

(On-site evaluation: July 2007)

## Ex-Post Monitoring of Completed ODA Loan Projects

Evaluator: Hajime Sonoda (Global Group 21 Japan Ltd.)  
Project Name: Nepal - Udaipur Cement Project (L/A No. NE-P4)

### Loan Outline

Loan Amount/Disbursement Amount : 18,770 million yen/ 18,749 million yen  
Loan Agreement : October 1987  
Loan Completion : October 1995  
Ex-Post Evaluation : FY1997  
Executing Agency : Udaipur Cement Industries Ltd. (UCIL)

### Project Objective

This project constructed a cement plant that produces 800 tons/day and other related facilities in Udaipur, located in eastern Nepal, to meet the rapidly increasing demand for cement while also improving the country's self-sufficiency ratio, and thereby contribute to promoting economic growth through promoting import substitution, and contribute to promoting economic growth through saving foreign exchange and creating jobs.

Consultants: Onoda Engineering Co., Ltd.  
Contractors: Tomen Corporation.

## Overview of Results

Item	At Time of Ex-Post Evaluation	At Time of Monitoring																																																																																																		
<b>Effectiveness and Impact</b>		<div style="border: 1px solid black; padding: 5px;"> <p>Cement production amounts had decreased even further than amounts measured at the ex-post evaluation despite the technical cooperation conducted by SAPS and JICA after the ex-post evaluation, and has been at less than 40% in recent years. The cement is of an extremely high quality made using high grade limestone, making it an attractive product; however, supply is unstable as the plant frequently stops operations for long periods of time.</p> </div>																																																																																																		
<b>Effectiveness</b>	<p>(1) Cement production and sales amounts</p> <p>Average cement production amounts at this plant are stuck at approximately 50% of the plant's production capacity due to unstable power supply and difficulty in procuring spare parts. The main reasons for this are 1) inadequate and unstable power supply, 2) difficulty in procuring spare parts, and 3) the stalling of mining operations and wetting of materials due to heavy rains. (*The unstable power supply is due to a chronic supply deficiency produced by the delay in development of domestic power sources, and blackouts occur frequently. Furthermore, factors for the dearth of spare parts include UCIL's lack of ability for bearing debt, and the great amount of time that is needed in acquiring the required approval from Nepalese parliament regarding the budget, as UCIL is a government-run company. Due to these factors, parts are not supplied steadily, and the situation is in a negative spiral, inviting further problems.)</p> <p style="text-align: center;">&lt;Table 1 Monthly cement production&gt;</p> <p style="text-align: right;">(Unit: tons)</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 10%;"></td> <td style="width: 10%;">Jul</td> <td style="width: 10%;">Aug</td> <td style="width: 10%;">Sep</td> <td style="width: 10%;">Oct</td> <td style="width: 10%;">Nov</td> <td style="width: 10%;">Dec</td> <td style="width: 10%;">Jan</td> <td style="width: 10%;">Feb</td> </tr> </table>		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	<p>(1) Cement Production and Sales Amounts</p> <p>After commencing plant operations, an ODA loan consultant resided at the plant until November 1994 providing technical assistance. Nevertheless, the operation ratio (actual amount produced/planned production amount) stayed at 60%<sup>1</sup>. One of the reasons for this is thought to be the fact that the plant is located far away from the capital city of Katmandu, meaning that highly capable personnel were not assembled for management positions; however, details are unclear.</p> <p style="text-align: center;">&lt;Table 3 Changes in production, sales, operation ratio, etc.&gt;</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">Kiln operating time</th> <th colspan="2">Clinker production (tons)</th> <th colspan="2">Cement production (tons)</th> <th colspan="2">Cement sales (tons)</th> </tr> <tr> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Planned value</td> <td>7920</td> <td>100.0%</td> <td>264000</td> <td>100.0%</td> <td>277200</td> <td>100%</td> <td>277200</td> <td>100%</td> </tr> <tr> <td>93/94</td> <td></td> <td></td> <td>123,363</td> <td>46.7%</td> <td>129,112</td> <td>16.4%</td> <td>128,782</td> <td>46.5%</td> </tr> <tr> <td>94/95</td> <td></td> <td></td> <td>157,593</td> <td>59.7%</td> <td>165,734</td> <td>59.8%</td> <td>169,594</td> <td>61.2%</td> </tr> <tr> <td>95/96</td> <td></td> <td></td> <td>123,379</td> <td>46.7%</td> <td>130,871</td> <td>47.2%</td> <td>130,981</td> <td>47.3%</td> </tr> <tr> <td>96/97</td> <td></td> <td></td> <td>95,272</td> <td>36.1%</td> <td>92,770</td> <td>33.5%</td> <td>89,885</td> <td>32.4%</td> </tr> <tr> <td>97/98</td> <td></td> <td></td> <td>122,675</td> <td>46.5%</td> <td>131,689</td> <td>48.5%</td> <td>132,564</td> <td>47.8%</td> </tr> <tr> <td>98/99</td> <td></td> <td></td> <td>94,195</td> <td>35.7%</td> <td>99,565</td> <td>35.9%</td> <td>101,876</td> <td>36.8%</td> </tr> <tr> <td>99/00</td> <td></td> <td></td> <td>107,474</td> <td>40.7%</td> <td>110,497</td> <td>39.9%</td> <td>109,461</td> <td>39.5%</td> </tr> </tbody> </table>		Kiln operating time		Clinker production (tons)		Cement production (tons)		Cement sales (tons)										Planned value	7920	100.0%	264000	100.0%	277200	100%	277200	100%	93/94			123,363	46.7%	129,112	16.4%	128,782	46.5%	94/95			157,593	59.7%	165,734	59.8%	169,594	61.2%	95/96			123,379	46.7%	130,871	47.2%	130,981	47.3%	96/97			95,272	36.1%	92,770	33.5%	89,885	32.4%	97/98			122,675	46.5%	131,689	48.5%	132,564	47.8%	98/99			94,195	35.7%	99,565	35.9%	101,876	36.8%	99/00			107,474	40.7%	110,497	39.9%	109,461	39.5%
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb																																																																																												
	Kiln operating time		Clinker production (tons)		Cement production (tons)		Cement sales (tons)																																																																																													
Planned value	7920	100.0%	264000	100.0%	277200	100%	277200	100%																																																																																												
93/94			123,363	46.7%	129,112	16.4%	128,782	46.5%																																																																																												
94/95			157,593	59.7%	165,734	59.8%	169,594	61.2%																																																																																												
95/96			123,379	46.7%	130,871	47.2%	130,981	47.3%																																																																																												
96/97			95,272	36.1%	92,770	33.5%	89,885	32.4%																																																																																												
97/98			122,675	46.5%	131,689	48.5%	132,564	47.8%																																																																																												
98/99			94,195	35.7%	99,565	35.9%	101,876	36.8%																																																																																												
99/00			107,474	40.7%	110,497	39.9%	109,461	39.5%																																																																																												

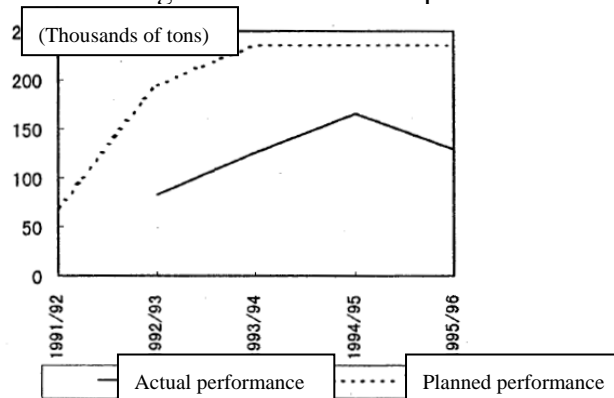
1992/93	-	-	-	-	3480	11002	11592	12170
1993/94	-	2642	8300	7010	582	8607	14583	12870
1994/95	8993	6559	13375	11239	13999	14763	13728	15958
1995/96	15016	7687	15162	17800	10633	16545	4366	13350

	Mar	Apr	May	Jun	Year Total
1992/93	5371	16152	10435	12265	82413
1993/94	13873	18531	22775	16363	126136
1994/95	15958	17916	15432	17688	165708
1995/96	16237	7089	4329	643	128857

Supply Capacity	a/h
184800	44.60%
277200	45.50%
277200	59.80%
277200	46.50%

(Source: UCIL materials)

<Chart 2 Changes in UCIL cement production amounts>



00/01			97,712	37.0%	105,919	38.2%	105,920	38.2%
01/02	4,568	57.7%	135,723	51.4%	143,730	51.9%	143,730	51.8%
02/03	3,429	43.3%	96,797	36.7%	102,487	37.0%	102,487	37.0%
03/04	3,208	40.5%	88,576	33.6%	89,057	32.1%	87,865	31.7%
04/05	3,362	42.4%	91,625	34.7%	91,052	32.8%	86,405	31.2%
05/06	2,926	36.9%	75,625	28.7%	88,690	32.0%	88,691	32.0%
06/07	3,686	46.5%	108,451	41.1%	106,737	38.5%	106,550	39.4%

(Source: UCIL response to a questionnaire.)

Responding to the further decline in the operation ratio following the conclusion of technical assistance, SAPS was conducted in FY1997 and continued technical cooperation was provided by JICA in order to ensure that those recommendations were implemented. A long-term specialist stayed at the plant for a period of three years beginning in March 1999 to oversee plant operations, and a total of three short-term specialists (totaling 10 man-months) provided technical assistance for maintenance by FY2004. Under the direction of the newly appointed general manager in FY2000, upon advice from the long-term specialist a portion of the malfunctioning facilities was restored, increasing the operation ratio to 52% in FY2001.

However, the operation ratio again declined after the long-term specialist left their position, bottoming out at the lowest-ever level of 32%~33% during the three-year period between FY2003 and FY2005. Later after the appointment of the current general manager, the operation ratio recovered to 39% in FY2006 due to reasons such as a portion of the production facilities being restored.

#### Direct causes for production declines

UCIL's cement production facilities have adopted Japanese technologies; however, they are not being adequately operated and maintained, malfunctions and trouble are common, and personnel

	<p>(Source: UCIL materials)</p>	<p>cannot use the facilities well, as they are unable to utilize its automated operations. The direct cause for production being low is that the clinker pyroprocess handled by the rotary kiln—the center of the production process—stops due to various different reasons<sup>ii</sup>. The kiln was planned to run 24 hours a day for 330 days a year, totaling 7,920 hours a year; however, it has only run for an average of 3,540 hours a year (45% compared to the planned rate) over the past six years. The main reasons that the kiln stops are:</p> <ul style="list-style-type: none"> <li>➤ In addition to frequent malfunctions and trouble with the production facilities, it takes time to restore the facilities due to a dearth in stock of spare parts<sup>iii</sup>. (A loss of approximately 20%~25% in production every year.)</li> <li>➤ It becomes necessary to stop the kiln for longer than planned when changing the heat-resistant bricks within the kiln that are frequently damaged or lost<sup>iv</sup>. (A loss of 5%~28% in production per year.)</li> <li>➤ Facility shutdown due to frequent blackouts and voltage drops<sup>v</sup>. (A loss of around 5% in production every year.) This is also one cause of the frequent facility malfunctions and trouble.</li> <li>➤ Supply shortages of limestone induced by traffic interruptions between the mining site and the plant due to trouble with the ropeway between the plant and limestone mining site (12.5 km) and general strikes<sup>vi</sup>. (A loss of approximately 23% in production in FY2003 and FY2004.)</li> <li>➤ Stops in production due to an increase in general strikes and strikes by plant workers in recent years<sup>vii</sup>. (A loss of about 10% in production since FY2003.):</li> </ul> <p>In addition to the reduction in kiln operating time, production amounts are being further decreased to about 80%~85% of rated production value per hour. The reasons for this are thought to be the decrease in capacity of various facilities, the inability to conduct the clinker pyroprocess under optimal conditions as automatic operations are hindered by problems with various measurement devices, and a decrease in productivity because of frequent shutdowns. Furthermore, coal consumption compared to productivity is at a 40%~50% increase of the rated value, greatly lowering energy efficiency within the production process.</p>
--	---------------------------------	--

(2) Handling increases in domestic demand for cement  
When comparing the demand for cement in Nepal with  
forecasts at the time of appraisal (yearly growth rate:  
7.5%), while there was a slight decrease in demand during

#### Operations management issues

In addition to the numerous times the general manager has changed over the past 20 years (14 times), the following management related issues can also be noted as remote causes for the frequent and long-term kiln shutdowns<sup>viii</sup>.

- Production plan management: There is a lack of capacity to produce an adequate production plan that takes into consideration the various factors such as the facility's condition and external factors, including a plan for procuring materials, and to manage the facility's operations and production.
- Facility operation and maintenance: There is a lack of spare parts and no preventive or planned maintenance. Facility are only checked and fixed when trouble occurs; however, the facilities shut down for long periods of time as there are often no spare parts, and procurement of those parts requires a great deal of time.
- Labor management: There is a trend for promotions to be decided based on seniority or for personal or political benefit with no relation to a worker's abilities or duties. There is not much educational training being conducted other than assistance from Japan. The common worker is not well-disciplined, there are vigorous labor union activities with a political backdrop, and performance is extremely low regarding facility operation, examinations, and maintenance.

#### Quality

The concrete using the plant's cement is extremely strong due to the high quality of the main raw material used, limestone, and is superior over products from India and other domestic products. However, minor modifications of ingredients and processing conditions are impossible because the production facility's various measuring devices are broken, limiting quality management. A sample is taken and strength tests are conducted daily at the plant; however, a variation in strength of approximately 10% currently exists. Moreover, according to the cement dealers, it is believed that the strength of the cement has decreased a little compared with when operations began.

	<p>FY1995 and FY1996, the average yearly growth rate is at 8.1%, changing with a general upward trend.</p> <p>The quality of the cement produced at UCIL exceeds that of cement produced in India, and is on par with the standards of cement produced in Japan. Moreover, compared to its quality, cost is maintained to be relatively affordable. Therefore, contractors use this cement by preference in major infrastructure projects, and it is receiving very high evaluations.</p>	<p>(2) Handling domestic cement demand  The cement consumption in Nepal has increased by 67% (annual rate of approximately 6.6%) in over the nine years since 1997 when it was at 900,000 tons. It reached approximately 1.5 million tons in FY2006<sup>ix</sup>, and the demand for cement is thought to continue to increase at a more rapid pace due to the recovery of development investments accompanying political stability. The amount of domestic cement production in FY2006 was approximately 640,000 tons, supplying for 43% of the demand<sup>x</sup>. The leftover demand was met through imports, mainly from India.</p> <p>This plant's share in the domestic cement market during FY2006 was approximately 7%. While the product is high quality, the plant is not used by contractors that receive contracts for large-scale construction projects as production is low and unstable. The plant is mostly used for houses constructed by individuals and small-scale business facilities<sup>xi</sup>. Seventy-five percent of the ultimate consuming region is the surrounding areas of Katmandu.</p> <p>According to cement dealers, UCIL's cement is appealing as it is popular and carries a high sales margin; however, it is difficult to handle the product because of the extremely unstable supply due to the plant often shutting down operations for long periods of time. Dealers wish for a steady supply, even if only in small amounts.</p>
<p><b>Impact</b></p>	<p>(1) Foreign exchange saving through cement import Substitution  There is worry that there will be long-term increases in the amount of cement imported, as new investments for expanding supply capacity were not seen at the time of ex-post evaluation. However, it can be said that there was a contribution as this project contributes to reducing imports while simultaneously restraining the outflow of foreign currency.</p>	<p>(1) Foreign exchange saving through cement import substitution  The amount of sales of cement for this project during FY2006 was 107,000 tons, totaling revenue of approximately 800 million rupees. When considering the import cost (approximately 1/3 of sales revenue) necessary to produce UCIL's cement and the price of cement produced in India (one ton is 9,300-9,800 rupees without tax), foreign exchange savings for the same fiscal year made through this project's cement import substitution can be calculated at approximately 750 million rupees (about 1.3 billion yen). This amounts to approximately 0.5% of Nepal's foreign exchange reserves of 166 billion rupees at the end of FY2006.</p>

(2) Expanding employment opportunities  
 The establishment of UCIL through this project employed approximately 500 workers, and newly created related industries such as subcontracting.

(3) Impact on the national government (subsidies, tax proceeds)  
 None

(2) Expanding employment opportunities  
 Through this project, 602 UCIL workers directly gained employment opportunities. All workers are permanent company employees<sup>xii</sup>. Approximately 200 of the employees were hired from the plant's local area. The following was included in indirectly creating employment opportunities.

- An average of 27 to 28 trucks operate every day in order to transport the cement shipped from UCIL, occupying about 50 people. Furthermore, a portion of the employment of the approximately 450 registered cement dealers is sustained through the buying and selling of UCIL cement.
- UCIL procures approximately 50 million rupees' worth of spare parts each year. Approximately 3 to 3.5 million rupees' worth of that amount (about 5~5.3 million yen) are procured domestically, providing employment opportunities to domestic related industries.
- About 50 new small shops have been established around the entrance to the plant, serving the plant workers and truck drivers as customers.

(3) Impact on national government (subsidies, tax proceeds)  
 UCIL received a sublease for the amount of the ODA loan from the Nepalese government, which received the ODA loan, for building the plant. The Japanese government waived the debt owned by the Nepalese government for the ODA loan; however, UCIL is currently continuing to repay the Nepalese government.

When including the payment for repaying the principal amount for the sublease and interest incurred, taxes such as value-added tax, royalties on the limestone, etc., UCIL is paying the Nepalese Government up to 24%~35% of their total sales every year, thereby restoring the funds to the government's finances. Subsidies are not being received.

<Table 4 Amount paid to Nepalese government by UCIL (millions of rupees)>

	00/0	01/0	02/0	03/0	04/0	05/0	06/0
--	------	------	------	------	------	------	------

	<p>(4) Impact on the plant's surrounding environment  Approximately 10% of all project expenses are used for environmental measure-related costs at this cement plant. The plant is equipped with dust collection equipment such as electrical dust collectors and bag filters, and the possibility of dust pollution problems occurring is extremely low. Furthermore, liquid waste is hardly produced at all during the manufacturing process at the plant, and as the plant is quite far from any urban area or settlement, there are no particular concerns regarding noise issues either.</p>	<table border="1" data-bbox="1182 188 2033 387"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>Total amount paid to government</td> <td>126</td> <td>244</td> <td>160</td> <td>122</td> <td>140</td> <td>120</td> <td>305</td> </tr> <tr> <td>Ratio on total sales</td> <td>24.3 %</td> <td>33.9 %</td> <td>32.8 %</td> <td>25.8 %</td> <td>25.8 %</td> <td>25.6 %</td> <td>35.1 %</td> </tr> </table> <p>(Source: UCIL response to a questionnaire.)</p> <p>(4) Impact on the Plant's surrounding environment  Just as with the ex-post evaluation, there are no major issues overall. One of the three EPSs (equipment for collecting dust) is currently not functioning; however, smoke and soot emissions are low, and the plant cannot be compared to that of Himal Cement Company Ltd. which was located close to an urban area and became a problem (later to be closed). The area is sparsely populated and there are no pollution issues.</p>		1	2	3	4	5	6	7	Total amount paid to government	126	244	160	122	140	120	305	Ratio on total sales	24.3 %	33.9 %	32.8 %	25.8 %	25.8 %	25.6 %	35.1 %
	1	2	3	4	5	6	7																			
Total amount paid to government	126	244	160	122	140	120	305																			
Ratio on total sales	24.3 %	33.9 %	32.8 %	25.8 %	25.8 %	25.6 %	35.1 %																			
<p><b>Sustainability</b></p>	<p>(1) Technology  The division in charge of operating and maintaining Udaipur Cement Plant is the Plant Division. This division is operated mainly by staff that acquired adequate knowledge and skills from the technical and administrative training (Training targeted for this project and held in Japan. 58 staff attended the training) provided by the consultant at the beginning of the plant's operations.</p>	<div style="border: 1px solid black; padding: 5px;"> <p>It is believed that sustainability has actually weakened compared with when the ex-post evaluation was conducted. Just as with many other Nepalese government-run companies, UCIL's management makeup is unsound, and it lacks managing and technical skills throughout. Operation and maintenance condition of production facilities is very bad as numbers are constantly in the red, there is a lack of spare parts, there is no planned and preventative maintenance, and operation and maintenance technology are of low quality.</p> </div> <p>(1) Technology  When looking at the plant's operation rate and conditions surrounding operations and maintenance of the facilities, it must be assumed that the technical level at UCIL is low overall, despite technical training (274 man-months) by ODA loan consultants and technical cooperation from JICA (one long-term specialist, three short-term specialists; totaling 46 man-months). The following can be given as causes for this.</p> <ul style="list-style-type: none"> <li>• UCIL is located at a mine for limestone—the basic material used</li> </ul>																								



	<p>However, some of these staff received invitations to switch to different jobs in the capital city of Katmandu or overseas, and a significant number of staff quit. A problem has arisen in that the average period of employment for plant workers has become relatively short at 2-3 years. There is a need to make improvements to treatment and living environments to ensure an absolute number of workers, and to strengthen the education system in order to maintain quality.</p> <p>(2) Organizational structure  Representatives from the Ministry of Industry, Commerce and Supplies, Ministry of Finance, and the Department of Mines and Geology are involved with UCIL's board of directors, as the plant is a government run company. Staff numbers totaled 373 as of 1995, of which 29 were technicians, 103 administrative staff, and 241 plant workers.</p>	<p>by the plant—which is located in a remote area separated from the capital Katmandu by an eight-hour car drive, and is easily avoidable as a place to work. Furthermore, as capable human resources which were vital to shoulder responsibility were not recruited, highly capable human resources were not secured<sup>xiii</sup>.</p> <ul style="list-style-type: none"> <li>• Staff were unable to absorb adequately the teachings from the technical training provided by consultants, SAPS, and JICA specialists or fully implement their advice because of the low skill level of the management team and staff, an indulgent management attitude, frequent changing of key members including especially the general manager, complicated and time-consuming procedures for procuring spare parts, and the severe financial conditions<sup>xiv</sup>.</li> <li>• Very little effective education training was conducted other than assistance from Japan.</li> </ul> <p>The current general manager has lengthy experience at cement plants and understands the technology; however, he mainly resides in Katmandu, and he is not seen to be making serious efforts for educating replacements for current technicians.</p> <p>(2) Organizational structure  Of the 600 employees at UCIL, 400 were assigned to the plant from other areas such as Katmandu. Of those 400, 250 are posted at the plant to live without their families. There is a liaison office located in Katmandu where a few staff reside.</p> <p>The privatization of government-run companies has been underway in Nepal since 1990. However, UCIL currently remains a government-run company, with no plan for privatization in the future. According to the Ministry of Mining and Manufacturing Services, the left-wing influence within the current administration is completely against privatization, and the privatization of UCIL is not likely to be considered at present.</p>
--	---	--

	<p>(3) Financial status</p> <p>As can be seen in the following table, the depreciation burden associated with facilities was extremely heavy at the time of ex-post evaluation, forcing profits into the red. There is little profit produced even from operating profits excluding depreciation cost, and the burden of variable cost</p>	<p>Government-run companies in Nepal are generally not soundly managed, and there is a lack of management and technical skills accompanied by extremely low operating efficiency. UCIL is no exception to this trend. The following are issues which have been indicated as common amongst government-run companies, and most have existed to varying degrees in UCIL's case<sup>xv</sup>.</p> <ul style="list-style-type: none"> <li>• Management and top level staff are more enthusiastic about pursuing personal and political gain rather than improving company performance.</li> <li>• The management team lacks knowledge and experience regarding commercial management, and is merely a group of managers with the temperament of civil servants.</li> <li>• The board of directors, which is composed of top officials from ministries, agencies, and political parties, lacks management knowledge and skills.</li> <li>• Aside from legal regulations, the ministers and vice-ministers that supervise these companies have actual control over them.</li> <li>• Hiring for political reasons has become an everyday activity, and the companies are overmanned.</li> <li>• Rigid and inefficient regulations from the public sector inappropriate for commercial management are applied.</li> <li>• Technical ability is low within basic areas including accounting, labor services, and production management.</li> <li>• There is a lack of responsible finance management.</li> </ul> <p>The technical assistance provided by SAPS and JICA specialists after the ex-post evaluation were efforts intended to improve UCIL's production technology and operation management technology. However, it was not possible to make great changes to a corporate structure such as this, making technical transfer limited; these efforts thus failed to lead to continually increasing cement production amounts<sup>xvi</sup>.</p> <p>(3) Financial status</p> <p>While there is a gross margin corresponding to UCLI sales, the burden of fixed expenses, such as interest payments and depreciation costs is great while numbers continue to be in the red and there is no sign of improvements despite capital restructuring conducted by</p>
--	--	---

alone is a gloomy situation. Increasing production and sales through improving the operation ratio of plant facilities is a future measure for ameliorating the plant's financial status, while stabilizing power supply and securing the adequate spare parts are also necessary. Another measure could be to reduce the interest burden by cutting back the original debt.

<Table 2 Profit and loss statement >

Income Statement (Thousands of rupees)

	92/93	93/94	94/95	95/96
Sales	278,556	492,987	716310	601047
Cost of goods sold	140,448	355,706	353733	417080
Gross profit on sales	138,108	137,281	362577	483967
Sales, general, and administrative expenses	42,953	204,168	767362	775520
Sales expenses	30,112	143,584	147444	147444
General administrative expenses	12,576	56,584	59589	67747
Depreciation cost	265	1,000	560329	560329
Operating profit	95,155	(66887)	(404785)	(591553)
Non-operating profit and loss	(122629)	(116396)	(115559)	(259584)
Acquired interest		6173	5731	12969

recommendation of SAPS<sup>xvii</sup>. In the past three years interest payments and depreciation cost has reached 18% and 24% of sales respectively. Moreover, the gross margin rate (gross margin/sales) sank from 38% in FY1997 to 20% in FY2005<sup>xviii</sup>.

The breakeven point is around an operation ratio of 75%~80% when calculating based on performance over the past three years. When considering that the current actual operation ratio lies around 40% and is still decreasing, there is no chance for ordinary profits to turn positive for quite some time.

Large-scale improvements to the operation ratio and production efficiency are vital in terms of ameliorating UCIL's financial status. There is room to raise the plant's shipping price for UCIL cement as it carries great market competitiveness, and sales could possibly increase somewhat based on such a price raise<sup>xix</sup>.

<Table 5 Profit and loss statement (millions of rupees)>

	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06
Sales	574	461	495	518	719	515	473	546	533
Cost of goods sold	354	294	354	394	473	386	356	396	425
Gross margin	220	167	141	124	246	129	117	150	108
Sales, general, and administrative expenses	133	138	143	147	144	140	120	123	244
General administrative expenses	21	26	30	32	31	30	32	35	38
Sales expenses	1	1	2	4	2	1	1	1	3
Depreciation cost	111	111	111	111	111	109	87	87	203
Operating profit	87	29	(2)	(23)	102	(11)	(3)	27	(136)
Non-operating profit and loss	(129)	(133)	(138)	(132)	(129)	(124)	(122)	(121)	(120)
Interest paid and principal repaid	(123)	(118)	(110)	(104)	(101)	(97)	(95)	(94)	(93)

Interest paid	(123039)	123000	123000	(272722)
Other	410	431	1710	169
Ordinary profit	(27474)	(183283)	(520344)	(851137)
Corporate taxes, etc.	0	0	0	0
Profit for current fiscal year	(27474)	(183283)	(520344)	(851137)

Other	(6)	(15)	(28)	(28)	(28)	(27)	(27)	(27)	(27)
Ordinary profit	(42)	(104)	(140)	(155)	(27)	(135)	(125)	(94)	(256)
	)	)	)	)	)	)	)	)	)

(Source: Created based on UCIL response to a questionnaire.)

<Table 6 Balance sheet (millions of rupees, end of FY2005)>

Liquid assets		Liquid liabilities	
Cash and savings	39	Bills and accounts payable, etc.	656
Advances paid	257	Allowances provided	71
Deposited funds	45	Fixed liabilities	
Inventory assets	469	Long-term loans	1,840
Investments	8	Capital	
Short-term loans	3	Shareholder's equity	3,648
Fixed assets			
Fixed assets*	1,230		
Assets on Work-in Progress	3,059		
Total assets	5,111	Total capital and liabilities	5,111

Note\*: Fixed assets are fixed assets before depreciation (2,543Mil Rs.) minus total deprecation amount (1,313 Mil Rs.).

(Source: Created based on UCIL response to a questionnaire.)

#### (4) Operation and maintenance

The maintenance of production facilities at UCIL is rather poor. Malfunctions and trouble occur frequently as many of the plant's facilities cannot be repaired and are not used, or are being operated despite not being maintained sufficiently, and the plant's operations ratio and productivity is greatly declining. The following are the main issues regarding maintenance.

#### Lack of spare parts

The largest issue directly hindering maintenance is the lack of spare parts. UCIL is unable to equip itself with the necessary inventory

	<p>(4) Operation and Maintenance</p> <p>Maintenance checks are performed regularly on a daily basis at the cement plant, and a unique system for all plant employees has been adopted to make upgrades with the objective of improving production, lowering cost, and creating high quality products.</p> <p>Meanwhile, however, issues including the unstable supply of power and difficulty in procuring spare parts are causing production capacity to remain at approximately 50%, as can be seen in Table 2 below.</p>	<p>because of fund restrictions, the long periods required for procuring parts, and inadequate procurement plans and inventory management<sup>xx</sup>. Consequently, partial repairs are conducted, as parts are used from other machines, and it takes time for repairs to be conducted.</p> <p>Most equipment at the cement plant was made in Japan, while that at the ropeway was made in Germany. Nonetheless, as genuine parts are expensive and they take a long time to procure, non-genuine parts made in India or Nepal are often chosen. However, non-genuine parts do not carry a performance guarantee, and the plant's management team has always faced the dilemma of choosing quality or price. Up until now, there have been a good number of cases where the non-genuine parts have broken soon after purchase or it has taken several months for a decision to be made for procuring genuine parts.</p> <p>A great deal of approval procedures are required for procurement by government-run companies, and it takes considerable time for a decision to be made. At UCIL it is necessary to have the approval of the board of directors for procurements of 250 thousand rupees (approx. 440,000 yen) or more. However, in some cases it takes a year or more to procure for amounts less than that. Furthermore, when importing from countries other than India, with whom there is a trade agreement, it takes far longer than when procuring from India or domestically.</p> <p>Meanwhile, the current general manager convinced the board of directors to allow him to acquire the authority to clear procurements for up to 15 million rupees personally as the general manager. Thus the procurement of important spare parts which used to take a long time is now possible in a comparatively short time-frame. This is considered to be connected with restoring production amounts in FY2006.</p> <p><u>Lack of preventive and planned maintenance</u> According to the specialist's report from JCIA, daily maintenance checks and regular maintenance were hardly ever conducted at UCIL.</p>
--	---	--

		<p>This situation continues to the present. The plant is not being cleaned, and there is cement dust collecting all over the plant and hardening. Materials taken from the equipment while making repairs has not been removed, and is left to sit on the ground. Because repairs are first conducted only after malfunctions or trouble occur, equipment at the various places break down one after another, and production stops each time. Factors behind not conducting preventive and planned maintenance are thought to be the lack of understanding regarding its necessity and the absence of planning ability, and the difficulty of procuring spare parts in a planned manner.</p> <p>The current General manager plans to stop production every month and half during FY2007 to conduct full checks and repairs of facilities. However, the procurement of spare parts and technical skill will dictate how effective repairs are actually able to be.</p> <p><u>Low level of maintenance technology</u> According to the specialist's report from JCIA, there are cases where the analysis of causes of a malfunction are inadequate and repairs are not conducted properly, repair procedures are improper, skills for conducting repairs (expertise) are low, and the specifications for spare parts are improper, playing as factors for the frequent malfunctions and occurrences of trouble.</p> <p>JICA dispatched a total of three short-term specialists during 1999 and 2004 where they provided technical assistance for maintenance. The specialists dispatched in 2004 performed a detailed survey on the condition of mechanical equipment and the plant's maintenance structure. The specialists provided concrete suggestions on the necessity of facility repairs, and also created a list of the bare essential spare parts required to be procured. However, after a new survey conducted this time, less than half of the specialist's suggestions had actually been implemented and the general manager and the current plant manager did not have adequate knowledge regarding the details of the specialist's report or suggestions.</p> <p>The same specialist considered the possibility of using a grant from</p>
--	--	--

		<p>Japan to supply the spare parts on the list created. However, the Ministry of Mining and Manufacturing Services did not make such a request at the time<sup>xxi</sup>. The same ministry appears to be anticipating assistance from Japan now as well; however the embassy and JICA have taken the stance that further assistance will not be possible unless a certain amount of improvement can be seen regarding the three issues (recognition of the importance for facility checks; bettering understanding and awareness of improvement activities; improving technical standards) which the specialist indicated for continuing cooperation<sup>xxii</sup>.</p>
<p><b>Lessons Learned, Recommendations, Information Resources and Monitoring Methods</b></p> <p>(1) Follow up on lessons learned and recommendations made in ex-post evaluation report or in later evaluations</p> <p>(2) learned at the time of ex-post monitoring and</p>	<p>(1) Lessons</p> <p>i) It is necessary to fully consider risks that carry a high possibility of occurring (import dependence on India, natural disasters from geographic and climatic causes, etc.) when implementing projects in countries where it is difficult to ensure prerequisite conditions for constructing and operating plants.</p> <p>ii) Careful technical and management guidance is effective in improving the project's sustainability.</p> <p>Also, just as seen in this project, for projects where improving the stable operations of facilities, quality of products, and management efficiency is connected with the project's effectiveness, the software aspects of management, such as technical and management support, are especially important in improving the project's sustainability in addition to the hardware aspect of the</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>UCIL should earnestly address the various issues necessary for improving its management in order not to miss the opportunity to revive business performance provided by the high quality of the plant's cement, and it is necessary for the Ministry of Mining and Manufacturing Services to take responsibility proactively in supporting this. It can be learned that technical cooperation should be implemented after confirming that the conditions for its success are set in place, and also that expensive technologies can actually oppress a company's operations if personnel cannot use them adequately.</p> </div> <p>(1) Implementation status of past suggestions/recommendations</p> <p>In March 1998, SAPS suggested an improvement plan for operation and maintenance, management of spare parts, providing motivation and staff training, strengthening organization, and an accounting system aiming to increase the plant's operation ratio gradually starting with 64%, to 72%, and then to 80%, and recommending the implementation of that plan to UCIL in their final report. Moreover, the report recommended to the Ministry of Mining and Manufacturing Services that the expenditure is approved for promptly implementing the capital restructuring suggested by UCIL and for implementing the improvement plan, and also that they refrain from frequently changing general managers.</p> <p>SAPS monitoring has suggested that UCIL has enforced the first level of the improvement plan to some degree, but the plant's operation ratio has yet to reach the first level objective, despite a follow-up by a JICA specialist. This is interpreted to be because UCIL's enforcement of recommendations from SAPS was either inadequate or lacked</p>

<p>recommendations for securing sustainability</p>	<p>plant's construction.</p> <p>(2) Recommendations None</p>	<p>effectiveness and continuance.</p> <p>The Ministry of Mining and Manufacturing Services has partially realized UCIL's suggestion to implement capital restructuring. However, frequent changes of the general manager have yet to cease, and support for the UCIL management team was not always completely adequate.</p> <p>(2) Recommendations considering results from monitoring after project completion UCIL faces many issues and production is currently decreasing; however, it is essential for them to address the following issues in earnest in order not to miss the opportunity to revive business performance using their superior quality product and the existence of a cement market that continues to grow. The Ministry of Mining and Manufacturing Services must proactively participate in the process as a central member of the project, and maintain a sense of responsibility in assisting with implementing these measures.</p> <ul style="list-style-type: none"> <li>• Strengthen the leadership of UCIL's management team, and allocate capable human resources to each division while assigning people equipped with professional expertise to the board of directors.</li> <li>• Discern the priority issues concerning the maintenance of production facilities and procure the necessary spare parts without delay while improving the procurement and inventory management system for spare parts, aiming for preventative and planned maintenance.</li> <li>• Utilize external resources while drafting an improvement plan and implementing educational training for staff, aiming for ameliorating the plan management system for production and material procurement.</li> <li>• Raise the price of products to a standard in line with the product's</li> </ul>
--	--	---



		<p>quality and competitive strength in order to reduce financial loss.</p> <ul style="list-style-type: none"> <li>• Sufficiently utilize various reports and materials created from past Japanese technical cooperation in making technical considerations.</li> </ul> <p>(3) Lessons learned</p> <ul style="list-style-type: none"> <li>• When conducting technical cooperation through consulting services in order to strengthen the operation management capacity of a government-run company, the local consultant should be utilized to take the time to conduct a thorough survey on the company's corporate culture, management makeup, organizational structure, abilities of management team and staff, government support system and its commitment, and on the presence of political intervention. Thereafter, technical cooperation should be provided once it has been confirmed to what degree conditions are fulfilled for ensuring the cooperation is effective and its effectiveness is maintained. Moreover, when providing an ODA loan as a premise for the technical cooperation, the technical cooperation should be provided first, and then screening performed after collecting adequate data on to what degree those conditions are fulfilled.</li> <li>• Even when adopting expensive technologies, there are cases where management is actually restrained as they are unable to raise enough profits to cover the great fixed costs and maintenance expenses when the capacity to use such technology or the proper management environment are lacking.</li> </ul>
--	--	---

---

<sup>i</sup> According to the SAPS report, the average operation ratio of cement plants in Southeast Asia around 1998 was approximately 80%.

<sup>ii</sup> Cement is produced by adding materials such as plaster to clinker made by heating and hardening limestone, clay, and silica at a high temperature, and then grinding it to power.

<sup>iii</sup> The production process for clinker is an uninterrupted process of grinding various basic materials, mixing them, preheating them, and then burning them. When a problem occurs during any one of these processes, it is necessary to cease provision of materials to the kiln (kiln stoppage), or even shut down the operations of the kiln

---

itself (kiln shutdown). This plant experiences frequent malfunctions and trouble of various levels, and accompanied by the lack of stocked spare parts, it takes time to restore the kiln in many instances. Due to equipment malfunctions and trouble, 2,900 hours/year (37% of production amount) were lost during SAPS monitoring and currently 1,700-2,000 hours/year (21%~25%) are still being lost even after some equipment was repaired with technical cooperation from JICA.

- iv The inside of the kiln is covered with a few thousand heat-resistant bricks. There was a plan to shut down the kiln for 35 days a year (816 hours) to replace those bricks; however, in reality the bricks frequently break or are lost and this requires the shutdown of the kiln and replacement of bricks each time. This has led to the time the kiln is actually shut down greatly exceeding the amount of time planned. It is believed that issues lie in the frequent kiln stoppages, improper operating conditions, quality of bricks used, and brick replacement skills. The shutdown time to replace heat-resistant bricks in 1998 during SAPS monitoring was 2,250 hours/year (1,400 hours more than the planned 850 hours). This amount sank to 800-1,200 hours at one point after JICA technical cooperation; however, the time required in 2005 was 3,043 hours (2,193 hours more than planned) as the quality of bricks used was poor. This amount reduced to approximately 1,200 hours (approximately 400 hours more than planned) in FY2006 after changing the quality of bricks.
- v At times when the power supply becomes especially tight, blackouts occur almost everyday, and fluctuations in voltage even lead to facility stoppages. Even if power is quickly restored in the event of a blackout, at least 1-2 hours is required before production can be restarted. The shutdown time for kilns caused by this is approximately 120-450 hours/year (2%~8% of production amount) depending on power circumstances. Furthermore, power feed restrictions have become significant in the past two years, and often kiln operations are given priority while other facilities must be shut down.
- vi There is a limestone quarry approximately 15km north of the plant in the Sindri Mountains, and limestone is transported to the plant via ropeway from the quarry. In FY2003 and FY2004, kiln shutdown time amounted to approximately 1,800 hours/year (23% of production amount) due to a paucity of limestone as ropeway malfunctions became numerous and traffic between the plant and quarry was stopped due to general strikes. The ropeway was later temporarily repaired, and kilns were not shut down due to these reasons in FY2006.
- vii Kiln shutdowns for reasons excluding facility malfunctions have increased since FY2003 due to the political instability resulting from the murder of the royal family in June 2001, the increase in activities by left-wing activists (Maoists) throughout Nepal since 2003, the increased number of labor unions, and the frequent occurrences of general strikes. In FY2003, there was a continuance of occurrences including a bombing incident within the plant's premises by Maoists (injuries were minor) and an incident where the 140 quarry staff were held captive for four days by Maoists, in addition to the general strikes that reached a total of 38 days. General strikes reached a total of 85 days in FY2004. Plant workers do not participate in the general strikes; however, the shutdown of traffic between the plant and quarry, closing of workers' commuting roads, and the halt of cement shipments have made a significant impact. Political instability has made a negative impact on the business attitude of plant administration in addition to its workers. In FY2005, workers held a strike for a little over one month to demand permanent positions with the company, and then again for two weeks in FY2006 to demand better wages. Moreover, in FY2006 the kiln was forced to shut down for 1,400 hours/year (18% of production amount) due to the closure of highways by Terai banda (general strikes by flatland residents) that totaled 102 days, and the delay in the supply for materials such as coal and plaster procured from outside sources. It is estimated that the shutdown time of the kiln over the past four years averages 700-900 hours/year (9%~11% of production amount) due to these causes.
- viii During the past twenty years, fifteen different general managers (or a substitute general manager for the term no general manager is appointed) have acceded office at UCIL, and the number of general managers that have spent two or more consecutive years in office since the commencement of plant operations is a mere three.
- ix It was not possible to obtain concrete data for yearly cement consumption amounts from the Ministry of Mining and Manufacturing Services. Consumption amounts for FY1997 are estimated figures by the SAPS team, and amounts for FY2006 are estimated figures by the Cement Dealer Association.
- x There are two government-run plants within Nepal including this one, and these plants produce approximately one-third of domestic consumption. There are also three privately run small-scale plants in Nepal, and thirty other small-scale plants that import clinker from India and produce cement.
- xi UCIL cement is sold through the around 450 dealers registered with the plant. Often, dealers also conduct retail sales. The final consumer is usually an individual. In Nepal, it is common for the construction of houses and small- to medium-scaled commercial facilities to be handled by individuals who will procure the materials and

- 
- allocate human resources themselves, and not by contractors. Common citizens are widely aware that the plant's cement is of high quality and strength. On the other hand, contractors used for large-scale construction projects import cement directly from India or use cement made in India by utilizing a cement import trader managed by an Indian person. The use of cement from India in national projects is common, as custom tariffs are exempted.
- xii Staff conducted a strike in 2006, and the number of permanent employees thereby rose from 411 to a total of 602 as a result of labor negotiations.
- xiii The specialist from JICA reported that 1) there is no evaluation of operations, while promotions are conducted completely according to a seniority system and the majority of mid-level executives possess a low level of skill as do the vice manager class staff and plant manager, who are supposed to support the General Manager; and 2) the technical level is extremely low as large numbers of highly capable employees abandon their positions to leave the company.
- xiv The SAPS report dictates that, "Some part, if not all, of the technologies taught by the consulting team is being forgotten. It takes a long time for UCIL employees to learn, and it is necessary for them to restudy while referring to the current operations and maintenance manuals." Also, "Performance would have been a great deal better if UCIL closely followed the methods taught by the ODA loan consultant team. The consultant's suggestions regarding organizational structure have not been realized."
- xv The list is based on "The Implementation of Privatization Policy: Case Studies from Nepal" (HARI PAUDEL, 2006).
- xvi After the appointment of the JICA long-term specialist, the necessity of reforming the consciousness of the management team and improving employees' discipline and motivation towards work was strongly recognized as a prerequisite condition for effectively transferring technology. The Ministry of Mining and Manufacturing Services renovated the management team in FY2000 due to pressure imposed from Japan in response to advice from the specialist, and a production-based bonus was instituted in FY2001. The bonus provision system produced a degree of effects in terms of improving employees' motivation, and, based on the technical advice from the specialist, restorations were performed for a portion of the facilities thereby increasing production. However, the specialist returned to Japan, and there was trouble pinning down a new general manager after the two-year term had concluded for the general manager at the time. Eleven months later, when the same general manager was reappointed, the discipline of employees had once again greatly diminished. While the General Manager did not receive the kind of technical advice as during his previous term, he also did not receive adequate support from the board of directors, and was thereby unable to conduct the necessary procurements for facility maintenance and repairs in a timely manner. Furthermore, the operations environment worsened due to factors including Maoist activities, and production levels decreased. The current General Manager, who was appointed in FY2006, is knowledgeable regarding technology and is skilled in public relations. This has allowed him to gain the strong support of the board of directors in conducting the necessary production facility repairs and restorations, successfully restoring production amounts somewhat. However, he spends most of his time in Katmandu, and displays his eagerness to become a politician. Moreover, his commitment to educating subordinate personnel and making continual performance improvements in the future is uncertain.
- xvii Fixed costs greatly increased because the 2.8 billion rupee comprehensive project cost envisioned during the screening expanded to 6.3 billion rupees as the yen continued to appreciate while the rupee devaluated to a large degree. According to the SAPS report, the investing cost for one ton per year production capacity in normal cement industries during 1998 was US\$150-200; however, UCIL was at US\$356. The ex-post evaluation and SAPS both indicated that fixed costs were high, and SAPS especially recommended the prompt implementation of capital restructuring that UCIL had proposed to The Ministry of Mining and Manufacturing Services at that time. The proposal detailed that a portion of the sublease be written off so that total investment would become 3 billion rupees and that the 5% interest on the sublease be halved so that UCIL could continue at an operations ratio of 70%. In response to this the government reduced the sublease amount and the interest burden by leaving approximately 3.1 billion rupees in fixed assets as assets on works-in-progress and deferring the depreciation of said assets, and by shifting 3.2 billion rupees of the 5.5 billion rupee government sublease to UCIL to shareholder's equity (government). These efforts halved the depreciation cost; however, this went no further than to gradually diminish interest payments, as there was already an accumulation of unpaid interest. The depreciation cost on the profit and loss statement acquired shows reductions that predate restructuring. Moreover, the ex-post evaluation profit and loss statement is also from before restructuring, but contains portions estimated by the evaluator and is not precise.
- xviii The gross margin rate was anticipated to be around 75% at the time of screening.
- xix The UCIL plant shipping price is 385 rupees per 50kg while the market price is 530 rupees. Meanwhile, the shipping price at the Hetauda Cement plant, another

---

government-run plant, is 405 rupees while the market price is 505 rupees. The market price for cement made in India is between 575 and 600 rupees. When considering that UCIL's cement is high quality and the most popular within the market, it is thought that it is completely possible to raise the shipping price by about 40 rupees even with the additional shipping cost of 20-30 rupees for 50 kg compared to Hetauda Cement plant. There are even some cement dealers that believe they would like to deal with UCIL's cement even if the plant shipping cost increases by 40-50 rupees.

<sup>xx</sup> As there was no record made of the parts procured through the ODA loan at the commencement of operations, parts management is inadequate and there is the possibility that some of those parts were illegally sold.

<sup>xxi</sup> There were repeated requests every year until FY2003; however, the Japan side gave top priority to bettering operations management structure and did not accept the request. In 2004, a short-term specialist was dispatched where a revision was newly conducted from the perspective of maintaining facilities. Upon this, a spare parts list was created but was not used to make an official request.

<sup>xxii</sup> According to the JICA Nepal offices, JICA expressed this opinion at the final debriefing session made by the specialist on-site, and top officials from the Ministry of Mining and Manufacturing Services who were in attendance agreed.