

**REPORT AND RECOMMENDATION
OF THE PRESIDENT
TO THE
BOARD OF DIRECTORS
ON
PROPOSED LOANS TO
NGHI SON CEMENT CORPORATION LIMITED
IN THE
SOCIALIST REPUBLIC OF VIET NAM**

November 1996

CURRENCY EQUIVALENTS

(as of 30 September 1996)

Currency Unit	-	Dong (D)
D1.00	-	\$0.00009
\$1.00	-	D11,025

- (i) The exchange rate of the dong is determined by the State Bank of Viet Nam, the central bank, under a system of managed float.
- (ii) For the purpose of calculations in this Report, an exchange rate of D11,025 to \$1.00 has been used.

ABBREVIATIONS

ASEAN	-	Association of South East Asian Nations
CFS	-	Complementary Financing Scheme
CIF	-	Cost, Insurance, Freight
DSCR	-	Debt-Service Coverage Ratio
EIA	-	Environmental Impact Assessment
EIRR	-	Economic Internal Rate of Return
FIRR	-	Financial Internal Rate of Return
FOB	-	Free on Board
IFC	-	International Finance Corporation
JEXIM	-	Export-Import Bank of Japan
JV	-	Joint Venture
LDBC	-	Long Distance Belt Conveyor
LIBOR	-	London Interbank Offer Rate
MMC	-	Mitsubishi Materials Corporation
NCC	-	Nihon Cement Corporation Limited
NMCC	-	Nihon-Mitsubishi Cement Corporation
NSCC	-	Nghi Son Cement Corporation
OCR	-	Ordinary Capital Resources
OPC	-	Ordinary Portland Cement
PPC	-	Pozzolan Portland Cement
PRC	-	People's Republic of China
SOE	-	State-owned Enterprise
tpa	-	ton per annum
UCP	-	Union of Cement Plants
VNCC	-	Viet Nam National Cement Corporation

NOTES

- (i) The fiscal year of the Government ends on 30 June, and that of NSCC on 31 December.
- (ii) In this Report, "\$" refers to US dollars.

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LOAN PROPOSAL SUMMARY

Borrower	:	Nghi Son Cement Corporation (NSCC)
Proposed Financial Assistance	:	Loan of \$30 million together with \$26.5 million cofinancing under the Bank's Complementary Financing Scheme (CFS)

I. The Project

Sponsors	:	NSCC is a joint venture between Nihon-Mitsubishi Cement Corporation (NMCC) (65 percent) and Viet Nam National Cement Corporation (VNCC), a state owned enterprise (35 percent) — the Sponsors. NMCC is a company incorporated by Nihon Cement Corporation (70 percent) and Mitsubishi Materials Corporation (30 percent), both from Japan.
The Project	:	The Project is to construct and operate a cement plant with an annual production capacity of 2.14 million tons per annum, and a port for shipment by seagoing vessels at Nghi Son, about 210 kilometers south of Hanoi. The technology to be used is the dry process with suspension preheater with precalciner burning. The Project will start commercial operation in mid-1999 after a 30-month construction period, and will employ 472 persons. The major raw materials, namely, limestone and clay, are readily available near the planned Project site.
Project Cost	:	The total cost of the Project is estimated at \$373 million, including \$323 million in foreign exchange.
Financing Plan	:	The proposed financing plan envisages a debt/equity ratio of 72:28. The long-term debt would be split in two tiers: (i) senior debt comprising loans from the Bank and the International Finance Corporation (IFC) and cofinancing from market sources under the Bank's CFS and an IFC "B" Loan; and (ii) subordinate loans from the Export-Import Bank of Japan (JEXIM), which will be guaranteed by the Sponsors. The proposed financing plan is as follows:

	<u>in \$ million</u>	
Equity:		
NMCC		67.7
VNCC		36.4
Total Equity		104.1
Debt:		
Senior Loans		113.0
Bank	30.0	
IFC	30.0	
Bank CFS Loan	26.5	
IFC "B" loan	26.5	
Subordinated Guaranteed Loans		155.9
JEXIM	155.9	
Total Debt		268.9
Total Project Cost		373.0

- Profitability** : The Project is expected to be profitable, with an estimated financial internal rate of return of 12.6 percent in dollar terms. A sensitivity test indicates that it would be viable even under certain adverse conditions. The economic internal rate of return is estimated at 16.6 percent.
- Environmental Aspects** : The Project has been classified in Category A. An Environmental Impact Assessment (EIA) Report has been prepared by NSCC, and the Summary EIA was circulated to the Board on 4 January 1996. The Project will incorporate adequate mitigating measures to comply with the applicable environmental guidelines of the Government and the Bank.
- Project Benefits** : The Project will be the largest cement plant in Viet Nam and will contribute to easing the shortages of a basic commodity needed for the country's infrastructure development. It will contribute to technological upgrading of the cement industry in Viet Nam and to foreign exchange savings, and will create 472 direct jobs.
- Project Risks** : There are four major risks of the Project: First, the availability of foreign exchange to service the debt may be a problem. This will be mitigated by the obligation of NMCC to export a portion of its output to earn foreign exchange. NMCC will have an undertaking, in the form of an Offtake Agreement, to purchase cement to help cover

any foreign exchange shortage. Second, a regulatory risk exists, as Vietnamese law currently does not permit a mortgage in favor of foreign creditors on fixed assets or land use rights. This risk is mitigated by other security arrangements that the senior lenders (Bank and IFC) will have, including a conditional assignment of the Sponsors' ownership interests in NSCC, a charge over NSCC's bank accounts, and a Sponsors' Financial Support Agreement. Third, a decline in world cement prices might reduce the Project's competitiveness. This risk is mitigated by the fact that the Project will achieve economies of scale, enabling it to produce cement at internationally competitive prices. Fourth, a delay in Project implementation and the resulting cost overrun are other risks. These risks are minimal considering the strength and the experience of the Sponsors in establishing plants and the Sponsors' support for Project completion in the form of a Sponsors' Project Funds Agreement.

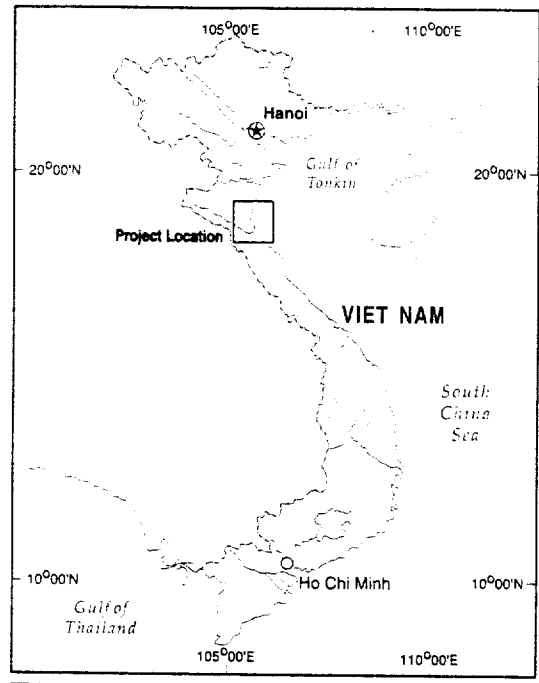
II. The Proposed Bank Loans

Proposed Loan	:	Amount	:	\$30 million from the Bank's ordinary capital resources
		Repayment Terms	:	12 years, including a 4-year grace period
		Interest Rate	:	a floating interest rate to be determined in accordance with the Bank's market based loan facility.
		Commitment Fee	:	0.5 percent per annum
		Front-end Fee	:	1 percent of the loan amount
Complementary Loan	:	\$26.5 million under the Bank's CFS at a floating interest rate to be negotiated with cofinanciers for a term of 9 years, including a grace period of 3.5 years. The Bank will charge an arrangement fee of 0.625 percent of the complementary loan and an administration fee of \$10,000 per annum.		
Security	:	Security arrangements will include (i) conditional assignment of Sponsors' ownership interests in NSCC; (ii) charge over NSCC's bank accounts; (iii) conditional assignment of insurance and of		

NSCC's rights under the Offtake Agreement and other agreements providing for support by the Sponsors; and (iv) a first charge on NSCC's land use rights, moveable assets, and fixed assets as soon as such security is available under Vietnamese law.

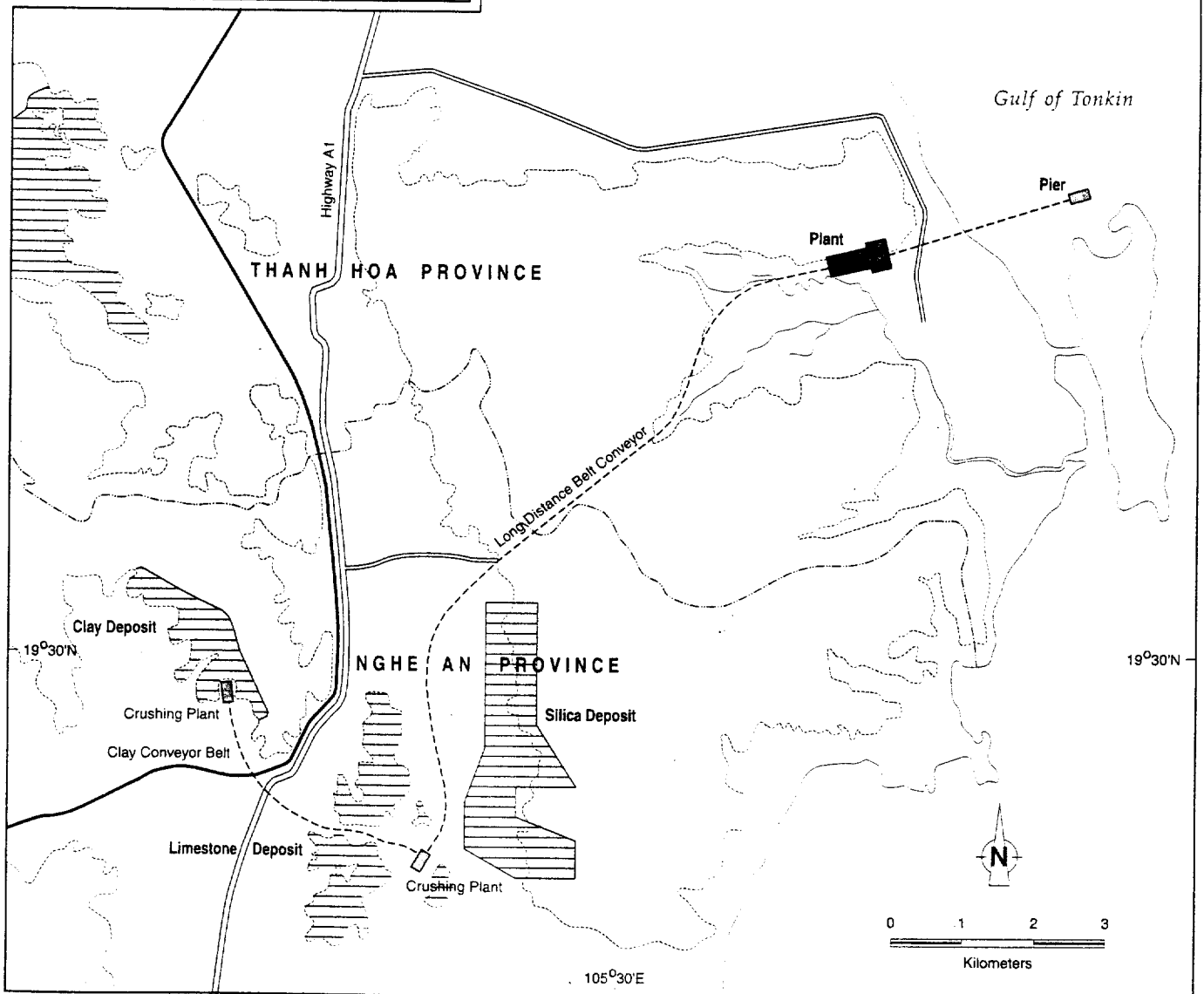
Justification

: This will be the first Bank loan to a private sector project in Viet Nam. Assistance to the private sector will help accelerate the ongoing reforms in developing the country's market economy. The Project, to produce a basic commodity for infrastructure development, is the biggest private sector entry into an industry still controlled largely by the State. It is also the biggest private sector project in the country outside the energy sector. The Bank will play a catalytic role by mobilizing long-term funds from external commercial sources under the Bank's CFS for the Project. Most commercial funding in Viet Nam is until now still with Government guarantee. Successful structuring, implementation, and operation of the Project will help attract foreign lenders and investors to other viable private sector projects.



VIET NAM NGHI SON CEMENT CORPORATION PROJECT Location of NSCC Plant

- Plant Site
 - Quarry Site
 - Mountain
 - National Capital
 - City
 - Road
 - Railway
 - Conveyor Belt
 - River
 - Provincial Boundary
 - International Boundary
- (Boundaries not necessarily authoritative)



I. THE PROPOSAL

1. I submit for your approval the following Report and Recommendation on the proposed financing assistance comprising (i) a loan without Government guarantee of \$30 million from the Bank's ordinary capital resources (OCR) to Nghi Son Cement Corporation (NSCC), a joint-venture company incorporated in Viet Nam with majority private ownership; and (ii) a complementary loan of \$26.5 million to be funded by commercial cofinanciers under the Bank's Complementary Financing Scheme (CFS), both for the purpose of establishing a cement plant at Nghi Son, in Thanh Hoa Province, Viet Nam. If approved, these will be the Bank's first loans to a private enterprise in Viet Nam.

II. INTRODUCTION

2. The foreign Sponsors, Mitsubishi Materials Corporation (MMC) and Nihon Cement Corporation Limited (NCC) approached both the Bank and the International Finance Corporation (IFC) in 1993 to request financial assistance for this Project. Considering the size of the Project for Viet Nam, both institutions agreed to process the Project jointly. Following a request to the Bank in May 1995 for financial assistance to the Project, a Fact-finding Mission was fielded from 15 to 25 November 1995, followed by an Appraisal Mission from 5 to 9 August 1996.¹ This Report is based on the Missions' findings.

III. BACKGROUND

A. The Cement Industry

1. Supply and Demand

3. The cement industry in Viet Nam is dominated by the public sector. Cement is produced by two groups: (i) Viet Nam National Cement Corporation (VNCC), which controls five plants with a total capacity of 4.7 million tons per annum (tpa); and (ii) 30 small vertical kiln miniplants owned by the provincial governments, with a total capacity of 1.0 million tpa. The technology used in these plants is generally outdated, and the quality of the output is below international standards (only one of the VNCC plants is using the dry process). Furthermore, a majority of the miniplants are producing at only about 70 percent of their rated capacity. Most cement plants are located in the north of the country because of the proximity to raw materials and inexpensive energy. The northern provinces produce two thirds of the domestic supply, but consume only about 35 percent of the output. The southern provinces account for 50 percent, and the remaining of 15 percent is consumed in the central region. The current domestic production of 5.7 million tons cannot meet the demand, which in 1996 is expected to reach 8.0 million tons. The balance of 2.3 million tons will, therefore, be imported mainly from People's Republic of China (PRC), Republic of Korea, and Thailand. The standard cement type in the Vietnamese market is the Pozzolan Portland Cement (PPC).

¹ The Fact-finding mission comprised A. Idris, Investment Officer (Mission Leader); E. Fischer, Senior Counsel; J. Yamagata, Investment Officer; A. Kimura, Environmental Specialist; W. Harvey, Staff Consultant; and N. Mirza, Investment Analyst from IFC. K.W. Lee, Manager, PSG, also joined the Mission from 15 to 18 November 1995. The Appraisal Mission comprised A. Idris, Senior Investment Officer (Mission Leader); W. C. Chung, Senior Cofinancing Officer; E. Fischer, Senior Counsel; and J. Yamagata, Investment Officer. W. Staub, Senior Social Development Specialist, assisted the Mission in Manila.

4. Cement demand in Viet Nam is expected to increase substantially in the next decade. Based on Government estimates, demand could reach 18-20 million tpa by 2000. This estimate represents an average increase of 20 percent per annum and is considered to be optimistic. Although demand has increased rapidly in the past few years, with an average growth of 20.8 percent per annum from 1989 to 1995, a more realistic scenario is that the growth rate will be reduced in the future because of the limited absorptive capacity of the economy. Based on a growth rate of 12 percent per annum, the domestic demand in 2000 is expected to be about 12.6 million tons.

5. To meet increasing demand, the Government has built new cement production facilities in the past five years. On the provincial level, local governments have also been encouraged to establish new miniplants. Viet Nam's cement production capacity increased from 2.7 million tpa in 1989 to 5.0 million tpa in 1995 but was still not sufficient to satisfy the growing demand. Therefore, concurrently, imports have gradually increased from only 0.2 million tpa in 1989 to 2.2 million tpa in 1995. VNCC is presently constructing one new plant and expanding two other plants.¹ The Government alone cannot meet all of the demand in the future, and it is unlikely to be able to command the resources needed for the large investments required for additional cement capacity. For this reason, the Government opened the sector to foreign investment in 1992. To date, four joint-venture (JV) projects, most of which are to construct large-scale cement plants, between the public sector and foreign partners have been approved, and another project is under consideration.² With the expansion of VNCC plants and the new JV projects, the total additional capacity in Viet Nam is expected to be 7.2 million tons by 2000.

6. The historical and projected supply and demand are shown in Table 1. An annual growth rate of 12 percent³ has been used, and the projections have taken into account the production capacities under construction and assume that around 25 percent of the JV cement plants' output will be exported.⁴ This may be necessary to earn foreign exchange to service their foreign currency denominated debt. The table indicates that there will be a shortage of cement until 2005 which will be supplied mainly by imports. However, as more JV plants are expected to be established, the imbalance between supply and demand will probably be eliminated by 2005.

¹ The new plant (But Son) will have a capacity of 1.4 million tpa by 2000. Expansion of the two existing plants (Hoang Thach and Bim Son) will create an additional capacity of 1.8 million tpa by 1998.

² The approved projects are Ching Fong-Hai Phong Cement Ltd. (1.4 million tpa) in Trang Kenh, a JV with Ching Fong Cement of Taipei, China; Morning Star Cement Ltd. (1.8 million tpa) in Hong Chung, a JV with Holderbank Financial Glaris Ltd. of Switzerland; Van Xa plant in Thua Thien-Hue, a JV with Lucks from Hong Kong (0.5 million tpa); and the proposed Project. The other project under consideration is a JV with Ssangyong Cement Co. Ltd. from Republic of Korea (1.2 million tpa).

³ Twelve percent is 1 percent lower than the average growth rate from 1985 to 1994 in the demand of cement in Viet Nam (16.5 percent) and in five Asian countries: PRC, Indonesia, Malaysia, Philippines and Thailand (9.5 percent).

⁴ The plants under expansion are Hoang Thach (from 1.1 million tpa to 2.3 million tpa) and Bim Son (from 1.2 million to 1.8 million tpa) and 0.5 million tpa miniplants by the provincial governments. The new plants under construction are But Son (1.4 million tpa), Ching Fong-Hai Phong Cement Ltd. (1.4 tpa); Morning Star Cement Ltd. (1.8 million tpa); Van Xa (0.5 million tpa); and NSCC (2.1 million tpa). These plants will gradually build up and will achieve full capacity in 2-3 years depending on the size of the plant.

Table 1: Historical and Projected Cement Supply and Demand
(million tons)

Year	Demand	Existing Plants	Expansion	New Plants	Total Domestic Supply	Export	Surplus (Deficit)
1990	2.9	2.7		-	2.7	-	0.2
1991	3.2	3.2		-	3.2	-	-
1992	3.8	3.8		-	3.8	-	-
1993	4.8	4.5		-	4.5	-	(0.3)
1994	6.5	4.7		-	4.7	-	(1.8)
1995	7.2	4.7		0.3	5.0	-	(2.2)
1996	8.0	4.7	0.7	0.3	5.7	-	(2.3)
1997	8.9	4.7	2.0	0.5	7.2	-	(1.7)
1998	10.1	4.7	2.3	3.4	10.4	-	(0.3)
1999	11.2	4.7	2.3	6.9	13.9	-	(2.7)
2000	12.6	4.7	2.3	7.2	14.2	1.3	(0.3)
2001	14.1				14.2	1.3	(1.2)
2002	15.8				14.2	1.3	(2.9)
2003	17.7				14.2	1.3	(4.8)
2004	19.9				14.2	1.3	(7.0)
2005	22.2				14.2	1.3	(9.3)

2. Government Policies and Pricing

7. Until 1986, the cement industry was under the control of the Viet Nam National Union of Cement Plants (UCP) under the Ministry of Construction. UCP operated as a typical economic entity under the central planning system, whereby production targets were given. The Government provided capital resources and other inputs; in return the cement plants supplied their output directly to the State-owned enterprises (SOEs) that had been given prior allocations. The system gave UCP little control over costs or the value of its output. The Ministry of Construction, with input from central planning, determined the quantity to be produced. The price of cement, as with other commodities, was determined by the State Pricing Committee and was not based on the cost structure or supply and demand. The price regime was a "two-price system" whereby the SOEs obtained cement at subsidized prices while for the rest of the consumers, the price was determined by "market forces." However, as the public sector was the largest consumer of cement, the subsidized price was de facto the price-setting mechanism for the entire country. During that period, Viet Nam was self-sufficient in cement, and imported an insignificant amount, which it paid for through barter trade.

8. From 1986 to 1990, the adoption of liberalization policies in the economy abolished most of the controls in the cement industry. In an effort to increase the autonomy and efficiency of SOEs, UCP was dissolved and VNCC, which was appointed as the organization controlling the cement plants, was corporatized with a profit-based accounting system and greater flexibility in making decisions. The obligation for VNCC to deliver cement to the SOEs

at a subsidized price was removed¹ and the "two-price system" was dismantled and replaced by a ceiling below which the selling price was determined freely. The price ceiling applies only to VNCC's cement, which presently reaches around 70 percent of the market. Market forces, therefore, determine the price for the rest of the market, currently consisting mainly of imports but in the future to include cement from JV plants. The price ceiling is functioning more to strike a balance between price stability and assured supply of cement. It has been successful in avoiding drastic price increases in times when demand was high. In principle, the price ceiling is reviewed every month; however, early reviews can take place if imposed by market conditions. With the increasing price of imported cement, the Government responded by gradually raising the price ceiling to avoid a disparity between the local price and the imported price.² Currently, for example the price ceiling for cement in the Ho Chi Minh City area is D1,170,000 (\$106) per ton, which is only five percent higher than that of cement imported from Thailand.³ The Government has indicated that by 1997, the price ceiling will be abolished. The high cost, insurance, freight (CIF) prices in Viet Nam can be explained by the following: First, because of its low value-to-volume-and-weight ratio, resulting in high transportation and distribution costs compared with production costs, cement is not a vastly internationally traded commodity. Second, Viet Nam's terminal and port facilities are underdeveloped and act as impediments to imports. Furthermore, as Viet Nam has no bulk facilities, cement is imported in bags, which adds 15-20 percent to the price. Finally, because of the shortage of cement in Asia, the price of cement is higher than in other parts of the world. Landed prices of cement in Viet Nam are 60 percent higher than the free on board (FOB) price.

9. Concurrently with price decontrol, import regulations have also been liberalized in the sector. Prior to 1986, the volume of imported cement was minimal because of Viet Nam's economic self-reliance policy and the constraint imposed by limited availability of foreign currency. Imports were executed only by the State trading firms, which were given import targets based on central planning. In 1989, the import targets were eliminated and replaced by import quotas.⁴ These quotas are allocated by the Ministry of Trade, which determines the amount of cement that may be needed. In practice, the import quotas have been regularly reviewed and increased since they were introduced. By allowing some flexibility in determining quotas, the Government was able to balance domestic production to domestic need. In 1995 for example, the quotas were set at 2.2 million tons, while actual imports were only 2 million tons. The import quotas have, therefore, not acted as an impediment to importation of cement.⁵ In 1990, private businesses were authorized to import cement, and the private sector presently accounts for

¹ Since 1992, SOEs have undergone reforms that have increased autonomy, imposed strict budgets, and established a clear profit motive. In addition, trade reforms and the framework of the private sector have subjected SOEs to increased competition. SOEs has generally performed well. The number of SOEs has diminished sharply. However, the reforms are still incomplete; some SOEs are still enjoying protection and privileges, and most are economically too small.

² The State Price Committee fixes the ceiling price taking into account imported cement prices, domestic production costs, and transport costs.

³ The price ceiling varies with the quality of cement and the region where it is sold. In the south the price ceiling is around 15 percent higher than in the north because of the imbalance between supply and demand. All cement imports in Viet Nam are for the south. In 1996, the price ceilings for PPC per ton were D1,170,000 in the south, D1,060,000 in the central region, and D1,040,000 in the north.

⁴ Until recently, quotas were used to control virtually all imports to Viet Nam. In 1994, the quotas were eliminated for all but 15 products (including cement, fertilizer, refined petroleum, and some other consumer goods).

⁵ Although import quotas have been expanded, they are still distributed mainly to the SOEs.

around 25 percent of imports. To ease imports, the Government has reduced the import tariff for cement five times since 1991.¹ From 25 percent in 1990, it has been fixed at 5 percent as of 1 January 1996 to conform with Viet Nam's obligations in joining the Association of South East Asian Nations (ASEAN).² With the opening of the industry to new JVs, the increased autonomy of VNCC, and the easing of imports, the Government has made considerable progress in introducing market forces in the cement industry. However, additional progress is still needed to develop an efficient market system in the industry. Increased productivity by the new JV plants can help accelerate this process.

B. The Bank's Strategy and Operations in Viet Nam

10. The Bank's strategic objectives in Viet Nam are to promote efficient economic growth, poverty reduction, and environmentally sound development by focusing on the following critical sectors: policy reform and institutional development, infrastructure development, rural development, human development, and environment and natural resource management. These objectives should take into account the particular needs of Viet Nam as it undergoes a transition from central planning to a market-oriented economy and as a country that until recently has had only limited access to foreign capital. The transition to a more market based economy can be achieved through deepening and extending of ongoing reforms and through support to commercially viable private sector initiatives. Infrastructure development, one of the main focal points of the Bank's strategy, offers significant potential for private sector participation. Considering that Viet Nam has a limited entrepreneur base, public-private JVs can play a significant role in attracting foreign private investment to undertake large projects. JV cement plants, producing a basic commodity needed for development, especially for physical infrastructure, should be supported. The Project will meet these objectives by (i) increasing the domestic supply of cement, thus saving foreign exchange; (ii) contributing to efficient development of natural resources such as limestone, with which Viet Nam is endowed but which remains unexploited so far; and (iii) supporting ongoing reforms aimed at dismantling the Government's control over the industry. This Project is the biggest foreign investment in Viet Nam outside the energy sector. It is also the first loans by the Bank to a private sector project.

IV. THE PROJECT

A. Promoters and Brief History

11. NSCC is promoted by VNCC and Nihon-Mitsubishi Cement Co., Limited (NMCC), a JV of NCC and MMC. VNCC was established in 1984 to operate existing cement plants, import cement and clinker, and develop new plants. Aside from the production and sale of cement, VNCC is engaged in the production of building materials and in providing cement consultancy services. It employs about 16,000 persons and operates five large cement plants, which in 1996 produced 5.0 million tons of cement. Together with many SOEs, VNCC has undergone important reforms that have made it increasingly autonomous and profit oriented. It has performed well under these reforms. In 1994, VNCC reported sales and profit of \$471 million and \$48.1 million,

¹ The overall level of import protection in Viet Nam is moderate (the tariff on raw materials and investment goods is less than 10 percent), and is expected to decline further as the commitments assumed in joining the Association of South East Asian Nations (ASEAN) are gradually implemented.

² Import tariffs on 15 items including cement have been reduced to 0-15 percent as part of the Government's commitment in joining ASEAN.

respectively. In 1995, VNCC became more independent of the Ministry of Construction.

12. NCC, established in 1833, is one of the pioneer cement manufacturers in Japan. It is currently the third largest cement company in Japan with a production capacity of 16.8 million tpa in eight plants. In 1995, NCC employed a staff of around 5,200 and had total assets of ¥372.4 billion (\$4.2 billion). From solely cement manufacturing, NCC has in recent years diversified its activities to the production of cement-related construction materials. At the same time, it is also developing new high-technology sectors such as electronics and ceramics. Cement manufacture accounted for 64 percent of NCC's revenues of ¥195 billion (\$2.2 billion) in 1995, but this proportion is expected to decrease to 50 percent by 2003. NCC incurred a net loss of ¥733 million (\$8.2 million) in 1995 because of the sluggish domestic market, fierce competition, and downward pressure in selling prices. NCC's shares are listed on nine stock exchanges in Japan including the Tokyo Stock Exchange.

13. MMC was founded in 1950 and is one of the world's largest diversified materials companies, employing more than 16,000 people in 16 countries. It has built strong positions in metal smelting and refining, cement manufacture, metal fabrication, and production of aluminum cans. In 1995, MMC reported sales of ¥1,151 billion (\$12.9 billion) and incurred a loss of ¥3.7 billion (\$42 million) mainly as the result of write-offs from the liquidation of subsidiaries and the adverse impact of the Kobe earthquake in January 1995. In 1995, cement manufacture accounted for 15.9 percent of its revenues and its total assets were ¥1,483.3 billion (\$16.7 billion). MMC, the fourth largest cement producer in Japan, operates six cement plants locally, one in the PRC, and one in the US. The total cement production capacity of MMC was 14 million tpa in 1995.

14. The leading Japanese cement companies including NCC and MMC have experienced major changes in their business environment in the past few years because of the domestic market contraction and the appreciation of the yen. Cement manufacturers are therefore consolidating their positions through rationalization, restructuring, horizontal integration and mergers. Since 1987, Japan has eliminated about 30 percent of its cement production capacity, mostly by closing down the less efficient facilities. Like many major cement producers, NCC and MMC have been geographically diversifying to reduce their vulnerability. MMC and NCC have increased their investments in the last three years in countries that have growth potential. MMC established a one million tpa capacity cement plant in Shandong Province in the PRC, which began operations in May 1995, and invested in another plant in the US. NCC is also promoting a second cement plant in the PRC with a 1.38 million tpa capacity. The investment in NSCC by NCC and MCC is in line with their globalization strategy. It will be the largest Japanese investment in cement manufacturing overseas.

B. Ownership and Management

15. To implement the Project, NSCC was established on 11 April 1995 as a JV company. The executive functions of NSCC are vested in a Board of 11 directors, consisting of seven directors representing NMCC and four representing VNCC. The Chairman of the Board is Mr. Seigo Terada, concurrently Managing Director of NCC. The Vice Chairman, Mr. Tong Van Nga, is concurrently the Deputy General Director of VNCC. The appointments of very senior executives from NCC and VNCC to the Board indicates the commitment of the Sponsors to the Project. The General Director or Chief Executive Officer of NSCC is Mr. Kentaro Ogawa, who has more than 30 years of experience in various NCC plants. Mr. Nguyen Minh Duc, a VNCC executive with experience in plant operations and marketing in Viet Nam, is the Deputy General

Director. Mid-managerial and technical staff will be recruited in Viet Nam at an appropriate time and given relevant hands-on training. A comprehensive training program is being prepared by NCC that will include on-the-job training in Japan for 37 Vietnamese engineers and marketing staff. The Project is estimated to require a total of 472 staff, of whom 390 will be semiskilled and unskilled labor. Labor and technical staff availability is not expected to be a problem, as Viet Nam has an abundant and capable workforce. The proposed organization chart of NSCC is shown in Appendix 1.

C. Project Description and Rationale

16. The Project is to construct and operate a plant with cement production capacity of 2.14 million tpa at Nghi Son, which is about 210 kilometers (km) south of Hanoi. The Project will produce international standard ordinary portland cement (OPC) for export and PPC for the domestic market. Aside from the proximity to the limestone deposit, the Project site has also been selected because it is on the coast, where a pier and bulk facilities can be constructed. The plant site of 82 hectares (ha) and the quarry site will be leased from the provincial government for a period of 50 years. Another site for the distribution terminal will be leased in an industrial park in Ho Chi Minh City.

17. The principal components of the Project are the following:

- (i) quarry equipment including a crusher, grinding facilities, and a long-distance conveyor belt to transport limestone, clay, and silica;
- (ii) cement plant machinery and equipment (vertical mills, five-stage preheater with calciner, material handling equipment, and computer control system) complete with ancillaries and facilities such as standby and emergency power supply; electric distribution; water supply, treatment, and storage; pollution control facilities; laboratory facilities; and maintenance workshop;
- (iii) office building and staff housing colony together with clinic and recreational facilities;
- (iv) a pier for shipment of cement and receipt of raw materials (gypsum) and fuel (coal); and
- (v) a distribution and cement handling terminal at Hiep Phuoc, Ho Chi Minh City.

18. Cement manufacturing comprises four principal processes: (i) grinding the raw materials to the required fineness, (ii) mixing the ground materials to a homogenous state, (iii) burning the mixture into clinker, and (iv) grinding the clinker with gypsum to produce cement. This technology is well established. As cement manufacturing is energy intensive, improvements have been made mainly on the consumption of energy. The Project will adopt the dry process with preheater kiln and precalciner. This is a proven process, yields optimum energy savings because of high thermal efficiency, and has easier and less expensive plant maintenance than the wet process.

19. The raw materials used for the manufacturing of cement are limestone, clay, and gypsum. The quarry, located about 10 km away from the plant site in Nghe An Province, is part of an extensive limestone deposit from the lower Triassic period. At full capacity, the Project will require about 2.3 million tpa of limestone. Geological tests carried out by the Sponsors indicate that the quarry has sufficient reserve for about 90 years of cement production at the planned capacity. The quarry will be developed in the bench-cut manner, and the limestone will be transported by a long-distance belt conveyor (LDBC). Clay and silica deposits are found next to the limestone deposit and will also be transported by the LDBC. Both the terrain and the location of the limestone deposits make the LDBC the most suitable means of transport. NSCC will obtain a 30-year mining concession from the provincial government of Nghe An. Natural gypsum will be procured from Laos or Thailand.

20. Coal is the largest and most stable source of energy in Viet Nam. Coal will be used to heat the rotary kilns and will be supplied from Hong Gai, Quang Ninh Province, directly to the plant. Coal with a calorific value 5,400-6,800 kilo-calories/kilogram will be used. It will be transported by sea and will be stored in a coal mill specially built at the plant site. NSCC will have a long term coal supply contract with Vinacoal, the mining company. Electricity will be supplied by the Viet Nam Electric Power company by a 110 kilovolt, 50 hertz line from the Ba Che substation, approximately 10 km from the site. The line, costing about \$1.0 million, will be built by NSCC to connect to the national grid. To avoid voltage variations or power failures, which can cause thermal shocks to the kilns, a standby power generator of 10 megawatts has been included in the plant. Both industrial and potable water will be supplied by the Viet Nam Water Company and supplemented by deep wells. The project will have a closed circulating system to reutilize water after application.

D. Project Implementation Arrangements

21. As both the foreign and local sponsors have substantial experience and track records in establishing cement plants, they have decided jointly to take the responsibility for overseeing project implementation. The Sponsors have formed a Project Team headed by Mr. K. Ogawa, General Director, with Mr. H. Oshima as Project Manager. The latter is a seasoned engineer with over 25 years of experience in the cement industry. The Team consists of nine Japanese staff from MMC/NCC and 16 staff from VNCC. The Head Offices of NCC and MMC have also allocated 20 full-time staff for the Project, who regularly visit Viet Nam. In addition, the local knowledge and operating experience of VNCC in Viet Nam will be useful in operating the plant. The Team's responsibilities are, among others (i) preliminary design and preparation of the technical specifications of the Project, (ii) preparation of the bidding documents, and (iii) evaluation of bids and recommendation for the award of contracts. The total number of Japanese staff will reach 50 during the installation of the major equipment.

22. The contracts for civil works have been awarded after competitive bidding to Fujita - Cienco, a JV between a Japanese construction company and a Vietnamese construction company. The civil works started in July 1996. The contract for the supply of machinery and equipment will be awarded on the basis of international competitive bidding. Goods and services will be supplied from, and produced in, Bank member countries. Invitations to bid for the

contracts were issued in March 1996, and final selection is expected in November 1996.¹ The selected equipment supply contractors will provide appropriate warranties and guarantees for achieving the design parameters, among which are kiln output, clinker quality appropriate to the specification, energy efficiency, and dust emission control. The Project will be implemented over a period of 30 months. The Project is scheduled to be in operation by June 1999. A detailed Project implementation schedule is presented in Appendix 2. Project implementation arrangements proposed by NSCC are appropriate, based on MMC's experience in a greenfield cement project in the PRC, for timely implementation and efficient operations.

E. Market and Marketing Arrangements

1. The Domestic Market

23. The three regional markets for cement in Viet Nam and their respective market share are (i) the northern region with Hanoi as the major market (35 percent); (ii) the central coastal region around Da Nang (15 percent); and (iii) the southern region concentrated around Ho Chi Minh City (50 percent). The main users of cement are still the Government construction firms or the Government trading companies. However, a growing proportion of cement is consumed by the private sector, which includes construction of residential and commercial buildings. The economic reforms introduced recently — private ownership and liberalization of interest rates — have increased domestic savings and developed a boom in the private sector. At the same time, Viet Nam is starting to rebuild its infrastructure. A national reconstruction program is under way, with spending and investments centered on all forms of infrastructure. Southern Viet Nam's infrastructure dates from the Viet Nam war, while in the north, it was built during the colonial time but largely devastated during the war. The Government has ambitious plans to build power plants, refineries, roads, railways, ports, airports, water supply and sanitation facilities and housing.² It is estimated that foreign borrowings for construction will increase to \$20 billion over the next four years. Against this backdrop, construction, which requires cement, will remain one of the fastest growing sectors of the economy.

24. The cement distribution system in Viet Nam is mainly a public sector network of appointed wholesalers and retailers under VNCC control. However, in 1992-1993, distribution was largely decentralized and essentially came under operational control of each plant. The private sector presently controls around 30 percent of the retailers. There are approximately 16 trading companies (mostly SOEs) importing cement, generally in small quantities (50,000-100,000 tpa). Most of the sales of cement in Viet Nam are on a cash-on-delivery basis. The point of supply is generally the plant, with transport being the responsibility of the buyer or distributor.

¹ The shortlist of suppliers invited to bid comprised F.L. Smidth (Denmark); Fuller International (USA); Kawasaki Heavy Industries Ltd. (Japan); Kobe Steel Ltd (Japan); Krupps Polysius AG (Germany); Mitsubishi Heavy Industries (Japan); and Techip CLE (France).

² According to the Vietnamese Ministry of Transport and Communications, among the investments in infrastructure that will require cement are (i) **Roads and highways**: It is estimated that only 10-15 percent of the nation's highways are paved or have hard surfaces; an estimated \$3.4 billion will be needed to upgrade or build six highways; another \$3.6 billion is needed to develop an arterial network of roads linking Hanoi to the provincial capitals; (ii) **Bridges**: Nine bridges with an estimated cost of \$520 million are planned to be built on a build-operate-transfer basis; (iii) **Ports and airports**: Only three ports — Haiphong, Da Nang and Ho Chi Minh City — can handle large cargo vessels; the Government has plans to upgrade these ports plus nine airports at a total cost of \$2.4 billion.

25. NSCC will sell its output mainly in the domestic market, but it is prepared to export up to 40 percent of its production, mainly to ensure a source of foreign exchange to service its debt. Exports may be necessary in the medium term to earn foreign exchange revenues for debt service and in the long term to substitute for exports currently sourced from Japan to the growing Asian market. However, as long as foreign exchange is available, NSCC will sell all of its output in the local market, as this will be more profitable than exports. NSCC is considering marketing only about 227,000 tpa in the northern district, as this region will be largely self-sufficient with new plants under construction. Cement will be distributed by trucks from a warehouse located in Hanoi. In the central region, the prospects of growth in sales are good because of the proximity of the plant to the markets in the coastal area. The market is expected to increase in the area around Da Nang, Vinh, and other medium-sized cities which have a latent demand, as no cement plants are located in the region. NSCC plans to sell 370,000 tons in the Central region and is considering building a distribution terminal in Da Nang. Most of the cement in the central region will be transported by trucks and barges. The southern region, around Ho Chi Minh City is the fastest growing market in Viet Nam. There is limited limestone in this region and growth in production capacity is lagging behind demand. As the Southern region is the priority target for the Project, NSCC will construct a distribution terminal in Ho Chi Minh City to serve as a base for sales in the region. This terminal will have a silo of 15,000 tons capacity for storage and a rotary packer with a capacity of 100 tons per hour, which can produce 50-kilogram bags automatically. The terminal will function as a reliable and stable source of supply for Ho Chi Minh City plus its hinterland, the Mekong delta and the densely populated south eastern region. Around 687,000 tpa will be sold in this region. Cement will be transported to Ho Chi Minh City terminal from the plant by two chartered bulk carriers with a capacity of 10,000 tons and 8,500 tons, respectively. From the terminal, cement will be transported by truck, small ships or barges by customers or existing transport companies. NSCC will have its own sales network for the distribution of its cement to the whole country. It may, however, utilize some of VNCC's existing wholesalers.

2. The Export Market

26. Southeast and East Asia have achieved remarkable economic growth beginning in the early 1980s in Hong Kong; Republic of Korea; Singapore; and Taipei, China. Following closely behind these economies are the ASEAN countries, which started their upward trend in 1985. Coupled with this economic growth has been the demand for cement. Since the late 1980s, cement demand in Asia has been increasing by an average of 6-7 percent against 3-4 percent worldwide. This reflects the resolute mandates from the Asian economies to improve their infrastructure. Based on these commitments to upgrade infrastructure, the likelihood of continued high economic growth, and the abundance of suitable natural resources, the future of the cement industry in this area appears bright. It is projected that the cement industry in the ASEAN region will experience the same steep growth curve that the cement industries of Japan; Republic of Korea; and Taipei, China have experienced in the course of their economic growth. However, the particular circumstances that surround the cement industry of each economy differ greatly. Japan has a capacity surplus, and therefore is still a major exporter. Republic of Korea and Thailand have become almost self-sufficient as a result of cement plant expansions. Capacity is rising in Indonesia and Malaysia. The PRC, which was a major exporter in the early 1990s, is now barely self-sufficient because of the tremendous increase in demand. The Philippines lacks production capacity. Hong Kong; Singapore; and Taipei, China are unable to produce sufficient cement because of lack of limestone reserves or environmental constraints. Imported cement fills the gap between demand and supply. An outlook for the cement market in Asia can be found in Appendix 3.

27. Although cement capacity is increasing rapidly across Asia, there are still potential markets for Vietnamese cement in Hong Kong; Singapore and Taipei, China which are net importers. Also, because of the long time lead and the huge investments needed to construct cement plants, many economies in the region will continue to rely on imports. Viet Nam will have an opportunity to export cement in the region because (i) it is strategically located in the geographic center of a fast growing market (ASEAN; Hong Kong; Singapore; and Taipei, China); (ii) Viet Nam has a long coastline (3,200 km) and deep sea suitable for large bulk carriers; and (iii) attractive incentives granted by the Government,¹ deepwater harbors, and the competitive and highly educated workforce will enable JV plants to produce cement at competitive prices.

28. NSCC is prepared to export up to 856,000 tons (or 40 percent of its output) of OPC in bulk by using 35,000-ton chartered ships. NSCC will use the sales network of NCC and MMC. Both companies have accumulated substantial experience in marketing cement in the region. In 1995, NCC and MMC exported 5.3 million tons of cement to the region (mostly to Hong Kong; Singapore; and Taipei, China), which represented nearly 30 percent of Japan's total cement exports. NMCC has agreed to offtake sufficient quantities of the Project's output to cover the foreign exchange shortage, if any. The price under the Offtake Agreement will be in dollars and will be at the market price for cement of comparable quality.

F. Environmental Aspects

29. One of the most critical impacts of cement manufacturing is the dust generated during transport, storage, milling, packing, etc. To reduce the dust emission from coal and material storage areas, dustproof circular silos and stockyards with roofs and walls will be installed. Dust generated from the milling and screening area will be collected and treated by dust collectors. During material transportation, all materials that can cause pollution will be carried by conveyor belts in enclosed galleries. Electrostatic precipitators will be installed to treat gasses from kiln firing, calcining, and clinker cooling. Dust concentration in the air after treatment is expected to be less than Vietnamese and international standards, and predicted maximum dust concentration is lower than the Vietnamese ambient air quality standard. The impacts of noise, dust, vibration, and rain runoff by quarrying will be mitigated by (i) creating buffer zones between residential areas and the quarry sites; (ii) implementing strict safety regulations regarding blasting which will not be allowed at night; (iii) using trucks with water spraying and belt conveyor systems for the transport of raw materials; and (iv) constructing a drainage system to conduct the runoff from the quarry area to sedimentation ponds. The Project's environmental protection and plant safety systems will be designed and guaranteed by the contractor and suppliers to conform to the Japanese standard and to fully comply with all the regulatory and performance standards of the Government. No problem is foreseen in the operation and maintenance of the pollution control facilities.

30. The Bank has classified the Project under category "A." The Environmental Impact Assessment (EIA) was prepared by the Environmental Protection Center, Institute for Tropical Technology and Environment Protection of Viet Nam, and the Summary EIA was circulated to the Bank's Board of Directors on 4 January 1996. The Ministry of Science, Technology and Environment of Viet Nam approved the EIA on 8 April 1995. Once a year, NSCC will submit to the Bank the results of the monitoring program and the highlights of the activities related to environmental protection and plant safety.

¹ The imports of machinery and equipment are tax exempt. The Project is granted a 4-year tax holiday, after which the income tax will be 7.5 percent.

G. Resettlement Considerations

31. Implementation of the Project will require 82 ha of land. Of the land identified in the provinces of Thanh Hoa and Nghe An, about 20 percent is being cultivated for the production of rice and the remaining 80 percent is idle or devoted to tree plantation. About 57 families in Hai Thuang commune in Thanh Hoa Province and 65 families in Quynh Thien commune in Nghe An Province will need to be involuntarily resettled. These families will be resettled in accordance with a resettlement plan that has been reviewed by Bank staff and found to be in conformance with the Bank's policy on involuntary resettlement. The key features of the plan provide for the relocation of families near their original neighborhoods, the provision of comparable farmland that is as productive as that which the families are foregoing, and compensation for foregone income from the loss of unharvested crops.

32. The provincial People's Committees established People's Compensation Committees which have determined the compensation rates for different types of land, trees, and crops after discussions with representatives of the affected families. The Compensation Committees include local village leaders and regularly consult the resettlers. Based on the recommendation of the People's Compensations Committees, NSCC has allocated \$1.53 million for compensation and payment of resettlement expenses. Of this amount, around \$1 million has already been paid in Thanh Hoa province, where the implementation of the resettlement plan is in an advance stage. The payments were channeled through the People's Committees and were confirmed by individual receipts from the families resettled.

33. The communes where the Project will be located have serious unemployment. During its implementation, the Project will create job opportunities for up to 1,000 people living in the area. Once operational, NSCC will provide 472 jobs and will give preferential treatment to employing the people displaced by the Project. NSCC will also initiate a job training program to provide alternative employment to the people who will be resettled. Furthermore, the provincial governments, with the financial assistance of NSCC, have established programs to provide credit for the poorer households to set up new businesses.

34. The relevant provincial governments have provided opportunities to explain to the local communities the Project and its possible environmental impacts. The concerned communities have been receptive and have accepted the resettlement compensation. Monitoring has been performed by NSCC with assistance from the Cement Consulting Investment and Development Co., a consulting company engaged by NSCC and the provincial police force. The resettlement process was reviewed by the Bank and IFC and was found satisfactory. The Bank will monitor the resettlement process through periodical reports that will be submitted by NSCC.

H. Cost Estimates and Financing Plan

1. Cost Estimates

35. The Project cost is estimated at \$373 million, including a foreign exchange component of \$323 million, based on suppliers' quotations and the Sponsors' experience. Calculated on the basis of capital cost per unit of capacity, the Project cost compares favorably with similar projects in other countries. The initial working capital of \$5.0 million will finance inventories, spare parts, and consumables. This working capital is considered adequate considering that most of the sales will be on a cash basis. Interest during construction is estimated at \$32.9 million based on the Project's implementation schedule and projected borrowing cost. The estimated project costs are summarized in Table 2.

Table 2: Project Cost Estimates
(\$ million)

Item	Foreign Exchange	Local Currency	Total Cost
Civil works and Infrastructure	76.0	30.4	106.4
Machinery and Equipment	189.6	12.5	202.1
Preoperating Expenses	3.3	3.2	6.5
Financial Expenses	1.8	0.0	1.8
Contingencies	15.7	2.6	18.3
Interest During Construction	32.9	0.0	32.9
Initial Working Capital	3.7	1.3	5.0
Total	323.0	50.0	373.0

2. Financing Plan

36. The financing plan is based on a debt/equity ratio of 72:28. NMCC will subscribe to 65 percent (\$67.7 million) of the equity capital of \$104.1 million, while VNCC will subscribe to 35 percent (\$36.4 million). The foreign exchange requirement will be financed through loans from the Bank (\$30 million); IFC (\$30 million); Export Import Bank of Japan (JEXIM) [\$155.9 million]; and commercial lenders under the Bank's CFS and IFC's "B" loan (\$53 million). In view of the market perception of the country risk for project financing in Viet Nam, provision of CFS and "B" loan umbrellas by the Bank and IFC is considered justified. The proposed debt financing comprises two tiers: (i) senior loans consisting of the loans from the Bank, IFC, and commercial lenders; and (ii) subordinated loans from and through JEXIM for which the Sponsors will arrange guarantees.¹ As the senior loans will have priority over subordinated loans in debt service, the effective debt/equity ratio for the senior lenders will be 30:70 if these loans are considered to be equity. Details of the financing plan are shown in Table 3.

¹ The JEXIM loans will be guaranteed by the Japanese sponsors (NCC and MMC) up to \$101.3 million (65 percent) and by the Ministry of Finance of Viet Nam (on behalf of VNCC) up to \$54.5 million (35 percent). The amounts guaranteed are in proportion to the Sponsors' equity share in NSCC.

**Table 3: Proposed Financing Plan
(\$ million)**

Source	Foreign Currency	Local Exchange	Total Cost	% of Equity/ Debt	% of Total
I. Equity					
NMCC	54.1	13.6	67.7	65.0	
VNCC		36.4	36.4	35.0	
Total Equity	54.1	50.0	104.1	100.0	28.0
II. Debt					
Bank Loan	30.0		30.0	11.2	
Bank-CFS Loan	26.5		26.5	9.8	
IFC Loan	30.0		30.0	11.2	
IFC "B" Loan	26.5		26.5	9.8	
JEXIM Loan	155.9		155.9	58.0	
Total Debt	268.9		268.9	100.0	72.0
Grand Total	323.0	50.0	373.0		100.0

I. Projected Operational and Financial Performance

37. The operational and financial evaluation assumes that construction will take 30 months and considers plant operations over 20 years. The production build-up assumes a kiln capacity utilization of 83 percent in the first year and 100 percent thereafter. This is considered a realistic assumption based on the experience of MMC in constructing its plant in the PRC, where nearly 100 percent plant utilization was achieved within the first year of operation. NSCC will market 75 percent of its output locally, while the rest will be exported to earn foreign exchange. Sales revenues have been projected using, for the domestic market, a selling price of 20 percent lower than the current price ceiling (averaging D1,111,000 or \$100.8 per ton), as the prices are expected to be lower when the new plants in the country are operational. For the export market, an FOB price of \$38 per ton was used, which is 10 percent lower than the average export price of NCC and MMC in 1996. NSCC's price of cement will be competitive in Asia on account of relatively low operating costs and closer location to the fast growing Asian markets. The largest input in the Project is energy, which is mainly coal. The projections are based on the price of coal currently charged for JV and exports. The cost of production of the Project is comparable to international standards. The projected income statement, cash flow statement, balance sheet, and the underlying assumptions are presented in Appendix 4. Key financial performance indicators are shown in Table 4.

Table 4: Summary of Key Financial Performance Indicators
(D million)

Item	1999	2000	2001	2002	2003
Pre-tax Profit	(4,087)	(189,957)	256,181	370,890	500,299
Net Income	(4,087)	(186,957)	256,181	370,890	379,999
Total Assets	4,644,060	4,291,180	4,299,718	4,354,008	4,373,606
Ratios:					
Current Ratio	0.92	0.59	1.14	1.74	2.10
Debt/Equity Ratio	3.01	3.41	2.50	1.72	1.21
Debt-service					
Coverage - total debt	0.00	0.91	1.42	1.47	1.42
Debt-service					
Coverage - senior debt	0.00	2.31	3.49	3.39	3.30
FIRR (%)	12.6				

38. The performance indicators show that, under the proposed financing plan, the Project is expected to maintain acceptable levels of debt-service coverage ratio (DSCR) and current ratio. The Project is also financially acceptable with a financial internal rate return (FIRR) estimated at 14.3 percent, and 12.6 percent after tax. This is higher than the weighted average cost of capital of the Project of 6.8 percent. Debt-servicing capability on the senior loans is satisfactory throughout the life of the Project.

39. Sensitivity tests were performed on key assumptions concerning cement prices, capital costs, and Project implementation periods. The lowest FIRR would be 11.7 percent (9.9 percent after tax), and the lowest DSCR would be 0.40. In this case, the DSCR of senior loans would be 1.15. The results of the sensitivity tests are given in Table 5. IF NSCC sells its entire production on the domestic market, the FIRR would be 16.1 percent (14.4 percent after tax), and the DSCR of all loans would be above 1.02, while that of the senior loans would be 2.59.

Table 5: Sensitivity Analysis of FIRR

Assumption	FIRR (%) Before Tax	FIRR (%) After Tax	Lowest DSCR	
			All Loans	Senior Loans
Base Case	14.3	12.6	0.91	2.31
Capital Cost Increase by 10 percent	13.0	11.3	0.80	2.31
One Year Delay in Start-up	12.8	11.1	0.45	1.15
One Year Delay and Capital Cost Increase by 10 percent	11.7	9.9	0.40	1.15
Export 40 percent of Production	13.1	11.4	0.84	2.13
Domestic Sale of Whole Production	16.1	14.4	1.02	2.59
Constant Foreign Exchange Rate with Projected Inflation	15.1	14.0	1.17	2.95

J. Economic Evaluation

40. For the economic evaluation, costs used in the financial analysis have been adjusted by excluding taxes and duties. Project benefits are valued at the landed price for imported cement. For the foreign capital costs, the CIF price was used. A standard conversion factor of 0.93 was applied to the cost of local capital goods to account for the difference between domestic and international prices. The economic price of coal is based on its international price plus ocean freight and port handling charges. The economic cost of electricity is determined by its long-run marginal cost. The cost of unskilled labor has been converted using a conversion factor of 0.6 to take into account the abundance of labor. In economic terms, the Project's production costs per ton of cement including capital charges (book value of depreciation and financial charges) are below the CIF value of imported cement. This is an indication that the Project is economically efficient for meeting domestic demand. The estimated economic internal rate of return (EIRR) is 16.6 percent. Detailed calculations of the EIRR are given in Appendix 5.

41. Sensitivity tests were carried out to assess the impact of deviations from base case assumptions. The result of the sensitivity tests are given in Table 6. In all cases, the EIRR would remain above 14.3 percent.

Table 6: Sensitivity Analysis of EIRR

Assumption	EIRR (%)
Base Case	16.6
Capital Cost Increase by 10 percent	15.2
One Year Delay in Start-up	14.8
One Year Delay and Capital Cost Increase by 10 percent	13.6
CIF Price and Export Price Reduced by 10 percent	14.3

42. In addition to the above quantifiable benefits, the main impact of the Project will be to increase the domestic supply of cement at an economic cost, and the Project will contribute to the development of Viet Nam's economy by reducing the shortage of a basic commodity whose periodic unavailability has created disruptions in economic activities of the user industries. The Project will also create direct employment for 472 people and will provide health facilities for the employees and their families. In addition, about 1,000 people will obtain employment indirectly from downstream industries such as construction, bagging, and distribution.

V. THE PROPOSED BANK LOANS

A. Nature and Amount of Bank Loans

43. The proposed Bank assistance comprises the following:

- (i) \$30 million loan from the Bank's OCR to meet the foreign exchange costs of the Project; interest rate will be determined in accordance with the Bank's market based loan facility with an amortization period of 12 years including a grace period of 4 years; a commitment fee of 0.5 percent per annum will be charged;¹ in addition, a front-end fee of 1 percent flat of the loan amount will be charged; and
- (ii) complementary loan of up to \$26.5 million to be funded by financial institutions under the Bank's CFS at a floating interest rate to be negotiated with the cofinanciers for a term of nine years including a grace period of 3.5 years²; the

¹ In line with the provisions on the commitment charge for the IFC loans, the flat commitment fee of 0.5 percent will be charged from the date of signing the Loan Agreement on the full undisbursed loan amount, instead of after 60 days and on increasing portions of the loan as is standard under the Bank's market based loan window. Since the Bank loans and the IFC loans were negotiated jointly, differences between the terms and conditions of the Bank loans and those of the IFC loans have been avoided to the extent possible.

² In accordance with the Guidelines on Operational Procedures: 29, a Board information paper will be prepared that will provide the detailed terms and conditions of the complementary loan as negotiated.

Bank will charge a syndication fee of 0.625 percent of the CFS loan and an administration fee of \$10,000 dollars per annum. The commitment fee will be the same as for the Bank loan.

B. Main Terms and Conditions

44. The proposed principal and complementary loans will be documented by a Loan Agreement, which will contain the standard terms and conditions that apply to the Bank's private sector loans without Government guarantee. The complementary loan will be further documented by a Participation Agreement among the Bank and the participating financial institutions, which will contain the standard terms and conditions applicable to commercial cofinancing arrangements under the Bank's CFS.

45. The Bank will also enter into the following agreements: (i) a Security Sharing Agreement between IFC and the Bank; (ii) agreements on the establishment of NSCC's bank accounts, providing terms and conditions under which NSCC will operate these accounts; (iii) a Project Funds Agreement under which the Sponsors will be responsible for the provision of funds, in addition to those specified in the financing plan, that may be required to accomplish the timely completion of the Project; (iv) a Financial Support Agreement under which the Sponsors undertake to provide additional funding, if needed, to meet the Project's operating requirements during the initial years of operations; and (v) an Offtake Agreement under which NMCC undertakes to purchase cement, if needed, to make up for the foreign exchange shortage.

46. The proposed Bank loans will be subject to a number of conditions precedent to first disbursement. Apart from standard conditions, the documents will provide that:

- (i) Sponsors will have paid at least 70 percent their planned equity contributions, and at least 50 percent of the total value of the subordinated loans will have been disbursed;
- (ii) appropriate security in form and substance acceptable to the Bank will have become effective, including a conditional assignment of the Sponsors' ownership interests in NSCC, of insurance, and of NSCC's rights under the Offtake Agreement, Project Funds Agreement, and Financial Support Agreement; a first ranking charge over NSCC's bank accounts; a first mortgage on NSCC's land use rights and fixed assets and a first ranking charge over NSCC's moveable assets will be created once Vietnamese law provides for this; and
- (iii) all governmental, corporate, creditors' and shareholders' approvals and consents legally required or deemed necessary by the Bank will have been obtained for the Project and for all financial and security arrangements contemplated hereby and will be satisfactory to the Bank.

C. Justification for the Bank's Assistance

47. The Bank's participation in the Project is justified, as the Project (i) is consistent with the Bank's current operational strategy in Viet Nam, which envisages support to private sector development to help the economy in its transition to a market economy; (ii) will increase,

at competitive prices, the local production of cement, a basic commodity needed for Viet Nam's development; (iii) will reduce the country's dependence on imports, thereby saving foreign exchange; and (iv) will promote private sector participation in an industry that has been the preserve of the State, which will help the sector to become more efficient and competitive.

48. The Bank and IFC have collaborated closely in processing this Project. Both institutions will play a catalytic role in attracting other commercial lenders to finance the Project and will arrange the commercial cofinancing on a joint syndication basis. Not only is this Project the largest private sector project in Viet Nam outside the energy sector, but it will have the largest loans without Government guarantee. Without the Bank's participation, commercial lenders are unlikely to participate because of the perception of country risk.

D. Project Risks and Safeguards

49. Four potential risks may affect the Project. These risks have been assessed, and mitigating measures are as follows:

- (i) **Foreign exchange risks:** Although the Government has given permission for NSCC to convert the proceeds of domestic sales to foreign currency and to maintain the export proceeds in dollars, Viet Nam has limited capacity to service foreign debt. To mitigate this risk, NMCC has agreed to offtake from NSCC significant quantities of cement to help cover any foreign exchange shortages. Furthermore, with the current pace of economic growth, Viet Nam is expected to improve its foreign exchange reserve in the long term. The Project also has a foreign exchange risk resulting from a possible depreciation of the dong on its US dollars borrowings. This risk will be mitigated by the fact that the Project can export its output, therefore assuring, a stable source of foreign exchange revenue.
- (ii) **Regulatory risk:** Vietnamese law does not currently permit a mortgage in favor of foreign creditors on fixed assets or land use rights. This risk is mitigated by the other security arrangements including a conditional assignment of the Sponsors' ownership rights and a charge over NSCC's bank accounts, and by the support of the Sponsors, including the Financial Support Agreement and the Offtake Agreement. NSCC has further agreed to give the Bank a first charge on its land use rights, fixed assets, and moveable assets as soon as this can be arranged under Vietnamese law.
- (iii) **Decline in the world cement price:** A decline in the world cement price may reduce the Project's competitiveness abroad. However, the Project's break-even price will be \$29 per ton which is 30 percent lower than the current traded prices in Asia. This will give NSCC a sufficient cushion for setting its export prices, which, combined with the foreign Sponsors' experience in trading cement, should enable NSCC to remain very competitive.
- (iv) **Implementation/cost overrun:** A possible delay in project implementation and potential cost overrun is another risk. To mitigate this risk, NSCC will use a reputable civil works contractor and cement equipment suppliers. The Sponsors' experience ensures that NSCC will have the capability to complete the Project on time and to operate the plant successfully. Furthermore, the Sponsors will enter into a Project Funds Agreement to provide additional funds to cover cost overruns.

E. Assurances

50. A Framework Agreement containing confirmation by the Government as to the Bank's status, privileges, and immunities with respect to the Bank's equity investment and lending operations in the private sector is in effect between the Government and the Bank. The Government has been requested to confirm that it has no objection to the proposed direct Bank assistance to NSOC. Disbursement will be made only after such confirmation has been received.

VI. RECOMMENDATION

51. I am satisfied that the proposed loans would comply with the Articles of Agreement of the Bank and recommend that the Board approve:

- (i) a loan of \$30 million to Nghi Son Cement Corporation (NSCC) from the Bank's OCR, with interest to be determined in accordance with the Bank's market-based loan facility and with an amortization period of 12 years, including a grace period of 4 years; and upon such other terms and conditions as are substantially in accordance with those set forth in this Report; and
- (ii) a complementary loan to NSCC of up to \$26.5 million to be funded under the Bank's Complementary Financing Scheme on terms and conditions substantially in accordance with those set forth in this Report and such other terms and conditions as may be reported to the Board.

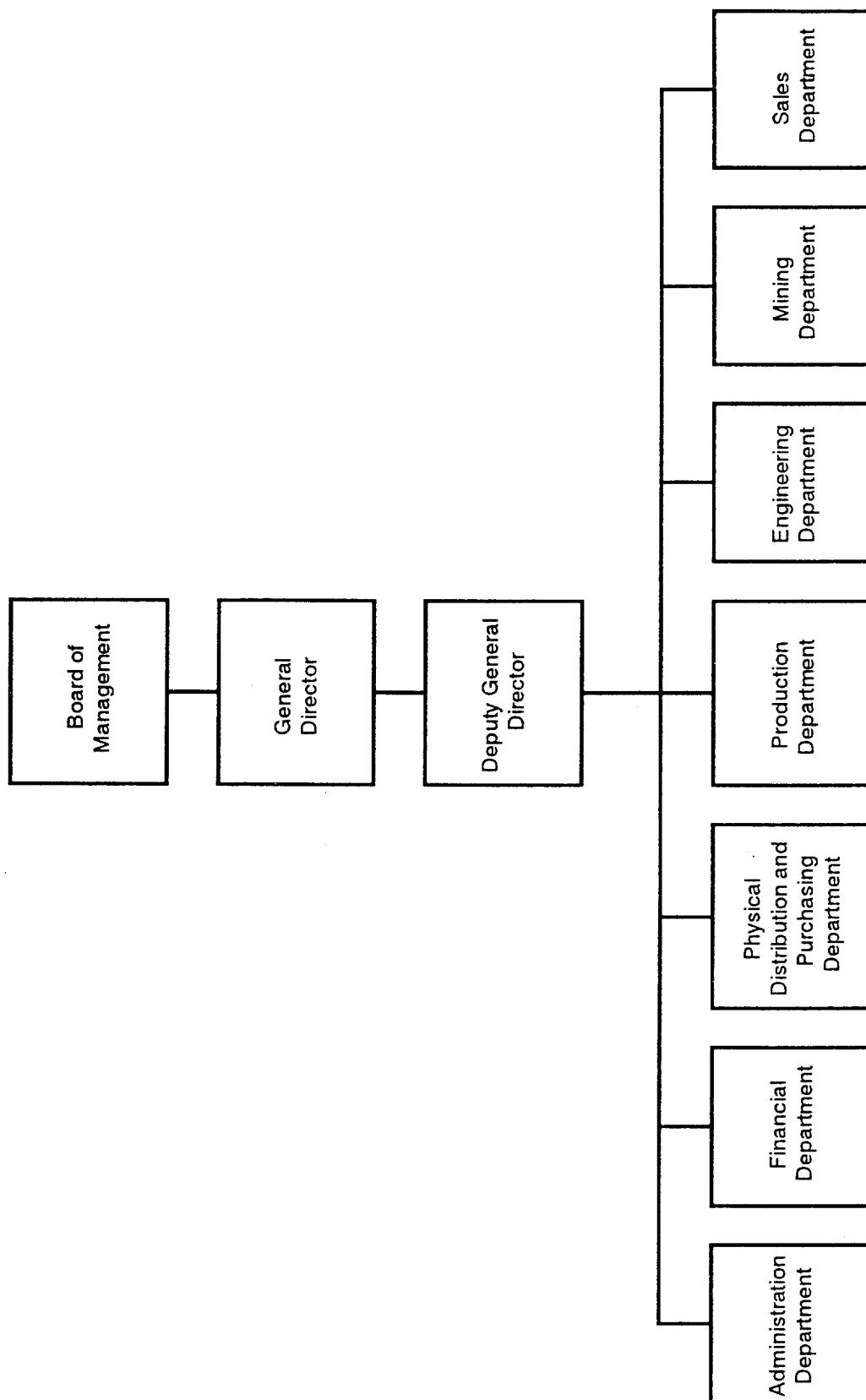
MITSUO SATO
President

7 November 1996

APPENDIXES

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NGHI SON CEMENT CORPORATION
ORGANIZATION CHART



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OUTLOOK FOR THE CEMENT INDUSTRY IN ASIA

A. People's Republic of China

1. The People's Republic of China (PRC) has been the number one producer of cement in the world since 1985. Production volume in 1995 is estimated to have exceeded 450 million tons, and expansion continues. The PRC currently exporting cement; however, most of it is produced by small-scale plants, and the quality and stability of supply are not considered to be satisfactory to importers. Only 15 percent of PRC output meets international standard. As demand for high quality cement increases, its shortage can be serious, especially in coastal areas. The PRC is gradually expanding its cement capacity and is attracting foreign partners.

B. Hong Kong

2. Although one cement plant in Hong Kong produces approximately 1.5 million tons per annum (tpa) of cement, there are no limestone reserves. All raw materials must be imported, creating a relatively high cost product. Hong Kong imports clinker for grinding and cement for the balance of its requirements.

3. Cement demand continues to be strong. Since 1986, a very active housing market and other major projects have raised cement consumption sharply. In 1995, cement consumption reached 4.3 million tons. Strong cement demand is expected at least for the next few years, primarily as a result of the new international airport project. Recently, Hong Kong has imported cement from the PRC, has placed downward pressure on cement prices. However, the PRC's domestic consumption is increasing, it will no longer be a major exporter.

C. Indonesia

4. Cement production has been increasing since 1988 in response to growing demand. Production in 1994 was 22 million tons, and in 1995 was expected to reach 24.8 million tons. Although a number of new cement projects are being evaluated to meet increasing demand, very few of them have been initiated. Cement consumption in 1994 of 22 million tons and 25.4 million tons for 1995 appropriately matches domestic production.

5. In the past, Indonesia exported large quantities of cement to Bangladesh, Malaysia, and Singapore. However, the increasing domestic cement demand reduced the amount of cement available for export. In 1989, exports reached a peak of 4 million tons, which steadily decreased to 2.6 million tons in 1992. In 1993, the internal cement requirement prompted the government to issue a decree that banned cement exports.

6. Under the current tight market, Indonesia will have to import cement this year. This shortage will disappear relatively soon with the completion of new projects. Indonesia is not expected to import cement in the long term.

D. Republic of Korea

7. Production capacity reached 54.3 million tpa in 1994. By the end of 1995, the annual capacity was projected to increase to 55.8 million mt through the addition of new kilns.

8. Cement demand has been increasing steadily since the 1960s, being supported by the government's economic development plan. Mega projects such as the development of a new highway network, and the private sector's housing boom in the highly populated metropolitan area, have all contributed to the sharp increase in cement demand. Increases in demand in the early 1990s have been followed by an expansion of production capacity.

9. However, for the medium and long term, the increase in cement consumption is planned to remain at the 3-6 percent level because of government intervention.

10. Although cement production capacity has been expanded significantly, the demand has continued to outpace supply. Accordingly, it is expected that supply will continue to be tight even if the conservative 3-6 percent demand growth rate is assumed.

E. Malaysia

7. The nation's economy is expanding at an annual rate of more than 8 percent. An increase in cement consumption corresponds to the growth in the economy. However, since the government took control of cement pricing in 1982, cement manufacturers have been unwilling to make new capital investments. Accordingly, production capacity has not increased at the same pace as the economy.

8. Because of the imbalance between production and demand, cement imports have been increasing sharply since 1992. Clinker imports were 1.4 million tons in 1993 and 1.2 million tons in 1994. In 1996, this figure was expected to reach 2.5 million tons. Although some manufacturers are considering expanding milling capacity, the firm government control over pricing make the decision to invest difficult.

9. Malaysia was exporting cement before 1989 because of weak domestic consumption. However, this changed in 1989 and exports ceased when domestic consumption regained its strength. In 1993, the government banned exports.

10. Domestic cement demand has been increasing recently, causing short supply. Unless the government adjusts the price upward, the construction of new capacity is unlikely to meet this and all new requirements.

F. Philippines

11. Cement production in 1995 was 10.6 million tons. The production rate has been unable to keep up with the increase in cement demand due to the delays in repair of existing plant equipment and in construction of new facilities, and the country's shortage of electrical power. The balance of requirements have been filled by imports from Japan, People's Republic of China and Indonesia. Imports in 1995 were approximately 1.1 million tons. However, the economic recovery has attracted new investments from Taipei, China and other foreign partners.

Capacity is expected to increase to 17 million tons in 1997.

G. Singapore

12. Singapore does not have any integrated cement plants because of lack of limestone and other raw materials. Local cement manufacturers produce cement by grinding imported clinker. Currently, over 50 percent of this clinker is being imported from Japan.

13. Cement consumption has been growing steadily. Domestic consumption was 3 million tons in 1993 and 4.4 million tons in 1994. In 1995 it increased to 3.4 million tons and it is expected to grow steadily in 1996. Accordingly, Singapore should also continue to be a major importer of cement.

H. Taipei, China

14. The economy of Taipei, China has shown remarkable growth over the last 40 years. Production and demand for cement have increased accordingly. Domestic cement consumption increased steadily to 26.5 million tons in 1995.

15. However, reserves in many quarries will soon be exhausted. The development of new quarries and facilities is rarely approved because of the strong objections of neighboring communities in favor of environmental conservation. Cement companies are considering moving to districts with abundant resources, but no actual progress has been made.

16. Annual increases of several percent are expected in future cement demand. Production, however, is decreasing because of environmental constraints and exhaustion of limestone resources at existing plants. This is expected to force the market to rely even more heavily on imports.

I. Thailand

17. Annual production capacity was 31.7 million tons in 1994, and was expected to increase slightly to 34.4 million tons in 1995 after completion of a minor expansion.

18. The increase in cement demand has been sharp, and during the period from 1987 to 1991, the growth rate exceeded 20 percent per annum. This caused a cement shortage during 1990-1992. In 1992, the completion of new plants caused a surplus capacity of approximately 2.1 tpa. However, continued future cement exports from Thailand are not expected because of:

- (i) inadequate plant location; most plants are located inland, and underdeveloped infrastructure makes inland transportation costly;
- (ii) no harbor facilities for large-scale export; and
- (iii) extensive planned infrastructure construction projects, which will most likely consume any new capacity.

FINANCIAL EVALUATION

I. Assumptions

A. Inflation and Foreign Exchange Rates

1. The projected financial statements are in current terms using the domestic and international inflation rates shown in Table 1. Although the nominal exchange rate has remained constant in the past three years, the real exchange rate has appreciated as a result of substantial growth in the capital account surplus. The projections were conservatively based on the purchase power parity theory with the dong projected to depreciate against the dollar at the end of every fiscal year by the difference between the two inflation rates. The reason this methodology was used is to demonstrate that even if the dong depreciates, the Project can be financially attractive and service its debt. Sensitivity tests using a constant real exchange rate indicate that the Project will not be affected negatively (see table 5 page 16).

Table 1: Inflation and Foreign Exchange Rates

Item	1999	2000	2001	2002	2003
Inflation Rate (percent)					
Domestic	8.0	8.0	8.0	8.0	8.0
Foreign	2.4	2.4	2.4	2.4	2.4
Foreign Exchange Rate (D/\$)	12,935	13,642	14,388	15,175	16,005

B. Construction Period and Start-up

Construction Period: 30 months
Expected Start-up : 1 June 1999

C. Capital Cost (\$ million)

	Foreign Exchange	Local Exchange	Total Cost
Civil Works	76.0	30.4	106.4
Electrical and Mechanical Costs	189.6	12.5	202.1
Preoperating Expenses	3.3	3.2	6.5
Financial Expenses	1.8	0.0	1.8
Contingencies	15.7	2.6	18.3
Interest During Construction	32.9	0.0	32.9
Initial Working Capital	3.7	1.3	5.0
Total Cost	323.0	50.0	373.0

D. Capital Expenditure (percent)

	1996	1997	1998
Foreign Exchange Cost	21	47	32
Local Currency Cost	29	43	28

E. Plant Capacity

2. The designed plant capacity and projected utilization rate are shown in Table 2.

Table 2: Plant Capacity and Capacity Utilization

Item	1999	2000	2001	2002	2003
Plant Capacity (000 tons)	2,140	2,140	2,140	2,140	2,140
Capacity Utilization (percent)	83	100	100	100	100
Production Volume (000 tons)	888 ¹	2,140	2,140	2,140	2,140

F. Sales Prices

Gross sales prices include turnover tax of 10 percent.

Gross Sales Price at Factory/Distribution Terminal
= Wholesale Delivered Sales Price - Distribution Cost

3. Projected Gross Sales Price and Wholesale Delivered Sales Price per ton of cement in each region in 1999 are shown in Table 3. Prices are projected to increase with inflation.

Table 3: Sales Price/Ton

Destination	Form	Wholesale Delivered Sales Price	Distribution/Transportation Cost	Gross Sales Prices at Factory/Distribution Terminal
Domestic Sales Price (in D)				
North	Bag	1,048,000	206,000	842,000
Central	Bag	1,068,000	206,000	862,000
South	Bulk	1,149,000	54,900	1,094,000
	Bag	1,179,000	92,700	1,083,000
Export Price (in \$)	Bulk	\$51.5	\$10.7	\$40.8
Weighted Average Sales Price (Export & Domestic, at Factory, in D)				787.431

¹ The Project will operate only six months in 1999.

G. Regional Product Distribution

4. The production will be marketed based on the regional demand shown in Table 4. It is also assumed that 25 percent of the total production will be exported because of oversupply of cement in Vietnam.

Table 4: Regional Demand

<u>Destination</u>	<u>%</u>
Domestic	
North	16.4
Central	20.0
South	<u>38.0</u>
Subtotal	75.0
Export	<u>25.0</u>
Total	<u>100.0</u>

H. Variable Costs

5. Raw materials (limestone, silica, and clay) will be supplied from the Project's quarry. Coal will be supplied by a local coal mine under a long-term supply contract. Fuel oil will be purchased by the Nghi Son Cement Corporation in the local market. Gypsum will be imported from Lao People's Democratic Republic or Thailand. The variable cost of each product per ton as well as those of bagging and transportation are shown in Table 5. The cost breakdown of clinker, Ordinary portland cement and Pozzolan portland cement in 1999 is shown in Table 6.

Table 5: Variable Cost (per Ton)
(D million)

<u>Item</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
Clinker	162,221	175,198	189,214	204,351	220,700
Ordinary Portland Cement	214,241	231,381	249,891	269,882	291,473
Pozzolan Portland Cement	201,807	217,952	235,388	254,219	274,557
Bagging Cost	102,901	111,133	120,023	129,625	139,995
Transportation Cost (Factory to Ho Chi Minh City)	137,309	148,293	160,157	172,969	186,807

**Table 6: Cost Breakdown of Clinker, Ordinary Portland Cement
and Pozzolan Portland Cement
(D million)**

Material	Quantity	Cost
Clinker (per ton)		
Limestone, Clay, & Silica Sand	1.58 wet-kg	6,857
Iron Material	0.02 wet-kg	3,021
Light Oil	1.58 liters	3,146
Coal	135 wet-kg	62,283
Diesel Oil	0.547 liters	1,803
Electricity	62 kwh	59,592
Water	0.35 ton	96
Refractor	0.80 kg	11,188
Consumable	0.20 kg	13,888
Lubricant	0.02 kg	347
Total		162,221
Ordinary Portland Cement (per ton)		
Clinker	0.93 ton	150,866
Gypsum	0.047 wet-kg	20,235
Additives	0.028 wet-kg	1,625
Electricity	42 kwh	40,369
Consumable	0.028 kg	972
Lubricant	0.01 kg	174
Total		214,241
Pozzolan Portland Cement (per ton)		
Clinker	0.805 ton	130,587
Gypsum	0.047 wet-kg	20,235
Additives	0.163 wet-kg	9,470
Electricity	42 kwh	40,369
Consumables	0.028 kg	972
Lubricant	0.01 kg	174
Total		201,807

I. Fixed Costs

6. Fixed costs consist of labor, general and administrative costs, maintenance cost, land lease cost of both plant site and distribution terminal in Ho Chi Minh City, and management fee. Fixed costs are projected as shown in Table 7.

Table 7: Fixed Costs
(D million)

Item	1999	2000	2001	2002	2003
Labor	17,323	37,418	40,411	43,644	47,135
General & Administrative	8,131	17,563	18,968	20,486	22,125
Maintenance	44,001	95,039	102,642	110,854	119,722
Nghi Son Land Lease	5	5	6	6	7
Ho Chi Minh City Land Lease	1	1	1	1	1
Management Fee	16,263	35,129	37,939	40,974	44,252

J. Interest Expenses

7. Interest rates on the long-term loans for the Project are given in Table 8.

Table 8: Interest Rates for Long-term Loans

Financing Sources	Maturity Period (years)	Grace Period (years)	Interest Rate (%)
Bank	11.5	4	9.0
Bank's CFS	9	3.5	9.0
IFC	11.5	4	9.0
IFC "B" Loan	9	3.5	9.0
JEXIM Loan	12	4	7.0

K. Repayment Terms

8. Repayment terms of the senior loan will be based on the schedule in Table 9.

Table 9: Repayment Terms
(percent)

Source	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Bank	5	10	10	10	11.25	12.5	13.75	17.5	10	100
Banks CFS	12.5	12.5	17.5	17.5	20	20				
IFC	5	10	10	10	11.25	12.5	13.75	17.5	10	100
IFC "B" Loan	12.5	12.5	17.5	17.5	10	20				

9. Repayment of the JEXIM loan will be made on an equal installment basis.

L. Depreciation

10. The depreciation expenses of the Project in accordance with the accounting standard are shown in Table 10.

Table 10: Depreciation Expenses

Assets	Period	Salvage Value (%)	Method
Building	25 years	0.0	Straight line
Machinery & Equipment	10 years	0.0	Straight line
Others	10 years	0.0	Straight line

M. Gain (Loss) on Foreign Exchange

11. The liabilities on the books are reevaluated based on the projected foreign exchange market rate at the end of each fiscal year. Gains and losses are entered into the "Year End Adjustment" account.

N. Taxes

12. The Project has been granted full income tax exemption for the first four years and 50 percent for the second four years. During the concession period, the applicable tax rate will be 7.5 percent. After the concession period, tax rate of 15 percent will be applied.

13. A 10 percent turnover tax is charged on domestic sales.

O. Working Capital Requirements

Cash	=	Equivalent to \$250,000 in dong
Accounts Receivable	=	15 days of sales
Accounts Payable	=	6 days of purchase
Inventories	=	18 days of consumption

P. Fixed Assets

14. Fixed assets are recorded at historical cost.

Q. Financial Internal Rate of Return (FIRR)

- The cashflow projection is based on 1996 constant prices
- Excludes interest during construction and price escalation

II. Results

1.	Income Statement	Page 8
2.	Cashflow Statement	Page 9
3.	Balance Sheet	Page 10
4.	Financial Internal Rate of Return	Page 11
5.	Weighted Average Cost of Capital	Page 12

NGHI SON CEMENT CORPORATION
Income Statement
(D million)

Item	Fiscal Year Ending 31 December														
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Production Amount ('000 tons)	888	2,140	2,140	2,140	2,140	2,140	2,140	2,140	2,140	2,140	2,140	2,140	2,140	2,140	2,140
Revenues															
Revenues (Domestic Sales)	646,836	1,683,452	1,820,844	1,966,569	2,124,013	2,294,071	2,477,454	2,676,034	2,889,478	3,121,031	3,370,866	3,640,674	3,931,579	4,246,031	4,585,709
Revenues (Export)	117,169	305,073	328,685	355,590	384,455	414,510	447,656	483,187	522,325	564,299	609,302	658,782	710,540	768,755	828,295
Turnover Tax (Domestic Sales)	(64,684)	(168,345)	(182,084)	(196,659)	(212,401)	(229,407)	(247,745)	(267,603)	(288,948)	(312,103)	(337,087)	(364,067)	(393,159)	(424,603)	(458,571)
Total	599,321	1,820,180	1,967,444	2,125,520	2,296,066	2,479,175	2,677,364	2,891,618	3,122,856	3,373,227	3,643,081	3,935,388	4,248,961	4,590,183	4,955,433
Operational Expenses															
Variable Production Cost															
Production Cost	250,529	651,978	665,146	718,357	775,826	837,892	904,923	977,317	1,055,502	1,139,943	1,231,138	1,329,629	1,435,999	1,550,879	1,674,950
Transportation Costs	46,278	120,433	130,068	140,474	151,711	163,848	176,956	191,113	206,402	222,914	240,747	260,007	280,807	303,272	327,534
Total	296,806	772,412	795,214	858,831	927,537	1,001,740	1,081,879	1,168,430	1,261,904	1,362,856	1,471,885	1,589,636	1,716,807	1,854,151	2,002,483
Gross Profit	402,515	1,047,768	1,172,230	1,266,689	1,368,529	1,477,435	1,595,485	1,723,188	1,860,952	2,010,371	2,171,196	2,345,753	2,532,155	2,736,032	2,952,950
Labor	17,323	37,418	40,411	43,644	47,135	50,906	54,979	59,377	64,127	69,257	74,798	80,782	87,244	94,224	101,762
General & Administrative	8,131	17,564	18,969	20,486	22,125	23,895	25,807	27,871	30,101	32,509	35,110	37,918	40,952	44,228	47,766
Maintenance	44,001	95,041	102,645	110,856	119,725	129,303	139,647	150,819	162,884	175,915	189,988	205,187	221,602	239,330	258,477
Nghi Son Land Lease	5	5	6	6	7	7	8	8	9	10	11	12	12	13	15
Ho Chi Minh City Terminal Land Lease	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3
Management Fee	16,263	35,129	37,939	40,974	44,252	30,038	32,441	35,037	37,840	40,867	44,136	47,667	51,480	55,599	60,047
Depreciation	140,532	281,065	281,065	281,065	283,765	286,614	289,618	292,787	296,128	243,183	246,901	246,901	250,821	254,956	259,318
Total	226,256	466,222	481,035	497,032	514,310	517,916	539,497	562,732	587,750	614,688	587,228	618,469	652,115	688,354	727,387
Operating Profit	176,258	581,546	691,196	769,657	854,220	959,518	1,055,988	1,160,456	1,273,202	1,395,682	1,583,968	1,727,283	1,880,040	2,047,678	2,225,563
Interest Expenses	0	578,295	254,405	231,734	204,274	171,732	132,956	95,424	58,381	19,115	0	0	0	0	0
Year-end Adjustment on Foreign Debts	180,345	190,208	180,610	167,033	149,646	129,858	105,774	77,937	54,799	26,461	0	0	0	0	0
Pretax Profit	(4,087)	(186,957)	256,181	370,890	500,299	657,928	817,258	987,095	1,160,022	1,350,106	1,583,968	1,727,283	1,880,040	2,047,678	2,225,563
Income Tax	0	0	0	0	0	136,432	152,759	169,458	375,965	414,883	458,378	497,538	539,527	585,274	634,207
Net Profit	(4,087)	(186,957)	256,181	370,890	379,999	521,496	664,499	817,637	784,057	935,223	1,125,590	1,229,746	1,340,513	1,462,404	1,591,356
Ratios															
Gross Profit Margin	57.6%	57.6%	59.6%	59.6%	59.6%	59.6%	59.6%	59.6%	59.6%	59.6%	59.6%	59.6%	59.6%	59.6%	59.6%
Operating Profit Margin	25.2%	31.9%	35.1%	36.2%	37.2%	38.7%	39.4%	40.1%	40.8%	41.4%	43.5%	43.9%	44.2%	44.6%	44.9%
Net Profit Margin	(0.6%)	(10.3%)	13.0%	17.4%	16.6%	21.0%	24.8%	28.3%	25.1%	27.7%	30.9%	31.2%	31.5%	31.9%	32.1%
Return on Average Assets	(0.1%)	(4.2%)	6.0%	8.6%	8.7%	11.8%	14.7%	17.0%	15.2%	17.0%	17.9%	16.5%	15.3%	14.4%	13.6%
Return on Average Equity	(0.4%)	(17.5%)	23.3%	26.2%	21.2%	23.3%	23.5%	22.9%	17.9%	17.9%	18.0%	16.5%	15.4%	14.4%	13.7%

NGHI SON CEMENT CORPORATION
Cash Flow Statement
(D million)

Item	Fiscal Year Ending 31 December														
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Sources:															
Internal Cash Generation:															
Net Income After Taxes	(4,087)	(186,957)	256,181	370,890	379,999	521,496	664,499	817,637	784,057	935,223	1,125,590	1,229,746	1,340,513	1,462,404	1,591,356
Depreciation	140,532	281,065	281,065	281,065	281,065	283,765	286,614	289,618	292,787	296,128	243,183	246,901	250,821	254,956	259,318
Interest Expense	0	578,295	254,405	231,734	204,274	171,732	132,956	95,424	58,381	19,115	0	0	0	0	0
Year-end Adjustment on Foreign Debts	180,345	190,208	180,610	167,033	149,646	129,858	105,774	77,937	54,799	26,461	0	0	0	0	0
Borrowings:															
Long-term Borrowings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Share Capital Increase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Sources	316,791	862,611	972,260	1,050,722	1,014,984	1,106,851	1,189,842	1,280,616	1,190,023	1,276,928	1,368,773	1,476,646	1,591,334	1,717,360	1,850,674
Applications:															
Capital Expenditures:															
Acquisition of Capital Assets	0	0	0	0	0	40,512	42,727	45,064	47,528	50,127	52,869	55,760	58,809	62,026	65,418
Debt Service:															
Amortization	0	365,716	428,879	484,960	511,481	570,258	614,796	501,022	572,979	510,325	0	0	0	0	0
Interest on Long-term Debt	0	578,295	254,405	231,734	204,274	171,732	132,956	95,424	58,381	19,115	0	0	0	0	0
Increase (Decrease) in Working Capital	43,532	65,395	7,408	9,244	9,972	11,015	11,612	12,546	13,533	14,639	15,780	17,071	18,339	19,906	21,354
Total Applications	43,532	1,009,405	690,693	725,938	725,938	793,517	802,091	654,056	692,421	594,207	68,649	72,831	77,148	81,931	86,772
Net Cash Flow	273,259	(146,795)	281,567	324,783	289,257	313,335	387,751	626,560	497,603	682,721	1,300,124	1,403,815	1,514,186	1,635,429	1,763,902
Short-term Investment															
At the Beginning	0	273,259	126,464	408,032	732,815	1,022,072	1,335,407	1,723,158	2,349,719	2,847,321	3,530,042	4,830,167	6,233,982	7,748,168	9,383,596
At the End	273,259	126,464	408,032	732,815	1,022,072	1,335,407	1,723,158	2,349,719	2,847,321	3,530,042	4,830,167	6,233,982	7,748,168	9,383,596	11,147,499
Ratios															
Debt Service Coverage Ratio															
for Total Debt (times)	0.00	0.91	1.42	1.47	1.42	1.49	1.59	2.15	1.88	2.41	0.00	0.00	0.00	0.00	0.00
for Senior Loans (times)	0.00	2.31	3.49	3.39	3.30	3.33	3.51	6.75	5.22	9.75	0.00	0.00	0.00	0.00	0.00
Interest Service Coverage Ratio (times)	0.00	1.49	3.82	4.53	4.97	6.45	8.95	13.42	20.38	66.80	0.00	0.00	0.00	0.00	0.00

NGHI SON CEMENT CORPORATION
Balance Sheets
(D million)

Item	Fiscal Year Ending 31 December														
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Assets															
Current Assets															
Cash	3,234	3,410	3,597	3,794	4,001	4,220	4,451	4,694	4,951	5,222	5,507	5,808	6,126	6,461	6,814
Account Receivable	31,834	82,855	89,564	96,757	104,519	112,858	121,880	131,634	142,158	153,555	165,840	179,144	193,422	208,949	225,584
Inventory	14,840	38,621	39,761	42,942	46,377	50,087	54,094	58,421	63,095	68,143	73,594	79,482	85,940	92,708	100,124
Short-term Investment	273,259	126,464	408,032	732,815	1,022,072	1,335,407	1,723,158	2,349,719	2,847,321	3,530,042	4,830,167	6,233,982	7,748,168	9,383,596	11,147,499
Total Current Assets	323,166	251,350	540,953	876,308	1,176,970	1,502,572	1,903,583	2,544,468	3,057,526	3,756,962	5,075,108	6,498,416	8,033,555	9,691,714	11,480,021
Fixed Assets															
Buildings	1,319,518	1,319,518	1,319,518	1,319,518	1,319,518	1,319,518	1,319,518	1,319,518	1,319,518	1,319,518	1,319,518	1,319,518	1,319,518	1,319,518	1,319,518
Plant & Machinery	2,577,213	2,577,213	2,577,213	2,577,213	2,577,213	2,617,724	2,660,451	2,705,515	2,753,043	2,803,171	2,856,040	2,911,800	2,970,609	3,032,635	3,098,052
Other Fixed Assets	564,696	564,696	564,696	564,696	564,696	564,696	564,696	564,696	564,696	564,696	564,696	564,696	564,696	564,696	564,696
Less: Accumulated Depreciation	140,532	421,597	702,661	983,726	1,264,790	1,548,556	1,835,169	2,124,787	2,417,574	2,713,702	2,956,886	3,203,786	3,454,608	3,709,564	3,968,881
Total Fixed Assets	4,320,894	4,039,830	3,758,765	3,477,701	3,196,636	2,953,383	2,709,496	2,464,942	2,219,683	1,973,682	1,783,368	1,592,227	1,400,215	1,207,285	1,013,385
Total Assets	4,644,060	4,291,180	4,299,718	4,354,008	4,373,606	4,455,954	4,613,078	5,009,410	5,277,209	5,730,645	6,858,476	8,090,643	9,433,771	10,898,999	12,493,405
Liabilities															
Current Liability															
Account Payable	6,376	15,959	16,586	17,913	19,346	20,598	22,246	24,026	25,948	28,024	30,265	32,687	35,302	38,126	41,176
Current Portion of Long-term Debts	346,753	406,641	459,813	484,960	540,689	582,918	475,043	543,269	483,864	0	0	0	0	0	0
Fixed Liability															
Long-term Debts	3,131,337	2,895,941	2,594,499	2,251,426	1,833,862	1,351,233	950,086	458,775	0	0	0	0	0	0	0
Total Liabilities	3,484,465	3,318,542	3,070,899	2,754,299	2,393,898	1,954,749	1,447,375	1,026,069	509,812	28,024	30,265	32,687	35,302	38,126	41,176
Shareholders Equity															
Paid-in-Capital	1,163,682	1,163,682	1,163,682	1,163,682	1,163,682	1,163,682	1,163,682	1,163,682	1,163,682	1,163,682	1,163,682	1,163,682	1,163,682	1,163,682	1,163,682
Retained Earnings	(4,087)	(191,044)	65,137	436,027	816,026	1,337,523	2,002,022	2,819,659	3,603,716	4,538,939	5,664,529	6,894,274	8,234,787	9,697,191	11,288,547
Total Shareholder's Equity	1,159,595	972,638	1,228,819	1,599,709	1,979,708	2,501,204	3,165,704	3,983,341	4,767,397	5,702,621	6,828,211	8,057,956	9,398,469	10,860,873	12,452,229
Total Liability and Shareholder's Equity	4,644,060	4,291,180	4,299,718	4,354,008	4,373,606	4,455,954	4,613,078	5,009,410	5,277,209	5,730,645	6,858,476	8,090,643	9,433,771	10,898,999	12,493,405
Ratios															
Current Ratio (times)	0.92	0.59	1.14	1.74	2.10	2.49	3.83	4.49	6.00	134.06	167.69	198.81	227.57	254.20	278.80
Total Liabilities / Equity (liabilities in %)	300.5	341.2	249.9	172.2	120.9	78.2	45.7	25.8	10.7	0.5	0.4	0.4	0.4	0.4	0.3
Senior Debt/(Equity + Subordinate Debt) (liabilities in %)	40.3	43.3	38.8	32.3	26.0	18.4	10.6	6.6	2.3						

NGHI SON CEMENT CORPORATION
Financial Internal Rate of Return
(D million)

Year	Investment	Revenues	Operation & Maintenance Cost	Benefit
1996	(759,159)	-	-	(759,159)
1997	(1,725,666)	-	-	(1,725,666)
1998	(916,652)	-	-	(916,652)
1999	-	555,215	303,665	251,550
2000	-	1,337,867	703,842	634,025
2001	-	1,339,621	677,305	662,316
2002	-	1,339,621	677,305	662,316
2003	-	1,339,621	677,305	662,316
2004	(26,460)	1,339,621	667,714	645,448
2005	(26,460)	1,339,621	667,714	645,448
2006	(26,460)	1,339,621	667,714	645,448
2007	(26,460)	1,339,621	667,714	645,448
2008	(26,460)	1,339,621	667,714	645,448
2009	(26,460)	1,339,621	667,714	645,448
2010	(26,460)	1,339,621	667,714	645,448
2011	(26,460)	1,339,621	667,714	645,448
2012	(26,460)	1,339,621	667,714	645,448
2013	(26,460)	1,339,621	667,714	645,448
2014	(26,460)	1,339,621	667,714	645,448
2015	(26,460)	1,339,621	667,714	645,448
2016	(26,460)	1,339,621	667,714	645,448
2017	(26,460)	1,339,621	667,714	645,448
2018	(26,460)	1,339,621	667,714	645,448
<hr/>				
FIRR =		14.3	percent	(before tax)
		12.6	percent	(after tax)

NGHI SON CEMENT CORPORATION
Weighted Average Cost of Capital
(\$ million)

Item	% of Financing	Interest / Cost (%)	Weighted Average Cost of Capital
Equity			
Share Issue	27.9	13.0	3.6
Total	27.9		3.6
Debt			
Bank	8.0	9.0	0.7
Bank CFS Loan	5.8	9.0	0.5
IFC	8.0	9.0	0.7
IFC "B" Loan	5.8	9.0	0.5
JEXIM	44.5	7.0	3.1
Total	72.1		5.6
Weighted average cost of capital in nominal terms:			9.2
Projected inflation rate:			2.4
Weighted average cost of capital in real terms:			6.8

ECONOMIC EVALUATION

I. Assumptions

A. General

1. For cement and traded inputs, import or export parity prices are used as shadow prices. For nontradable goods, a standard conversion factor for Viet Nam of 0.93¹ has been used to convert the prices of nontradable goods and services into international prices. All prices and costs are expressed in 1996 constant values. The economic operating life is assumed to be 20 years.

B. Capital Cost

2. Imported goods are considered tradable while local goods are considered nontradable and therefore subject to a standard conversion factor of 0.93. Import duties, taxes, price contingencies, and interest during construction have been excluded from the Project cost. Local labor cost is subject to a standard conversion factor of 0.6 taking into account the abundance of labor.

C. Benefits

3. Viet Nam is presently a net importer of cement. However as a result of additional production capacity added by new joint ventures and the possible oversupply of cement in the market, all joint ventures including the Project are assumed to export 25 percent of their production.

4. The estimated economic value of cement marketed locally has taken into account (i) the lowest border price of imported cement (Cost, Insurance, Freight) Vung Tau from the People's Republic of China, (ii) port handling costs; and (iii) the lowest cost of inland transport of NSCC's cement to various regions relative to that of imported cement. The port handling costs and inland transportation cost are considered nontradable and are subject to a standard conversion factor. An economic benefit of cement marketed locally is calculated to be D754,772 per ton. For the benefits of exported cement, the Freight On Board Nghi Son price of D418,950 is used. Details of the calculation of the economic benefit are shown in Table 1.

¹ Notes on Social-Cost Benefit Analysis, issued by J. K. Johnson, ADB Seminar on Economic Analysis of Projects, 1986.

**Table1: Economic Benefit per ton of Cement
(D million)**

Item	Cost (Foreign/Local)		Benefit
For Cement Marketed Locally			
Price of Imported Cement	Foreign	529,200	(\$48.0)
Port Handling Costs			
Port Charge	Local	10,253	
Handling Charge	Local	61,520	
Inland Transport Cost	Local	153,799	
Total		754,772	
For Cement Exported			
Export Price	Foreign	418,950	(\$38.0)

D. Costs

5. The estimate economic values of raw materials such as limestone, clay and silica sand, which are considered nontradable, are their local mining cost subject to conversion factors.

6. A long run marginal cost of electricity of \$0.0564/kilowatt hour for 110 kilovolt subtransmission line calculated by the World Bank¹ is used for the economic evaluation. The imported price of diesel oil (\$0.12/liter) and light oil (\$0.19/liter) plus the estimated port handling costs, which are subject to conversion factors, are considered as the economic costs of diesel oil and light oil.

7. As coal is considered tradable, the international price (\$34.35/ton) plus estimated ocean freight from the People's Republic of China (\$1.0/ton) and port handling charges are used for the economic calculation. The port handling charges of coal are contingent on the conversion factor.

8. A conversion factor of 0.6 is applied to local labor cost taking into account the abundance of labor. All imported goods including cement bags are considered tradable goods. The economic cost of each component in detail is shown in Table 2.

¹ Viet Nam Energy Sector Investment and Policy Review, World Bank, June 18 1993

**Table 2 : Economic Cost per ton of Cement
(D million)**

Item	Cost (Foreign/Local)	Benefit
Foreign Components	Foreign	35,865
Local Components	Local	64,787
Local Labor	Local	9,292
Electricity for Production	(104 kwh)	64,668
Coal	(135 wet-kg)	51,126
Ocean Freight		11
Port Handling Charge		62
Light Oil	(1.58 liters)	2,090
Port Handling Charge		17
Diesel Oil	(0.547 liters)	1,146
Port Handling Charge		6
Electricity for Bagging	(0.65 kwh)	404

II. Results

1. Economic Internal Rate of Return

NGHI SON CEMENT CORPORATION
Economic Internal Rate of Return
(D million)

Year	Investment	Benefit	Operation & Maintenance Cost	Net Benefit
1996	(698,059)	-	-	(698,059)
1997	(1,637,118)	-	-	(1,637,118)
1998	(983,891)	-	-	(983,891)
1999	-	595,752	306,005	289,747
2000	-	1,435,547	712,133	723,413
2001	-	1,435,547	685,626	749,920
2002	-	1,435,547	685,626	749,920
2003	-	1,435,547	685,626	749,920
2004	(26,460)	1,435,547	676,035	733,052
2005	(26,460)	1,435,547	676,035	733,052
2006	(26,460)	1,435,547	676,035	733,052
2007	(26,460)	1,435,547	676,035	733,052
2008	(26,460)	1,435,547	676,035	733,052
2009	(26,460)	1,435,547	676,035	733,052
2010	(26,460)	1,435,547	676,035	733,052
2011	(26,460)	1,435,547	676,035	733,052
2012	(26,460)	1,435,547	676,035	733,052
2013	(26,460)	1,435,547	676,035	733,052
2014	(26,460)	1,435,547	676,035	733,052
2015	(26,460)	1,435,547	676,035	733,052
2016	(26,460)	1,435,547	676,035	733,052
2017	(26,460)	1,435,547	676,035	733,052
2018	(26,460)	1,435,547	676,035	733,052
EIRR =		16.6	percent	