

Myanmar

Renovation Project for Alcohol No. 2 Plant

Report Date: March 2002

Field Survey: September 2001

1. Project Profile and Japan's ODA Loan



Project Site



Various Types of Industrial Alcohol Products

1.1. Background

The Myanmar government's Fourth 4-year Development Plan (April 1982 to March 1986) encouraged industrial development in an effort to shift the basis of the economy from ordinary agriculture to processed agricultural products. This project was given high priority since it uses agricultural resources (broken rice) that are abundant in Myanmar and, by processing the rice into alcohol for industrial use, provides added value. The Alcohol Industry in Myanmar consisted of four plants, three managed by the Foodstuff Industries Corporation (FIC) and one by the Pharmaceutical Industries Corporation (PIC). The alcohol production capacities of these plants were deteriorated, due to equipment superannuation. As a result, there was a wide gap between supply (226,000 gallons¹) and demand (1,000,000 gallons) for industrial alcohol in 1982/83. This project was planned to increase alcohol production in order to bring about a balance between demand and supply in the industrial alcohol market.

1.2. Objectives

To produce 1,200,000 imperial gallons of 95 vol.% alcohol per year for industrial use in the domestic market.

1.3. Project Scope

The project scope consists of the following works:

- 1) Construction of an alcohol plant using Submerged Mould Amylase (Liquid Koji) process with a production capacity of 4,000 gallons of alcohol 95%v/v per day,
- 2) Construction of auxiliary facilities consisting of water treatment facilities, utilities, storage tanks, a

¹ 1 imperial gallon = 4.546 litres

laboratory and a repair shop,

3) Supervision and Training.

Japan's ODA Loan was available for the foreign currency portion.

1.4. Borrower/Executing Agency

The Foodstuff Industries Corporation (FIC)

/ The Foodstuff Industries Corporation (FIC) (currently Myanmar Foodstuff Industries (MFI))

1.5. Outline of Loan Agreement

Loan Amount	1,970 million yen
Loan Disbursed Amount	1,884 million yen
Exchange of Notes	June 1984
Loan Agreement	August 1984
Terms and Conditions	
Interest Rate	2.75% p.a.
Repayment Period (Grace Period)	30 years (10 years)
Procurement	Partially Untied
Final Disbursement Date	January 1993

2. Results and Evaluation

2.1. Relevance

The development of the country's agricultural processing industry was addressed in the Fourth 4-year Development Plan; as a result, this project, which aimed to produce industrial alcohol utilizing agricultural resources (broken rice), was considered valid. At present, the government of Myanmar continues to place emphasis on the promotion of the agricultural processing industry, and thus the project is still considered relevant in view of its role in supplying alcohol to the domestic market and in shifting the industrial base to agricultural product processing.

2.2. Efficiency

2.2.1. Project Scope

After reconsidering site conditions, the project site was changed from Moulmein to Bilin prior to the construction works. In addition, the maximum capacity of the project plant was revised to 960 thousand gallons per year resulting from the fermentation process changed during the test run period.

2.2.2. Implementation Schedule

The project was completed in September 1993, approximately 5 years after the originally scheduled

completion date, due to political unrest in the late 1980s. The plant was put into commercial operation after an additional delay of 7 months resulting from the transfer of operation know-how and skills.

2.2.3. Project Cost

The estimated project cost at the time of appraisal was 4,409 million Yen, while the actual project cost was 3,995 million Yen. The actual cost can be broken down into the foreign currency portion of 1,884 million Yen, which ran under budget by 4%, and the local currency portion, 2,111 million Yen, which ran under budget by 13%.

2.3. Effectiveness

2.3.1. Amount of Alcohol Production at the Project Plant

The project plant (Bilin Alcohol Plant) was originally designed to produce 1,200 thousand imperial gallons of alcohol per year. During test runs from 1991 to 1993, the fermentation process was changed because the initially selected process (bacteria amylase culturing) did not succeed at the project plant. As a result, the maximum capacity of the project plant was revised to 960 thousand imperial gallons per year.

Table 1 shows the actual amount of alcohol produced at the project plant. It has mainly produced Rectified Spirit; production of Denatured and Methylated Spirits has been limited, as these products can be supplied by other alcohol plants. The total production amount at the project plant was quite low at the beginning of commercial operation; however, it has gradually increased, reaching approximately 80% of the revised target in fiscal year 2000. MFI reported that the delay of new industrial projects in the country has resulted in the limited demand for industrial alcohol.

Table 1: Amount of Industrial Alcohol Production at Bilin Alcohol Plant

Unit: thousand gallons as 95 vol.% per year

Fiscal Year	Rectified Spirit ²	Denatured Spirit ³	Methylated Spirit ⁴	Total		
	Actual	Actual	Actual	Original Target	Revised Target	Actual
1994/95	91.46	5.16	20.03	1,200	960	116.65
1995/96	198.20	13.06	6.52	1,200	960	217.78
1996/97	265.36	15.4	6.76	1,200	960	287.73
1997/98	287.66	8.1	5.79	1,200	960	301.55
1998/99	593.96	14.01	0.05	1,200	960	608.02
1999/00	600.23	15.55	-	1,200	960	615.78
2000/01	754.13	11.22	-	1,200	960	765.35

Source: Information prepared by Myanmar Foodstuff Industries

² Main product utilized as a raw material for acetate acid, ether production, metal refining and as a chemical solvent in laboratories

³ By-product used in paint and furniture industries

⁴ By-product used for medical purpose

2.3.2. Recalculation of Internal Rate of Return

Since the required data were not available, recalculation of Internal Rate of Return was eliminated from this report.

2.4. Impact

2.4.1. Demand and Supply Balance of Industrial Alcohol

According to MFI, there has been no export or imports of industrial alcohol. At present, 5 plants under MFI are producing industrial alcohol; plants in private sector produce mainly drinking alcohol. Demand for industrial alcohol has been limited, and it seems that the demand for and supply of industrial alcohol sector is almost balanced.

2.4.2. Rural development and Employment Promotion

As a result of this project, the 22.3 acres of the project site and an additional 30.7 acres in the surrounding area were developed. In addition, the project created 217 jobs (including 50 jobs for women) in commercial operation of the plant.

2.4.3. Impact on Natural Environment

The wastewater discharged from the project plant was collected in one place and turned into fertilizer by means of evaporation and dry process. The plant provides this fertilizer to farmers hereby free of charge. Broken rice refuse, which is solid waste, is utilized for livestock feed.

2.4.4. Impact on Social Environment

The relocation or resettlement of local residents did not occur.

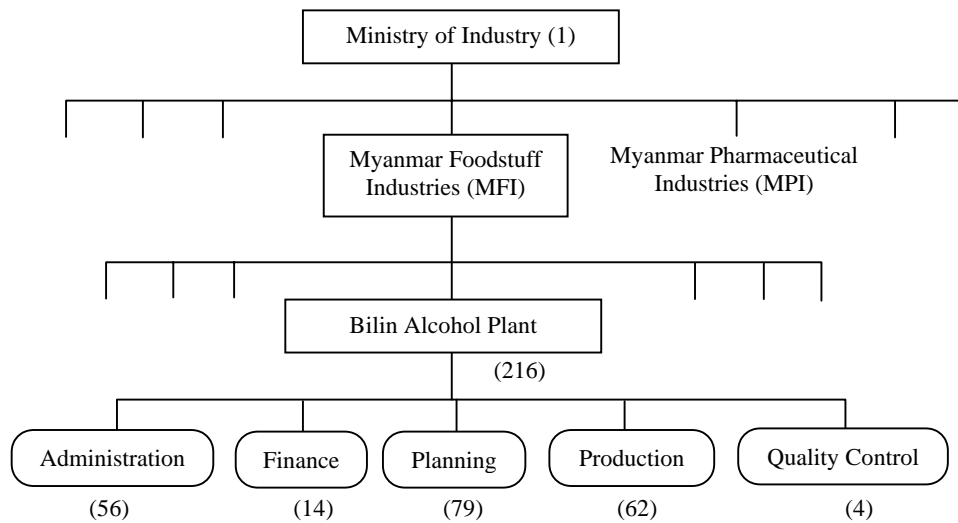
2.5. Sustainability

2.5.1. Operation and Maintenance Organization

At the time of appraisal, the Foodstuff Industries Corporation (FCI) was to assume responsibility for operation and maintenance. Currently, Myanmar Foodstuff Industries (MFI), which is a state-owned enterprise under the umbrella of the Ministry of Industry (1), has this role. The organizational structure is shown in Figure 1. At present, the project plant (Bilin Alcohol Plant) employs 216 people for administration, finance, planning, production and quality control.

As mentioned, the gap between the target and actual production amounts is attributed to limited demand for industrial alcohol in the country, not due to defects or failures in operation and maintenance of the plant.

Figure 1: Operation and Maintenance Organization



Source: Information prepared by Myanmar Foodstuff Industries

2.5.2. Financial Status

The government controls the price at which alcohol is sold. The selling price fluctuates based on the raw materials (broken rice or molasses) and products (Rectified Spirits or Denatured Spirits). The project plant does not take responsibility for its profitability.

Table 2 shows profit and loss figures for MFI from 1998/99 to 2000/01. At present, 5 plants are operating under MFI. MFI made a profit for all three years.

Table 2: Profit and Loss Account of MFI (1998/99 - 2000/01)

(unit: million Kyats)

	1998/99	1999/00	2000/1
Gross Income	3,966	3,359	3,558
Expenditures	103	128	267
Financial Charges	5	6	5
Commercial Taxes	1,303	1,377	1,594
Net Profit	2,555	1,848	1,692

Source: MFI

2.5.3. Prospective Sustainability

At this time there appear to be no critical issues threatening the sustainability of the project.

Comparison of Original and Actual Scope

Item	Plan	Actual
Project Scope (1) Industrial Alcohol Plant (2) Utilities & Auxiliary Facilities	(1) 1,200,000 gallons per year (2) Water Treatment, Storage Tanks, Laboratory, Repair Shop, etc	(1) 960,000 gallons per year (2) Same as Plan
Implementation Schedule (1) Tender and Contract (2) Site Final Survey (3) Erection and Installation (4) Commissioning & Test Run (5) Commercial Operation	May.1985 – Jul.1986 May.1985 – Sep.1985 Oct.1987 – May.1988 Jun.1988 – Aug.1988 Sep.1988	Jun.1985 – Nov.1986 May.1986 – Sep.1986 May.1988 – May.1991 Jun.1991 – Sep.1993 Jun. 1994
Project Cost Foreign currency Local currency Total Yen loan portion Exchange Rate	1,970 Million Yen 2,439 Million Yen 4,409 Million Yen 1,970 Million Yen 29.0 Kyat = Yen (as of 1985)	1,884 Million Yen 2,111 Million Yen 3,995 Million Yen 1,884 Million Yen 23.0 Kyat = Yen (as of 1990)

Source: Data from MFI and JBIC