

Evaluation Report

Operations Evaluation (EV)

Evaluation of EIB Financing of Railway Projects in the European Union

Synthesis Report



EVALUATION REPORT

Evaluation of EIB Financing of Railway Projects In the European Union

Prepared by

Operations Evaluation

Guy Berman
Monique Bianchi

External Consultants:

Jack Duchemin
Ecorys (NL)
Dieter Havlicek

June 2005
Edited March 2019

* * *

NOTICE

The EIB has an obligation of confidentiality to the owners and operators of the projects referred to in this report. Neither the EIB nor the consultants employed on these studies will disclose to a third party any information that might result in a breach of that obligation, and the EIB and the consultants will neither assume any obligation to disclose any further information nor seek consent from relevant sources to do so.

TABLE OF CONTENTS

EXECUTIVE SUMMARY AND RECOMMENDATIONS	1
1. INTRODUCTION	6
1.1 CONTEXT OF THE EVALUATION	6
1.2 OVERVIEW OF THE RAILWAY PROJECT PORTFOLIO	6
1.3 METHODOLOGY	7
2. RAILWAY SECTOR DEVELOPMENTS	8
2.1 RAILWAY SECTOR CHARACTERISTICS	8
2.2 EU POLICIES FOR THE RAILWAY SECTOR	10
2.3 PROSPECTS	11
2.4 THE EIB'S POLICIES	12
3. RELEVANCE/EFFECTIVENESS OF PROJECTS	13
3.1 CONTRIBUTION OF PROJECTS TO OBJECTIVES	13
3.2 IMPLEMENTATION PERFORMANCE (EFFECTIVENESS)	14
4. EFFICIENCY	17
4.1 PROJECT DESIGN	17
4.2 ECONOMIC EFFICIENCY	17
4.3 FINANCIAL VIABILITY	18
5. SUSTAINABILITY, ENVIRONMENT AND INSTITUTIONAL DEVELOPMENT	18
5.1 PHYSICAL SUSTAINABILITY	18
5.2 FINANCIAL SUSTAINABILITY	19
5.3 ENVIRONMENTAL SUSTAINABILITY	19
5.4 INSTITUTIONAL DEVELOPMENT	19
6. EIB PERFORMANCE	19
6.1 INTRODUCTION	19
6.2 PROJECT IDENTIFICATION	20
6.3 PROJECT DEFINITION	20
6.4 PROJECT APPRAISAL	20
6.5 FINANCING ARRANGEMENTS	22
6.6 MONITORING	22
7. THE EIB'S CONTRIBUTION	23
7.1 FINANCIAL VALUE ADDED	23
7.2 NON-FINANCIAL CONTRIBUTION	24
 ANNEX 1: Evaluation Criteria	

Executive Summary and Recommendations

Introduction

This report presents the results of an evaluation of 29 “mainline”¹ railway projects, selected from the Bank’s portfolio of 48 railway projects financed in the European Union (EU-15) during the period 1990-2000. The total loan value of this portfolio amounted to EUR 14 billion, or almost double the amount of the previous decade. Thirteen projects were selected for a desk review and sixteen were chosen for an in-depth review.

Half of the projects consisted of high-speed and main line fixed infrastructure. The remainder comprised rolling stock (15%), interurban/urban modernization projects (13%), communication infrastructure and electrification (8%), as well as regional projects and projects with mixed components (14%). The purpose of the projects was railway modernization, rehabilitation and the construction of new high-speed railways. Moreover, 90% of these projects were for passenger traffic.

The Bank’s portfolio, as measured by total costs, showed a significant number of very large projects. This lopsided distribution of projects reflects the very high number of high-speed rail projects undertaken during the period.

The evaluation assessed the performance of the railway projects in the light of the Bank’s standard evaluation criteria: relevance/effectiveness of projects, efficiency and sustainability, including the environment and institutional development where appropriate.² It also reviewed the Bank’s own performance and contribution in the context of the Bank’s underlying broader operational objectives, policies and procedures.

Railway Sector Developments

The Bank’s involvement in railways should be seen against the background of vastly increased traffic over the last 20-30 years that has mainly benefited road and air transport. By contrast, rail transport has stagnated at relatively low historic levels and has lost significant market share mainly in freight but also in passenger transport. This has given rise to concern among policy-makers as to whether such a development, if left unchecked, is socially acceptable, environmentally sustainable and economically sound. It has also prompted EU governments and the EU itself to devise policies designed to halt the decline of the railways.

Rail enjoys the support of policy-makers because it has certain advantages that make it environmentally less damaging and socially more acceptable than other modes of transport, such as road and air transport. Economically, rail freight transport is under certain conditions superior to other forms of land transport for high-volume traffic over medium to long distances. For passenger transport, experience shows that rail can be competitive over medium distances, provided it offers frequent, fast and high quality services at competitive prices.

Despite these comparative advantages the declining role of the railways in freight and passenger transport is undeniable. There is more or less a consensus on the principal factors that have caused the decline, namely: the changing structure of the EU economies, requiring flexibility and customer focus, to which railway enterprises have not yet adapted sufficiently; fiscal and transport policy distortions that favour road and air transport over rail; and, last but not least, excessive state intervention in the management of the railways. In addition, four railway-specific problem areas can be identified: inefficient management of rail infrastructure and operations, estimated to amount to 25% of total railway costs per year; lack of commercial focus in such areas as costing, pricing, operations, marketing and customer orientation; lack of international integration hampering cross-border transport, one of the fastest growing market segments; and, finally, institutional obstacles preventing business-oriented management of the railways.

¹ Excluding urban and suburban projects.

² See Annex 1 for a definition of these terms.

The EU has assisted the railways in the process to transform themselves into more competitive, commercially oriented enterprises in several ways. It has introduced scope for competition between railways by establishing rights of access to rail infrastructure by other operators. It has also introduced measures that foster international rail competition and rail interoperability, among other things. Moreover, a number of regulations have been adopted that are designed to improve the railways' financial situation, their debt burden and the rights and obligations of EU Governments in relation to the railways. However, practical implementation of these EU policies has so far been slow and uneven, reflecting both technical and institutional or legal difficulties.

The Bank has supported financially in a massive way the attempt to revitalize railways in the EU. In 1990 the Bank stated, for instance, that its objective was to provide substantial support to the railways so as to help them adapt to a changed environment and to reclaim their position in the market because rail was seen as environmentally friendly and as a solution to relieve road congestion in key corridors. The doubling of railway lending by the Bank during the 1990s compared to the previous decade is testimony to the Bank's commitment in this regard. In addition, the Bank shares its expertise in the railway sector with the Commission in the relevant specialist committees. In a recent strategy paper the Bank confirmed that it intends to continue its support, albeit with more emphasis on project efficiency and demonstrable progress in the implementation of EU policy objectives.

Project Performance

Contribution to project objectives. In terms of their contribution to EU and national objectives, all railway projects evaluated in depth potentially contributed to the national objectives of modernization and viability. As regards the contribution of the projects to EIB objectives and operational priorities, the picture that emerges is more mixed. In accordance with its Statute the Bank always ensured that the debt service for projects was secured. By contrast, the contribution of projects to economic productivity, as measured by their economic rate of return, was lower than anticipated in the majority of projects and unsatisfactory in about a third. Such other Bank objectives as regional economic development, economic and social cohesion and environmental protection and improvement were also claimed for a number of projects but not quantified.

Implementation performance. The implementation performance of the projects evaluated in depth was mixed. With few exceptions, the ex post performance did not hold up to the ex ante expectations. In particular, weaknesses were identified in project scope, implementation schedule, costs and project output.

- As to project scope, half of the 16 projects reviewed in depth were not in conformity with the original project description. Inter alia, projects had to be modified on account of environmental objections, administrative intervention, incomplete project designs and geological problems. Although these are all important and legitimate reasons for adapting the scope of a project they are also an indication of incomplete project preparation. The fact that careful project preparation pays is demonstrated by one project without changes in its scope, implementation delays or cost increases. In this case the promoter negotiated and agreed with all stakeholders before project implementation and also obtained cost guarantees.
- Implementation delays were a problem in 11 of the 16 projects, representing three quarters of the value of the projects reviewed in depth. Only five projects were on schedule or had delays of less than one year. The others were delayed by between one to six years and one by even more than ten years. Consequently some of these projects were not yet complete at the time of the evaluation.
- It is not surprising to learn that the projects that were completed on schedule also registered no or slight cost increases. By contrast, five delayed projects (representing 60% of the loan value of the 16 projects evaluated in depth) had cost increases of 50-80%.
- As regards expected project output the intended improvements in service quality, measured in terms of time savings, safety and comfort, have more or less been achieved in all projects in operation. Ex post traffic demand registered by these projects was usually lower than anticipated, but on the whole still satisfactory. For two projects (sections of the same line, but independent) whose

completion was delayed, expected traffic was reduced by the Bank in subsequent appraisals by 30%-50%. Updated traffic forecasts for the remaining five delayed projects were either not available or not sufficiently reliable.

In conclusion, it can be stated that the implementation performance of the projects evaluated in depth was weak but, if judged against the softer evaluation criteria referred to in section 1.3 of this report, still satisfactory for the majority of projects. Nevertheless, there were five projects with major problems (comprising 60% of the total ex post cost of the projects evaluated in depth), whose delays and cost increases were clearly unacceptable. The Bank attempted to intervene in the two most obvious cases but, apart from acquiring a better understanding of the causes of underperformance, was unable to influence the promoters' performance significantly. When the Bank is involved at an early stage and projects are very large, full monitoring is appropriate.

Project Efficiency. Lower ex post economic and financial efficiency of the projects examined in depth is expected for the reasons stated in the above discussion of the projects' implementation performance. As to the economic viability of the projects, the majority met or exceeded the evaluators' (low) benchmark of 3% and almost half of the projects exceeded the 5% mark but were generally lower than the ex ante estimates. At the other end of the scale there was one large high-speed rail project (comprising 25% of the loan value of the in-depth projects) that failed to attain even the 3% level. The measurement of financial return is less significant for these projects; it can only be lower than expected and is always closely linked to inflows of subsidies at various levels (investment, operations).

Project Performance Ratings

The table below summarizes the project performance ratings for the projects evaluated in depth.

Criterion	Project rating				
	Good	Satisfactory	Unsatisfactory	Poor	Not rated
Relevance	15	0	1	0	0
Effectiveness	3	9	1	0	3
Efficiency	4	4	4	3	1
Sustainability	3	12	0	0	1

It was difficult to give an overall rating for each project. The balance between criteria was uneven and a number of projects were either not yet operational or had been redefined, often for justified reasons. The evaluators would suggest that only half of the projects evaluated in depth would have been rated as Satisfactory or Good, the others being either Not rated or Unsatisfactory/Poor.

The Bank's Project Cycle

The identification of projects was almost always based on regular contacts with the railway companies concerned, with a relatively large number of repeat projects being the norm. The type of projects identified was closely related to the priorities identified by the railway companies themselves, i.e. modernization, rehabilitation and new lines for high-speed rail passenger transport. The project definition was identical, or fitted in with, the promoter's project/investment programme in half of the projects reviewed. In some other projects the project definition was modified to ensure that the Bank did not exceed 50% of total project costs. Railway programme loans encountered the difficulty that it was rarely possible to assess and fully quantify each individual component. The changes to the appraisal of such loans made during the latter part of the 1990s have, however, improved the previous practice, a fact that has also been appreciated by the promoters.

As to project appraisal, the quality and depth of the analysis varied widely and seemed primarily a function of the information available at the time of appraisal. In particular, the prospective market and

demand for a project's output was difficult to estimate, even with the sometimes elaborate econometric models commissioned by some promoters. Although the Bank was generally more conservative in its estimates of likely demand, this still proved over-optimistic for a number of projects, including repeat projects. All projects evaluated in depth included a quantified economic analysis and usually an estimate of the EIRR. However, a number of them showed methodological weaknesses, such as under- or over-statement of the economic life of the projects or missing cost and benefit components, such as operating and maintenance costs and environmental benefits. Moreover, with few exceptions, project implementation periods and costs were often underestimated.

One area the appraisals should address more systematically concerns risk analysis. Although credit risk was always analysed with care, such other risk categories as traffic risk, implementation risk and cost increases were rarely treated adequately, as evidenced by the significant number of projects that incurred such problems. Even where such risks were identified, their potential impact on the project's viability was seldom quantified adequately and mitigation measures were rarely recommended. Although the Bank conducted monitoring in accordance with the category assigned (at appraisal), this sector justifies closer monitoring than expected. Large projects, where the Bank's financing is granted at an early stage, deserve regular monitoring. Observations made during monitoring may require further action, even if the Bank's loan is not at risk.

EIB Contribution

The main impact of the Bank was in the financial value added, in terms of advantageous interest rates, loan terms and financing mechanisms, flexibility in dates and currencies of disbursements and the Bank's goodwill. Based on the projects whose financial advantage could be quantified, the Bank's rates were on average lower than those offered by other sources of finance. Assuming this applies to the whole railway portfolio, it corresponds roughly to a net present value of EUR 10-15 million per year over the decade under review. The Bank's competitive edge diminished over time, however, so that by about 1998 several loan balances still to be disbursed were not called because promoters could arrange more advantageous funding from other sources. By contrast, the Bank's capability to grant long-term loans on flexible terms was mentioned by promoters as particularly helpful because almost all projects were characterized by long economic lives and relatively low financial returns. Several promoters emphasized the benefit of the Bank's participation in their projects. It had facilitated their funding efforts because of the Bank's quality image and goodwill.

As in other sectors, the Bank added only little in the way of non-financial improvements to the projects it financed. Given the nature of those projects and the quality of the promoters, the use of the Bank's expertise could be increased by strengthening its participation in committees dealing with railway policies and other matters (EU Commission, Parliament, Member States). This early involvement could give the Bank more leverage when monitoring project implementation.

Table of Recommendations

	EV Recommendation	Accepted Yes/No	OpsA/ PJ/ RM Comments
1.	<p>The following problem areas were identified in the appraisal of the majority of railway projects:</p> <ul style="list-style-type: none"> ▪ weak project preparation resulting in significant under-estimation of implementation delays and project costs; ▪ imprecise definition of project output; ▪ unsystematic risk analysis; ▪ external benefits (mainly environmental) used to justify a project not quantified. <p>The Bank should examine the above areas at the project identification stage, so as to ensure that projects with high risk of a limited economic justification are identified and weaknesses addressed. External benefits used in the justification of a project should be quantified as far as possible.</p>	Yes	<p>It is a fact that highly complex large-scale projects can lead to significant performance risks during project implementation or that rearrangements in phasing or in scope are introduced by responsible authorities for different reasons. These issues must be fully analysed at appraisal and best efforts are being made in that regard.</p>
2.	<p>The Bank already shares to some extent its experience and expertise with the relevant Commission bodies in EU railway policy formulation and corresponding projects. The Bank could increase its contribution in the railway sector by strengthening this participation with the relevant Commission/Parliament/Member State committees dealing with railway policies and projects, including such matters as TEN and QuickStart projects, new corridors, appraisal guidelines and interoperability.</p>	Yes	<p>Recommendations already implemented. The cooperation between the Commission and the other bodies mentioned has been developed over the recent pasts in many areas, in particular those relevant for railway policy and projects. There has been a very useful and reinforced dialogue with the Commission (DG TREN), leading to the establishment this year of a Memorandum of Understanding on future cooperation.</p> <p>At the request of Member States, the Bank is also involved in the project preparation of large-scale cross-border projects (like Brenner Tunnel and Lyon-Turin). Policy dialogue should continue to be reinforced, but will necessarily face resource constraints.</p>
3.	<p>Monitoring: given the low rating for effectiveness, the monitoring of railway projects, which is already at a relatively high level, could be improved by reacting better when problems are identified (even if the Bank's loan is not at risk). When the Bank is involved at an early stage and projects are very large, full monitoring is appropriate.</p>	Yes	<p>New procedures now address this issue. Size alone is not a sufficient condition to justify (big projects) or discard (small projects) full monitoring.</p>

1. Introduction

1.1 Context of the Evaluation

This evaluation comprises “main line” railway projects financed by the Bank in the European Union (EU) during the period 1990-2000, e.g. TGV (trains à grande vitesse), and other traditional main line projects (including other infrastructure such as train stations, communication equipment, electrification and rolling stock). Some projects consisted of a mixture of interurban and urban elements. These are included. Excluded are: urban and suburban railways (e.g. metros, light railways, tramways), which have recently been covered by an EV evaluation concerning urban development projects³, and very large combined projects.

1.2 Overview of the Railway Project Portfolio

The Bank financed 48 railway projects during the period under consideration for a total loan amount of EUR 14 billion. This is almost double the amount financed during the preceding decade. Although large in absolute terms, the Bank’s share in the total cost of these projects (EUR 56.8 billion) amounted to about 25%. In terms of total investment in the sector the Bank funded less than 4%, which is roughly comparable to its financing of other eligible sectors. The table below shows the types of project financed, in terms of number of projects, their estimated cost⁴ and loan value.

Project Type	Number of projects	Percent of total	Cost of projects EUR million	Percent of total	Value of EIB loan EUR million	Total of loans	Total of costs
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>C5</i>	<i>C5/C3</i>
High speed	12	25	31 265	55.1	6 020	43.0	19.3
Main line	12	25	10 580	18.6	2 789	19.9	26.4
Rolling stock	7	14.6	3 763	6.6	1 490	10.6	39.6
Signalling, Electrification	4	8.3	3 603	6.4	450	3.2	12.5
Interurban/urban	6	12.5	2 404	4.2	1 062	7.6	44.2
Regional	3	6.3	1 303	2.3	677	4.8	52.0
Mixed projects	4	8.3	3 854	6.8	1 521	10.9	39.5
Total	48	100	56 772	100	14 009	100	24.7

Half of the projects concerned high-speed lines and main lines, 15% rolling stock, 13% a combination of interurban/urban modernization projects and 8% communication infrastructure and electrification. The remainder, including regional projects, were projects with mixed components.

The main beneficiary railways of these loans are located in Denmark, France, Italy, Portugal, Spain and the UK (89% of the projects or 80% of the total loan amount). Over 90% of the projects supported by the Bank concerned passenger traffic.

The Bank’s portfolio, as measured by total costs, showed a significant number of very large projects. Thus, ten projects in the portfolio, representing 61% of total project costs, had costs above EUR 2 billion. It should be borne in mind that if a large project fails, this has a much more significant negative impact on the Bank’s portfolio than if a small project fails. In the interest of an unbiased

³ EIB Financing of Urban Development Projects in the EU, 2003, available at www.eib.org/publications.

⁴ Ex post cost where available, otherwise ex ante estimates. Since experience shows that cost increases can be substantial, the cost estimate in the table above is likely to be on the low side.

analysis the evaluation attempts to take this into account where warranted by presenting the synthesis in terms of both the number and the size of the projects.

1.3 Methodology

The evaluation applies the Bank's standard evaluation criteria⁵ and also assesses the Bank's own performance.

The analysis was split into four phases:

- a review of sector statistics and analysis of developments and policies pertinent to the railway sector;
- a desk review of a sample of 13 projects financed between 1 January 1990 and 31 December 2000 chosen at random;
- an in-depth review of 16 additional projects, chosen on the same basis as the desk review projects, with visits to the promoter(s) for 13 projects;
- preparation of this synthesis report.

In view of the large number of substantially delayed projects (seven out of the sixteen projects reviewed in depth) it was decided to modify EV's usual practice for ex post evaluation that a project must be physically complete and have been operational for a period of at least two years. The reasons for this were threefold: first, a great number of major projects that should have been completed well within the period examined would otherwise have had to be excluded; second, it was considered that a detailed examination of the reasons for these extraordinary delays would be of value to the evaluation; and third, excluding the seriously delayed projects could have distorted the results of the evaluation.

It follows from this deliberate departure from the usual methodology applied by EV that the results of the analysis will depend on the "confidence" in the analysis of the projects in the sample. For instance, it is possible to express a reasoned opinion about the relevance of all projects examined in the sample because sufficient time has elapsed since project inception. However, it is only possible to express such an opinion as a "best-possible estimate today" on the efficiency of the projects in the Bank's portfolio because ex post results as defined above were not firm for a substantial number of projects in the sample. In any event, every effort was undertaken to obtain the required information from all sources available to the evaluators.

The projects were rated according to the core evaluation criteria mentioned in Annex 1. It should be noted in this context that the tests applied to the railway projects are significantly less stringent than in EV's other evaluations. This was done (a) in order to account for the external benefits of railway projects, which are difficult to quantify, and (b) to compensate for the relatively short assumed life expectancy of projects (20 years) in the appraisal reports, without computation of a residual value in the majority of projects reviewed.

⁵ Relevance/effectiveness, efficiency and sustainability as well as institutional development impact, where appropriate (see Annex 1).

2. Railway Sector Developments

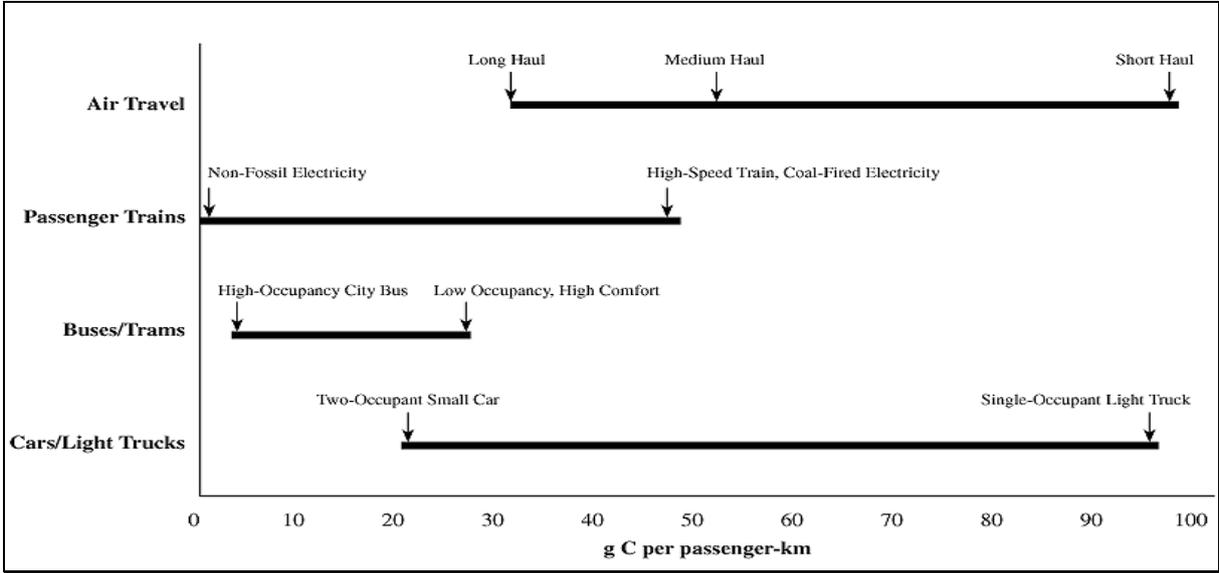
2.1 Railway Sector Characteristics

The railway sector has a number of features that have determined its development as a mode of transport, its role in the transport sector and its importance for the economies of the EU. In 2002 the Bank carried out a review of the sector in order to gain a deeper understanding of these features and to provide strategic guidance for future operations. The summary below uses that report as well as other sources to provide the background for this evaluation and to recall the the most important railway characteristics for a proper understanding of the determinants of the sector, the environment in which it operates and its potential role in the future.

Advantages of rail transport

- Railway transport enjoys low external costs compared with other modes of land transport and air transport. For example, energy consumption and CO₂ emissions per passenger/km (pkm) and tonne/km (tkm) are generally lower than for road and air transport (see graph below).

Comparative Carbon Emissions⁶ (per passenger-km)



In addition, rail transport uses less space and is subject to less congestion. For instance, a double-track railway uses 30% less space than a two-lane motorway, but its capacity is three times as great. Rail safety is far superior to that of road transport (i.e. 0.05 deaths per billion pkm for rail against 12 for road transport). In sum, the external costs of rail transport have been estimated at about one fifth of the external costs of the transport sector as a whole⁷ (per pkm and tkm).

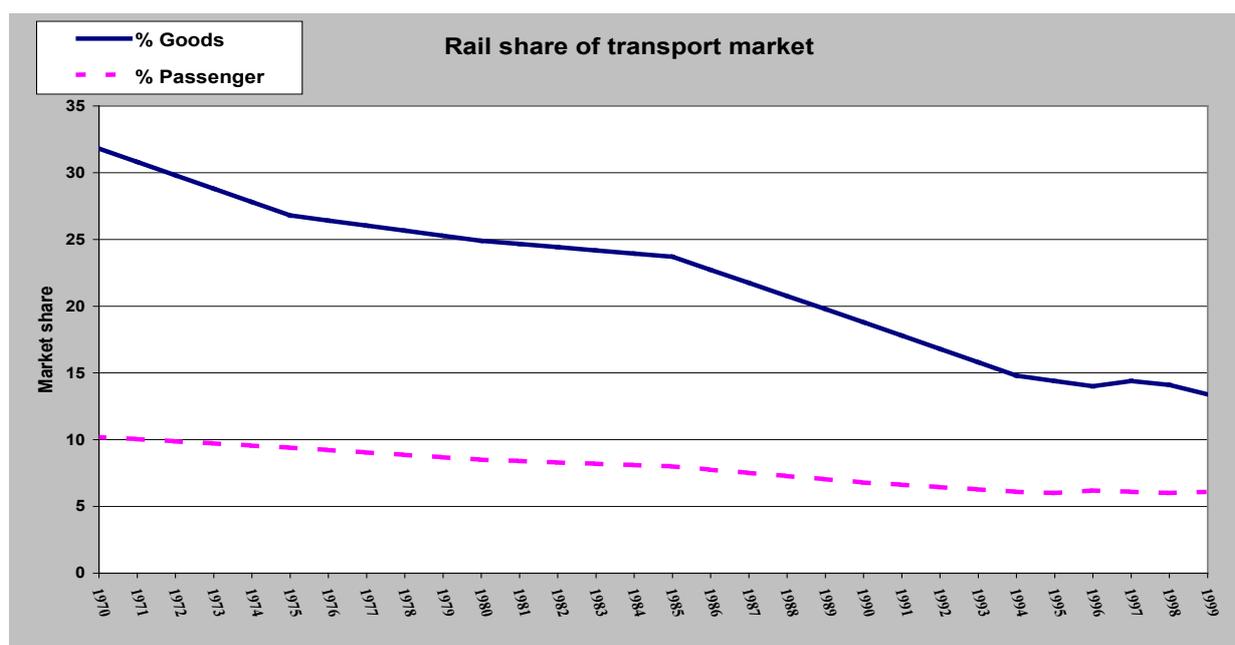
- In terms of comparative advantage rail is in principle superior to other modes of land transport and inland waterways in high-volume freight traffic over medium to long distances, especially if it can provide a door-to-door service. In passenger transport rail has the potential to be competitive with road and air over medium distances (roughly 300-800 km), provided it can offer a fast, frequent, reliable, safe and cost-competitive service. An example of a successful passenger service is the TGV between Paris and the Mediterranean or between Paris and Brussels.

Transport statistics show that rail was a superior mode of transport until about the 1960s. Since then the relative importance of rail freight and passenger transport has steadily declined (see graph below). However, in absolute numbers rail transport just about held its own.

⁶ “Aviation and the Global Atmosphere”, Inter-Governmental Panel on Climate Change (IPCC). Figures based on typical seat occupancy rates.

⁷ Rapport d’information du Sénat français n°300, Paris 2001.

Rail Share of EU Transport Market 1970-2000



Source: "A Strategy for Revitalizing the Railways", EU Commission (White Paper)

Many studies have been carried out to identify the causes of the relative decline of the railways and there is more or less a consensus opinion that there are a number of exogenous and endogenous (railway-related) causes.

- The growth in the transport of finished and semi-finished goods, along with the decline in the transport of bulk commodities and raw materials, has benefited modes of transport with comparative transport cost and quality advantages such as road and air transport more than rail. These trends were complemented by the growing specialization of the transport sector itself to meet specific customer needs requiring integrated logistic chains and just-in-time delivery. For example, rail is usually at a competitive disadvantage in door-to-door services in modern integrated transport chains that require reliable, on-time and cost-competitive door-to-door delivery of high-value goods in varying quantities. In passenger transport the flexibility, comfort and convenience of the private car can hardly be matched by rail. Similarly, rail has lost out to air transport in the boom in tourism travel and, more recently, with the rise of low-cost airlines.
- It is also claimed that rail is at a competitive disadvantage vis-à-vis road and air transport on account of fiscal and transport policy distortions. Thus, road and air are said to be favoured by policies that fail to charge properly for the use of their infrastructure and the external costs they incur.⁸
- To survive, the majority of railways in the EU are heavily dependent on government support. It has been estimated that on average almost 50% of rail infrastructure and operational expenditure consists of state subsidies.⁹ It follows that state intervention in the railway sector is much more prevalent than for other modes of transport.

While it may be difficult for the railways to influence the exogenous factors mentioned above, there is much more scope to reduce or even eliminate the majority of the railway-specific factors hampering competitiveness.

⁸ It should be pointed out in this context, however, that rail infrastructure is heavily subsidized by the State as well.

⁹ With a wide variation between national railways. For instance in France and Spain, the subsidization of regional rail operations is estimated at 70%.

- Inefficient management of rail infrastructure and operations. It has been estimated that there is a potential for cost savings in the management of EU rail infrastructure amounting to about EUR 10-19 billion per year. Another EUR 5-9 billion cost savings per year could be achieved in train operations if only current EU best practices were adopted by all EU railways.¹⁰ Together, the estimated potential annual cost savings amount to a not insignificant 25% of total annual railway costs. While the exact amounts may be debatable, the estimate nevertheless shows that there is vast potential for efficiency gains that could be tapped by the railways themselves.
- Lack of commercial focus. In the past, rail enterprises were monopolies and focused on the technical aspects of their businesses. There is ample evidence for this lack of commercial focus. For example, costing and pricing techniques needed to identify profitable and unprofitable operations and markets are still rudimentary in most railway enterprises. Quality of services keyed to customer needs is still the exception rather than the rule. Thorough knowledge of markets and active marketing are not yet common practice. Widespread cross-subsidization blurs the identification of unprofitable operations and hampers the development of profitable activities.
- Lack of international integration. Railways have basically developed as national enterprises, without much regard for the development of common technical and commercial standards and procedures across frontiers. For instance, at the technical level there are numerous obstacles to the interoperability of equipment and personnel. To name a few: in the EU there are three different gauges for main lines in Europe; nine different electric currents (even the Thalys TGV locomotives need to be equipped with four different electric currents). At the commercial level the situation is comparable. For example, the rapid exchange of commercial data (e.g. on train composition, customer information, customs data) between railways is still rare, as is the integration of electronic data information systems. These problems have only fairly recently been identified as major obstacles hampering the international competitiveness of the railways. But attempts by the EU to develop a common framework of rules and regulations in these areas have not always been met with enthusiasm because of powerful vested national interests.
- Institutional obstacles. The institutional set-up of most railways still reflects the heritage of the past: the priority given to the technical and engineering aspects of the business, which is also reflected in railway management and decision-making; the powerful union influence in defending the status quo and strong interference from public authorities at all levels, each with its own agenda. It is therefore understandable that in such an institutional environment it can be extremely difficult to shape the railways into economically efficient, competitive and commercially viable enterprises.

2.2 EU Policies for the Railway Sector

After a long period of stalemate in the development of the common transport policy the European Commission's programme for the removal of the remaining obstacles to a single market included the transport sector as a key facilitator. On the basis of the provisions of the European Treaty, the Commission developed a number of proposals aimed at the establishment of a common transport market in all modes of transport.

The most important proposal with regard to the railways was Directive 1991/440, which aimed to introduce competition between railway enterprises by creating rights of access to rail infrastructure, albeit in a limited way. This was to be achieved by the separation of rail infrastructure management from operations. The rationale behind this proposal was that the fixed-rail infrastructure constitutes a natural monopoly and therefore needs to be dealt with differently from the operation of rail services, where competition between different operators is possible. The Directive also aimed to improve the financial situation of EU railway enterprises by requiring business and managerial freedom and the granting of debt relief for previous bad practices (for which the EU Governments were at least partly responsible).

¹⁰ Profitability of rail transport and adaptability of railways, Halcrow Fox, July 1997.

The Maastricht Treaty and subsequent agreements (such as that of the 1994 Essen Council) included a definition of a trans-European transport network and nodes¹¹ - including railways - which were to be developed as a priority in support of European integration. These networks are eligible for EU financing, including EIB financing, and are subject to a set of common technical standards. As regards railways, practically all main lines are eligible. In this context it is worth noting that the EU stipulated in its Council Regulation of 1995 as a condition for its financial support that the TEN projects in question should be economically viable, based on a socio-economic cost/benefit analysis.

A number of further Directives¹² in the following years refined and elaborated on the 1991 Directive on the conditions for a functioning common market in railway transport. However, implementation got off to a very slow start and, with a few notable exceptions (e.g. UK, Sweden), the expected increase in competition and revitalization of the railways was rather ineffectual. This prompted the Commission to ask a high-level group of experts to identify further measures¹³. The group's recommendations were taken up in the Commission white paper "A Strategy for Revitalizing the Railways"¹⁴. Some of the Commission's proposals were subsequently endorsed by the Lisbon Council and enshrined in three Directives known as the "Rail Infrastructure Package." The majority of the measures included in the first package were to be implemented by the spring of 2003 (with this deadline being waived for certain Member States), including the right for any licensed operator to access most of the rail network for international freight services. Subsequently, a second package was adopted, extending the access rights to the entire networks by 2007, with additional measures to facilitate the emergence of common safety and other technical standards. One of the strong focuses of EU action has been to promote interoperability of rail services despite the heritage of a very diverse network with regard to such aspects as signalling systems or electrical current powering the networks.

Additional measures are currently being examined for a third package, which is set to include right of access to the whole EU railway network for international freight and passenger services.

The above summary shows that there is no lack of action on the part of the European institutions to promote the role of the railways by creating a competitive market for railway services throughout the EU. However, practical and meaningful implementation of specific measures has been slow and uneven, reflecting both technical and institutional or legal difficulties. At times, these real difficulties have been compounded by the reluctance of national governments to jeopardize the position of national operators or indeed of the industry, which has traditionally been shielded from foreign competition by technical standards. Ultimately the key issue is structuring effective regulation of the sector so that it can remain independent of any single operator's expertise while enabling the high safety standards of the rail transport industry to be achieved. Though the established national railway companies still enjoy dominant positions in most markets, the introduction of competition has had noticeable effects on a few networks. New players such as infrastructure managers and rolling stock-leasing companies have emerged as a result of the institutional changes, leading to a parallel evolution of the Bank's approach to the sector.

2.3 Prospects

Assuming the EU's objectives eventually prevail and are generally implemented, the future role of the railways will be radically different in terms of the way they are organized and operate in the markets. A number of these new forms of doing business are already emerging today in different EU Member States. However, the speed and depth with which these changes are implemented throughout the EU are likely to differ greatly and depend on the economic philosophy pursued by each Member State and the willingness of the stakeholders concerned to embrace the reforms.

Regarding the organizational aspects, the fixed infrastructure will most likely be kept as a separate entity, funded in accordance with principles comparable to the funding of road infrastructure, the aim

¹¹ TEN (Trans-European Network).

¹² E.g. Directives 1995/18 and 1995/19.

¹³ The Future of Rail Transport in Europe, Report of the advisory group to Neil Kinnock, June 1996.

¹⁴ Com (96)421, July 1996.

being to create a level playing field in inter-modal competition. As to the management and operation of the infrastructure network, public and/or private organizational solutions are slowly emerging, in the latter case in the form, inter alia, of periodic public auctions in order to ensure efficiency and to minimize the burden of public subsidies.

If we look at the future of rail operations, the hitherto monopolistic national railway companies are likely to be subject to increased competition from new entrants and established companies from other EU Member States, but also between the railways and other modes of transport (i.e. road, air, inland waterways). This means that individual railway companies will have to focus on markets where they enjoy comparative advantages in terms of costs, quality of service and customer orientation. By implication this also means that railway operators will have to abandon markets in which they do not enjoy a comparative advantage.

Moreover, subsidies to rail-operating companies should in principle cease in the competitive rail markets of the future, except in well-defined areas where the public authorities purchase certain services that are deemed publicly desirable (e.g. commuter services) at cost-covering prices from the rail operators. Similarly, investment in operating equipment and facilities should in future be made on the basis of the commercial considerations of the operating companies, without interference from public authorities.

The above future scenario, based on EU policies, leaves ample room for the operating companies to work out reasonable forms of competition and cooperation for the ultimate benefit of the consumer and the providers of rail services. This has happened already in other modes of transport such as air and maritime transport and is now emerging in rail transport as well (e.g. EUROSTAR and Thalys).

Whether the reforms will be able to halt and reverse the decline of the railways, as expected by the Commission and the Member States, is difficult to predict. On the other hand, inaction would certainly lead to further decline and increased dependence on public subsidies.

2.4 The EIB's Policies

During the period under evaluation the Bank did not expressly specify its strategy and/or policy with regard to its financing of railway projects. One can only take note of various papers produced on portfolio reviews explaining, for instance, the reasons for an increase in lending activity in the sector at the end of the 1990s ("rail's green credentials and its potential for relieving road congestion by providing high capacity transport in key corridors").

At the level of the EU institutions the Bank also cooperates with the Commission in areas such as TEN and QuickStart projects, railway corridors, appraisal guidelines and interoperability. This involvement has been beneficial because it has allowed the Bank to contribute its technical know-how and expertise at an early stage before policies are cast into projects. It has been the Bank's experience that this offers practically the only possibility to have an early impact on the general quality of the projects it will later be requested to support financially. However, so far the Bank's involvement has been quite modest and in view of the increasing extent of EU involvement in the railway sector it might be useful to strengthen the Bank's presence in the relevant Commission bodies.

The implications of the EU reforms for the Bank's future activity in the sector have been spelled out in the Bank's strategy paper mentioned earlier (section 2.1). In sum, the Bank should support the reform process actively and focus its financial assistance on projects that show adequate rates of return, provide acceptable security and contribute measurably to the implementation of the EU policy objectives, as measured against a set of specific criteria defined in the strategy paper.

3. Relevance/Effectiveness of Projects

3.1 Contribution of Projects to Objectives

3.1.1 EU and national objectives

All projects examined in depth were eligible for financing under the current Article 267 (formerly Articles 130/198e) of the EU Treaty. One project was situated in a less developed region of the EU and was thus eligible by virtue of Article 267(a), nine projects complied with both paragraphs (a) and (c) (projects of Community interest), and six projects were eligible on account of their Community interest (Art. 267(c)). Of the 13 desk review projects, five complied with Art. 267(c) and the remainder with Art. 267(a) and (c). In addition, a number of these projects formed part of specific EU policy initiatives such as the Trans-European Network (TEN) or were among the priorities set by the Essen Council.

The Bank applied the eligibility test in a purely formal manner, i.e. it checked whether a given project was located in an area either defined by the EU as a less developed region or designated by the EU as being of Community interest or whether it was part of a special policy initiative. Since in practice these criteria cover almost any project presented to the Bank, they are not particularly relevant as selection criteria.

As regards compliance of the projects with such other pertinent Community policies as the promotion of competition, the attainment of financial viability and the development of a railway network with common technical and operating standards, the evaluation found that:

- One project has the potential to contribute to the promotion of competition because its implementation may facilitate the market entry of new operators.
- All projects examined in depth were deemed to be financially viable in the ex ante appraisals but less so ex post.
- Three high-speed rail projects (TGV) examined in depth aimed expressly at network integration across national borders.

All projects, whether supported by the state or the private sector, contributed to national objectives of railway modernization and the promotion of the commercial and economic viability of the rail sector. The achievement of these objectives will be discussed in Chapter 4.

3.1.2 EIB objectives

In addition to the EU eligibility tests the Bank's Statute stipulates a number of further criteria for project eligibility. In accordance with Article 20 the debt service for a project must be assured. This is a requirement that the Bank has examined with great care and has ensured that it is complied with in all projects. The same article also requires that the project should contribute to economic productivity and to the attainment of the common market. The first condition was indirectly tested by means of cost/benefit and financial profitability analyses as well as by analysing qualitative factors. While at least one of these aspects was fulfilled in the ex ante appraisals, the ex post evaluation arrives at more differentiated results. The second condition was rarely tested explicitly. However, as in other sectors, the fact that a project was found to be in the common interest was deemed to be equivalent.

Finally the evaluators examined the contribution of the projects to the Bank's operational priorities during the period under review. Two of these priorities were relevant in this context: regional development, including economic and social cohesion, and environmental protection and improvement. As regards the first, eight projects evaluated in depth were either located in Objective 1 regions or improved access to them and therefore should have been beneficial from a regional development point of view. However, apart from the obvious statement of the development potential, more detailed analyses were not carried out and thus an ex post verification was not possible. Six projects were likely to improve the EU's economic and social cohesion by facilitating transport between EU Member States. The relevant component of one project was found to have failed in its

intended impact on economic and social cohesion because the expected traffic did not materialize. As to the second priority mentioned above, it is widely believed that all projects that induced a modal shift from road and/or air to rail should in theory have a beneficial effect on the environment. Except for two projects, such modal shifts were expected in all other projects evaluated in depth. Unfortunately, the effect was quantified only in a few projects and therefore the claim is difficult to verify ex post. However, even if such a beneficial effect existed, the fact that for most projects evaluated in depth ex post demand was lower and costs higher than estimated at appraisal means that the postulated beneficial environmental effects must also have been smaller. What is more, the substantial delays in more than one third of the projects are likely to have reduced the effects even further.

3.2 Implementation Performance (Effectiveness)

3.2.1 Project scope

As far as project scope is concerned, eight desk review projects conformed with the original project description, one project underwent a substantial change in scope that rendered the Bank’s original appraisal obsolete, and four of the desk review projects lacked completion reports or other pertinent information that would have allowed an ex post comparison of the project scope. Of the 16 in-depth review projects, eight were substantially in conformity with the original project scope and eight were not. Among other things, projects had to be modified on account of environmental objections and government intervention. Moreover, project designs were either incomplete or were adapted by Promoters to better reflect technical requirements and safety concerns. These are of course all legitimate reasons for the modification of a project, but it is also an indication of weak project preparation on the part of the Promoters concerned. In any event, it would have been appropriate for the Bank to re-appraise these projects in order to verify the validity of the original reasons for approving them. This was, however, done only for one project because financing had been arranged in phases. In this case, the reappraisal resulted in substantially reduced economic and financial returns. Projects that were implemented as planned were usually well designed and executed, in particular as regards environmental aspects and consultations with local and regional authorities where relevant.

3.2.2 Project implementation

The table below summarizes the evaluation’s findings for the in-depth review projects¹⁵:

Implementation delay (years)	Projects	Percentage of all in-depth projects	Percentage value*
On schedule or < 1	5	31	24
Between 1 and 3	6	38	29
Between 3 and 6	4	25	39
More than 6	1	6	8

* Percent of total cost of projects evaluated in depth.

The table shows that about one third of the projects examined in depth did not experience any implementation delays and another third experienced delays between one and three years. This performance may be considered satisfactory in relation to the established criteria. The implementation of the remaining third, comprising 47% in terms of project value, was clearly unsatisfactory, showing delays of three and more years. One project was more than 10 years late and has still not been completed.

¹⁵ It should be borne in mind that the completion times for seven projects are still estimates, as these projects have not yet been completed or fully implemented.

The main causes for the delays were:

- administrative problems, such as acquisition of land, compensation disputes with local communities;
- geological problems (especially with tunnels);
- inexperienced contractors and outright bankruptcies;
- changes in project scope (e.g. for environmental or archaeological reasons or on account of local or regional community pressures).

As the experience of successful project implementations shows, careful project preparation - which includes environmental due diligence procedures and consultations with the local communities - is normally key to a good project. By contrast, the likelihood of delays increases once a project has started while major issues are still to be decided. This was noted in particular where two key factors coincide: early-stage involvement of the EIB and mega-size of the projects. The Bank has attempted to deal with these issues by adding standard physical and price contingencies to the estimated base cost of the projects and, in some projects by testing the impact of delays on the project's viability. However, the extraordinary delays experienced in some projects examined in depth were not able to be covered by this approach. This could justify closer monitoring of certain projects that involve a combination of negative factors.

3.2.3 *Ex ante and ex post project costs*

The table below shows ex ante and ex post project costs for the 16 projects reviewed in depth¹⁶. As a number of projects examined had not yet been completed at the time of the evaluation but should have been according to the original timetable, a distinction is made between final ex post costs for the completed projects and updated estimates for the projects yet to be completed.

Ex ante and ex post variation of project costs (EUR million)

Cost variation	Completed projects			Delayed projects		
	Number of projects	Ex ante project value	Ex post project value	Number of projects	Ex ante project value	Ex post project value
< Budget	1	438	397	0	0	0
On budget (1)	7	9 265	9 341	1	1 075	1 075
20%-50%	1	1 738	1 950	1	222	268
50-80%	0	0	0	5	12 226	19 420

(1) Includes cost increase of less than 20%.

The table shows that nine projects were on or below budget, for a total cost of EUR 10.8 billion and two projects with a total cost of EUR 2.2 billion had cost increases below 30% which, according to the criteria adopted in this evaluation, is still acceptable. The cost increases for these two projects were mainly due to additional environmental measures imposed by local governments and implementation delays caused by longer than anticipated permit procedures.

Major cost increases of 50% to almost 80% were incurred by five large projects whose completion was delayed. These projects accounted for about 60% of the total ex post costs of the projects evaluated in depth. In addition to the reasons already mentioned above, the major problems affecting these projects were inadequate initial project preparation, substantial scope changes and excessive intervention by public authorities (including local, regional and central government) during the implementation period.

¹⁶ The cost comparisons ex ante and ex post do not include project components that were added during implementation and that expanded the original project objectives or were shifted to other projects. However, they do include added components that contributed to the original project objectives (e.g. environmental, geological or safety modifications).

3.2.4 *Expected project output*

The in-depth review identified two types of output indicators that were common to all projects¹⁷:

- the quality of service (e.g. time savings, comfort, safety),
- the increase in demand for the services offered by the project¹⁸.

The expected improvements in the quality of service were generally achieved in the projects that are in operation. There have been some problems in one rolling stock project however, where improvements depended on corresponding improvements in fixed infrastructure for which the Promoter concerned was not responsible.

As regards ex ante and ex post demand it must be pointed out that for the majority of projects demand figures are derived from traffic statistics for the entire network or parts of the network and therefore indirect indicators of traffic demand for the projects concerned can be provided at best. Actual figures for the completed projects were only available in a minority of cases because Promoters did not keep separate project statistics. For the projects that had not yet been completed or had been in operation for the minimum period (2 years) updated traffic estimates were utilized where possible.

The nine in-depth projects that were completed showed mixed ex post traffic demand results, but on the whole they were still satisfactory. Two large high-speed lines were between 18 and 20% below the ex ante forecast; one project was in line with the forecast based on a two-month operating period; two projects were above the ex ante forecast; one project was in line with the forecast overall but a project component was below forecast; and for another project no forecast had been made. Another project recorded lower passenger traffic than forecast but substantially increased freight traffic, which materialized after the construction of production facilities along the line - a development that had not been forecast at all at appraisal. In the last project, only three out of 11 project components had ex ante traffic forecasts, which cannot be considered representative for the project as such. Three desk review projects for which information was only available from public sources appeared to show satisfactory levels of demand.

As for the seven projects whose completion was delayed, the forecast for one high-speed line was reduced by the Bank in subsequent appraisals by 30%-50%. For the remaining projects, updated traffic forecasts were either not available or not sufficiently robust.

In conclusion, this evaluation, like the others carried out by EV in the transport sector, shows that traffic forecasting is an inexact science to say the least. The Bank has taken this into account in its appraisals of the railway projects by systematically reducing the traffic forecasts provided by the Promoters. Obviously it was still over-optimistic in some cases with regard to large projects. It appears, in particular, that the effect of traffic diversion from road and air to rail was often overestimated.

3.2.5 **Induced benefits**

A number of appraisal reports indicate that beyond the direct, project-related benefits the projects concerned stimulated economic benefits, such as regional economic development benefits in the project impact areas (especially in Objective 1 regions), urban development benefits around railway stations and environmental benefits by transferring traffic from other, more polluting modes of transport. Unfortunately, such claims were rarely supported by quantified analysis and verifiable

¹⁷ As regards rolling stock operating and maintenance cost savings were also relevant. However, the Promoters concerned did not transmit any data because ex post cost savings could not yet be documented or were not disclosed by the operating companies.

¹⁸ It was often not possible to obtain these figures from the Promoters, either because they were not collected for the project concerned or were refused on grounds of confidentiality (despite the Promoters' contractual obligation to divulge such information to the Bank).

evidence. What is more, even if such benefits do exist, a careful analysis of the resources spent to achieve these benefits and a comparison with alternative options that might achieve the same objectives with lower resource inputs should always be carried out. Otherwise such claims are of little value in a rational decision-making process and should not be used as justification for a project that would not be viable on other counts¹⁹.

4. Efficiency

4.1 Project design

As a rule, the Bank accepted the projects' design as presented by the Promoter. The evaluation found evidence that a number of projects did not seem to be designed solely in accordance with standards of technical/economic optimality. The appraisal reports did not examine or report on whether alternative design options had been considered by the Promoter to ensure that the chosen option was the optimal one from a technical and economic point of view. For example, in one project, a high-speed line was initially considered, then rejected in favour of main line rehabilitation, but a high-speed line is now again under consideration, whereas building both is neither optimal from a technical nor economic point of view. Other examples are the construction of train stations to suit local/regional political pressures rather than for economic considerations. These changes are more important when the Bank's involvement is at an early stage, especially with large projects with a long lead time.

4.2 Economic efficiency

As stated in paragraph 2.1.4 above the evaluators obtained relatively little detailed information from promoters and public sources on ex post traffic demand (or ex ante demand for that matter). Therefore, the following results of ex post calculations of the economic internal rates of return (EIRR) should be interpreted with this reservation in mind.

Ex ante and Ex post EIRRs

EIRR ranges	Completed projects				Delayed projects			
	Ex ante		Ex post		Ex ante		Ex post	
	Number of projects	Project value in EUR m	Number of projects	Project value in EUR m	Number of projects	Project value in EUR m	Number of projects	Project value in EUR m
< 3%	0		1	397	1 ²	1 075	3 ² 3 ³	12 670
3% - 5%	0		1	1 950	0		1	853
5% - 8%	4 ¹	3 103	5 ¹	8 690	6 ³	12 448	1	4 540
> 8%	5	7 895	2	651	0			
Not calculated							2	2 750
Total	9	10 998	9	11 688	7	13 523	7	20 813

1 Calculation of EIRR for one project only for three components out of eleven.

2 Including cross-border sections.

3 Two projects involving a high-speed line reappraised in subsequent operations, with EIRR between 0-2.5%.

¹⁹ The external (including environmental) benefits of rail as opposed to road traffic often serve as justification for railway projects with low EIRRs. Yet they are rarely quantified in project analysis, as was the case in the projects evaluated in this report. Recent detailed studies financed by the Commission (TIPMAC and Jason studies) indicate that the external benefits claimed for railway projects, such as an increase in the value of land near stations, environmental impact, may amount to a maximum of about 10% of the direct quantified benefits (30% in exceptional cases), usually too little to alter the viability of a project.

Of the nine completed projects, seven showed satisfactory ex post EIRR estimates exceeding 5%, although the majority of them were lower than the ex ante estimates. The reasons for this were almost always over-optimistic estimates of traffic growth and cost overruns. In one project consisting of three components, the EIRR calculation was based on a flawed methodology, which did not properly take account of the traffic diversion of a new line under construction, thus resulting in over-optimistic estimates. Using the appropriate methodology the calculation would have resulted in very low EIRRs of about 1%. EIRR calculations for another project were carried out for only three components out of eleven and were thus not representative for the project as a whole. However, the three components were found to yield satisfactory returns both ex ante and ex post.

Of the seven projects that have not yet been completed or been in operation for at least two years, one project is likely to yield satisfactory economic returns, albeit lower than forecast at appraisal because costs were higher and demand updates lower. Another project is also likely to turn out satisfactory if a project life is used in the calculation that is more appropriate for this type of project than that used in the appraisal. For two projects, firm conclusions cannot be drawn on the basis of the available information. Finally, the unsatisfactory EIRRs of two projects, concerning the same high-speed rail line, show the consequences of excessive delays, costs running out of control and drastically reduced traffic forecasts. Their updated EIRR is now estimated at between 0.5% and 2.5%. What is more, since the projects are not yet completed even these low economic returns may prove to be optimistic.

Although it is difficult to draw any firm general conclusions about the economic viability of the projects evaluated because of their unique features, three recurring themes can still be identified. First, with a few exceptions traffic demand and the diversion of traffic from road to rail were overestimated by Promoters. Even the Bank's more cautious estimates proved at times to be too optimistic. Second, project costs were usually underestimated, sometimes substantially, for the reasons already mentioned above (paragraph 2.1.3). Third, Promoters (and the Bank) were too optimistic in their expectations that the projects could be implemented within the planned timeframe. The combination of these three factors led in the majority of projects to lower than anticipated (but still acceptable) economic returns and in some large projects to uneconomic investments.

4.3 Financial viability

Financial return calculations must be considered with caution as most of these projects benefit from subsidies/support at investment level and often at operating level; in most cases public support will ensure the financial sustainability of the projects.

Based on existing data, financial returns were calculated for only seven projects. Five demonstrated a marginal positive return and two yielded high returns, but always below the ex ante evaluation; the reasons are the same as for the lower EIRRs, i.e. investment cost increases, lower demand and substantial implementation delays. For the other projects, expectations were always below initial estimates because of the heavy impact of delays and cost increases.

5. Sustainability, Environment and Institutional Development

5.1 Physical sustainability

All projects examined in the evaluation (i.e. desk studies and in-depth studies) had physical lives of 20 or more years. Despite the implementation problems already mentioned the quality of the physical work and assets appears to have been satisfactory. Thus the prospects for the physical sustainability of the projects look good, with the exception, perhaps, of certain components of these projects which may become obsolete before the end of their useful lives on account of technical progress (e.g. signalling equipment, fibre optic cables). Obviously, the above statement assumes that the railway companies concerned have at their disposal the required technical organization and financial means to

maintain and operate their assets properly. This has not always been the case in the past, as the examples of lack of track maintenance in an EU member country show. Although most loan agreements include clauses concerning the borrower's obligation to properly maintain the assets of the project in question, there is no evidence that the Bank has checked whether or not such clauses were complied with.

5.2 Financial sustainability

As regards the nine completed projects examined in depth it appears that the five for which financial data were available are sustainable on a project basis. For two completed projects, financial data cannot be extracted on a project basis. The updated financial estimates for the projects that are not yet fully implemented and operational show that ex post four projects are likely to be sustainable on a project basis while the remaining three projects are either not financially sustainable on a project basis, or financial data are not available on that basis. However, all these projects are of sufficient strategic importance that they are likely to be sustained at the enterprise level, even though they will probably need subsidies.

5.3 Environmental sustainability

The environmental legislation in force at the time (mostly national at the beginning of the 1990s, European thereafter) has been applied in all projects. The projects' impact on the environment has generally been found to be acceptable after the implementation of the appropriate mitigation measures, which in some cases were considerable. In some projects adverse local environmental impacts were identified but found acceptable, given the national importance of the projects. Other projects were subject to complex negotiations in areas with sensitive environments (such as vineyards) but in the end acceptable solutions were found. In one case significant environmental damage occurred during implementation which polluted the surrounding groundwater level. The ensuing mitigation and prevention measures have resulted in an implementation delay, which is currently estimated at 7-8 years.

5.4 Institutional development

Railway projects are rarely an appropriate vehicle for the promotion of institutional development. There are two projects, however, that could possibly contribute directly to the institutional development of the railway sector, two may contribute to the institutional development of other sectors and five projects can be said to have contributed indirectly to institutional development. The two projects with the potential to contribute to institutional development and support of EU transport policy concern rolling stock investments financed by an intermediary organization (such as a bank or leasing company). Since the rolling stock concerns standardized equipment, it can easily be transferred to other companies after the termination of the initial lease period, thus facilitating competition. Furthermore, market entry is also made easier because the leasing mechanism lowers the capital barrier for new firms. The other two projects are investments in communication equipment, part of which can be leased out, for instance, to telecom enterprises, which could help promote competition in that sector, another objective of EU policy. Five projects contributed indirectly to institutional development because the participation of the Bank contributed to the introduction of a more open bidding process for the procurement of assets than before.

6. EIB Performance

6.1 Introduction

The project cycle of the Bank includes the following phases: identification, project definition and appraisal, arrangement of project finance, project approval and contract negotiations, implementation and monitoring, including the preparation of a project completion report. These phases and the Bank's effectiveness in dealing with them in respect of its portfolio of railway projects will be assessed below.

6.2 Project identification

The decade under review witnessed a substantial increase in Bank activity in the sector. This was appropriate because of the heightened efforts of the EU and the railway companies to reinvigorate the railway industry. The majority of railway projects in the Bank's portfolio were identified via regular contacts with the railway companies concerned. In almost all cases contacts had already been established in the early to mid 1990s, with repeat operations being the norm. Of course, the large high-speed projects were public knowledge very early on in the decade. For instance, for the funding of some of these projects the Bank had already been approached at an early stage.

6.3 Project definition

In a quarter of the 29 projects reviewed (about 40% in terms of loan value) the Promoter's and the Bank's project definitions were identical and corresponded with the classical definition of a project²⁰. In another quarter of the projects (12% in terms of loan value) the Bank chose elements for financing that were part of the Promoter's wider investment program.

However, in four projects the Bank's project definition did not correspond with that of the Promoter. In other projects, the project definition was modified to ensure that the Bank's loan did not exceed 50% of the total project cost. In all cases examined in depth, where the Bank had adopted a different project definition from the Promoter's the latter indicated that this approach had complicated his work.

For its railway programme loans the Bank encountered yet other difficulties, in particular during the first half of the 1990s. For instance, it was rarely possible to assess and fully quantify each programme component. However, to assess only a few components and disregard the others or only assess them in a qualitative, summary way (as was done for one project) does not allow a comprehensive conclusion about the viability of the entire programme. This weakness in the appraisal process was corrected towards the end of the decade, when the Bank adopted a modified approach for programme and framework loans. The improvements have also been recognized and appreciated by the Promoters.

6.4 Project appraisal

The appraisals of the projects evaluated in depth covered the usual cost and benefit items of the standard Bank format and were undertaken within the standard time frame or more quickly for a majority of the projects. However, the quality and depth of analysis of the appraisals varied widely. This was primarily a function of the information available from the promoters and other sources. In particular, the appraisal teams faced difficulties in the following areas:

Market/demand. Despite the existence of sometimes elaborate modal split models in some cases, it was very difficult to estimate reasonably accurately the likely development of the relevant transport market. In one large high-speed rail project and several others such an analysis, though clearly essential, was omitted altogether. In two projects the transport market was analysed, but such crucial aspects as prospective freight traffic utilizing the project were omitted.

Undue optimism on the likely transfer of traffic from road and air to rail was one factor in the overestimation of demand. In addition, the expected normal growth and traffic generated by virtue of the implementation of the project were other sources of inflated estimates. Although the Bank's appraisal teams were usually more cautious in their traffic estimates than the projects' promoters they were still too optimistic. It is difficult to assess whether these errors could have been avoided²¹. In any

²⁰ An investment project is an entity that comprises all additional elements of a permanent nature (whether tangible or intangible) that are necessary for the sustainable production of the goods or services the project is designed to deliver.

²¹ In particular, demand was often estimated in the early 1990s, a period of high GDP growth, whereas actual growth when projects were complete, i.e. the late 1990s, was much lower.

event, a more conservative approach would have been preferable at least in the substantial number of repeat projects with a history of overestimates.

Project implementation schedule. As mentioned before about two thirds of the projects evaluated had implementation delays, one third of which by three or more years. This suggests that the Bank should analyze the potential causes of such delays more systematically and propose measures to minimize them where possible. Such an analysis could be a straightforward exercise, for instance in the form of a checklist, because most potential causes of delay are known, i.e. lack of agreement with local/regional authorities on project details affecting them²²; incomplete project designs and implementation plans; political interference in project implementation; natural causes such as geological problems or archaeological finds. Although experience clearly shows that the Bank's influence is limited without the promoter's cooperation even when it has identified the problems, such an analysis would at least result in a more realistic assessment of a project's strengths and weaknesses.

Economic analysis. All projects included a quantified economic analysis, albeit in varying detail, completeness and quality. For example, in one appraisal the economic life of the project was overstated and in another a different method (residual value) was used. In other projects, operating and maintenance costs were not taken into account or the economic viability was based on the EIRR estimate of a much broader investment programme and not the project as such. Other economic analyses omitted the standard practice of sensitivity analysis as a gauge of the potential project risk. The end result was that only a few ex ante estimates of the economic viability of the projects evaluated in depth were methodologically entirely sound.

Where possible, the ex post evaluation attempted to estimate the project EIRRs by using the standard methodology but this could not always be achieved because the information was not available or not provided for reasons of confidentiality (despite the Promoters' contractual commitment to provide such information). Obviously, the EIRRs calculated for projects that are delayed are subject to change once those projects have been completed and are operational. However, that does not alter the conclusion that their economic rates of return were much lower than estimated at appraisal because of the substantial delays, cost increases already incurred and lower demand, not to mention the occasional weaknesses sometimes in the appraisal methodology.

Risk Analysis. The Bank's analysis of the credit risks that it may incur with a project has generally been satisfactory. As regards such other risks as traffic risk, implementation delays and cost increases, the over-optimism of the appraisal teams has already been mentioned. In some appraisals these risks were taken into account by means of a sensitivity analysis, in others not. For example, the appraisal of a follow-on project had identified a high risk of cost increases and delays as a result of the experience with the first project, but no sensitivity analysis was undertaken to quantify the impact of those factors on the project's viability. In general, it can be said that even where sensitivity analyses were performed the worst-case hypothesis usually proved too optimistic in the ex post evaluation. Apparently it is difficult to think the "unthinkable", i.e. that a project might fail. An antidote could be the inclusion of a null hypothesis in the sensitivity analysis, which would examine under which conditions the proposed project would fail and give an estimate of the likelihood of such failure.

Even when the risks were properly identified, mitigation measures were rarely recommended or accepted by promoters. For instance, in one (very large) project the promoter hired an expert at the Bank's recommendation to monitor costs and project implementation, with the result that the Bank had an excellent understanding of the reasons for the delays and cost increases but no influence on their mitigation. A further Bank recommendation on how to deal with cost overruns and delays was not accepted by the promoter. A similar situation occurred in another large project, where cost overruns and delays had already been experienced during the initial implementation stage. The Bank proposed assisting the promoter with mitigation measures but this was rejected. The project has now been delayed by three years. Of course, it is not possible to conclude whether acceptance of the

²² There was only one project that was on budget and on time where potential problems with local and regional authorities were discussed and cleared before project implementation started.

Bank's advice would have made any difference. The lesson that can be learned from this experience is that the Bank has little leverage to influence the outcome of a project one way or the other, unless the promoter takes ownership of the Bank's recommendations.

6.5 Financing arrangements

The financing arrangements for 18 of the projects reviewed (in depth and desk reviews) consisted of direct loans to the Promoters. In 11 projects, financing was arranged via an intermediary, most often a Government agency or a special purpose vehicle created for the operation, and in one case more complex arrangements in the form of public private partnerships were chosen. In one of these cases a specialist was called in (at the expense of the Promoter) to assist with the design of the financial instrument.

6.6 Monitoring

The Bank's appraisal team normally recommends the type of project monitoring that it deems appropriate in the context of the complexity and potential risks of the project concerned and in the light of its knowledge of the borrower's implementation arrangements and technical competence. Accordingly, monitoring categories 1 to 3 were assigned, with increasing degrees of monitoring. As regards the projects evaluated in depth and via desk studies the following monitoring categories were assigned: category 1, five projects; category 2, twelve projects; category 3, ten projects. Six projects were without a monitoring category.

The actual monitoring was carried out in the majority of projects less in accordance with the assigned category than in accordance with the actual difficulties encountered. This has the benefit of utilizing the Bank's scarce staff resources in an appropriate way. Thus, projects whose implementation was smooth were not monitored at all. On the other hand, problem projects were monitored intensely, including in one case the utilization of a specialist. In other projects, intense monitoring was a by-product of follow-on operations by the Bank.

However, the ultimate objectives of the monitoring exercises were not clear. Thus, even in the cases where the Bank's monitoring identified serious issues, there was no concrete action on the part of the Bank to mitigate or eliminate those issues, unless the Bank's loans were at risk directly. This happened, for instance, in one project, when the guarantees for the Bank's loans became worthless and new guarantee structures had to be set up. It can therefore only be concluded that monitoring was a resource-driven process, with as its main purpose at best to keep the Bank informed of a project's difficulties, and that the Bank does not enter into negotiation as long as its own loans are not at risk.

On average, less than 3 progress reports were produced for each of the 29 projects evaluated. Nevertheless, important modifications in certain projects were discovered too late. For instance, one project was expanded geographically by 50% and the equipment to be procured also changed substantively. In another project, only 340 project components out of the original 820 were financed, while 389 new components were added. These changes should at least have warranted a reappraisal of the Bank's involvement, in order to ensure that the project was still viable and its objectives were still valid (again these two projects are very large projects). Also the direct impact on the Bank's accounts is low, the promotion of the Bank's "expertise" is not compatible with those issues. Obviously monitoring has to be improved, especially for large projects (i.e. more than EUR 2 bn, as a rule of thumb).

Completion reports were produced for only five of the 29 projects evaluated, of which two projects were considered good, two satisfactory and one poor.

Two other projects were closed administratively, i.e. without a completion report. Questionnaires for two other projects were sent to the Promoters but not answered nor was this followed up by the Bank.

In the final analysis, the Bank has little scope to act on problem projects once disbursement has taken place. The only effective sanction allowed by the contracts in such an event would be to recall the loan. In most projects this would however have been inappropriate because the projects' objectives would then have been even more difficult to achieve.

As regards the monitoring of the financial situation of the borrowers there is likewise a lack of documented evidence, except in the cases where financial monitoring was essential because the borrower had to be placed under administration. However, as many projects in the railway sector are repeat operations, the Bank normally has a good knowledge of the borrower's financial position.

7. The EIB's Contribution

7.1 Financial value added

7.1.1 Interest rates

One of the specific objectives of this evaluation has been to try to measure quantitatively the financial value added of the Bank in terms of the advantage of Bank financing compared with that of other funding sources available to the promoter. This has been possible in a limited number of the projects evaluated (in depth and desk review):

- in four projects, the promoter provided sufficient information to allow a precise quantification of the advantage;
- in eight projects, the advantage could be estimated with an adequate degree of confidence on the basis of alternative sources;
- for 17 projects, no information could be obtained, mainly because the promoters considered their alternative cost of funding a commercial secret.

As for the projects whose financial advantage could be quantified, the interest rates offered by the Bank were lower per year than those offered by others

A more detailed analysis shows that the Bank's interest rates offered a maximum advantage in two types of project:

- projects implemented at the beginning of the decade, in particular during the period before monetary union;
- projects of the "project finance" type (including PPPs), for which commercial banks usually charge more.

However, the Bank's competitive edge has shrunk over the years and by about 1998 several loan balances still outstanding were unable to be fully disbursed.

Nine out of 16 promoters whose projects were examined in depth indicated that the Bank was competitive at the time of the first disbursement. Several promoters stated that the Bank had a slight edge over other sources of funding at the beginning of the new century but that it was more expensive compared with bond issues (which require complex and time-consuming preparations, however).

7.1.2 Loan terms

The Bank's ability to grant long-term loans is one of its traditional advantages. This was mentioned by six promoters (out of 16) as being advantageous for their projects with long economic lives and relatively low returns. In fact the Bank's statistics show that 83% of all loans signed in the railway sector had terms of ten years or more. This confirms the interest of the promoters in long-term loans.

Another advantage quoted by promoters is the flexibility of the loan agreements. Indeed, all the Bank's loans offer the possibility to choose, for instance, the number and timing of disbursements, the

currencies of disbursement, modifications during the life of the loan in the interest rates and currencies, and prepayment of the loan. And the borrowers are free to request a modified set of loan terms in accordance with their own criteria for each new disbursement. The borrowers frequently availed themselves of these possibilities.

7.1.3 *The Bank's goodwill*

A number of borrowers (six out of 16) stated that the Bank had facilitated the acquisition of other loans because of its quality image and its good reputation in the financial markets. In addition, the Bank's need for a guaranty caused one promoter to create a new financing subsidiary, which obtained the guaranty from the Government at zero cost. The same scheme was later utilized for other loans. A similar technique was also employed for another project. Three promoters expressed their appreciation of the Bank's support during difficult times. For instance, one promoter mentioned that the Bank's support during administration proceedings had been much appreciated because it had served to reassure other lenders.

7.2 Non-financial contribution

The Bank is normally requested to fund a project when it has been well defined by the promoter. Moreover, Bank projects are usually components of long-term investment plans. Furthermore, most promoters in the EU are highly competent and experienced in project preparation. In the majority of projects there is therefore little scope for the Bank to provide a non-financial contribution. Also, many projects subsequently encountered substantial changes. In one case, however, the promoter felt that the Bank had added non-financial value because the Bank's questions had helped to structure the project better and had helped it to implement its objective of introducing labour-saving technology. The evaluators also found that the Bank was able to persuade the promoter of another project to strengthen its environmental aspects. The Bank was able to play a useful role as well in yet another project by facilitating communication between the EU Commission and the promoter about each other's practices on qualification.

The Bank's involvement at an early stage can be justified given its expertise; the most efficient way to achieve it would be by increased active participation in the relevant committees (Commission, Parliament, Member States) dealing with railway policies and projects.

EVALUATION CRITERIA

Project performance is assessed using the core evaluation criteria as defined by the Evaluation Cooperation Group (ECG), which brings together the operations evaluation units of the multilateral development banks (World Bank group, regional development banks, and EIB), in line with the work of the OECD- DAC Working Party on Aid Evaluation, and adapted to meet the particular operating needs of the EIB. Evaluations take due account of the analytical criteria used in the ex-ante project appraisal and the strategy, policies and procedures that relate to the operations evaluated. Changes in EIB policies or procedures following project appraisal, which are relevant to the assessment of the project, will also be taken into account.

- Relevance is the extent to which the objectives of a project are consistent with the relevant EU policies (the Treaty, Directives, Council Decisions, Mandates, etc.) and the decisions of the EIB Governors, as well as the beneficiaries' requirements, country needs, global priorities and partners' policies. In the EU, reference is made to the relevant EU policies in the context of the Article 267 of the Treaty that defines the mission of the Bank and the EIB related policies. Outside the Union, the main reference are the Community's relevant external policy objectives considered in the specific mandates given to the EIB by the Council of the European Union and the EIB interpretation of them.
- Effectiveness relates to the extent to which the objectives of the project have been achieved, or are expected to be achieved, taking into account their relative importance, while recognizing any change introduced in the project since loan approval.
- Efficiency is the measure to which project benefits/outputs are commensurate with resources/inputs. For the ex-ante appraisal, a project's efficiency is normally measured through the economic and financial rate of returns. In public sector projects the economic and financial rate of returns often are not calculated ex-ante. In those cases the efficiency of the project is estimated by a cost effectiveness analysis.
- Sustainability relates to the likelihood of continued long-term benefits and the resilience to risk over the intended useful project life. The assessment of the project's sustainability varies substantially from one case to another depending on circumstances and takes into account the issues identified in the ex-ante due-diligence carried out by the Bank. Among the issues reviewed in the assessment are:
 - Technical and management issues, mainly willingness, capacity and funding to carry out the necessary maintenance of the project in order that it can reach its useful life;
 - Government commitment, regulatory environment and socio-political support (this is particularly important in weak institutional context such as in some developing countries);
 - Financial sustainability for revenue generating projects, whether there is a significant risk that those revenues become unacceptably low, e.g. that they cannot cover at least the operating and maintenance costs;
 - Environmental sustainability, whether there are environmental risks that might be a significant threat to the future operation of the project.
 - Other issues that might affect the continued long-term benefits during the useful project life.

EUROPEAN INVESTMENT BANK OPERATIONS EVALUATION (EV)

In 1995, Operations Evaluation (EV) was established with the aim of undertaking ex-post evaluations both inside and outside the Union.

Within EV, evaluation is carried out according to established international practice, and takes account of the generally accepted criteria of relevance, efficacy, efficiency and sustainability. EV makes recommendations based on its findings from ex-post evaluation. The lessons learned should improve operational performance, accountability and transparency.

Each evaluation involves an in-depth evaluation of selected investments, the findings of which are then summarized in a synthesis report.

The following thematic ex-post evaluations are published on the EIB Website :

1. Performance of a Sample of Nine Sewage Treatment Plants in European Union Member Countries (1996 - available in English, French and German)
2. Evaluation of 10 Operations in the Telecommunications Sector in EU Member States (1998 - available in English, French and German)
3. Contribution of Large Rail and Road Infrastructure to Regional Development (1998 - available in English, French and German)
4. Evaluation of Industrial Projects Financed by the European Investment Bank under the Objective of Regional Development (1998 - available in English, French and German)
5. An Evaluation Study of 17 Water Projects located around the Mediterranean (1999 - available in English, French, German, Italian and Spanish).
6. The impact of EIB Borrowing Operations on the Integration of New Capital Markets. (1999 – available in English, French and German).
7. EIB Contribution to Regional Development A synthesis report on the regional development impact of EIB funding on 17 projects in Portugal and Italy (2001 – available in English (original version), French, German, Italian and Portuguese (translations from the original version)).
8. Evaluation of the risk capital operations carried out by the EIB in four ACP countries 1989-1999 (2001 - available in English (original version), French and German (translations from the original version)).
9. EIB financing of energy projects in the European Union and Central and Eastern Europe (2001- available in English (original version), French and German (translations from the original version))
10. Review of the Current Portfolio Approach for SME Global Loans (2002 – available in English (original version), French and German (translations from the original version)).
11. EIB Financing of Solid Waste Management Projects (2002 – available in English (original version), French and German (translations from the original version)).
12. Evaluation of the impact of EIB financing on Regional Development in Greece (2003 – available in English (original version) and French (translation from the original version)).
13. Evaluation of Transport Projects in Central and Eastern Europe (2003 – available in English (original version)).
14. EIB Financing of Urban Development Projects in the EU (2003 – available in English (original version), French and German (translations from the original version)).
15. Evaluation of the Projects Financed by the EIB under the Asia and Latin America Mandates (2004 – available in English (original version), French, German and Spanish).

EUROPEAN INVESTMENT BANK OPERATIONS EVALUATION (EV)

16. Evaluation of EIB Financing of Airlines (2004 – available in English (original version) French and German)
17. Evaluation of EIB Financing of Air Infrastructure (2005 - available in English (original version))
18. EIB financing with own resources through global loans under Mediterranean mandates (2005 - available in English (original version) German and French.)
19. Evaluation of EIB Financing of Railway Projects in the European Union (2005 - available in English (original version) and French.).

These reports are available from: EIB website: <http://www.eib.org/publications/eval/>.

E-mail: EValuation@eib.org