PE04-276S

Special Study

Power Sector Review

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Project Evaluation
Department

European Bank
for Reconstruction and Development

POWER SECTOR REVIEW

Preface

This Special Study

This power sector review assesses the EBRD's power sector portfolio. The review was carried out by Arthur Dennis Long, Senior Environmental Evaluation Manager, Project Evaluation Department, EBRD with support from Tim Peara, an independent consultant.

Approach and findings

The methodological approach of this review is in line with PED's *Evaluation Policy Review* 2004. The existing and past portfolio of power projects consists of 57 projects. The study population consists of a total of 21 projects.

Overall the sector performance is rated as *Partly Successful*. The sector scores *Satisfactory/Good* on transition and *Good* on environmental impact, but less well on the financial performance of projects. This is attributed to the large percentage of state sector generation projects located in early and intermediate transition countries.

A response to this report from EBRD Management is contained in Appendix D.

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ABBREVIATIONS

AEOR	Annual Evaluation Overview Report
EBRD	European Bank for Reconstruction and Development
EE	Energy Efficiency (EBRD**)**
EI	Extractive Industry
EPCM	Engineering Procurement Construction Management
ESCO	Energy Services Support Companies
EU	European Union
FI	Financial Intermediary
GDP	Gross Domestic Product
IAEA	International Atomic Energy Agency
IFI	International Financial Institution
IPPs	Independent Power Providers
IRR	Internal Rates of Return
MEI	Municipal and Environmental Infrastructure (EBRD)
MTBL	Modified Triple Bottom Line
OCE	Office of the Chief Economist (EBRD)
OPER	Operation Performance Evaluation Review
OVI	Objectively Verifiable Indicators
PED	Project Evaluation Department
PIU	Project Implementation Unit
PMU	Project Management Unit
SME	Small and Medium-Sized Enterprises
TIMS	Transition Impact Monitoring System
TC	Technical Cooperation
TI	Transition Impact

DEFINED TERMS

the Bank	European Bank for Reconstruction and Development
PED	Staff and Contractors of the Project Evaluation Department

EXECUTIVE SUMMARY

The power and energy utilities sector receives a significant amount of EBRD financing and makes a valuable contribution to the transition to market economies. Regional development, industrial growth and job creation depend on reliable and inexpensive energy supplies. Within the EBRD's countries of operations, state-owned power and energy systems were well established but tended to be out-dated and in need of refurbishment. Unmet demand was less of an issue, particularly after the downturn in economic growth that all the countries of the region experienced in the early 1990s.

The Bank's existing portfolio heavily relies on state sector projects. In many countries the state sector remains the only option for the Bank to invest in power and energy. As a result, the Bank has accepted lower returns to focus on projects that positively impact the transition process and the environment. To date, the Bank has invested in multiple projects in a few countries, while implementing just a few projects in others. Looking forward, the Bank may consider investing more of its power and energy sector resources in a few select countries to maximise transition impact.

Although the Bank has focused investments in the early and intermediate countries, the results have been more promising in advanced countries. If the Bank is to remain focused on early and intermediate transition countries, in line with the overall strategy, it may wish to develop an alternative model for engagement in the power and energy sectors of these countries. One approach would be to increase the involvement of non-sovereign and private sector sponsors. In addition, high fossil fuel energy prices should make alternative sources of renewable energy economically more viable and ease the shift towards full privatisation.

The Project Evaluation Department (PED) prepared this study to assess the EBRD's overall performance in the power and energy utilities sector. The assessment is based on PED reviews of individual projects and on sector objectives and expected sector challenges defined in the Bank's Energy Policy. The EBRD's overall performance in the sector was rated *Partly Successful*. This rating is largely due to the substandard performance of generation projects; by comparison, transmission and distribution projects achieved significantly better results. The Bank scored *Good-Satisfactory* for transition impact and *Good* for environmental impact, but *Satisfactory-Marginal* for both efficacy (achievement of policy objectives) and efficiency (sound banking). Of the Bank's individual projects, 52 per cent (or 48 per cent of volume) were rated *Successful* or better. For transition impact, 47 per cent had a *Good* or better rating, while another 38 per cent rated *Satisfactory*. In addition, 63 per cent achieved a *Good-Satisfactory* rating and 10 per cent achieved an *Excellent* rating for environmental performance.

The Bank needs to take a number of steps to improve its performance in the power utilities sector. It should put greater emphasis on regulatory reform and address sector restructuring and unbundling. The Bank should also continue and expand its energy efficiency programmes and diversify its generation portfolio, emphasising alternative

sources of renewable energy. Lastly, it should incorporate other Bank-wide power and energy operations, such as captive power plants and investments by financial intermediaries (FI), into the sector policy.

Six broad recommendations emerge from this study: (1) the update of the Bank's Energy Policy needs to reflect the reality of higher fossil fuel energy prices, address the poor performance of generation projects, expand support for energy efficiency and establish intellectual leadership on the types of regulatory structures appropriate for the power sector in the Bank's countries of operation; (2) the Bank must continue the shift from supporting state sector projects to promoting privatisation and opportunities for non-sovereign and private sector sponsors; (3) the EBRD should continue to focus on early and intermediate transition countries, but also support renewable energy in advanced countries; (4) the Bank should take a country-wide strategic perspective; (5) the EBRD should diversify its renewable energy portfolio in line with its environmental mandate; and (6) there should be direct and explicit links between the new Energy Policy and the Bank's 2003 Environmental Policy.

A response to the findings of this review from EBRD Management is contained in Appendix D.

Getting the policy environment right must be a pre-condition to successful project implementation. The Bank needs to work closely with donors to ensure the effective use of technical cooperation funding and work closely with host governments in the region to implement critical changes in policy and further the Bank's transition mandate.

1. INTRODUCTION

1.1 BACKGROUND TO THIS SECTOR REVIEW

This review is an evaluation of the European Bank for Reconstruction and Development's past performance in the power sector. It has been carried out by the Bank's independent Project Evaluation Department (PED). The EBRD's Energy Policies of 1992, 1995, and 2000, and the power sector projects evaluated to date, form the basis of this review. As PED only evaluates mature projects, the projects included in this review were all signed between 1992 and 2002. This review will help the Bank develop a new Energy Policy. PED has also completed a separate review of Energy Efficiency (2002) and Extractive Industries (2004),[1] both of which will also contribute to the formulation of the new policy.

Chapter 1 provides the context and background for this sector review. Chapter 2 provides an analysis of the sector rationale and describes the EBRD's power sector portfolio. Chapter 3 presents PED's evaluation findings and includes a section on power sector lessons learned; and Chapter 4 presents the conclusions and recommendations.

Power sector projects have been, and continue to form, an important part of the EBRD's energy sector investments. These projects comprise a significant portion of the Bank's overall portfolio (see Section 2.2). Within the EBRD's countries of operations, power and energy infrastructure existed, but tended to be older, obsolete and in need of refurbishment. Unmet demand was less of an issue, particularly with the economic downturn that all the countries of the region experienced in the early 1990s. The new reality of higher fossil fuel energy prices should make alternative sources of energy economically more viable. However, this constitutes an important challenge in the EBRD's countries of operations, some of which have artificially low tariff prices.

The EBRD invests in the following power and energy sub-sectors:

- power generation
- power transmission and system operation
- power distribution
- gas distribution.

To date, no gas distribution projects have been signed although three are in the pipeline. However, the Bank is involved in gas distribution through financial intermediaries (FI) and municipal loans (see section 2.6). Also, through district heating, general manufacturing, hotels and tourism, financial intermediaries (FI) and other sectors, the EBRD may also support projects such as captive power plants and back-up generators (see section 2.6). Individually, these may be small, but collectively they may play a significant role in industrial power production. As part of this review, PED has also evaluated technical cooperation (TC) activities in the sector.

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[1]. The Extractive Industries Review and a summary of the Energy Efficiency Special Study are available on the EBRD's web site: www.ebrd.com.

1.2 OBJECTIVES OF THIS SECTOR REVIEW

The objectives of this sector review are to:

- review the EBRD's Energy Policies of 1992, 1995, and 2000
- assess whether the identified challenges were met
- summarise evaluation findings and lessons learned
- identify challenges and opportunities for the future.

This review is based on:

- completed project evaluations and TC assessments prepared by the EBRD's Banking Department and PED
- lessons learned from evaluated power and energy utility projects and TC activities.

No new project evaluations were undertaken as part of this review. This report simply compiles existing project evaluation information.

1.3 SECTOR REVIEW APPROACH AND METHODOLOGY

1.3.1 Evaluation scope

This review focuses on the *relevance* of the sector to help fulfil the Bank's mandate and assesses whether the transition challenges of the Bank's Energy Policies were met. The *efficacy* of sector operations is measured through the achievement of the policy objectives. *Efficiency* addresses project financial performance. *Transition impact* and *environmental impact* are determined based on past performance in comparison with EBRD-wide evaluation data. All of these criteria are combined to provide an overall sector performance rating (see section 3.2).

1.3.2 Approach

The power sector portfolio consists of 57 projects. Through 2004, 35 projects had reached evaluation maturity ("ready for evaluation"), while the remaining 22 were too new to be evaluated. Thus the sample from which the evaluated projects are taken represents 61 per cent of the portfolio. Of the 35 mature projects, self-evaluations have been conducted by the Banking Department on all 35 projects. From this group of 35 projects:

- 11 projects have undergone both a self-evaluation prepared by the Banking Department and an independent evaluation, resulting in an operations performance evaluation report
- 10 projects have been evaluated by the Banking Department and PED has assessed these evaluations and validated the outcomes.

The evaluated sample is therefore 60 per cent of the mature population and 37 per cent of the portfolio population. For the purposes of this review, the analysis is based on completed operations performance reports and self-evaluation assessments. In addition,

four TC related activities have been evaluated. Chapter 3 will also present data from the transition impact monitoring system on the newer projects, and overall risk data for pipeline projects, which have not yet been approved, portfolio projects, for which funds have already been disbursed and evaluated projects.

2. POWER SECTOR PORTFOLIO ANALYSIS

2.1 REGIONAL ENERGY TRENDS

To understand the EBRD's accomplishments in the sector, it is important first to understand what was happening in the sector at the time of investment. This section contains a brief summary of research both from within the EBRD[2] and from elsewhere.[3] From 1990-2000, the region experienced the following:

- initial declining gross domestic product throughout the region, with some countries making a quick turnaround by 1993-95, and the rest improving in the years following the Russian economic crisis
- an initial wave of privatisation, particularly in central and eastern Europe
- increasing tariffs (partly a function of the transition to market economies and partly as a result of privatisation), although many countries in the region still under-price electricity, essentially subsidising industry and providing a social benefit to their citizens
- a corresponding decline in energy consumption, both on a national (industrial production) and per capita (individual use) basis
- a fuel mix shift towards natural gas and away from coal and oil, with nuclear and hydroelectric power playing a small but increasing role over time
- energy demand initially declining due to the economic downturn, then continuing to decline with improved energy efficiency (partly as a function of increasing tariffs).

This was a difficult environment in which to seek new investments. The region lacked the power shortages and increasing demand that drove Asia and Latin America to support independent power providers (IPPs). After the initial wave of privatisation, there has been little development in this area. The EBRD was not a major player in the privatisation opportunities of the early 1990s in Hungary, the Czech Republic and Poland. This suggests the Bank was unsuccessful in complementing private sources of finance in these countries and lacked additionality.[4]

Figure 2.1 compares GDP to energy consumption in the countries in which the EBRD is active in the sector. This graph shows: (i) there is a correlation between energy consumption and GDP, and (ii) countries above the regression line are on average relatively less energy efficient. The mean ratio of electricity consumption to GDP (energy consumed to produce US$ 1 of GDP) is 0.54, with Hungary the lowest at 0.26. By comparison, the ratio for the United Kingdom is 0.23, for Germany is 0.24, for the

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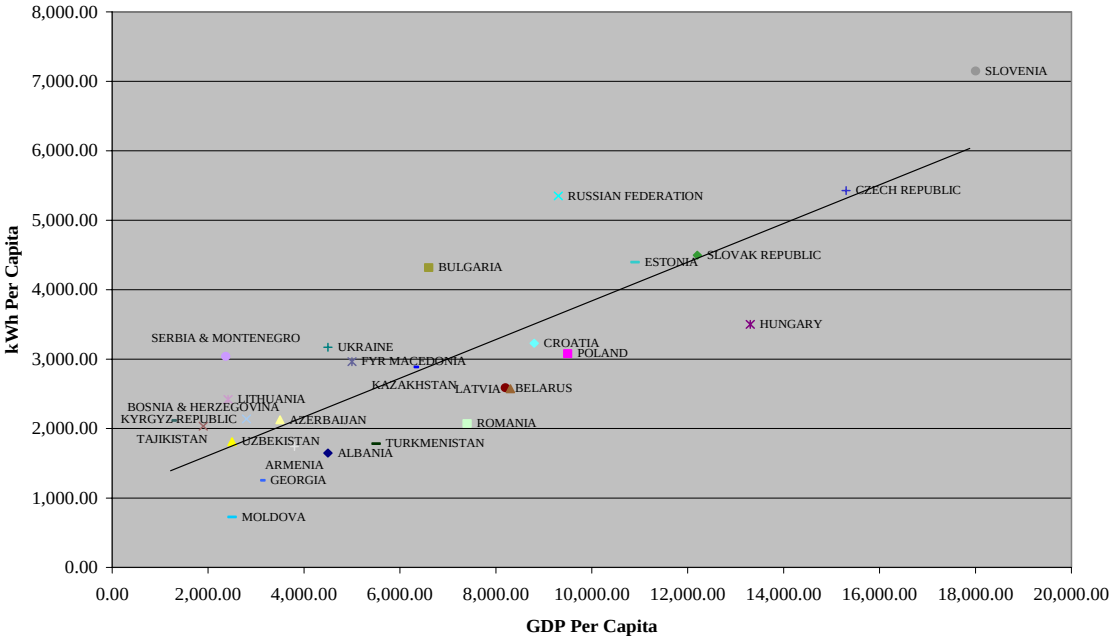
2 Jose Carbajo and Steven Fries, "Restructuring infrastructure in transition economies," EBRD Working Paper No. 24.

3 Energy information Administration, *World Energy Use and Carbon Emissions 1980-2001*, Section III: Eastern Europe and Former Soviet Union. See www.eia.doe.gov/emeu/cabs/carbonemiss/chapter3.html. This web site includes long-term graphs on the key indicators.

4 The Banking Department argues that the EBRD was not additional in these early privatisations because private capital was already available. While true, public utilities normally would be the one of the last sectors in which the Bank remains additional in a transition economy.

US is 0.32 and for Japan is 0.27. Thus, there are significant challenges *and* opportunities to better use energy for economic gain in the EBRD's countries of operations.

Figure 2.1: Comparison of energy consumption to GDP



Data source: The World Factbook, 2003

2.2 THE EBRD'S ENERGY POLICIES

The first Energy Policy was approved in 1992 and has since been updated in 1995 and 2000. The first power project was approved by the Board in March 1992. Initially the policy also incorporated natural resources (extractive industries), but a separate Natural Resources Policy was issued in 1999. The 2000 Policy is thus restricted to power and energy utilities and energy efficiency. The sector is also subject to the Environmental Policies (1992, 1996 and 2003) and various other Bank policies and procedures as appropriate (for example, procurement and public disclosure).

Table 2.1 compares the operational objectives as stated in the three previous policies. Excluding the natural resource components of the 1992 and 1995 policies, subsequent policies have focused on tightening objectives rather than changing direction significantly. Collectively, the sector objectives are best summarised as follows:

- to improve the investment and regulatory climate to support competitive energy markets
- to improve efficiency in generation, transmission, transportation, distribution and consumption of energy and to improve the quality of energy services
- to improve environmental performance, including supporting actions to address climate change
- to improve the safety of nuclear power production.

Given the Bank's mandate, the Energy Policies stress a transition towards market systems, and privatisation is an important tool in the process. PED therefore argues that

the new policy should also directly promote and enhance the role of the private sector. This sector review does not address the Bank's nuclear power activities.

Table 2.1 Comparison of previous EBRD Energy Policies

1992	1995	2000
• Enhance the efficiency of existing energy supply operations • Promote improvements in countries' security of supplies • Promote regional interconnection for economic and security reasons • Give particular emphasis to projects that help countries increase energy exports and provide additional energy supplies for the world market • Stimulate the injection of foreign capital and the introduction of commercial management techniques • Improve the environmental performance of fuel industries and energy utilities • Promote improvements in end-use efficiencies and industrial and residential energy conservation; • Assist the priority nuclear projects, in particular, by improving the safety of existing nuclear plants and bringing these fully in line with internationally accepted standards; safety considerations and economic rationale will be the guiding principles of the Bank's involvement in nuclear projects, and Bank participation will have to be determined on a case-by-case basis.	• Support and accelerate the establishment of competitive and efficiently regulated energy markets • Increase energy efficiency and cost effectiveness in both energy supply and demand • Facilitate the integration of energy markets in countries of operations • Improve sector environmental performance • Improve the safety of nuclear power plants.	• Improve the investment climate and allow the development of energy systems based on market principles • Improve efficiency in conversion, transportation, distribution and consumption of energy and improve the quality of energy services • Improve environmental performance, including support for actions that address climate change • Improve the safety of nuclear power production.

The challenges identified in the 2000 Policy, which have been valid for much of the Bank's history, are the need to address:

- high energy consumption
- high wastage at the level of the end user
- low operational efficiency and availability of power and heat generation
- high losses in the transmission and distribution of electricity, heat and gas
- inadequate tariffs in many countries
- low revenue collection
- subsidy mechanisms that are ineffective in the heat sectors
- poor environmental, health and safety management in most countries of operations
- high risk and ageing Soviet-designed nuclear power plants
- European Union accession.

2.3 PROFILE OF THE POWER SECTOR PORTFOLIO

This section provides a descriptive analysis of the Bank's power sector portfolio through 2004 (Appendix A). The purpose of this portfolio analysis is to put in context the evaluation results presented in Chapter 3. The power and energy utilities portfolio has consistently accounted for between 3 and 5 per cent of the total EBRD portfolio. Total project size for all 57 projects is €5.578 billion, of which the EBRD has invested €1.990 billion or 36 per cent of project cost. Ninety-seven per cent of the EBRD's exposure is through loans, while 3 per cent is through equity.

In presenting this portfolio analysis PED offers the following caveats and recommendation:

> The Bank distinguishes between power generation, distribution and transmission projects, and for the purposes of this report, an "other" category has been added. (This group constitutes three working capital projects, all of which were originally coded as generation projects.) Also, as noted in Chapter 1, the Bank invests in gas distribution, but to date, has not signed any projects in this sub-sector (although a few projects are currently in concept review). Thus, data in this review are divided among generation, distribution, transmission and other. Of the three "other" projects none have been evaluated so far, and therefore this category does not appear in Chapter 3.
>
> PED uses the project codes provided by the Power and Energy Utilities Team (part of the Banking Department). However, there are limitations to the use of this coding system. For this review, projects have been coded based on how a majority of the funds were spent. The existing classifications were clear and appropriate for most projects, but a few projects were re-coded. For example, one project previously considered to be a generation project is now coded as a transmission project because the investment was used equally to support transmission-related activities and a working capital facility. In addition, many utilities are integrated utilities and separating them into sub-sectors may be arbitrary and misleading. In addition, in 2004 the Power and Energy Utilities Team began to distinguish between sovereign and non-sovereign projects. [5]
>
> The purpose of this discussion and the specific example above, prior to presenting the portfolio analysis, is simply to caution the reader from putting too much emphasis on sub-sector results presented in the following sections. Both the Power and Energy Utilities Team and PED recognise the limitations of these data.

Recommendation: In the Extractive Industry Review, PED noted the need to modify the Bank's use of industry codes. It is difficult to identify all power sector components throughout the Bank's portfolio and sub-sector classifications. For example, the category of "generation" does not adequately capture multi-sector activities such as

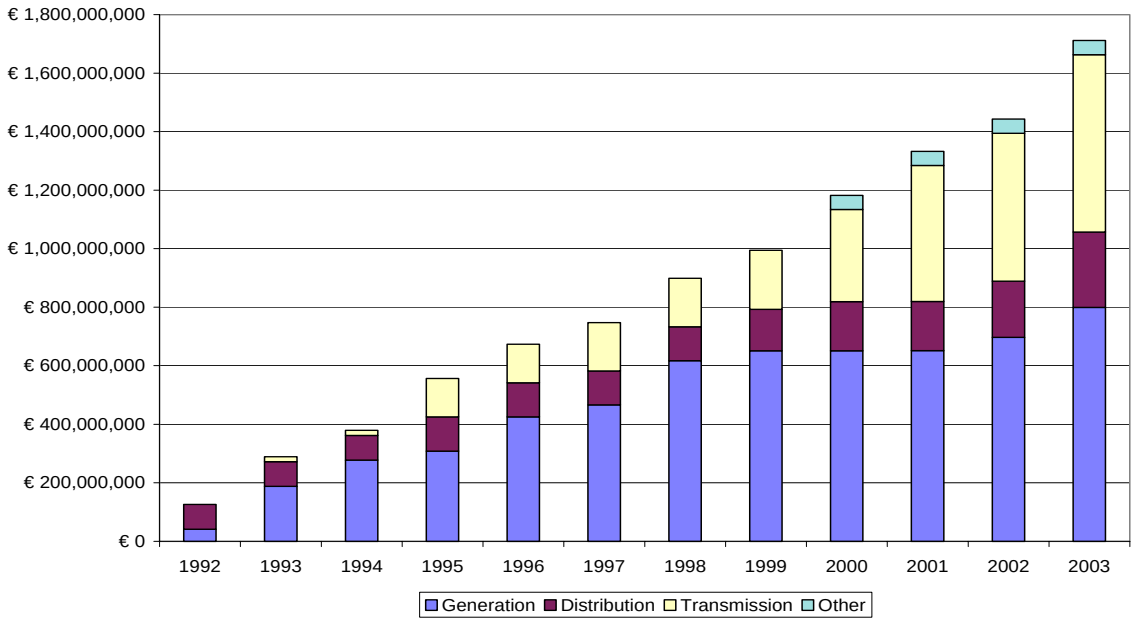
[5] The Bank defines a non-sovereign operation/project as an operation in which financing is provided to an entity that is not owned or guaranteed by a sovereign government.

projects with integrated utilities. The finding from the Extractive Industry Review is equally applicable to the power sector.[6]

- **EBRD investments in the power sector**

While the portfolio has grown steadily over time (Figure 2.2), the variations from year to year have been significant (Figure 2.3).

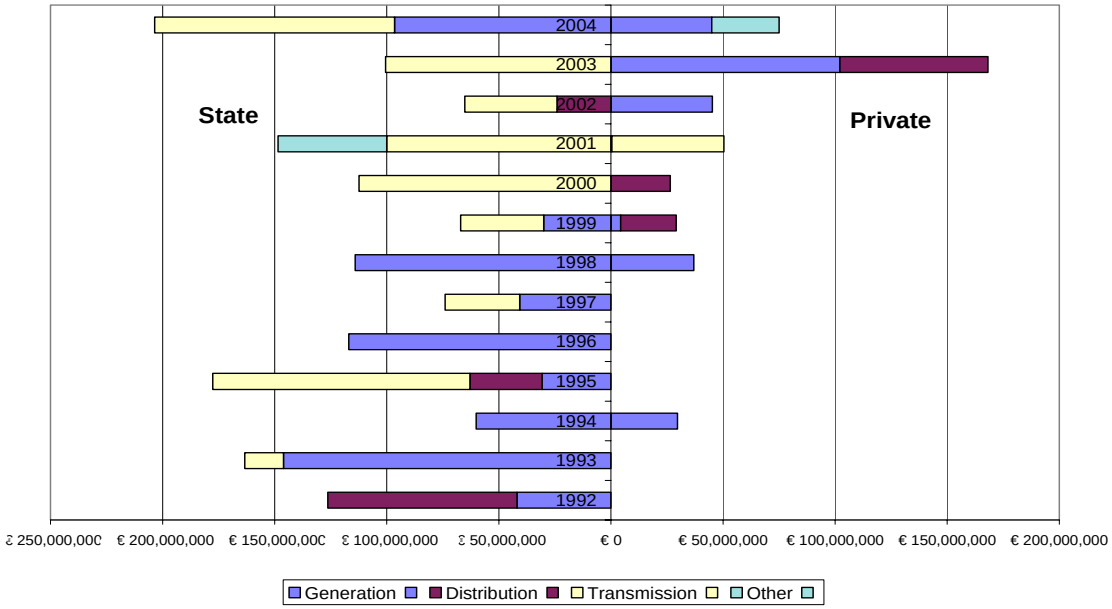
Figure 2.2: Cumulative growth of the power sector (by volume)



The portfolio is heavily invested in state sector projects, with a shift to the private sector beginning in 1998 (figure 2.3). In 2003 the majority of investments were in the private sector, but in all other years, including 2004, state sector investments have exceeded private sector investments. The significant shift towards the private sector in 2003 was due to three large projects in Bulgaria, Russia and the Slovak Republic.

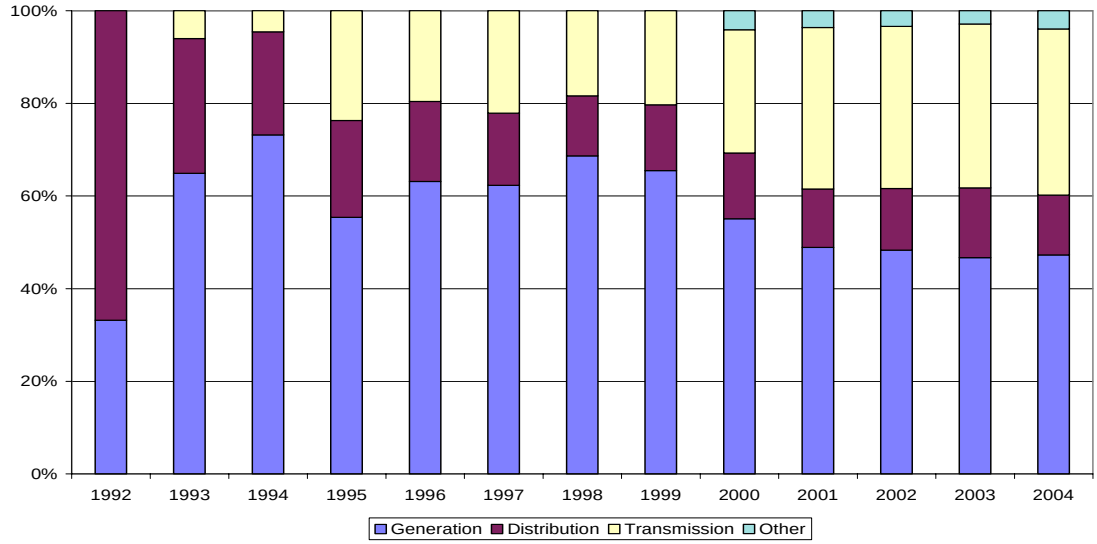
[6] PED Extractive Industry Review page 14. See http://www.ebrd.com/projects/eval/showcase/eistudy.pdf

Figure 2.3: EBRD investments in the state and private sectors



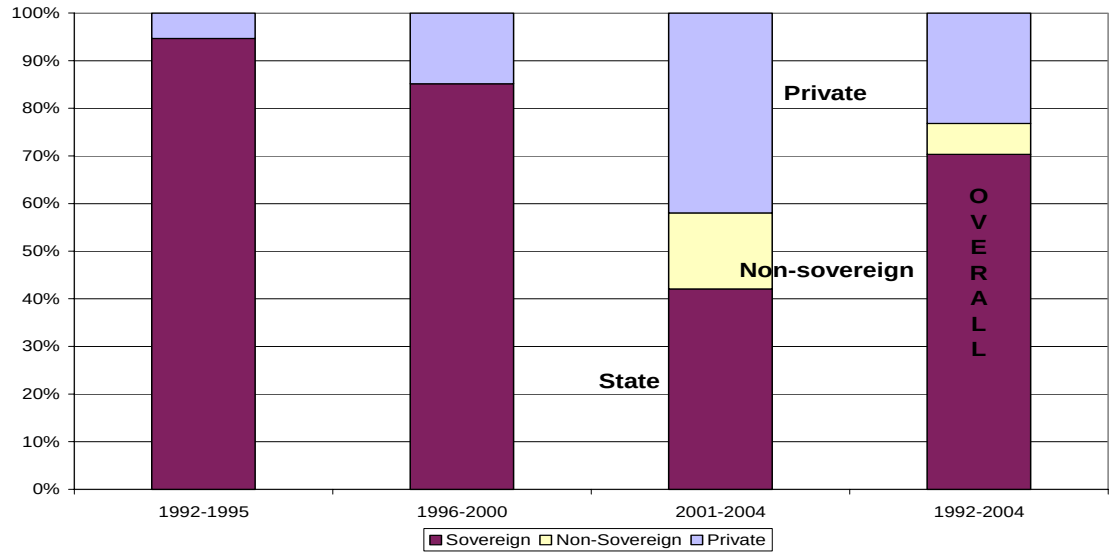
Generation projects have accounted for approximately 50 per cent of the overall sector, followed by transmission projects at around 30 per cent (Figure 2.4).

Figure 2.4: Percentage of cumulative investment by sub-sector (by volume)



The Bank also distinguishes between private and state (Figure 2.3) and, within state, between sovereign and non-sovereign. Grouping the data over the three periods under the 1992, 1995 and 2000 polices, and overall shows a shift towards the private sector. Private sector investment has increased from 5 per cent in the period 1992-95 to 42 per cent in the period 2001-04 (Figure 2.5). However, for the entire portfolio only 28 per cent by number of projects (23 per cent by volume) were classified as private sector. During the period 2001-04, non-sovereign projects first appear. The four non-sovereign projects are in Kazakhstan, Bulgaria, Russia and Romania, and were all signed in 2004. Therefore this is a very new shift in strategy.

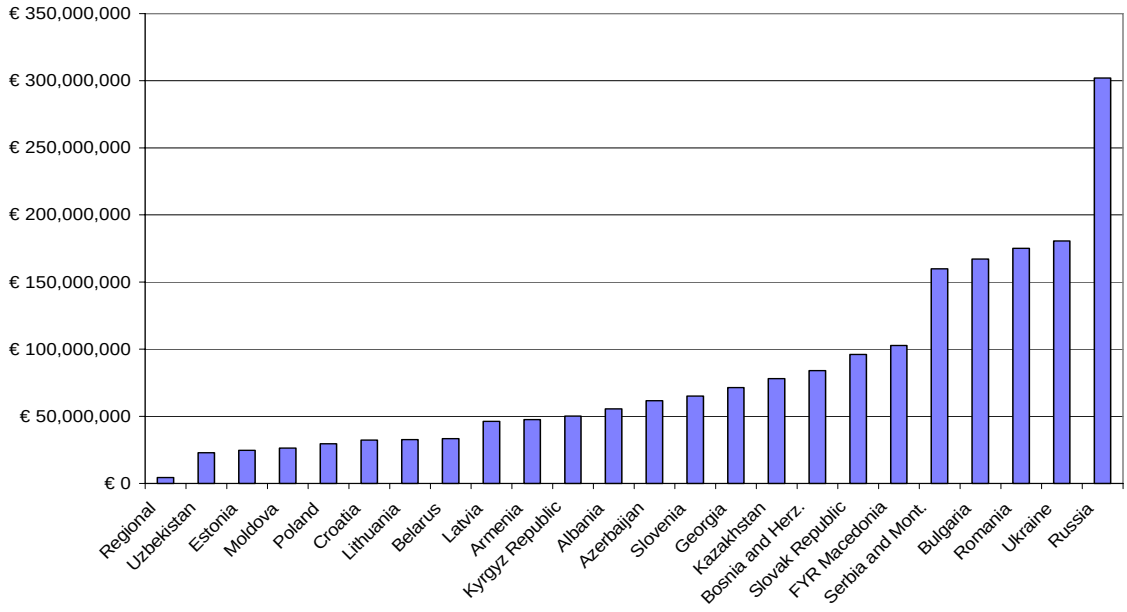
Figure 2.5: Private vs. state sovereign and non-sovereign investments for the time periods covered by each Energy Policy and overall (percentage of volume)



- **Investments by country**

The Banking Department has completed projects in 24 countries (Figure 2.6). The only countries in which the Bank does not have projects in this sector are the Czech Republic, Hungary, Tajikistan and Turkmenistan. There are six projects in Russia, five each in Romania and Albania and four in Bulgaria. The rest of the countries have three or fewer projects, including eight countries that only have one project each.

Figure 2.6: Power sector project by country (cumulative)



Looking at the projects by transition stage (Figure 2.7), the Bank initially focused on advanced countries, an approach that was increasingly de-emphasised between 1992

and 1996;[7] Early and intermediate countries now represent 68 per cent of the portfolio (Table 2.2), with Russia becoming increasingly important.[8] Eighty-five per cent of transmission projects are in early and intermediate transition countries, while 70 per cent of distribution projects are in advanced countries.

Figure 2.7: Geographic distribution of the power sector portfolio (by volume)

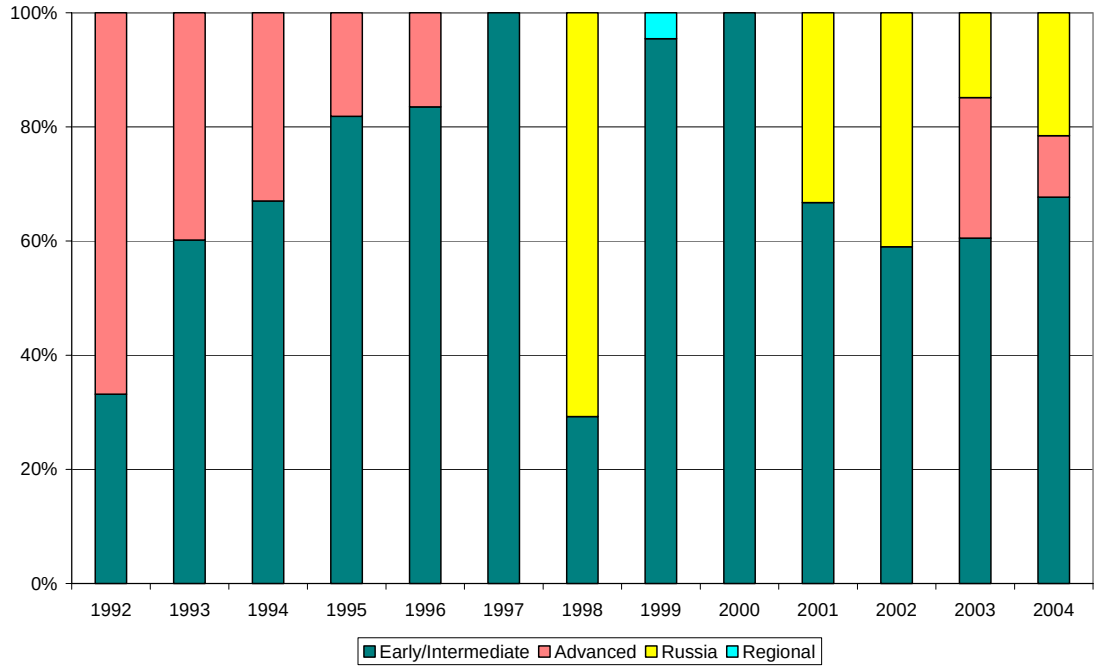


Table 2.2: Comparison of sub-sector and regional distribution by volume

	Generation	Distribution	Transmission	Other	Overall percentage
Early/Intermediate	67%	30%	85%	62%	68%
Russia	20%	0%	15%	0%	15%
Advanced	12%	70%	0%	38%	16%
Regional	0%	0%	0%	0%	0%
Percent	100%	100%	100%	100%	100%
Percentage of sub-sector	47%	13%	36%	4%	

7 2003 and 2004 represent two projects in the Slovak Republic plus one guarantee to one of these projects in 2002.

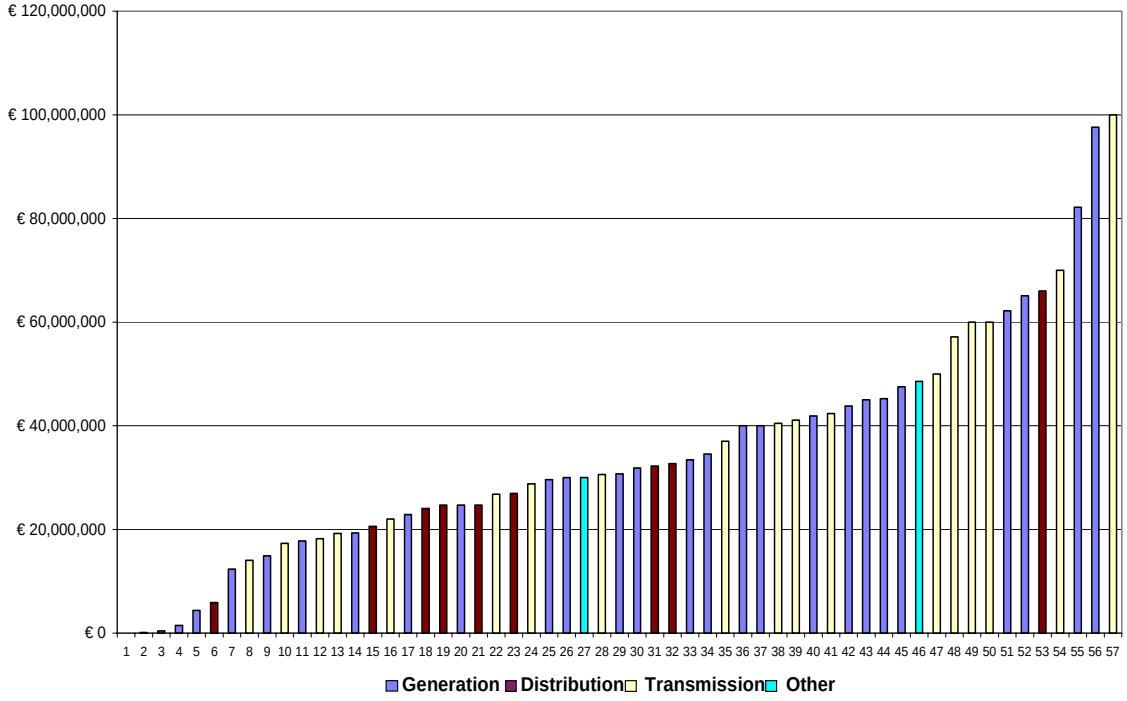
8 The EBRD classifies its countries of operations by their progress in transition towards a market economy (Russia is treated separately):

- Early/Intermediate: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, FYR Macedonia, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Romania, Serbia and Montenegro, Tajikistan, Turkmenistan, Ukraine, Uzbekistan
- Advanced: Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia.

- **Project size**

The EBRD's commitments are evenly distributed by project size (Figure 2.8), with median and average amounts of €30.7 million and €34.9 million. Power distribution projects tend to the lower end of the scale (average €28.7 million, weighted heavily by one large project), while transmission (average €39.6 million) and generation (average €34.8 million) projects are more concentrated at the upper end of the scale. There was one €108 million loan guarantee extended to local banks in the Slovak Republic, which was not disbursed as there was no default. As a result it shows up as having a value of €0. Otherwise, the smallest project was for €100,000 while the largest project was for €100 million.

Figure 2.8: Power sector project deal size distribution



- **Environmental codes**

In respect of the need for environmental due diligence (Table 2.3), few (14 per cent) of the power sector projects have been classified as Category A,[9] although this number is slightly higher than that for the whole EBRD portfolio (at slightly less than 10 per cent). Sixty-seven per cent of the generation projects are classified as B/1. Overall, 69 per cent are classified as Category B, and only 16 per cent as Category C, while one project was classified as a financial intermediaries project.

[9] The EBRD classifies projects according to the extent of "potentially significant adverse future environmental impacts" resulting from the Bank's financing and according to whether the issues can be readily identified and mitigated or whether a more detailed assessment is needed (EBRD 2003 Environmental Policy). Under this classification, A projects are perceived to potentially cause the most environmental damage and therefore require a greater amount of assessment prior to the Bank signing the project. C projects, by comparison, require less assessment prior to signing.

Table 2.3: Environmental categorisation by year

Year	A/1	A/0	B/1	B/0	C/1	C/O	FI	Deals/Year
1992			1	3				4
1993			4					4
1994	1		2	1				4
1995		1	4	1				6
1996			1	1				2
1997			3	1				4
1998			3	1				4
1999			1	2			1	4
2000				2	3			5
2001		1	1		1			3
2002			2	1	1			4
2003	2	1	1		1			5
2004		2	2	1	3			8
Combined Results								
Total	3	5	25	14	9	0	1	57
Percent	5%	9%	44%	25%	16%		2%	100%

Note: The environmental screening categories are as follows: A – projects with potentially significant adverse future environmental impacts; B – projects with future environmental impacts which are less adverse than those for Category A projects; C – projects with minimal to no adverse future environmental impacts; 0 – no environmental audit; 1 – environmental audit; FI – financial intermediary.

Table 2.4: Environmental categorisation by sub-sector

Sub-sector	A/1	A/0	B/1	B/0	C/1	C/O	FI	Deals/Sub-sector
Generation	2	2	18	3	1	0	1	27
Distribution	0	0	2	4	3	0	0	9
Transmission	3	1	5	6	3	0	0	18
Other	0	0	0	1	2	0	0	3
Total	5	3	25	14	9	0	1	57

When broken down by sub-sector and environmental category, the average project size displays an unusual pattern (Table 2.5). In all sub-sectors Category A projects tend to be smaller than Category B projects, which in turn tend to be smaller than Category C projects.[10] The Bank puts greater effort on due diligence, public disclosure and project monitoring on Category A projects. The first Category C project appears in 2000 and by 2004 had become the most used classification. Both the 1996 and 2003 Environmental Policies set 300 megawatts (MW) as a minimum size for a project - whether greenfield, major expansion or transformation-conversion - to be considered Category A. Within the portfolio there are rehabilitation and completion projects of power plants larger than 300 MW which have been classified as Category B. Based on this definition, a few

[10] The Category A size is a function of two very small projects skewing the data.

projects previously treated as large B's should be considered as Category A projects (see Appendix A for list of projects and environmental categorisations).

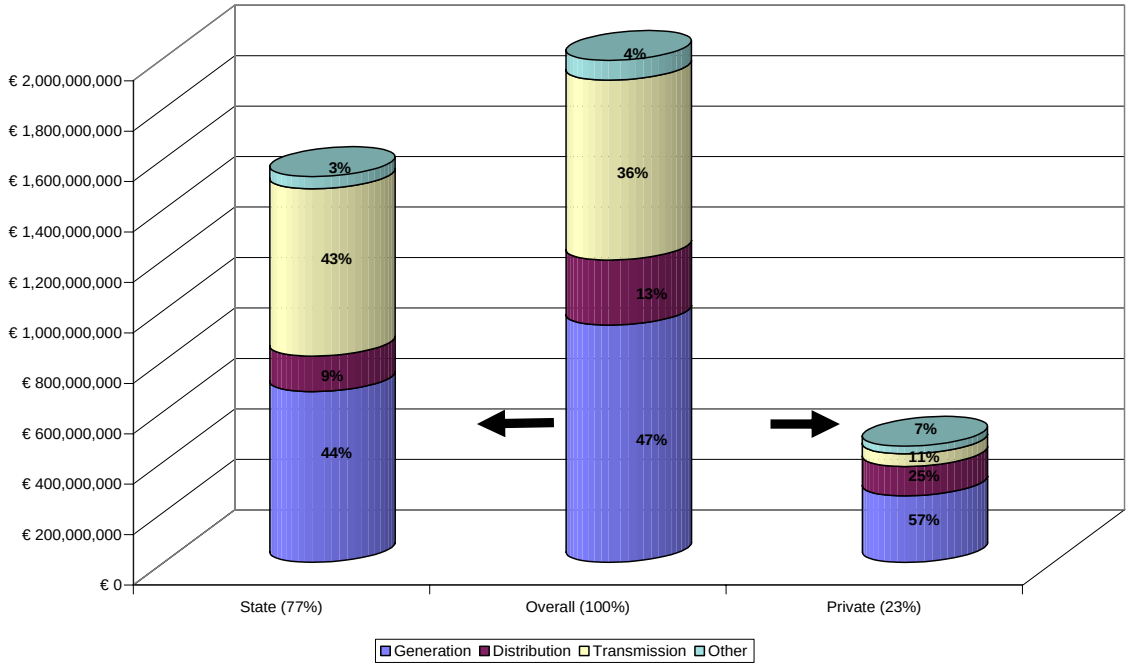
Table 2.5: Average project size by environmental categorisation and sub-sector (€ million)

	Environmental Categorisation			
Sub-sector	**A**	**B**	**C**	**FI**
Generation	33	36	45	4
Distribution		28	31	
Transmission	30	38	60	
Other		49	15	

- **State vs. private**

The portfolio is also characterised by a large number of state sector projects (Figure 2.3 and Figure 2.9), with the introduction of state non-sovereign projects in 2004. Starting with the Bank's overall power sector portfolio (central column in Figure 2.9), generation dominates, followed by transmission. Ninety-three (93) per cent of the transmission projects are in the state sector and 72 per cent of the generation projects are also in the state sector, while distribution projects are split between the state and private sectors. Generation projects account for 47 per cent of the portfolio, followed by transmission at 36 per cent. As is the case with industry coding, the Bank's portfolio allocation between state and private does not adequately reflect the range of project structures that exist, including state non-sovereign, state sector enterprises in transition, or majority state ownership of "private" companies.

Figure 2.9: Distribution by sub-sector, between state and private, by volume



- **Summary of the portfolio**

The portfolio can thus be characterised as follows:

- The existing portfolio has a number of large generation (27) and transmission (18) projects that are mainly in the state sector, and in early and intermediate transition countries and Russia. (Generation: 67 per cent early and intermediate transition countries and 20 per cent Russia; Transmission 85 per cent early and intermediate transition countries and 15 per cent Russia).
- There are nine distribution projects of which 70 per cent are in advanced countries and are split between state and private sector.
- In 2000 Category C projects were introduced. State non-sovereign projects were introduced in 2004.
- The Bank phased out of most advanced countries between 1992 and 1996.
- The first Russian project was signed in 1998 and Russia now accounts for 15 per cent of the portfolio.
- Finally, the Bank began a shift towards the private sector in 1998, and under the 2000 policy the private sector represents 42 per cent of the portfolio. Overall, however, the state sector dominates (77 per cent).

The Banking Department should be given credit for its willingness to work in early and intermediate countries early on, but this has obligated it to work mainly with the state sector. New approaches and structures (non-sovereign and Category C) are being implemented but are too new to be evaluated (Chapter 3).

2.4 OTHER POWER SECTOR ACTIVITIES UNDERTAKEN BY THE BANK

While this review is focused on the EBRD's investments in the power sector as implemented through the Power and Energy Utilities Team, PED is aware of other EBRD investments that could also be partly classified as power sector investments.

2.4.1 Captive power plants

Many municipal and environmental infrastructure (MEI), general industry, tourism and other sector projects may include replacement and/or refurbishment of existing captive power plants and back-up generators. Indeed, one of the largest coal-fired power plants within the EBRD's project portfolio is a 600 MW power plant captive to a steel plant. While many are individually small, collectively these plants may add up to a significant portion of energy production and pollution. The new policy should address all forms of energy production supported by the EBRD, regardless of the originating banking team, and should establish acceptable environmental performance standards for all types of energy production units.

2.4.2 Financial intermediaries (FIs)

The EBRD's investments through FIs now represent over 33 per cent of total Bank investments per year. The portfolio described in this review only contains one FI project – a project with a specific energy focus that was developed by the Power and Energy Utilities Team. However, it is reasonable to assume that other projects developed by the FI Team may contain power sector and captive power projects or components within their portfolio. Further, the Power and Energy Utilities Team has yet to implement one gas distribution project, while municipal gas distribution is an objective of more than one FI project.

2.4.3 Energy efficiency projects

The Bank has a separate Energy Efficiency Team. While the Team is tasked with development of energy efficiency projects across all sectors, in fact the bulk of the Team's activities previously focused on district heating (DH) and energy services support companies (ESCOs). District heating is an important area for energy efficiency gains, but important gains can be found in other sectors as well (for example, large integrated steel plants). In 2003, these district heating projects were added to the MEI portfolio as they are municipal projects, thus allowing the Energy Efficiency Team to better focus on projects across all sectors. The Power and Energy Utilities Team and the Energy Efficiency Team remain responsible for combined heat and power and district heating projects. PED completed a special study on the Bank's energy efficiency portfolio in 2002, and evaluated the Bank's performance in implementing the recommendations from that report in PED's 2003 Annual Evaluation Overview Report (AEOR).[11]

Energy efficiency not only involves addressing wasteful use of energy in district heating, industrial operations and housing projects, but should also be addressed through building codes, vehicle emissions codes and other measures. There are also economic tools such as electricity tariffs and road tolls that can be used to promote greater energy efficiency. Rising global energy prices, which in turn are affecting local prices in many of the Bank's countries of operations, will go a long way to promoting energy efficiency, renewable energy, co-generation etc. With ratification of the Kyoto agreement, pollution trading may become a reality in this region and the initial gains will come from focusing on energy efficiency in electricity production.

One important component of the Bank's work in this sector is the EBRD's investments in ESCOs, of which there are 18 such projects in the Bank's portfolio. These projects tend to be located in more advanced countries and all but one are private. To date, PED has evaluated only one ESCO which was rated *Successful.*

2.4.4 Renewable energy

Counting hydroelectric power and geothermal power as renewable energy, the Bank's investments in this area are considerably higher (36 per cent of the generation portfolio) than the total level of such investments in the region as a whole. The Bank should

[11] PED's AEOR is published annually on the Bank's web site: www.ebrd.com

consider diversifying its renewable energy portfolio. Wind, solar and mini-hydro deserve greater investment focus where conditions are appropriate. However, the economics associated with small-scale projects may require different mechanisms, such as carbon funds which purchase carbon credits from EBRD countries of operations. Another option involves lending to small and medium-sized enterprises through financial intermediaries, an approach the team is currently testing in Bulgaria.

At its last Annual Meeting, the Bank said renewable energy was not cost-competitive given oil and gas prices in the region. When oil was at US$ 30 a barrel, this may have been true, but oil prices are increasing and US$ 30 per barrel now appears to be the floor rather than the ceiling. Given this new reality, even though prices in the former Soviet Union are still below world market prices, renewable energy is increasingly cost competitive. In addition, as a commitment to joining the EU, new member countries have committed to achieving 12 per cent of their energy from renewable sources by 2010. This creates a significant new investment opportunity in the advanced countries.

2.4.5 Co-generation

Co-generation involving district heating and power production is a common practice in the region, and the EBRD is involved in various combined heat and power and district heating projects. The EBRD is also involved in agribusiness projects that include a power and heating plant: for example, sunflower oil plants which use the waste husks as a fuel source for the plant's power and energy needs (both renewable energy and co-generation). However, PED evaluated one such company in Ukraine that had the capacity to produce additional energy but could not sell into the market as the legal and regulatory environment did not anticipate small-scale independent power producers. Agribusiness-related co-generation is a potentially significant source of renewable energy in the region that the EBRD should promote.

2.4.6 Waste-to-energy

Solid waste remains a significant cost to municipalities in the region, and as solid waste landfill sites become full, potential new landfill sites are increasingly scarce. Some of the advanced countries have introduced recycling but many have yet to do so. Regional wastewater utilities (many funded by the Bank) face an increasing problem of sludge disposal. The EBRD is engaged in one sludge disposal incinerator project in St. Petersburg. The Bank should consider waste-to-energy alternatives.

2.4.7 Clean coal technology

Coal remains an important raw material for energy production in the region. The Bank's generation portfolio includes coal-fired power incorporating improved scrubbers and clean coal technology. Given the availability of the resource and the probability of continued dependence on coal, particularly in Central and Eastern Europe, the Bank's new strategy should further promote clean coal technology as an option.

3. EVALUATION RESULTS AND COMPLIANCE WITH OPERATIONAL OBJECTIVES

The findings of past project evaluations and resulting implications are presented in this chapter. Section 3.3 presents PED's analysis of lessons learned.

3.1 REVIEW POPULATION

The existing and past portfolio of power and energy utilities projects through 2004 (Appendix A) consists of 57 projects. PED has evaluated 21 projects, and the findings from those evaluations (Appendix B) are incorporated into this review. In addition, PED has also completed evaluations on four power and energy-related technical cooperation activities, findings of which are also reported below.

3.1.1 Review limitations

In presenting these findings, PED offers five caveats:

- Given an evaluation population of 21, statistical indicators should only be taken as preliminary, particularly when the numbers are divided by year, country or by sub-sector. The results and findings of this sector review are specific to this population of 21 projects at the time each was evaluated.
- PED has not updated any of the findings from its project evaluations. Evaluation findings are very time-sensitive. PED's best practice approach, as described in its 2004 *Evaluation Policy Review*, defines when a project is ready for evaluation as well as its evaluation methodology. All projects are in principle evaluated at the same stage in the project cycle. Revisiting projects at a much later date may provide a more accurate assessment of current conditions, but would not allow for cross-project comparisons, as projects would have had varying performances over different time periods.
- PED's performance indicators have been defined and modified over time. PED previously used a four-point scale for several indicators. Based on the available data, and to be consistent with the Extractive Industry Review, PED has used the four-point scale for environmental performance and a six-point scale for transition impact.
- This review is limited to the information obtained from PED's evaluations of projects and technical cooperation (TC) activities. There are many activities that the Bank undertakes through its representation in its countries of operations, participation in international community donor activities, advocacy and other activities. Such activities are poorly recorded and difficult to evaluate, but are important to contributing to the Bank's furthering of its transition objective.
- It is important to understand the country context in which investments are made. This includes the legal and regulatory environment, the extent of government control, foreign direct investment (FDI) investments and competition. In its Extractive Industry Review, PED compared the EBRD's extractive industries portfolio against the extractive industries sector FDI in Russia. As the current study was limited in time (three months), PED was therefore unable to undertake such a country assessment. The lesson learned is that in future sector reviews

one to two country assessments are invaluable to better understand the context of the EBRD's investments and assess relevance and efficacy.

3.1.2 Portfolio and sample comparison

The sample of 21 projects represents 60 per cent of the projects available for evaluation over the evaluation time period, and 37 per cent of the portfolio. Table 3.1 compares the sub-sector distribution of the evaluation sample as compared with the overall portfolio population. When looked at either by number of projects or by volume, the sample is slightly weighted towards generation projects and under-represents transmission projects. The new "other" category is not represented.

Table 3.1: Comparison of portfolio with evaluated sample by sub-sector and over time

By number of projects					
	Generation	**Distribution**	**Transmission**	**Other**	**Total**
Portfolio	27	9	18	3	53
Per cent	47%	16%	32%	5%	100%
Evaluated sample	13	4	4	0	21
Per cent	62%	19%	19%	0%	100%
By volume in € millions					
	Generation	**Distribution**	**Transmission**	**Other**	**Total**
Portfolio	941	258	713	79	1,990
Per cent	47%	13%	36%	4%	100%
Evaluated sample	483	109	157	0	749
Per cent	64%	15%	21%	0%	100%

3.1.3 Evaluation Results as a Function of Time

The evaluation process only includes those projects that have been appraised and approved by the Board and have been operating two to three years, making them "mature". If the structure of the portfolio has changed significantly, the evaluation can only point to performance for the period evaluated. As discussed in Chapter 2, there have been shifts in the portfolio. One is a shift towards the private sector. By number 28 per cent (23 per cent by volume) of the portfolio is private while 29 per cent (25 per cent by volume) of the sampled projects are private; therefore this shift is captured in the evaluation data.

The more recent shift is towards non-sovereign lending, but all these projects were signed in 2004 and will not reach maturity until 2006-07. Table 3.2 compares PED's overall evaluation outcomes year-on-year according to the percentage rated *Successful* or better. PED's benchmark for success is *Successful* or better; projects rated *Partly Successful* or *Unsuccessful* do not meet PED's benchmark. As indicated above, the numbers of evaluated projects per year are small, but the success rate in more recent years (2002-04), which covers 48 per cent of the sample, is less than that in previous years.

Table 3.2: Changes in overall evaluation results measured over time

Year evaluated	Number evaluated	Percentage rated *Successful* or better
1997	3	100%
1998	4	50%
1999	1	0%
2000	1	100%
2001	2	100%
2002	3	33%
2003	4	0%
2004	3	66%
Total	**21**	**53%**

PED will not evaluate 2003 projects (where there was a large shift to the private sector) until 2006-07 and will not evaluate 2004 projects (where there was a shift to non-sovereign lending) until 2007-08. Therefore, given a reasonable comparison between the sample and the portfolio, and the trend in year-on-year overall results, it is reasonable to conclude that the results presented in this review are (i) reasonably representative of the portfolio and (ii) may be predictive of future evaluation results for the next two to three years.

3.2 PERFORMANCE EVALUATION OF POWER SECTOR PROJECTS[12]

This review is based on an approach that first completes individual project evaluations and then combines the findings to provide overall sector results. The core criteria used to rate the sector are *relevance, efficacy,* and *efficiency* plus the EBRD's two mandate-related indictors for *transition impact* and *environmental impact*. Each evaluation criterion was rated by PED based on its evaluation findings. Individual criterion of the policy indicators are rated on a six-point scale: *Excellent, Good, Satisfactory, Marginal, Unsatisfactory,* and *Highly Unsatisfactory*. The overall rating is based on a four-point scale: *Highly Successful, Successful, Partly Successful,* and *Unsuccessful*. The Natural Resource objectives of the 1992 and 1995 policies are not addressed here as PED has evaluated these projects in the context of its Extractive Industry Review. In addition, the nuclear objective is not assessed as it was beyond the scope of this review.

3.2.1 Relevance
Rating: *Satisfactory*

Relevance is measured by how adequately the Bank's projects respond to and fulfil its 1992, 1995 and 2000 Energy Policies and how these projects satisfy regional requirements, country needs, global priorities and donor objectives. While most of the evaluated projects fall under either the 1992 or 1995 policies, the 2000 policy is an extension and tightening of these earlier efforts. In this and the following sections, PED considers the combination of all three policies. Relevance can be assessed through PED's assessment of additionality and by considering the project's success in addressing the sector challenges articulated in the 2000 policy. Additionality was rated *Verified in All Respects* in 19 of the 21 projects. The sector challenges are listed in Section 2.2 of this report.

[12] PED's evaluation criteria are described and discussed in the PED *Evaluation Policy Review* 2004.

As energy was not a scare resource in the EBRD's countries of operations, the challenge was to improve performance (rehabilitation and/or replacement) and address environmental concerns. The Bank has correctly identified the challenges, but needs to design strategies for how to address them and how best to combine technical cooperation (TC) and project funding to respond to them.

PED has evaluated four TC activities, of which one had a *Successful* rating, two had *Partly Successful* ratings, and one had an *Unsuccessful* rating. Overall, 25 per cent of TC activities had a *Successful* or better rating. These results are unsurprising give the small number of projects and that three of these TC activities were tied to generation projects which, as already indicated, have underperformed. Just over half of the TC activities undertaken were directly for project identification and preparation, while the remaining activities were for least cost studies, institutional support, policy dialogue and privatisation support.

Addressing challenges requires a policy dialogue before identifying specific projects. The timing of many TC activities – during the initial stage of project implementation - therefore limits the Bank's ability to address policy issues. The Bank has focused on improving operational efficiency and environmental performance. It has also addressed end-user conservation through metering and support for tariff increases, but there has been very limited focus on demand-side issues. Focusing on demand-side issues may lead to new energy efficiency investment opportunities.

3.2.2 Efficacy – Achievement of policy objectives
Rating*: Satisfactory/Marginal*

Efficacy is defined as the extent to which the policy objectives were achieved or are expected to be achieved. On a project-by-project basis, efficacy is the extent to which objectives defined in each project have been fulfilled. Starting with the project perspective, 76 per cent (16 out of 21) of the evaluated projects are rated *Satisfactory* or better on fulfilment of objectives, which would support an overall *Satisfactory* result**.**

From the policy objectives perspective:

Objective A: To improve the investment and regulatory climate so as to support competitive energy market systems
Rating*:* ***Partly achieved***

Evaluation finding: The objective focuses on the investment climate to achieve competitive energy market systems. This implies a process of change achieved through demonstration (projects) and policy dialogue. PED recognises that the Bank is very active in policy dialogue, but lacks data on this policy dialogue from which to evaluate EBRD's achievements. (PED focuses on evaluating projects). To date, none of the policy-related TC activities have been evaluated. Informal policy dialogue and representation are difficult to evaluate without taking into account country perspective.

The other approach is to look at project outcomes. The 1992 policy was: "to stimulate the injection of foreign capital and the introduction of commercial management techniques." In 1995, this became: "to support and accelerate the establishment of

competitive and efficiently regulated energy markets." And in 2000, this became: "to improve the investment climate and allow the development of energy systems functioning on market principles."

The EBRD's mandate is to promote the private sector, but it is authorised to work with the state sector when there is a clear intent to move towards the private sector. Starting in 1998, the Bank began a shift towards the private sector (Figure 2.3). Under the initial energy policy (1992-95), the state sector represented 95 per cent of the portfolio; under the second policy (1996-2000), the state sector accounted for 85 per cent of the portfolio; and under the 2000 policy the state sector still accounted for 59 per cent of the portfolio.

In 2004 the Banking Department began non-sovereign state financing, which is an important step towards the private sector. Table 3.3 shows that the Bank has achieved better outcomes with its private sector investments (66 per cent) than when working with state sector entities (47 per cent). The Bank has also achieved much better results in advanced countries (100 per cent) and Russia (75 per cent) than in early and intermediate transition countries (18 per cent). This indicates the importance of having a supportive investment and regulatory climate. The EBRD works in difficult investment climates and while there has been progress in energy market liberalisation and privatisation, particularly in eastern Europe, much remains to be accomplished.

Table 3.3: Overall success by state-vs.-private and by regional distribution

Overall Performance	Private-State	Regional
52% (21 projects)	Private -66% (4 out of 6 projects)	Advanced transition countries – 100% (6 out of 6 projects)
		Russia – 75% (3 out of 4 projects)
	State – 47% (7 out of 15 projects)	Early/intermediate transition countries – 18% (2 out of 11 projects)

Objective B: To improve efficiency in conversion, transportation, distribution and consumption of energy and to improve the quality of energy services
Rating: ***Achieved***

Evaluation finding: A major thrust of the EBRD's projects has been to improve efficiency and the quality of services. The Bank has had *Good* overall success with transmission and distribution projects, but poor success with generation projects (Table 3.4). The Bank has yet to implement a gas distribution project. One can address efficiency from an engineering or physical perspective, and in this respect the EBRD's projects have responded to the objective. Many projects – even several generation projects that had low overall performance ratings – achieved high marks in improving plant performance, reducing pollution, and providing a reliable service.

Another approach to the efficiency question is to address the quality of energy services. Here the implementation model and management approach are critical. To maximise efficiency, a regulated privately-owned public utility arguably provides the most efficient outcome. Given government-imposed regulations and tariffs, the utility will maximize efficiency so as to maximise profit. This model was the basis for power

expansion in the US and remains so in many European countries. Others argue that a fully unbundled competitive private sector provides the most efficient outcome.

To decide the appropriate model for each country, it is important to consider the country's stage of transition and the state of the existing national utility structure. In smaller economies where there are only a few power plants, pushing for competitive private markets may not make sense. Rather, the regulated private utility model may be more viable. In many of the EBRD's countries of operations, the Bank's only choice is to work with the state if it wishes to engage in this sector. Investing in new generation capacity, transmission lines, etc., results in large and long-term investments. These investments, once made, will have an impact on and may determine the viability of future investments in the sector and potential reform paths. Countries go through a progressive series of reforms in their privatisation transition over time.[13] The timing of the intervention is therefore also important.

If efficiency is the objective, it is important that the Bank analyse and understand the structure of the sector within a country and not simply analyse each individual project presented to the Bank. Two of the generation projects were rated less than *Satisfactory* as they were not appropriate for the needs, available technology and local conditions. The Banking Department historically evaluates projects by their intrinsic factors although it is now also considering country or power-system-wide issues. When working with public goods and natural monopolies, it is important to consider possible project alternatives. Perhaps the project presented to the Bank is not the optimal project and the sponsor should be encouraged to consider other possible options – particularly when dealing with state sector sponsors. When presented with a specific project, it is difficult to step back and investigate alternatives. However, without an alternatives analysis, it is impossible for the Bank to optimise its investment for the public good.

The new strategy should take a position on the issues of privatisation, maximisation of efficiency, timing and regulatory requirements appropriate to each of the EBRD's countries of operations.

Table 3.4: Overall success by sub-sector

Overall performance	Generation	Transmission	Distribution
52% (21 projects)	38% (5 out of 13 projects)	75% (3 out of 4 projects)	75% (3 out of 4 projects)

Objective C: To improve environmental performance, including supporting actions to address the climate change issue

Rating: ***see Section 3.2.4***

Evaluation finding: Addressing environmental performance concerns has been a key component of the Bank's engagement in this sector. In this framework, environmental criteria are rated under mandate indicators (see Section 3.2.4). The new policy should be

[13] See Figure 1 in: "Private Sector Development in the Electric Power Sector," *A Joint OED/OEG/OEU Review of the World Bank Group's Assistance in the 1990s*, July 2003, http://www.ifc.org/ifcext/oeg.nsf/AttachmentsByTitle/psd_electric_power/$FILE/psd_electric_power.pdf. Also see EBRD's 2000 *Energy Policy* Annex 9.

expressly linked to the 2003 Environmental Policy, which in turn is based on host country, EU and World Bank environmental performance standards.

Objective D: To improve the safety of nuclear power production
Rating: ***Not Rated***

Evaluation finding: This review has not explicitly addressed the Bank's nuclear activities.

3.2.3 Efficiency – Sound banking
Rating: ***Satisfactory/Marginal***

Efficiency is defined as the extent to which benefits are commensurate with the resources invested. Efficiency is best addressed through the EBRD's project and company financial performance ratings, bank handling, and the Bank's return on its investment.

Project financial performance (Table 3.4) is rated 57 per cent (12 out of 21 projects) *Satisfactory* or better and company financial performance, the performance of sponsors to which the Bank has extended loans, is rated 67 per cent (14 out of 21 projects) *Satisfactory* or better. However, generation under-performs the other sub-sectors and accounts for 78 per cent (7 out of 9) of the less than *Satisfactory* projects. Project performance is rated *Satisfactory-Good* for distribution and transmission. However, the EBRD's exposure (volume) is via generation projects. This sub-sector is rated *Marginal.*

Table 3.5: Project financial performance by sub-sector

Project financial performance	Generation	Distribution	Transmission	Subtotal
Excellent	2	1	1	**4**
Good	2		1	**3**
Satisfactory	2	2	1	**5**
Marginal	5		1	**6**
Poor	1			**1**
Unsatisfactory	1	1		**2**
Total	**13**	**4**	**4**	**21**
Percentage *Satisfactory* or better	**46%**	**75%**	**75%**	**57%**

On bank handling, 86 per cent (18 out of 21) projects are rated *Satisfactory* or better. Thus, the Bank has done a good job internally in its design and management of projects, but has less than *Satisfactory* results on project financial performance from generation projects, which form the bulk of the evaluated population.

Another way to measure sound banking is to look at the overall risk ratings the Bank assigns to its projects. For non-sovereign projects, the ratings reflect the project credit risk, and on sovereign projects they reflect the country risk. Analysis of overall risk ratings as a function of (i) the project cycle, or individual power projects that are being reviewed or are already signed by the EBRD (76 projects); (ii) projects grouped by sub-

sector (57 projects) and (iii) regional breakdown of the portfolio has led to several conclusions, some of which are to be expected:

- As projects move forward in the project cycle, the overall risk declines.
- Projects in early and intermediate transition countries have higher overall risk ratings than projects in advanced countries.
- Transmission and generation projects have higher risk ratings than distribution projects, but this is partly a function of location.
- The projects evaluated, which by definition are older, on average have slightly lower average overall risk ratings (both by sub-sector and by region) than the projects not evaluated.
- The portfolio as a whole is relatively risky from the perspective of transition impact, reflecting the location of the projects. However, the financial risk for state sector projects is low due to existing government guarantees.

Given these transition and country risk levels, is the Bank being appropriately rewarded for this higher degree of risk? The Bank maintains detailed project financial data, but does not calculate results on a sector portfolio basis. PED has attempted to calculate the Bank's return on investment for the portfolio, looking at the return on investment (IRR) to the Bank for the power sector portfolio over its investment life. PED faced three challenges in doing so: it was impossible to obtain complete data prior to 1996; the calculation cannot anticipate future returns that might differ from existing projections; and equity that has yet to be exited has been excluded from the calculation.

Based on limited data, PED estimates that the Bank's return on investment for this portfolio is 2-3 per cent. While this is positive, it is less than the return for the Bank as a whole, which averages 8.4 per cent. Because the portfolio is heavily invested in state sector projects, which are normally priced with a margin of 1 per cent, and because the portfolio also includes many projects in early and intermediate transition countries, this sector portfolio will under-perform the Bank-wide results. Further, the maturities of the loans in this sector are on the long side, which tends to result in lower risk-adjusted returns. This is one of the reasons why many commercial banks have reduced their exposure in the sector.

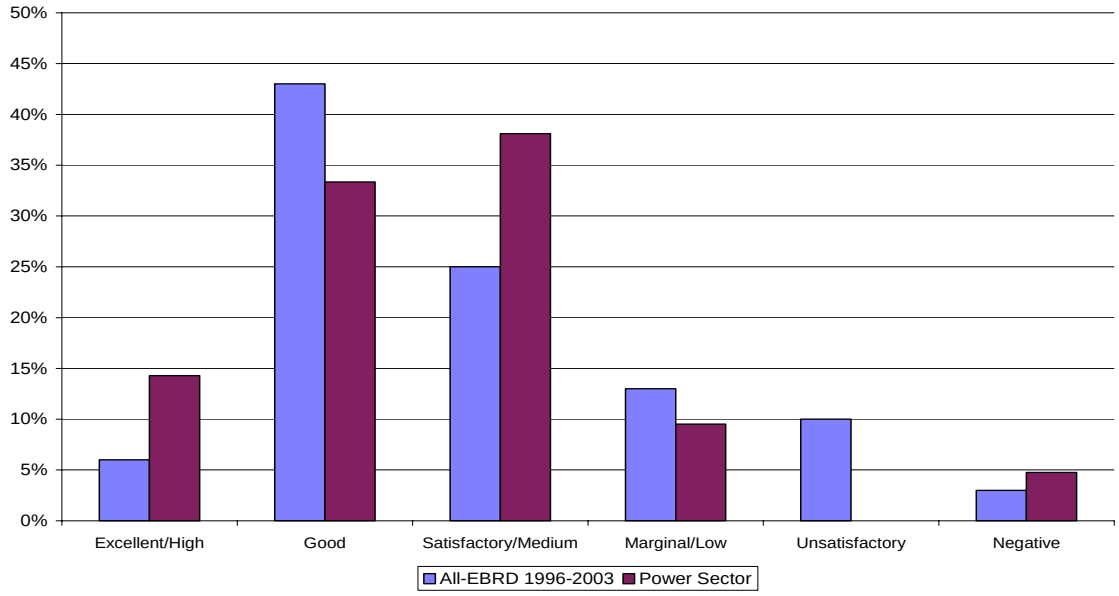
There are strong reasons to invest in this sector, as shown in Section 3.2.1 on relevance, and the Bank must support a diversified multi-sector strategy. But, if the sector is performing below average, the Bank's strategy should justify this. Otherwise, the Bank would be better investing its limited resources in other sectors. In drafting a new policy, the Bank should ensure that its sector return on investment meets defined Bank expectations, or have a strategy that accepts lower returns for higher transition, social, and environmental benefits. The Bank has traded off less-than-average financial returns for *Good* transition and environmental impact. If this is indeed the strategy, it should be clearly stated and justified in the new Policy.

3.2.4 Mandate indicators
Rating: *Good*

Objective A: Transition impact
Rating: *Good/Satisfactory*

Transition impact at the sector level is defined as the extent of transition impact realised versus that expected, and the resilience to risk of the net sector transition impact resulting from portfolio investments. Power sector projects have positive economic, political and social transition impact. Transition impact is *Satisfactory* or better in 86 per cent (18 out of 21) of the cases (Figure 3.1), as compared with 74 per cent for the EBRD-wide data. However, the power sector group is dominated by *Satisfactory* ratings. Further, generation projects account for all of the less than *Satisfactory* ratings.

Figure 3.1: Transition impact percentage



Note: Data based on 21 previously evaluated projects and combines PED's four-point and six-point scales.

In 2002, the Bank's Office of the Chief Economist began tracking transition impact using the transition impact monitoring system (TIMS). So far there are no projects in this sector that contain both TIMS data and PED evaluation data, as projects with TIMS data have not reached a stage of maturity where they can be evaluated by PED. However, within the power sector portfolio there are 14 projects with TIMS data (Table 3.6). TIMS indicates high initial and new transition impact potential with decreasing risk.[14] While the evaluation data also point to *Good-Satisfactory* transition outcomes, there are a few cases of less than *Satisfactory* impacts. Finally, as expected, the transition impact potential should increase and the risk decrease, moving forward in time.

[14] It is impossible for projects to have a less than *Satisfactory* TIMS rating at the beginning of the project cycle.

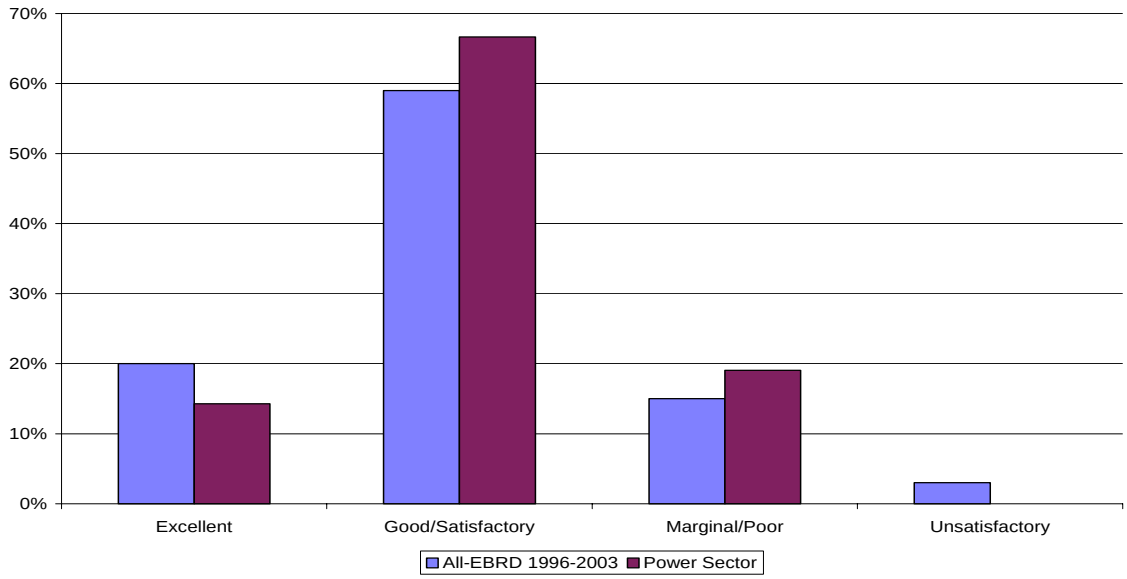
Table 3.6: Transition Impact Monitoring System (TIMS)

Original TI potential		Original TI risk		New TI potential		New TI risks	
Excellent	**6**	Low	**0**	Excellent	**6**	Negligible	**1**
		Medium	**4**			Low	**1**
		High	**2**			Medium	**4**
						High	**0**
Good	**8**	Low	**1**	Good	**8**	Negligible	**1**
		Medium	**2**			Low	**2**
		High	**5**			Medium	**1**
						High	**4**
Satisfactory	**0**			Satisfactory	**0**		

Objective B: Environmental impact
Rating: ***Good***

Environmental impact is defined as the extent to which overall environmental quality has improved as a result of specific investments in the portfolio. For environmental performance (Figure. 3.2), 81 per cent (17 out of 21) of the projects are rated *Satisfactory* or better, which is comparable to but slightly under the EBRD-wide results. A comparison shown in Table 3.7 indicates a positive correlation between environmental performance and environmental change. On a four point scale, the environmental performance indicator lacks differentiation – 67 per cent of the projects are rated *Good-Satisfactory* – therefore, in 2003 PED introduced a six-point scale. However, as this population includes older evaluations, these data are presented on a four point scale.

Figure 3.2: Environmental performance



Note: Data based on 19 evaluated projects.

Table 3.7: Environmental performance vs. extent of environmental change

	Environmental performance					
Extent of environmental change	Unsatisfactory	Marginal/ Poor	Good/ Satisfactory	Excellent	**Total**	
Outstanding			**1**	**1**	2	**10%**
Substantial			**9**		9	**43%**
Some		**2**	**2**	**2**	5	**24%**
None		**2**	**2**		4	**19%**
Negative						
Total		**4**	**14**	**3**	**21**	
		19%	**67%**	**14%**		**100%**

Table 3.8 compares environmental performance by sub-sector. While the overall performance is *Good*, 75 per cent (three out of four) of the less than *Satisfactory* outcomes on environmental performance occur in generation projects. As with the extractive industries sector, the EBRD lacks specific project emissions data to assess the environmental impact of each project. Lastly, as indicated in Section 2.3, PED is concerned about the environmental classifications being given to projects. Projects over 300 MW should be classified as Category A projects, not as "large B's". The recent usage of the Category C classification is a possible cause for concern, as it suggests these projects will receive a lower level of assessment than they should.

Table 3.8: Comparison of environmental performance by sub-sectors

Environmental Performance	Generation	Distribution	Transmission	Subtotal
Excellent	2		1	3
Good/Satisfactory	8	4	2	14
Marginal/Poor	3		1	4
Unsatisfactory				0
Subtotal	**13**	**4**	**4**	**21**
Percent *Satisfactory-or-Better*	**77%**	**100%**	**75%**	**81%**

3.2.5 Aggregate sector or overall performance Rating: *Partly Successful*

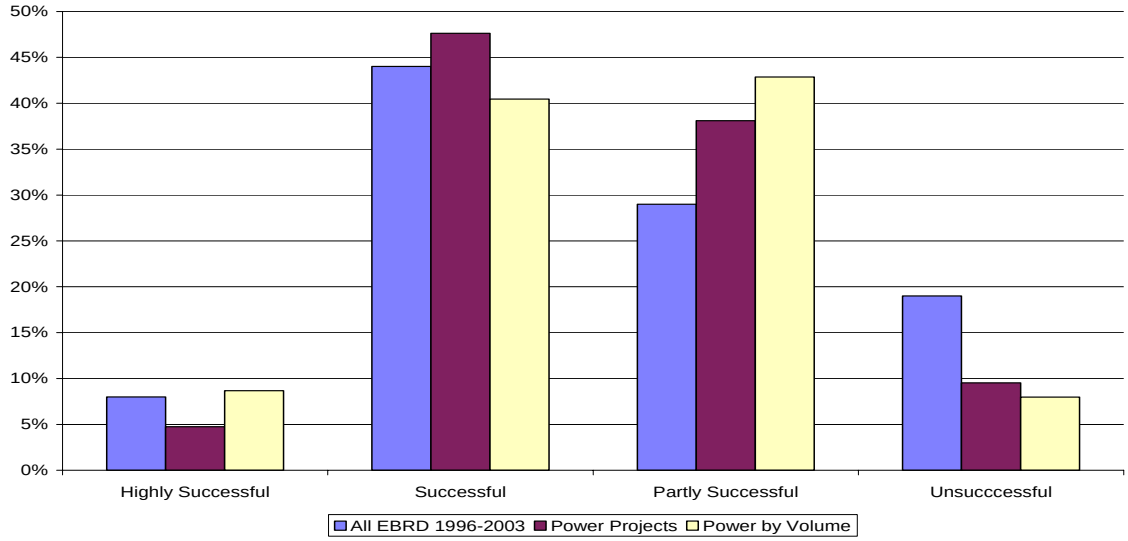
Evaluation findings

In terms of overall performance, by number of projects 52 per cent (11 out of 21) of the projects are rated *Successful* or better (Figure 3.3). This is comparable to the EBRD-wide (1996-2003) result of 52 per cent.[15] When weighted by volume, however, the percentage of *Successful* projects is reduced to 48 per cent. By volume, the overall success rate for the Bank is 64 per cent; thus, the sector under-performs the Bank's

[15] Note, the PED 2004 Annual Evaluation Overview Report shows a success rate of 54 per cent. The numbers reported here and elsewhere in this report for EBRD-wide data are based on a slightly smaller database, restricted to those projects with a full range of evaluation results.

overall results. Overall performance is a composite rating of all the other ratings in the PED matrix. As ratings cluster around *Successful* and *Partly Successful*, there is room for improving overall performance of power sector projects. However, the lower percentage of *Unsuccessful* projects is a positive outcome relative to the overall Bank performance.

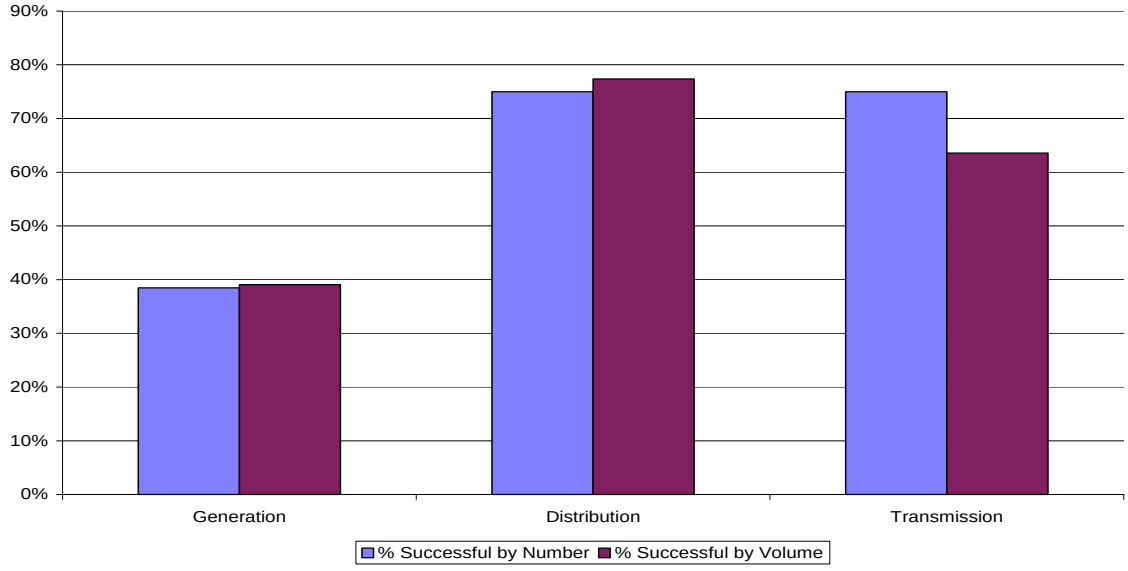
Figure 3.3: Overall performance by number of projects



Note: Data based on 21 previously evaluated projects.

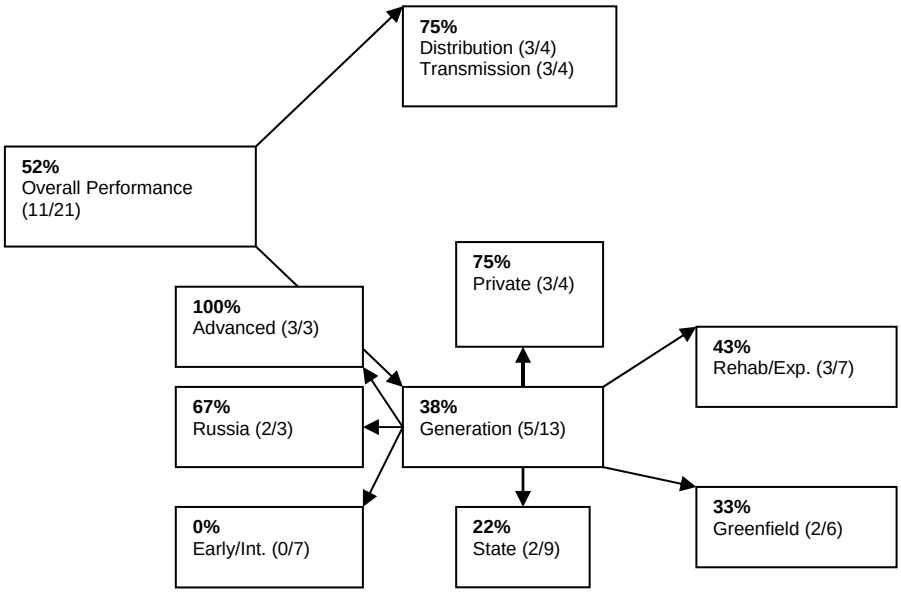
Sub-dividing the data by sub-sectors (Figure 3.4), the poor overall performance is associated with generation projects.

Figure 3.4: Sub-sector overall performance by number of projects and by volume



While the numbers become small, it is possible to further sub-divide the data by various risk factors (Figure 3.5).

Figure 3.5 Evaluation findings - power sector risk factors – overall success rates



Finally, in the 2004 Extractive Industry review, PED introduced the concept of a Modified Triple Bottom Line (MTBL). Figure 3.6 compares the MTBL for (A) all EBRD projects 1996-2003; (B) the power sector, and (C) the generation projects only. Looking at the sector as a whole, the power sector slightly under-performs the Bank, while generation significantly underperforms. While the MTBL only considers three variables, on a *Satisfactory* vs. less than *Satisfactory* basis, the MBTL analysis provides the same results as the overall result reported in Figure 3.5, which is based on the full range of PED evaluation indicators. Thus, the MTBL analysis confirms the observations above.

Figure 3.6 EBRD modified triple-bottom-line analysis

Figure 3.6 A: All-EBRD Modified Triple-Bottom-Line (1996-2003)

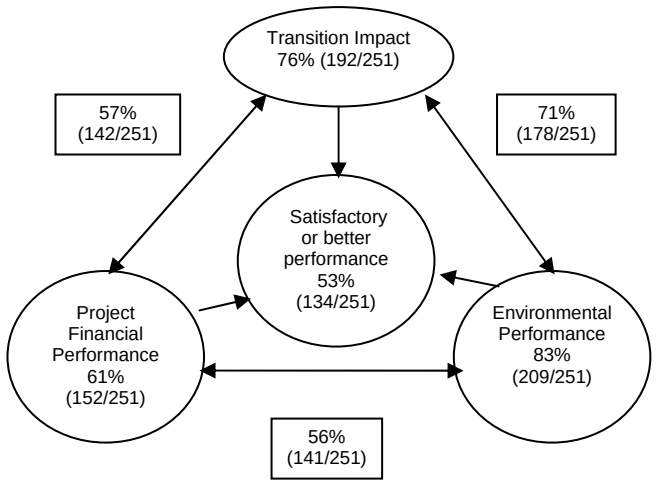


Figure 3.6 B: Modified power sector triple-bottom-line at EBRD

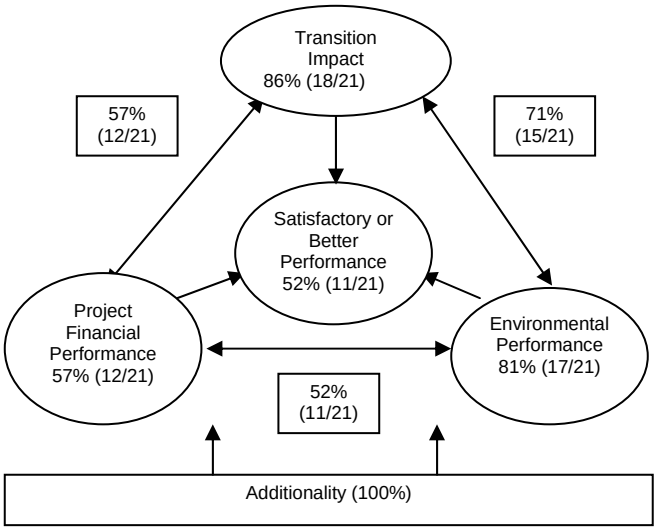
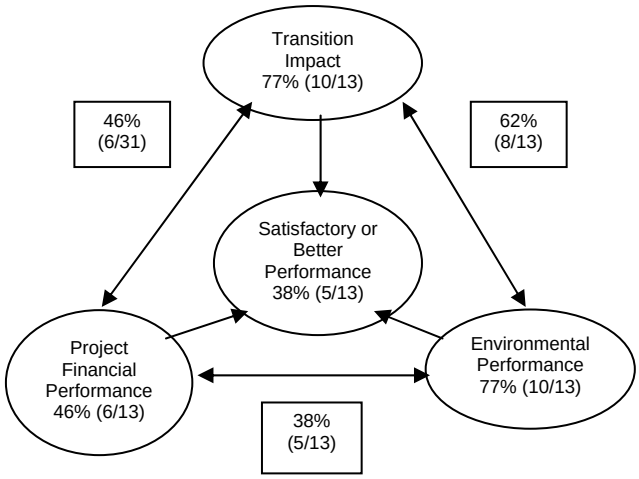


Figure 3.6 C: Modified triple-bottom-line for generation projects



Overall sector rating

The analyse, based on evaluation outcomes of 21 projects, leads to the following conclusions:

- The Bank has had a reasonable overall performance in the power and energy utility sector except for generation projects. These, however, account for more than 47 per cent of the portfolio by number and volume and are the most significant contributors to the success of the portfolio. However, moving forward in time, generation is becoming less significant as a portion of the portfolio.
- The less than satisfactory outcomes for generation projects appear to be attributed to the following risk factors:

  - early and intermediate transition countries; and
  - state sector projects.
- The Bank has had good success with generation projects located in advanced countries and in the private sector.
- The Bank has had good success with distribution projects and with transmission projects; although the numbers are small (four projects each).
- Of the 21 projects, one generation project is rated *Highly Successful* overall, but the two *Unsuccessful* projects are also generation projects, both of which are in transition countries. One is a state project, while the other is private.

The Bank's knowledge and experience is improving as a function of learning. In addition, market conditions are always changing, therefore, the evaluation, while indicative of future performance, is not necessarily predictive. When examined by sub-sector, generation projects score only *Partly Successful*. For generation projects, the Bank's emphasis has been on state sector rehabilitation projects in early and intermediate transition countries. This is a bold approach, but has not led to successful outcomes.

Overall sector performance, which is 52 per cent *Successful* or better, is in line with EBRD-wide performance (53 per cent). However, when the evaluation outcomes are combined with the analysis on the sector policy indicators – relevance, efficacy and efficiency – the overall sector is *Partly Successful***,** as summarised in Table 3.9 and presented in Table 3.10.

Table 3.9: Power and energy sector performance ratings

Indicator	Rating
Relevance	Satisfactory
Efficacy (achievement of objectives)	Satisfactory/Marginal
Efficiency	Satisfactory/Marginal
Mandate Indicators Transition impact: Environmental impact :	Good Good/Satisfactory Good
Aggregate Overall Sector Rating	***Partly Successful***

Table 3.10: Summary of power and energy sector strategy evaluation				
Narrative summary	**Objectively Verifiable Indicators (OVI)**	**How/Means of Verification**	**Evaluation data/findings**	**Evaluation ratings**
RELEVANCE • Measure of the EBRD's performance against the challenges identified in the Energy Policies	**Additionality:** **Challenges:** • High energy consumption • High wastage at the level of the end-user • Low operational efficiency and plant availability in power and heat generation • High losses in the transmission and distribution of electricity, heat and gas • Tariffs in many countries • Low collection of revenues • Ineffective subsidy mechanisms in the heat sectors • Poor environmental, health and safety management in most countries of operations • High risk and ageing Soviet-designed nuclear power plants • EU accession.	• Additionality assessment • Qualitative assessment	*Verified in all respects*	**Satisfactory**
EFFICACY • Fit of the portfolio within the objectives set out in the sector strategy	**Fulfilment of objectives** **Achievement of objectives**: • To improve the investment and regulatory climate so as to support competitive energy market systems; • To improve efficiency in generation, transmission, transportation, distribution and consumption of energy and to improve the quality of energy services; • To improve environmental performance, including supporting actions to address climate change issues; and • To improve the safety of nuclear power production.	• Project objectives achieved • Qualitative assessment	• *76% achieved* *62% for Generation* • *Partly Achieved* • *Achieved* • *Rated in mandate indicators* • *Not Rated*	**Satisfactory/Marginal**
EFFICIENCY • Sound banking	• Summary of project financial performance • Summary of company financial performance • Summary of bank handling	• Project financial performance • Company financial performance • Bank handling • Bank return on investment	• *57% Satisfactory* or better *46% for Generation* • *67% Satisfactory* or better *62 % for Generation* • *86% Satisfactory* or better ▪ *2-3%*	**Satisfactory/Marginal**

MANDATE INDICATORS • Transition impact • Environmental impact	• Transition impact • Environmental impact	• Realised transition impact • Realised environmental impact	• Transition impact o *38 % Satisfactory* o *33% Good* o *14% Excellent* • Environmental performance o *67 % Satisfactory/ Good* o *14% Excellent* • Environmental change o *24% Some* o *43% Substantial* o *10% Outstanding*	**Good/Satisfactory** **Good**
AGGREGRATE PERFORMANCE	• Summary of overall project performance • Rating of above results	• Overall project performance	• *Overall performance* o *48% Successful* o *5% Highly Successful* *Generation 38% Successful*	**Partly Successful**

3.3 LESSONS LEARNED

The unique experiences of the EBRD in its countries of operations and the novel solutions its staff have found to deal with the challenges it finds, form the basis for this body of knowledge. By recording lessons learned, the Bank seeks to retain its institutional memory. By reading them, staff members can learn or reacquaint themselves with their colleagues' thoughts on how best to invest capital in target countries using sound banking principles, promote transition and enhance environmental sustainability and additionality.

Lessons are drawn from past experience with a bias towards opportunities for improvement; consequently, as a body of information these data contain a negative bias. It is important to remember that by meeting their energy production, reliability and environmental projections, the Bank's power projects make valuable contributions to national economies. Several are first-of-a-kind projects. For example, the Bank's energy sector loan to Latvia was the first project-related loan by any international financial institution to this country. Likewise, Poland's Bielsko-Biala power station demonstrated that significant energy sector funding could be raised with recourse to a sovereign guarantee. The Bank underwrote the successful completion of the Soviet-era hydroelectric Yenikend dam in Azerbaijan, while upgrading and extending the lives of hydropower dams on the Drava River in Slovenia and the Daugava River in Latvia. The Bank's involvement in Bulgaria's Maritza East II plant has meant a shift away from unsafe nuclear power plants. The Mutnovsky geothermal plant in Kamchatka, Russia, has established improved environmental practices and paved the way towards privatisation and regional regulation.

Thus, although the focus of the lessons learned is on opportunities for improvement, the Bank and its project sponsors are providing financial and technological leadership, while introducing new technologies, new business standards, new approaches to environmental management and increasing transparency and corporate governance.

In these lessons, the Banking Department address price controls and centralised economies. Meanwhile these more specialised lessons for the power sector arise from the large fixed costs and public nature of the power industry.

Several lessons focus on the procurement process. Specific lessons suggest the need for technical consultants with broad and relevant experience to write and evaluate tenders, vet supplier capabilities and view cautiously bidders affiliated with either the project sponsor or local politicians. Consultants also need to be able to draft enforceable covenants, involve and train local staff to promote transition and select a major western general contractor whose reputation is worth protecting. Lastly, consultants must rewrite Soviet-era contracts and, above all, follow the Bank's procurement policies.

A second recurrent theme concerns the political sensitivities involved with tariff and sector reform. To overcome expected resistance to price rises and privatisation job losses, the Banking Department are encouraged to consult widely, prioritise and set goals that are realistic for a given country's stage of transition, and then implement these slowly.

In assessing and structuring a power project, the Banking Department stresses the importance of studying it from an energy system perspective encompassing power load balance, or the pattern of energy usage, cross-subsidies, future demand and competing sources of supply. Power is fungible, but generally non-storable. Given the size and scale of power projects, it is better to address emergency situations with short-term measures rather than rushing into a major investment. The arrival of a new plant or revival of lower-cost options can disrupt a project's economics by causing over-supply and driving down tariffs. Also the Banking Department cautions against placing sunk costs, or investments already incurred, ahead of economic reasoning when choosing whether to complete Soviet-era structures, however appealing this may be to local politicians.

The Bank's power investments span the range of its target countries. Maintaining leverage over negotiations and enforcing covenants are addressed repeatedly in these lessons. A key strategy is to divide large and complex projects into stages, requiring specific goals to be accomplished before further loans are disbursed, while supporting goal achievement with graduated technical cooperation. A combination of incentives and penalties is suggested to manage both suppliers and regulators. In particularly difficult situations, project sponsors are encouraged to use the full lobbying efforts of the Bank as well as other IFIs. The transfer of completed projects to local authorities for operation must proceed carefully. Covenants need to be understood and appreciated to be fulfilled. Emissions data and financial performance must be clearly presented in a format that is useful. Where appropriate, such information should be shared to increase public awareness and to demonstrate project success.

A summary of lessons is presented in Appendix C. The lessons have been divided among the various roles and stages of the lending and investing process in order to make them more tractable. The categories are as follows:

- effective use of advisors
- appraisal and due diligence in power projects
- budget and time management
- coordination with other organisations
- drafting agreements for power projects
- environmental issues to be addressed during project design and implementation
- project implementation with the project company
- monitoring issues related to annual reporting, project monitoring and data quality
- project company operations
- internal EBRD procedures
- procurement, covering supply and tendering of both goods and services
- measuring and maximising results
- broadening of the project scope, while being realistic
- due diligence on project sponsors
- structure of financing and the project company
- integration of technical cooperation into projects.

4. MAJOR RECOMMENDATIONS AND CONCLUSIONS

The evaluation findings, which are in line with overall Bank performance, are as follows:

- for overall performance, 52 per cent of the projects by number (48 per cent by volume) are rated *Successful* or better
- transition impact is rated *Good* or better in 47 per cent of the projects and *Satisfactory* for a further 38 per cent
- 67 per cent of the projects are rated *Satisfactory-Good* and 14 per cent *Excellent* on environmental performance.

However, the performance of the largest sub-sector, generation, is only *Partly Successful* – with only 38 per cent of the evaluated projects being rated *Successful* or better. The overall sector performance is derived by combining sector policy indicators for relevance, efficacy, and efficiency with project evaluation data. The resulting overall sector performance rating is *Partly Successful.*

4.1 RECOMMENDATIONS

The major recommendations of this review, which emerge from the findings in the previous chapters, are:

Recommendation: While updating its 2000 Energy Policy, the Bank needs to reflect the new reality of higher fossil fuel energy prices, address the less than adequate performance of generation projects and expand support for energy efficiency. At the same time, it must diversify its renewable energy portfolio and establish intellectual leadership on the types of regulatory structures appropriate for the power sector in the EBRD's countries of operations.

In updating the Energy Policy, the Bank has committed to incorporating all aspects of the energy cycle from extraction through to consumption. The results, with respect to generation projects, are only *Partly Successful.* Therefore, the Banking Department needs to reconsider its approach to this important sub-sector. Further, the Banking Department has yet to implement a gas distribution project.

The Banking Department has made a trade-off accepting weaker financial performance (driven by the number of state sector projects) in return for good transition and environmental outcomes. As a strategy this may be an appropriate model for working with the state sector in early and intermediate transition countries.

Recommendation: The Bank should consider moving from a practice of supporting state sector projects to promoting privatisation and supporting non-sovereign and private sector sponsors.

The existing portfolio heavily relies on state sector projects with less than satisfactory results. Where the Banking Department has worked with the private sector the results have been substantially better. In some countries the state sector (sovereign and non-

sovereign) may remain the only option if the Bank wishes to stay engaged; however, the Bank should promote privatisation where possible.

The Bank has been willing to work with municipalities[16] in eastern Europe on utility services for up to two years to establish the framework for privatisation, assist with a public competitive selection process and fund the winning bidder. This approach achieves the Bank's mandate, ensures optimal return to the municipality and engages the private sector in the successful management of a utility. By participating in the bid selection process the Bank can ensure sponsor quality and lowest cost. Such an approach may also be applicable to the Power and Energy Utilities Team, as it could lead to greater volume and thus greater transition impact.

Recommendation: The Bank should continue to focus on early and intermediate transition countries but also support renewable energy in advanced countries.

The Banking Department is to be commended for its boldness to "move east" from the start. Unfortunately, the results have been strikingly better in advanced countries than in early and intermediate transition countries. The Banking Department should remain focused on these countries in line with the Bank's overall strategy, but should develop a better model for engagement. However, the EU emphasis on renewable energy creates a new investment opportunity in the advanced countries.

In many countries the Bank has only completed a few projects in this sector. It is not clear that this broad approach will achieve the desired regional transition impact. While maintaining a broad focus to support the sector throughout the region, the Banking Department may also wish to consider focusing more resources in a few selected countries to maximise transition impact. If implemented, this approach should be undertaken in close collaboration with donors and other IFIs.

Recommendation: For the power and energy sector, the Bank needs to take a country-wide strategic perspective.

When presented with a specific project, the Bank's approach is to evaluate each project on its own merit. This model works for private sector ventures in a competitive market, but when working on utility projects in natural monopolies - particularly state sector projects - it is important to understand the larger context.

It is also important to think strategically and to analyse all possible reasonable alternatives. The Banking Department is increasingly taking this approach. However, this requires more pre-project technical cooperation funding, greater engagement with host governments and close collaboration with other donors. Bilateral aid agencies have the capacity to provide extensive technical assistance, but are constrained in working with the private sector. The Bank has successfully teamed with selected bilateral aid agencies on a country basis, with the bilateral donor providing technical assistance to

[16] Sometimes classified as private sector non-sovereign projects, as they are "enterprises in transition".

the government on the policy and privatisation agenda, and the EBRD providing the necessary financing to state (sovereign and non-sovereign) and private sector ventures.

Recommendation: In line with its environmental mandate, the Bank should further develop and diversify its renewable energy portfolio.

While fossil fuel may be under priced in some countries of operations, this under pricing will not last and a new reality is emerging for fossil fuel prices. Regional alternatives include nuclear, renewable energy and addressing demand-side issues. The new EU members have committed to producing 12 per cent of their energy from renewable sources by 2010. The Bank should work with host governments to proactively promote renewable energy alternatives.

Recommendation: The new Energy Policy should be directly and explicitly linked to the Bank's 2003 Environmental Policy.

This is a sector with significant environmental impacts. Future power sector projects will not only be subject to the new Energy Policy but are also subject to the 2003 Environmental Policy and other relevant Bank policies. Due to the importance of this sector, PED recommends that the new policy contain explicit links to the 2003 Environmental Policy, indicating how the Bank's investments in this sector will help it achieve its environmental objectives, meet compliance targets and improve environmental quality. Assignment of project environmental classifications (A, B, C, and FI) has implications for the Bank's environmental due diligence and project monitoring processes. Projects over 300MW should normally be classified as Category A projects, and the increasing use of the Category C classification on large investments in this sector is a potential cause for concern.

4.2 CONCLUSIONS

Based on the evaluation findings from this review, two conclusions emerge:

Conclusion: It is important to get the policy environment right to achieve successful project outcomes.

Getting the policy environment right must be a precondition to successful project implementation. The Bank needs to continue to work with other donors, allocate pre-project TC funding, and work closely with host governments on critical but difficult policy shifts in the sector. This will accelerate the move toward market economies, achieve better project outcomes and fulfil the Bank's transition mandate.

Summary Conclusion: The EBRD has so far performed only *Partly Successfully* in a challenging sector.

For generation projects, the performance has been less than adequate, while the other two sub-sectors have achieved significantly better results. The power and energy portfolio stresses state-sponsored generation projects in early and intermediate transition

countries, which has not worked. Starting in 1998, the Bank began a shift towards the private sector, which is now accelerating. In 2004, the Bank began investments with state non-sovereign sponsors.

While a new policy reflecting today's realities is called for, PED believes that it is less what is contained in the policy and more the strategy, and how the policy and the strategy are implemented, that matters.

To reach a *Successful* or higher performance outcome in the power and energy sector the Bank should:

- put much greater emphasis on sector policy and regulatory reform and address sector restructuring and unbundling
- proactively support privatisation and achieve a shift in the generation portfolio to the non-sovereign and private sector
- continue and expand the Bank's programs on energy efficiency
- diversify the generation portfolio, with more emphasis on alternative sources of renewable energy
- incorporate other Bank-wide power and energy operations into the sector policy, for example captive power plants and investments by financial intermediaries.

The Banking Department has achieved *Good* results in promoting the Bank's transition and environment mandates. Greater emphasis must be put on sound banking. It is not simply a matter of new volume but the quality of the portfolio that matters.

APPENDICES

APPENDIX A

POWER SECTOR PORTFOLIO DATA

Op Name	Portfolio Class	Sovereign/ Non Sovereign	Short Description	Op Status	Op Tot EUR Amt	Op Finance EUR (EBRD)	Debt Finance EUR (EBRD)	Equity Finance EBRD	Actual Signing Date	Country Name	Transition Stage Name	Use of Proceeds	Environ -mental Code
Maritza East II Power Project	STATE	Sovereign	Construction of lignite fired generation unit	Active	201,158,384	41,902,739	41,902,739	0	11-Jun-92	BULGARIA	Early-Intermediate	Energy Generation	B/1
Estonia Energy Sector Emergency Investment Project	STATE	Sovereign	Finance investments to repair energy infrastructure	Complete	26,501,997	24,686,911	24,686,911	0	04-Dec-92	ESTONIA	Advanced	Energy Distribution	B/0
Lithuania Energy Sector Emergency Investment Project	STATE	Sovereign	Finance investments to repair energy supply infrastructure	Complete	32,690,643	32,690,643	32,690,643	0	15-Dec-92	LITHUANIA	Advanced	Energy Distribution	B/0
Latvia Energy Sector Emergency Investment Project	STATE	Sovereign	Prepare Borrower for First Repayment	Complete	34,215,623	26,967,482	26,967,482	0	23-Dec-92	LATVIA	Advanced	Energy Distribution	B/0
Hrasdan No. 5, Republic of Armenia	STATE	Sovereign	Completion of Hrasdan Unit no. 5 Oil/Gas 300 MWe Power Unit	Active	73,835,884	47,509,269	47,509,269	0	20-Apr-93	ARMENIA	Early-Intermediate	Energy Generation	B/1
Drava River Hydro Power Project	STATE	Sovereign	Refurbishment and upgrade of three hydro power plants	Complete	107,230,179	65,087,456	65,087,456	0	25-Apr-93	SLOVENIA	Advanced	Energy Generation	B/1
Orsha Power Plant Modernisation	STATE	Sovereign	Rehabilitation of a combined heat and power station	Active	33,453,100	33,453,100	33,453,100	0	16-Dec-93	BELARUS	Early-Intermediate	Energy Generation	B/1
Power Sub-sector Project	STATE	Sovereign	Construction of Transmission Line.	Active	26,947,856	17,335,569	17,335,569	0	22-Dec-93	FYR MACEDONIA	Early-Intermediate	Energy Transmission	B/1
PPGC's Financing of Bielsko-Biala Power Station	PRIVATE	PRIVATE	Purchase from PPGC of receivables from power sales contract.	Complete	114,303,778	29,621,080	29,621,080	0	08-Jul-94	POLAND	Advanced	Energy Generation	A/1
Drin River Cascade Rehabilitation	STATE	Sovereign	Rehabilitation Project	Complete	34,164,960	1,444,960	1,444,960	0	22-Nov-94	ALBANIA	Early-Intermediate	Energy Generation	B/1
Power Rehabilitation Project	STATE	Sovereign	Rehab of thermal plant	Active	19,532,870	14,886,222	14,886,222	0	20-Dec-94	GEORGIA	Early-Intermediate	Energy Generation	B/1

Op Name	Portfolio Class	Sovereign/ Non Sovereign	Short Description	Op Status	Op Tot EUR Amt	Op Finance EUR (EBRD)	Debt Finance EUR (EBRD)	Equity Finance EBRD	Actual Signing Date	Country Name	Transition Stage Name	Use of Proceeds	Environ -mental Code
Yenikend Renewable Energy Project	STATE	Sovereign	Power Rehabilitation	Active	61,760,592	43,800,905	43,800,905	0	21-Dec-94	AZERBAIJAN	Early-Intermediate	Energy Generation	B/0
Electricity Network Reconstruction	STATE	Sovereign	Energy: war-damage reconstruction of power network	Active	49,015,421	32,211,389	32,211,389	0	02-Feb-95	CROATIA	Advanced	Energy Distribution	B/1
Transmission Network Improvement Project	STATE	Sovereign	Finance to improve the electricity transmission network.	Active	30,612,527	30,595,251	30,595,251	0	22-May-95	KYRGYZ REPUBLIC	Early-Intermediate	Energy Transmission	B/0
Power Sector Op. Efficiency Improvement - Transelectrica	STATE	Sovereign	Part of former CONEL loan (2038) allocated to Transelectrica	Active	67,480,368	26,790,460	26,790,460	0	10-Nov-95	ROMANIA	Early-Intermediate	Energy Transmission	B/1
Power Sector Op. Efficiency Improvement - Termoeletrica	STATE	Sovereign	Part of former CONEL loan (2038) allocated to Termoelectrica	Active	30,731,519	30,731,519	30,731,519	0	10-Nov-95	ROMANIA	Early-Intermediate	Energy Generation	B/1
Power Sector Operational Efficiency Improvement Project	STATE	Sovereign	Rehabilitation of power plant and the transmission system	Complete	120,270,542	57,150,542	57,150,542	0	10-Nov-95	ROMANIA	Early-Intermediate	Energy Transmission	B/1
Power Transmission and Distribution Project	STATE	Sovereign	Investment in power transmission and distribution facilities	Complete	80,880,000	100,000	100,000	0	12-Dec-95	ALBANIA	Early-Intermediate	Energy Transmission	A/0
Daugava Hydro Schemes Upgrade Project	STATE	Sovereign	Refurbishment, with improvements, to three hydropower plants	Complete	57,743,974	19,302,222	19,302,222	0	26-Apr-96	LATVIA	Advanced	Energy Generation	B/0
Starobeshevo Power Modernisation Project	STATE	Sovereign	Thermal Power Modernisation	Active	113,182,752	97,630,086	97,630,086	0	11-Dec-96	UKRAINE	Early-Intermediate	Energy Generation	B/1

Op Name	Portfolio Class	Sovereign/ Non Sovereign	Short Description	Op Status	Op Tot EUR Amt	Op Finance EUR (EBRD)	Debt Finance EUR (EBRD)	Equity Finance EBRD	Actual Signing Date	Country Name	Transition Stage Name	Use of Proceeds	Environ -mental Code
Mingechaur Power Project	STATE	Sovereign	Rehabilitation of existing Hydropower Plant	Active	39,724,583	17,782,995	17,782,995	0	24-Jun-97	AZERBAIJAN	Early-Intermediate	Energy Generation	B/1
Syrdariya Power Plant Rehabilitation	STATE	Sovereign	Rehabilitation projects for efficiency improvement.	Active	37,121,349	22,871,246	22,871,246	0	05-Nov-97	UZBEKISTAN	Early-Intermediate	Energy Generation	B/1
Emergency Power System Reconstruction Project	STATE	Sovereign	Providing services and equipment for power system network	Active	112,992,535	14,065,034	14,065,034	0	27-Nov-97	BOSNIA AND HERZEGOVINA	Early-Intermediate	Energy Transmission	B/1
Talas Transmission Network Improvement Project	STATE	Sovereign	Rehabilitation and upgrading of the Transmission Network	Active	20,354,055	19,226,570	19,226,570	0	18-Dec-97	KYRGYZ REPUBLIC	Early-Intermediate	Energy Transmission	B/0
Mutnovsky Independent Power Plant	STATE	Sovereign	Construction of a 40 MW (2x20) Geothermal Power Plant	Active	123,570,547	82,188,400	82,188,400	0	08-Jan-98	RUSSIAN FEDERATION	Russia	Energy Generation	B/0
Mosenergo	PRIVATE	PRIVATE	Corporate loan to Mosenergo	Active	106,951,872	24,681,201	24,681,201	0	07-Apr-98	RUSSIAN FEDERATION	Russia	Energy Generation	B/1
Karaganda Power	PRIVATE	PRIVATE	Efficiency & environmental improvement in the electric/heat	Active	36,610,448	12,340,601	12,340,601	0	13-Oct-98	KAZAKHSTAN	Early-Intermediate	Energy Generation	B/1
Georgia Enguri Hydro Power Plant	STATE	Sovereign	Referred to OpsCom on 05/11/02	Active	122,371,658	31,879,885	31,879,885	0	22-Dec-98	GEORGIA	Early-Intermediate	Energy Generation	B/1
KEGOC Power Transmission and Rehabilitation Project	STATE	Sovereign	Support the restructuring of the Kazakh power sector.	Active	210,448,375	37,021,802	37,021,802	0	03-Dec-99	KAZAKHSTAN	Early-Intermediate	Energy Transmission	B/0
Albania Power Sector Reconstruction	STATE	Sovereign	Reorganisation of the existing loan (Op. 350+2342)	Active	63,200,000	30,000,000	30,000,000	0	08-Dec-99	ALBANIA	Early-Intermediate	Energy Generation	B/1
Central & Eastern Europe Power Fund	PRIVATE	PRIVATE	Power & Energy Private Equity Fund	Active	16,150,852	4,363,543	0	4,363,543	16-Dec-99	<REGIONAL>	REGIONAL	Energy Generation	FI

Op Name	Portfolio Class	Sovereign/ Non Sovereign	Short Description	Op Status	Op Tot EUR Amt	Op Finance EUR (EBRD)	Debt Finance EUR (EBRD)	Equity Finance EBRD	Actual Signing Date	Country Name	Transition Stage Name	Use of Proceeds	Environ -mental Code
AES Telasi	PRIVATE	PRIVATE	Privatisation of Telasi Electricity Distribution Company	Complete	167,090,909	24,681,201	24,681,201	0	30-Dec-99	GEORGIA	Early-Intermediate	Energy Distribution	B/0
Ukraine Fuel Purchase Loan Facility	STATE	Sovereign	Fuel Purchase Loan Facility	Complete	48,557,303	48,557,303	48,557,303	0	06-Oct-00	UKRAINE	Early-Intermediate	OTHER	B/0
Electric Power Reconstruction Project	STATE	Sovereign	Supply and installation of control and monitoring system	Active	70,000,000	70,000,000	70,000,000	0	02-Nov-00	BOSNIA AND HERZEGOVINA	Early-Intermediate	Energy Transmission	C/1
Romania National Power Grid Company (NPGC)	STATE	Sovereign	Restructuring of the Romanian Power Sector	Active	168,867,956	42,346,360	42,346,360	0	08-Dec-00	ROMANIA	Early-Intermediate	Energy Transmission	B/0
Moldova Power Distribution Equity Investment	PRIVATE	PRIVATE	Power Distribution Equity Investment	Active	5,871,991	5,871,991	0	5,871,991	15-Dec-00	MOLDOVA	Early-Intermediate	Energy Distribution	C/1
Post-Privatisation Power Distribution Loan	PRIVATE	PRIVATE	Post-privatisation Power Distribution Loan	Active	41,135,335	20,567,668	20,567,668	0	21-Dec-00	MOLDOVA	Early-Intermediate	Energy Distribution	C/1
DIF - Issyk-Ata Hydro Power Station Rehabilitation	PRIVATE	PRIVATE	Rehabilitation & upgrading of hydropower plant in Kyrgyzstan	Active	834,240	427,000	0	427,000	30-May-01	KYRGYZ REPUBLIC	Early-Intermediate	Energy Generation	A/0
RAO UES Restructuring Loan.	PRIVATE	PRIVATE	Export receivables based on corporate loan to UES	Active	100,000,000	50,000,000	50,000,000	0	11-Oct-01	RUSSIAN FEDERATION	Russia	Energy Transmission	C/1
EPS: Emergency Power Sector Reconstruction Loan	STATE	Sovereign	Loan for rehabilitation and upgrade of transmission system	Active	135,900,000	100,000,000	100,000,000	0	25-Oct-01	SERBIA AND MONTENEGRO	Early-Intermediate	Energy Transmission	B/1
Albania Power Distribution Rehabilitation	STATE	Sovereign	Follow-on to Power Sector Reconstruction Project	Active	190,441,000	24,038,000	24,038,000	0	18-Sep-02	ALBANIA	Early-Intermediate	Energy Distribution	B/1

Op Name	Portfolio Class	Sovereign/ Non Sovereign	Short Description	Op Status	Op Tot EUR Amt	Op Finance EUR (EBRD)	Debt Finance EUR (EBRD)	Equity Finance EBRD	Actual Signing Date	Country Name	Transition Stage Name	Use of Proceeds	Environ -mental Code
Slovenske Elektrarne - Sector Restructuring	PRIVATE	PRIVATE	Re-approval memo 21/09/01	Complete	108,011,045	0	0	0	06-Mar-02	SLOVAK REPUBLIC	Advanced	OTHER	C/1
Mosenergo Restructuring Loan	PRIVATE	PRIVATE	Eurobond refinancing & investment in generation	Active	57,589,469	45,248,869	45,248,869	0	14-Aug-02	RUSSIAN FEDERATION	Russia	Energy Generation	B/1
Maritza East III Power Project	PRIVATE	PRIVATE	Rehabilitation of the 840 MW lignite fired power plant.	Active	651,300,000	62,180,000	62,180,000	0	28-Feb-03	BULGARIA	Early-Intermediate	Energy Generation	A/1
Lenenergo	PRIVATE	PRIVATE	Financing completion of TPP 5 and investment in heat network	Active	40,000,000	40,000,000	40,000,000	0	19-Jun-03	RUSSIAN FEDERATION	Russia	Energy Generation	B/1
ZSE Electricity Distribution Privatisation	PRIVATE	PRIVATE	Privatisation of ZSE	Active	330,000,000	66,000,000	60,515,003	5,484,997	16-Oct-03	SLOVAK REPUBLIC	Advanced	Energy Distribution	C/1
EPS Power II	STATE	Sovereign	EBRD long-term sovereign Guaranteed loan of EUR60 million.	Active	152,160,000	60,000,000	60,000,000	0	21-Oct-03	SERBIA AND MONTENEGRO	Early-Intermediate	Energy Transmission	A/1
FYR Macedonia Transmission Interconnection	STATE	Sovereign	Transmission line interconnection with Bulgaria	Active	50,090,600	40,470,600	40,470,600	0	25-Nov-03	FYR MACEDONIA	Early-Intermediate	Energy Transmission	A/0
KEGOC North-South	STATE	Non-Sovereign	KEGOC North South power transmission project	Active	66,639,243	28,794,735	28,794,735	0	16-Mar-04	KAZAKHSTAN	Early-Intermediate	Energy Transmission	B/0
Slovenske Elektrarne Restructuring Loan II	PRIVATE	PRIVATE	refinancing loan to support privatisation of SE	Active	350,000,000	30,000,000	30,000,000	0	08-Apr-04	SLOVAK REPUBLIC	Advanced	OTHER	C/1
Vlore Thermal Power Generation Project	STATE	Sovereign	Construction of a new thermal power station	Active	100,567,668	40,000,000	40,000,000	0	09-Jul-04	ALBANIA	Early-Intermediate	Energy Generation	A/0
K2R4 Post-start-up Safety Modernisation Programme	STATE	Sovereign	Modernisation of nuclear power units	Active	102,838,338	34,553,682	34,553,682	0	29-Jul-04	UKRAINE	Early-Intermediate	Energy Generation	B/1

Op Name	Portfolio Class	Sovereign/ Non Sovereign	Short Description	Op Status	Op Tot EUR Amt	Op Finance EUR (EBRD)	Debt Finance EUR (EBRD)	Equity Finance EBRD	Actual Signing Date	Country Name	Transition Stage Name	Use of Proceeds	Environ -mental Code
ESM Pre-Privatisation Share Purchase	PRIVATE	PRIVATE	purchase from FYR Macedonia of existing shares in ESM	Active	45,000,000	45,000,000		45,000,000	12-Oct-04	FYR MACEDONIA	Early-Intermediate	Energy Generation	C/1
Maritza East 2 TPP	STATE	Non-Sovereign	Financing of gas desulphurisation plant	Active	80,300,000	22,000,000	22,000,000	0	30-Nov-04	BULGARIA	Early-Intermediate	Energy Generation	B/1
System Operator SCADA	STATE	Non-Sovereign	Senior Loan to finance the implementation of SCADA/EMS	Active	120,000,000	60,000,000	60,000,000	0	17-Dec-04	RUSSIAN FEDERATION	Russia	Energy Transmission	C/1
National Power Transmission Co "Translectrica"	STATE	Non-Sovereign	Regional Transmission Link btw Romania and Hungary	Active	33,300,000	18,200,000	18,200,000	0	20-Dec-04	ROMANIA	Early-Intermediate	Energy Transmission	A/0

APPENDIX B

EVALUATION DATA

Sector Name	Overall Rating	PED Transition Impact	Risk Ti	Environ Performance	Environ Change	Company Performance	Project Performance	Additionality	Fulfilment of Objectives	Bank Handling
Energy Distribution	Successful	High		Satisfactory	Substantial	Satisfactory	Satisfactory	High	Excellent	Satisfactory
Energy Distribution	Successful	Medium		Good	Substantial	Satisfactory	Satisfactory	High	Excellent	Satisfactory
Energy Distribution	Successful	High		Satisfactory	Substantial	Excellent	Excellent	High	Excellent	Good
Energy Distribution	Partly Successful	Satisfactory	Medium	Good	Substantial	Unsatisfactory	Unsatisfactory	Verified in All Respects	Good	Good
Energy Generation	Partly Successful	Medium		Poor	None	Satisfactory	Satisfactory	High	Partly Unsatisfactory	Satisfactory
Energy Generation	Unsuccessful	Negative		Marginal	None	Poor	Poor	High	Unsatisfactory	Marginal
Energy Generation	Highly Successful	Excellent	Low	Excellent	Some	Excellent	Excellent	Verified in All Respects	Excellent	Good
Energy Generation	Successful	Medium		Excellent	Outstanding	Satisfactory	Satisfactory	High	Satisfactory	Satisfactory
Energy Generation	Partly Successful	Medium		Satisfactory	Substantial	Marginal	Marginal	High	Partly Unsatisfactory	Marginal
Energy Generation	Partly Successful	Good	Medium	Marginal	Some	Good	Marginal	Verified in All Respects	Good	Good
Energy Generation	Successful	Satisfactory	Medium	Good	Some	Excellent	Excellent	Verified in All Respects	Good	Good
Energy Generation	Partly Successful	Satisfactory	High	Good	Substantial	Unsatisfactory	Marginal	Verified in All Respects	Marginal	Good
Energy Generation	Partly Successful	Marginal	High	Good	Some	Good	Marginal	Verified in All Respects	Marginal	Marginal
Energy Generation	Partly Successful	Good	Medium	Good	Substantial	Good	Good	Verified in All Respects	Good	Good
Energy Generation	Successful	Good	Medium	Good	Substantial	Good	Good	Verified in All Respects	Excellent	Good
Energy Generation	Unsuccessful	Marginal	High	Satisfactory	Outstanding	Unsatisfactory	Unsatisfactory	Largely Verified	Satisfactory	Satisfactory
Energy Generation	Successful	Good	Medium	Good	Substantial	Marginal	Marginal	Verified in All Respects	Good	Satisfactory
Energy Transmission	Successful	Medium		Satisfactory	None	Marginal	Satisfactory	High	Satisfactory	Satisfactory
Energy Transmission	Partly Successful	Good	Medium	Marginal	Some	Good	Marginal	Verified in All Respects	Good	Good
Energy Transmission	Successful	Good	Medium	Good	None	Excellent	Excellent	Verified in All Respects	Good	Good
Energy Transmission	Successful	Good	High	Excellent	Some	Good	Good	Largely Verified	Good	Good

APPENDIX C

SUMMARY OF LESSONS LEARNED

LESSONS FROM EVALUATIONS OF POWER AND ENERGY PROJECTS 1991-2004	
Advisors	Consultants, experts and advisors of various kinds can be drawn upon to expand the Bank's capabilities without creating permanent positions. Lessons on dispatching and managing advisors are: • Consultants to a tender should have expertise both in drafting specifications and in procurement. • Consider switching consultants once a project moves from tendering to implementation to get the most qualified assistance. • Make sure that terms of reference for consultants clearly define tasks and properly measure achievements. • Consider single responsibility contracts to help assign responsibility clearly and avoid delays and cost overruns.
Appraisal	During due diligence the project implementation unit (PIU) must carefully review feasibility studies, assess the quality of the transmission system and alternative power suppliers to critique assumptions for reasonableness and identify circumstances that could imperil the project. Specific lessons include: • Select and appraise power projects from a systems perspective. • Carefully assess power and infrastructure projects that aim to lessen geopolitical risk. • An emergency approach cannot be justified for large power and infrastructure projects. • Sunk costs cannot justify completion of a stalled project. • The feasibility of finishing Soviet-era projects should be critically evaluated to confirm the validity of their assumed benefits and identify possible risks. • Over-capacity of power generation can retard price reform. • Prospective project managers must be vetted to be sure their past experiences match the challenges of the project.
Coordination	Bankers can promote transition and reduce risk by coordinating their structuring negotiations and monitoring activities with relevant IFIs, non-governmental organisations (NGOs) and specialist departments within the Bank itself such as the Project Preparation Committee. Activities should be combined to provide a stronger voice to local sponsors and host governments in conflict resolution, provide a unified procurement procedure to local suppliers, share information and save on monitoring costs, especially in countries where economic decisions are often distorted by cronyism and nepotism.

Drafting Agreements	Bankers caution that covenants need to be understood and appreciated for them to be kept. Additionally they advise: • Put carrots and sticks in the loan agreement to ensure achievement of environmental objectives. • Clearly word conditions for closing nuclear power plants in loan documents. • PIUs should renegotiate Soviet era contracts rather than attempt enforcement. • Detailed pre-qualification criteria and clear project specification are vital to selecting contractors for large infrastructure projects. • Operational financial covenants for utilities must match the country's stage of transition. • Realistic targets for price liberalisation should be set. • Drawdown covenants should follow TC and support phased project implementation.
Environment	Energy conservation, clean-burning technologies and other external environmental conditions should be considered in project design. Close cooperation with the Bank's Environmental Department (ED) should be maintained. Lastly, since large and controversial projects such as hydroelectric dams affect a wide number of stakeholders, care must be taken to inform and involve local communities, NGOs and others when designing and executing power projects. Specific lessons are summarised as follows: • Significant energy conservation from energy service companies (ESCOs) may only be achieved in the long term. • A public information strategy for environmentally risky projects should be formulated and executed. • A certified environmental management system will promote compliance. • Environmental objectives should be covenanted with sanctions. • The national energy strategy should be incorporated into the environmental appraisal. • Reasonable objectives in energy efficiency projects should be set. • Grants for projects addressing climate change should be mobilised.
Implementation	Even after deciding to commit its capital, the Bank can retain significant leverage during its deployment to support the viability of a project and promote the Bank's wider mandate. Bankers must be sensitive, however, to the political realities surrounding tariff and sector reform. To overcome expected resistance to price rises and privatisation job losses, the Banking Department are encouraged to consult widely, prioritise and set goals that are realistic for a given country's stage of transition and then implement these slowly.

	Specific lessons include: • An experienced project management or implementation unit (PMU/PIU) should be appointed early on. • Appointing and retaining a lender's supervisor and procurement specialist will enhance control of a project. • Projects in distress will need "workout" support to redress transition impact. • Loan conditions must be enforced by immediate action such as suspension of loan disbursement or negotiations on other projects. • A neutral audit of the capabilities of local companies and suppliers according to international standards should be conducted. • Client repurchase of its own bonds may be justified if done at a steep discount. • Transition to a market economy may be best achieved through phasing price rises into a socially-acceptable tariff structure. • The transfer of completed projects to local authorities for operation must proceed carefully.
Monitoring	Active monitoring of projects is required to maintain credit quality, identify problems at an early stage and ensure progress toward business and environmental goals. Emission data and financial performance must be clearly presented in a useful format. Where appropriate, such information should be shared to increase public awareness and demonstrate project success. • Report operations and environmental results on a "with and without project" basis as opposed to a "before and after" basis. • Since the cost of conserving a complex project rises as it advances, monitors must stay alert to completion risks. • The same lender's monitoring consultant should be used throughout a project's life. • Emissions data should be clearly presented in three time periods: before the project started, at the time of monitoring and target values set forth in the Environmental Action Plan.
Operations	Whereas the implementation lessons deal chiefly with financial or strategic choices about how the Bank manages its investment, operations focus on how the Bank wishes the sponsor company to manage its affairs to advance a project: • Warranties should be monitored and enforced. • PIUs should have active, western implementation support. • Physical investment projects in crisis may be put on hold in order to preserve options at a later date. Government grants and subsidies in public sector operations

	should be tracked.
Process	The Bank's internal policies for handling a project highlight these lessons: • All Banking Teams must keep detailed documentation of all key issues relating to a project, including the evaluation of tenders, throughout the procurement process. • Critical information given orally at Board meetings, especially in controversial situations, should be recorded in great detail. • Transition expectations must be realistic and be prioritised. • Exemption from the EBRD's Operations Committee must be sought if engineering procurement construction management (EPCM) contracts cannot be tendered competitively.
Procurement	Bankers highlight the need to engage consultants with broad and relevant experience to write and evaluate tenders, to vet supplier capabilities, to view cautiously bidders affiliated with either the project sponsor or local politicians, to draft enforceable covenants, to involve and train local staff so as to promote transition, to select a major Western general contractor whose reputation is worth protecting, to re-write Soviet-era contracts and above all, to follow the Bank's procurement policies. Specifics lessons include: • EPC contracts for large public clients should be procured under open tender. • Time for tendering multiple sub-projects should be allowed. • Mitigate procurement risk when resuming completion of large halted projects by using independent experts of high ethical standing. • Those running local tenders must be thoroughly evaluated, especially if affiliated to the client.
Results	Following Bank policy ought logically to achieve the Bank's mandate. Power projects highlight the following: • IFIs can influence governments in taking difficult political decisions regarding commercialisation and eventual privatisation of state-owned utilities. • Clients must understand contractual obligations for these to be enforced. Potential influence on a government through policy dialogue is in reverse proportion to that government's reputation for integrity, so temper transition expectations accordingly, especially where policy objectives run counter to the personal interests of key officials.
Scope	A project's scope encompasses its role in a country's power system, backward linkages to fuel sources, forward linkages to markets and

	effects on local communities. If defined too narrowly, risks can be overlooked and related developments can be ignored. If defined too widely, the expectations of sponsors and communities cannot be met. Specific lessons are as follows: • Supply agreements need to assess the technical requirements of the receiving party. • The Bank should be proactive in altering a project's scope of work when the economy and the power sector undergo substantial changes. • Feasibility studies should guide process selection.
Sponsors	Sponsors, both local and international, are fundamental to the origination, execution and hence the financial and transition success of any project. Specific lessons follow: • ESCOs without equipment supply interests are preferable as pioneers in a new environment. • Multiple shareholders can have positive and negative impacts on project development.
Structure	The legal, financial and operating structure of a project that is negotiated by the PIU sets the ground rules for its implementation and defines the tools and leverage with which the Bank can influence operations and mitigate risks. Maintaining leverage over negotiations and enforcing covenants are addressed repeatedly in these lessons. A key strategy is to divide large and complex projects into stages, requiring specific goals to be accomplished before further loan disbursements, but supporting goal achievement with graduated TC. A combination of incentives and penalties is suggested to manage both suppliers and regulators. In particularly difficult situations, project leaders are encouraged to involve the full lobbying efforts of the Bank as well as other IFIs. Lessons learned in this topic are summarized as follows: • EPCM contractors could be motivated by including bonuses for early completion and for target-cost and performance guarantees. • An institutional framework may not be relied upon until it is actually tested. • Bankers should not expect politically unpopular measures such as tariff increases to be easily enacted. • Commercialisation can be enhanced by safeguarding the independence of a former utility from government intervention. • Government commitments to support a project only have value if they can be enforced. • Over-collateralisation guards against credit risk, particularly

	in a national financial crisis, should be incorporated into the structure.
Technical cooperation	TC programmes can extend a project's scope to address legacy or transition issues that are beyond the immediate economics: degraded infrastructure, polluting burners, training, managerial development, information technology installation or upgrading, international accounting standards, reporting and monitoring, commercialisation or privatisation of a state company, and so on. TC can also be used better to assess scope or plan for a large project. Best results are achieved when the sponsors and staff have close involvement with the TC programme. In instances where attitudes or practices are to be changed, such as waste treatment or reporting requirements, the TC must allocate both money and time to build an awareness of the problem within the affected community and earn a commitment from the affected persons to rectify it. Highlights include: • TC should make clear the sequence and conditions for future Bank involvement. • Remote regions may be better served by a region-wide, rather than a project-specific approach.

APPENDIX D

MANAGEMENT RESPONSE TO POWER SECTOR REVIEW

MANAGEMENT RESPONSE TO POWER SECTOR REVIEW

BACKGROUND

Management appreciates this important evaluation study on EBRD projects in the power sector and will take it into account when drafting the new Energy Policy Paper. In considering the results and recommendations of the study it is important to note that it is based on 21 project evaluations (less than half of the 57 projects undertaken in the sector to date), 19 of which were signed between 1992-1999. Only two evaluations relate to projects committed after the last Energy Policy paper (both rated 'Successful'). In these early years of the Bank the power sector in all of our countries of operation were at an early stage in their transition from state owned integrated utilities or ministries. In those first years the priority for the Bank in the sector was to finance priority investment needs in countries while initiating the transition process through increased efficiency and institutional reform. As many of these projects were done at this early stage with serious disruptions and economic uncertainties in the operating environment there were many challenges particularly with implementation capacity at the Borrower level. Therefore against this background, Management is pleased that the Bank was able to achieve a good rating on transition and environment.

As the graphs in Annex 1 show, the portfolio of projects since the last Energy Policy Paper has altered substantially with generation reduced to under 30% as a sub sector in the portfolio since 2000 and sovereign lending to state owned entities down to 35 % of the portfolio since 2000. It should also be noted that the Power Sector Review is based only on evaluated investment projects and does not take into account the substantial policy work by the Bank in this sector through sector initiatives and technical cooperation (TC) projects. Annex 2 presents two graphs showing the distribution of the Bank's TC projects in the power sector. Of the 178 TCs done to date in the sector for a total of Euro 36 million, 51 % in number and 40 % in volume were for direct project preparation and implementation. The balance 49 % in number and 60 % in volume were for least cost studies, institutional reform, policy dialogue, regulatory work and privatisation support.

The results of these efforts include unbundling of the power sector in the majority of our countries of operation: 17 out of the 23 countries in which we have made power sector investments have partially or fully unbundled. The ones that have not tend to be the smaller countries such as the Baltic States, where it may not make economic sense to do so. More than half of the countries in which the Bank has undertaken power projects have also started privatising parts of the sector.

COMMENTS

Management welcomes the six recommendations of the PED report which will be taken into account in drafting of the new Energy Policy Paper. It is important to note that many of these have now been implemented, or are under implementation since the last Energy Operations Policy Paper in 2000. However, the limitations on the scope of the PED study to the evaluated projects to date (as noted in the study) meant that many of the activities of the Bank in recent years were not able to be taken into account. In accepting these recommendations, Management would like to illustrate how these are already being effected.

(1) While updating the Bank's 2000 Power and Energy Policy, the Bank needs to reflect the new reality in energy prices, address the less than adequate performance in generation projects, expand support to energy efficiency, and establish intellectual leadership on the types of regulatory structures appropriate for the power sector in the Bank's countries of operation.

As already illustrated, the Bank's generation project performance is judged largely on projects undertaken prior to the 2000 Energy Policy Paper. Since 2000 the percentage of generation projects signed has declined significantly and many of the lessons learned from the projects undertaken in early years have been incorporated.

Since the 2000 policy paper the Bank's energy efficiency activities have expanded to include industrial projects. In 2004 the Bank signed almost Euro 100 million of industrial energy efficiency investments, and this effort will continue to expand.

The 2000 Policy Paper discussed appropriate sector reform priorities at length and the updated policy paper will certainly update this discussion based on the extensive experience acquired to date by the Bank by taking an active leadership role on sector issues in our countries of operation. Examples of the Bank's key role in such activities which will be drawn upon in the revised Paper will include:

- Russia – on Restructuring Committees of RAO UES, Mosenergo, Lenenergo
- Ukraine: Co-Chair of Energy Task Force
- Lead role in South East Regional Energy Market together with other Donors and IFIs. In particular led the effort on an Affordability Study for the region and hosted latest donor conference
- Lead roles in policy dialogue and participation in privatisations in Albania, Bosnia, Armenia, Georgia, Romania, Bulgaria, Moldova, Macedonia, Slovakia, and Kazakhstan

Management remains committed to an active role in policy dialogue in the energy sector and this will be discussed in detail in the new Paper.

(2) Continue a shift away from a practice of supporting state sector projects to promotion of privatization and support to non-sovereign and private sector sponsors.

As noted in the PED review, the proportion of non-sovereign and private projects has increased significantly in recent years (70% of the portfolio since 2000). One of the issues to be addressed in the new policy paper is the appropriate balance between sovereign, non-sovereign and private projects in the energy sector. In addition the Bank has actively promoted privatisation through its TCs. The approach suggested by PED based on the MEI experience has in fact been applied in the power sector as well, with the most notable success of late being in Bulgaria where distribution companies were privatised to reputable investors for a record price. In the power sector we have gone further by offering pre-privatisation financing (Macedonia, Slovakia) and equity (Moldova, Slovakia, Bulgaria), alongside investors to increase the attractiveness of the investment and reduce risks to investors. In addition we have supported private sponsors post–privatisation in several countries (Kazakhstan, Georgia, Moldova, and Bulgaria). However also as noted by PED in the report in order to continue the process

of reform it is important to remain engaged with the Government and this will imply some level of involvement with state owned entities, in particular with natural monopolies such as transmission companies. Increasingly the Bank is trying to structure such transactions on a non-sovereign basis (e.g. Kazakhstan, Romania and Russia).

(3) Continue to focus on early/intermediate transition countries but also support renewable energy in advanced countries.

Management believes that it is the mandate of the Bank to continue to engage actively in early transition countries as demonstrated by the ETC initiative. Taken together with the TC and other activities including task forces, restructuring committees it is in many of such early and intermediate transition countries where the Bank has succeeded in initiating reform and privatisation and maximising transition impact. Management expects to continue to support all the countries in the region willing to make the commitment to reform and transition in line with the Bank's mandate and where there are projects which follow the Bank's principles of sound banking and additionality. We accept the PED comment that EU emphasis on renewable energy creates investment opportunities in advanced countries, as does the Kyoto Protocol create opportunities fore renewable investments in other countries in our region. However Management remains conscious that the Bank will have to demonstrate transition impact and additionality even for renewables projects in all countries.

(4) Take a country wide strategic perspective

The Bank does take a Country wide perspective and its proposed investments in the sector are presented in the context of the country's sector as well as the Country Strategies which always have a section on the sector strategy for that country. In the early years of the Bank this was not always easy to do as countries were in the throes of transition and uncertainties on the economic front made it very difficult to take any long term perspective. With increasing stabilisation in the region the Bank has engaged in several least cost and market studies. Some of this work is done directly by the Bank through TCs (about 10% of all TCs in the sector for a total of Euro 3.6 million) but to a large extent the Bank also works with bilateral donors and other IFIs such as the World Bank.

(5) In line with the Bank's environmental mandate, diversify its renewable energy portfolio.

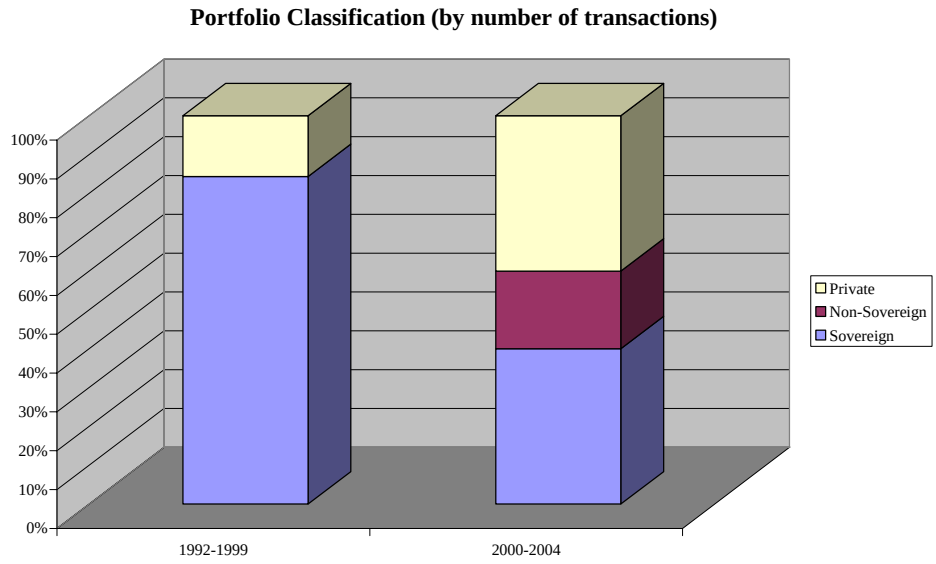
As recognised by PED, the Bank has done a substantial amount of renewables projects to date – 36% of the portfolio as compared with a 12% requirement by the EU. This was largely in hydro and geothermal projects, and the Bank is attempting to diversify this portfolio to the extent economic opportunities exist in our region. Following commitments made in the 2000 Energy Policy Paper, the Bank undertook a Renewables Mapping exercise for the region. This has provided a basis on which to proactively follow up on specific renewables projects and initiatives. A review of the regulatory framework for renewables in each of our countries of operation is currently underway. The line of credit in Bulgaria for energy efficiency and renewables projects provided in 2004 is proving highly successful. Other initiatives in the pipeline include a renewables fund in Armenia focussing on wind and mini-hydro, and a regional renewables fund.

(6) There should be direct and explicit links between the new Energy Policy and the Bank's 2003 Environmental Policy.

As the 2000 Energy Policy Paper devoted an entire section to Environment and Climate Change it will be entirely appropriate for the new Energy Policy to reflect the updating of the Environmental Policy.

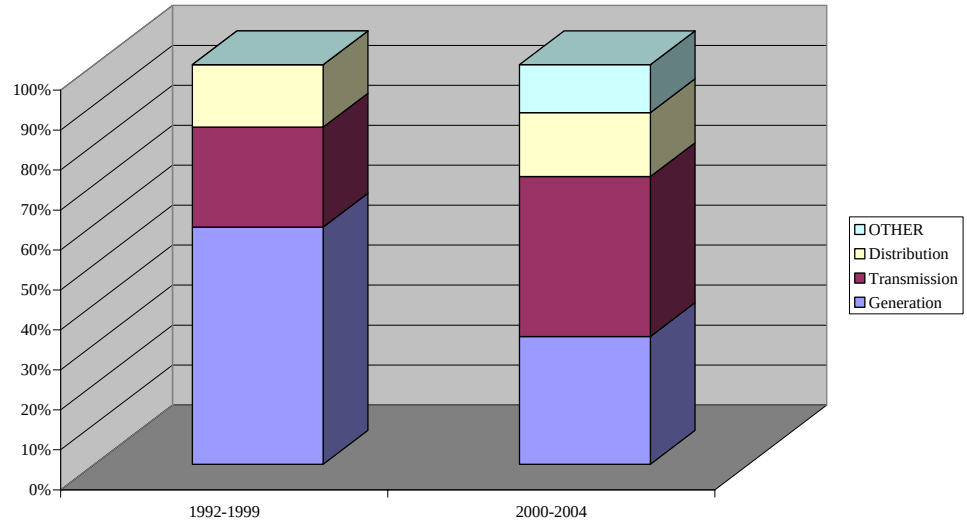
ANNEX 1

Figure 1



Total number 32	Total number 25

Figure 2

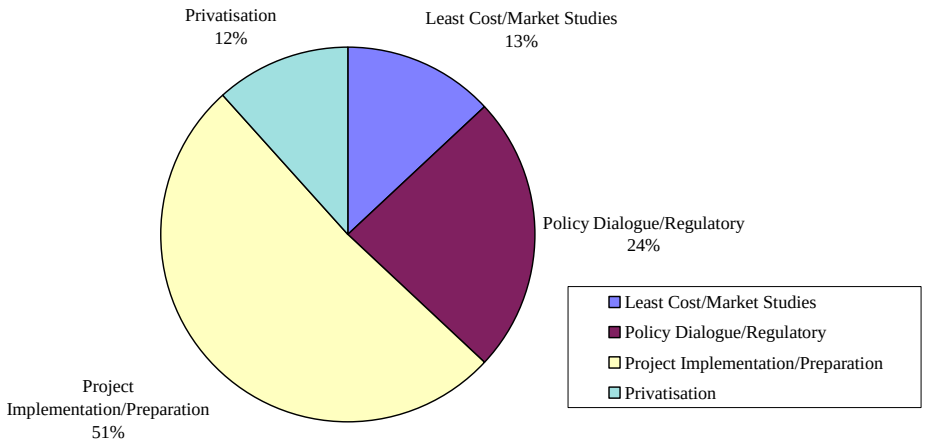


Total number 32	Total number 25

ANNEX 2

Figure 1

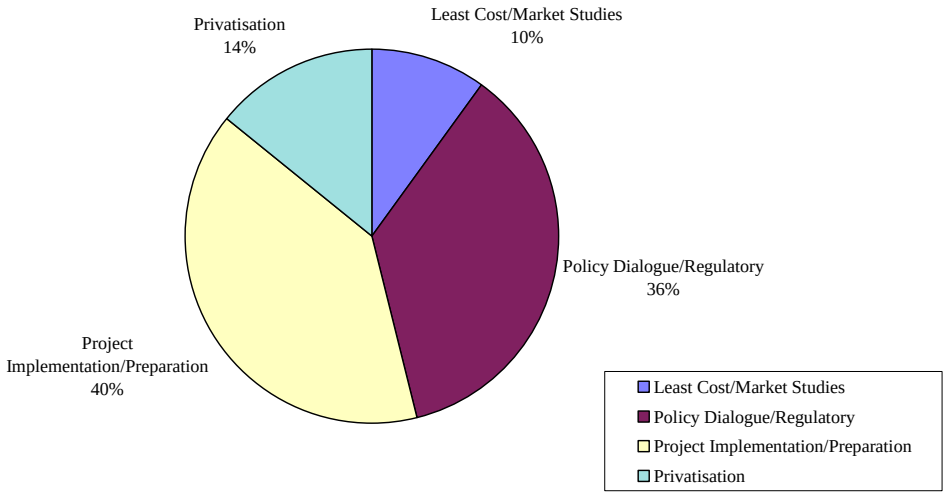
TC types - by number of transactions



Total 178 transactions

Figure 2

TC types by volume



Total volume EUR 36,195,126