Egypt "Beni-Suef Cement Factory Project (I), (II), (III)"

Report Date: January 1999

Field Survey: May 1998

Project Summary

	Phase I	Phase II	Phase III
Borrower	Egypt		
Executing Agency	Beni-Suef Cement Company (Initially National Cement Company)		
Exchange of Notes	November 1983	April 1985	March 1992
Date of Loan Agreement	February 1986	October 1988	June 1992
Completion of Loan	February 1991	October 1993	May 1997
Loan Amount	¥8,760 million	¥15,750 million	¥12,490 million
Loan Disbursed Amount (including charges)	¥8,760 million	¥15,750 million	¥10,254 million
Procurement Conditions	Partial Untied	Partial Untied	General Untied
Loan Conditions (Repayment period)	Repayment period: 30 years (10 years grace period) [Note 1)]		
Loan Conditions (Interest rate)	3.5%	4.0%	2.7%

Note 1 However, regarding Phase I, based on the Paris Club agreement in May 1991, JBIC signed a loan rescheduling agreement with the Egyptian government in April 1993 that sets the first repayment date at July 1991 and the final repayment date at July 2026.

Reference

(1) Local Currency: Egypt £ (pond) (£E)
1£E = 100 Piastre = 1000 Millieme

(2) Exchange Rate: Consumer Price Index (CPI: 1990=100)

Year	1985	1986	1987	1988	1989	1990	1991	1992
Yen/£E	285.7	227.3	176.4	179.5	129.5	67.2	37.6	37.4
£E/US$	0.700	0.700	0.700	0.700	1.100	2.000	3.330	3.336
Yen/US$	200.5	159.1	123.5	125.9	143.5	134.4	125.2	124.8
CPI	40.5	50.2	60.0	70.6	85.6	100.0	119.7	136.1

1993	1994	1995	1996	1997
33.2	29.4	30.6	34.5	38.3
3.370	3.392	3.390	3.384	3.388
111.9	99.7	102.8	116.0	130.0
152.5	165.0	190.9	204.7	214.1

(Source: IFS)

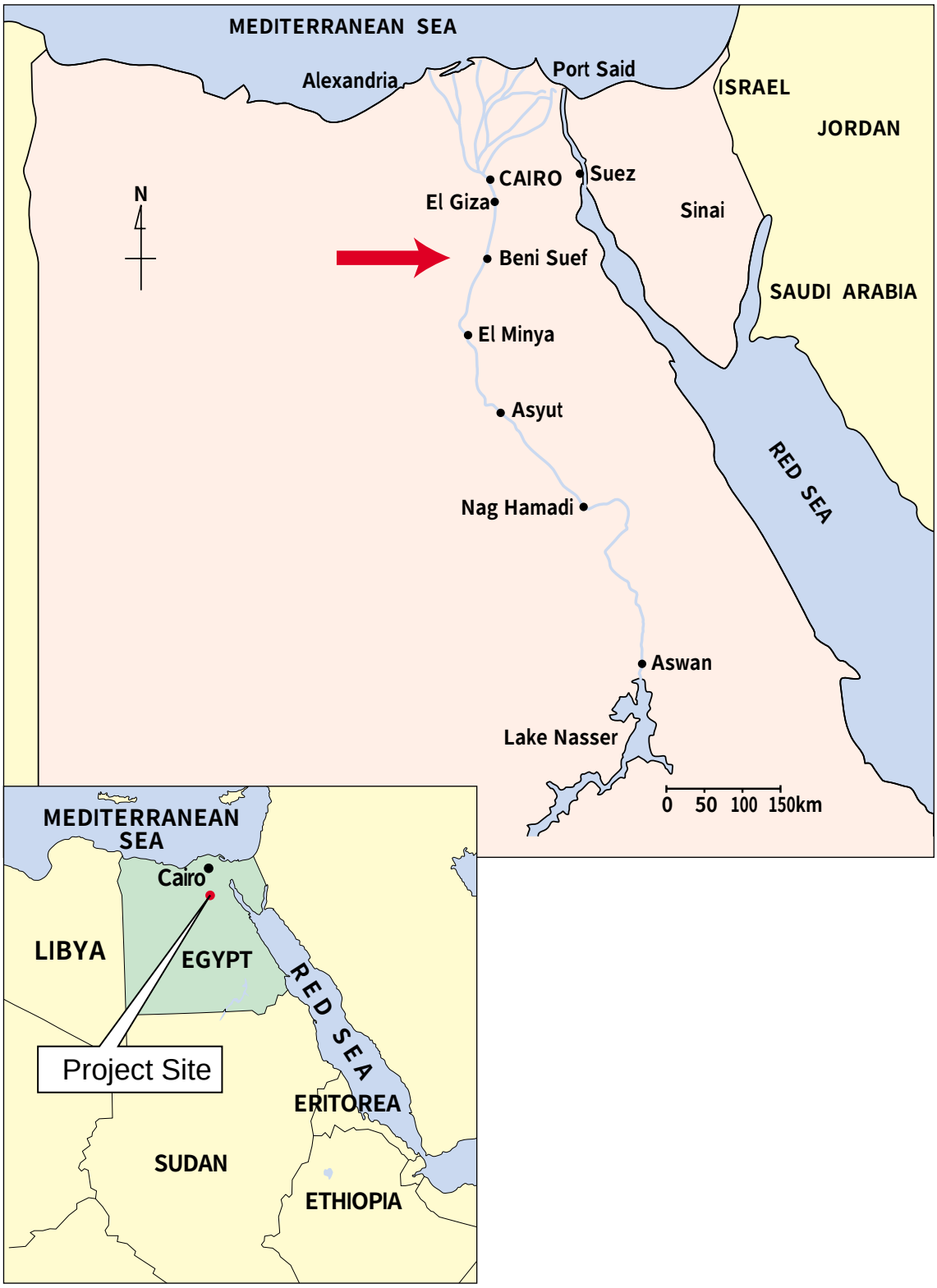
(3) Fiscal Year: July ~ June

(4) Abbreviations

NCC: National Cement Company

BCC: Beni-Suef Cement Company

Project Location



1. Project Summary and Comparison of Original Plan and Actual Result

1.1 Project Summary and JBIC Portion

This project is designed to build a cement plant with an annual production capacity of 1,000 tons in Beni-Suef City, some 120 km south of Cairo, in order to support the booming demand for cement accompanying the implementation of new urban development and related infrastructure construction projects in Egypt. In accordance with capital requirements, this project was divided into 3 phases, with loans provided by JBIC. The ODA loan covers the foreign currency portion of the project costs.

1.2 Background

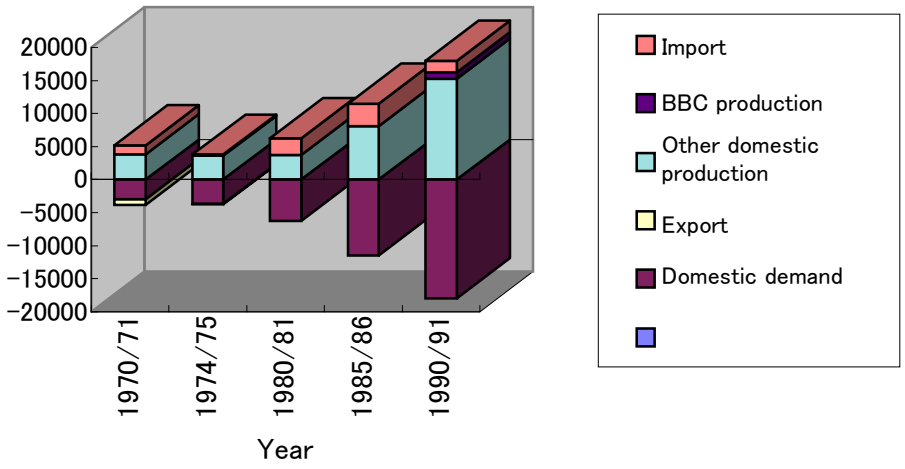
Egypt, which has a long history of cement production and abundant raw material resources (limestone), started producing cement at the beginning of the century. From the 1930s to the mid 1970s, Egypt was a cement exporter, and this product was an important source of foreign currency revenues for the country.

However, domestic reconstruction following the Fourth Middle Eastern War in 1973 and the rapid growth of demand resulting from the open door policy that followed, plus the fact that no cement plant expansion projects were implemented between 1971 and 1978 and the fact that the production capacity declined due to the obsolescence of production facilities turned Egypt into a net importer from 1975, as shown in the figure below. Moreover, cement demand after this was forecasted to grow at an annual rate of 9.5% until 1990 (see the table and figure below). Actually, the necessity of priority investments into the industrial sector and rising demand in the construction sector for housing throughout the ensuing First 5-Year Plan (1982/83 to 1986/87) and the Second 5-Year Plan (1987/88 to 1991/92) led to the forecast of cement demand matching the one above.

In order to respond to such demand, various cement plant construction projects were drafted in the 1980s, and this project is one of them.

Table 1.1 Cement Supply and Demand in Egypt in 1980 (1,000 tons)

	1970/71	1974/75	1980/81	1985/86	1990/91
	Actual			Estimate	
Domestic demand	2,913	3,679	6,256	11,500	18,000
Export	901	97	1	0	0
Total of demand	3,814	3,776	6,257	11,500	18,000
Other domestic production	3,814	3,583	3,696	8,108	15,218
BBC production	**0**	**0**	**0**	**0**	**990**
Import	1,331	193	2,561	3,392	1,792
Total of supply	5,145	3,776	6,257	11,500	18,000



Source: Egyptian Government

1.3 Project History

The history of this project is described below.

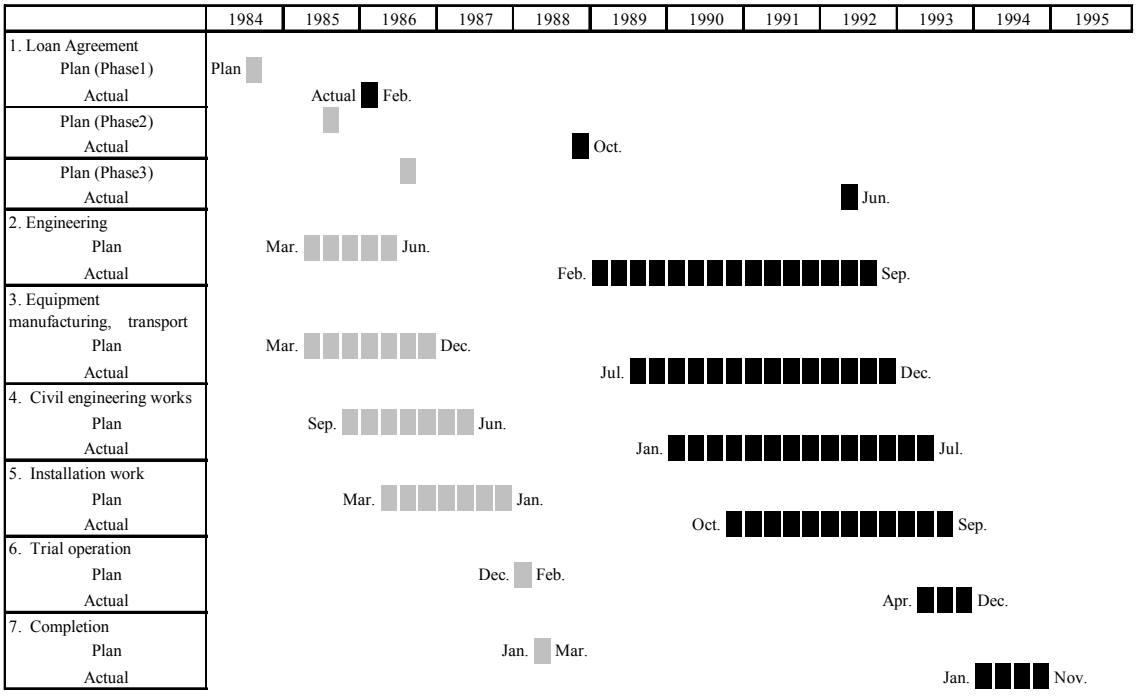
May	1979	An Egyptian-Swiss joint-venture private consulting firm drafts F/S for the West of Nile (Giza City suburb) Cement Project.
December	1982	The Egyptian government makes a request for ODA loan for this project as part of its ODA loan requests in fiscal 1982.
February	1983	Archaeological ruins are discovered on the proposed site, and the site is changed to the Beni-Suef City suburb.
March		JBIC appraisal mission is sent to Egypt.
April		During his visit to Japan, the Egyptian president is given prior notification of ODA loans to Egypt for fiscal 1982, which include a loan for ¥8,760 million for Phase I of this project.
November		Exchange of Notes for fiscal 1982 ODA loan (Phase I).
June	1984	Prior notification for fiscal 1983 ODA loan.
April	1985	Exchange of Notes for fiscal 1983 ODA loan (Phase II)
December		Conclusion of construction contract for this project.
February	1986	Loan Agreement for Phase I
March	1987	Prior notification of ODA loans for fiscal 1984, which include ¥12,490 million for Phase III of this project.
January	1988	Completion of ratification of fiscal 1983 ODA loan E/N (Phase II) by Egyptian Parliament.
October		Loan Agreement of Phase II.
February	1989	Start of project implementation.
August	1990	Iraq invaded Kuwait.
Aug. ~ Sept.		During Prime Minister Kaifu's visit to the Middle East, gives again prior notification of funding of this project (Phase III) as part of Japan's Middle East contribution policy related to the Persian Gulf crisis.
May	1991	Paris Club agreement regarding debt payment rescheduling for the Egyptian government by creditor nations.
March	1992	Exchange of Notes for Phase III.
May		Ratification by the Egyptian Parliament for Phase III Exchange of Notes.
June		Loan Agreement of Phase III. (Total amount for 3 phases: ¥37,000 million).
April	1993	JBIC signs Amendment Agreement for rescheduling the loan repayment against the Egyptian government, including ODA loan of this project.
September		Completion of plant construction.
November	1994	Start of commercial operation of plant.

1.4 Comparison of Original Plan and Actual

1.4.1 Project Scope

Item	Plan	Actual	Difference
1. Cement plant			
① Production process	New suspension preheater (NSP method)	Same as left	None
② Production scale	1 million tons of Portland cement/year	Same as left	None
③ Major facilities	Crushers, raw mills, kiln plant, cement mills, packing plant, utility equipment, etc.	Same as left	None
④ Spear parts	None	Purchased	—
2. Consulting Service	Design review and construction management (381M/M)	Same as left	Note) Employed as part of the turnkey contract. (However, M/M unknown)

1.4.2 Implementation Schedule



1.4.3 Project Cost

Item	Foreign currency (million yen)			Local currency (thousand £E)			Total (million yen)		
	Plan	Actual	Difference	Plan	Actual	Difference	Plan	Actual	Difference
Plant									
Equipment	24,027	23,571	-456	2,654	2,775	+121	24,797	23,704	-1,093
Transport	2,247	436	-1,811	2,968	2,635	-333	3,108	562	-2,546
Civil engineering	5,777	4,747	-1,030	18,990	14,960	-4,030	11,284	5,462	-5,822
Installation work, trial operation	4,949	4,810	-139	5,388	5,238	-150	6,512	5,060	-1,452
Spear parts	-	1,200	+1,200	-	-	0	-	1,200	+1,200
Total of plants	37,000	34,764	-2,236	30,000	25,608	-4,392	45,701	35,988	-9,713
Consulting service	0	0	0	3,700	0	Note) -3,700	1,073	0	-1,073
Others	-	-	-	-	31,000	+31,000	-	1,482	+1,482
Total	37,000	34,764	-2,236	33,700	56,608	+22,908	46,773	37,470	-9,304

Exchange rate: £E 1 = ¥290 at the time of plan (JBIC appraisal = March 1983)
£E 1 = ¥48 at actual result (weighted arithmetic average)

(Note) Consultants were employed as part of the turnkey contract for the plant, and therefore, being unable to divide and sum up at actual result.

(Source: PCR, appraisal materials)

1.4.4 Project Effect and Impacts

	Plan	Actual
Quantitative Effect		
FIRR	6.4%	11.5%
EIRR	(Not calculated)	12.7%
Qualitative Effect	① Relief from shortage of cement ② Foreign currency economy by replacement of imported cement ③ Job creation in local cities with few employment opportunities ④ Regional development	Same as left

2. Analysis and Evaluation

2.1 Evaluation on Project Implementation (Project Scope/Implementation Schedule/Project Cost/Implementation Scheme)

2.1.1 Project Scope

(1) Overall Project

No significant change was noted as a whole in the scope of the project compared to the project plan. This is mainly because the construction of the plant was done under a turnkey basis contract by an independent contractor (contractor and trading company consortium), of which the coverage was the design and contract of the plant.

Moreover, spare parts were additionally purchased although they weren't included in the original plan. It is considered appropriate to purchase the spare parts because they were procured in order to introduce stable plant operation.

On the other hand, consulting services, which were to be provided under the separate contract from the plant construction contract, were actually provided as part of work on turnkey basis under the contract.

(2) Plant Design and Production Capacity

The plant was compared with other similar sized plant in other countries in specifications per annual production capacity (1 million tons/year or 3,500 tons/day) in order to verify that the design of the plant was reasonable. As a result, the plant in this project has high capacities compared to other cement plants of similar size, and the plant is considered to be free of problems regarding its production capacity (Table 2.1).

Table 2.1 Comparison of Installed Capacities

	Beni-Suef (This Project)	Plants of Similar Size in other Countries
①Limestone storage capacity	90,000 tons	30,000～40,000 tons (average)
Reserve days	18 days	6～8 days
②Clay storage capacity	20,000 tons	10,000～15,000 tons (average)
Reserve days	16 days	8～12 days
③Raw mills	360 t/h	280 t/h
④Blending silos	30,000 tons	20,000 tons (average)
⑤Kiln	3,500 t/day	3,500 t/day
⑥Cement mills	220 t/h	190 t/h
⑦Clinker silos	60,000 tons	30,000 tons (average)
⑧Cement silos	50,000 tons	25,000～30,000 tons

(Source: Estimates by BCC and technical experts)

2.1.2 Implementation Schedule

This project was initially planned to be completed in March 1988 (Phase I appraisal in 1984), but it was actually completed in November 1994, or 6 years and 8 months behind schedule. This breaks down into a delay of 4 years for the start of construction in February 1989, and an extension in the implementation schedule of 2 years and 8 months past the planned date.

The causes of these delays were mainly due to the fact that the signing of the loan agreement (L/A) between the government of Egypt and JBIC was delayed due to a considerable delay in the ratification of the exchange of notes between Japan and Egypt by the Egyptian Parliament based on the concern about the financial situation of the Egyptian government. Details are provided below.

① The ODA loan for this project, which covered the foreign currency portion of the total amount required was ¥3.70 billion. However, since this is an amount that is too huge to be dispensed at one time, it was decided to split the project into three phases[1] on an annual basis based on capital requirements and release ODA loans accordingly.

② Based on this, the loan agreement (L/A) for Phase I was signed in February 1986. However, with regard to the loan procedure for Phase II, the fact that there was a delay in the ratification of the exchange of notes (E/N) by the Egyptian Parliament (E/N in April 1985, ratification in January 1988) resulted in the signing of the loan agreement as late as October 1988. Moreover, as will be described later, the exchange of notes for Phase III was delayed on account of Egypt's raising questions about perceived problems, so that the National Cement Company (hereafter, NCC), which is the executing agency of this project, intentionally delayed the start of the project in order to avoid having to stop the project due to a shortage of funds following the start of the project. However, thereafter, the Egyptian government and contractors issued requests to NCC to start the project, and construction of the plant finally commenced on February 1989.

③ On the other hand, regarding Phase III, interest rate problems and arrearage in debt repayment including the loan for this project on the part of the Egyptian government rendered the exchange of notes difficult. Thereafter, in October 1990, as part of the Japanese government's policy of Middle Eastern Nation Aid against the background of the Persian Gulf War, it was decided to separate Phase III from other ODA loans to Egypt, and advance notification was made again. However, along with the reduction of interest rates by the Egyptian government from the end of 1990, the Egyptian government requested changes in loan amounts, and in the end, the loan agreement for Phase III was not signed until June 1992.

Based on the above factors, the completion of this project suffered a delay of 6 years and 8 months compared to the schedule. This delay, in addition to delays in cement supply, also affected the conversion amount of fixed assets of the Beni-Suef Cement Company (hereafter, BCC), which is the current executing agency.

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[1] Actually, following the Phase I grant, Phase II and Phase III were established on request by the Egyptian government, which asked for two additional phases instead of just one.

Financial difficulties experienced by the Egyptian government at the time were a large factor in this series of delays in the loan procedures. Particularly regarding Phase III, due to delays in interest payments to JBIC by Egyptian government, it would have been difficult to approve new loans.

2.1.3 Project Cost

(1) Loan Format

The ODA loan for this project was to be disbursed by JBIC to the Egyptian government, with the Egyptian government then transferring funds to NCC (BCC) based on the same condition as the loan agreement between JBIC and the Egyptian government. (For the relationship between NCC and BCC, see section 2.1.4. Implementation System (1) Executing Agency.)

Therefore, foreign exchange risks related to interest payment and principal repayment were singly borne by BCC.

(2) Effects and impacts of rescheduling of debt repayment

Through the Paris Club agreement on May 1991, it was decided to reschedule the repayment of Egypt's foreign debt at the time, which included this ODA loan. Based on this decision, JBIC decided to postpone the last payment date until 2026 for the debt for which L/A was signed with Egypt prior to October 31, 1986 (Phase I of this project). What this means for the loan for this project is that the repayment start date was postponed from the end of 1998 until 2007, extending the last repayment until 2026.

However, the results of the local survey that was performed this time showed that NCC (BCC) was repaying debt to the Egyptian government according to the schedule agreed upon during the loan agreement for Phase I, and that NCC (BCC) was not fully cognizant of the loan rescheduling by JBIC. Outside the chairman of NCC (BCC), nobody knew about the rescheduling of debt payment by JBIC. Moreover, going back further, it was not fully understood that the delay in the signing of the loan agreement for Phase III was due to arrearage in the Egyptian government's interest payments. Based on the loan agreement for this project, the Egyptian government is the borrower concerning this ODA loan, and since, regarding the repayment method used between the Egyptian government and NCC (BCC), JBIC is not in a position to perform direct negotiations, the fact that NCC (BCC) does not have sufficient information is unavoidable, but it is thought that the Egyptian government could have provided at least an explanation about this situation to NCC (BCC). Regarding the increase in Egyptian pound denominated debt due to exchange rate fluctuations and the project implementation schedule delays, NCC (BCC) appeared to harbor dissatisfaction vis-a-vis JBIC, and this is thought to be due to the fact that the Egyptian government did not provide sufficient data to NCC (BCC).

(3) Project Cost

The foreign currency portion of project costs was lower by 6% compared to the initially planned figure (during Phase I appraisal in 1984)(¥37,000 million → ¥34,764 million), while the local currency portion of project costs was 68% higher (£E 33,700 → £E 56,608).

One of the reasons why foreign currency costs were lower than planned and local currency costs were higher than planned is that, fearing an increase in debt if the yen became higher, NCC decided to use its own funds as much as possible (for the construction of the buildings for administration, warehouse, roads in the plant premises, etc.).

Moreover, additional purchases of spare parts were done with foreign currency funds accumulated through NCC's above-described decision to use its own funds as much as possible, and these purchases are considered to have been appropriate.

Taking in consideration the above facts, no particular problems are thought to exist with regard to project costs. Moreover, regarding the use of consultants, the initial plan was to hire consultants outside the turnkey contract, but in the end, they were hired within the turnkey contract, so that consulting costs were included in the overall plant cost as part of the project costs.

Due to the appreciation of yen during the implementation of this project, project costs converted into the local currency (Egyptian pounds) swelled considerably, and as a result a considerable burden was placed on NCC (BCC). In this regard, the financial condition of the executing agency is described in detail on the following pages.

2.1.4 Implementation Scheme

(1) Executing Agency

In the 1984 plan, the executing agency of this project was the state-owned enterprise National Cement Company (NCC), but the executing agency function was transferred to the Beni-Suez Cement Company (BCC, 756 employees as of June 1997), which separated from NCC, from October 1993. Moreover, due to administrative reforms within the Egyptian government, the government office that served as the external relations counter for this project was changed once from the Ministry of Development, New Community, Housing, and Public Utilities to the Ministry of Public Enterprises, and then once again to the Ministry of Housing and Public Utilities.

The separation of BCC from NCC was done in preparation for the separation of the Beni-Suef Cement Plant from NCC and its privatization as part of the privatization of state-owned enterprises. However, privatization did not progress as planned, and as of June 1998, BCC remains a state-owned enterprise.

Since the Beni-Suef Cement Plant was constructed on a turnkey basis, the role of the executing agency until completion of the plant was limited to a few tasks including management of procured materials. Following the start of plant operation, BCC satisfactorily performed maintenance and operations while receiving technical support from consultants, and the operations and maintenance status is considered to be satisfactory (details provided later) (see Table 2.2).

Table 2.2 Distribution of Roles by Organization

	To September 1993 (until plant completion)	October 1993 (following plant completion) to May 1998 (present time)
Executing agency	NCC (general management tasks including materials management)	BCC (management and maintenance tasks)
Design and construction	Consortium of Japanese steel maker and trading company (Plant construction on turnkey basis)	
Consultants	Egypt and Swiss joint-venture company (Construction supervision and trial operation guidance)	Same as on left (Operations and maintenance task support)

(Source) BBC, etc.

(2) Contractors

As the result of tender by specified bid (in June 1984) by 6 Japanese companies, the construction of the plant in this project was assigned on a turnkey basis to a Japanese consortium consisting of a steel maker and a trading company. In the case of this project, procurement conditions per the loan agreement were partial untied. At the time, there were only 6 Japanese contractors among all the interested parties with the required qualifications capable of building a cement plant of the scale required for this project as well as providing adequate operating guidance. Therefore, NCC requested these 6 companies to participate in a tender by specified bid, and JBIC agreed that this was adequate. These procurement procedures were done according to the JBIC procurement guidelines and are free of any particular problems.

Regarding the contractor's design and construction performance, planned facilities were constructed according to the plan, and the latest local survey shows no problems in particular in the construction contents. Thus the contractor's performance is judged satisfactory. (Reports from NCC (BCC) also rate the performance of the contractor as "satisfactory".)

(3) Consultants

NCC has traditionally been using a consulting firm that is jointly capitalized by a Swiss company and state-owned Egyptian cement companies, and this is the consulting firm that was selected to provide consulting services in this project. The scope of work of the consultants was construction supervision for the construction of the plant and trial operation guidance. Following the construction of the plant, the consultants went on to provide technical support to BCC, and as described later in the section about operation and maintenance their performance is deemed satisfactory.

2.2 Evaluation on Operations and Maintenance

2.1.1 Operations and Maintenance Scheme

(1) Maintenance of Plant

Under the guidance of consultants, BCC set up a maintenance system taking into consideration preventive maintenance, and prepared standards and data sheets such as the ones below. Insofar as it was possible to confirm in this local survey, the plant's management is satisfactory overall.

The relationships among inspectors, operators, and maintenance personnel, are as follows. Under this system, maintenance know-how and experience are accumulated.

	Occurrence of Problem		Work Request	
Inspector	→	Operator	→	Maintenance Personnel
(Management using checklists)				(Work records)

Periodic inspection of kilns (periodic shutdown maintenance) is performed twice a year, and the number of shutdown days per inspection average 14 days (2 weeks). The kiln inspection method that is employed allows inspection even while the kiln is not operated. Therefore, it is possible to perform external appearance maintenance of the kiln at the same time. Moreover, this method has also the advantage of being highly safe, enabling the periodic inspections efficient. Inspection work is performed by consultants, but BCC technicians are widely involved with other maintenance tasks. BCC is capable of singly assuming maintenance responsibilities in the future, and it is gradually preparing in this direction.

In plant maintenance, lubrication is important next to kiln inspections. During this local survey, we examined the status of lubrication management, and were able to confirm that BCC has a good understanding of what parts in what equipment needs what kind of lubricant, as well at the best lubrication and inspection cycle, and that it conducts lubrication management according to a set management standard.

(2) Spare parts management

Three major aims of spare parts management can be defined. BCC shares this concept.

① To supply spare parts of the required specifications at the required time in the required quantity, in order to prevent opportunity loss due to delays of recovery of recovery.

② To enforce strictly log, procurement, inspections, and storage, and through this, in order to

improve spare parts in specifications and standardization.

③ To reduce inventories and storage costs.

Authorization of spare parts ordering are also defined. Moreover, inventory management is done by computer.

(3) Product (cement) quality control

① Control contents

Using three fluorescent X-ray analysis devices, BCC checks the chemical composition and mineral composition of limestone/clay blended raw material, blending silo (B/L) inlet raw mix powder, and manually processed cement to see if they meet daily control standard. Sampling times are as described below, and control can be said to be fine-tuned.

Limestone/clay blended raw material:	Once every hour
B/L inlet raw mix (powder):	Once every hour
Kiln feed material:	Once every 2 hours
Clinker:	Once every 2 hours
C4 cyclone dust:	Once every 2 hours
Cement:	Once every 2 hours

Furthermore, control is also performed for almost all processes, from ore mining sites, storage areas, drying/crushing/mixing processes, to silos, kilns, coolers, cement mills, and shipping.

Moreover, the laboratories and plant operations control rooms are located next to each other to facilitate communications with operators, forming a system enabling smooth feedback of analysis results.

② Quality

The finer its particles are, the stronger cement is, and the finer the particles, the higher the quality of cement is considered to be. However, the cement produced at the plant in question has somewhat coarse particles (approximately 10% to 30% coarser than standard Japanese cement). One of the reasons for this is that the cement mills are not equipped with classifiers, and the particles are very rough. Considered simply from the aspect of quality, it is hard for the cement produced by the Beni-Suef Cement plant to compete with imported products.

However, this does not necessarily mean that the cement produced by the plant in this project cannot be sold in Egypt. The quality of this cement is sufficient to answer daily needs within Egypt. The quality of cement is determined by the needs of the market, and whether the same quality as in Japan should be maintained in Egypt is a subject for a separate debate. (Incidentally, if the cement

separation process performed by the classifiers were added in order to raise the strength of cement, the capability of the existing cement mills would be lowered.)

(4) Education and Training of Plant Employees

Regarding overall maintenance of the plant, OJT is being implemented under the guidance of consultants. Moreover, 35 core engineers of the plant (senior plant engineers) who have gained experience at other plants have been put in charge of the education and training of inexperienced plant employees. Based on the above, education and training at the plant are considered to be satisfactory.

(5) Environmental Impact of Plant

The Beni-Suef Cement Plant is located in the desert in an environment where it has no impact whatsoever to human life, plants, and animals. Moreover, the plant recycles its water, and no leaks were detected.

Generally, pollution problems at cement plants concern dusts, noise, vibration, and atmospheric diffusion of NOx and SOx. Of these, based on their nature, noise and vibration are reduced according to the distance of the measurement point from the source of generation, but in the case of this project, there is a large distance between the plant and the outer limit of the plant premises (100 m or more). Furthermore, both noise and vibrations could hardly be heard or felt at the boundary line of the plant premises, and these two factors were thus not deemed to be a problem. Next, regarding dusts, Egypt's current regulation is 200 mg/Nm^3 or less, but this regulation is expected to be made more stringent by lowering the maximum allowable value to 100 mg/Nm^3 or less. In this regard, the Beni-Suef Cement Plant is facing the following problems.

① The dust density from the bypass system is normally 300 mg/Nm^3 or higher.

② If the carbon monoxide concentration in turbine exhaust gas exceeds 2%, large amounts of dust of 50 to 80g/Nm^3 (estimated) are continuously released in the atmosphere to cut the EP load, as a measure to prevent the electric dust collector (EP) from exploding. (The carbon monoxide concentration at the Beni-Suef Cement Plant is high compared to that at Japanese cement plants of the same size. However, the cause of the high concentration level was not determined in this survey under restricted data. In the future, detailed inspections by technical experts should be performed, the cause of these high emission levels determined, and countermeasures implemented.)

Regarding the atmospheric discharge of NOx and SOx, Egypt has not yet set regulation values. Beni-Suef Cement Plant has not measured and does not know its emission levels. In preparation for future regulations, it is thought necessary to periodically measure NOx and SOx values.

In addition to the above, chlorine gas emissions have also been recognized as a problem, and since these emissions have a direct damaging effect on plant facilities (smokestacks), they will be described in section 2.2.3. Problems of the Plant.

2.2.2 Operating Condition

(1) Annual operating performance

Following the completion of the Beni-Suef Cement Plant in 1994, annual cement production results and operation days have evolved as shown in the table below. As can be seen from this data, after operation of the plant started in earnest, annual production volume exceeded the initially planned level of 1,000 tons, and the number of working days has been extremely high.

Table 2.3 Operating Result of Beni-Suef Cement Plant

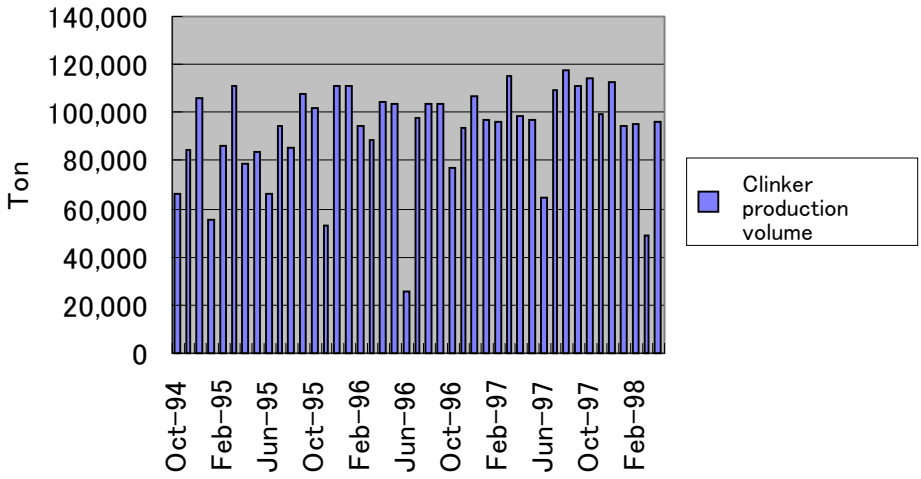
	Plan	1994/95	1995/96	1996/97
Annual cement production volume (1,000 tons)	1,000	616	1,017	1,150
Actual/planned ratio		62%	102%	115%
Annual working days	268.75	215	293	310

(Source) Beni-Suef Cement Plant

(2) Ratio of Monthly Production Volume and Working Hours

Next, let us look at the ratio of monthly production volume and working hours by studying the trend in clinker production volume (see Table 2.4 below). Here, months when the production volume decreases are months when periodic inspection was performed. Average monthly production from the start of operations until now has been approximately 92,000 tons. A look at the average monthly production volume excluding months when periodic inspection was performed in the nearest period from 1997 to 1998 shows that the average monthly production volume was a little under 104,000 tons. Moreover, a look at monthly operation hours against kiln operation hours excluding months when periodic inspection was performed in the nearest period from 1997 to 1998 gives a figure of 94% (681 hours/720 hours), which represents almost a full utilization. The utilization of this plant is almost the same as that of cement companies in Japan. Thus, including its utilization, the Beni-Suef Cement Plant receives a high overall technical score.

Table 2.4 Monthly Clinker Production Volume



(Source) Beni-Suef Cement Plant

2.2.3 Problems of the Plant

Based on the results of Section 2.2.1 Operations and Maintenance Scheme and Section 2.2.2 Operating Status, there have not been major problems regarding operations until now.
Critical problems may arise as follows if appropriate measures are not implemented in the future.

(1) Necessity of intensive plant diagnosis by experts

As of May 1998, the plant's maintenance procedures have been performed under the aforementioned guidance of consultants. The maintenance contract with the consultants has been renewed on an annual basis since the start of operations. In the background of this, the Beni-Suef Cement Plant has few experienced senior engineers and would have difficulty performing maintenance on all its own.

Currently, the Beni-Suef Cement Plant has been efficiently maintained under the guidance of consultants based on the manuals prepared by the contractor. However, as facilities get old with the passage of time, problems and failures that are not described in the manuals are likely to occur. Thus there is the issue of how to develop applied technology capabilities in the future. Moreover, unlike in Japan, in Egypt cement plants are located far from equipment suppliers, and when complicated equipment problems occur, it is not easy to resolve them in a short time.

To remedy this situation, it is thought necessary to request detailed plant analysis regarding both design and operations by experts, in order to grasp the current status of the plant after five years from the start of operations, and to gain an accurate understanding of the factors that may cause problems in the near future. If spare parts are deemed to be short, the parts will have to be procured. For instance, the following are potential problems that were identified in the survey.

① Kilns and thrust rollers

Lower side thrust rollers are applied to kilns while they are in the lowered position (thrust rollers act as stoppers to prevent kilns from becoming inclined more than needed, and during normal operation, kilns thrust rollers are not applied to kilns), and the contact surface is quite rough. Since it is thought that considerable force is applied to the lowering side of kilns, lift adjustments should be made, for example by using notches in the kiln supporting roller. Moreover, the procurement of spare thrust rollers is also thought necessary in order to provide for emergency situations.

② Primary limestone crusher/Hammer shaft

Limestone, which is the raw material of cement, is finely crushed by a crusher (hammer), but the hammer shaft has recently been breaking every 1 month (180 hours) approximately, or even as fast as 1 week (42 hours), preventing further crusher operation. Therefore, the Beni-Suef Cement Plant procured a new set of shaft rotary equipment and plants to substitute them at the next shutdown of the kilns, but the operation status following this replacement needs to be monitored carefully.

③ Compressor motors

At the time of the local survey, it became impossible to restart 270kW compressor motors due to unknown causes. The plant is now using spare compressors instead and replacement motors have now been procured, but the causes of this trouble need to be investigated.

④ GBF fan heater

The 1,070 kW motor of a GBF (dust collectors) also failed due to an unknown cause. Fortunately, an I.D.F. (preheater induced draft fan) motor (spare part) with the same specifications was on hand, and it was used instead to remedy the situation. The failed motor has been sent by its Swiss maker at the beginning of May, but the cause of the failure is still under investigation and the maker has not yet given an answer.

⑤ Dust scattering in bypass system

The efficiency of electric dust collectors (EP) is declining, and as of end of May 1998, the scattered dust density was approximately 300 mg/Nm^3. The scattered dust density at the start of operation was between 100 and 150 mg/Nm^3, and dust collectors' efficiency has worsened considerably. The Beni-Suef Cement Plant is currently studying measures with the maker regarding this situation.

⑥ Fumes

It seems that chlorine gas exhausts exceed the design standards for smokestacks, and as a result corrosion on the inside of the smokestacks occurs under the action of HC1 (hydrogen chloride). Actually, corroded sections of approximately 20 cm from the extremity of the plant's smokestacks,

which are more than 50 meters high, have been cut off, but there are already signs of corrosion in the remaining part of the smokestacks, and their destruction is only a matter of time. The Beni-Suef Cement Plant is currently discussing measures with the equipment supplier and, at the time of the local survey, a course of action had not yet been decided upon.

⑦ Blending silos (B/L)

When the crusher operation stops due to problems, etc., the ratio of clinker and scattered dust input to the blending silos (B/L) (part corresponding to homo silos in Section 1.1. (2) Plant Outline) becomes incorrect and the high-pressure aeration capability inside the blending silos (B/L) becomes insufficient, causing a dramatic worsening in the homogenization efficiency of the blending silos (B/L).

To maintain the homogeneity of ingredients inside the blending silos (B/L), it is important to produce good quality cement. Currently, the Beni-Suef Cement Plant is making technological efforts in this direction, but solving the above-described equipment problems is required in order to maintain homogeneity inside the silos.

2.2.4 Financial Condition of BCC

1. Necessity of understanding financial condition

As mentioned in Section 2.1.3 Project Cost, the foreign exchange risk involved in this ODA loan has been borne by the (current) executing agency, BCC, but BCC cannot enjoy the benefits of the loan repayment rescheduling by JBIC vis-a-vis Egypt. Therefore, the fact that the financial status of BCC has not improved even though the plant's operating status is satisfactory has been pointed out by BCC as being due to foreign exchange losses on the ODA loan for the construction of the plant. On the other hand, in relation to the financial status, there have been for some time unclear points regarding the accounting standards and the processing methods employed by BCC, and it has thus been difficult for JBIC to judge on the validity of BCC's allegations. This point was taken into consideration during this evaluation and the validity of BCC's allegations has been examined based on a clear understanding of BCC's financial status.

2. Financial condition

Table 2.5 shows the most recent financial statements of BCC that could be obtained.

Table 2.5 Statement of Profit and Loss of BCC (7/1/1995-6/30/1996)

(Unit: £E million)

Net sales	175
Cost of sales	(87)
[Excluding depreciation expenses]	
Gross margin	88
Interest expenses	
JBIC	(37)
Non-JBIC	(42)
Depreciation expenses	(77)
Other indirect expenses	(2)
	(158)
Net income (loss)	(70)

Note 1: The items in the above table have been extracted from BCC's financial statements.
(Source) BCC

Table 2.6 Balance Sheet of BCC (6/30/1996)

(Unit: £E million)

Assets		Liabilities	
Assets procured on turnkey base		Loans payable	
Assets procured with ODA loan	1,329	ODA loan payable	1,187
Other	26	Other loans payable	183
	1,355		
Non-turnkey base procurement assets	31	Capital subscribed	203
	1,386	(from holding company)	
Accumulated depreciation	(136)	Other liabilities	76
	1,250	**Total liabilities**	**1,649**
Construction in progress (ODA loan)	118		
Total tangible fixed assets	1,368	Capital	
Other	154	Deficit	(127)
		Capital	**(127)**
Total assets	**1,522**	**Total capital and liabilities**	**1,522**

Note 1: The items in the above table have been extracted from BCC's financial statements.
Note 2: £E 203 million in capital subscribed are planned to be recombined in capital during 1998.
(Source) BCC

(1) Differences between BCC's accounting policy and accounting policy based on Japanese or international accounting standard

As can be seen in the statement of profit and loss (P/L) shown in Table 2.5, in the semester ending June 1996, profit from plant operations (£E 88 million, obtained by deducting sales costs from net sales) was entirely applied to payment of interest on the ODA loan and depreciation cost, ultimately resulting in losses for the term. BCC holds the somewhat radical view that, since continuing plant operations will mean an accumulation of losses, it may be better to close down the plant. Moreover, although the Egyptian government is currently studying the privatization of BCC, it considers that the plant would be hard to sell with such operating result. However, the Egyptian government uses accounting policy that differ from Japanese or international accounting standards for determining the acquisition cost of tangible fixed assets with regard to the preparation of BCC's financial statements. Thus we will first clarify what accounting procedures differ, and based on this adjust BCC's financial statements to Japanese accounting policy based statements in order to analyze BCC's financial condition.

① Method for determining acquisition cost (rate) of tangible fixed asset

According to Japanese accounting standards that are based on historical cost convention, the cost of tangible fixed assets is determined by their acquisition cost. This means that, in the case of a purchase of foreign currency denominated assets, the historical rate is used to translate the acquisition cost to the local currency. Except for exceptional cases (exceptional depletion, obsolescence, sale. Moreover, revaluation of assets during times of inflation, although such revaluation applies only to specific assets under Japanese regulations), that acquisition cost of the assets thus determined is taken over accounting-wise and using costing as depreciation expense for that acquisition cost, it is applied to profits. Moreover, the exchange losses not necessarily resulting from the relationship with the plant operation status are categorized as financing cost, separating it from operating expenses such as depreciation expense.

On the other hand, with regard to the ODA loan (long term yen denominated loan), BCC, after converting the value of the plant's assets using the current rate (CR) at the end of the semester when the plant started operating, has fixed this rate. Moreover, it has revaluated assets with regard to the revaluation of assets on this side of liabilities. In other words, the current rate at the start of the calculation of the cost of plant assets built with ODA loans was used to perform conversions and fixed, and asset depreciation was performed based on this asset cost. This means that, as a result, unlike the Japanese accounting standards, in which the value of assets is, as a rule, measured based on the acquisition cost, assets on the balance sheet are overstated.

In accordance with international accounting standards, in addition to the accounting policy for asset acquisition cost based on the historical cost, the accounting policy for measuring assets based on the fair market value (current price) is also accepted. However, the revaluation of assets according to international accounting standards does not mean retranslation, but only the revision of the evaluation using the replacement cost or the net realizable value, and thus the accounting policy currently employed by BCC is not also in accordance with international accounting standards.

② Yen denominated long term loan conversion method

From the perspective of BCC, ODA loans are long term (over 1 year) yen denominated loans. With regard to this long term yen denominated debt, if the future rate is not fixed based on exchange commitment, conversion by HR is generally accepted accounting principal in Japan, since it is not possible to accurately forecast future exchange rates. However, if large foreign exchange losses emerge at the end of the accounting period and there are no prospects of recovering these losses in the future, the conversion will have to be done using CR and the conversion loss taken into account. On the other hand, according to international accounting standards, conversion at CR at year end is an obligation for foreign currency denominated debt. Based on the above, the fact that BCC performed conversions using CR in the past for ODA loans is a method that can be accepted under Japanese and international accounting standards, but under international accounting standards, conversion is performed again upon reoccurrence of foreign exchange losses for this debt due to currency fluctuations, and foreign exchange conversion losses must be accurately recognized at the time.

③ Differences resulting from different accounting methods

As a result of ① and ②, the financial statement of BCC presents the following differences with a financial statement prepared following the Japanese or international accounting standards.

(i) On the balance sheet, the amount of tangible fixed assets exceeds their acquisition cost. In other words, the exchange rate conversion adjustment resulting from exchange rate fluctuations is included in the amount of tangible fixed assets, and therefore the amount of tangible fixed asset is overstated by this portion.

(ii) As a result of (i), the adjustment resulting from revaluation is included in the depreciation expense in BCC's statement of profit and loss. The depreciation expense calculated based on the policy is overstated compared to the amount based on generally accepted accounting principles, and as a result, the loss amount for the period for which the calculation is made is overstated compared to the amount based on generally accepted accounting principles.

(iii) Since conservative conversion (yen too high) was done for yen denominated long term loans, thus the debt amount is extremely overstated.

(2) Correction of BCC financial statement

Next, based on the above information, we will attempt to convert the financial statements of BCC to financial statements based on Japanese or international accounting standards and analyze the results.

Base Case

Conversion rate used by BCC (1994 year end rate): £E 1 = ¥29.4 (or £E 3.40 = ¥100)

Case 1

For tangible fixed assets, if conversion using the rate at acquisition date (HR) is used (Japanese accounting standard)

The rate at acquisition date (weighted average rate at loan disbursement): £E 1 = ¥47.8 (or £E 2.09 = ¥100)

Case 2

For tangible fixed assets, if yen-denominated loans are converted using the rate at acquisition date (HR) and reconverted using a recent (3/97) exchange rate (£E 1 = ¥36.6, or £E 1 = ¥100) (international accounting standards)

① Statement of profit and loss (period ending June 1997)

(Unit: £E million)

	Base Case (Period ended June 1996)	Cases 1 and 2	Predicted profit/loss assuming case 1
Net sales	175	175	224
Cost of sales			
[Excluding depreciation expense	(87)	(87)	(106)
	88	88	118
Depreciation expense	(77)	(47)	(47)
Other indirect expense	(2)	(2)	(2)
Interest expense			
JBIC	(37)	(37)	(33)
Non-JBIC	(42)	(42)	(21)
	(158)	(128)	(103)
Net income (loss)	(70)	(40)	15

Note 1) Prediction of net sales for the period ending June 1997 is based on the BCC's forecast amount and the June 1997 term prediction of sales costs is calculated using a variable cost rate of 40% and fixed costs of 16 million Egyptian pounds. The depreciation expense for the period ending June 1996 is used for the useful life[2] because the straight line method for depreciation is employed.

Based on the above, if HR is used for the conversion of tangible fixed assets, the depreciation expense is smaller compared with cases 1 and 2, and the net loss for the period ending June 1997 is reduced. Moreover, of the paid interest, 42 million Egyptian pounds represented by payments of non-ODA loan interest (loans from Egyptian sources), 203 million Egyptian pounds, which corresponds to almost half the historical amount, have been shouldered by the holding company in the period ended June 1997. As a result, interest payments for non-ODA loans have been reduced to 21 million Egyptian pounds, or approximately half the amount until then from the period ended June 1997. From the above, based on cases 1 and 2, profit and loss for the period ended June 1997 is estimated at a profit

[2] Useful life by item

Item	Plant buildings	Office buildings	Machinery	Vehicles	Post hole diggers	Production tools
Useful life	20	30	20	5	20	5

of 15 million Egyptian pounds. Compared to this, based on the BCC's accounting standards, even if making forecasts that do not take into account the factor of uncertain exchange rate fluctuations in the future, a considerable number of years is likely to be required to get out of loss operation.

② Balance Sheet of BCC (6/30/1996)

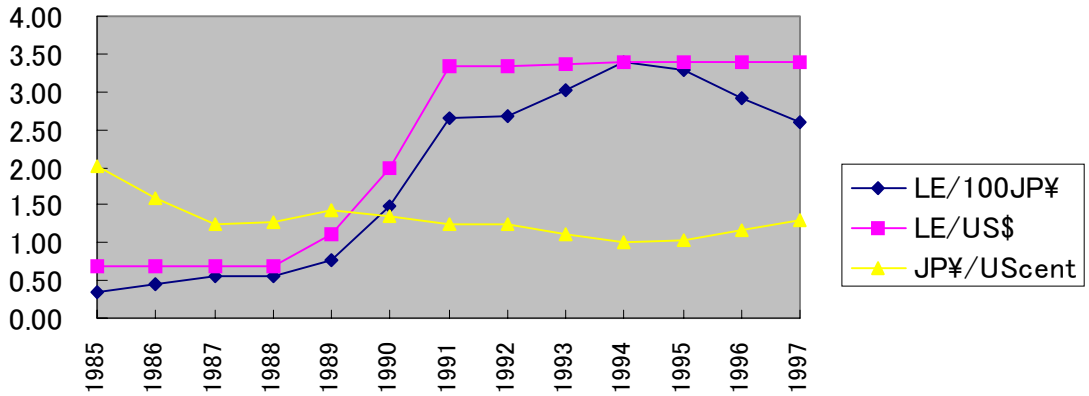
(Unit: £E million)

	Base Case	**Case 1**	**Case2**
Assets			
Assets procured on turnkey base			
Assets procured with ODA loan	1,329	817	817
Other	26	26	26
	1,355	843	843
Non-turnkey base procurement assets	31	31	31
	1,386	874	874
Accumulated depreciation	(136)	(84)	(84)
	1,250	791	791
Construction in progress (ODA loan)	118	73	73
Total tangible fixed assets	1,368	863	863
Other	154	154	154
Total assets	**1,522**	**1,017**	**1,017**
Liabilities			
Loans payable			
ODA loan payable	1,187	1,187	911
Other loans payable	183	183	183
Capital subscribed (from holding company)	203	203	203
Other liabilities	76	76	76
Total liabilities	**1,649**	**1,649**	**1,373**
Capital			
Deficit	(127)	(632)	(356)
Capital	**(127)**	**(632)**	**(356)**
Total capital and liabilities	**1,522**	**1,017**	**1,017**

If in converting tangible fixed assets HR is used as in case 1, the assets account amount is stated smaller and, accordingly, the capital account amount is stated smaller too, compared to the base case. On the other hand, regarding the exchange of long-term yen-denominated debt, if conversion is performed again using the rate of March 1997 as the recent exchange rate, as in case 2, the liabilities

balance is lower, and accordingly the capital account is larger. This is due to the fact that, in fiscal 1994 when BCC did the conversion, the yen was at its highest level. With regard to the conversion of yen-denominated assets and debt, the rate to be used makes a large difference on the evaluation. As a result, BCC is using the most conservative conversion (yen too high) for current yen-denominated long-term loans. While BCC's yen denominated long term loan conversion method is due to a different way of analysis and cannot said to be inadequate, as mentioned previously, extending use of this method to include assets results in distorted profit and loss calculations for subsequent period, and cannot be said to be appropriate.

Table 2.7 Exchange Fluctuations



Source: IFS

(3) Cash flow

As described above about BCC's statement of profit and loss and its balance sheet, a look at BCC's future cash flow shows that since BCC does not take part in the benefits of the JBIC's rescheduling of Egyptian debt payments, repayment of the principle to JBIC (actually, to the Egyptian government) started in 1998 according to the original repayment schedule. Considering BCC's profit status, including principal repayment to JBIC, a shortage of funds is unlikely to occur until the year 2000. However, considering rising consumer prices in Egypt (approximately 6% lately), if cement prices are not raised to absorb rising costs, the principal grace period for the loan agreement for Phase III will run out, and when capital becomes required from 2002 when principal repayments to JBIC start, the financial condition of funds will become extremely tight[3].

According to BCC, cement selling prices in Egypt differ depending on the type of cement, but are basically equivalent to the market price based on the supply and demand relationship. In Egypt,

[3] If, in the future, cement prices rise as predicted by BCC, the balance of fund taking will be kept somehow or other. However, if cement prices are deferred, the fund taking balance will collapse from between 2001 to 2002 (term expenditures of £E 208,000 or more versus term income of £E 200,000), and by 2005 to 2006, BCC's repayment funds may hit bottom.

demand for cement still exceeds supply, and for the type of cement produced by BCC, there is not too much competition with other Egyptian cement plants, and thus the cement selling price is forecasted to rise in the future. (However, the Chairman of BCC himself predicts that this demand and supply balance will collapse due to the introduction of new equipment by cement plants in Egypt. He is skeptical about the current image of future cement selling prices).

(4) Profitability of operations

As calculated in (2) ①, a calculation of profit and loss according to Japanese or international accounting standards shows that BCC has the potential of profitable operation. Moreover, a measurement of the profitability (persistence) of its operations using FIRR yields a range of 11.5% to 14.3% (as note later in the section of project effects and impact).

However, from the viewpoint of Egyptian investors, Egypt's market interest rate being in a higher range, BCC will certainly not appear as an attractive investment vehicle.

(5) Privatization

BCC is currently the property of the Mining & Refractories Company (Egyptian joint stock holding company). The Mining & Refractories Company (M&F) was established by the Egyptian government for the privatization of the mining industry, and it is aiming for the rapid privatization of the BCC. However, as mentioned in (4) above, BCC cannot be said to be an attractive investment vehicle, and the foreign exchange risk in principal repayment of the ODA loan remains a factor of uncertain in the future.

According to BCC, if a plant having similar installed capacity is built, the cost would be approximately US$200 million (£E 680 million) (according to the experts who participated in the local survey for this evaluation, such a plant could be built at a cost of £E 780 to £E 830 million). However, the Egyptian government and M&F are planning to sell and privatize BCC without making changes in its current obligations, which means selling BCC for approximately 1.3 billion Egyptian pounds at the current book value. This would make it difficult to find a buyer, and indeed, as of May 1998, BCC has still not been privatized.

In order to achieve BCC's privatization, the Egyptian government/M&F needs to be ready to share the burden to some degree. A rational approach could be to assume part (or the entirety) of debt repayment, assume the foreign exchange risk, reschedule debt, or find some other form of incentive for potential buyers. The impact these items could have on the privatization of BCC is examined below.

① Assumption of debt obligation

The most direct way to take away the debt burden is for the Egyptian government/M&F to assume debt repayments to JBIC at the time of the privatization of BCC. The method to implement this would be for the Egyptian government to cancel either partially or in its entirety BCC's obligation vis-a-vis the ODA loan that the Egyptian government is lending to BCC. The canceled obligation would then be accounted as a capital surplus or retained earnings in BCC's B/S. (Actually, the Egyptian government, as mentioned in section 2.2.4 Financial Status of BCC,

2. Financial Status, Section (2)①, the Egyptian government has already assumed approximately half of Egyptian loans to BCC.)

② Assumption of foreign exchange risk

If the obligation burden in ① is difficult to assume, the Egyptian government/M&F could insure the exchange fluctuation risk that BCC has for the ODA loan. While it is impossible to predict foreign exchange fluctuations, investors will not feel tempted to invest unless there is some way to hedge the foreign exchange risk. Therefore, if the Egyptian government/M&F insure losses that would arise in case of excessive foreign exchange fluctuations, investors would be able to establish profit plans for the future and this would make it easier for them to invest (buy BCC).

③ Rescheduling of debt repayment

As mentioned previously in Section 2.1.3 Project Cost, BCC is not partaking in the benefits of the rescheduling of debt repayment for Phase I to which it was entitled. This is a factor for uncertainty concerning principal repayment as noted in (3) Cash flow. If, regarding the Phase I rescheduling, the Egyptian government applied the same rescheduling to its loan to BCC, worries over BCC's repayments would almost altogether disappear. Inversely, if BCC's situation with regard to funds becomes less tight, it may be able to secure additional investment funds in the future.

④ Other incentives

Another measure besides the above-described ones that the Egyptian government/M&F could implement is to assure the purchase of BCC's cement for several years following its privatization. Such excessive government assurances are definitely not desirable from the viewpoint of social effectiveness. However, if Egypt wishes to press ahead with the privatization of state-owned enterprises as a matter of national policy, such a measure is thought to be capable of being implemented if a deadline is set for the company to be able to stand on its own following its privatization.

In addition, if BCC expands its facilities, clarifying the system by which the Egyptian government/M&F will provide active support in order to ensure that such expansion goes smoothly would also represent an incentive in the eyes of investors.

While all the above measures would impose to a greater or lesser degree a financial burden on the Egyptian government/M&S, the Egyptian government/M&S would be able to recover this expense over the long term by imposing corporate taxes on BCC, which is currently free of them.

(6) Other (one-time settlement)

The Egyptian government is also studying the settlement of the ODA loan for this project by the Egyptian government in one lump sum. The major reason for this consideration is that the Egyptian

government is worried about the reemergence of a strong yen.

If long-term funds (Egyptian pounds) with an annual interest rate of 10% can be raised in Egypt for repaying the ODA loans, this would represent an average interest rate of 3.5% for all three ODA loans, A lump sum repayment of the ODA loan would be advantageous to Egypt assuming an annual drop of 6.5% or more in the value of the Egyptian pound versus the yen from now. The decision about whether to pay off the ODA loans in one lump sum depends entirely on the Egyptian government's view of future foreign exchange trends (rate of Egyptian pound versus yen).

2.3 Evaluation on Project Effects and Impact

2.3.1 Plan

The following effects are expected from this project.

1. Qualitative effects

① Correspondence to demand for cement, which is predicted to expand

② Foreign currency economies through replacement of imported cement

③ Creation of jobs in region with low employment opportunities

④ Promotion of regional development

2. Quantitative effects

FIRR (Financial Internal Rate of Return) of 11.5% assuming a project life of 20 years.

2.3.2 Actual

1. Quantitative effects

① Support of demand for cement, which is predicted to expand

Table 2.2 below shows the supply and demand status for cement in Egypt. After 1995/1996, this project has been satisfying approximately 5% of Egypt's demand for cement. In this sense, this project is making a suitable contribution with regard to cement supply in Egypt.

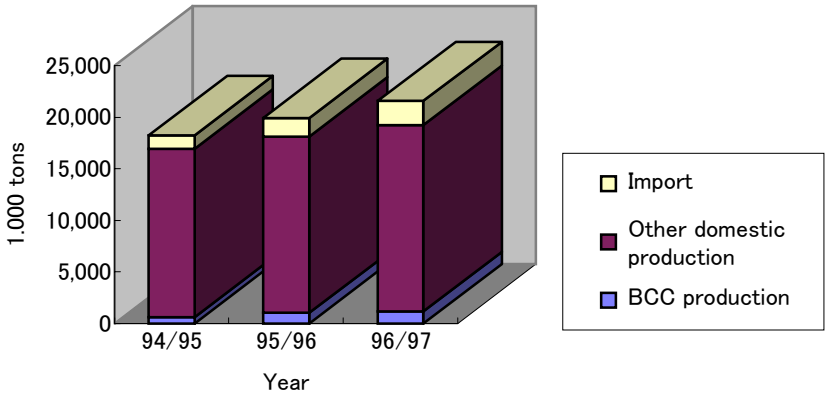
However, Egypt, with a domestic consumption of about 1.6 million to 1.7 million tons of cement and demand growing between 8% and 9%, is unable to meet demand just with domestically produced cement, and, therefore, had to import over 2.3 million tons of cement in 1996/1997.

Table 2.8 Demand and Supply for Cement in Egypt

(Unit: 1,000 tons)

	1994/95	1995/96	1996/97
Domestic demand	17,869	19,557	21,152
Export	395	351	411
Total of demand	18,264	19,908	21,563
Other domestic production	16,317	17,094	18,102
BBC production	616	1,017	1,150
Import	1,331	1,797	2,311
Total of supply	18,264	19,908	21,563

Figure 2.1 Cement Supply in Egypt



Source: BCC

① Foreign currency economies through replacement of imported cement

Compared to if the entire production of this plant were replaced with imported cement, the effect of this plant in terms of foreign currency economies has been in the order of US$97 million (international price of US$79.70/ton x 1,223,000 tons). This amount is 0.5% of Egypt's foreign reserves of US$18.665 billion in fiscal 1997.

② Creation of jobs in region with low employment opportunities

Beni-Suef City, which is where this project is located, is a provincial city of approximately 60,000 inhabitants located 120 km south of Cairo on the Nile. It has no industry besides cement. Therefore, the fact that this project has created 750 jobs has considerable significance.

Table 2.3 Number of BCC Employees

	1994/95	1995/96	1996/97
Number of employees	738	750	756

Source: BCC

① Promotion of regional development

It is difficult to measure the extent to which this project has contributed to the development of Beni-Suef City and the surrounding region. However, one thing is certain, and it is that, in order to implement this project, new infrastructure, including the installation of new power supply and waterworks, had to be built. As a result, an environment has been provided to support the expansion of the plant in the future or the entry of new companies.

2. Quantitative effects

① FIRR (Financial Internal Rate of Return)

Assuming a project life of 20 years, the calculation of the FIRR based on operating results after the project's completion yields an actual figure of 14.3% versus the 6.4% that was originally planned.

However, this figure includes BCC's expectation of future rises in the price of cement.

As previously mentioned, the entry of competitors would make raising cement prices problematic. A recalculation of the FIRR fixing the price of cement at the 1996 level gives 11.5%.

② EIRR (Economic Internal Rate of Return)

The EIIR, which had not been calculated at appraisal, was calculated during this evaluation. The result was 12.7%. The economic cost and benefit considered in calculating the EIRR are as follows.

Economic benefit: Calculated as the unit price of cement times the production volume, using the standard international price of cement (£E 260/ton).

Economic cost: For the project cost and operating cost, the cost elements of material cost, labor cost, and overhead were each calculated by multiplying them with a correction rate.

3. Lessons Learned

For an accurate analysis and understanding of problems related to the project's implementation and maintenance, and the study of countermeasures, the active implementation of interim and post-monitoring accompanied by experts (including SAPI) is important and effective.

In this case, a certified public accountant as a financial specialist accompanied the technical experts in the field survey for this evaluation. As far as the financial condition of the executing agency is concerned, it is possible to share the essence of the problems by preparing financial statements of the executing agency complying to the Japanese or international accounting standards.

In this way, for an accurate analysis and grasp of problems related to the project's implementation and maintenance, and the study of countermeasures, the active implementation of interim and post-monitoring accompanied by experts is important and effective. This will promote faster solution of problems.

(JBIC has a special assistance scheme accompanied by experts for project implementation (SAPI) or project sustainability (SAPS) to cope with problems encountered at project implementation phase or after project completion. They make recommendations to promote project implementation or improve project sustainability.)

① Beni Suef cement plant

② Cement silo

③ Limestone mining site, 15km far from the plant