

4.3.3 Requirements for Expansion of Export in Myanmar

(1) Pulse and Beans

In Myanmar, export volume of rice, which used to dominate the market, has been declining every year. Instead, pulse and beans have become popular export items in recent years.

In 2000/2001, growing area of pulse and beans was 6,700,000 acres, and production volume was 2,113,000 tons, 340% increase from 1985/1986 (2100,000 acres and 614,000 tons respectively). Export is also expanded to 700,000 tons by annual average. Currently, pulse and beans are considered as Myanmar's two promising export items. Myanmar is the second largest exporter of pulse and beans in the world.

Table 4-41 Production, Export of Pulse and Beans in Myanmar

(In thousand ton)

		85/86	96/97	97/98	98/99	99/00	00/01	y/y (%)
Matpe: Black Gram:	Production Volume	93	323	413	437	421	523	24.2
	Export Volume	0	209	308	279	235	275	17.0
Pedisein: Green Gram	Production Volume	30	328	442	457	471	511	8.5
	Export Volume	0	128	121	174	145	186	28.2
Other Pulses	Production Volume	491	658	686	704	823	1,079	31.1
	Export Volume	89	258	340	169	181	371	104.9
Total	Production Volume	614	1,309	1,641	1598	1,715	2,113	23.3
	Export Volume	89	595	769	622	561	832	48.3

Note: p: provisional
n.a.: not available

Source: Statistical Yearbook 2000, Selected Monthly Economic Indicators

Main export items from Myanmar to Japan are matpe and kidney beans.

Table 4-42 Import Value of Pulse and Beans from Myanmar to Japan

(In US\$1,000)

		98/99	99/00	00/01
Pulse and beans	1) Matpe	2,450	2,908	3,385
	2) Kidney beans Others	3,472	4,646	4,151
	3) Others	28	31	28
Total		5,950	7,585	7,564

Source: Agro Trade Handbook 2000, JETRO

In the following pages, Myanmar's pulse and bean products will be compared to those of China and Thai in terms of quality and price, since these two countries are Myanmar's main competitors in pulse and bean export. In addition, consumer propensity of Japanese market will be analyzed. Lastly, suggestions to expand Myanmar's export policies will be discussed.

1) Matpe (Matpe: Black Gram)

Three Major Matpe Exporting Countries

Three countries with the largest matpe export are China, Myanmar and Thai. Among these three countries, Myanmar is the largest exporter.

Table 4-43 Volume of Matpe Export of China, Myanmar and Thai

(In 1,000 tons)

	1998	1999	2000	Major exporting countries in 2000 The figures in parenthesis are export volume
China <USM\$>	114	289	88 <50>	Japan(40.5), Philippines(6.8) The United States(5.0), Vietnam(3.3)
Myanmar	279	235	226	India, Indonesia, Japan(5.5), Philippines, Malaysia, Pakistan
Thai	11	12	10	Sri Lanka(3.0), Japan(1.5), India(1.1)

Source: Agro Trade Handbook 2000, JETRO

i) Japan's Bean Sprouts Import and Domestic Production

Bean sprouts cultivated in Japan are mainly produced from green beans from China, or black matpe from Myanmar and Thai. Since green beans and matpe are not grown in Japan, they are imported fully from these three countries. In 2000, less than five million tons of green beans and matpe (approximately US\$35 million) were imported to Japan.

Table 4-44 Matpe Import in Japan

(In US\$1,000)

	Value (in US\$1,000)			Volume (tons)	
	1999	2000	y/y (%)	1999	2000
China	30,961	30,224	▲ 2.4	46,297	40,533
Myanmar	2,908	3,385	16.4	6,629	5,457
Thai	1,580	1,200	▲ 24.1	2,302	1,570
Other countries	288	177	▲ 38.5	434	215
Total	35,737	34,986	▲ 2.1	55,662	47,775

Source: Trade Statistics, Japanese Ministry of Finance

The three largest suppliers are China (approximately 80%), Myanmar (the second largest) and Thai. Priority rate of duty does not apply to matpe in Japan. Production volume of bean sprouts in Japan made from matpe and green beam imported from these three countries is 364,000 tons as shown in the table below.

Table 4-45 Production Volume of Bean Sprouts in Japan
(In thousand ton)

	1998	1999	2000
Production Volume	392	389	364

Source: Agricultural Production Bureau, The Ministry of Agriculture, Forestry and Fisheries of Japan

ii) Price Competitiveness of Myanmar Matpe

Table 4-46 Price Competitiveness of Myanmar Matpe
(US\$/ton)

	1998	1999	2000	y/y (%)
Total average	827.1	642.0	732.3	14.1
China	910.4	668.7	745.7	11.5
Myanmar	387.1	438.7	620.3	41.4
Thai	651.7	686.4	764.3	11.3

Source: Prepared by the NRI Research Team based on Trade Statistics, Japanese Ministry of Finance

In 2000, average import price of Myanmar bean sprout seeds Myanmar was the lowest (US\$620.3), compared to China (US\$745.7) and Thai (US\$764.3).

The fact that Myanmar's bean sprout seeds are cheaper than Chinese (by 17%) and Thai (by 19%) products means that they are inferior to these two countries' seeds in terms of quality and yield ratio.

Retail price of bean sprouts made from Chinese green beans in Japan is JPY78 (250g), while the price of bean sprouts made form Myanmar matpe is JPY38 (200g). (Per gram price is JPY0.312 for the former and JPY0.19 for the latter). More importantly, import price of Myanmar's matpe is rapidly nearing import price of green beans produced in China and Thai in recent years. In 2000, import price of Myanmar's matpe increased by 41.4% compared to the year before.

iii) Japanese Market's Potentials and Myanmar's Export Policies

Bean sprouts are rich in important nutrients such as vitamins, minerals and protein. With growing health-consciousness among Japanese consumers, bean sprouts have become one of popular ingredients in Japanese diet. In particular, consumption of bean sprouts is now firmly in place in Korean food, Chinese food and various salads that Japanese favor. Demands

for bean sprouts in food industry is expected to increase. As a result, import of bean seeds is also expected to show a steady increase.

Currently, Chinese green beans which consists 80% of Japanese bean seed import, are superior to black matpe produced in Myanmar and Thai, in terms of quality and yield ratio. Chinese green beans are expected to dominate Japanese bean sprouts import. At the same time, the volume of green bean export from China to Japan has been declining. Now is the right time for Myanmar to increase its matpe export. In particular, bean sprouts made from Myanmar matpe have good reputation in Kansai area since they are thin and thus, easily absorb spices. Myanmar matpe is also competitive in terms of price. In order to increase market share in Japan, improvement of quality and yield ratio will be a significant strategy for Myanmar. Japanese consumers prefer special quality products. Therefore, increased production of special quality products is recommended.

2) Kidney beans (Kidney bean)

i) Export of Peas and Beans in Myanmar and China

Table 4-47 Production and Export of Myanmar's Peas and Beans

(Export volume in 1,000tons, Export value in 1,000Kyat)

	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001(p.a.)
Production volume	658	686	704	823	1,079
Export volume	258	340	169	181	371
Export value	529	582	329	407	618

Note: p.a.: provisional actual

Source: Statistical Yearbook 2001, Selected Monthly Economic Indicators

Increase in export in 2000/2001 is due to stable weather, and a greater number of farmers who now produce beans as an aftercrop.

Export of peas and beans in Myanmar to neighborhood countries (including kidney beans to Japan and pigeon peas to India) are expected to have great potential, considering the country's advantaged weather, rich soil and growing area that is expanding every year.

Peas and beans grown in Myanmar are mainly exported to India, Indonesia, Singapore, China, Malaysia, Pakistan and Japan (kidney beans). Export status of kidney beans in China (Myanmar's biggest competitor) is as follows.

Table 4-48 China's Kidney Beans Export

(Export volume in tons, Export value in US\$1,000)

	1997		1998		1999		y/y
Export areas	Export Volume	Export Value	Export Volume	Export Value	Export Volume	Export Value	%
South Africa	45,046	16,715	42,470	16,259	29,418	9,910	▲30.7
Pakistan	17,460	6,228	17,460	6,689	30,791	9,291	74.6
Italy	16,035	081	18,431	8,799	18,684	8,330	1.4
India	12,746	4,556	11,829	4,502	22,971	7,728	94.2
Japan	12,799	8,079	11,654	7,033	11,313	6,829	▲ 2.9
Total	368,736	151,837	222,858	98,512	214,859	80,734	▲ 3.6

Source: China Customs Statistic Yearbook

ii) Japan's Import and Myanmar's Market Share

Kidney beans are categorized as "peas and beans" in Japanese statistics, and "other pulses" in Myanmar. "Peas and beans" are general term for dried beans (excluding soy beans and peanuts) used for bean jam, cooed beans and sweet beans. "Peas and beans" are divided into five groups: a) red beans (regular red beans and daidagon azuki beans); b) kidney beans (white navy, kintoki beans, uzura beans, daifuku beans, large white kidney beans, tramame beans); c) dry peas; d) broad beans and; e) red kidney beans. These beans are subject to tariff quota system and JYP354 per kilogram is taxed to annual import of over 120,000 tons.

According to Trade Statistics, by Japanese Ministry of Finance, the volume of kidney bean import in Japan in 2000 was 62,761 tons (y/y 12% increase). Kidney beans are mainly imported from the United States, 17,790 tons (import share of 28.3%) , China, 15,713tons, (25%) and Myanmar, 10,712 tons (17.1%) . These three countries consist 70.4% of the entire kidney bean import in Japan. There are numerous types of kidney beans. In Myanmar, butter beans are the biggest import item.

Table 4-49 Kidney Bean Import Price

(Ton/USS)

	1997	1998	1999	2000	y/y (%)
Average total	711	629	692	635	▲ 8.2
The United States	903	681	793	687	▲13.3
China	711	704	697	719	3.1
Myanmar	411	331	433	388	▲10.4

Source: Source: Prepared by the NRI Research Team based on Trade Statistics, Japanese Ministry of Finance

Average import price for kidney beans in Japan in 2000 was US\$635 per ton while import price of Myanmar kidney beans was US\$388. However, since there are many types of kidney beans with various prices, it is impossible to conclude that Myanmar kidney beans are competitive in price.

iii) Japanese Market Potentials

Annual consumption volume of peas and beans in Japan in 2000 “bean year” (from October to September) was 213,300 tons. The ratios of domestic and imported products were roughly equal.

Breakdown of consumption by bean types is: a) red beans, 99,800 tons (y/y 2.5% increase); b) kidney beans, 83,300 tons(y/y 1.4 % decrease)and; c) dry peas, 21,500 tons(y/y 7.3% decrease).

Approximately 80% of domestic peas and beans are produced in farming areas in Hokkaido where peas and beans are one of core products in crop rotation. In order to balance supply and demand, certain limitations are placed on cultivation of peas and beans in Hokkaido, a chief producing district in Japan.

On the other hand, since demands for red beans and kidney beans have been low in Japan, the price has been declining also. This trend is expected to continue for a while. Total import volume of kidney beans is predicted to be around 60,000 to 70,000 tons (10,000 tons for Myanmar kidney beans). Significant changes in the volume are not expected.

(2) Sesame Seeds

1) Production and Export of Sesame Seeds in Myanmar

Table 4-50 Important Trend of Sesame Seeds in Myanmar

(Acreage & Quantity: in thousand)

		94/95	95/96	96/97	97/98	98/99	99/00	00/01	y/y (%)
Sesame seeds	Growing area (acres)	3,288	3,153	2,830	2,430	2,738	3,173	n.a.	
	Production (tons)	299	298	338	258	160	295	381	29.6
	Export (tons)	81	50	53	52	42	20	32	60.0
	Export value (1 millionKyat)	223	186	191	176	164	82	108	31.7

Note: p: provisional
n.a. : not available

Source: Statistical Yearbook 2000, Selected Monthly Economic Indicators
JETRO Agro Trade Handbook

Sesame seed production in 2000 is estimated to be 381,000 tons (y/y 29.6% increase) , export volume 31,600 tons (y/y 60% increase) and export value 18 million Kyat (y/y 31.7%

increase).

In order to promote domestic production of cooking oil, Myanmar government designated sesame seeds as a government-controlled farm product in November 1998. Export of sesame seeds are now managed exclusively by Myanmar Agricultural Products Trading (MAPT) and Myanmar Economic Holding Ltd. (MHEL), a military affiliate company. Export by private enterprises is strictly prohibited. As a result, annual sesame seed export that amounted to 80,000 tons in 1994, 50,000 tons between 1995 and 1998, dropped to between 20,000 and 30,000 tons recently. Recovery of export volume is not expected to occur in the near future. Efforts by private enterprises to develop sesame seeds as an important export item slowed down due to the government intervention. Utilization of private enterprises and the transition to market economy are strongly desired in order to expand export market of sesame seeds.

In addition, shortage of cooking oil has been a very serious issue in Myanmar. Import of oil (palm oil) has put extra burden on the country's already scarce foreign currency reserve. In 1999/2000, Myanmar imported approximately 160,000 tons of oil and spent 479 million Kyats.

Other oil and fat products, including peanuts, sunflower seeds, and soybeans, are also used in Myanmar to supplement the shortage of cooking oil. Yet, these products are not enough to cover all domestic consumption. Regulation of sesame seed export enacted in 1998 was aimed at promoting self-supply of cooking oil. However, considering production and export trends after 1998, and complaints from private enterprises, the regulation is not an economically sound approach. Thus, Myanmar should expand sesame seed export to earn foreign currencies.

Recent export price of Myanmar sesame seeds was US\$672 per ton (to Japan in 2000), while import price of Malaysian palm oil was 1,232 RM or US\$324.21 (January 2002).

2) Japan's Sesame Seed Import and Competitiveness of Myanmar Sesame Seeds

Japan's sesame seed import from Myanmar have increased to 16,252 tons (y/y 211.3% increase) and US\$10,920,000 (y/y 199.6% increase). This accounts for 9.1% of the entire export value from Myanmar to Japan. Of 130,000 tons of sesame seed export from Myanmar to Japan, it is estimated that 80,000 tons were consumed as oil, with 50,000 tons for regular intake.

Table 4-51 Japan's Sesame Seed Import

Imported from	Value (in US\$1,000)			y/y	Volume (tons)			y/y	2000
	1998	1999	2000	%	1998	1999	2000	%	
China	34,824	42,471	43,518	2.5	32,482 (36,397)	44,722 (44,168)	52,178 (51,436)	16.7	834.03
Sudan	14,711	13,092	19,140	46.2	22,644	17,329	28,148	62.4	679.98
Nigeria	13,682	16,263	15,658	▲3.7	21,650	21,771	23,140	6.3	676.43
★Myanmar	9,482	3,645	10,920	199.6	14,400	5,221	16,252	211.3	671.92
Guatemala	6,524	8,738	10,286	17.7	5,614	6,988	8,961	28.2	
Tanzania	8,087	11,857	9,359	▲21.1	11,107	16,291	13,254	▲18.6	
Others	26,340	21,102	19,220	▲8.9	32,983	22,693	22,780	0.4	
Total	113,650	117,168	128,101	9.3	140,860	135,015	164,713	22.0	

Source: Trade Statistics, Japanese Ministry of Finance

Figures in parenthesis are taken from China Customs Statistics Yearbook

The reason why the price of Myanmar sesame seeds is much cheaper than Chinese sesame seeds is because of quality. Improving quality of Myanmar sesame seeds will increase their price, and provide incentives to sesame seeds manufactures, and thus expand growing areas and production in Myanmar.

Sesame seeds are not subject to import custom tariff in Japan. Japanese cooking oil manufacturers that use Myanmar sesame seeds include Nissin Oil, Kadoya Oil, and Takemoto Oil.

3) Myanmar's Sesame Seed Export; Expansion and Strategies

Myanmar has great potential for sesame seed export. Domestic consumption of sesame seed amounts only a few tons per year. Depending on crop situation, Myanmar is capable of exporting between 50,000 tons to 200,000 tons of sesame seeds per year. Productivity is high since it takes only three months to grow and cultivate sesame seeds in Myanmar. In addition, Myanmar people prefer peanut oil to sesame seeds oil. Myanmar's main competitors in sesame seed export are China, and African countries such as Tanzania, Uganda. Myanmar is advantaged because freight from Africa to Japan is high.

More importantly, export volume of sesame seeds in China (the largest exporter of sesame seeds to Japan) is decreasing due to greater domestic consumption, caused by the country's improved living standard.

For these various reasons, Myanmar's export opportunities are rapidly expanding. However, there are some issues that need to be solved first. Three years ago, Myanmar government prohibited private enterprises from exporting sesame seeds, in order to decrease

palm oil import from Malaysia (US\$100 to 150 million per year). As a result, public enterprises introduced their customers to the government and these customers signed nominal contracts with the government. The most serious issue is that while private enterprises used US\$1 – 600Kyat exchange rate, the government now uses US\$1 - 300 Kyat exchange rate. Sesame seed export costs are supposed to be even with US\$1 - 500 Kyat exchange rate. Therefore, the current exchange rate results in red figure. Considering Myanmar's domestic economy, export price of sesame seeds should be US\$400-700/ton. On the other hand, since Myanmar's oil pressing equipments are old, two tons of sesame seeds can produce only one ton of sesame seed oil. The quality is very poor, too. As a result, oil pressing is considered as a loss of great opportunity. The difference between import price of palm oil (US\$350) and export price of sesame seed oil (US\$400-700) results in a loss of critical business opportunities for Myanmar.

On top of these negative factors, cultivation of sesame seeds in Myanmar decreased due to the heavy rain that hit chief production districts in 2001 (sesame seeds are also produced in areas with little rain and humidity.)

Myanmar is the third largest sesame seeds producer (the same rank as Sudan), and the forth-largest exporter in the world. It is suggested that Myanmar make efforts to improve the quality of sesame seeds, increase production volume and change its export policies.

4) Export Expansion Policies for Pulse, Beans, and Sesame Seed

Farming is a core industry, and also a main export industry in Myanmar. Farming accounted for 52% of the country's GDP in 1999. Main export produce in Myanmar (including rice, pulse, beans and sesame seed), consisted 28% of the entire export value in 1998/1999.

In the following pages, various measures to increase export of pulse, beans and sesame seeds will be discussed from two aspects: strengthening factors to promote export and minimizing factors that prohibit export.

i) Strengthen Factors to Promote Export

*1. Preferential Treatments to Exporters

Preferential treatment programs, and incentive programs for exporters should be developed and implemented. Just like fishery products, agricultural products are affected easily by weather and international markets. Agricultural products also require strict quality control. Without government support, private enterprises' individual efforts are not enough for expansion of agricultural product export.

It is recommended that Myanmar establish a program similar to Thai's "Special Finance Program for Export". In this program, low-interest loans are

given to exporters to minimize their financial burden in purchasing and exporting agricultural products. The program has contributed to the promotion of agricultural product export in Thai.

*2. Establishment of Pulse, Beans Sorting Factories

At sorting factories, impurities are removed by air screen, pulse and beans are categorized by weight, cleaned and bagged by quality and size. This will upgrade the quality of Myanmar pulse and beans for export. Establishment of these facilities in production/shipping centers in the entire Myanmar is desired.

*3. Founding Trade Promotion/Information Organizations

Organizations, which introduce customers, conduct market research, exchange information and promote participation to international/domestic trade shows, should be founded in Tokyo and Yangon. For example, Japan can use JETRO Tokyo or its affiliate organization as contact point, while Myanmar can use MOC or Myanmar Pulse, Beans, and Sesame Seeds Merchants Association as a contact point. Myanmar Pulse, Beans, Sesame Export Association is an affiliate organization of UMFCCI, established in 1991 and has approximately 200 members.

ii) Minimize Factors That Prevent Export

*1. Abolishment of the Government Control on Sesame Seeds

Myanmar government designated sesame seeds as a government-controlled agricultural product in November 1998. Export by private enterprises is strictly prohibited. This policy should be abolished immediately to open sesame seed market to private enterprises. This is because efforts by private enterprises to develop sesame seeds as an important export item, slowed down due to the government intervention.

*2. Abolishment of Export Taxes

Abolishment of export taxes will help upgrade price competitiveness and improve export profitability. Expansion of export will help stimulate farmers and increase growing area/production.

*3. Establishment of Trade Policies and Simplification of Custom/Trade Procedures

Clear trade policies should be established while simplifying custom/trade procedures. The most critical issue for agricultural product buyers (including Japan) is to find stable providers. Sudden policy changes (as in the example of sesame seeds) force buyers to find alternative suppliers, and as a result, export

countries lose their credibility.

Also, frequent policy changes in exchange rates, export/import policies prevent Myanmar exporters from making continuous efforts to expand their business. Current trade procedures and the number of days it takes to complete transactions are stopping Myanmar from utilizing its trading opportunities.

*4. Establishment of Infrastructure

Establishment of infrastructures for distribution, such as electricity, roads, communications and harbor facilities requires significant amount of time and money. Still, poor harbor infrastructures are very serious issue for agricultural products including pulse and beans. Due to a small number of ocean vessels that stop at Myanmar harbors, sea costs are high (US\$1,000 per container).

Improvement of transportation and shipping is desired in order to shorten the length of domestic shipping for agricultural products.

*5. Relaxation of Foreign Currency Control

Improve operation of subordinated exchange rates for foreign currencies earned (not limited to agricultural products only.)

(3) Other Agricultural Products (Potential Export Items)

1) Raw Cotton

Production of raw cotton in Myanmar accounts for only 0.57% of the entire global production. However, the Myanmar government believes that raw cotton is a critical factor for the country's textile industry and also a potential export item. The government considers raw cotton as an important product in the country's farming industry, just like pulse, beans, rice, and sugar cane. The government is planning to improve productivity and increase growing area of raw cotton.

i) There are two types of raw cotton grown in Myanmar.

Short Staple Cotton..... Mahaing-5, Mahaing-8, Wagyi (*gossypium arboreum*)

Medium Staple Cotton.... Lungyaw-3, LA-887(*gossypium hirsutum*)

In order to promote export, Myanmar now grows new types of raw cotton, such as medium staple cotton, Anjali, LRA-5166, MCU-5V, and SR-60, imported from Thai and India.

Table 4-52 Growing Area, Production, Export of Raw Cotton in Myanmar

Acreage & Quantity : in thousand

Export value: in million

	85/86	95/96	96/97	97/98	98/99	99/00 (p)	y/y %
Growing area (acres)	496	778	737	608	716	796	11.2
Production (tons)	98	162	165	161	156	173	10.9
Export volume (tons)	2	-	-	4	4	2	▲50.0
Export value (K)	18	1	3	26	21	10	▲53.3

(p):provisional

Source: Statistical Yearbook 2000

Up to 1950's, majority of raw cotton produced in Myanmar was *gossypium arboreum*, which has short and rough fiber. However, in late 1950's, medium staple cotton (a kind of *gossypium hirsutum*) was introduced from the Soviet Union and the United States. As a result, production of *gossypium arboreum* decreased while medium staple which provides better quality and greater crop volume became more popular. By 1997/1998, medium staple cotton dominated 80% of all raw cotton growing area, and 98% of production volume in Myanmar.

In order to increase raw cotton production, Myanmar government has implemented various strategies, such as building test growing farms, improving quality, reserving fertilizer and pesticide, providing loans to farmers and improving irrigation facilities. Myanmar government plans to expand the current raw cotton growing area of 844,000 acres (in 2000/2001) to 1,000,000 acres by 2005/2006. Target growth rate per year is average 3.5%.

ii) Usage, Domestic Consumption and Export of Raw Cotton

There are currently six cloth-manufacturing plants, three textile factories and one fabric factory under the Ministry of Industry (1). These factories use 26,600 tons of raw cotton annually (mostly medium staple cotton). All of short staple cotton and some of medium staple cotton are consumed in cottage industry or by farmers (volume is expected to be 140,000 to 150,000 tons per year in total.) Myanmar exported raw cotton until the beginning of 1960's. With expanded production, export volume started to increase in 1997/1998. In March 1998, raw cotton was designated as a government-controlled agricultural product. Now all export of raw cotton is managed exclusively by Myanmar Cotton and Sericulture Enterprise: MCSE, an organization under the Ministry of Agriculture and Irrigation. In order to expand export, greater production volume is critical, as well as improved quality/breed. Myanmar's raw cotton is exported mainly to Thai, Bangladesh, Malaysia and Japan. Raw cotton is not subject to import custom tariff in Japan.

Issues in raw cotton export, according to the opinions collected from trading companies in Myanmar, are as follow.

- a) Difficult to secure enough raw cotton because the domestic consumption is high on the list of priorities.
- b) Myanmar's lack of knowledge about overseas market price.
- c) It takes at least a few weeks to receive final answers even if a limit is given. Buyers' bidding period is usually a few days. Thus, the deals has to start all over again.
- d) Imposition of export tax (8%), which is against export promotion policies by the government.

Examples of issues in the production of raw cotton are: 1) delay in breed improvement; 2) insufficient irrigation facilities; 3) shortage of fertilizer and insecticide; 4) insufficient production/supply system of seeds and; 5) insufficient measures for pest extermination.

With requests from the Myanmar Ministry of Agriculture and Irrigation and MCSE, Kubota Corporation (located in Osaka) signed an agreement for Cotton Yield Maximization Research and Demonstration Project in September, 1998. This is an experimental project designed for increasing raw cotton production by breed improvement in Myanmar. Kubota grew raw cotton in October 1998 with cooperation from MCSE as a trial. This project showed that raw cotton production and its quality can be improved by cultivating superior breeds, improving irrigation facilities, increasing germination rates with utilization of farming machines, shortening length of agricultural field maintenance by automation, and decreasing disease with the introduction of dual crop. MCSE was pleased with these results and requested Japan for continuous technical assistance in order to earn foreign currencies by raw cotton export.

2) Buckwheat

Production/export of buckwheat started with technical trainings provided by the Japanese government, in order to substitute production of drugs in 1995. Buckwheat has strong potential as the Japanese government continues to provide "grass root" assistance. In June 2001, the second batch of buckwheat grown in Kokang Special Region of Shan State, which used to cultivate garden poppy (ingredient for drugs) was exported to Japan. Export volume was 54 tons (3containers). The breed used is Early Plants produced in Hokkaido. FOB was US\$280. Buckwheat production started in Kokang in 1997. At first, 18 tons were exported to Japan in 2001. Growing area has expanded from 3,000 acres in 2000, to 4,100 acres now.

The Japanese government is assisting Myanmar's buckwheat production as part of drug busting campaign. In February 2001, the Japanese government granted US\$95,000 as "grass roots grant aid" to Myanmar Boarder Areas Development Association for purchasing 20 tons of buckwheat seeds. Export volume of buckwheat still remains small at this point. Yet, it is

hoped that this project, which contributes to drug busting campaign, will gradually expand.

(4) Shrimp

Myanmar exported 14,000 tons of shrimp (worth 529 Kyat) in 1999. According to Trade Statistics by Japanese Ministry of Finance, Japan's shrimp import was 4,373 tons (JPY 49.8 billion) in 1999 and 4,464 tons (JPY 52.5 billion) in 2000.

Myanmar's share within Japan's shrimp import is still low at 1.8%. However, shipment to Japan accounts for about 40% of Myanmar's shrimp export.

There is no import volume limit for shrimp in Japan. The present tariff rate is 1% (excluding cooked shrimps). However, since Myanmar is designated as cholera contaminated zone, a government-issued health certificate is necessary for importing shrimps, as with other aquatic products. A health certificate is necessary for any other product that uses water. Since it is not made clear how thorough sanitary precautions are made in Myanmar, Japan's reliance level towards Myanmar shrimp does lack in some areas.

1) Japan's Shrimp Import Volume

Table 4-53 Japan's Frozen Shrimp Import Statistics

Country Name	Volume (Tons)			Value (JPY billion)			2000 Share (%)
	1998	1999	2000	1998	1999	2000	
Indonesia	53,693	50,619	49,795	868	642	685	20.2
India	50,411	52,756	50,005	715	562	586	20.3
Vietnam	26,697	30,253	33,098	289	279	328	13.4
Thailand	17,779	19,320	18,651	334	279	289	7.6
China	12,141	13,489	16,545	102	95	152	6.7
Myanmar	4,473	4,372	4,464	64	50	52	1.8
Others	73,712	76,504	74,069	997	899	888	30.0
Total	238,906	247,314	246,627	3,369	2,806	2,979	100.0

Source: Prepared by the NRI research team, based on Trade Statistics, by Japanese Ministry of Finance

Japan's shrimp import volume is approximately 25 million tons annually and has not seen much of a change, but remains Myanmar's most important export item to Japan. Other shrimp exporting countries are looking to expand exports to the United States and EU Nations. As a result, there is a strong possibility that Myanmar's shrimp export to Japan will expand in the future.

Currently Myanmar's share in Japanese shrimp export is 1.8%. However, considering production increase from the expansion of aquaculture business, to boost the export goal to around 10-15% in line with Vietnam can be possible.

The reason behind the low import rate from Thailand, a large exporter of cultured shrimp, is that Thailand's export has been increasing towards the United States and EU nations. Similarly, Indonesia and India are seeing an increase in the same trend. Confidence by the US and EU in security, high quality, advanced technology, and quality management toward shrimps produced in these Asian countries is considered to have increased.

Table 4-54 Shrimp Average Import Unit Price

Country Name	1998	1999	2000	2001
Indonesia	1,616	1,269	1,375	1,290
India	1,419	1,065	1,171	1,092
Vietnam	1,083	922	990	981
Thailand	1,879	1,445	1,547	1,339
China	842	705	918	870
Myanmar	1,423	1,138	1,176	1,182

Source: Prepared by the NRI research team, based on Trade Statistics, by Nagoya customs

However, in import prices, China's import unit price is extremely low. This is because affordable, small sized raw peeled shrimp such as hardback shrimp (*trachypenaeus curvirostris*), pink shrimp, mud shrimp (*solenocera melatho*) are imported in large quantities. On the other hand, the reason why the price of shrimp imported from Thailand and Indonesia are extremely high is because products with added value such as medium sized raw peeled shrimp with tail and sushi shrimp are being imported. The confidence level/popularity in the Japanese market goes in the order of shrimps exported from Thailand, Indonesia, India, China, Vietnam, and Myanmar. Myanmar shrimps are traded for JPY100-200 cheaper per block compared to other countries' shrimps in the wholesale markets. The reason why Myanmar shrimp's import unit price is high compared to India, Vietnam, and China is due to its large size. Other countries' export unit price is on the decline, but this trend is not recognized in Myanmar. This is assumed to be because Myanmar's exporters are not having a grip on market transaction price information. Unable to react to the price fluctuations, they are missing out on export opportunities.

2) Myanmar's Shrimp Export Plan to Japan

As a short-term, governmental target, there is a goal to expand the shrimp pool to 120,000 acres by 2003. However, seeing the present progress, achieving this goal by 2003 seems difficult. If 60,000 acres, approximately half of target, were to be completed in 2005, and the full 120,000 acres in 2010, production per acre were to be 1.5 tons (intensive culture), and percentage of export to Japan were 15-20%, it is assumed Myanmar can export approximately up to 22,000 tons of shrimps in 2005, and 32,000 tons in 2010. (Natural

shrimps are predicted to be slightly less.)

The share of Myanmar shrimps in Japan is currently 1.8%. However, to aim 10-15% share in line with Vietnam is a reasonable target. Since cultured products are going to increase in medium sizes, export value is assumed to decline overall with JPY 220 billion in 2005 and JPY 320 billion in 2010 (calculating based on unit price of JPY 1000 / KG).

Huge shrimp exporters, such as Thailand, Indonesia, and India are flattening out or on the decline. Opposed to that, Vietnam and China tend to be on the rise. This is the result of Thailand and Indonesia exporting mainly to the United States.

Additionally, diffusion of sushi boats in the Japanese Market and the easy-to-cook features has led frozen packed shrimps with added value such as medium sized raw peeled shrimp with tail and sushi shrimp, to be imported in large quantities from countries including Thailand. This trend seems to intensify furthermore.

When viewing Japan's import volume as a whole, the flat economy is not likely to change dramatically, but since countries like Thailand's export to Japan is on the decline, there is plenty of possibility for Myanmar shrimp's share to increase.

3) Export Expansion Strategy

Production Costs:

Abundance in labor and cheap labor costs enable Myanmar to compete with neighboring countries. Electricity shortage makes reliance on private power generation inevitable and is a disadvantage in cost competition. Cutting down rising material cost caused by inflation, price increase caused by raw material purchase competition among processors, high taxes for export and revenue, and strengthening cost competitiveness are desirable.

Price:

In terms of price differences among neighboring countries, while maintaining the current standard, it is important to be able to react to the fluctuation of international transaction market prices. By lowering the current high production costs, shrimp processors will be able to gain profits. It will also increase their motivation to export.

Quality:

Large-size and high quality shrimps, mainly consisting of natural products, should be produced. Improvement in processing technology after technical guidance from countries such as Japan will enable shrimp processors to respond to buyers' demands. Stable supply of products (mainly medium-sized shrimps) is an important strategy as well. Improving Myanmar shrimp's image by separating natural and cultured shrimps is also possible. In other words, while ensuring rigorous employee training/management and providing guidance on processing technology in order to improve quality and reliability, the superiority of natural products as well as freshness and security of cultured products must be appealed.

Technical Level Advancement:

Especially in size assortment, freshness preservation, and processing methods are important.

International Profile:

Public's confidence in Myanmar shrimps should be increased, through introductions on Myanmar's industry and business meetings. In the current state, factors such as low international profile, lack of import experience in Japan, and dispersion in quality are resulting in loss of confidence. Using the Internet, Myanmar should gather market/price/information on exporting countries, and transmit information of Myanmar's enterprise to enterprises in other countries. It is important to be able to respond quickly to the international market.

Productivity:

Promotion of the aquaculture business and the expansion of productivity can be widely anticipated. By ensuring rigorous employee management/training, the level of production efficiency will improve.

Package design:

A package with impact for higher brand image should be created.

Export share in Japan:

Target should be 10-15% share in Japan. Market cultivation, profile improvement, setting up opportunities and organizations that enable negotiation with Japanese businesses and import traders to increase business chances.

In addition, major export disincentives and strategies for export expansion are summarized below.

Table 4-55 Export Disincentives (Field Study Results)

	Disincentive	Improvement Ideas	Expected Effects
1	Export taxes	Reduced or removed.	Increased competitiveness
2	Export procedure	Right now, EXPORTERS have to obtain a license every time they export, and for every product, which takes a number of days. Simplification of procedures is recommended.	Smooth delivery will allow functional improvement and export promotion.
3	Export inspection	Even when the same product is shipped, an inspector is placed from the Myanmar fishing department for every export. This requires inspection period as well as creates complicated problems. Need reformation for efficiency	Same as above
4	Refrigerated carrier	The number of ships with refrigeration facilities is extremely low. Upgrading of shipping facilities is necessary.	Improved quality of shrimps and increased competitiveness
5	Quality management	In shrimps exported to Japan, there are cases where in order to increase weight, slugs are mixed in with the shrimp. Currently, Japanese traders first check whether shrimp processors have metal detectors or not before signing a contract. Reinforcement in this inspection is necessary.	Increased confidence and quality in Myanmar shrimp.
6	Export financing	Export financing for medium and small processors should be provided. (Purchasing processing material and resources are difficult since low-interest loans are not available.)	Leads to higher production and motivation for export
7	Shortage of fishing equipment	Allow greater opportunities for fishers to purchase fishing equipment with profits from export.	Improvement in fare ability
8	Shortage of market information	(1) Shortage of research/resource information should be improved. (2) Shortage of international market information should be improved.	Development of new export products
9	High charges for freight	Lower ocean freight, liberate dominance by five-star ships	Higher competitiveness due to simplified shipping procedures
10	Electricity	Since stable supply of electricity is unavailable, private power generation must be used, which results in higher costs.	Cost reduction
11	Communications	Since communications network is not set up, international market information or exchange of information with exporting countries does not happen smoothly. Myanmar cannot respond to market conditions.	Expansion of business opportunities Increase in earning capacity
12	Employee moral	There are gaps among employees in their technical levels. Also low moral levels are causing decline in reliability.	Increased confidence from the market

Source: JICA Study Team

Export Expansion Strategies

- By abolishing export taxes or adopting preferential treatment programs, profit margins for shrimp processors will increase. This will result in greater motivation for shrimp processors toward exports.
- Increase in investment and dispatch of experts (in technical, control, and management areas) by Japanese companies will lead to improved quality and stable supply of Myanmar shrimp.
- By establishing organizations for shrimp processors, unnecessary inflation in raw materials/equipments can be minimized, which will facilitate procurement.
- Organizations for shrimp processors will facilitate information exchange among shrimp processors, which will lead to increased competition among them.
- Export license acquisition and export inspection processes should be simplified.
- By establishing and opening communication network to the public, collecting and transmitting information can be made easy.
- Low-interest loans should be provided based on export contracts, in order to facilitate procurement of raw materials and equipments.
- Ocean freight costs such as containers should be lowered in line with costs in neighboring countries.
- Basic infrastructures should be built in order to ensure stable supply of electricity, lower fuel costs for private power generation, and provision of communications network.

Strategies for Increased Competitiveness

There are many factors, which are hindering further promotion of exports in Myanmar. Yet, the most urgent issues are developing/expanding Japanese market, and improving Myanmar's international profile. These two issues have to be solved immediately since Myanmar will soon be able to produce large quantity of shrimps through expansion of aquaculture business.

(5) Copper Cathode

1) Overview of Mineral Material Production in Myanmar

Myanmar has rich supply of mineral materials such as noble metal (gold, silver, ruby, sapphire, jade) and various types of industrial metal/mineral including crude oil, natural gas, coal, nickel, antimony, lead, stannum, and tungsten.

Table 4-56 Production Volume of Metal and Mineral Items in Myanmar

Name	Unit	1985-1986	1990-1991	1995-1996	1997-1998	1998-1999	1999-2000
Copper matte	m. ton	142	108	263	53	58	142
Nickel speiss	m. ton	54	98	83	38	31	77
Antimonial lead	m. ton	294	110	88	-	116	-
Refined lead	m. ton	5,807	1,562	2,074	1,585	1,855	1,716
Zinc concentrates	m. ton	8,403	3,820	1,704	1,303	1,236	507
Tin concentrates	m. ton	892	272	490	154	114	131
Tungsten concentrates	m. ton	338	13	144	19	7	7
Mixed tin, tungsten & scheelite	m. ton	2,966	1,155	1,106	819	339	292
Coal	Ton	43,155	32,774	34,708	29,379	30,536	42,099
Copper concentrate	m. ton	36,015	30,033	27,856	14,634	-	-

Source: Statistical Yearbook 2000

However, lately production volume has been declining every year because of aging facilities, lack of new investment and poor infrastructure. In addition, quality of products is losing its global competitiveness due to the lack of new technology implementation. Therefore, export volume/value of mineral items in Myanmar is on the decline these days.

Export Volume and Export Value

Table 4-57 Base Metal and Ores

Unit	85/86	90/91	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00
Kyat (million)	114	72	27	29	61	70	33	30	74	289
M/T	30	33	22	25	54	34	16	26	8	33

Source: Statistical Yearbook 2000

Table 4-58 Foreign Investment to Myanmar's Mining in 1990's

In US\$1 million								
1990-91	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00
5,510	3,338	2,087	50	15,577	17,829	270	488	1,850

Source: Statistical Yearbook 2000

There are currently 19 joint venture agreements between foreign affiliates and Myanmar.

However, due to price drops, Asian currency crisis and shortage of funds, most of these agreements have been terminated or cancelled. The only foreign investment that has succeeded so far is investment to re-development of the Monywa Copper Mine.

Background information and history of the development of copper cathodes at the Monywa Copper Mine are as follows:

- This is a joint venture by Ivanhoe Mines Ltd., Canadian company and No.1 Mining Enterprise of the Ministry of Mining. Each entity holds 50% share of the joint venture.
- History
 - 1994 Joint venture agreement was signed.
 - 1996 Feasibility study was completed at the Monywa Copper Mine, in Sebentaung, Kyesintaung district.
 - 1998 Production started using the SX-EW method (annual production volume was 2.5 tons).
 - 1999 Exports of copper cathodes started. Since then, copper cathodes have been exported every year, which has helped Myanmar earn foreign currencies.

Source: Metal Mining Agency of Japan

2) Status of Copper Cathodes Export

According to interviews conducted by the NRI research team, the joint venture is capable of producing 2,500 to 30,000 tons of copper cathodes every year. All of copper cathodes produced are exported overseas.

- Standard market price for 2,500 tons of copper cathodes is US\$1,400 to 1,200/ton. Since market price has been declining lately, total export value will be US\$30 million using market price of US\$1,200/ton. Exports to Japan account for US\$15.2 million while the remainder is exported to neighboring countries (mostly to Japanese companies).
- Grade of copper cathodes produced: 99.995% (meets global standard)
- Production cost is US\$0.7 per kilogram, about half of industry standard, and thus a great advantage for Myanmar in competing against other countries.
- Myanmar government hopes to increase production volume and export volume of copper cathodes, since it brings foreign currencies. Currently the government plans to increase production volume from the current figure of 25,000 tons, to 12,500 tons per year (five times more). 12,500 tons of copper cathodes production will result in output of US\$1.5 million. Approximately, US\$62.5 million profits can be expected after subtracting production costs of US\$1.5 million.
- The entire amount of 12,500 tons of copper cathodes can be exported because most of the buyers are Japanese companies in neighboring countries. Also, as mentioned previously, Myanmar's copper cathodes are competitive in terms of

the price.

- Letpandanaung, the mountain seven kilometers apart from the current factory has over 3 million tons of reserve. It is confirmed that this mountain will be capable of producing five times more copper cathodes than the current production volume, for more than 25 years.

3) Japanese Copper Cathodes Market

In 2000, approximately 200,000 tons of copper cathodes (JPY39 billion) were imported to Japan. Myanmar copper cathodes accounted for over 7,600 tons, or JPY1.5 billion. Myanmar's share in Japan's copper cathodes export was 5.3% in terms of volume, and 5.1% in terms of value.

Table 4-59 Copper Cathode Import Statistics

Top column: Volume in tons

Bottom column: Value in JPY1 million

Copper Cathodes Suppliers	1999	2000	2001 (Until November)
Total amount of export to Japan	225,723 40,328	198,123 38,929	143,766 30,414
1. Chile	107,383 19,349	109,068 21,556	65,727 14,954
2. Zambia	29,171 5,268	26,257 5,132	20,443 4,325
3. Indonesia	23,165 4,038	11,408 2,228	13,767 2,839
Myanmar	13,386 2,252	8,667 1,634	7,661 1,549
Myanmar's share	Volume : 5.9% Value : 5.6%	4.4% 4.2%	5.3% 5.1%

Source: Nagoya Custom Office

Per ton copper cathodes price has been between approximately JPY170,000 to 210,000 in the past three years. In 2001, per ton price of copper cathodes produced in Chile and Zambia are high at JPY210,000, while Indonesian product was JPY206,000, and Myanmar product was JPY202,000. Consequently, Myanmar product is competitive in terms of price.

Copper cathodes have been imported from China, too, but have remained low at around 1,000 tons per year. Major suppliers to Japan are Central and South America and Africa, which are relatively far from Japan. These countries are disadvantaged in terms of high shipping costs.

In addition, copper cathodes import from Myanmar is not subject to custom tax since Myanmar is designated as a preferential trade country. Also, there are not restrictions in import. These are additional reasons why Myanmar product has strong global

competitiveness.

4) Future Issues and Export Expansion Policies

The Myanmar government is strongly interested in a significant increase in production volume of copper cathodes. Myanmar product is competitive globally, in terms of production method, quality, LME registration, reserve, production costs, and export price. This project is strongly recommended because it will help Myanmar earn foreign currencies. However, there are some issues that need to be solved for the further development of copper cathodes export. The two most critical issues are as follows:

i) Need for large investment

Because of the current economic environment that surrounds developed countries, companies/investors who are eager to invest are rare.

It seems that there are very few companies/investors who are willing to spend a large sum of money in Myanmar, because of its political instability.

(In order to increase production volume by five times, an estimate shows that JPY45billion is necessary.)

ii) Need for significant volume of electricity

Shortage of electricity is a critical issue in today's Myanmar. In particular, the Ministry of Electric Power Enterprise (MEPE) is unable to provide large volume of electricity required for industrial use. Users have to rely on private power generation. Currently, Myanmar government is considering to use hydroelectricity or thermal power (coals). However, this will need large investment (over JPY10 billion will be necessary for building thermal power plants). Therefore, the plan to increase production volume by five times has not progressed.

Factors that prevent exports in other items (e.g. including domestic shipping, and custom processing) have not been an issue in copper cathodes export.

The following conclusion can be drawn based on the information above. For the expansion of Myanmar economy, promotion of this project is very critical.

This is one of a few projects, which sell competitive industrial products, manufacture products while utilizing Myanmar's resources, and earn foreign currencies by export.

The success of this project will be beneficial to Myanmar economy in many aspects, such as employment, new technology implementation, infrastructure development, reformation in export procedures, and improvement in foreign banking systems.

After the enactment of the Myanmar Mines Law in 1994, all mineral resources in Myanmar have been treated as the government property. All mining activities have to be managed by the Ministry of Mining through Department of Mines. Therefore, the government plays significant roles in the success of mining industry in Myanmar.

(6) Kenaf

Kenaf (Hollyhock family, Hibiscus genus) is the annual that grows in subtropical regions in Africa and Southeast Asia. This plant grows on the ground where the temperature is 20 degrees centigrade and above, and crops heavily in a short period of time. Because of its ability to absorb large quantity of CO₂, kenaf is viewed as a plant that helps prevent global warming. Kenaf grows in a wide range of area, and its bast fiber can be used for clothing, fuel woods, and seeds for oil. With growing awareness toward environmental protection in our society, particularly in forest preservation, kenaf is looked at as the future (non-wood) pulp that will be able to replace wood fiber. According to the FAO statistics, 730,000 tons of kenaf were produced all over the world in 1998/1999. 350,000 tons were cultivated in China, and 100,000 tons in Thai. Other countries such as the US and Australia also grow kenaf.

1) Kenaf Production in Myanmar

Myanmar has been importing kenaf seeds from Thai since 1963. Kenaf is now cultivated in areas such as Yangon and Bago, although the growing area still remains small. (1,100 acres in 1989/1999 and 2,000 acres in 1999/2000.) Kenaf is mixed with jute to make croker sacks or carpets in Myanmar. Yet, demands for croker sacks is declining drastically due to the invention of polypropylene bags. Myanmar Jute Enterprise, under the Ministry of Agriculture and Irrigation, is promoting kenaf production by developing a five-year plan as listed below.

Objectives of Five-Year Plan

- Expand and promote kenaf production in the entire Myanmar, not only in the south region.
- Develop a new agricultural resource to accelerate Myanmar's economic development while utilizing kenaf.
- Create employment in agricultural/industrial sectors.
- Build kenaf pulp plants. Decrease paper import.
- Earn foreign currencies by exporting, kenaf, kenaf pulp and other related products.

Application of Kenaf

Kenaf can be mixed with hemp. It can also be used as non-wood pulp to substitute wood in construction, or automotive interiors. It contributes to forest preservation. In Malaysia, a large amount of kenaf, which is transformed into pellet, is used to feed animals.

Table 4-60 Details of Kenaf Production Five-Year Plan

<u>Fiscal Year</u>	<u>Sown Acre</u>	<u>Yield (Viss/Acre)</u>	<u>Kenaf Production (Viss)</u>
2001/02	10,000	300	3,000,000
2003/04	20,000	320	6,400,000
2005/06	30,000	340	10,200,000

Note: Viss = 1.63kg

Source: MJE

For 2001/2002, Myanmar will target to plant 10,000 acres of kenaf, and produce 3 million viss (4,950 tons). Next goal is to enlarge growing area by 5,000 acres annually in subsequent years. In five years Myanmar aims to expand growing area to 30,000 acres, and production volume to 1,020 million viss (1.6 million tons). The government is also interested in establishing a pulp plant.

Kenaf Pulp Plant

- Target production volume: 20 tons daily (goal developed by Myanmar)
- Planned construction site: Toungoo city, Bago State
- Target buyers: Japan and other countries
- Target export price: Current market price is around US\$500/ton, which is 1.5 times higher than wood pulp.
- Application: Luxurious paper, bank notes, wrapping paper, newspaper, etc.

2) International Relationship

Japan Kenaf Development Institution and the Myanmar Ministry of Science and Technology are working together to discuss with MJE, issues related to test production of kenaf and establishing pulp plants. Also, Japanese companies are manufacturing carpets, which consist of 30% kenaf and 70% polyester.

Inbest Technology (M) SDN.BHD in Malaysia imports kenaf from Myanmar and is now experimenting how to use kenaf for automotive interiors for cars, together with a German automobile manufacturer.

3) Current Status of Kenaf Experiments in Japan

In Japan, large acres of rice paddies are being abandoned because of the difficulty associated with finding alternative products to grow in rice paddies. Kenaf, which is rich in fiber adjusts to high humidity in Japan and crops heavily. There are now experiments being conducted to cultivate kenaf in rice paddies (mainly fallow fields), extract fiber and use it for paper, food. Tokai Bureau of Agricultural Production Bureau in the Ministry of Agriculture, Forestry and Fisheries of Japan started a three-year kenaf experiments/production project in

July 1999. Some of the issues that surfaced from this project are how to establish automated harvesting/adjustment technologies, and how to analyze the plant's environment purification capabilities. This project is taking place in Aichi Prefecture Agricultural Test Growing Center where 65 acre of kenaf is planted.

On the other hand, in today's automobile industry, production of kenaf is widely promoted because of its environmental protection feature. New application method such as using kenaf fiber for automotive interiors is also being considered.

Toyota is using 50-60 tons of kenaf every month, as molding core for door in two models, Celsior and Soarer. Because of its high cost, kenaf cannot be used in low-priced cars. However, in terms of export, the plant's feature that contributes to preservation of environment can be a unique advantage. Kenaf used in molding core for door in Toyota cars, is manufactured by Araco Co. Araco grows kenaf in its own factory in Indonesia and imports bast of kenaf to Japan. Otsuka Spinning mixes this material with polypropylene fiber (40-50% ratio), molds it into a certain format, and delivers it to Araco, which turns it into door trim (molding core for door). Also, another Toyota-affiliate automobile parts company is test-growing kenaf in Toyota city to merchandize the plant for automotive interiors.

4) Kenaf Import in Japan

Kenaf was first imported to Japan in 1991 from Thai and China. Since then, Japan has been importing 3,000 to 5,000 tons of kenaf every year.

Paper and related products produced by leading Japanese paper manufacturer, using kenaf are as follows:

<u>Type/Purpose</u>	<u>Manufacturer Company</u>	<u>Product Name</u>	<u>Kenaf</u>	<u>Application</u>
Coating paper for print	Nippon Paper Industries	G Plan Ecoma	30	Coating paper

5) Current Conditions in Thai

History of Kenaf Production in Thai

Kenaf was first cultivated in the northeast region of Thai in 1950, to make rice bags. Initial growing area was about 5,000 hectare, which produced 4,700 tons of kenaf. Since then, growing area expanded due to the increasing demand for rice bags. By 1965, kenaf cultivation enlarged to 392,000 hectare, and production volume to 537,000 tons. Rice bags made of kenaf bast were exported to all over the world and became the second largest hard currency earning product in Thai. However, demand for kenaf rice bags dropped due to the invention of polypropylene rice bags, with peak growing area, 555,000 hectare and production volume, 625,000 tons in 1973. By 1997, production volume declined to 90,000 tons.

Source: The Office of Agricultural Economics

Establishment of Kenaf Pulp Plant

Application of kenaf for pulp was first developed by the North Region Research

Institute of the United States Department of Agriculture. A Thai researcher who was involved in the project between 1957 and 1981 convinced Thai government that kenaf which had been produced in the country for a while, could be useful in generating employment and revitalizing business in depopulated areas of the northeast region. In 1975, with the government's initiatives, the first kenaf pulp plant (Phoenix Pulp and Paper Public CO., Ltd., Khon Kean, Thailand) was built together with India and Australia, using loans from Finland. Actual manufacturing started in 1982, with initial production volume of 70,000 tons per year. In order to produce 70,000 tons of pulp, 190,000 tons of kenaf is necessary. Procuring this amount of kenaf was not an issue when the plant was built. However, lowering demands for kenaf due to the invention of polypropylene rice bags, and increasing popularity of tapioca and sugar cane among the farmers in the northeast region (which could sell at higher price than kenaf), made it difficult for the plant to gather required amount of kenaf.

As a result, Phoenix started using other materials. Currently, volume of kenaf pulp the plant manufactures dropped to 5,000 tons to 10,000 tons annually. Instead, 70,000 tons of bamboo pulp and 20,000 tons of eucalyptus pulp are produced.

(Source: "Current Status of Kenaf in Thai" Association of Promotion for Non-Wood Materials)

6) Current Conditions in China

China has low supply of woods and thus, mainly relies on non-wood pulp. In order to cope with increasing demand for paper, and to reduce wood pulp import, the county is planning to use kenaf as pulp.

In an attempt to meet growing demands, kenaf pulp has been produced in Anhui, Zhejiang, Shandong, Hubei, Hunan with a goal to improve quality.

7) Myanmar's Goals

- Complete Kenaf Production Five-Year Plan
Minimum requirement for Myanmar is to meet its target to increase kenaf production. (Target annual production: 10,200,000 viss, 16,626 tons by 2005/2006, the final year of the five-year plan.)
- Establish kenaf pulp plant
Myanmar aims to produce 20 tons of kenaf per day. However, since it requires approximately 16,000 tons of kenaf, this goal will be difficult to achieve in a short period of time. Perhaps, Myanmar should lower its target while considering the actual kenaf production volume.
- Develop new products by utilizing unique characteristics of kenaf
Myanmar should focus on developing animal feeds made from kenaf in pellet form, or fabric for automotive interiors.

- Employ foreign engineers and experts
Myanmar should employ foreign experts in kenaf cultivation and kenaf pulp production, in order to improve quality.
- Examine effects of sequential cropping
Compared to other agricultural precuts, effects of sequential cropping are supposed to be minimal in case of kenaf. However, obstacles to large-scale production should be considered and appropriate measures should be taken, such as to revitalize produce by applying fertilizer, or to cultivate kenaf interchangeably with other produce in order to balance nutrients in the soil.
- Myanmar Jute Enterprise is requesting Japan to provide proactive assistance in developing kenaf industry, including dispatching experts from JICA. Japan should also be more proactively involved in kenaf industry, since it is effective in preventing global warming. From mid-to-long term perspectives, kenaf could be one of vehicles to develop industries in Myanmar. Kenaf also has potential as a new, promising export item. Continuous feasibility study of kenaf is desirable.

(7) Castings

1) Background

Myanmar Heavy Industrial Enterprise, which is now renamed Myanmar Agricultural Machinery Industries (MAMI), has been manufacturing irrigation pumps and engines with technical assistance from Kubota since 1962. These efforts by Myanmar Heavy Industrial Enterprise has contributed to the automation of farming in Myanmar. Among various businesses MAMI is engaged now, production/export of castings is the only business that has potential to earn foreign currencies for the time being.

In 1981, MAMI built one of the best casting factories in Southeast Asia with funding from ODA and technical assistance from Kubota. In 1997, the factory went through complete overhaul, thanks to free equipments provided by Kubota.

In 1985, Myanmar exported 10,500 sets of manhole covers to Japan for the first time. Since then, Myanmar has been exporting approximately 600 tons of castings for engines and pumps every year. All pig iron required for manufacturing castings is available from iron manufacturers in May Myo. This is a typical, labor-intensive industry. In addition to cheap labor, quality of castings manufactured by MAMI is high, due to Kubota's technical assistance. MAMI castings are also competitive in terms of price compared to castings made in China and Korea. Japanese casting industry is facing difficulty in hiring and retaining workers because of its hard physical labor. Therefore, Japan is shifting its supply source of castings to China and Korea. There are possibilities that Japanese casting companies may transfer their manufacturing operations to Myanmar.

2) MAMI Casting (Molding) Factory: Overview

Production capability: Approximately 4,000 tons/year (as of 1981)

Equipments:

i) Dissolution	- Skull crucible, low frequency furnace (capacity: 3 tons)	3 sets
ii) Molding	- Greensand automated line (2,500 tons/year)	1 set
	- Self-hardening automated molding line (1000 tons/year)	1 set
	- Shell line	1 set
	- Self-hardening handloader line (500 tons/year)	1 set
iii) Sand sink	- Greensand sand sink equipment (Processing capability: 30 tons per hour)	1 set
	- Self-hardening processing equipment (Processing capability: 3 tons per hour)	1 set
iv) Core molding	- Shell core molding machine (two for horizontal, vertical machines respectively)	1 set
	- Self-hardening core molding line, oil core molding line	1 set

With the overhaul conducted at the end of 1998, the factory's production ability improved to approximately 3,000 tons per year. Current production capability is 3,000 tons of castings, of which, raw casting material accounts for approximately 2,500 tons. However, production control after the overhaul has not been thorough and this has resulted in aging of equipment.

3) Export Expansion Plan and Its Effects

- Detail of 2,500 tons/year of raw casting material:

For domestic use	1,500 tons/year
For export	1,000 tons/year

- Detail of 1,000 tons of castings for export:

Raw material 600 tons (Earn US\$1 million per year)
Exported after processing (value added): 400 tons

- Trading partner: mainly Japan

Production capabilities described above are based on estimates for one shift work. Increase in domestic demand and export can be dealt with by overtime work and double shift work depending on the volume. In order to expand export, factory overhaul carried out in 1997/1998 should be conducted again. To export more value added products, new processing equipments (machining center, CNN lathe, general purpose machines) and molding machines to make molding parameters (wood and aluminum) should be implemented. This requires technical assistance from Japan, including sharing technical know-how.

By improving current capabilities of the casting factory, export value of US\$1 million

or higher can be achieved annually. In addition, this will vitalize production of farming machines at MAMI.

Since Myanmar lists advancement of farming on the top of its priorities, automation of farming is the most critical issue. In particular, domestic consumption for farming equipments such as spades, plows, and for small farming machines including cultivators and irrigation pumps should be increased. Sufficient supply of these equipments has to be provided to farmers at cheap cost. In addition, in order to promote drug-busting campaign targeted to ethnic minorities in areas near Chinese and Thai borders, Myanmar government is hoping to provide farming equipments to garden poppy croppers as an incentive to promote crop rotation. However, due to the serious shortage of farming equipments/machines, this program has not been fully implemented. In addition, improvement of MAMI will result in development of Shinde district and Pyay city (across from the Ayeyarwaddy River), and revitalize economy of these areas, thus further enhancing economic values of the Ayeyarwaddy Bridge.

4) Casting Parts

Casting parts that are currently manufactured include manhole covers and frames, waterproof units, casted parts for gate valve, hose collar, foot valve, casted parts for vehicle, and cylinder liner.

5) Casting Costs

Unit price for raw casing material procurement:	Myanmar	JPY55-JPY65 /kg
	Japan	JPY100-150/kg

6) Areas Raw Materials Are Procured

- Pig iron is procured from Maymyo Sponge Steel Factory (built with assistance from Italy) ran by (3) Mining Enterprise, under the Ministry of Mine.
 Pig iron production capability 17,000 tons/year
 Sales price of pig iron 40,000 Kyat /ton
- Supplemental materials are procured from India, Korea, and Japan

(8) Old Rubber Wood

1) Background

Old rubber woods are cut into pieces of one to four inches wide, one to two inches thick and one to three feet long, and seasoned by chemical injection. These pieces are used as raw material for laminated wood. Reasons why old rubber woods are considered as Myanmar's

new export item with growth potential are as follows.

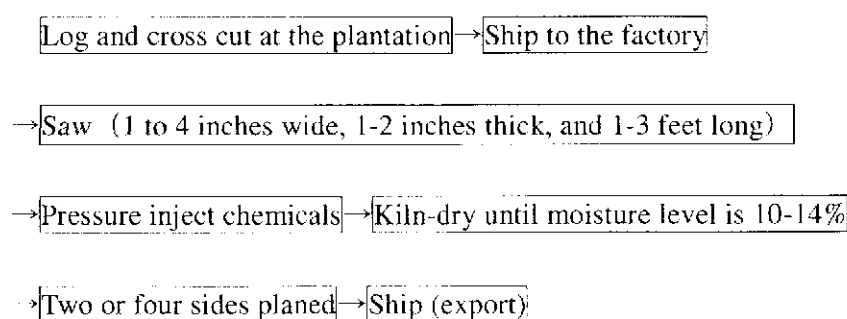
Myanmar has a large supply of old rubber trees. On the other hand, Malaysia is facing the shortage of old rubber woods. Therefore, demands for Myanmar's old woods are expected to grow. In addition, this is a labor-intensive industry, which requires relatively small amount of investment. Our estimate shows that approximately JPY200 million will be necessary to establish facilities that can produce 4,000 h. tons of processed old rubber woods per year (excluding property and building cost). This amount is reasonable, considering that the investment will help improve Myanmar's wood processing/management technologies.

Old rubber woods that are processed in a conventional method (sawn, injected with chemicals, and kiln-dried) can be exported as raw material for laminated wood. However, old rubber woods are relatively low value added and profitability of exporting companies tends to be influenced by exchange rates. Therefore, it is desirable that Myanmar continues to export finished products such as staircase sets, and simple furniture, while making laminated wood from old rubber woods.

2) Old rubber woods: Basic Information

In Myanmar, old rubber woods had been abandoned since 1960's except when they were used as coppice. As a result, it is believed that Myanmar has a capability to supply 2 million tons of scrap rubber woods. All activities related to rubber trees, from planting to sampling of rubber, are under the control of the Ministry of Agriculture, while logging is governed by the Ministry of Forestry. Rubber trees tend to be easily affected by discoloring and decay fungus. The trees' grain is straight, surface is relatively rough, and hardness is medium, which makes them easy to cut and process. Rubber trees can be used for a wide range of purposes, including stairs, simple furniture and counters. Rubber trees change their color to black or blue immediately after logging, due to the ingress of discoloring and decay fungus. Therefore, they have to be sawed, injected with chemicals to prevent discoloring and decay, and artificially seasoned, immediately after logging. After seasoned, and two or four sides planed, rubber woods are exported to make laminated wood.

Figure 4-31 Flow of Rubber Wood Processing



Source: JICA Study Team

3) Current Rubber Wood Market Conditions

Rubber woods exported from Myanmar are sawed, applied with chemicals, kiln-dried and planed. In the future, Myanmar should manufacture laminated wood from rubber woods as a more value added product, by implementing laminated lumber wood production facilities. Currently, the volume of old rubber woods available in Southeast Asia is declining. In particular, older rubber wood price is on the rise due to the shortage of products made from old rubber woods. Import price tends to be influenced by exchange rates. The price fluctuation of products made from old rubber woods is illustrated below.

Table 4-61 The Price Fluctuation of Products Made from Old Rubber Woods

Year	Price (US\$/H. Ton)	Required exchange rates
1995	300~360	RM2.5/US\$
1997	240	RM3.8/US\$
2000	290~340	RM3.8/US\$

Source: Toprank Corporation Limited

In Malaysia, Myanmar rubber woods are used for dining room sets, which have received good reputation. In Japan, Matsushita Electric Industrial imports rubber woods processed in Myanmar from Malaysia to make furniture-type *Kotatsu* (Japanese fireplace with a cover). Aica Co. imports banisters for stairs made from rubber woods from Malaysia. Rubber woods are not used for table tops because their pitch pockets could be a problem. In addition, in Thai, laminated wood made from old rubber woods are turned into finished products and exported overseas. In China, old rubber woods are skived into single boards by small rotary lathe, seasoned and exported to Japan. This is a small, one-man industry and supposed to be run collectively in specific regions in China.

4) Myanmar's Export Strategies

Myanmar has Yogo Rubber Wood Factory (Mudonn) that is governed by Myanmar Perennial Corps Enterprise (MPCE), which processes old rubber woods. The factory's annual manufacturing volume is 1,000MT. The products are exported to Vietnam, China and Singapore at unit price of US\$230/MT. Rubber Wood Development Corp is a privately owned joint venture with Malaysia. Its annual manufacturing volume is 3,000 to 4,000H.Ton. All products are exported to Malaysia.

Table 4-62 Estimate of Cost Breakdown

Items	Percentage (%)	Note
Raw wood cost	50	Product yield rate of raw wood is 25-30%
Processing cost (Including supplemental material cost)	30	All chemicals used to prevent color change/decay are imported from other countries.
Product packaging cost	10	
Sales, administration cost	10	
Total	100	200~250 (US\$/H. Ton)

Source: Rubber Wood Development Corp.

Shortage of rubber woods is expected to occur in Malaysia, which will increase the value of Myanmar rubber woods. However, Myanmar needs to develop management systems to ensure quality and delivery dates that meet international market standards. In addition, in order to expand export, the country's production capabilities must be strengthened by further investment in equipments and by providing additional technical trainings to workers.

Cost for Rubber Wood Processing Facilities (Cost for one set)

Target production capability: 4,000H.Ton annually

Investment: JPY200 million (excluding property and building cost)

Main facilities: Sawing equipments, Chemical pressure injection equipments, kiln-drying equipments, boilers, dust collection equipments, a set of electric facilities

New factories should be built in Modon or other further southern areas since many rubber wood plantations are located near the Malay islands.

On the other hand, there are many issues that Myanmar has to solve in order to expand rubber wood industry. First, there are people who are still making living by sampling rubber sap from trees that are at least 20 years old, which can no longer produce large quantity of sap. Therefore, if these old trees are going to be logged, new seeds will have to be planted to turn the vacant lot to a rubber plantation. Since Myanmar lacks in high quality seeds, they will have to be imported from Malaysia.

Old rubber woods are easily propagated with discoloring and decay fungus (immediately after logging). Therefore, quick chemical injection and kiln-drying are necessary.

In addition, there are other issues, including authorization for domestic shipping, and complexity related to authorization for logging since both the Ministry of Forestry and the Ministry of Agriculture and Irrigation are involved.

(9) Laminated Wood

1) Background

There are mainly four reasons why laminated wood is viewed as a new export item with potential growth in Myanmar.

i) Increased added value of teak wood

Currently, teak wood is the only product among a wide range of Myanmar's forestry products that is dominating the overseas market. However, teak woods that are now shipped overseas are becoming younger every year. The Ministry of Forestry intends to use thinned out woods that are 20 years old as sawtimber from 2008. Compared to natural trees that are at least 100 years old, young trees tend to cause distortions and bowing. Therefore, further research on how to minimize these problems will be necessary.

The easiest solution is to use young teak woods for laminated wood. With this method, exterior and chemical features that teak woods originally have will be maintained. In addition, woods can be exported in a state that is close to the finished product, since waste timber can also be utilized. This will result in greater added value of original wood.

In particular, in order to prepare for thinned out woods harvested starting 2008, implementation of technologies for laminated wood processing, and cultivation of market are important. Teak products that Myanmar should try to manufacture include staircase furniture, counter tops, flooring, walls and materials for furniture.

ii) Increased added value of rubber wood

Myanmar has a large supply of old rubber wood. Currently, small volume of old rubber woods that are chemically injected (to avoid discoloring, decay) and kiln-dried, are imported to Malaysia, Singapore, and Vietnam as raw material for laminated wood. By processing old rubber woods to make raw material for laminated wood and exporting these woods overseas, added value of scrap rubber woods have increased, as well as their cost-effectiveness. In addition, shortage of rubber woods is expected to occur in Malaysia in the near future, which will even increase the value of Myanmar rubber woods.

Japan has already imported large quantity of laminated wood from China, Indonesia and Malaysia. Japan's laminated wood import will most likely continue. Some of the products that are manufactured in Japan from laminated wood include staircase furniture and other simple furniture.

iii) Currently, Myanmar does not have a factory that specializes in producing laminated wood. Instead, laminated wood is finger-joint assembled in wood flooring factories.

iv) Growth of laminated wood business will contribute to the improvement of wood processing technologies in Myanmar. Level of technology that is required in this business is not that high. Also, investment required for monthly production of 100 cubic meters is estimated to be JPY 300 million, which is quite reasonable.

2) Characteristics of laminated wood

Laminated wood consists of lamina and small pieces of wood, glued together in length, width and thickness by aligning direction of fiber. Urethane resin, urea resin and melamine resin are used to glue woods to make laminated wood for interior use while resorcinol resin is used for exterior use. Classification and application of laminated wood are defined in accordance with each material's durability and fancy based on JAS Standards, as shown below.

Table 4-63 Classification and Main Application of Laminated Wood

	Durability	Placaged	Main Applications
1) Furnishing laminated wood	Low	No	Stairs, table tops, furniture, flooring
2) Fancy furnishing laminated wood	Low	Yes	Doorsill, Upper Sliding Groove, frame, floor
3) Structural laminated wood	High	No	Post, beam, floor for containers
4) Fancy structural laminated wood	High	Yes	Post and beam for Japanese rooms
5) Structural, cross-sectional laminated wood	High	No	Post, beam, archway

Source: Japan Woodworking Machinery Cooperative Association document

Characteristics of laminated wood are as follows:

- Improved extraction rate by effective use of waste timbers.
- Strong durability by eliminating/minimizing defects observed in regular woods.
- Manufactured to precise lengths, width, and thickness, which is impossible to do with natural woods
- Can reduce or eliminate such inherent defects as warping, bowing and, shrinkage.
- Can make woods with beautiful grain at low cost

3) Current Status of Laminated Wood Market in Japan

Substantial progress of aging is observed in some Japanese houses that are 20 years old or over. This is caused by various reasons, such as decay and white ants. There are even houses that decay after only one year.

These phenomena are often result of the types of woods used to build houses in Japan. Housing Quality Guarantee Act was enacted in April 2000 to ensure the quality of housing in

Japan. Thus, demands for laminated wood is expected to increase from now on. It can be assumed that Japanese consumers' total demands for laminated wood is a sum of import volume of furnishing laminated wood and domestic production volume. Total domestic demands have been flat since 1998 in line with the number of building units commenced in Japan. Domestic production volume of laminated wood dropped substantively while import has increased, mainly due to cost. In particular, import from China grew substantively. Japan also imports laminated wood from Malaysia, Indonesia, Canada, New Zealand and Russia.

**Table 4-64 Domestic Production Volume and Import Volume of Furnishing Laminated Wood,
The Number of Building Units Commenced in Japan**

	1993	1995	1998	1999	2000
Production	356,469	373,783	306,800	282,800	269,700
Import	17,464	42,414	59,061	78,355	97,733
Total	373,933	416,197	365,861	361,135	367,433
The number of Building Units Commenced	1,510	1,485	1,180	1,226	1,213

Note: 1. Production = Domestic production volume Import = Import volume

The Number = The number of building units commenced

2. Unit = Production volume: Cu. M

The number of building units commenced = in 1,000

Source: Production volume = Data from Japanese Laminated Lumber Processing Association

Import volume = Trade Statistics, the Japanese Ministry of Finance

The number of Building Units Commenced = Imidas 2002, Shueisha

4) Myanmar's Laminated Wood Export

The most critical strategy in expanding Myanmar's laminated wood business is to increase sales unit price, by creating greater added valued of teak woods. As the first step, Myanmar should initiate laminated wood processing business. This is an easy market to enter since it is a labor-intensive industry, and requires relatively small amount of investment in facilities. Myanmar government should establish systems to facilitate market entrance by foreign companies, and develop this new business by establishing joint ventures. To build a laminated wood factory with minimum facilities, which will concentrate on manufacturing products for exports, following investment will be necessary. Its expected production volume is also listed below.

- Investment JPY300 million (excluding property and building cost)
- Monthly production volume 100 cubic meters
- Overview of facilities

A set of wood processing equipments, including molder, sander, blade sharpening machine, Electric equipments, Kiln-drying facilities for wood, Dust collection facilities, Boilers, Inspection facilities.

(10) Other Items Examined in This Study: Export Items with Growth Potential

1) Gems and Accessories

i) Current Production Status

Myanmar is known globally for producing 39 types of gems with the finest quality, including rubies, sapphires, jades, and pearls

Table 4-65 Myanmar's Precious Stone Production

	A/U	1996/97	1997/98	1998/99	1999/00
Jade	Kilogram	1,608,189	2,154,061	1,256,466	5,242,914
Ruby, Spinel	Carat	13,684,960	14,402,593	8,970,411	8,350,695
Pearl	Monmmi	6,653	5,757	7,910	10,012

Source: Statistical Yearbook 2000, Myanmar Pearl Enterprise

Gems are governed by Myanmar Gem Enterprise, Ministry of Mining while pearls are governed by Myanmar Pearl Enterprise, Ministry of Mining. Gems are produced in Kachin State (Myitkyina, Monkaung, Monyine and other locations.) Rubies and sapphires are produced in Shan State (Mogok, Mongshu). Pearls are produced in Tanintharyi Division, around Myeik in the Andaman Sea.

There are two government- owned pearl farming companies (Pearl Island Pearl Farm and Mali Island Pearl Farm), while there are six joint venture companies including Magybinsaung Pearl Farm. Tasaki Pearls, a Japanese company, has also established a wholly owned subsidiary in Myanmar to develop pearl farming business in Myanmar. In 2001, Tasaki Pearls decided to continue the business for the next 15 years, transfer farming facilities to a government-owned company after 15 years, and provide 25% of sampled products to a government-owned company (product sharing). There is a possibility that local employees at Tasaki Pearls may be engaged in pearl processing, too, in the future. The Myanmar subsidiary of Tasaki now has approximately 140 employees, among them 6 are Japanese engineers. In November 2001, the first batch of pearls from Tasaki pearl farm is expected to be cultivated.

ii) Sales of Gems and Pearls

Myanmar gems and pearls are sold at Myanmar Gems, Jade, and Pearl Emporium, held twice a year in Yangon. Foreign buyers are invited to this event and sales are conducted in three methods: auction; bidding; and fixed price sales. Private enterprises that are registered can also participate. However, Myanmar companies can buy only up to US\$50,000 worth of products.

Myanmar Gems, Jade, and Pearl Emporium was first held in 1964. By October 2001, a total of 54 conventions had been held.

Table 4-66 Sales at Myanmar Gems, Jade and Pearl Emporium (the Past Five Years)

(In US\$1,000.-)

	Sales					Total
	Gems	Jade	Pearl	Jade Carving	Jewelry	
1997 34th	2,018	1,751	1,015	32	77	4,839
1997 Mid year	1,534	1,846	1,048	14	63	4,505
1998 35th	380	2,039	610	11	116	4,285
1998 Mid Year	1,273	2,272	698	21	22	4,285
1999 36th	1,062	4,991	228	4	24	6,309
1999 Mid Year	1,404	5,237	290	9	69	7,009
2000 37th	7,660	16,310	181	5	14	24,170
2000 Mid Year	11,943	4,465	109	5	9	16,531
2001 38th	5,743	4,304	54	9	17	10,127

Source: Myanmar Gem Enterprise, Myanmar Pearl Enterprise

In the convention held in October 2001, total sales were US\$955 million and companies/buyers from the following countries participated. Due to the global recession, sales have been declining in recent years.

Table 4-67 Myanmar Gems, Jade and Pearl Emporium, (October, 2001)

Country	Number of Companies	Number of Participants
1.Germany	1	2
2.Hong Kong	57	150
3.Japan	3	6
4.Malaysia	5	9
5.China	10	28
6.Korea	2	4
7.Thai	15	45
8.Singapore and other countries	5	16

Source: UMFCCI investigation report

In addition to Myanmar Gems, Jade and Pearl Emporium, MEHL holds its own jewelry convention. Export value of precious/semi-precious stones from Myanmar to Japan was US\$631,000 in 1998, US\$542,000 in 1999 and US\$643,000 in 2000 and accounted 0.54% of total export value from Myanmar to Japan.

iii) Pearl Farming in Myanmar

In 1923, pearl farming techniques were first introduced by a Japanese pearl diver to Myanmar. In 1953, Takashima Pearls established a joint venture and started pearl farming business in the Andaman Sea. However, this company was nationalized in August 1963, due to socialist policies. After democratization in 1988, Myanmar government started to allow foreign investment to government-owned pearl farms. As a result, there are currently five joint ventures (with Thai, Australia and other countries) involved in pearl farming in Myanmar. In Japan, Tasaki Pearls saw potential in Myanmar's pearl farming and established a wholly owned subsidiary.

Table 4-68 Changes in Pearl Production in Japan

(Volume in kg, value in JPY1 million)

Types		1995	1996	1997	1998	1999*
Seawater pearls	Volume	63,300	56,565	48,307	28,893	25,000
	Value	68,603	54,858	57,787	35,289	-
Fresh water pearls	Volume	165	190	204	214	-
	Value	238	397	492	526	-
Total	Volume	63,495	56,755	48,511	29,107	-
	Value	68,841	55,255	58,279	35,815	-

Note: *: Preliminary figures

Source: Fishing, Aquaculture Annual Statistics

In Japan, most pearl farms produce Akoya pearls from oyster pearl. South sea pearls grown in white-lipped oysters are dominant in Australia, Indonesia, and Myanmar. In Polynesia and Micronesia, black pearls made from grown in black-lipped oysters are dominant. Import of south sea pearls to Japan has been increasing recently. Fresh water pearls grown in fresh water mollusks, are cultured in the creek located in the lower Yantze River, Kasumigaura, and the Lake Biwa in Japan. The volume of domestic cultivation is small. Majority of fresh water pearls are imported from China. Chinese fresh water pearls are imported directly from China, or through Hong Kong and Taiwan. Fresh water pearls account for approximately half of the entire pearl import in Japan.

Volume of cultured seawater pearls cultivated in 1999 was 25 tons, 4 tons or 13.5% less compared to the previous year. Production volume of cultured seawater pearls has been decreasing for six years in a row since 1994. In particular, the decline in the past four years was substantial. This was most likely caused by the death of large quantity of Akoya oyster, due to the spread of infectious disease in Japanese pearl farming areas (e.g. Mie, Ehime) since 1996.

Supply of Akoya pearls declined while its price increased after the incident in 1996. As

a result, import of black pearls (Polynesia dominates 95% of world's black pearl market), and south sea pearls (Australia, Indonesia, Myanmar, Thai and Philippines dominate over 90% of world market) has been growing in Japan.

Export of pearls and related products in Japan is as follows:

Table 4-69 Export of Pearls and Related Products in Japan

Exported From	Export Value (in US\$1,000)			Export Volume (in kg)		
	1997	1998	1999	1997	1998	1999
Polynesia	101,354	101,160	124,871	3,607	4,928	8,014
Australia	114,731	58,254	75,931	2,079	1,705	1,962
Indonesia	40,259	50,757	66,240	1,008	1,440	1,966
China	7,509	10,868	20,498	5,490	5,839	11,050
Hong Kong	22,020	18,277	15,941	7,646	6,684	7,532
Other countries	27,266	21,163	18,897	2,516	1,536	1,728
Total	313,217	260,420	322,378	22,346	22,132	32,252

Source: Trade Statistics, Japanese Ministry of Finance, Agro Trade Year Book 2000, JETRO

Akoya pearls cultured in Japan are losing its competitiveness in the global market because of declining quality caused by low production efficiency.

In particular, high quality south sea pearls and black pearls have better reputation compared to Akoya pearls in terms of quality and price. These two pearls' export and sales volume are increasing, assisted by solid demands in Japan. This tendency is expected to continue for a while.

Japanese pearl industry is now facing significant transformational challenges.

Considering the current status of Japanese pearl industry as described above, Myanmar should make continuous efforts to increase cultivation volume, as well as improve its processing capabilities, in order to develop overseas markets, including Japan, Hong Kong and Swiss. The Andaman Sea (near Meik), where Myanmar is currently operating pearl farming business is rich in plankton. Thus the area is suitable for producing cultured pearls. There is potential in the area to grow pearl farming to Myanmar's core business in the future. In other countries, pearl farming by Japanese companies has expanded from production to processing, assisted by Japanese investment. In some of these countries, pearl farming has become one of core industries.

As described previously, domestic Akoya pearls are losing their appeal in the international market because of declining quality, caused by decrease in supply and production efficiency. Considering this fact, Japan can contribute to expansion of Myanmar pearl export and developing pearl farming to one of core industries, by using south sea pearls in Myanmar and by providing technical assistance to local employees.

2) Teak Woods and Processed Woods

i) Forestry Industry in Myanmar: Overview

Lately, many countries are making individual efforts to promote preservation of forests as a way to improve environment, including prevention of global warming. Myanmar government, too, has taken proactive actions to ensure sustainable supply of woods by establishing long-term plans. Under these long-term plans, maximum timber volume that can be logged annually is defined in order to prevent destructive lumbering, and new trees are planted in the areas cultivated. Mainly, teak wood, which has received favorable reputation globally as construction/furniture material, is planted. Other trees newly planted are pingado, padau, and eucalyptus. Teak wood accounts for 11.2% of total logging volume, yet it occupies 42% of the entire plantation land in Myanmar.

Table 4-70 Annual Allowable Logging Volume and Plantation Area

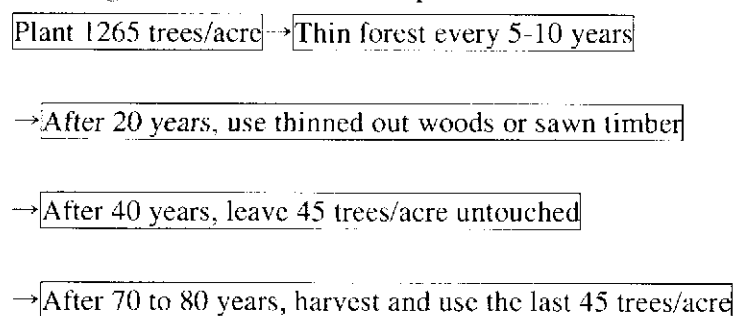
Item	Logging		Afforestation	
	Volume (Cu. M)	Ratio (%)	Volume (ha)	Ratio (%)
Teak wood	409,062	11.2	280,963	42.0
Other hard woods	3,236,071	88.8	394,234	58.0
Total	3,645,133	100.0	675,197	100.0

Source: Forestry in Myanmar, The Myanmar Ministry of Forestry

The Ministry of Forestry conducts planned logging and plantation. However, timber experts in private enterprises are concerned that teak woods logged in Myanmar are getting younger every year, and that the quality is declining.

The following afforestation steps are taken for teak wood, until it reaches appropriate logging age in Myanmar.

Figure 4-32 Afforestation Steps for Teak Wood



Source: Myanmar Timber Association

From 2008, thinned out woods that are 20 years old will be logged as sawn timber. The trees that are between 20 to 40 years old are considered as young trees, have rough surface and tend to bow or crack. Young trees are inferior to old trees over 100 years old, in terms of quality. It takes at least 70 years since the initial plantation, to grow and cultivate high quality teak wood.

The percentage of woods exported in total volume of woods logged annually in Myanmar was 25-30% in 1996-1997. This figure has been rising recently, with 40.5% in 1998 and 52.5% in 1999 (this means that more than 50% of sawn woods in Myanmar is exported overseas.)

Table 4-71 Timber Export and Domestic Consumption Ratio
(Based on Logged Timber, Annual Figure from 1999 to 2000)

Item	Category	Timber volume (Cu. M)	Consumption Ratio (%)	Ratio by wood type (%)
Teak wood	Export	394,909	74.0	20.8
	Domestic consumption	139,300	26.0	7.3
	Sub total	534,209	100.0	28.1
Other hard woods	Export	601,876	44.0	31.7
	Domestic consumption	764,845	56.0	40.2
	Sub total	1,366,721	100.0	71.9
Total	Export	996,785	52.5	52.5
	Domestic consumption	904,145	47.5	47.5
	Total	1,900,930	100.0	100.0

Source: Data in Forestry in Myanmar, The Myanmar Ministry of Forestry

Export volume has grown substantively for both teak wood and other hard woods. However, export unit price has shown a significant decrease. Therefore, annual export value has not changed. Also, differences in unit price between teak wood and other hard woods should be examined.

Table 4-72 Changes in Timber Export and Unit Price in Myanmar

Year	Teak wood			Other hard woods			Total		
	Value	Volume	Unit price	Value	Volume	Unit price	Value	Volume	Unit price
1995/96	903	117	7,718	145	83	1,747	1,048	200	5,240
1996/97	855	138	6,196	130	131	992	985	269	3,662
1997/98	698	138	5,058	155	154	1,006	853	292	2,921
1998/99	640	172	3,721	149	243	613	789	415	1,901
1999/00	727	234	3,107	198	335	557	925	569	1,626

Note: 1. Value = in 1 Kyat million Volume = in 1,000 Cu. T. Unit price = in Kyat
2. 1999/2000 Provisional Actual

Source: Statistical Yearbook 2000

Export value of timber to Japan has grown. However, the products that showed increase, were teak wood mainly used as raw material (thus, with limited application) and wood for flooring. Most of these woods are assumed to be teak wood. In short, more than 70% of timber export from Myanmar to Japan is teak wood (data provided by the Japanese Ministry of Finance shows that 79% is teak wood.)

Other hard woods that are exported from Myanmar to Japan include Pyinkado, Padauk, Kanyin, and Tamalan. However, their export volume is limited.

Table 4-73 Changes in Timber Export from Myanmar to Japan

Items		1998		1999		2000	
		Value	Ratio	Value	Ratio	Value	Ratio
Raw Material	Teak	1,928	44.3	2,682	48.5	3,028	52.3
	Sawn timber	1,728	39.7	1,918	34.7	1,429	24.7
	Veneer plywood	102	2.4	43	0.8	48	0.8
	Wood charcoal					15	0.3
	Sub total	3,758	86.4	4,643	84.0	4,520	78.1
Products	Wood flooring	494	11.3	811	14.7	1,136	19.7
	Wooden building material	98	2.3	73	1.3	129	2.2
	Sub total	592	13.6	884	16.0	1,265	21.9
Total		4,350	100.0	5,527	100.0	5,785	100.0

Note: In US\$ 1,000

Source: JETRO Yangon data

ii) Current Market Status

a) Japanese Market

- **Popularity of teak:** In Japan teak is considered as a special material and thus, there are very few experts among building material retailer, architects, construction companies who have traded/used teak. There are even less building owners (end users) who know about teak. This applies also to furniture and kitchen equipment using teak.

However, a leading Japanese manufactured housing company has just launched a product line that uses teak. Further promotion and diffusion of teak are expected from this initiative.

- **Niche in Japan :** High temperature/humidity in Japan makes woods easy to decay and damaged by white ants. In addition, Japanese people prefer wood color, complexion and texture. Teak is a perfect wood material that meets these special conditions. Aging has progressed at drastic speed in many of the houses built in 1970's to 1980's, due to decayed and damage by white ants. Therefore, wood building materials with strong durability are now demanded in Japanese housing market.
- **Processing technology :** In general, Japanese people seek perfection in all aspects of quality, including practicability, accuracy, blazonry, durability. On the contrary in Myanmar, quality standards are not as strictly defined as in Japan. As a result, most of Myanmar products cannot be used unless they are re-processed in Japan.
- **Teak import in Japan:** Total export value of teak and other wood products in Japan was JPY700 million, of which 65.4% was from Myanmar.

Table 4-74 Japan's Teak Import by Country

(In JPY1,000, %)

Imported from	Thick board, Plank		Boards 6 mm or more		Boards 6 mm or less		Total	
	Value	Ratio	Value	Ratio	Value	Ratio	Value	Ratio
Myanmar	318,088	94.3	138,364	39.5			456,452	65.4
Taiwan			98,789	28.2	7,745	73.2	106,534	15.3
China			44,743	12.8			44,743	6.4
Indonesia			39,263	11.2	1,811	17.1	41,074	5.9
Singapore					1,030	9.7	1,030	0.1
Other countries	19,464	5.7	29,070	8.3			48,534	6.9
Total	337,552	100.0	350,229	100.0	10,586	100.0	698,367	100.0

Note: Other countries = Thai, Hong Kong, Denmark, Australia

Source: Japanese Trade Statistics by the Ministry of Finance

b) Other Overseas Market

- Teak wood is distributed in Myanmar, Thai, and Indonesia. However, it is believed that only Myanmar has supply of teak wood that can be used as sawn timber. Thus, it is can be concluded that Myanmar dominates teak wood market.
- Volume of teak wood that Myanmar Timber Trade has sold by auction is as follows. Japan accounts for 4% of total sales. The percentage of export to Japan in Myanmar's total teak wood export value is also estimated to be 4-5% based on various documents.
- Thai exports teak wood from Myanmar, manufacture converted products and export to other countries. Myanmar government needs to find out what kind of converted products Thai is producing. Singapore and Hong Kong also have bought large amount of teak from Myanmar. It is not clear how these countries use Myanmar teak, either for domestic consumption or export of converted products.
- In Middle East, living in a house made from teak wood is viewed as a symbol for wealth.

Table 4-75 Purchase Record of Teak Logs by Country (Bidding/Purchase)

Country	Timber volume (Ton)	Value (US\$)	Ration of value (%)
1. THAI	11,966.60	12,942,051.50	36
2. EUR/UK/USA	3,805.78	6,892,641.92	19
3. SINGAPORE	3,788.88	4,829,761.21	13
4. HONG KONG	3,658.39	3,712,745.85	10
5. MYANMAR	3,450.68	3,657,639.12	10
6. INDIA	2,246.73	2,807,959.09	8
7. JAPAN	779.24	1,531,484.20	4
Total	29,696.30	36,464,282.89	100

Note: Bidding and purchase period covers 11 months, between April 1999 to February 2000

Source: MYANMAR FORESTRY JOURNAL Vol. 4.No.2

c) Competitiveness of Myanmar Teak

Supply capability: Myanmar dominates timber market because other countries do not ship timber. However, because of logging restriction placed by Myanmar government, current maximum logging volume is set 410,000Cu.M, of which, 75% is already exported overseas. Therefore, increase in supply cannot be expected. Thus, it is important to export more value added products.

Processing technologies: Compare to Thai which has the highest bidding record of Myanmar teak and other countries that export processed teak products to Japanese market, including Taiwan, Indonesia, Malaysia and China, Myanmar's teak processing

facilities and technical abilities are low quality.

Export value: Myanmar is a growing center of raw teak wood. The country also has other advantages such as rich supply of hard-working and cheap labor. However, all supplement materials are currently exported. In addition, due to the shortage of electricity, or the lack of high quality facilities, Myanmar products' price/cost competitiveness declines as more processing states are involved.

Other contributing factors to declining competitiveness :

- Complex export authorization procedures
- Sea freights are high because of poor harbor infrastructure and necessity to reship in Singapore
- High electricity price because of need to use private power generation due to poor electric infrastructure.
- Production control is insufficient. Myanmar workers must understand concepts pertaining to quality, quantity and delivery dates. Trainings by Japanese experts are recommended.
- For above reasons, raw wood is the most competitive item among Myanmar's current wood products. Its competitiveness declines in an effort to create more added values through processing.

(11) Suggestions for Expanding Export: by Individual Item

In section three, various topics related to each export item in Myanmar, including current conditions, market status, requirement for export expansion and strategies to enlarge export, have been discussed.

Considering export expansion strategies for each item, there are many strategies that are common to a number of export items, that need to be implemented, including simplification of export licensing process, minimization of export disincentives (export tax), alleviation of foreign currency restrictions in raw material import. These common issues have been discussed already in the previous pages.

In the pages below, export expansion strategies specific to each export item are outlined.

Table 4-76 Export Promotion on Programs for Export Promising Products

	Basic Strategies	Action Plans
Pulse and bean	Strengthen competitiveness against Chinese products. Acquire capabilities to collect and analyze market information.	<ul style="list-style-type: none"> - Improve quality and yield rate. Implement selection technologies using air screen. - Expand production of SQ products for Japanese market. - Acquire capabilities to collect and analyze latest information about overseas market, competitors and price.
Sesame seeds	<ul style="list-style-type: none"> - Alleviate government restriction on export by private companies. 	<ul style="list-style-type: none"> - Improve facilities and yield rate (sesame oil).
Shrimp	Educate consumers to distinguish between natural and cultured shrimps. Improve safety of cultured products and secure stable supply.	<ul style="list-style-type: none"> - Take various actions to increase popularity of Myanmar shrimp in Japanese market. - Develop information network among consumers, shrimp farmers and processors. Secure stable supply of shrimp. - Promote Myanmar shrimp's safety to market. - Expand investment to shrimp farms.
Copper cathodes	<ul style="list-style-type: none"> - Current SX-EW manufacturing method is already competitive and meets global standards. - Expand export to Japan and other neighboring countries. 	<ul style="list-style-type: none"> - Improve electricity supply capabilities. - Large-scale investment to increase production capabilities.
Kenaf	<ul style="list-style-type: none"> - Promote and complete the current five-year plan. - Promote usage of kenaf for fabric in automotive interiors. 	<ul style="list-style-type: none"> - Invite engineers from overseas. - Build small kenaf plants and expand kenaf industry at a steady pace.
Castings	<ul style="list-style-type: none"> - Expand export to Japan. 	<ul style="list-style-type: none"> - Overhaul part of production facilities. - Implement molding machines to make molding parameters (wood and aluminum) for greater added value.
Laminated Wood	Collect teak market information in Thai and Singapore (Myanmar teak's largest buyers). Create greater added value in Myanmar products. Strengthen relevant training programs including establishment of process technology centers.	Strengthen information collection capabilities. Introduce processing technologies from overseas. Develop new laminated wood companies by establishing joint ventures with overseas.
Scrap rubber woods	<ul style="list-style-type: none"> - Develop export market (in Malaysia, Thai and Vietnam) for raw material to make laminated lumber. 	<ul style="list-style-type: none"> • Establish systems to ensure quality and delivery date. • Invest in facilities and engineer trainings.

Source: JICA Study Team