European Investment Bank

Operations Evaluation Unit

Evaluation Report

An Evaluation Study of 17 Water Projects Located Around the Mediterranean Financed by the European Investment Bank

Based on reports made on behalf of the European Investment Bank by:

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THIRTY YEARS' EXPERIENCE IN THE MEDITERRANEAN

EIB financing activities in non-member Mediterranean countries date back to the start of the 1960s, when the Bank carried out its first operations in Greece (1962), at that time not a member of the European Union but signatory to one of the first association agreements in the region. Since then, the situation has developed significantly: first, four generations of Financial Protocols and the "Redirected Mediterranean Policy", introduced at the end of 1992, and more recently the "Euro-Mediterranean Partnership", adopted by the European Union at Barcelona at the end of 1995, to bolster co-operation with non-member Mediterranean countries, encompassing the Maghreb and Mashreq countries, Israel, Malta, Cyprus, Turkey as well as Gaza and the West Bank.

Covering the period 1992-1996, the "Redirected Mediterranean Policy" was founded both on bilateral financial protocols (amounting to more than ECU 1.5 bn) and on an off-protocol horizontal financial co-operation component designed to support investment of regional significance together with environmental protection schemes. Under the off-protocol facility, loans from the Bank's own resources amounted to a total of ECU 1,800 million.

A new lending mandate for the EIB was approved by the ECOFIN Council of Ministers in December 1996 under the Euro-Med Partnership arrangements, making available ECU 2,310 million for the period 1997-1999 for financing investment projects in the 12 non-EU Mediterranean countries that have signed co-operation or association agreements with the Union. In addition, the EIB is also able to offer "risk capital facilities", funded from EU budgetary resources.

Over the period from 1992 to 30 June 1997, the EIB lent ECU 3.5 billion in the non-member Mediterranean countries. Although this financing has chiefly taken the form of long-term loans, risk capital funding designed to encourage development of the local private sector and joint ventures has also been made available. Undertaken in close liaison with the European Commission, the EIB's actions thus complement the grant aid (ECU 4.3 bn between 1995 and 1999) being advanced in parallel by the European Union to these countries.

Against this background, the Bank's approach is that of financing projects, intended first and foremost to develop the economic base of the countries in question. By this token, when selecting projects for support, the EIB looks not only at the technical calibre and financial viability of the capital investment proposed, but also the economic justification, so as to ensure that these projects do indeed create lasting wealth, notably by enhancing the quality of life.

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Abbreviations:

BOD_5	Biological Oxygen Demand (5 days)	*kW*	kilowatt
CAP	Common Agricultural Policy	*kWh*	kilowatt hour
cap	caput or capita	*l*	litre
cust	customer	*m*	metre
d	*da*y	M	million
EC	European Commission	*m^3*	cubic metre
ECU	European Currency Unit	MFI	Multilateral Financial Institution
EIB	European Investment Bank	*mg*	milligram
EU	European Union	*mm*	millimetre
EV	Evaluation Unit of the EIB	*No*	number
g	gram	*p.e.*	population equivalent
ha	hectare	*PER*	Project Evaluation Report (EIB)
h	hour	*s*	second
ICR	Implementation Completion Report	*SCADA*	Supervisory Control and Data Acquisition
kg	kilogram	*UfW*	Unaccounted for Water
km	kilometre	*W*	watt
		WHO	World Health Organisation
		yr	year

EXECUTIVE SUMMARY

This report presents the findings of an ex-post evaluation of seventeen water projects financed by the EIB around the Mediterranean. The study, covering water supply, sewage treatment and irrigation projects, aims in particular at assessing project performance, development impact, the contribution of projects towards environmental enhancement, and, whenever appropriate, trans-sectoral issues. To ensure an independent result, it was carried out by outside consultants; their findings are fully reflected in the conclusions that also include comments from relevant EIB departments as well as from promoters of the projects.

The projects selected are located in eight countries north and south of the Mediterranean. They account for 11% of the projects financed by the Bank from 1981-1992, representing a total investment cost of 1 397 M ECU and a total EIB loan amount of 430 M ECU. Admittedly, the sample is small and projects are both geographically and sectorally disparate. True representativity of the EIB's overall portfolio cannot be assumed, but the findings are sufficiently consistent with other related studies to merit attention.

In general terms, the findings present a picture of mixed or even sub-average quality. However, this would not surprise anybody familiar with the problems related to the sector, and the approach of the study has therefore been to investigate reasons for the weaknesses found and suggest ways of reacting to improve future activities in the sector.

Implementation of projects in the sample was in line with **technical** plans and cost forecasts. Project design, however, was not always optimal: water supply projects were often based on over-estimated demand projections, inadequate attention was paid to potential water savings and loss reductions, and yields of water resources, particularly when non-renewable, deserved more careful attention; sewerage and waste water treatment plants experienced technical difficulties and system over-loading of polluted water. Overall, delays in implementation were often considerable, pre-empting some of the promoters' expectations of benefiting from positive leverage from EIB loans.

Evaluators found evidence that project appraisals allowed the EIB's technical experts to propose improvements which brought investment plans closer to international standards. Promoters valued this, and some of them expressed regrets that EIB technical input could not be greater.

In terms of the **financial performance** of the projects and the water agencies, this study confirms previous EV findings for the sector, namely that accounting standards are poor. Most projects and agencies are financially unprofitable, with irrigation projects not performing significantly worse than the other sub-sectors. Tariff revenues cover both operating costs and part or all of depreciation and financial charges in 10 out of the 17 projects. Nevertheless, late or inadequate tariff adjustments are seen to be responsible for sub-optimal investment and management decisions. Within the European Union (EU) the Bank did not see it to be within its remit to challenge water-pricing policies.

Whilst the Bank essentially makes loans to sound, creditworthy borrowers, this may have contributed to weakening the link between EIB loans and the projects. Loans were usually channelled through intermediaries and resources were then allocated to the final beneficiary on the intermediary's own terms, rather than on the EIB's. Hence, lending terms were either not well adapted to the investment or the promoter, or EIB funds *de facto* financed the treasury requirements of the intermediary institution or public administration. This may have reduced the EIB's financial exposure, but its scope to influence the outcome of projects and impose the discipline that usually accompanies bank lending was also diminished.

Environmental enhancement was achieved in almost all projects and although much remains to be done, the EIB's contribution has undoubtedly been positive. Investments have, for instance, contributed towards eliminating or reducing pollution for two beaches that obtained "blue flag" status. The small sample also contained notable successes in the difficult areas of soil erosion and desertification.

However, the general level of ecological and plant performance data available at evaluation was insufficient to fully evaluate the environmental impact of the projects. When such information was available, the results often revealed shortfalls from current national and EU norms. At the time that most of the projects were being implemented, EU and national standards - when they existed - were much less stringent, and it is therefore understandable that these projects now rarely comply with current standards. Environmental enhancement remains an area of concern.

As separate but related points, the study reveals that sludge treatment/disposal remains neglected and effluent reuse opportunities not sufficiently exploited. There is also evidence that EIB's practice of considering water supply projects as enhancing the environment by their very nature is questionable.

Economically, most water projects succeed in providing social, economic and environmental benefits. They tend to create employment, particularly irrigation projects in rural areas where unemployment is high. However, the overall impact, as measured by the economic rate of return, was less than estimated at appraisal. In irrigation projects within the EU, farmers deviated from the original cropping patterns and adopted crops subsidised by the Common Agricultural Policy, turning highly profitable financial situations into negative economic rates of return.

Water agencies are generally **institutionally** weak**.** The sample included only public companies, so the study cannot analyse the alleged greater efficiency of private promoters. The success of 2 of the projects managed by public entities with business-like reward systems illustrates the potential of improving public sector performance without resorting to privatisation. The sample contained 2 cases that confirm the assertion that involving ultimate beneficiaries in project design and financing improves outcome.

When the projects are rated against a set of standard performance criteria - implementation conditions (input efficiency), operational conditions (output efficiency), impact and sustainability - the combined results are: 2 cases are satisfactory, 4 reasonably satisfactory and 11 unsatisfactory. Although differences are generally small, projects outside the EU tended to fare better than those within the EU on all criteria except the promoter's financial profitability. Even if these results are statistically not significant, they still suggest that projects within the EU in this sector and region do not require less attention than those outside.

The report makes a number of specific **recommendations** which have been put to the EIB services and their reactions are set out in the report.

In general, the study points to the need to shift the EIB's focus to more purpose-oriented lending. This requires a change in the definition of investments, from project to programme lending, and the involvement of independent quality control agencies.

Appraisal procedures for the projects in the sample, carried out on average 15 years ago, focused on financing well-defined fixed assets rather than helping the client solve his problems. Procedures have been improving, and a brief review of 10 recent appraisals shows a more thorough analysis of technical and economic factors, as well as an increasing awareness of institutional issues.

Finally, the EIB should assign additional resources to monitoring ongoing water projects in the area, taking into account the findings of this study.

In conclusion, the EIB's lending for water projects in the Mediterranean, particularly within the EU, has decreased in recent years. This is partly a consequence of an EU policy shift which has put additional emphasis on grant financing at the expense of loan financing, but it is also one of the inevitable results of the problems identified in this study.

Despite their often rather mediocre performance, the projects reviewed have by and large succeeded in providing certain social, environmental and economic benefits. Furthermore, the EIB is aware of the critical importance of this sector in the area, and thus the need for continuous support for the region as a whole, not least for environmental programmes which include water. The EIB acknowledges its obligation to help correct these problems by maintaining an appropriate volume of assistance in the financing of relevant projects.

The study illustrates the difficulties facing Multilateral Development Banks in overcoming institutional and cultural obstacles in socially sensitive sectors. The Bank's involvement in the Mediterranean Environmental Technical Assistance Programme (METAP) (beyond the scope of this study) is indicative of its commitment in the region, and in order to improve the potential of its action, the EIB should continue to intensify its co-operation with other financiers and international networks engaged in water development in that region. In particular, the EIB could associate itself with the Action Plan recently produced by the European Commission in collaboration with the water agencies of 7 Mediterranean countries.

1. INTRODUCTION

1.1 Water in the Mediterranean

The countries forming the boundary of the Mediterranean Sea, including the island states lying within, share a broadly similar climate. Summers are dry and hot, and the rainfall pattern ranges from extremes that can result in both severe flooding and drought - in a dry year, rainfall can drop to half the average levels and less. Precipitation is unevenly distributed, varying from an annual average of approximately 1,000 mm in the mountainous areas of the north, to less than 100 mm in the arid zones of the south. Taken together with the distribution of population, a wide diversity of per capita water resources emerges: some countries in the Balkan sub-region have generous natural water resources per inhabitant in excess of 5,000 m^3/yr, but others such as Jordan, Malta and Tunisia have less than 500 m^3/yr. There is also a considerable variation in water availability per person within individual countries, for example between the north and south of Italy, and between mainland Greece and the islands.

Water demand per capita varies considerably between countries, from around 100 m^3/yr at the low end of the range, to more than 1,000 m^3/yr in countries where there is a high use of water for irrigation. Requirements for irrigation water also differ greatly, between 2,000 and 20,000 m^3/ha/year, representing more than 80% of water consumption in several southern Mediterranean countries.

From a regional perspective, the southern and eastern Mediterranean countries generally experience greater pressure on available water resources. This situation has led to the exploitation of non-renewable deep aquifer resources, as well as sea water desalination and the use of land-based brackish water sources, involving much higher unit production costs. Localised water resource problems may be found in most countries, both water poor and water rich: for example, the over-abstraction of ground water aquifers in coastal urban communities has led to saline intrusion and pollution levels exceeding EU / World Health Organisation (WHO) norms.

Thus, as far as water resources are concerned, the region experiences both feast and famine, depending on the standards of water management. The situation is particularly serious where the environment is under severe threat, where expensive water is wasted through distribution pipe leakages, rationed by intermittently cutting the supply to consumers, or wasted through inefficient irrigation systems and practices.

The Mediterranean Sea suffers from serious pollution and environmental degradation. The introduction of legislation such as the key EU directives on bathing water quality and on the collection and treatment of liquid waste from urban developments, has started to have an impact on the waters of EU Member States in the region, but full compliance with these directives is still far from being a reality. Waste water treatment is much less developed in the poorer countries of the southern and eastern Mediterranean than in the EU. Urbanisation of the coastal zone is the largest single source of aquatic pollution, and the significant population and economic growth foreseen in the next three decades, coupled with continuing growth in tourism, present a major environmental threat.

The reuse of treated waste water (sludge reuse is still underdeveloped) for irrigation and possibly industrial purposes has an important part to play in the development of integrated solutions for water resource and environmental pollution problems, but to date the proportion of reused effluents falls well short of the economic and environmental optimum.

1.2 EIB's Contribution to the Water Sector in the Mediterranean

Throughout the study, the water sector is defined as covering water supply (resource development, distribution), waste water treatment (sewerage treatment and disposal, networks and collectors) and irrigation. In terms of area, the study covers Mediterranean countries both within and outside the EU.

Table 1A shows the evolution of investments in the water sector supported by EIB lending in the Mediterranean. Water projects have been declining both in number and amount lent in real terms, particularly within the EU, where there was a halt in 1997. These changes may stem from a combination of factors, including the completion of large water infrastructure works by the mid-90s, promoters' preference for grants from the European Commission (EC), and, possibly, a growing awareness by the EIB of problems in the sector.

Table 1A: EIB Supported Investments in the Water Sector in Mediterranean Countries
Operations with Own Resources - Current ECU

	Average 1982-91		1994		1995		1996		1997	
	N°. op.	M ECU	N°. op.	M ECU	N°. op.	M ECU	N°. op.	M ECU	N°. op.	M ECU
Total *)		**23 068**		**45 139**		**48 807**		**53 972**		**62 475**
Water sector *)		**1 681**		**1 808**		**3 775**		**3 218**		**5 317**
Medit. region	**12**	**1 086**	**6**	**720**	**10**	**2 063**	**11**	**1 450**	**5**	**850**
Water supply	5	387	4	194	3	255	1	257	1	112
Waste water	5	578	2	526	6	1734	10	1193	4	738
Irrigation	1	119	-	-	1	74	-	-	-	-
% in EU	*93*	*90*	*33*	*51*	*20*	*5*	*27*	*23*	*0*	*0*

*) excluding global loans

1.3 EU Objectives Justifying EIB Involvement

To be eligible for EIB financing, investments must not only be technically, environmentally, financially and economically sound, they must also contribute to meet the EIB's statutory objectives. Water projects within the EU are usually financed under the objective of fostering regional development (reduction of income disparities within the EU) and/or environmental protection. Projects outside the EU are financed under mandates given to the EIB by the European Council to promote investments assisting recipient countries' economic development.

1.4 The Study

This report was commissioned by the EIB's lending directorate for operations outside the EU as a background paper for its contribution, together with the World Bank, to international fora on Mediterranean water. It seeks to determine the extent to which projects supported by the EIB have contributed to the achievements of its objectives. Findings should help the EIB improve policies and procedures, with the aim of improving the quality of its operations and its clients' satisfaction in targeted sectors and regions.

The evaluation was carried out in 3 stages by EV staff, assisted by 2 independent consulting companies:

1. A desk review of EIB files leading to the preparation of provisional Project Evaluation Reports (PER) and questionnaires (model in Annex 1);
2. Field visits conducted by the first independent consultant to finalise the individual PERs, the analytical findings being summarised in a synthesis report;
3. The compilation of the present final report assisted by a second consultant who reviewed the stage 2 synthesis analysis in the light of his extensive experience of the Mediterranean region.

Both individual reports and the synthesis were submitted for comments to the various EIB services and the promoters, of which 7 replied. Their comments have been incorporated into the text, or shown separately if they contradicted EV's findings.

The evaluation analysis was hampered by a shortage of reliable data, most of which should have been readily available from the water agencies visited. The standard of promoters' replies to the questionnaires varied considerably: figures were sometimes contradictory or even felt to be suspect.

Earlier data from the Bank's files (appraisal, completion reports) was therefore used, providing it was not inconsistent with other findings at evaluation.

The study required 115 days of EV's professional staff (including 3 to review 10 recent appraisals) and 240 days of support staff, and 295 consultancy days. About 40% of EV time was spent completing existing files and preparing questionnaires on individual projects.

2. DESCRIPTION OF THE SAMPLE

Projects were selected by EV to provide a broad geographical and sectoral coverage. A total of 17 projects from 8 Mediterranean countries were retained in 3 sub-sectors: water supply, sewerage treatment and irrigation. All 8 projects located within the EU met the regional development eligibility criterion; of these, 5 were also eligible as improving the environment. The other 9 projects were located in countries outside the EU. Whenever possible, a series of 3 projects – one in each sub-sector – was selected within a single region to verify inter-sectoral issues. In a number of cases, projects were sub-divided into sub-projects in different areas, or consisted of a number of investment components. Key features of sampled projects are given in Annex 2, and summarised below.

Table 2A: Evaluated Projects by Sub-sector

Sub-sector	Primary component	Secondary component	All
Water supply and distribution	**7**	**3**	**10**
Sewerage collection, treatment and disposal	**5**	**2**	**7**
Irrigation	**5**	**2**	**7**
Other environmental measures and ancillary facilities	**-**	**4**	**4**
TOTAL	**17**	**11**	**28**

The sample is split almost equally between greenfield operations and additional investments to existing schemes. It covers 11% of EIB loans in the relevant sectors during the 1982-91 period. It does not include projects in some countries known to have sound water management, as no water project was completed when the study was launched, but several sample cases represent series of projects which constitute a significant share of the EIB's involvement in the sector. The statistical representativeness of the sample cannot be verified from information currently available from the EIB's filing system.

A total of 17 borrowers and 17 promoters were involved. One project comprised 3 sub-projects with different promoters; 4 projects shared 2 promoters.

Table 2B: Borrowers and Promoters

	Borrowers	Promoters
Central government ministries or departments	12	2
Municipally owned water enterprises	2	5
State bank	1	1
State owned enterprise	1	1
Société Anonyme (SA)	1	1
Autonomous or semi-autonomous agencies		6
Regional authority		1

Promoters and borrowers were public companies, although some of them were structured and operated as private utility companies. Two promoters have been converted recently to 'Sociétés anonymes', although still retain full public ownership.

Water supply and sewerage projects together are estimated to benefit about 6 M people, increasing from 5.2 M at appraisal to 6.6 M at evaluation. Water projects concern a large number of people ranging from 21,000 for the smallest to over 1 M for the larger schemes.

Total out-turn investment costs (Table 2C) amounted to 1,397 M ECU. This includes land acquisition, engineering and supervision, civil works, supply of equipment, working capital and interest during construction. In some cases, ancillary services (such as extension in irrigation projects), and value added taxes are also included. EIB loans totalled 430 M ECU, or an average of 31% of the investment. Because of the way costs were reported, unit costs could not be checked meaningfully. The cost of one waste water treatment plant was abnormally high. Investment costs per hectare of 2 irrigation schemes co-financed with the final beneficiaries fell significantly below those of other projects.

Table 2C: Breakdown of Project Costs by Technical Element

Sub-Sector	Total Investment Cost M ECU
Water resources	321
Water networks	184
Sewerage	210
Sewage (waste water) treatment	79
Irrigation	559
Other	44
TOTAL	**1,397**

3. PERFORMANCE OF THE PROJECTS EVALUATED

3.1 Implementation of Investments - Conformity with Plans

3.1.1 Technical Design – Capacities

Basic median, minimum and maximum specifications of the projects evaluated are given in Annex 2. Of the 17 projects, 11 - most of them located outside the EU - were substantially in line with appraisal specifications. Five cases underwent minor changes that do not affect the outcome. The original concept fundamentally changed in only 1 project that was unviable. Deviations can best be illustrated with examples:

In 1 **water supply project**, the conveyor pipe was built with a smaller diameter resulting in a 20% lower hydraulic capacity without affecting the service provided. In another case the environmental protection components (afforestation, embankment protection and waste water treatment plants in villages around the main water supply reservoir) were not or only partially implemented.

For **waste water collection and treatment projects,** treatment varied from preliminary only (screening and grit removal), to full biological treatment with disinfection, but none included nutrient (N + P) removal. In one case, the plan to provide primary treatment to 100% of the flows was replaced by secondary treatment of only 16% of the flows, on an interim basis pending construction of the second phase. In a project consisting of a series of sewerage treatment and sludge drying plants, a sophisticated but so far unused energy production unit was constructed in the smallest plant serving around 2,000 population equivalent (p.e.); 1 sludge drying plant was not built, and another is standing idle and being cannibalised. This project, obviously political, is the exception, and although an EIB document reports that the "project was implemented largely according to plans", EIB personnel had suspected problems and asked EV to verify the outcome as part of this study.

Three out of the 5 **irrigation projects** were implemented according to the original design capacity. One particularly risky project seeking to introduce drip irrigation to stop over-exploiting a non-renewable water source failed entirely, despite intensive EIB technical assistance. In the end, agricultural rather than irrigation equipment was purchased to use up the EIB loan. The technology proposed was over-sophisticated for the local management and the EIB became aware of corruption after the loan was fully disbursed. The institutional set-up has since been changed.

From the above, regarding technical implementation, the following conclusions can be drawn:

- Installed capacities were in line with plans with a few exceptions. If the EIB's task is limited to helping to implement planned infrastructure, on the whole it has succeeded. There is also no doubt that in the Mediterranean region the EIB has helped to increase the potable water supply and sewerage treatment as well as enlarging the irrigated area.
- Secondary environmental protection components risk being neglected as a result of budgetary restrictions.

3.1.2 Timing

Of the 17 projects analysed, 3 were completed on time. The delay in implementation for the other 14 ranges between 2 and 12 years. Of these, 7 projects - 40% of the sample - were not completed at the end of the grace period, and 1 project overran the loan repayment period. The 40% figure is better than the average implementation delay of the whole EIB portfolio of water projects financed in the Mediterranean region over the same period because of the geographical distribution of the sample selected for this study. The problem was particularly acute in 2 EU countries.

Unreasonably slow implementation resulting from institutional weaknesses is one of the main curses of water projects in the Mediterranean area. This has been one of the factors contributing to the EIB's decision to no longer finance irrigation projects in some countries. In one symptomatic case, for instance, the EIB

participated with a local bank in an innovative deal where farmers agreed to finance 65% of the investment costs of collective irrigation schemes. Farmers expected this to solve the problem that 100% subsidised schemes were being continually postponed because of their Government's budgetary restrictions. However, after a few years they withdrew from the arrangement, partly because the Government interfered with procurement procedures, which resulted in delaying access to irrigation water by sometimes several cropping seasons. In the meantime the Government managed to accelerate its own programme with EU grants providing 100% subsidies.

Within the EU, EV found no evidence from the sample that EIB-supported projects are implemented faster than those not supported by the EIB: the usefulness of selecting specific projects from a broader government programme is therefore unclear. Whether or not the link between EIB loans and specific projects has been tightened under current financing practices, requires further investigation.

3.1.3 Procurement

Eleven projects (65%) appear to have encountered no significant procurement problem and have met EU guidelines.

The other 6 projects experienced the usual difficulties with public procurement procedures:

- Bids accepted despite extremely low cost or from inexperienced contractors, forcing subsequent renegotiations, quality problems and undue implementation delays;
- Excessive delays between the receipt of bids and contract awards, due to the nature of the procedure itself and project management shortcomings;
- Change in design, disputes with suppliers and liquidation of appointed contractors (not directly related to procurement but they nevertheless disturb the overall contracting procedures).

3.1.4 Budget

Most of the projects were implemented in line with agreed budgets when local currency is corrected to ECU, with performance outside the EU again outstripping performance within.

On the basis of available data:

- 10 projects were completed within 5% of the original ECU appraisal budget;
- Of the 7 projects exceeding the 5% margin, 3 cost 40% to 50% more than budgeted.

However, actual investment costs are difficult to verify so long after completion. Accounts are not reliable enough to trace back missing data, and comparisons are subject to interpretation. As with other sectors analysed by EV, the EIB's method of calculating physical and price contingencies appears to provide sufficient margin to accommodate major price increases when compensated by devaluation of the local currency against the ECU.

Unit investment costs could not be verified: with the exception of a few irrigation projects, unit costs in appraisal documents were rarely consistent or comparable, and the way cost breakdowns were presented made it difficult to abstract relevant data. Per hectare investment costs of irrigation works co-financed with the ultimate beneficiaries are significantly lower (half or less) than those of schemes 100% financed by the State.

3.2 Operational performance

3.2.1 Production in Relation to Capacity

Of the 10 **water supply and distribution projects**, 4 are considered to operate close to capacity. In 3 cases, lack of data on the "without" project situation makes it difficult to determine incremental production, but these 3 projects are significantly under-exploited. One is running below 10% nominal capacity, because demand has fallen short of forecasts, due to institutional conflicts and a 4-year severe drought that reduced water supply sharply and caused demand to fall by 40%; when the drought was over, water demand did not return to previous levels. Another project is also operating substantially below capacity but it has at least achieved the important objective of ending water rationing.

Two projects were affected by water losses exceeding 60%: in both cases, a loss reduction programme should have been a higher priority than the construction of new facilities. One of the promoters is now undertaking a programme for water loss control, and the second promoter claims to have achieved a loss reduction for 1998, but these results could not be substantiated.

As a partial justification, the under-exploitation of water supply plants ought to be considered in the context of the legitimate concern for a secure water supply in a region which has highly variable hydrological conditions. Furthermore, at the time that these investments were made, control of water demand and losses was less advanced.

Of the 7 **waste water collection and treatment projects**, 5 have succeeded in reducing the levels of pollution discharged, although the impact on the environment was less than expected. The impact of the other 2 projects is not clear, as they consist of a variety of works performed in various water systems, which did not allow for a clear definition of needs and

impact. However, implementation has clearly suffered from a lack of definition of results to be achieved (cf. case described in paragraph 3.3.2).

There is sufficient evidence to believe that in many cases shortcomings in operational competence mean that best use is not being made of the capital investment. Major deficiencies include: (i) a low number of connections to the collection system, (ii) overloading of new and existing waste water treatment plants (one project resulted in raw sewage being dumped in an open area), and (iii) technical problems.

Reuse of waste water for irrigation was planned in 3 projects. It did materialise in 2, but the quality of the water remains uncertain in 1, with possible health hazard risks.

In 4 out of 5 **irrigation projects**, production equals or exceeds appraisal estimates (higher yields or crop intensity); the fifth project had no impact on production. Two projects supply water to irrigate a larger and 2 a smaller area than was originally planned. Inadequate water resources and rapid urbanisation are the main causes for reducing the agricultural area.

3.2.2 Financial Performance

3.2.2.1 Operational Costs

For all sub-sectors, but especially for water supply and sewage treatment projects, data are fragmentary and available only from some of the promoters (i.e. half of the water supply projects). The operational costs are calculated from the most recent financial data, in no case earlier than 1995. The poor quality of accounting data in water projects was already deplored in EV's previous report on water projects[1] and is an issue in itself.

Differences in operating costs are mainly due to there being a number of alternative processes (desalinisation versus surface water catchment), staffing levels and uncontrolled spending. Proper accounting could help track major anomalies. It also emerged that a promoter in one of the countries covered by the study owns one of the largest fleets of cars used for State purposes.

For irrigation, the collective operating cost (exclusive of on-farm operations) per irrigated hectare varies from 4 to 111 ECU accounting for differences in the cost of energy used for pumping irrigation water.

3.2.2.2 Tariffs

Of the 12 promoters of water and sewerage projects, 5 appeared to achieve full cost recovery, according to their annual balance sheets, although for one of them, no recent evidence has been provided. Of the other 7 promoters, 2 were not required to recover depreciation on capital assets or loan repayments, although their tariffs were no less than those with full cost recovery.

Tariffs of 2 promoters covered less than half of total costs. In one case, the amount of the government subsidy appears on water bills issued to customers. In the second case, a substantial tariff increase was introduced from 1997, to correct the situation after many years of running a deficit. This promoter's tariff is now the highest of all of the projects evaluated.

With regard to charges for waste water, it would appear that in only one case is a waste strength charge levied on industrial customers.

In irrigation, tariffs cover operating costs and at least part of the investment costs in 3 projects, including one where state farms are managed as independent businesses. In the largest scheme, irrigation charges barely cover annual operating costs, and as a result, much-needed dams have not been constructed, available treated water is not being reused, and only 50% of the planned area has been irrigated.

3.2.2.3 Profitability

The EIB calculated the financial rate of return (FRR) at appraisal for 9 projects, mainly outside the EU (50% of all appraisals), and recalculated it at the end of the investment period in 2 cases. In 5 cases, it ranged between 3% and 15%; in the others, it was negative, because of excessive operating costs and/or insufficient tariff compensation, or because of delayed implementation.

At evaluation, 6 projects showed an FRR of between 3.5% and 14.8%, confirming appraisal forecasts. Five projects showed a very low or negative FRR. The FRR of the 6 remaining projects was not recalculated due to lack of data.

Only in two cases did the projects' financial profitability match EIB lending rates, expressed in real terms and in local currency. Within the EU, the EIB's practice of disbursing at loan signature, combined with extreme delays in project implementation, exacerbated the discrepancy between EIB funding terms and financial performance of the investments.

3.3 Contribution to EIB Objectives

3.3.1 Employment Impact

Creating employment is not the objective of water projects. Nevertheless, they are more labour intensive than other infrastructure projects, both directly and indirectly. Irrigation in particular usually contributes to more intensive agriculture and creates direct and indirect employment in rural areas where opportunities are scarce. Investment costs per direct (at the

[1] Performance of a Sample of Nine Sewage Treatment Plants in EU member Countries, December 1995

promoter's level) permanent job created remain high in water supply and sewerage projects but are more reasonable in irrigation, ranging from 24 to 58,000 ECU.

3.3.2 Environmental Achievements

All projects had some positive environmental impact. Several water supply projects include environmental protection components and all sewerage projects have reduced pollution levels in some respect. Even considering the deficiencies described in 3.2.1 of most waste water treatment projects, these types of projects do improve the environment. Also, at the time, most current EU directives, including directive 91/271 regarding effluent qualities, had not been issued. EV was not able to check compliance with the various directives for the sector[2], as translation into national legislation remains difficult to establish, and norms difficult to compare.

The following positive achievements are worth noting:

- Two areas obtained blue flag status because of the elimination of untreated waste discharges in the vicinity of bathing beaches;
- Three irrigation projects made possible a successful fight against soil erosion on steep slopes, desertification or soil salinisation;
- The original plans of one waste water treatment plant were adapted to reduce pollution of sensitive recipient waters albeit at the cost of not alleviating much of the existing pollution that the project was designed to eliminate;
- The pollution level of an aquifer supplying water to urban areas was reduced;
- Treated waste water was reused in 2 projects for agricultural purposes.

For one particular irrigation project, the EIB made considerable efforts to introduce drip irrigation in order to stop excessive over-exploitation of the aquifer, unfortunately to no avail.

However, despite the positive achievements, when compared to international norms and initial goals, all 17 projects were found to have deficiencies. Serious ones that could not be resolved with minor adjustments were found in 11. These results are comparable to those of a previous EV study of sewerage treatment plants showing that the EIB can be credited for helping to reduce pollution, but that investments with its support still fell short of EU norms.

Most notable deficiencies include:

- The assumption that all water supply projects contribute to the environment by their very nature, even where the over-abstraction of aquifers is encouraged by subsidised tariffs;
- In 5 cases, ground water aquifers suffer from over-abstraction; 3 of the 5 water supply projects designed to stop or reduce it, failed to do so;
- Failure to identify, monitor and report on effluent control measures: the effluent quality of waste water treatment plants rarely reaches national or international norms. In a sewerage treatment project including several plants seeking to reduce bacteriological pollution, the agency responsible for measuring effluent quality was first identified by the evaluation team. The agency claims that during the last year prior to evaluation, only 1% of the samples taken met national bacteriological norms, and 40% met chemical norms. In another project, raw waste water spills over into an open area because the treatment plant is overloaded;
- Sludge treatment and disposal as well as the reuse of treated water are not given proper attention. The Bank did not check results of a project that specifically addressed these issues;
- One plant was operated using subsidised (i.e. cheap) fossil fuel based energy;
- Of the 5 projects eligible within the EU for their contribution to the environment, 3 have failed to reach their environmental objectives and the EIB has not sought to overcome the deficiencies.

3.3.3 Economic Profitability and Development Effects

In some other sectors previously studied by EV, the economic rate of return (ERR) of projects is an indication of good resource allocation at national level but not at regional level, since it does not take into account the distribution of benefits between the inhabitants of the region and those of the rest of the country. In most water projects, the local impact of net benefits can be easily identified and the ERR provides a good measurement of both the national and the regional development impact.

The ERR was calculated at appraisal for 9 projects: 7 yielded an ERR between 7% and 14.5%, 2 had an ERR below 5%. However, these figures should be interpreted with care, as social benefits (e.g. health improvement) were not quantified and included in the calculations, although they were mentioned as contributing to the economic justification. At the end of project implementation, the EIB recalculated the ERR in 4 cases, and all were

[2] For relevant EU legislation, see Annex 1: Questionnaire, section 4. Environment

positive. The consultants suggest that efforts be made to quantify these benefits for a more accurate assessment of the economic profitability (Annex 3).

At evaluation, 7 projects out of 17 appeared to be economically justified, of which 2 were irrigation projects. Data were available for proper recalculations in only 4 cases: 2 were positive and 2 negative. In the other cases, the appreciation remains subjective.

In addition to the implementation delays already mentioned in the section on financial profitability, in a number of cases the ERR suffered from subsidised tariffs and/or crops. Negative externalities were related to the environment. As far as crops were concerned, in the 2 irrigation schemes within the EU, farmers deviated from planned crop patterns and adopted crops subsidised under the Common Agricultural Policy and therefore yield negative economic rates of return.

EV included a positive ERR for a desalinisation plant even though water losses in the network increased more than total incremental project production, on the assumption that the promoter's well-conceived plan for cutting these losses would be successful.

3.3.4 Sustainability

The EIB does not have specific sustainability criteria. The results reported in the previous chapters of this study verified the operational/technical, environmental and financial sustainability on the basis of long-term cross-sector effects. The main shortcomings are: exploitation of non-renewable aquifers, unchecked water losses, sewerage treatment falling short of current EU norms, and tariffs that do not ensure proper maintenance and replacement of assets. Considering the poor performance of the sample against other criteria, it is not surprising that at best 1/3 of the projects was judged to be sustainable.

3.3.5 Rating

All projects were rated by both consultants according to EV's provisional[3] 5-level rating system covering conformity with initial plans, input and output efficiency, impact and sustainability. Items for which no data was available were rated 2.5.

One consultant concluded:

« None of the projects evaluated achieved a full compliance rating under all headings, although one project came close to and achieved a composite rating of 4.0. Only 3 projects were judged to have at least a 'reasonably satisfactory' (rating 3.5) rating under all five main sub-headings. [...]. Overall, therefore, the performance of this group of projects has to be regarded as poor.

Despite some substantial budget and time schedule overruns in individual projects, the projects scored best in terms of their "conformity with original plans". The lowest ratings were in efficiency of outputs and in project impact, which underlines the deficiencies in project planning (conceptual design) and exploitation.»

When the projects are rated against a set of standard performance criteria - implementation conditions (input efficiency), operational conditions (output efficiency), impact and sustainability - the combined results are: 2 (12%) cases are satisfactory, 4 (24%) reasonably satisfactory and 11 (65%) unsatisfactory. Although differences are generally small, projects outside the EU tended to fare better than those within the EU on all criteria except the promoter's financial profitability. Even if these results are statistically not significant, they still suggest that projects within the EU in this sector and region do not require less attention than those outside.

The results of the rating match those of water projects financed by other Multilateral Financial Institutions (MFIs), but they are worse than EV's findings on sewerage treatment plants located mainly in northern Europe. Causes for this are numerous, but in EV's view one recurring factor is institutional weakness resulting from political interference at all levels and lack of managerial autonomy (cf. paragraph 4.3).

[3] In the meantime it has been replaced by a system based on a 4-level rating system over 12 criteria, including a rating of EIB performance, in line with "good practices" set by the Evaluation Co-operation Group whose members are the evaluation units of all MFI members of the Joint Development Committee.

4. EIB CONTRIBUTION

4.1 At Appraisal

The Bank's technical and financial appraisals undoubtedly improved the design quality by highlighting negative features and bringing several projects closer to international standards. Promoters recognised this.

The level of scrutiny minimised the risk of significant under-performance by limiting blatant misallocation of resources. In most cases, however, it was inadequate to influence project outcome to meet expectations. It is felt that a more uniform, co-ordinated and thorough review of the project proposals could have been achieved without significant additional EIB staff input and would have further raised the quality of several of the projects under review.

The main areas requiring attention are:

(i) the estimated yield of raw water resources;
(ii) water demand forecasting;
(iii) estimates of future pollution flows and load;
(iv) analysis of the water loss control programme (this point in particular is set out in Annex 3);
(v) project definition to be more holistic[4];
(vi) institutional constraints. Results of this study suggest that as a rule, water supply systems are over-designed, while waste water systems are over-loaded.

In several cases of waste water projects, not all the components of sanitation systems were taken into consideration. Water supply or waste water treatment projects deriving revenue from water sales to irrigation schemes were not analysed by agricultural or irrigation specialists. There is also little evidence in EIB files of looking for least-cost alternatives, particularly for reducing water losses.

Since the sampled projects were appraised, several of the above points have received greater international attention, and the EIB services have told EV that reports are now more comprehensive. EV therefore reviewed the 10 most recent Mediterranean water projects (4 water supply, 5 waste water and 1 irrigation project; 2 within and 8 outside the EU) according to the consultants' recommendations listed in Annex 3.
There is no doubt that the Bank's appraisal standards have improved since the projects were evaluated. A more thorough analysis is now carried out, including elements such as: the 'without' project situation, management arrangements (including situations involving privatisation), yields of resources, water demand forecasts and peak flows, system losses, industrial pollution, sludge and water reuse. Social and political considerations seem to be taken into account more often: one project was rejected on the basis of poor institutional arrangements and ERRs were calculated in all but one case. Loans are made directly to the promoter or through a (private) bank. The externalities of 3 projects had been assessed on the same lines as recommended by the consultants. The number of special conditions listed in the project appraisal reports has risen significantly. The one project which received a negative opinion from the Projects Directorate was not accepted.

On the other hand, unit costs still receive only cursory attention, at least according to the documentation available and, more importantly, investments rather than results still remain the ultimate measurement of impact. Target water consumption is rarely reported, and water savings are mentioned only once. No report on waste water projects mentions norms to be achieved to meet EU standards or names the controlling agency, with an indication of its capacity to measure, report and impose effluent quality. Measurement of financial profitability is less systematic and tariff hikes are still hoped for more than sought. Although investment financing still dominates solution-seeking, the trend is positive.

In the absence of regular portfolio performance reviews and a review of legal documents to check that promoters fulfil their reporting obligations, it is not possible to ascertain whether the above developments will result in improved policies and actual project outcome.

4.2 Monitoring and Completion Reporting

According to the EIB's records, water projects in the Mediterranean are visited on average by EIB staff every 5.5 years after appraisal and every 3 years if the appraisal visit is included (25% of the projects were started before EIB involvement). Outside the EU, the time range drops to 3 and 2 years respectively, and the files on projects outside the EU contain letters suggesting closer follow-up than these figures imply. Six project files (30% of the sample) were closed without a final visit to the facilities (in one case, a full evaluation by EV was requested). EIB

[4] Performance of a Sample of Nine Sewage Treatment Plants in EU member Countries, December 1995

services generally agree that this frequency is inadequate for such a sensitive sector.

The problem is complex and this evaluation shows that the EIB, as with most MFIs, in the end has little leverage over recipient governments to overcome political obstacles to change the framework of individual project financing. This is particularly so for the EIB within the EU, where its loans are made for projects in an advanced stage of implementation and disbursed on signature. Under these conditions, real leverage lies in the capacity to refuse loans. Indeed, for some EIB staff, the reason for the fall in EIB lending for water projects in the area is due to the lack of monitoring resources.

4.3 Dealing with Institutional Issues

All water projects evaluated were in the public sector, which suffers from cumbersome decision making processes. The efficiency of the water system is hampered by factors such as a conflict of interests amongst competing authorities, late budgetary allocations, lengthy procurement verifications or delayed tariff adjustments. The EIB claims to have little leverage in handling these issues, particularly within the EU.

The study could not verify whether privatisation can solve these problems, since no private undertaking was included in the sample. For 2 promoters, management is rewarded according to results, which helps to explain the low investment costs and high productivity levels. Several promoters have asked the EU to provide more managerial and technical assistance to the members of the local government councils who run water projects. This recommendation echoes the request from promoters of the Sewerage Treatment Plants evaluated earlier by EV (cf. reference p.9).

Special conditions, half of them directly aimed at resolving institutional issues, were listed for 9 projects, but they were rarely satisfied within the scheduled time frame. In some cases, it was not evident that all conditions for successful completion set out in the appraisal documents were picked up in the loan contracts. The EIB has imposed special conditions mainly on projects outside the EU, and usually when other MFIs are also involved.

Several of the issues raised in this report, such as the excessive pollution load of effluents from sewerage treatment plants and low tariffs, are still outstanding. This study confirms research into the effectiveness of MFIs which suggests that they can generate sustainable development only if their clients operate efficiently. They cannot, at least through their lending operations, reverse a hostile environment. It remains to be seen whether this can be achieved in this particular area through the active participation of MFIs in targeted networks and fora, such as those for which this study was commissioned.

4.4 Financing

EIB loans per project vary from 2.6 to 405 M ECU, ranging from 17% to 58% of investment costs. The median interest rate is 9.65%, varying from a minimum of 1% to a maximum of 14%; loan duration is 15 years and the grace period is 4 years; the average implementation time of investments of the 17 projects including pre-appraisal time is 7.5 years.

Two loans were granted directly to the project promoter, one to an intermediary bank, and most of the others to the governments of the recipient country (Table 2B). Within the EU, 5 loans were extended as part of regular budgetary allocations. In only 2 cases which were within the EU did EV find evidence that the EIB's contribution had accelerated project implementation.

Because of indirect channelling of EIB funds within the EU, generally through recipient governments, EV was unable to carry out its standard survey of borrowers' interests in EIB services (Annex 1, paragraph 2.5). In fact, 2 promoters in one region claimed that they would have been unaware that their project had benefited from EIB funding had it not been for the contacts with EIB technical staff.

The 2 promoters who borrowed directly from the EIB complained of rigidity in renegotiating the loan conditions following substantial drops in market interest rates. Both have since cancelled their loan.

Within the EU, competition with EU funds resulted in the EIB not financing 2 second- or third-phase projects, having financed the initial phases. In one case at least, the subsequent availability of EU grants resulted in the beneficiary of an EIB loan questioning his obligation to repay the loan to the intermediary.

Outside the EU, disbursements are made according to expenditure. The EIB's onlending terms vary from case to case: in one country, they were well adapted to project specifications, in another, they were in line with the conditions applied by other foreign donors: the promoter carried the foreign exchange risk despite having no foreign

exchange earnings. As the local currency depreciated by 221% over 10 years, outstanding debt rose well above forecasts.

Within the EU, the pattern of disbursement bears little relation to investment specifications and, as already indicated in a previous EV report[5], EIB resources fund *de facto* the treasury requirements of the borrower or intermediary institution, rather than the project. Typically, the full loan amount is disbursed at loan signature or staggered in "tranches" with a view to matching expenditure. This procedure is not really compatible with slow-moving projects, particularly in cases where loan repayments start before investments enter the production phase. Disbursements within the EU have also been in a cocktail of currencies, resulting in a large number of credit lines, e.g. one waste water treatment project was financed from 3 "tranches" totalling 22 disbursements in 8 foreign currencies.

These procedures do not stimulate the sort of discipline expected from promoters taking on bank loans rather than receiving grants. The question also arises as to the meaning of evaluating the EIB's contribution to objectives through its investments when there is no certainty that its loans influence investments that would have been carried out even if the EIB had not participated.

4.5 Within versus Outside the EU

Surprisingly, ratings attributed to projects (paragraph 3.3.5) within the EU are generally lower than those for projects outside the EU for all but one criterion: the promoter's financial profitability because of sizeable subsidy transfers. Differences are generally small and statistically insignificant except for implementation timing, capacity utilisation and tariff coverage of costs.

These results should be checked in future evaluations of the water or other sectors for projects located both within and outside the EU. In the meantime, the belief that projects outside the EU generally require more attention than those within the EU does not match the findings of this study.

4.6 At Evaluation - Comments by the Consultants

« The process of evaluation on an objective basis proved to be rather difficult, essentially because of lack of data and inconsistencies in the data that were available amongst projects. The basic methodology for the evaluation and the roles of the technically qualified Bank personnel and the external consultants was sound, but many of the promoters found it difficult to understand parts of the draft PERs and questionnaires, which compounded the data shortfall problem. Nevertheless some promoters were quite well prepared for the Consultant's visit and had made a genuine attempt to complete the questionnaires, collect relevant documentation and arrange for the relevant staff to be available for discussion ». This conclusion of the consultant points to the need for a careful testing of the questionnaire, which for reasons beyond EV's control could not be carried out under this study.

« At least one of the water statistics data sets received from promoters was suspect and highlighted the problem of expecting the promoter to acquire relevant raw data and process it correctly to derive the information required by the questionnaire.

These difficulties originate from the inconsistencies and incomplete data available in the original appraisal reports and, more critically, the absence of clear monitoring and evaluation procedures that would identify the basic data needs and the mechanisms to have them routinely collected and collated.

It is emphasised that most of the data required for an evaluation of this nature should be available within a promoter's organisation, being necessary for effective and efficient operation of the facilities and for overall performance and forward planning review by senior management.

Projects which comprised a large number of individual projects forming part of a large regional programme were especially difficult to evaluate and would warrant special consideration at appraisal stage to establish a meaningful monitoring programme that could form the basis for post-project evaluation. »

[5] Evaluation of 10 Operations in the Telecommunications Sector in EU Member States (1998)

5. RECOMMENDATIONS

Following evaluation of the 17 water sector projects financed mainly during the 1980s, EV makes the following recommendations for the EIB to improve its effectiveness in developing the water sector in the Mediterranean region:

1. Reinforce technical appraisal in line with the proposals set out in Annex 3 of this report. It is recognised that some of the proposals are already being applied. Others need further attention. In particular, financial and economic rates of return need to be verified more systematically for marginal projects within the EU.

EIB Operations Management:
"The Bank's appraisal procedures have indeed evolved during the 20 years or so since the 17 projects were approved and improvements have been along the lines set out in Annex 3 of this report. Nowadays water companies' medium/long term investment programmes are looked at in the national/regional water sector context and the appraisal focuses on the effectiveness of the investment plan objectives when compared to the existing and expected Water Sector Directives and/or reforms. The cost effectiveness of the selected technical solutions is evaluated, and their rates of return are usually calculated using water tariffs as proxy for the benefits generated by the investment financed. Environmental externalities are quantified, but due to lack of data, qualitative assessments are frequently used. The EIB fully accepts that rates of return used to justify investment at the appraisal stage should be a centre of attention at the evaluation stage. Appraisal work is normally streamlined in straightforward cases, however, and full appraisal is reserved for complex cases presenting special difficulty. Water projects in the Mediterranean frequently present such difficulties and an effort will be made to put additional staff effort into them, although this will mean a greater diversion of resources away from more standard cases elsewhere in the EU."

2. To increase EIB's capacity to apply appropriate loan conditions and bank discipline on promoters, tighten the link between the EIB loan and the targeted investments. Channel loans as much as possible directly to the promoter, and when intermediaries are involved, ensure that when funds are passed on, terms are suitable, taking into account realistic project timing and design. Also improve co-ordination of the various sources of EU funds.

EIB Operations Management:
"The report does not properly recognise that, because money is fungible there is in many cases an element of artificiality in trying to link particular loans with particular additions to the capital stock. The link between the EIB on the one hand and the underlying investment on the other is closest in project finance cases; and in another group of cases, mainly associated with METAP, the EIB contributes to institutional development as part of project preparation. All these cases are rather special however, for in most circumstances there are limits to what can be achieved by writing conditions into a finance contract and the EIB has taken this about as far as it can. In practice the influence exerted by the Bank's expert staff during the course of appraising investment projects and programmes is a more powerful source of pressure for improvement and the report acknowledges that the Bank's technical and financial appraisals improved the design quality by highlighting negative features and bringing several projects closer to international standards. The EIB will continue to work hard at this, directly in the case of individual loans and in other cases by its choice of competent intermediaries. As to co-ordination with other sources of EU funds, there is particularly close co-operation with the Cohesion Fund, for which the EIB carries out a certain amount of appraisal work under contract, and a reinforcement of co-operation with the Regional Fund is foreseen in the Bank's Corporate Operational Plan. Outside the EU, by the nature of its mandates, the Bank necessarily has close relations with other EU sources of funds such as PHARE, as well as with other IFIs."

3. Fix objectives in terms of results (population served, amount and quality of water delivered, loss reduction, pollution loads of effluent), and provide the means for their independent control.

EIB Operations Management:
"It is entirely appropriate that investment promoters should set themselves objectives in physical terms such as those suggested here and this is often done, although the results may be hard to interpret when some objectives are exceeded and others not attained. For the EIB however the objective has to be broader, if only because the Bank does not normally have the detailed knowledge required to fix a set of mutually consistent objectives of these kinds. In principle what the Bank mainly requires from the promoter in terms of results is an acceptable economic rate of return. In practice an ERR often cannot be calculated and simpler yardsticks have to be used. For example the impact of the investment programme which the Bank helps to finance is compared to the objectives of national water authorities and least cost ways of complying with EU Directives are sought."

4. Environment: apply EU norms, including in countries located outside but near the EU. Water supply projects should not be considered per se as eligible under the EIB's environmental programme, particularly if tariffs are subsidised and water resources are not renewable.

EIB Operations Management:
"Many of the projects evaluated were conceived and implemented before relevant EU environmental Directives were in place. These now provide a legal framework for investment programmes, such that the objective is to meet standards at least cost. The Bank applies this same approach outside the EU, using the EU Directives as a guideline where possible or the local water sector regulations if found acceptable. There are obvious problems where tariffs are subsidised and water resources are not renewable, and in such cases investment cannot be justified on environmental grounds."

5. Tariffs should be presented coherently, accounting procedures improved with proper recording of capital and current expenditures, water supply and waste water treatment costs, etc. The level of subsidy should be indicated on customers' bills. For waste water treatment projects, the EIB should check that extra pollution loads be charged in accordance with the 'polluter pays' principle.

EIB Operations Management:
"The Bank has had very little leverage on tariff policy in EU countries, particularly where projects were subsidised by Government or where ceilings were imposed by law. The Water Framework Directive in the EU will exert pressure for reform and introduce tariff systems based on recovering accounting costs, which could be a step towards pricing that is inspired by economic precepts and which would in principle be better. For projects outside the EU the EIB actively supports tariff reform and private sector participation. Conditionalities to this effect are often included in the EIB's finance contract (with problems concerning their general application similar to those experienced by other donors and IFIs)."

6. Monitor projects regularly (minimum once/year) and regularly report to management on the performance of the portfolio. Follow-up on special loan conditions.

EIB Operations Management:
"Within the EU, procedures have been reviewed to relate the effort put into monitoring more closely to the complexity of the project. Whenever EIB loans/disbursements are channelled through Government departments, the Bank tries to ensure that the department concerned is involved in the monitoring process. Outside the EU, monitoring and the preparation of project completion reports is particularly thorough, which is appropriate given the level of economic development of the countries concerned. Informal visits are taking place more often than suggested by the figures reported by EV. Given the effort which is already being devoted to this, the cost effectiveness of additional monitoring activities is uncertain."

7. The EIB should develop a regional water strategy and enhance its "non-lending" role together with other main funding agencies, in particular using international networks on water development in the region.

EIB Operations Management:
"The EIB strategy concerning water sector projects is formulated within the context of the country/region water resource management policies. Long term water demand/supply projections are questioned, normally within the framework of rolling 3 to 5 year investment programmes, and water tariffs have to be based on economic principles while helping water authorities towards financial self-sufficiency. In non-Union countries loan conditionality is often introduced with the view to supporting or accelerating the necessary sector reforms. In EU countries, project appraisal practices are streamlined as appropriate. Streamlining and modulation save manpower that can be redirected for the benefit of projects where additional effort on the part of the EIB can generate "value-added"."

6. CONCLUSIONS

The EIB's lending for water projects in the Mediterranean, particularly within the EU, has decreased in recent years. This is partly a consequence of an EU policy shift which has put additional emphasis on grant financing at the expense of loan financing, but it is also the inevitable result of the state of the sector in the area.

The EIB is of course aware of the critical importance of this sector in the area and thus the need for continuous support for the region as a whole, not least for environmental programmes which include water. The EIB acknowledges its obligation to help correct these problems and seek to maintain an appropriate level of assistance in the financing of relevant projects.

The study illustrates the difficulties facing Multilateral Development Banks in overcoming institutional and cultural obstacles in socially sensitive sectors. The Bank's involvement in the Mediterranean Environmental Technical Assistance Programme (METAP) (beyond the scope of this study) is indicative of its commitment in the region, and in order to improve the potential of its action, EV underlines its recommendation that the EIB intensifies its co-operation with other financiers and international networks engaged in water development in that region.

This review has shown that EIB's appraisal procedures have been improving, and a brief review of 10 recent appraisals shows a more careful analysis in several domains. However, resources assigned to monitor ongoing water projects in the area and to report regularly on the performance of the investment portfolio are inadequate. The EIB operational services should learn lessons from its more recent experience in this sector and area, and EV plans to verify the findings of this present study by planning a more in-depth evaluation of the performance of each sub-sector.

Finally, the findings of this evaluation are consistent with a recent similar exercise conducted in 7 Mediterranean countries by a special unit of the European Commission's DGXVI, responsible for Structural Funds. As a result of its investigations, the unit produced an Action Plan, which is due to be published soon. If the EIB were to associate itself with this plan, it could become a basis for introducing lessons learned into future involvement by EU institutions in water projects in the area.

Annex 1

EIB MEDITERRANEAN WATER EVALUATION STUDY

PROJECT :

QUESTIONNAIRE

Date:

Complementary to Preliminary Project Performance Report (PPER)

0. IDENTIFICATION

0.1	Country	
0.2	Project Name	
0.3	Project Area	
0.4	Project Objective	
0.5	Beneficiaries	
0.6	EIB Identification No.	
0.7	Sector	
0.8	Borrower	
0.9	Promoter	
0.10	Date of EIB Contract signature	
0.11	Date of Completion report	

1. THE PROMOTER

1.1	**INSTITUTIONAL**	**At completion**	**At Evaluation**
1.2	Organisation(s) responsible for tender designs and bid documents, names and types (e.g. , engineering consultant, quantity surveyor)		
1.3	Ditto for technical and financial evaluation of tenders		
1.4	Ditto for supervision of Contractor(s) and administration of Contract(s)		
1.5	Plant contractor(s), scope of supply and installation in each case. Allocate design responsibility in each case, i.e. contractor, WSC or shared (if so, clarify).		
1.6	Civil and building works contractor(s) and scope etc. as above		
1.7	Brief description of procedure for inviting bids, including advertising, pre-qualification, number of applicants, tenders received etc.		
1.8	Brief description of quality control arrangements, design stage. Did beneficiaries partici-pate?		
1.9	Ditto, implementation and commissioning		
1.10	Expenditure on external labour for operation and maintenance (M …….)		
1.11	Role and quality of outside technical or other assistance (consultants)? see also 2.4.8.		

2. PROJECT DESCRIPTION AND IMPLEMENTATION

2.1	**TECHNICAL DETAILS AND STATISTICS**	**At Completion**	**At Evaluation**
2.1.1	Comments on technical description		
2.1.2	Significant changes in technical content during implementation including cost impacts		
2.1.3	Design plant throughput		

2.1.4 Did or does the promoter intend to implement supplementary investments since completion of EIB-financed project? If so, give specifications.

2.1.5 Would the design (and capital investment) of the project differ if it had been combined with other investments in the water sector in the country? What are the promoter's views on project vs. programme financing? Would design differ if investments on sewerage treatment had been combined with those for water supply (water savings) ?

2.2	TIMETABLE	At Completion	At Evaluation
2.2.1	Date of first contract (works started)		
2.2.2	Date of Completion		
2.2.3	Project duration, actual		
2.2.4	Project duration, planned		
2.2.5	Difference (% overrun)		
2.2.6	Origin of the difference : (a) Administrative/institutional; (b) Technical/ procurement; (c) Financial; (d) Other (explain)		

2.3	PROCUREMENT		
	Number of separate contracts		

2.4	INVESTMENT COST	At Completion	At Evaluation
2.4.1	Total Investment cost in M…….. (M Ecu) Foreign Currencies component		
2.4.2	Origin of the difference (explain): (a) Delay/Inflation; (b) Technical Changes (c) Supplementary investment (d) Budgetary constraints (e) Other		
2.4.3	**Unit Costs Net values** **Overall figures** **Total**		
	Consultants		

2.4.4 Did technology, procurement and financing arrangements give the lowest possible unit costs?
2.4.5 Are taxes and overheads for supervision (%) included or have to be added to these costs?

2.5	FINANCING (M ECU)	At Completion	At Evaluation
2.5.1	Amount of EIB Loans		
2.5.2	Did the terms of EIB loans (foreign cost, grace period,...) prove to be compatible with the investment schedule ?		
2.5.3	Was the financing channel appropriate?		
2.5.4	How do annual repayments compare with project cash flow (foreign exchange risk) ?		

3. WATER SUPPLY AND DEMAND

3.1. WATER DEMAND
3.2. WATER SUPPLY & TREATMENT
3.2.1. Capacity
3.2.2. Volume of Water Actually Distributed / Treated in M m3/year
3.2.2.1. How is supply measured (meter type and size) and at what point(s)?
3.2.2.2. Maximum 24 hour production achieved and date (m3/d, date : / /) ; Attach summary of plant output flow meter readings.
3.2.2.3. How many meters or what proportion of meters replaced every year?
3.2.2.4. Length of network (km)

Type of Network	1989	1993	1995	1997	2000
Water supply mains Water supply distribution					

Irrigation networks Collectors					

3.2.2.5. Actual Power Consumption including Borehole Abstraction Pumps, at Design Throughput.

Kwh/d	**1989**	**1993**	**1995**	**1997**	**2000**

4. ENVIRONMENT

4.1. Are project specifications in line with requirements under EU legislation?

N° EEC	Description	At appraisal/completion	At evaluation
75/440	Quality of surface water		
76/160	Quality of bathing water		
76/464	Dangerous substances		
80/778	Quality of domestic water supply		
86/278	Sludge disposal on farmland		
91/271	Quality of urban wastewater treatment		
25.07.1977	Barcelona Convention		

4.2. Was there any full public environmental impact assessment made before the project? Since then? Any planned? Are there any continuing problems with odours and mosquitoes at the dams?

4.3. Outstanding problems with asbestos and pesticide content?

4.4. Number of treated water quality samples taken per year. Per cent compliance with target standards. Attach summary of official government or independent laboratory analyses of treated water.

4.5. Has the groundwater table continued to rise? Is it stable? What is the situation with groundwater abstraction?

4.6. Current waste water quality standards (EC norms vary depending on the sensitivity of receiving waters and are therefore given only as references) :

	Criteria	**EC NORMS** **General**	**EC NORMS** **Reuse**	**Actual for Discharge into forests**	**Actual for Discharge into Sensitive Water**	**Actual for** **Reuse**
4.5.1	pH					
4.5.2	BOD5					
4.5.3	COD					
4.5.4	Suspended Solids (SS)					
4.5.5	Coliforms					
4.5.6	Chlorine					
4.5.7	Phosphorus					
4.5.8	Nitrogen					

4.7. Is there a classification of receiving waters and their quality?

4.8. What percentage of waste water is actually treated?

4.9. Describe sludge disposal arrangements (capacity of landfills, agriculture, composting, sea disposal...)?

4.10. Is the polluter-payer principle respected (taxes on polluting products, fertilisers, pollution of ground water..)?

4.11. Was someone appointed as the environmental authority or contract person for the project? Who?

4.12. Who controls environmental impact and in particular water quality (water supply, reservoirs and receiving water bodies (lagoons, rivers, ground water, sea,...)? Are regular reports available? Brief description of measures taken to protect raw water resources from pollution or physical degradation.

4.13. Description of environmental impact of the project:
(a) overall water resource management ; (b) discharge of concentrate

4.14. Brief description of water loss control activities, including allocation of resources.

4.15. Brief description of any other water conservation measures.

4.16. Brief description of responsibility and powers of promoter for water conservation within customer premises, e.g. customer leakage, waste, type of plumbing fittings.

4.17. Assessment of impact in Mediterranean context. Refer any relevant regional studies.

5.0 EMPLOYMENT

5.1. Comments on the the present composition of promoter's staff (numbers by category) and organisation chart.
5.2. Did the project result in job creation or preservation? Directly or indirectly and in what sectors?
5.3. Actual temporary employment during construction

6. TARIFFS

		At Completion	At Evaluation
6.1	Provide tariff schedules applicable to last 3 financial years		
6.2	Potential income from application of tariffs (last financial year) - domestic - touristic - industry/commerce - agriculture - governmental/other - TOTAL		
6.3	Actual income to promoter from sale of water and consumption charges M …..		
6.4	Reasons for shortfall and subdivision of amounts if categorised		
6.5	Frequency of meter reading (and billing if different)		
6.6	Other income to promoter last financial year, M …..		

7. PROJECT IMPACT

		At Completion	At Evaluation
7.1	Description of development growth facilitated by project		
7.2	Description of impact in terms of reduced frequency of water rationing or other demand control measures		
7.3	In the context of 7.2, have measurable levels of service to customers improved? If so, has this ameliorated increases in tariffs necessitated by cost of investment and plant operation?		

8. EIB CONTRIBUTION

8.1. Qualify the comparison between project cash flow and EIB loan repayments.
8.2. Verify validity of EIB assessment.
8.3. Would the project have been implemented under similar conditions without the financial assistance of the EIB?
8.4. Reasons for EIB financial assistance?

	AT THE TIME OF THE PROJECT	TODAY
Access to foreign exchange		
Access to long term funds		
Access to cheaper funds		
Quality of appraisal (seal of approval for other financiers)		
Quality of follow-up		
Other (which?)		
No opinion, no longer interested in EIB loans		

8.5. Are you satisfied with EIB's services? How can they be further improved? Were missions useful? Will you use the EIB for future investments?

Evaluation of 17 Water Projects Located Around the Mediterranean **Annex 2**

BASIC INFORMATION ON PROJECTS INCLUDED IN THE SAMPLE

2.1 Technical and social statistics

Item	Unit	Median	Max.	Min.
Water Supply and Demand				
Water production / scheme capacities	m³/d	166,000	773,000	10,500
Total annual average water production per capita at evaluation	l/cap.d	285	411	191
Total annual average water delivered (consumption) per capita at evaluation	l/cap.d	165	342 sd	90
Domestic only average consumption per capita	l/cap.d	149	315 sd	89
Losses as percent of production (excluding bulk supply authorities)	%	26	67	17 sd
Losses by length of network	m³/km.d	41	56	4
Losses by customer	l/cust.d	171	401	84
Losses by population	l/cap.d	79	222	56
Security of supply margin at evaluation	%	23	81	negative (rationing)
Projected total annual average water production per capita (design horizon)	l/cap.d	314	452	108
Ditto water delivered	l/cap.d	222	376	86
Ditto domestic per capita consumption	l/cap.d	169	346	75
Projected losses (horizon)	l/cap.d	75	49	22
Wastewater Flows and Loads				
Scheme hydraulic capacities – daily flow	m³/d	5,600	250,000	2,700
Ditto as population equivalent	no.	31,100	1,389,000	15,000
Scheme treatment (pollution load) capacities	kgBOD/d	2,500	18,000	1,500
Ditto as population equivalent (thousands)	10^3	41,700	300,000	25,000
Total annual average flow per capita at evaluation	l/cap.d	186	345	58
Reserve hydraulic margin at evaluation	%	28	64	-24
Total annual average BOD load per capita	kgBOD/cap.d	0.05	0.125	0.037
Projected total per capita wastewater quantity (design, horizon)	l/cap.d	220	325	80
Projected total per capita BOD load (design, horizon)	kgBOD/cap.d	0.082	0.107	0.06
Irrigation Projects Properties				
Cultivated area	ha	5,750	65,000	200
Water supply capacity	Mm³/yr	18	20.8	5.5
Superficial capacity	l/s.ha	13.7	75.3	1.6
Range of Beneficiaries as Population (Water and Sewerage Projects)				
At evaluation	Population	525,000	1,040,000	21,000
Projected future	Population	612,000	1,127,000	21,000

Annex 2

2.2 Financial and economic data

Item	Unit	Median	Max.	Min.
Range of Investment Cost and Financing				
Total investment cost	MECU	37	309	4.4
EIB loan	MECU	10.8	70.4	2.6
Interest rate	%	9.65%	14.00%	1.00%
Proportion of EIB loan / Investment cost	%	41.2	58.3	16.3
Investment cost per beneficiary at evaluation	ECU	96	646	43
EIB loan per beneficiary at evaluation	ECU	46	230	13
Period of grace	years	4	10	0
Period of repayment	years	12	31	8
Overall period of loan	years	15	40	10
Financial Performance				
Ratio, project investment cost : Promoter's turnover	ratio	2.4	21.2	0.4
Financial IRR (at evaluation)	%	< 0	7.6	< 0
(at appraisal)	%	3	11-13	< 0
Economic IRR (at evaluation)	%	5.3	19	< 0
(at appraisal)	%	7-10	15	<0
Promoters Balance Sheets				
Profit / surplus before tax	%	0%	27%	-112%
Proportion of income from tariffs	%	74%	100%	25%
Proportion of income from govt. subsidies	%	8%	67%	0%
Allowance for depreciation as proportion of total income	%	16%	72%	0%
Operational Costs, Water Projects				
Annual expenditure per m^3 water produced	ECU/m^3	0.472	7.119	0.225
Operating cost per m^3 water produced	ECU/m^3	0.404	6.168	0.057
Annual expenditure per m^3 water delivered	ECU/m^3	0.449	2.905	0.305
Operating cost per m^3 water delivered	ECU/m^3	0.488	1.985	0.059
Total income per m^3 water produced	ECU/m^3	0.499	4.687	0.313
Total income per m^3 water delivered	ECU/m^3	0.474	2.578	0.325
Charges income per m^3 (mean tariff)	ECU/m^3	0.408	0.751	0.325
Operational Costs, Wastewater Projects				
Annual expenditure per m^3 wastewater	ECU/m^3	0.319	0.598	0.268
Operating cost per m^3 wastewater	ECU/m^3	0.274	0.308	0.152
Total income per m^3 water produced	ECU/m^3	0.316	0.964	0.305
Total income per m^3 wastewater	ECU/m^3	0.387	0.817	0.249
Charges income per m^3 (mean tariff)	ECU/m^3	0.525	0.621	0.126
Employment				
Temporary employment (construction)	Man-years	725	3,925	50
Permanent employment created	no.	20	56	0
Investment cost per man-year of temporary employment	kECU	59	418	18.4
Investment cost per additional permanent employee	kECU	2146	infinite	325
EIB loan per man-year of temporary employment	kECU	19.7	46	2.6
EIB loan per additional permanent employee	kECU	665	infinite	161

TECHNICAL and INSTITUTIONAL RECOMMENDATIONS

The consultants who reviewed EIB files and visited the projects sampled for this evaluation, consider that the EIB could improve the performance of its portfolio of Water projects in the Mediterranean by adopting the following technical recommendations.

1. Technical Recommendations

Water Supply and Demand. Waste water Flows and Loads

Water demand forecasting was poor in some cases and this can be explained by a failure to take a first principles approach, starting from a proper analysis of existing demands. Often the absence of competent metering, both system and customer, inhibits such an analysis. Each of the individual components of demand: domestic, industry, commercial, institutional, agricultural, and losses needs to be evaluated and individual projections made.

At appraisal, an attempt should be made to estimate 'real' and 'apparent' losses, so that the project can address both types. Losses should be expressed not only as a percentage of production, but also per unit of network length and per customer or connection (the use of percentages is misleading and incorrect in demand forecast calculations). Ideally also the average pressure in the network should be noted since it affects leakages.

The demand projection should indicate whether there is an increase or decrease in losses envisaged, taking into account network growth. In the case of a decrease, the project should include the necessary infrastructure to implement an active water loss reduction programme and the financial appraisal should take into account the additional manpower cost involved, offset by savings in the cost of water produced and the deferment or down-sizing of resource developments.

Seasonal and diurnal variations in demand should be clearly presented to establish peak flows for hydraulic capacity determination and any safety factor added separately and transparently, rather than relying only an all-embracing 'rounded up' figure.

A similar situation applies to the estimation of wastewater flows, which need to include infiltration if applicable, again dealing with the separate components of flow and the variations which determine hydraulic design capacity (cf. EV's study " Performance of a sample of Nine Sewage Treatment Plants in European Union Member Countries" of 1995).

In the appraisal reports there was very little information on pollution loads, which are the basis for the process design. Greater clarity is required and a similar first principles approach needs to be adopted. The issue of industrial waste and its control needs to be addressed, both in terms of loads and the possibility of inhibitory (toxic) substances.

Resource Yields

Whilst it is reasonable to suppose that resource yield investigations have been undertaken in all cases, the appraisal reports did not provide the statistical basis for design capacities. Mediterranean climatic characteristics are more prone to extremes than in northern Europe, for example, and the appraisal should establish clearly the reliability of the water yield data. These statistics should also be checked against alternative uses.

Effluent Standards, Wastewater Treatment Processes and Re-Use

Generally the appraisal reports provided insufficient information and evaluation of the appropriateness of wastewater effluent standards. Whilst directives are now in place that apply to discharges of wastewater in EU member states, the level of treatment is still a matter for judgement in each case to determine whether primary, secondary or tertiary (nutrient removal) treatment levels apply.

In the water poor countries of the southern and eastern Mediterranean, the matter of effluent quality should be concerned with re-use for irrigation as well as the discharge back into the natural environment. In these countries, the Bank should not support any sewerage project without a full investigation of the overall water availability and use situation in the locality, in which re-use opportunities for treated effluent have been explored to determine the optimum overall water management strategy.

Where irrigation re-use is to be practised, the bacteriological standard of the effluent is the more important determining factor and this in turn depends on the nature of the irrigation and the crops to be grown. This must also be established at appraisal and linked to the choice of treatment process. As a general rule, the Bank should adopt a policy of requiring waste stabilisation pond (WSP)[1] systems to be adopted (*without* mechanical aeration), unless there are compelling reasons otherwise, since this process has lower (zero) energy, maintenance (minimal mechanical equipment), sludge production and operator skill requirements than the alternatives. Bacteriological standards for safe irrigation use can be achieved in well designed WSP systems, without recourse to chemical treatment.

Sludge Treatment and Disposal

This important topic received little or no attention at appraisal, except in the one project where sludge re-use was a feature. The appraisal should seek to satisfy the Bank that an integrated sludge treatment process and disposal study has been carried out, to derive an optimum solution which takes into account the quality of the sludge, as influenced by industrial waste content and the control regime, the potential for sludge re-use, as well as transportation and storage costs which have a bearing on the degree of dewatering adopted (process evaluation needs to consider both quality and quantity). The Bank should not support any sewerage project that has not examined opportunities for waste sludge re-use.

Combined System Overflows

Two of the projects evaluated featured combined sewerage systems with overflows discharging directly into the marine environment under heavy rainfall conditions. The performance requirements for such structures are just as important as the effluent from the wastewater treatment plant, but the appraisal reports gave no information on their frequency of operation, the quality of overflowed waste, or the effect on the receptor. These issues must be addressed and the Bank should ensure that the provision of such devices and their design has been properly considered from an environmental standpoint, in conjunction with the provision of in-line or off-line sewer storage if necessary, and an appropriate balance of cost and environmental performance achieved.

Choice of Sanitation System

Piped sewerage of conventional design is expensive and can be more costly per capita than the provision of water supply, Promoters often find it difficult to charge the fully economic price for sewerage. It should not always be presumed that a piped system is preferable to on-site sanitation methods and any evaluation at appraisal should explore the possibility of improving the existing on-site arrangements. Lower cost alternatives to conventionally designed pipe sewerage are available and should be considered – so-called small bore or settled effluent systems can form part of a phased solution, linked to ability to pay, in which improvements are made to existing on site systems in the first instance.

Soil Conditions

Two of the projects evaluated under-performed, either because there was not an adequate pre-contract geotechnical investigation, or, if there was, the implications were not fully appreciated and carried through into the designs and construction specifications. Inadequate ground investigation remains a common feature of many civil engineering projects and the Bank should make a specific point of ensuring that this is adequately dealt with through a separate and sufficient budget item.

Irrigation Projects

It may be noted that the more efficient irrigation projects were those where the Promoter's objectives are consistent with those of the farm enterprises.

[1] The Mediterranean Technical Assistance Programme, co-financed by the EIB, just completed a report on the subject.

2. Institutional, Financial and Economic Aspects

Institutional Framework

Presently most projects of this type lie within the public sector, where responsibilities may be diffused within various layers of government, departments and agencies. The decision making process in this case can be cumbersome, typically reflected by time over-runs, especially during the procurement stage.

The highest scoring projects in this evaluation were those where the Bank had required, as a special condition of the loan, the appointment of a special project management team with the requisite individual experience and charged with ensuring that the project was carried through on time and within budget and with adequate supervision of contractors. Less successful projects were implemented within existing organisational frameworks and even though external consultants were involved, their role was advisory and established procedures had to be followed.

The appraisal should make a clear distinction between the project itself and the Promoter's financial and organisational capacity. Thus the appraisal report should be in two parts: Project Assessment and Organisational Assessment. The assessment of the project is essentially objective in nature and a systematic process can be followed to establish technical, financial, economic and environmental soundness. Assessing the ability of an organisation to deliver the project in line with expectations is perhaps more subjective, however, and it may therefore be worthwhile to explore previous projects undertaken by the organisation and, if poor performance is revealed, discuss with the Promoter the reasons and what organisational changes should be made to improve the performance of the proposed and other future projects. The use of special project management teams, with sufficient powers including the authority to establish their own procedures, whilst still remaining within the legal framework, should be encouraged.

Subsidies

When evaluating the financial soundness of an organisation, subsidies should be assessed separately. A specific analysis of their expected development over the next 10 – 15 years should be carried out. The appraisal should also incorporate a discussion of the project's effect on the subsidy requirements of the organisation.

Alternative Sources of Finance

In the appraisal, and in later evaluations, the characteristics of alternative sources of financing should be explicitly compared with the EIB loan specifications.

Non-quantifiable Benefits

When non-quantifiable financial benefits are expected to accrue, the appraisal should identify success criteria in the form of indicators and benchmarks which are expected to be reached at a given time. For example, if it is considered that improvements in water quality will result in an increase in the number of tourists, the numbers should be quantified, the timeframe, and how the numbers are to be measured.

Risk Factors

Each appraisal should incorporate a section which explores the risks to successful implementation, external and internal factors. This can best be done by use of the logical framework analysis technique, as is commonly required by aid agencies in project appraisal. This method also leads to a project which has a clear linkage between the problems that are to be solved, the specific objectives of the project, and the solutions proposed. Indicators for project monitoring also emerge from this process, which is best carried out in a workshop format involving all of the interested parties ('stakeholders').

Data Requirements for Monitoring

To facilitate and enhance the quality of project monitoring and later evaluation, the data requirements should be set out in the special conditions to the loan agreement. The data sources should be identified, and within the organisational review part of the appraisal, the mechanisms and units or individuals responsible for data collection should be determined.

Calculation of the Financial Rate of Return (FRR)

No firm guidelines exist where the project revenue is below the level required for an acceptable value of FRR. Three of the projects had a negative FRR at appraisal, and only one exceeded 10%. It is not systematically calculated at appraisal or verified later in the project cycle. To improve the quality of the FRR calculations, the following procedure is recommended:

A. Calculate the revenue required to reach an FRR benchmark to be agreed with EIB management as a matter of corporate strategy for the sector;

B. Calculate systematically the actual FRR at appraisal and 18 months after completion of works (basis : 2 annual reports including project operational data)

The difference between A and B (or more exactly the NPV of the difference) constitutes the cost of the project's non-quantifiable benefits which do not enter as revenue. If the project does not achieve an acceptable FRR when calculation B is performed, the non-revenue net benefits should be stated as specifically as possible and compared to the NPV of the difference between A and B. For example, in a sewerage project a non-revenue net benefit is likely to be improved health of the population, the A and B difference would be divided by the population to give the 'cost' per beneficiary and an assessment made as to whether the cost seemed reasonable.

Calculation of the Economic Rate of Return (ERR)

There appeared to be no clear guidelines for calculation of the ERR, which varied from project to project. It is difficult to find projects with genuine 'with' and 'without' alternatives, although one such was included in the present study. Engineers and financial specialists need to work together to identify the likely alternatives in a situation where a project is not carried out. This approach should help to reveal less resource demanding solutions which have not been considered.

It is recommended that the ERR focuses on comparing the 'with' project (based on the FRR) and the 'without' situation being the best alternative solution. Once this exercise has been carried out, the following aspects should be discussed separately:

- Effect of sensitivity analysis
- External effects of the project (including forward and backward linkages)
- Main direct or indirect subsidies included in costs and benefits
- Non-quantifiable effects (refer comments under FRR)

Many of these recommendations are self-explanatory and normal practice in project financing institutions. The depth of the analysis will necessarily vary depending on EIB's reliance on the promoter's record in handling past similar investments. Reports should, however, specify clearly, what has been verified specifically by EIB's services, what are the promoter's unchecked assumptions, and what elements need to be checked later as the project progresses.

THE EUROPEAN INVESTMENT BANK

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

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

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

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

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

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

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

These reports are available from:

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