possible EIB financing. During project appraisal, the Bank followed the guidelines set out in EU environmental legislation. Environmental matters were examined closely in all projects. In two cases, additional environmental studies were requested. In a power plant rehabilitation project, the Bank would not have financed the project if the promoter had not accepted to install additional antipollution equipment.

The eligibility rules, appraisal procedures and project follow-up for projects in the CEE countries are basically the same as for those in the EU. To develop its activities in the energy sector the EIB adopted a pragmatic approach aimed at getting involved as quickly as feasible. As for the EU, there was very limited strategic framework or policy guidelines to drive the activities in the energy sector. **Despite the limited resources dedicated to appraisal, the EIB's assessment proved efficient and, overall, correct.** It was in general more cautious and - in spite of some failures - far more accurate than national energy experts with regard to energy demand assessment; its economic analysis, which is a key criterion in project appraisal, proved to be a valid tool. **Monitoring was mainly directed towards controlling procurement and disbursement conditions in the finance contracts; more or less regular follow-up procedures were applied in all but one of the eight cases,** and problems, detected by this process, required the EIB to intervene in various cases.

2. Recommendations

	Recommendations	EIB Response
1	<p>The prioritisation established in the Corporate Operational Plan (COP) since 1999 should be further developed to focus the activity in the priority projects, particularly in the EU. Financing of renewable energy or rational use of energy, which is considered a COP priority, should be significantly increased. This could require the EIB to take on more risk and grant smaller loans than at present.</p>	<p>The Operational Directorate (Ops) response is that the COP process is the appropriate framework for such prioritisation. In current COPs, the energy sector has not been identified as a top priority per se and the policy rationale for such projects mainly derives from other priority objectives (such as regional development, TENs or environment). These aspects, together with more basic energy supply issues, will also be the focus in the Accession Countries. Dedicated Global Loans may be used for smaller loans.</p> <p>Projects Directorate (PJ): The EIB remains committed to making a real contribution to the objective of sustainable development, including renewable energy and rational use of energy, but the inherently higher project risks in certain areas of renewables and environment (solar, fuel cells...) stipulate the further development of adequate mitigation measures. PJ and Ops are currently analysing-within the scope of environmental lending-the feasibility of a specific window dedicated to renewable energy.</p>
2	<p>Appropriate resources should be dedicated to the identification and internal processing of the energy sector projects where the Bank brings more value-added. The analysis of external environmental costs and of investment programmes should be improved. Recent initiatives in this line aiming at reinforcing the capacity for detailed appraisal of projects, in particular in relation to the environmental issues, should be pursued further.</p>	<p>Ops: Resources are allocated to project needs, taking all lending priorities into account. This also applies to energy projects.</p> <p>PJ: Resource allocation for project and sector work may not be separated from the annual budget exercise interlinked with the regular common COP-review.</p> <p>Since several years, the analysis of environmental externalities is being increasingly integrated into those project exercises where it makes sense.</p>
3	<p>The Bank should take a more proactive approach to EU initiatives in the energy sector. The Bank has launched several actions in support of EU policies in the energy field in the period analysed. However, often these actions have not been guided enough by proper upstream/sectoral work in order to increase the impact of the Bank and sometimes they came rather late in relation to the evolution in the policy front (such as concerning the objective of reducing CO2 emissions).</p>	<p>Ops: As is the case for other sectors, the Bank is ready to co-operate with the Commission in further defining well-focused initiatives. Renewable sources and rational energy use are fields where many small unit investments are normal. Ways to reach these - including intermediation - will be considered by Ops/PJ.</p> <p>PJ: Certain EU energy-initiatives are difficult to be made bankable. Renewable energy schemes in particular – due to their generally small size but large number and high geographical dispersion – have to be handled preferably via Global/Framework type loans in order to reach the targets of the COP. The application of clear energy-relevant criteria (energy saving potential per amount of investment) for these loan types – even if PJ does not participate - appears required.</p>
4	<p>More emphasis should be put on the project follow-up phase in order to provide systematic information and feedback on project performance and contribution to EIB objectives. The new Self-Evaluation System (Scorecard), introduced at end 2000 in order to enhance the self-learning process, can only improve the situation if sufficient information is collected and analysed.</p>	<p>PJ: Since 1997 the Bank has reorganised and streamlined its monitoring activities, particularly in the EU. Backlogs originating from the period before have already been and are currently being further reduced. Progress must be achieved in gathering information from the promoters who proved to be reluctant. The efficiency of current procedures is under review and the Bank must better familiarize promoters with its monitoring requirements.</p>

A. Financing within the EU

1. Introduction

The present study was carried out at the request of the EIB's Management Committee. The primary aim was to cover EU Member countries, but in early 2000 the evaluation was extended to include Central and Eastern European countries. The first section of the evaluation study covers energy projects financed inside the European Union.

In line with EV's Terms of Reference, the general objective of this evaluation is to assess the quality, effectiveness and relevance of EIB operations in the energy sector with emphasis on environmental issues, as well as the Bank's strategies, policies and procedures that relate to them. In addition, this evaluation should help to identify the impact of EIB loans, as well as the quality and contribution of ex-ante project appraisals.

1.1. Presentation of the approach followed in the evaluation

The evaluation was based on the following tasks:

1. Analysis of the Bank's overall financing of projects contributing to energy policy objectives in the period 1990-2000. This includes projects in the energy sector, as well as projects outside the energy sector contributing to the energy policy objectives (for instance, energy savings in industrial plants or waste to energy projects). In addition, the Bank's strategies, policies and procedures relating to the energy sector have also been reviewed.
2. Statistical analysis of the project completion reports (PCRs) for projects contributing to the energy policy objectives where the finalisation of the construction was expected in 1990-95. The total number of projects in this category is 118, but only 86 were covered by a PCR when the analysis was carried out (early 1998). The 118 projects can be broken down into 91 projects in the energy sector (but only 64 PCRs are available) and 27 outside the energy sector (22 covered by a PCR). The 86 PCRs refer to 79 distinct investments, as some of the PCRs concern follow-up loans to the same project. In addition, to obtain an overall view of the economic performance of the oil and gas fields and of the power generation projects financed, the cost of production of a large sample of these projects has been estimated. This analysis, which covers the period 1990-2000, is based on the information from the PCRs or, sometimes, from the information at appraisal.
3. For projects that would not be visited for an in-depth evaluation, a questionnaire was sent to the promoters. The questionnaires focused on operational performance, environmental impact and any advantages of borrowing from the EIB. 31 questionnaires were sent, but only 21 answers were received relating to 32 projects, covering 35 distinct "investments". The answers received are quite general and not supported by figures.
4. Individual evaluations of 19 projects: The selection of the projects was based on the following considerations: projects in the refinery sector and in non-energy sectors (rational use of energy) were excluded. The rest of the projects were spread over three categories (production of primary fuels, generation of heat or electricity and transport and distribution of energy) and classified as to whether or not a PCR had been completed. The maximum total of projects to be analysed was established at 20 initially, which is about 15% of the total number of projects in the energy sector in the European Union (projects completed in 1990-95). Finally, the individual projects were selected randomly from the various sub-groups as defined before. However, for 4 projects information was unavailable. To complete the sample, 3 other projects were subsequently selected and the final number of projects examined thus became 19. Out of these 19, 16 are covered by a PCR.

The sample of projects for in-depth evaluations comprised:

- 4 oil/gas fields, in the North Sea and in the Italian Adriatic Sea.
- 4 gas transmission/distribution projects (2 in Italy, one in DK and another in IRL)
- 6 power generation projects (2 CHP plants, 2 thermal generation projects and 2 hydropower projects; 1 in D, 1 in DK, 1 in GB, 1 in GR, 1 in I and 1 in P)
- 2 district heating systems (D and DK)
- 3 electricity grid projects (Irl, It and 2 in Spain).

The first three stages of the above approach were carried out directly by EV staff, while external consultants performed the fourth stage, involving on-site visits and discussions with the promoters concerned. It proved difficult to obtain detailed information from the promoters on the project performance², but the EIB contribution to the projects financed is well covered in the different evaluation reports.

1.2. Energy sector and policy trends in the EU during the 1990's

The oil price collapse at the end of 1985/early 1986 marks a significant change in energy trends in the EU countries³. Since 1985 energy consumption in the EU as a whole, and particularly oil consumption, began to increase moderately again for the first time since the 1973 oil crisis. This can be explained by higher economic growth in combination with a gradual slowdown in the pace by which the energy intensity of Europe's economy declined. At the same time there was a rapid increase in gross inland consumption of natural gas, reaching 5.1% per year in 1995-97, following on a slight decrease in the early 1980's. Solid fuel consumption, on the other hand, decreased rapidly, particularly in the 1990s.

Total domestic production of primary energy in the EU decreased between 1986 and 1992, to increase again in the years that followed. Trends in energy production varied by energy source. Nuclear production in the Union expanded only moderately from 1985 on, whereas solid fuel production decreased. Oil production in the North Sea increased marginally in the 1990's, but EU gas production increased significantly, to keep up with growing gas consumption. Renewable energy production, mainly wind power and biomass, has grown relatively fast since the mid-1990s.

The lessening of tension in the oil market since mid 1980's and up to mid 1999 led to a change in the priorities of EU energy policy and in parallel the governments' level of intervention in the energy sector has decreased. The White Book⁴ on Energy Policy marked this new direction. Four main objectives are outlined in the White Book; the establishment of the internal energy market, security of energy supply, environmental protection and research and technology development in the energy sector. Since the end of the 1980s, policies have been initiated to introduce elements of competition in the national gas and electricity markets: a process that was pioneered by the UK. At the EU level, after a long process of preparation, two important Directives were approved that aimed to gradually open the electricity and gas markets to competition with the ultimate objective of establishing an internal energy market; the Electricity Market Directive (96/92/EC) that was to be transposed into Member States' national legislation by 19 February 1999, and the Gas Market Directive (98/30/EC) that was to be transposed by 10 August 2000.

The EU's energy self-sufficiency as a whole improved significantly from 1973 to 1985, but has deteriorated slightly since. Increased EU energy dependence on outside supplies has again stimulated the debate on the security of energy supply. The EU Commission has recently prepared a Green paper on security of supply, which was adopted by the Commission at the end of 2000.

Regarding the environment, there are two main challenges in the energy sector. The first concerns classical pollution (such as acid rain), the second is the risk of climate change linked to the emission of greenhouse gasses. In relation to the classical forms of pollution, the Community has already made a

² Market developments, as well as economic and financial profitability, were not analysed in detail in some of the individual evaluation reports

³ Although the EU is examined as a whole, the Union is marked by contrasts resulting in widely different patterns of energy consumption and production.

⁴ Com(95) 682 Final January 1996

lot of progress and new measures are being progressively adopted. It is now climate change that has become the key challenge for coming years, implying substantial effort at national and international level.

The Commission has adopted a White Paper for a Community Strategy and Action Plan for Renewable Energy⁵ directed towards the goal of achieving a 12% share of renewable energy in the European Union by the year 2010, thus doubling the share of renewable energy in the energy balance. The development of renewable energy should be an important instrument for reducing CO₂ emissions and decreasing energy dependence from supplies outside the Union.

The above changes in the market and policy context have had a significant impact on energy investment trends since the mid-1980s. **Gas has become the preferred fuel for many uses, due to its improved availability, competitiveness and limited environmental impact.** In particular, the increase in the use of gas in power generation has been spectacular (combined cycle gas turbines accounted for about 50% of new investment in electricity generation since 1990). **Another significant trend in the 1990s was the development of combined heat and power generation,** also often using gas. In addition, as indicated above, **natural gas and renewable energy production are rapidly expanding since the mid-1990s.**

From end 1985 up to mid-1999, the price of crude oil remained at levels significantly lower than the prices observed in the 1974-85 period; but, from mid-1999, oil prices have increased substantially. Gas import prices have followed a similar trend to oil prices. Coal import prices have declined since 1985. Following these global trends, energy prices in the EU also decreased in the 1990s. The average price of energy for industrial consumers⁶ (1990 EUR per toe) over the period 1990-97 shows on average a yearly decrease, the fastest reductions being in electricity prices (3.2% per year) and steam coal prices (7.1%); the latter is largely explained by the ending of the "Kohlepfennig" (a subsidy to support the coal mining industry in Germany) in 1996.

All these price trends have significantly affected the economic profitability of energy investments. In relation to the situation before 1985, everything else remaining equal⁷, the profitability of investment in primary energy production and energy savings has decreased while the profitability of investment in equipment using oil and gas (such as gas power stations) has increased. The profitability of investment related to coal (coal power stations for instance) or nuclear energy has significantly decreased in relation to the situation before 1985. Finally, policy measures to protect the environment have penalised coal, nuclear energy and oil and directly or indirectly favoured renewable energy, energy savings (particularly co-generation) and gas.

2. EIB financing of energy projects in 1990-2000

EIB energy lending in relation to total lending in the EU has gradually declined, from 18% in 1990-95 to 12% in 1996-2000. As the ratio between energy lending and overall investment in the sector remained more or less at the same level during this period (around 5%), energy lending has followed investment trends in the sector⁸. **Annual Bank lending in the sector has been in the order of 3 bn EUR during this period.** Energy projects are frequently very large scale, as illustrated by the fact that the average individual loan is in the region of 100 M EUR. **The majority of the financing consisted of individual loans (94%), which covered 331 large projects/programmes.** The financing of small projects or programmes through global loans represented only 6 % of the lending total. Five countries represent more than 80% of the energy lending during this period: they are Italy (31%), the UK (19%), Germany (11%), Spain (13%) and Portugal (7%).

The largest part of EIB financing to energy related projects in 1990-2000 (see table 1) concerned power stations (24%), including CHP plants, followed by electricity grids (21%), gas grids (19%),

⁵ Com(97) 599 final

⁶ From Energy in Europe 1999-Annual energy review. Special issue. January 2000

⁷ The low oil price since 1986 promoted cost savings in those industries involved in oil/gas production.

⁸ To complement this, it can be mentioned that the part of energy investments in the total investments in the EU has substantially declined (in 1986 energy investments represented 7.2% of the GFCF and decreased to 4.9% in 2000).

renewable energy sources (11%), oil/gas fields (11%) and investment in refineries (6%). The remainder (8%) corresponds to investment in rational use of energy outside the energy sector (3%), district heating (2%), oil storage/distribution and nuclear waste facilities. Around 45% of the operations financed correspond to investment programmes (a myriad of small projects with a common set of objectives, such as electricity or gas grids).

Table 1: Financing of energy related projects during the period 1990- 2000 through individual and global loans in % of the total amount financed in this sector

Gas/oil fields	11.3
Renewable energy sources	10.4
Power Stations producing only electricity	
▪ Coal/lignite power stations	8.2
▪ Natural gas power stations	8.1
▪ Oil power stations (1)	3.2
Combined heat and power stations, including those outside the energy sector	4.5
Refineries	5.7
Electricity grids	21.1
Natural gas grids, including gas storage	19.4
Rational use of energy, outside the energy sector	3.3
Rest (district heating, nuclear cycle, coal/lignite mines, etc..)	4.8
	<u>100%</u>

(1) Mainly concerns integrated gasification combined cycle (IGCC) plants

Source: Own calculations from EIB database

Finance for electricity production (excluding renewable energy projects producing electricity) is concentrated in several large power stations. The various operations have been classified into two groups⁹: power stations producing mainly or exclusively electricity and CHP plants (**CHP plants represent 19% of the financing of power stations**). The types of projects financed in the first group are the following:

- Coal/lignite power stations (35% of power station financing): About 60% of financing went to the construction of 6 large power stations, the remainder corresponds to the installation of antipollution equipment in existing power stations located mainly in Germany and Italy.
- Power stations burning natural gas as the main fuel (34%): close to 90% of financing corresponds to the construction of 13 new large CCGT. The CCGT in the UK represent about 50% of total financing to gas power stations.
- Power stations using oil products (13%): This concerns practically all the construction of three large integrated gasification combined cycle plants (IGCC) for the generation of electric power from refinery residues located in Italy.

The majority of electricity grid projects financed were located in Italy, Spain, Greece, Portugal and Ireland. Among such projects there are several electricity interconnection lines between EU countries or with neighbouring countries. **Many of these electricity interconnections are classified as priority TENS**, e.g. interconnections between the UCPTe and Nordel systems, Spain and Portugal, Denmark and Germany, Italy and Greece, as well as Morocco and Spain.

⁹ This classification is approximate as in some cases the power stations are difficult to classify

In this period the Bank financed a significant part of the extension of the European gas grid in several countries. The main part of the financing in this sector has gone to Italy (38%), followed by Germany (23%), mainly in the New Länder, Portugal (9%), Denmark (8%), Greece (6%), Spain (4%) and Ireland (3%). In Portugal, Greece and Denmark the Bank has financed a significant part of the investment in the gas transmission and distribution sector. **Several of the gas network projects financed were classified as priority TENs**, such as the Magreb-Europe gas pipeline and the Greek and Portuguese natural gas networks.

In the renewable energy sector, the Bank has essentially financed waste-to-energy projects (70% of the total financing of renewable energy) and large hydropower stations (22%). Only very few individual loans concerned other types of renewable energy sources (wind parks, mini-hydro stations, power stations using biomass and geothermal power stations). Financing of renewable energy projects under global loans is very limited, approx. 34 M EUR per year during the period 1990-2000, and has remained more or less at the same level throughout the entire period. Therefore, **the Bank has financed a very low share of the substantial increase in renewable energy investments during the second half of the 1990's, particularly wind energy.** It is estimated that investments in wind energy in the EU have reached 4 bn EUR¹⁰ in 2000, while the Bank's financing of wind energy projects in the second half of the 1990's has been on average 40 MEUR/year and has not increased in recent years.

The financing of oil/gas fields concerns mainly the development of offshore oil/gas fields in the UK part of the North Sea and the Italian part of the Adriatic Sea.

The projects in the refinery sector (excluding the IGCC using refinery residues already included under electricity production) mainly concern conversion capacity upgrading and product quality improvements. The latter category includes projects producing unleaded gasoline and aimed at the reduction of sulphur content in fuel-oil and gas-oil.

Total financing through direct loans for rational use of energy (RUE) in sectors outside the energy sector represents only 3% of total financing to the energy sector in the 1990s. This figure does not include waste-to-energy projects and CHP plants in non-energy sectors, as these were already included under renewable energy and electricity production respectively. In addition, most investments in rational use of energy are part of more encompassing projects, of which they are a relatively small component. The lending figures however refer to the total project. Very few RUE operations have been identified that were financed through global loans, with the exception of combined heat and power plants that have already been included under power generation.

3. Project performance

3.1. Implementation performance

The main conclusions of the analysis of the PCRs (second task of the evaluation) are the following:

- Technical definition: the large majority of energy projects have been implemented in accordance with the technical description (only on 11% the implementation has been problematic). However, the information available is of a rather general nature.
- Time schedule: the average delay is about 11 months for an average project implementation duration of 4.2 years. Implementation delays did not create significant problems, except in one project.
- Final cost: on average, the final cost in ECU/EUR turned out only 2.7% higher than at the initial estimate.

In most of the 19 projects (see 4th task of the evaluation), the promoters carried out only minor technical design modifications during implementation and operation. In 5 out of the 19 projects that were evaluated in-depth, significant cost overruns (more than 15% higher than the initial estimate) or

¹⁰ From Global energy market report, www.awea.org

delays (more than 2 years) occurred. There are various reasons for this, ranging from changes in the technical design to price contingencies or longer implementation periods. In one particular case the extra costs are largely explained by additional investment to cover higher demand. However, in another case (a hydropower project, which experienced a 122% cost overrun in local currency and 4 years delay, mainly due to administrative complications) there was a substantial negative impact on the financial results. Some of the projects were actually accelerated and implemented faster than foreseen during appraisal. The situation described above confirmed in part the analysis in the PCRs. However, cost overruns or delays were sometimes not reported in the PCR, due to the late participation of the Bank, because the final cost and the implementation time was already well advanced when the Bank appraised the project.

For the projects that experienced significant cost overruns in the sample of 19, the costs estimated at appraisal by the Bank were in the majority of cases significantly higher than the promoters' estimates, but lower than the final cost.

In a market open to competition there are substantial incentives to keep cost and delays under control. The analysis of Bank-financed electricity projects in the new deregulated electricity market in the UK seems to confirm this. The 5 power stations financed were built within the initial budget and on time (only one experienced a 6 month delay). Therefore, it is likely that the gradual deregulation of EU energy markets has directly or indirectly been a significant incentive to closely control costs and delays.

Environmental considerations were a major element in the design and implementation of most of the projects. From the different appraisal reports consulted, it appears that the Bank's services very closely analysed possible environmental impacts of the projects and the need for mitigation measures and, in some cases, exerted pressure on the promoters to adopt tighter environmental standards than those considered by the promoter. The impact of environmental considerations on project implementation is not systematically recorded in the PCRs and it is therefore difficult to have an overall view on the subject. From the information available, it can be seen that environmental issues implied changes in the project design for several projects. This is particularly the case for large coal power stations where, out of 5 projects, 2 had to install additional antipollution equipment not foreseen at the time of the appraisal. Some evidence was also found that several hydropower stations were affected by environmental problems or administrative delays as well. However, such problems are rarely reported in the PCRs. The individual analyses of the 19 projects show that in two cases, unforeseen environmental or safety considerations significantly affected project implementation.

Given that the available information relates to a substantial part of the energy projects financed by the Bank in the period under consideration, it could be considered representative to a large extent. **The general conclusion then is that the vast majority of the projects financed by the Bank were implemented in line with initial expectations (cost, time and technical description). In addition, environmental considerations significantly affected the implementation of several projects and the Bank exerted in some case pressure to the promoters to adopt tighter environmental standards.**

3.2. Operational performance

Operational performance concerns the operation of the project once it is fully implemented and has been working for some time. This evaluation has sought to determine whether initial expectations for the first years of operation have been fulfilled, both with respect to the purely technical aspects as well as with respect to its financial and economic performance.

3.2.1. Technical and financial performance

The information available on the operational performance in the PCRs analysed (see 1.1. second task) is rather limited. The financial profitability of the project is specified in 37 PCRs (47% of the PCRs), the economic profitability in 18% of the cases and the technical operation of the project is only mentioned in 15% of the cases. From the information available from the PCRs it appears that only few projects had serious operational problems: 2 projects suffered serious technical problems, in 4 cases the financial profitability was considered insufficient and in one case the economic profitability was considered poor. The qualitative information obtained from the 31 questionnaires sent to the promoters confirms, in part, the conclusions in the PCRs. Operational incidents were very limited (rated satisfactory or excellent in all the cases). However, with regard to actual financial results as compared to initial expectations, in quite a significant number of cases, 8 out of 25 answers, projects were rated as unsatisfactory to bad. The large majority of these projects are electricity or heat generation projects. In the answers given, the reasons for the unsatisfactory rating of some projects are not indicated. However, from the individual in-depth evaluations it can be assumed that these reasons are linked to the change of the energy context since 1985.

The information obtained in the individual in-depth evaluations (see 1.1. task four) can be summarised as follows:

- No serious technical operational problems are reported in any of the projects analysed, with the exception of one gas field that experienced major problems and several pipelines integrated in another project suffered from larger leakage than initially expected.
- In the four oil and gas field projects, overall reserves turned out to be higher than initially estimated, but oil prices have been significantly lower than initially expected by the promoter and the Bank. As a result the financial rate of return, although remaining high in all cases, turned out to be lower than foreseen at appraisal.
- Gas transmission and distribution projects. Gas sales were significantly higher than expected at appraisal in two out of three projects, mainly due to policy favouring gas in relation to other fuels for environmental reasons. In one case (Italy) sales in the grids included in the project were substantially lower than expected at appraisal.
- Power generation: in all cases technical operational performance is as initially planned. In one of the two CHP plants heat sales were lower than initially expected, but had practically no impact on revenues. In a power generation project relating to the installation of anti-pollution equipment in an existing plant, the operating costs are significantly higher than estimated at appraisal (40% to 100% higher), but this has a minor impact on the cost of electricity generation.
- District heating: in the two district heating projects the technical operational performance is as initially planned. In one case total cost of heat to consumers is higher than originally forecast and doubts are expressed on the project's sustainability¹¹
- Electricity grids: The operational performance is reported to be as planned. However, the information may not be reliable, as very limited information on operational and market issues was available.

From the above analysis it seems that **the large majority of projects did not experience serious technical operational problems. However, on the commercial/financial side of operations it appears that a significant proportion of projects were affected by changes in market conditions in relation to the expected evolution at appraisal.** The answers to the questionnaire sent to promoters indicate power and heat generation projects were the most affected. The gradual deregulation of electricity and gas markets in Europe will increase the vulnerability of projects to changes in market conditions. For instance, this is the case for some energy projects financed in the deregulated electricity market in the UK.

The individual in-depth evaluations do not bring out reservations on the projects' sustainability, except in the one district heating case above.

¹¹ The steel mill and the coking plant supplying heat to the district heating system may be shut down in the near future.

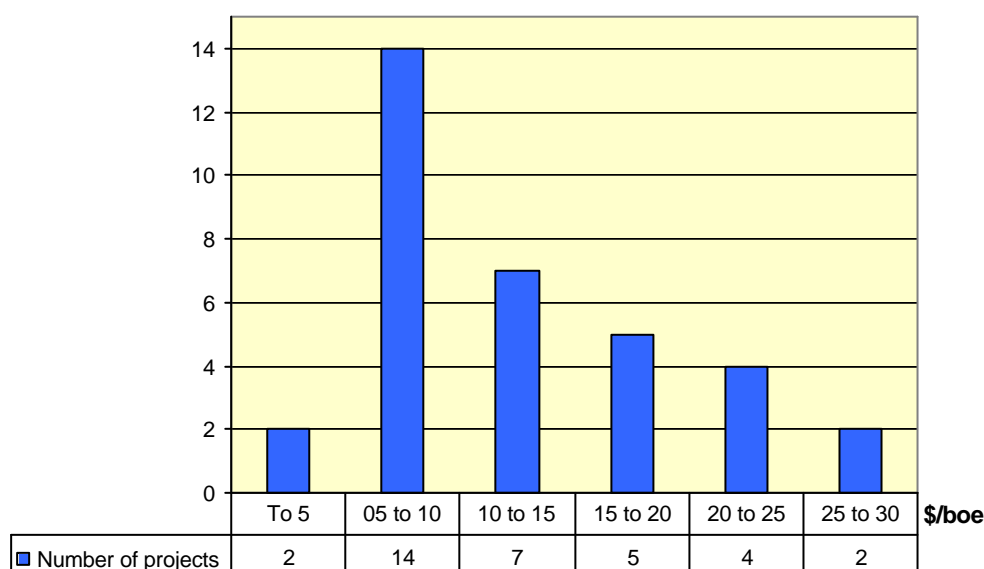
From the evidence collected on the 19 projects evaluated, a fundamental and positive conclusion is that severe environmental operational problems did not occur. All projects examined conformed with national and EU environmental legislation and in the large majority of projects the promoters and the relevant national authorities have environmental monitoring mechanisms in place.

3.2.2. Economic performance

It has only been possible to obtain an overall view of the economic performance for the oil and gas fields and for power generation projects, including renewable energy sources producing electricity. These are two important sub-sectors that represent around 40% of lending to the energy sector and where the markets are already open to competition (oil) or are being opened to competition (gas and electricity markets). In order to obtain this overall view, the economic cost of production (excluding taxes and subsidies) of the majority of oil/gas fields and power stations financed has been estimated. For some of the projects the information on the actual implementation and operating costs was unavailable; in such cases the estimates at the appraisal have been used. Therefore, the figures presented do not accurately reflect the economic cost of production of the projects financed. In the case of oil/gas fields, the production projections are based on the more recent ones or when not available on those expected at appraisal. The fuel cost of the power stations has been estimated using the average price of primary fuels in the period 1995-2000¹², as the majority of the power stations were commissioned in the early 1990's.

Figure 1 presents the cost of production of a large sample of the oil/gas fields financed, at a discount rate of 10%. **The average cost of production is about 13 USD/boe (in 2000 USD), which is significantly lower than the average oil price in the 1990s (around 24 USD/boe¹³).** Only 6 of the 35 fields/developments analysed have a cost higher than 20 USD/boe and the large majority of these started operations in the early 1990s. These costs correspond to the fields/field extensions considered in the appraisal, the real costs are often lower if neighbouring fields can be developed using the same facilities or due to field extensions (secondary recovery).

Figure 1: Estimated economic cost of production of a large sample of oil/gas fields financed in the 1990s (2000USD/boe)



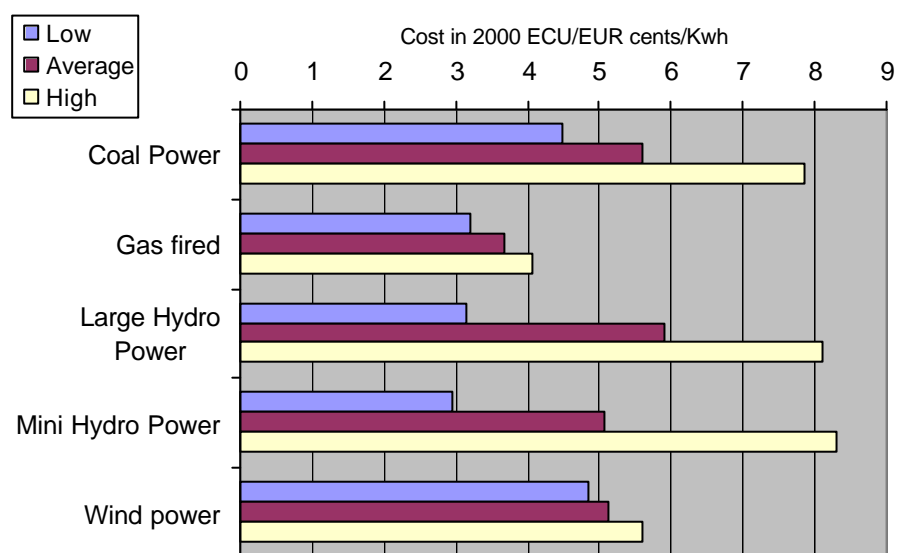
Note: Cost of production at a discount rate of 10%, based mainly on the information at appraisal
Source: own calculations based on EIB database

¹² Border prices increased with average inland transportation costs.

¹³ Average oil price expressed in constant 2000 USD using the MUV deflator.

The economic cost of electricity generation¹⁴ (investment, O&M and fuel costs) of a substantial number of the projects financed, excluding CHP stations, is presented in figure 2, using a discount rate of 5%. **On average, in the period 1995-2000 the CCGT plants were able to produce electricity at a substantially lower cost than the alternatives, followed by mini-hydro plants, wind-power and coal/lignite fired power stations.** The cost of generation in renewable energy plants shows large variations. In the case of hydropower, this is in part related to the fact that some of the plants are used to cover demand during peak periods. The sample for wind-power and mini-hydro includes mainly projects in Spain and thus is not representative of the situation in other EU countries. In the case of coal-fired power stations, the large variations observed are caused by differences in non-fuel costs (investment and operating costs). The cost of electricity generation is very high in two projects (one that experienced significant cost overruns and one that uses a new technology). Leaving these aside, the cost of electricity generation in the other three coal-fired power stations is around 5 EUR cents per KWh. These conclusions are in line with the general trends presented in section 1, in the sense that gas generated electricity has become a very competitive option in relation to alternatives.

Figure 2: Estimated economic cost of electricity generation of projects financed by the EIB in the 1990s, based on the actual prices of primary fuels during the period 1995-2000



Notes: Average of 6 Coal power, 11 CCGT, 6 large hydropower (more than 10MWe), 27 Mini hydropower, 7 Wind power. In the case of coal and gas power stations, the cost corresponds to base load production, normally about 7000 h/year

Full cost of electricity (investment, O&M, fuel) at a discount rate of 5%. Fuel prices estimated from border prices, increased with average inland transportation costs.

Costs excluding taxes and subsidies

Source of data: Own calculations based on EIB data.

¹⁴ In the case of coal and gas power stations, the cost corresponds to base load production (normally about 7000 h/year). In addition, the prices of primary fuels considered are the actual figures for the period 1995-2000 (border prices plus average inland transportation cost).

4. Impact, relevance and effectiveness of EIB operations in the energy sector

4.1. Contribution to the Community's policies

The majority of projects considered in this study were selected because of their contribution to the Common Energy Policy, but in some cases they were also contributing to the Common Environmental or Regional Development Policies. However, a few projects¹⁵ in the refinery sector or using oil products were not eligible to the Common Energy Policy, but were financed for regional development or environmental reasons.

The information available in the 19 evaluations on the performance of the projects financed confirms that initial expectations in terms of contribution to Community Energy Policy (development of indigenous resources or diversification of energy imports away from oil for instance) were fulfilled in the large majority of cases. The same is true for projects contributing to the Environmental Policy, where the initial expectations were fulfilled in all the projects analysed in the sample. However, any contributions to regional development were not covered in any detail in the appraisals or PCRs.

As regards environmental protection, Bank financing has been significant for projects directly improving the environment, such as antipollution equipment in existing or new coal-fired power stations, investment in refineries to produce unleaded gasoline or to reduce the sulphur content of fuels. It has also contributed indirectly to reduce environmental pollution, for example by stimulating gas consumption, thereby replacing more polluting fuels. The Bank has supported development of competition by financing new entrants in markets open to competition (especially in the UK) and priority TENs¹⁶.

The Bank has essentially financed large projects or programmes in the energy sector, mostly promoted by well-established energy companies. Only a small part of the EIB's lending supported small-scale projects and programmes, such as small cogeneration units and renewable energy projects. This is despite the fact that such investments have been growing rapidly in many European countries in the last few years and have top priority in the Community Energy Policy.

The Bank did not measure and compare the relevance of the projects financed as regards their consistency with priorities and objectives of the Community. Some projects in the sample made a significant contribution to Community Policies whilst others contributed only marginally (several of the network projects, for example). Nevertheless, the Bank accorded the same priority to all projects.

4.2. EIB's contribution

EIB's financing of the 19 projects covered on average 33% of construction costs and no loan exceeded the usual limit of 50%. Financing was approved during implementation of the projects: on average about a quarter of the construction work had been completed (measured by the number of months elapsed). In two cases, 75-80% of the work had been completed when the financing was approved by the EIB. Because of the Bank's late intervention, its impact on project design and implementation was very limited.

¹⁵ This is particularly the case for conversion capacity upgrading and product quality improvements in refineries that were financed under the Common Environmental Policy, or power stations using oil in islands financed under the Common Regional Development Policy.

¹⁶ Many of these priority TENs promote competition in the Union by facilitating access to new players in the national markets.

For the 19 projects it was also determined **why promoters had turned to the EIB and what benefits they believed they had obtained**. It turned out that there was strong concentration on 3 aspects, of which there was unanimity among all respondents on the first: **1) overall low borrowing costs; 2) possibility to obtain long maturities and 3) a broad choice of funding currencies**. Thus, the main impact of EIB financing is financial. In five cases the EIB provided a type of financing that otherwise would not have been available. In three cases it is reported that the Bank's financing has facilitated obtaining additional finance from other sources. In another three cases it may have provided a certain quality label, bringing a positive image to the project.

On project implementation or operation the impact of EIB lending has been very limited. Only in one case did the company feel that without the loan (or rather without Portugal's adherence to the EU) the project would definitely have had difficulties being financed and its implementation would therefore have been in danger.

The questionnaires sent to some promoters (see 1.1. task three) that were not visited for an individual evaluation cited the same advantages for borrowing from the EIB as the individual evaluations. These are mainly the following:

- Relatively low borrowing cost, long maturity, choice of currencies (17 times)
- Quality of the assistance and services provided by the Bank (5 times)
- Loan conditions matching project characteristics (3 times);
- Others (long grace period, large loan size, etc.) (2 times).

From the analysis of several project dossiers, it appears that the EIB's contribution to projects has varied depending on the type of promoter, the project and the type of financing provided. There is some evidence that the Bank's contribution is larger when it accepts some project risk, when financing small players or new players in the market, or where the EIB gets substantially involved from the start in an investment programme.

There were no serious drawbacks to EIB borrowing revealed and the EIB's reporting requirements were not considered to be unduly burdensome. The quality of the EIB's staff was considered generally satisfactory (in the questionnaires, 4 out of 24 replies rated EIB staff unsatisfactory).

5. Bank's strategies, policies and procedures related to the energy sector

This section briefly presents the EIB's project cycle for energy projects in the European Union. The analysis focuses on three main points: selection criteria, ex-ante appraisal and the project's follow up.

A significant portion of the information relating to the project cycle cannot be found in the internal database. It is kept in personal files or is not available in written form. In order to maintain an adequate institutional memory and to enable efficient dissemination of information this situation needs improvement.

5.1. Project selection

In 1982 the Bank's Board of Directors decided that projects supporting the Community's energy policy objectives were eligible for EIB financing irrespective of their location (previously energy projects could only be financed when located in regional development areas). Since then it has put in place eligibility criteria to assure conformity of investment projects with Community policy objectives, the focus being on:

- Development of the Community's internal energy resources;
- Diversification of its imports of energy to replace oil imports;
- More rational use of energy

The eligibility criteria for energy projects are currently (early 2001) being adapted to fully conform to the Commission's White Book on Energy Policy.

Taking into account the investment trends in the period considered, as well as the Bank's eligibility criteria, practically all investments in the EU energy sector, as well as all investments in rational use of energy outside the energy sector, were potentially eligible for Bank financing. Thus, the eligibility criteria do not effectively rank the projects according to their contribution to Community objectives. **Since 1999, a general prioritisation of the activities in the energy sector has been laid down in the Corporate Operational Plans (COPs).** In line with the reduction of the importance attached to energy policy consideration at EU level, **energy in the EU is no longer a COP individual priority objective per se, except for environmentally related energy projects.** Therefore, lending to energy in the EU is now mainly justified by non-energy specific policy criteria, essentially environment, competition and regional development.

Under its Statute, the Bank must ensure that the investment to be financed is economically, financially, technically and environmentally sound and viable. The Bank does not keep a full record of projects not accepted for financing, but there is no doubt that it has turned down a number of them. This happened for instance to several power generation projects and gas expansion networks in marginal zones, as well as to projects producing primary energy sources. **Insufficient economic viability was the main reason for rejection. The generally good performance of the projects financed indicated that, in the majority of cases, good quality projects are selected.**

An important weakness of the existing selection process is the broad definition of the Bank's field of action. It does not focus enough on the activity in priority areas. For instance, financing of some top priority projects has been rather limited in the past. Renewable energy and rational use of energy are obvious examples.

5.2. Project appraisal

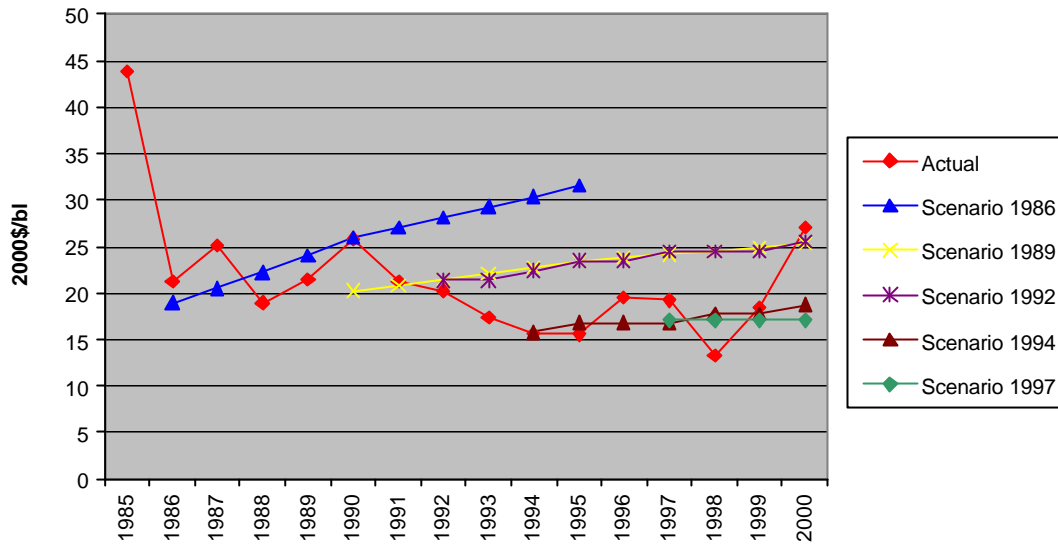
In general terms, the reviewed ex-ante appraisals are of good quality. The Bank carries out a detailed analysis adapted to every project, covering technical, financial, economic and environmental aspects.

The Bank's 1997 "Environmental Policy Statement", which has been recently revised, outlines the assessment of environmental aspects. In addition to the general guidelines for project appraisal contained in the publication, the EIB employs its own simplified overview format of environmental project impact. At appraisal an "Environmental Summary" is produced for all projects in order to systematically record the main environmental risk areas.

For the past few years discussions have been underway in the Bank concerning external cost of electricity generation. However, **in only very few cases were the external environmental costs analysed in detail and quantified.** The growing importance of the environmental aspects of certain energy investments, and the recent trend to quantify in economic terms some environmental impacts leaves the Bank no choice but to realise a more systematic analysis of the external environmental costs in such projects.

In the economic assessment of energy projects, the energy price scenarios considered in the evaluation are a key variable. Figure 3 presents the EIB's medium crude oil price scenarios used since end 1980s, as compared with the actual market prices in the same period. In general, the oil price scenarios were quite close to the actual evolution, except in the scenario of mid/end-1980's which was higher than the real prices. As gas prices are linked to oil prices, the same applies.

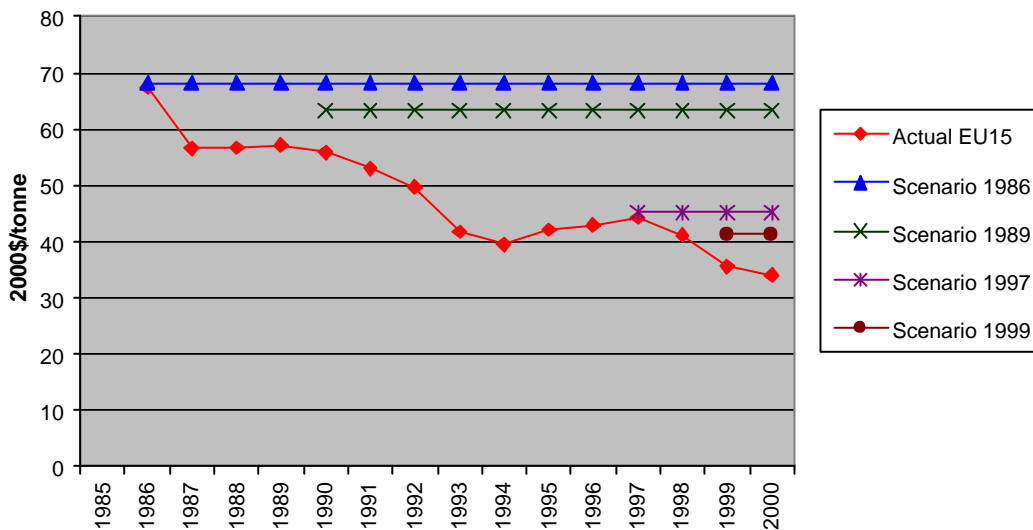
Figure 3: Medium oil price scenarios: Brent crude oil prices in 2000US\$/bl



Source: Own calculations. Prices deflated using MUV index.

The coal price scenarios (see figure 4) were used as a general reference, but prices used in the various appraisals reflected local circumstances. It turns out that the coal price assumptions were significantly higher than market prices in the early 1990's, but since mid-1990's they were gradually aligned with actual prices.

Figure 4: Coal price scenarios: Steam coal import cost in 2000US\$/tonne



Actual steam coal import costs for 1999 and 2000 are estimates. Prices deflated using MUV index. Source: Own calculations. Actual prices from IEA, Energy Prices and Taxes.

In many projects consulted the promoters' energy price assumptions were substantially higher than the actual prices and significantly above the EIB's assumptions (see for instance the individual in-depth evaluations of oil and gas fields). In addition, as indicated in the project implementation performance section, investment costs estimated by the Bank's services were prudent, and in general closer to the actual costs than the promoters' estimates.

The main problems faced by the projects analysed were the result of changes in market conditions. The trend towards deregulation will mean that market developments become the major risk in the energy sector. However, in spite of this trend, market analysis during appraisal has been reduced in the Bank.

As previously stated, the increase of the EU's energy dependence from external sources has again stimulated the debate on the security of energy supply, but the Bank has yet to develop an in-depth reflection on how to appraise projects from the security point of view.

As the Evaluations Department has pointed out previously, the Bank's approach to financing investment programmes needs improvement. The appraisal reports for programmes analysed were normally light and the usual measures of profitability and other specific calculations of project benefits were not standard. At the monitoring and ex-post evaluation stages there were frequent problems in retracing data and in verifying initial assumptions. Also, the analysis rarely reviewed the overall investment programme, which significantly reduced possibilities to influence them in favour of Community policies.

As stated above, **project appraisals tend to focus on the expected contribution to Community objectives, but without measuring such contribution.** More detailed priorities (as proposed in §5.1.) should allow for better assessment of the Bank's expected impact in financing the project. Project proposals should be ranked against common guidelines and benchmarks and the expected impact should be a key element in deciding whether or not the Bank should finance the project.

5.3. Project follow up

During project implementation projects are followed from a financial, technical and environmental point of view, the so-called "physical monitoring". In the last few years, the Bank has put a "modulation system" into place, categorising projects according to necessary follow-up. Such a system is justified given the average high quality of projects and project promoters in the Union and it frees resources for those projects facing major implementation issues.

This evaluation has brought to light the fact that not all problems experienced during implementation are duly reported in the Bank's Project Completion Reports (PCRs)¹⁷. Neither do PCRs provide specific information on the environmental considerations. The monitoring system should be improved to allow for an adequate follow-up during project implementation, with more thorough annual reviews of problems where necessary and allowing for reclassification of projects to a different monitoring category.

In the last few years the monitoring system has deteriorated, as witnessed by the fact that for the period 1993-2000 a PCR is available for less than 50% of the energy projects completed in the EU, although it should be noted that this is the case for all projects-not only energy. The situation is the result of both limited resources dedicated to monitoring and lack of data provided by the promoters.

¹⁷ For instance, in relation to the projects where a questionnaire was sent to promoters, seven PCRs were produced, covering 9 of the 15 investments rated "unsatisfactory" or "bad". Of these, 5 PCRs made no reference to the problems for which the projects had been so rated (whilst in some cases other problems were noted); this might be due to problems occurring after the RFT was produced. In many cases, significant project risks or issues detected during the ex-ante appraisal phase were not pursued in detail during the monitoring phase.

The Bank has recently considered how to improve its monitoring, and in this context self-evaluation has been introduced in 2000. As of 2001 a scorecard will be completed for every project at completion, summarising project performance data and informed judgment in a standard format. There are two main parts to the present scorecard. The first deals with project performance (implementation, operation and wider effects-environment, employment, etc). The second part of the scorecard is more directly related to the Bank in that it focuses on the extent to which the project under review has helped to realise the Bank's policy objectives. It is too early to judge the impact of the scorecard system. However, it is clear that without an increase in available data on project implementation and operation, the self-evaluation process by itself cannot enhance self-learning.

B. Financing within CEE Countries

1. Introduction

1.1. Evaluation Approach

The present study includes two stages:

1. Analysis of the Bank's strategies, policies and procedures relating to the energy sector and of EIB financing in CEE countries over the last 10 years of projects contributing to energy policy objectives.
2. In-depth ex-post evaluation of 8 projects: The eight cases examined constitute the total of EIB-financed projects, which when the evaluation study was initiated (early 2000) were implemented and operational (except one completed in early 2001). The 8 projects are located in 6 CEE countries: Lithuania, Poland, Czech Republic, Slovak Republic, Hungary and Romania.

The in-depth evaluations include five projects in the electricity sector (one load management project; four power plant rehabilitation, involving the construction of new plants/replacement of old units on existing sites); and three natural gas projects (one comprehensive gas sector modernisation, one gas storage project and one pipeline project).

The evaluations are based partly on a review of the EIB's project files, partly on project visits in the field. Internal project completion reports (PCRs, based on borrowers' completion reports and EIB questionnaires) had been established for five of the eight projects prior to the evaluation; one promoter had responded to a PCR questionnaire at an earlier date without a PCR being elaborated yet; finally, two evaluation questionnaires were sent out as part of the field visit preparation but only one was answered. Seven project visits took place in July-September 2000; for one project it was not possible to organise a visit.

EV staff carried out the analysis of EIB's policies and overall financing relating to the energy sector in the CEE countries and external consultants carried out the ex-post evaluation work, including field visits and reporting.

1.2. Energy sector and policy trends in CEE Countries in the 1990's

Since the beginning of the transition process, **energy consumption of the CEE countries¹⁸ has fallen sharply** (-24% in gross inland energy consumption since 1988). The evolution of energy demand has varied widely between the countries. Energy consumption per unit of GDP, which was among the world's highest before 1990 (2 to 4 times the OECD average), has also decreased substantially. This is a consequence of the economic reforms and recession, which led to output falls, especially in energy intensive industries, and more efficient use of energy in general. Given the dramatic structural changes in the national economies, assessment of future energy demand developments was a particularly difficult task at the beginning of the transition. It was, therefore, a key issue in discussions with CEE energy experts in the preparation of investment projects. The majority of experts were convinced that energy demand would decrease, or at least not increase as in the past, because new investments and higher energy prices would lead to higher energy efficiency and thus disconnect the growth of energy demand from economic growth. CEE experts were, however, in general too optimistic on demand growth.

The energy systems of the former socialist countries (Comecon) were closely integrated, creating strong interdependencies in the region. The former Soviet Union was the main supplier of

¹⁸ This region includes the following countries: Albania, Bosnia-Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia and Yugoslavia.

energy to the CEE countries, mainly in the form of gas and oil. Therefore, at the beginning of the transition, an important policy objective in these countries was to integrate their energy systems with the Western European systems and diversify energy imports, with the aim of reducing their dependence on the former Soviet Union. Another significant characteristic of the energy balance in several of these countries is the large percentage of solid fuels, often produced by high-cost subsidised mines. Solid fuels represented 47% of gross inland energy consumption in 1997 for the CEE countries as a whole, compared with only 16% for the EU. Solid fuel consumption is mainly concentrated in Poland, Czech Republic and Bulgaria.

Under the former socialist system in the CEE countries, energy supplies (electricity, heat, gas, etc) were heavily subsidised. During the 1990s the CEE countries had to undertake the difficult task of raising energy prices and reducing subsidies so that the energy sector could become financially viable. Energy subsidies have been widely reduced or eliminated. However, in several countries electricity and gas prices are still kept low and tariffs are distorted (low prices to households cross-subsidised by high prices to industrial consumers).

The former state-owned companies in the energy sector have been fundamentally restructured. In the late 1980s, energy companies (often managed as ministries or ministerial agencies) were vertically integrated covering all aspects of the energy sub-sector, production of energy, transportation and distribution, including engineering companies and equipment manufacturing plants. The reforms introduced proper legal frameworks (energy laws, regulatory systems, etc), gradually created competitive structures, and shifted from public ownership to various types of private ownership. However, both the enthusiasm for such reforms and the specific transition process adopted varied substantially across the region.

Before the transition process began, planning and preparing for new investment projects in CEE countries differed substantially from practice in Western countries. The preparation of investment projects concentrated on technical aspects, while little weight was given to market issues (demand, pricing, etc), keeping costs under control and financing. Most projects were planned on the assumption that demand would continue to increase as under the socialist planning system, and the aspects of rehabilitation, modernisation, and efficiency improvement in general, were not given high priority. Under the circumstances and with the different approaches followed by CEE countries, project identification and appraisal was also a difficult exercise for the EIB, particularly at the beginning of the transition process. Furthermore, competitive bidding procedures had generally not been applied in these countries and there was therefore, not surprisingly, reluctance in the early 1990s to accept and adopt competitive bidding practices.

High energy intensity, combined with the absence of adequate environmental control equipment, had led to acute environmental pollution problems in the energy related activities, particularly atmospheric pollution. However, over the years the decline in energy consumption and the efforts undertaken by these countries to improve environmental performance has led to a significant decrease in pollution levels. Nonetheless, although there is now broad agreement among CEE countries on the importance of environmental protection, the detailed measures to be taken and the economic resources to set aside for this objective are still debated. Environment was already a major concern for the projects started in the early 1990s.

1.3. EIB Financing of Energy Projects in CEE Countries since 1990

EIB lending to the energy sector in the CEEC amounted to 1.5 bn EUR over the period 1990-2000. This represented 11% of EIB's overall lending in CEE countries. 97% of the financing to the sector was granted as individual loans for relatively large projects or programmes (covering 26 individual operations), whereas financing through global loans to smaller projects or programmes only accounted for 3%. Five countries absorbed about 92% of the energy lending during this period: Hungary, (29%), Czech Republic (17%), Slovak Republic (16%), Poland (15%) and Romania (15%). Since mid-1990's energy financing has increased significantly: from 50 MEUR/year on average in 1990-1994, to 210 MEUR/year on average in 1995-2000. The size of the individual loans varied from 3.5 MEUR to 200 MEUR.

Five types of projects represent the bulk of the financing to the energy sector:

- Rehabilitation of the existing lignite/coal power stations (24% of total financing) in all cases implying a substantial improvement in the environmental performance of the plants;
- Modernisation of oil refineries (mainly conversion units) and oil products distribution (18%);
- Upgrading and extension of gas storage and gas grids (18%);
- Construction of CHP plants (most often based on natural gas), in some cases including modernisation of the district heating networks (17%);
- Improvement and extension of electricity grids (14%).

2. Performance of the Evaluated Projects

Information presented in this section corresponds only to the 8 projects evaluated. Therefore, the conclusions must be considered with prudence and cannot necessarily be taken as representative of the portfolio. Table 2 summarises the main findings: positive points, weaknesses and EIB contribution.

2.1. Project Implementation

Technical Design and Specifications

All projects were, with minor changes, implemented according to the technical descriptions¹⁹ of the finance contracts. The few technical changes were mainly caused by inadequate initial design, for example due to overestimation of demand and hence of capacity; or by cost considerations when, for example, during implementation it became apparent that savings could be made without jeopardizing project operations. In two cases it was possible to include additional components into the project because the project was realised at a lower cost than initially planned.

As a result of the appraisal, in five projects additional studies or investigations were requested by the EIB to improve certain aspects of the project, mainly relating to the commercial operation. In two of these cases the studies requested were not carried out.

Implementation Time

When comparing planned and actual completion dates, it is apparent that **the implementation planning entailed problems**, although delays were not excessive considering the special situation of the energy sector in the CEE countries during the first half of the 1990s. Only two projects were completed on time. Otherwise, the numerous reasons for delays were linked to: financing problems including guarantee negotiations, restructuring of ownership, revision of project scope, insufficient project preparation, procurement or import problems, permits and authorisations, and the complex nature of the project.

¹⁹ There were substantial differences in the level of detail of the technical descriptions, which at times made it difficult to precisely appreciate whether the project was realised according to the initial specifications.

Table 2: Main points identified in the 8 evaluated projects.

Project	Project's Main Problems/Weaknesses	Project's Strong/Positive Points	EIB Contributions/Value Added²⁰
1) Power grid	2 years delay.	Positive impact on EU energy policy objectives. Support for inter-connection to UCPTTE system. Load management sub-project promotes energy saving	Private loans not available. Flexible adjustment of contracts.
2) Gas supply	2.5 years delay and 20% cost overrun. Gas demand lower than forecast.	Significant element in national energy supply; positive contributions to environment.	EIB covered only 8% of cost in co-financing with IBRD, which did most project preparation and appraisal.
3) Power Plant Rehabilitation	6 years delay and 50% cost overrun. Electricity demand lower than forecast. Low tariffs. Atmospheric pollution is still relatively high.	Emergency project; economic viability acceptable. Reduction of atmospheric pollution	Significant guidance on procurement and environmental aspects; least-cost study requested and realised; Co-financing with IBRD, private loans not available.
4) Combined Heat/Power Plant	1 year delay. Public opposition to project located in densely populated area. Heat demand far below forecast.	Modern technology in the country. Low air pollution emissions.	Flexible adjustment of contracts in support of sector/company restructuring.
5) Gas storage	2 years delay.	Internationally competitive and cost efficient. Successful financing. Opening international markets for the country.	Reorientation of the project from a purely national scope to an international scope. Support with long-term sales contracts
6) Cogeneration plant	Technology chosen was not least-cost solution from economic point of view.	Modern, clean coal-firing technology meeting requirements for electricity supply reliability and security.	EIB covered only 8% of cost, remainder funded from private sector sources.
7) Gas transport	Gas demand well below forecast (less than half than originally expected) and slow consumer connection rate.	Major part of national gas supply system.	EIB requested further studies on future demand and environment. Only the last was carried out.
8) Power Plant modernisation	1 year delay and about 25% cost overrun. Cooling tower required to avoid environmental penalties or operational constraints but financing not available.	Modern, cost efficient and environment friendly.	Close monitoring but weak financial situation not yet restored.

Source: Consultants' synthesis report.

²⁰ In all cases the Bank contributes significantly to reducing borrowing costs. It also provides guidance on financial, procurement, environmental and market issues, which is more or less substantial depending on the project.

Procurement and Tendering Procedures

For seven of the eight projects, international competitive tenders were required by the EIB in accordance with standard procedures, which were new for most of the promoters. The application of international tendering procedures, especially for the early projects up to 1993, was not without complications. In one case the quite complex procurement procedure led to serious delays in the project implementation. For three projects international consultants were recruited to provide assistance with procurement, but this was not always readily accepted by the borrowers.

Despite the problems, the EIB's requirements for competitive procedures were justified: four projects benefited from cost savings due to the competitive procurement and additional project components could be introduced.

Project Cost

In five cases the planned project costs turned out to be similar or lower than initially estimated (such reductions were basically due to good project management, including application of international tendering procedures). However, for the other three projects the final cost was significantly higher than planned. One of these projects was extremely complex (a comprehensive modernisation of the entire national natural gas sector), for which reliable project studies had not been definitively settled at the date of project start. In another case specifications were changed after the project start, to which were added delays in project implementation due to financial problems of the borrower. Finally, in the third case, cost increases were due to serious institutional weaknesses resulting in delays of project implementation, insufficient project development and management, as well as lacking financial planning.

2.2. Project Operation

Technical operation was generally in line with the planned specifications, with only minor problems in the start-up phase. These were solved although sometimes entailing cost increases. However, commercial operation performance was lower than initially foreseen in six cases. Out of these six, three projects had a significantly lower than planned efficiency, being operated below design capacity. This was due to insufficient demand as further discussed in the following section. The remaining two projects showed a significantly better performance than planned. This was basically due to prudent technical project development and management.

Energy Demand and Market Development

The EIB demand projections were generally prudent. In most cases the promoters wrongly expected a much higher demand than the EIB. In some countries the economic recession led to lower demand developments than even the EIB had expected (two projects).

Four of the eight projects were thus severely hit by a lower than forecast energy demand, causing problems for project operations (and in certain cases implementation): overcapacity, sub-optimal utilisation and unsatisfactory efficiency were the result in all these cases.

For two projects related to power plant rehabilitation, the decrease of electricity demand did not, however, affect project operations because the rehabilitated or new units were operated on a priority basis.

Energy Prices

The low – and distorted - energy tariffs in CEE countries constituted a major problem in the early 1990s, and for social/political reasons it was difficult to increase prices rapidly to a level covering the cost of supply. Over time, however, in four of the six countries, prices have increased and are now in line with the economic cost of supply. In the other two cases the low and distorted tariffs created some financial problems for the projects involved: implementation delays and a financial profitability lower than expected initially.

To overcome the tariff problem, the EIB imposed the inclusion of clauses in the finance contracts providing for a revision of energy tariffs. Even so, the tariffs were insufficiently adjusted in the two cases mentioned.

Institutional Aspects

There were many institutional changes in the energy sector during the 1990s and **most of the projects went through difficult periods of restructuring and institutional reforms**. The process is now well advanced in some countries. Four projects were directly impacted by changes in ownership. Three cases concerned privatisation in full or in part, including significant organisational changes. In the other four cases the national electricity sector has been significantly restructured, but remained state owned.

2.3. Economic and Financial Performance

In general, the EIB's appraisal of economic/financial performance of the investment projects and of the borrower was professional and was confirmed by project outcome at later stages. The methodology adopted for the appraisal, and for project completion reporting (PCR), comprises three aspects:

Economic performance of the project: The analysis uses standard economic cost-benefit analysis, and attempts to determine whether the project presents a least-cost alternative for the country. The economic performance is a key criterion in the project appraisal.

Financial performance of the project: Market prices or tariffs are used as basis for calculations. Therefore, the evaluation of the financial performance depends on electricity and gas prices in the country considered, which at the time of project appraisal were normally very low.

Financial performance of the promoter: The analysis concentrates on the latter's ability to finance the project and to repay the loan.

The assessments of the economic viability was made by determining the rate of return on the investments or by comparing specific production costs with the cost of alternative solutions, considering international market prices.

- Economic Performance: Two projects presented an economic performance equal to or better than expected at appraisal. In three other cases, although not wholly unsatisfactory, the economic profitability was lower than expected due to significantly higher investment costs. Finally, in the remaining three projects, economic performance is clearly unsatisfactory at present. For each of the three, the relevant risks were identified at appraisal. In one case heat demand decreased dramatically compared with forecasts and the combined heat and power plant in question could not, therefore, be operated at optimal capacity. Secondly, for an industrial CHP unit a coal-based technology was selected, which was not the least-cost option in comparison to a gas alternative. This was made clear at appraisal, but the promoter considered the coal option to provide higher security of supply than the alternative gas option. Thirdly, due to significantly lower than expected gas demand (by 2005 less than half that initially expected), new pipeline sections in a comprehensive gas project were used at low load. The risk of a lower demand than initially expected was detected at appraisal, and a market study to evaluate the

potential for natural gas in district heating was requested in the EIB's finance contract, but was not carried out.

- Financial project performance: Despite tariff increases, financial performance was disappointing in four projects: for two projects due to low capacity utilisation, and for two others due to low electricity prices.
- Financial situation of the company: In most of the countries energy prices were increased in real terms during the 1990s, enabling the energy companies to cover their operating costs and to undertake the necessary modernisation and capacity expansion investments. For two projects, the countries concerned did not adapt energy prices and this created problems for the projects.

2.4. Future Operation and Sustainability

Six of the projects were directly operated and managed by the main energy companies in the respective countries; special purpose companies operated the two other projects. Given that all the projects can be operated in economic conditions (in terms of technical operation and marginal cost of production) and given the financial strength of the owners, **it can be reasonably expected that all projects will be operated until the end of their technical lifetime.**

2.5. Environmental Impact and Contribution to Environmental Policy

As was observed for energy projects in the Union, environmental considerations were directly or indirectly a key element in the design and implementation of all the projects.

The projects were not primarily aimed at environmental protection, but all comprised positive environmental aspects:

- Direct environmental impacts: the four power plant rehabilitation projects are leading to a reduction of atmospheric pollution because they replaced outdated plants. Two projects are examples of modern clean power technologies.
- Indirect environmental benefits: in the three gas infrastructure projects, natural gas replaces more polluting fuels; in one country coal was replaced and in another country heavy fuel oil. The electricity load-management project promoted rational use of electricity.

The projects were realised and implemented according to national environmental standards, which are close to EU standards. **For some projects additional environmental studies were requested to guarantee that their realisation and operation reduced environmental impacts.**

3. Impact, relevance and effectiveness of the EIB operations analysed

3.1. Contribution to EU Energy Policy Objectives

In the early 1990s the EIB received a special mandate for lending in CEE countries to support the EU policy objectives for these countries. In the beginning of the 90s, emergency relief and transition assistance were the dominant objectives. The following is a summary of the evaluation results.

- **Support to CEE countries during the transition period:** all projects provided support in this respect. The projects were carefully planned and implemented, addressing important aspects of the energy sectors in the respective countries.
- **Reliable and secure energy supply at minimal cost:** all projects were conceived as and still are important parts of the energy systems. The capacity utilisation of two projects is still not satisfactory, although this does not deprive them of importance. However, at the outset one project was not the least cost option to cover demand.
- **Protection of the environment:** all projects have positive environmental impacts and most of them reduce pollution levels in a significant way. They were all built in conformity with national environmental standards, which were generally revised during the 1990s to approach EU standards.
- **Market oriented energy policy:** the reform of the energy sector and the introduction of a market oriented energy policy was an integral part of several projects, and the EIB's participation ensured that the projects contributed to this objective, not only through the investment itself but also - and often more so - by the project management, procurement procedures, additional studies and obligations stipulated in the finance contract. Finally, the procurement procedures based on competitive tendering introduced innovative project management and transparency.
- **European integration:** in two cases the projects belong to the category of European energy networks or trans-boundary cooperation. But several projects include aspects which do promote European co-operation and integration, as for example power plant rehabilitation including national environmental standards similar to those of the EU; a feasibility study on the requirements in a CEE country for the UCPTE interconnection; reorientation of a gas storage project with initially a purely national scope, to one offering substantial capacity to EU companies.

3.2. EIB contribution

Project appraisal and monitoring

EIB was in general more cautious - and far more correct - than the national energy experts with regard to energy demand assessment. Its economic analysis, the key-criteria in project assessment, also proved a valid tool. The use of border/international prices reflecting cost of supply, made it possible to anticipate developments towards a market economy. EIB identified weaknesses and risks for future operations in six of the projects (lack of strategic planning or low tariffs, for example): in all those cases appropriate clauses were included in the finance contract.

Although formal assistance to promoters in formulating the concept or of developing the projects was not within its responsibilities, **the EIB did in some cases contribute actively, mainly by way of recommendations or requests to carry out additional studies** (one was supervised by the EIB).

Monitoring was mainly directed towards controlling procurement and disbursement conditions in the finance contracts and more or less regular monitoring procedures were applied in all but one of the eight cases Various problems were detected through the monitoring process requiring the EIB to intervene. In addition, further studies were requested, the monitoring of which required considerable efforts.

Financing and Subsidiarity

In all cases the Bank's financing contributed to reduce overall borrowing costs significantly, but the advantage of borrowing from the EIB decreased over time. The EIB was the only external lender in two cases; it co-financed with the IBRD in three other projects, and for the remaining three projects it provided loans in parallel with other external lenders (commercial banks, international institutions or the EU Phare Programme).

In all but one case it would have been difficult to finance the projects without the EIB's intervention. Two projects would probably not have been realised or would, alternatively, have been delayed or reduced in scope. Only in one case could the project have been financed totally by commercial banks. In that case negotiations with the EIB were initiated when the project was already well advanced.

Institutional and Environmental Issues

The EIB demonstrated a flexible attitude in cases involving institutional reform and restructuring. It cooperated with borrowers, making adjustments to the finance contracts whenever necessary. A change in ownership due to privatisation occurred for two projects, in which cases the new, private owners completed the projects. In the case of a gas project there was a change in ownership with a foreign gas company joining the venture.

Environmental considerations were an important issue in the discussion with the promoters on possible EIB financing. The Bank analysis used as a reference the EU environmental legislation. Environmental matters were examined closely in all projects. In two cases, additional environmental studies were requested. In a power plant rehabilitation project, the Bank would not have financed the project if the project had not accepted to install additional antipollution equipment.

Cooperation with other Financing Institutions

No general problems were observed in the co-operation with other financial institutions, but on three occasions there was disagreement in substance on essential issues such as electricity demand forecasts; levels of acceptable power plant emissions; and specifications of technical equipment. The EIB maintained its independent positions in all cases.

4. EIB Strategies, Policies and Procedures

4.1. Project selection

The eligibility rules for energy projects in the CEE countries are the same as for the projects in the EU (see section for the energy projects in the EU). Under these rules practically all the investment projects in the energy sector of the CEE countries were potentially eligible for Bank financing.

To develop its activities in the energy sector the Bank relied mainly on the existing preparatory work for the first analysis of possible projects to be financed. Only when there was limited background information available or for the weaker operators, the Bank asked the promoters for the realisation of general studies before getting involved in a specific project. Taking into account the difficulties in finding “good” projects at the beginning of the transition process, this approach seems appropriate to obtain quick results and to get involved in the sector of the various countries. In addition, this approach, which is similar to the one adopted for the EU, was welcomed by the promoters. Despite this pragmatic approach **the internal preparatory work for many of the projects was substantial and was realised with very limited staff.** Because of this limitation the lending volume started to increase significantly only after the mid-1990s. **As for the Union there was limited strategic framework/sectoral analysis to guide the activity in the energy sector.**

In several cases, the Bank got involved in a possible project at a relatively advanced stage in the project preparation and this significantly limited its impact on the project concept. Sometimes this created problems later on. For instance, the design in some projects was not flexible enough to adjust the project to market developments.

All projects financed by the EIB should be viable in economic, financial, technical and environmental terms. **There is substantial evidence that economic and environmental viability, as well as acceptability of the procurement practices adopted by the promoter, played a key role in the project selection.** Concerning the economic viability and strategic framework, the Bank gave preference to rehabilitation of existing facilities in relation to new ones and to low capital investment alternatives and flexible designs that allow the project to adapt to the expected substantial changes in the economic environment. This is reflected in the type of project financed by the Bank, mainly modernisation or rehabilitation of existing facilities. Concerning environmental and procurement practices, the EIB verifies that projects comply with national laws and EU legislation was used as a reference or “benchmark”. In some cases, the acceptance of EU practices on procurement and environment was an important selection criterion, especially in the case of environmental practices.

Taking into account the significant changes in these countries in the 1990’s, **the analysis of the projects’ performance indicates that the selection process has allowed, in the majority of cases, for the selection of good quality projects.**

The economic and regulatory background, as well as the energy market in most of these countries is quickly converging with the situation in the EU. Therefore the Bank’s approach in selecting the projects to be financed needs adjusting in the same way as proposed for the EU. It is now time to establish a more detailed prioritisation of the activities in the energy sector in order to maximise the value added of the Bank’s intervention. The progress realised in CEE countries has allowed them to develop their financial markets and to obtain access to international financial markets in good conditions. Therefore, as it has happened in the Union, the financial benefits of borrowing from the EIB have, in general decreased. In addition, the Bank’s strategy should take into account that CEE countries present significant differences in transition process advancement.

4.2. Project appraisal

The general approach followed to appraise the energy projects in the CEE countries was the same as for the projects in the EU (see section A). However, on average, the appraisal input was substantially larger in the CEE countries than for similar projects in the EU. EIB’s appraisal approach was flexible, focusing on the essential issues, and promoters were not required to submit heavy loan application dossiers. **Despite the limited resources dedicated to appraisal, the EIB’s assessments proved efficient and, overall, correct.** However, risks involved and measures to mitigate them were not always analysed in detail.

The appraisal process should be used to steer the investment decisions in a direction that maximises the support of EU objectives. **In some cases, the promoters’ future investment programmes were not systematically reviewed or the Bank intervened too late in the project preparation to influence investment decisions.** Also, all investment programmes should be analysed in the context of the programme and not by isolating only parts of it, as is often the case. Unsatisfactory economic

performance was observed in three cases: these had significant problems, especially commercial. This issue should have been addressed before loan signature.

Strengths and weaknesses of the projects identified at appraisal were not always systematically discussed and, when possible, agreed with the promoters. Problem areas were often identified during project appraisal and special conditions were introduced in the finance contract, but the respective conditions were in some cases not enforced during project implementation.

In view of the importance that market aspects proved to have for most of the projects, the analysis of these issues during appraisal was too limited for some of the projects. The trend towards deregulation of all energy markets in CEE countries, in line with EU developments, will reinforce the importance of market issues in the future.

4.3. Project follow up

The project follow-up system for CEE countries is the same as for the EU. At the time when the evaluation was realised, PCRs were available for five of the eight projects. The PCRs are normally desk studies based on the material provided by the promoter and only in one case the PCR was supported by a project visit. **The PCRs consulted were made on time and presented a good analysis of the borrowers' financial performance; but the assessment of the technical/economic aspects could be improved.** The completion reporting and associated ex-post analysis were to some extent disadvantaged by the absence of a direct and systematic link to the appraisal: the key parameters to be monitored and recorded for the completion reporting were not clearly identified and agreed with the promoter at the time of project appraisal. Therefore, to ensure proper enforcement, it seems necessary to clearly specify monitoring requirements in the finance contract.

Project progress reports to be submitted by the borrower were apparently not always produced. Similarly, internal file notes and reviews, which are frequent and important tools in EIB's monitoring process, did not appear as systematically as could have been expected in the files for the eight projects. Finally, the project archives also seemed to be incomplete in that complementary studies relating to a given project were not always available.

THE EUROPEAN INVESTMENT BANK

The European Investment Bank (EIB) is owned by the fifteen European Union (EU) Member States and has its headquarters in Luxembourg. It supports EU policies on a self-financing basis, raising its resources on the world's capital markets for onlending to sound capital investment projects that promote the balanced development of the European Union.

Set up in 1958 by the Treaty of Rome, the EIB has its own administrative structure and decision-making and control bodies (Board of Governors - usually the Finance Ministers of the Member Countries - Board of Directors, Management Committee and Audit Committee).

As a major international borrower, which has always been awarded the highest "AAA" credit rating by the world's leading rating agencies, the EIB raises large volumes of funds on fine terms. It onlends the proceeds of its borrowings on a non-profit basis.

The volume of the EIB's operations has grown steadily and the Bank is today one of the largest financing institutions of its kind in the world. While the bulk of its loans are within the European Union, the Bank has also been called upon to participate in the implementation of the Union's development aid and cooperation policies through financing for the benefit of some 120 non-EU countries. It therefore supports:

- economic growth in the African, Caribbean and Pacific States and the Overseas Countries and Territories, as well as in the Republic of South Africa;
- a stronger Euro - Mediterranean partnership;
- preparations for the accession of the Central and Eastern European Countries and Cyprus;
- industrial cooperation, including the transfer of technical know-how, with Asia and Latin America.

The EIB began carrying out ex-post evaluations in 1988, mainly for its operations in non-EU Member Countries. In 1995, the Bank established an Evaluation Unit to cover operations both inside and outside the Union. Ex-post evaluations take a thematic approach and are intended for publication. To-date the bank has published:

1. Performance of a Sample of Nine Sewage Treatment Plants in European Union Member Countries (1996 - available in English, French and German)
2. Evaluation of 10 Operations in the Telecommunications Sector in EU Member States (1998 - available in English, French and German)
3. Contribution of Large Rail and Road Infrastructure to Regional Development (1998 - available in English, French and German)
4. Evaluation of Industrial Projects Financed by the European Investment Bank under the Objective of Regional Development (1998 - available in English, French and German)
5. An Evaluation Study of 17 Water Projects located around the Mediterranean (1999 - available in English, French, German, Italian and Spanish).
6. The impact of EIB Borrowing Operations on the Integration of New Capital Markets. (1999 – available in English, French and German).
7. EIB Contribution to Regional Development A synthesis report on the regional development impact of EIB funding on 17 projects in Portugal and Italy (2001 – available in English, French, German, Italian and Portuguese).
8. Evaluation of the risk capital operations carried out by the EIB in four ACP countries 1989-1999 (2001 - available in English, French and German)
9. EIB financing of energy projects in the European Union and Central and Eastern Europe (2001 - available in English, French and German)

These reports are available from:

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