Chapter 8

Upgrading and Diversification of Industrial Structure in Myanmar: Prospect and Challenges

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March 2010

This chapter should be cited as
Kyaw, M. and T. Kudo (2010), 'Upgrading and Diversification of Industrial Structure in Myanmar: Prospect and Challenges', in Banomyong, R. and M. Ishida (eds.), *A Study on Upgrading Industrial Structure of CLMV Countries*. ERIA Research Project Report 2009-7-3, Jakarta: ERIA. pp.315-359.

CHAPTER 8

UPGRADING AND DIVERSIFICATION OF INDUSTRIES IN MYANMAR: PROSPECTS AND CHALLENGES

Moe Kyaw and Toshihiro Kudo*

Abstract

This paper explores the prospects and challenges of the industries to be diversified and upgraded to attract more production blocks to Myanmar. It aims to find out how industries in Myanmar can be developed by taking into account its industrial location's advantages and disadvantages as well as structure and trends. Using the case study method, seven industries were selected to undertake the infrastructure needs survey, garment survey, and labor survey. The data gathered were able to provide evidences to judge the requirements to be fulfilled, hence, make recommendations for further improvement.

INTRODUCTION

(1) Location advantages and disadvantages of Myanmar

Myanmar is the the world's 40th largest country in terms of area and the 24th most

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populated. Among its neighbors, China and India with a combined population of more than 2.6 billion people are emerging economies that belong to the G20. Thailand is one of the Newly Industrialized Economies (NIE) in the ASEAN region.

With economic and regional development in South and Southeast Asia, the position of Myanmar is becoming increasingly strategic. Myanmar serves as a gateway to trade routes between its neighbors. As such, Myanmar holds a potential location for industrial growth and its accompanying economic advantages. With the substantial reforms implemented in Myanmar after 1988[1], promoting transformation from an agrobased industry to an industrialized one became the target objective since its independence in 1948.

Myanmar also has location advantages in the form of abundant labor and skilled manpower. The population at working age group increases by an average of about one million people annually. The literacy rate is among the highest in the region at 89 percent. Due to abundant and surplus labor, wages are low compared to other ASEAN countries[2].

Myanmar could be regarded as a country with lower labor cost. Some ASEAN countries need to shift their labor intensive industries such as garment industries in order to reduce the unit cost of production.

Location disadvantages, on the other hand, are not well materialized because of some problems in Myanmar. Such includes inadequate road infrastructure and electricity supply. A business environment and investment climate which are not supportive to manufacturing and processing industries also exist.

[1] For example, the setting up of a Foreign Direct Investment Law, the creation of 18 industrial zones, the opening of border trade through border check points and two trade zones.

[2] According to a 2008 ERIA-CLMV survey, the average monthly wage of a general worker in Yangon is US$35 while a general worker in Phnom Penh receives US$80.

In the overall, there are more location disadvantages than advantages in Myanmar. There are serious service link cost obstacles to its participation in global and regional production and distribution networks. The paper examines industrial-specific location advantages and disadvantages in Myanmar. Suggestions are made on how to attract more production blocks to diversify industries and integrate Myanmar in these networks.

(2) History of Industrial Development in Myanmar

During the colonial period emerged a monocultural economy based on the expansion of paddy production and rice export. At that time, Myanmar was the top rice-exporting country in the region. Rice mills were built throughout the country to process paddy. Teak was the second export item; numerous saw mills were built too. Industry was mostly composed of these two sectors.

After gaining independence, Myanmar opted for an interventionist economic system where planning and State-owned enterprises (SOEs) were essential but not exclusive. Industries producing consumer goods flourished while the government took responsibility for public goods and other industries that the private sector could not establish due to lack of capital investment and technology. In this context, foodstuff consumer goods manufacturing factories represented the largest portion of the industry sector.

After 1962, Myanmar adopted the so-called “Burmese Way to Socialism”. All sizeable industries were nationalized, free market practices were discarded, and foreign trade was restricted. Priority was given to agro-based industries to enhance production of the agriculture sector. On the other hand, the government built state-owned heavy

industries. An import-substitution strategy was adopted to save foreign exchange earnings and promote domestic consumer goods manufacturing and foodstuff processing industries. The private sector continued to play a role in the industry, especially in food and beverage processing. The "Burmese Way to Socialism" was abandoned in 1988 and substantial economic reforms have been enacted since then.

(3) Overall Industrial Structure of Myanmar

The industrial sector contributed only 15 percent to the total GDP in 2007-2008 (Table

Table 1: Share of Industrial Sector in GDP

(%)

No	Particular	1988-89	1991-92	1995-96	2000-2001	2001-2002	2005-2006	2006-2007	2007-2008
		(1985-86 Base Year)				(2000-2001 Base year)		(2005-2006 Base Year)	
1	**Production**	59.4	60.4	60.6	60.5	66.5	65.3	63.8	63.3
	1) Agricultures	38.5	37.5	37.1	33.6	47.4	40.2	37.1	35.6
	2) Livestock & Fishery	8	7.6	6.8	8.3	8	9.5	7.6	7.3
	3) Forestry	1.4	1.9	1.1	0.9	0.5	0.3	0.6	0.5
	4) Energy	0.3	0.3	0.2	0.5	0.2	0.2	0.2	0.2
	5) Mineral product	0.4	0.7	1.1	1.8	0.4	0.5	0.5	0.5
	6) Manufacturing	8.7	8.8	9.3	10.1	7.8	11.4	13.8	15
	7) Electrical Power	0.6	0.7	1	1.1	0.1	0.1	0.2	0.2
	8) Constructions	1.5	2.9	4	4.2	2.1	3.1	3.8	4
2	**Services**	18.2	17.4	18	18.6	9.6	11.7	14.5	15
	1) Transportation	3.5	4	4.3	4.6	6.1	7.7	10.7	11.1
	2) Communication	0.7	0.8	1.3	2.1	0.3	0.7	1.2	1.3
	3) Finance	3.4	0.6	1.5	2.1	0.1	0.2	0.1	0.1
	4) Social and Management	5.9	7.2	6.7	6	1.6	1.5	0.9	0.9
	5) Rental and Other Services	4.7	4.8	4.2	3.8	1.5	1.6	1.6	1.6
3	**Trade**	22.4	22.2	21.4	20.9	23.9	23	21.7	21.7
4	**GDP(1+2+3)**	100	100	100	100	100	100	100	100

Source: Ministry of National Planning and Economic Development (MNPED).

1). The contribution of the industrial sector ranges from 25-50 percent of the GDP in most ASEAN countries.

To encourage the development of the private industrial sector, 18 industrial zones were established across the country after 1988. There are 18,257 industries in these industrial zones, out of which 44 percent are located in Yangon, followed by Mandalay with 11 percent (Table 2). Over 322,000 workers are employed in these zones. Advanced technology and large scale industries are concentrated in Hlaing Thayar industrial zone (Yangon West). This kind of industries are the most numerous and represent 57 percent of the total number of industries in the industrial zones. Among four districts in Yangon, most of the industrial zones are located in the Yangon West District followed by North District. As Yangon West District is downtown area, it has smallscale and medium scale industries but some large factories are found in Hlaing Township and Mayangone Township. Yangon South District includes Thi La War Industrial Zone in Than Lyan Township and industries in Dala and Seik Gyi Kanaung Townships. Mandalay Industrial Zone consists of Industrial Zone (1) and (2).

The registered industries are comprised of 13 business and 26 product groups. Among the registered private industries, food-processing accounted to 64 percent. The combined number of foodstuff, clothing, consumer and household goods industries represent the largest share with 76 percent.

Myanmar has tried to follow the path taken by regional Newly Industrialized Economies (NIEs). However, the contribution of the industry sector to the GDP is still low at 15 percent and the internal structure of the processing and manufacturing sector has remained virtually undeveloped in Myanmar with the dominance of smallscale, agro-processing and foodstuff industries.

Table 2: Industrial Establishments in Industrial Zones in Yangon Area

Sr	Zone name	Number of establishments				Labor force
		Small	Medium	Large	Total	
1	**Yangon (East)**					
	South Dagon Zone(1)	95	34	2	131	14,335
	South Dagon Zone(2)	284	194	669	1,147	16,847
	South Dagon Zone(3)	6	82	45	133	826
	Dagon Seikkan	83	8	-	91	5,762
	East Dagon	35	18	27	80	1,688
	North Okkalapa	27	20	18	65	2,362
	Shwe Paukkan	32	82	8	122	3,862
	South Okkalapa	26	57	31	114	6,498
	Thaketa	24	14	10	48	2,981
2	**Yangon (West)**	148	274	612	1,034	12,079
3	**Yangon(South)**	76	150	673	899	6,582
4	**Yangon(North)**					
	Hlaing Tha Yar	344	41	3	388	37,021
	Shwe Pyi Tha	134	32	15	181	18,734
	Mingaladon	81	17	38	136	11,562
	Yangon total	**1,395**	**1,023**	**2,151**	**4,569**	**141,139**
5	Mandalay	284	194	669	1,147	12,480
6	Myingyan	37	169	133	339	1,888
7	Meikhtila	21	108	257	386	2,566
8	Muaung Mya	36	34	328	398	2,349
9	Hinthada	17	42	388	447	1,954
10	Pathein	25	78	230	333	2,555
11	Mon Ywa	85	230	588	933	4,594
12	Kale	11	34	220	265	1,253
13	Pyay	18	83	84	185	857
14	Yenaung Chaung	8	20	60	88	591
15	Pakokku	38	113	121	272	1,479
16	Mawlamyaing	41	149	19	209	1,071
17	Taunggyi (Aye Tha Yar)	40	41	669	750	4,129
18	Myeik	19	2	5	26	2,685
	Other zones total	**680**	**1,297**	**3,771**	**5,778**	**40,451**
	Total	**3,470**	**3,343**	**8,073**	**14,916**	**322,729**

Source: Directorate of Industrial Inspection and Supervision, Ministry of Industry (1).

Looking at the industrial structure, one can try to determine the contribution of industries and firms to the official economic growth of 13 percent[3] a year.

(4) Industrial Policy of Myanmar

After 1988, Myanmar adopted a market-oriented economic system and liberalized its economy by promulgating the Foreign Direct Investment Law and the Myanmar Citizenship Investment Law. Some institutional changes took place in line with the market-oriented system. Various reforms were undertaken to encourage active participation of the private sector in national economy, but the State continued to play a crucial role in industrial development in Myanmar.

The official industrial policy[4] declares a systematic development of industries, such as heavy industries, agrobased and agro-supportive industries, import substitution industries, consumer goods industries, export promotion and value-added industries not only in the State sector but also in the private and cooperative sectors. Long-term industrial development goals are set to promote the industry sector.[5] The industrial policy indicates long-term targets to be implemented by the public and private sectors[6].

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[3] Average official GDP growth rate of the country was 12.6% per year for the period 2000-2008, Myanmar Economy: A Comparative View .

[4] This policy includes 1) Long-term industrial development goals; 2) Long-term targets to be realized by State and private sectors; 3) Industrial development guidance for private and cooperative sectors; 4) Measures to be taken for industrial development.

[5] The four goals are: 1) To develop industries based on agriculture; 2) To raise the quantity and quality of industrial products; 3) To produce more new items of mechanical equipment; 4) To produce machines and equipment for industrial use.

[6] The seven targets are: 1) To produce adequately machines and equipment for agro-industrial use by expanding agrobased industries; 2) To exert further efforts to produce quality consumer goods; 3) To prioritize the expansion of import substitution industries and export promotion industries; 4) To develop the processing industries based on the raw materials of agricultural products; 5) To provide necessary contributions towards the industrial development of private sector; 6) To strive for harmonious and mutual supportive development among the public and private industries; 6)To raise the share of

Industrial development guidance for private and cooperative sector is also given[7].

The government has adopted some important measures to promote industrial development, of which the establishment of industrial zones is found to be the most important[8]. However, these diverse principles are mere slogans than a serious industrial plan. The share of the industry sector in GDP was less than 7 percent before 2000. The government tried to increase the share up to 15 percent by 2007-2008. The share contribution of the industry sector in GDP was doubled, so it can be assumed that the industrial sector has developed because of right industrial policy. The industrial policy does not support anything, however, the quantity of private factories and their production volumes increased mainly because of market expansion and advancing consumers' purchasing power. The industries in Myanmar seem fairly content relying on domestic market. It has lacked few opportunities to expand their products to export market. It needs to explore the obvious and hidden factors that push the industries to location disadvantages.

In terms of institution, the Myanmar Industrial Development Committee headed by the Prime Minister composed of cabinet ministers and deputy ministers is

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Cooperative sector in total industrial GDP; 7) To establish industrial zones by regions for industrial development in private sector as well as for regional development.

[7] The guidance is: 1) To arrange and encourage capable entrepreneurs to implement the appropriate industrial projects for industrial development in the private sector; the state will carry out the task for the development of heavy industries which is not yet the capacity of the private sector; 2) To encourage the emergence of industrial cooperative associations to join the private sector in industrial development; 3) To make the private sector establish the import-substituting industries stage by stage; 4) To focus on regional self-sufficiency while pursuing industrial development.

[8] These measures are: 1) The establishment of industrial zones. Fulfilling the requirements of industrial zones for systematic and rapid development; 2) Facilitating the private entrepreneurs to acquire new ideas and technologies for industrial development; 3) Striving for the establishment of heavy industry that produces agricultural and industrial machineries to create favourable conditions for industrialization; 4) Giving priority for the establishment of export promotion and import substitution industries in collaboration with local and foreign entrepreneurs.

responsible for coordinating, overseeing, and supervising the state sector's industrial performance as well as that of the private and cooperative sectors. The Ministry of Industry has the following roles to perform: (1) largely responsible for the production of consumer products and light industrial goods; (2) concentrates on developing heavy industry; and (3) put more emphasis on their production targets than on facilitating private industries.

In terms of legal framework, Myanmar has a few outdated industrial laws and regulations and has no Small and Medium Enterprises (SME) law or institution. In the private sector there is an association named Myanmar Industries Association (MIA) under the Union of Myanmar Federation of Chambers of Commerce and Industry (UMFCCI) - to promote, represent and safeguard the interest of the Myanmar private industries. There is no federation level organization for private industries.

1. CURRENT SITUATIONS OF SELECTED INDUSTRIES

1.1. Garment Industry

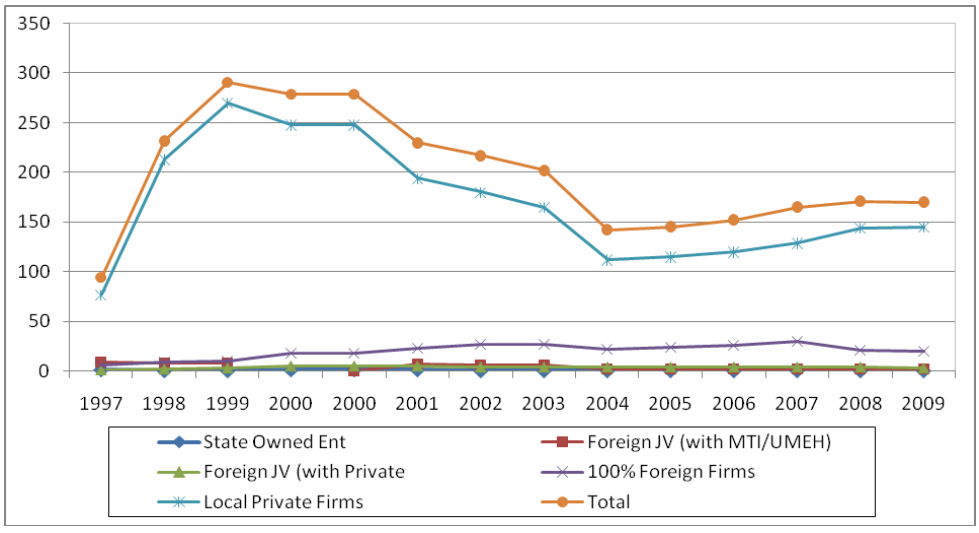
The export-oriented garment industry is a major foreign exchange earner for developing economies because of its reliance on low labor cost. Myanmar has abundant cheap labor but the garment industry is underdeveloped due to several reasons, including economic sanctions of the United States since 2003. Introduced in 1990 through a joint-venture (JV) with Union of Myanmar Economic Holding (UMEHL)[9], the garment industry thrived from 1997 to 2000 and declined afterward. During the peak period there were over 300 garment factories in Myanmar of which 70-80 percent were foreign-owned or

[9] A semi-government firm.

foreign backed up firms. Availability of abundant, cheap, and relatively well-educated labor force, MFA privileges and China+1 strategy of international buyers are the factors behind the rapid growth. In 2009, about 170 garment factories exist in Myanmar with 20 Foreign Direct Investments (FDIs), 5 JVs, and 145 local private firms. Figure 1 shows the growth of the garment industry from 1997 to 2000.

At present, the yearly exports of Myanmar garment industry is around US$390 million. It is insignificant if compared to Cambodia, which enjoys an export value of more than US$3 billion a year. US sanctions limit garment exports. Insufficient electricity supply leads to high operational cost and underdeveloped transportation and communication infrastructure result in lengthy transaction time and high cost of production.

Figure 1: Trends of Garment Industry Development from 1997 to 2009



Source: (Myanmar Garment Manufacturers Association).

1.2. The Foot Wear Industry

There are many footwear companies in Myanmar, but most of them produce Myanmar style slippers. About 10 foreign and local factories have been producing shoes and foreign style slippers for export to the European Union (EU), Japan, Korea, and other Asian markets since 1994. At present seven CMP-based[10] footwear factories and two local firms are operating in Myanmar. Business growth has been stable due to regular export since 2003. The local factories penetrated the local market and diversified their outreach by extending to neighbouring countries through border trade. The total production volume of exported footwear is around 4 million pairs, with a foreign export market value of over US$38 million a year (Table 3). Shoe manufacturers in Myanmar, a country that benefits from the "Generalized System of Preferential Tariff" (GSP) privilege, have enjoyed robust sales due to the large quantity of orders from Japan. If more raw materials were available domestically, the shoe manufacturing industry would operate more smoothly and develop more quickly. At the moment only about 20 percent of raw materials including rubber for insoles, and foam and cardboard boxes for packaging—come from domestic sources.

Table 3: Trends of shoes and footwear exports from Myanmar from 2005-2009

No	Year	Volume (pair)	Value USD
1	2005	2,807,561	21,481,066
2	2006	4,068,128	27,107,082
3	2007	4,190,777	28,056,598
4	2008	4,725,234	29,254,395
5	2009	4,274,660	38,740,987

Source: Customs Department.

[10] Cutting, Making and Packaging

The main raw material—leather—is difficult to be available domestically in Myanmar since no farm animals are specifically bred for the industry. Local non-CMP footwear manufacturers receive raw leather from cow and goat skin. Firms have to import raw leather from other countries especially China.

According to industry sources, other delays are caused by regulations requiring all manufacturing CMP system to be approved first by the Myanmar Investment Commission, then CMP Supervision Committee for operation, and by the Directorate of Trade under the Ministry of Commerce for export and import licenses' application. As a result, some factories cannot accept short-notice orders.

1.3. Electric and Electronic Appliances

Myanmar Machine Tools and Electrical Industries (MTEI) under the Ministry of Industry produced household electrical and electronic goods since 1964 in collaboration with Matsushita Electric Industrial Co. Ltd. It was then named Myanmar Heavy Industries, the only manufacturer in this sector before 1988.

Private industries have started production of electric and electronic goods and parts after 1988. Since 2000, some private firms import parts and components. They also assemble and distribute TV/VCD or refrigerators under their own brand. Wire cable, transformers, and motors for domestic markets are also being produced. These industries are capital intensive and lack supportive industries. They have to operate from beginning to end and stock raw parts for production. JV firms are overcoming the constraint and the electric and electronic industries recently started to operate. There are also some CMP-based electric and electronic parts and components assembling factories.

Battery is the most essential parts among electronic goods. High quality foreign

batteries are imported from neighboring countries. There are many foreign brands available. They are expensive compared with Myanmar brands but many people believe they are more reliable when it comes to quality and durability. Despite import competition, local entrepreneurs are committed to manufacturing batteries, in order to fulfill the local demand. There are only two private battery manufacturers and one state-owned factory in Myanmar. For the market demand, more than 50 local battery distributors are operating in Myanmar where they double their efforts to upgrade their products and manufacture international standard batteries with modern technology. Myanmar still imports US$ .35 million worth of batteries and accessory in 2008. The local batteries can substitute imported batteries.

With regard to the wire cable production, there are about 7 industries in Yangon which the Golden Lion Wire is the market leader. The electric cable is produced for industrial use and domestic use. The raw material for cabling is mostly sourced from China, Korea, and other Asian countries, notably Thailand. Locally manufactured wires and cables now make up majority of the market due to lower price and competitive quality against imported goods. But producers continue to rely on imported raw materials.

1.4. Processed Food Industry

Myanmar has been producing processed food since 1999. It is an important sector in Myanmar composed of establishments engaged in the processing/manufacturing and distribution of food and food products. Myanmar people now use more processed or preliminarily treated food to make meals, which is seen as a big opportunity for food processors.

Among the processed foodstuffs, coffee mix and instant noodle are the most popular products due to their convenient use and reasonable prices. Coffee mix, which had a market value of US$80 million in 2009, was introduced in Myanmar market in 2000 and its consumption has been growing by 10 percent annually. Instant coffee tops the demands among other commodities. The Myanmar coffee mix market has long been dominated by the Super brand, followed by Mikko, Gold Roast, Super One, Sinoda, Ben Café, and Coffee King.

The consumption of instant noodle has been growing in Yangon. Instant noodle had a market size valued at US$50 million in 2009 and the rate of consumption has been increasing by 6 percent for several years. Producers need to manufacture high quality products to reduce the market share presently gained by imported brands.

Nowadays, manufacturers try to link with the retail market through various trading methods including consignment system.

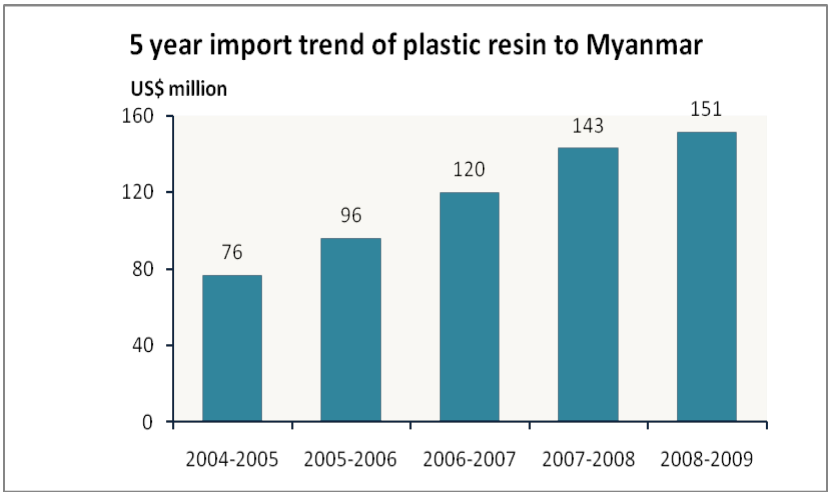
1.5. Plastic Products

The private plastic businesses had increased rapidly between 1994 and 2003. According to 2006 figures, there are 459 private plastic industries in Yangon and 73 in Mandalay which were already registered with the Directorate of Industrial Supervision and Inspection, Ministry of Industry. According to the 2009 issue of Yangon Directory and Mandalay Directory, there are 522 plastic industries in Yangon and 186 numbers in Mandalay. According to the estimates made by the Chairman of the Myanmar Plastic Industries Association, there are about 6,000 plastic factories in the whole country. Some set up by sole proprietorship and some are run by companies and partnership entities.

Nowadays, melamine, various plates, plastic chairs, pipes and plastic commodities could be produced without difficulties. All kind of plastic pipes are produced using German machines. Coffee mix bags, noodle bags, packing material and printing can be made locally. The consumption of plastic is growing by 10 percent on yearly average. Plastic resin costing US$76 million was imported in 2004-2005 and the figure reached US$150 million in 2008-2009 (Figure 2).

Myanmar people have widely utilized High-Density Polyethylene (HDPE) plastic bags for packaging—food in markets and restaurants as well as for disposal of rubbish. HDPE plastic bag producers in Myanmar's commercial city of Yangon have been instructed to stop production as part of the program for creating a thin-plastic-bag-free city and bringing about a clean environment. Myanmar has started banning use of small and thin plastic bags in a number of cities since June 2009. Plastic bag production in Myanmar has since dropped by half.

Figure 2: Import Trend of Plastic Resin to Myanmar from 2005-2009



Source: Select Monthly Economic Indicators, October 2009.

1.6. Automobile Industry

Myanmar Automobile and Diesel Engine Industries (MADI) under the Ministry of Industry is an enterprise specializing in the production of light and heavy motor vehicles, component and parts, accessories, and multipurpose diesel engines. The production of buses and trucks at the Automobile Factory in Yangon started in 1962. The production of light vehicles at the Automobile Factory in Htonbo started in 1973 under the Japanese economic and technical cooperation.

Myanmar Suzuki Motor Co., Ltd was established as a JV between Suzuki Motor and the Ministry of Industry in 1998. Some 1,000 units of Suzuki Wagon and Suzuki Light Trucks have been produced annually since then. Due to high domestic demand and the rise of motor vehicle prices in local market, vehicles from neighboring countries have entered illegally since 1990s. In order to meet the domestic demand, the private sectors have been allowed to assemble and produce jeepneys and light trucks in the industrial zones since late 1990s.

The motor vehicle industry grew after 2004 when illegal vehicles were strictly under control. At present there are about 150 car production firms in Myanmar (Table 4). The Ministry of Industry grants licenses to produce jeepneys and light trucks for automotive firms in industrial zones for more than 10,000 units a year. The car manufacturers assemble or produce based on quota system.

There are 5 motorcycle assembling plants in Myanmar which have started in 2003. Motorcycle engines are imported from China and being assembled in Myanmar. The total production of 5 local assembling plants in 2008-2009 was around 26,000 units. While the assemblers were gaining momentum, licenses were issued to illegally

Table 4: Car Manufacturers (assemblers) in Myanmar

No	Cities	Number of Assembler
1	Yangon	45
2	Mandalay	73
3	Meikhtilar	11
4	Taunggyi	7
5	Mawlamyaing	7
6	Kalay	5
7	Pathein	1
	Total	**149**

Source: Industrial Zone Management Committees.

Table 5: Motorcycle Manufacturers (assemblers) in Myanmar

No	Cities	Number of Assembler	Brands	Annual Production Unit
1	Yangon	1	Viva (Suzuki)	6,000
2	Yenanchaun	2	Star, Ram	4,000
3	Pakokku	2	Stream (Yoma Yazar) , Zaw	6,000

Source: Industrial Zones Management Committees.

imported motorcycles by the authorities, adversely affecting the motorcycle industries (Table 5).

1.7. Cold Storage and Processing

Myanmar produces and exports various types of fishery product items such as aquarium fish, live fish, sea water fish/prawn (chilled/ frozen), fresh water fish, Dried fish, Live finned eel, lobster, sea live crabs, baby long (fillet), snack skin gobran, fish meal, and

dried rosy Jew maw etc.

The fishery sector is the fourth most important source of export earnings in Myanmar. The country earned US$561 million from the export of 324,710 metric tons of fish and fishery products in 2008-2009 (Table 6).

Myanmar's cold storage businesses are mainly centered on the export market. Most of the cold storages factories are in Yangon, Rakhine State, and Myeik. There are 116 cold storage and processing plants out of 143 various processing plants in Myanmar (Table 7).

Table 6: Five years Export Trend of Fishery Products from Myanmar

No	Year	Volume (MT)	Value USD (million)
1	2004-2005	255,780.18	346.92
2	2005-2006	271,070.25	359.20
3	2006-2007	343,426.61	466.16
4	2007-2008	351,652.05	561.02
5	2008-2009	324,710.54	483.23

Source: Department of Fisheries.

Table 7: Type of Processing Plants in 2007

No	State/ Division	Classification						Total
		Cold store and processing	Surimi	Fishmeal	Dry prawn	Prawn shell dust	Canning	
1	Yangon	77	5	5	-	2	2	91
2	Tanintharyi	13	1	6	2	-	-	22
3	Ayeyarwaddy	4	-	2	-	-	-	6
4	Rakhine	14	-	-	-	-	-	14
5	Mon	7	-	2	-	-	-	9
6	Shan	1	-	-	-	-	-	1
	Total	**116**	**6**	**15**	**2**	**2**	**2**	**143**

Source: Department of Fisheries.

Standardization of the cold storage plants are currently determined by the Department of Fisheries. The products of cold storage factories could be exported with the assistance training facility provided by Myanmar Fisheries Federation[11]. Cold storage factories gain improvement in meeting international standard for operation in Myanmar. The factories have been using not only Hazard Analysis and Critical Control Point - and International Standard of Organization or ISO but also getting approval for Quality Control—checking the export product in an experiment room in accordance with international standard. The factories are trying to produce in line with the European Union (EU) standards.

Fishery products' exports grow every year with 10 percent domestic production is being exported at present. Fish and prawns for export market are stored at local cold storage factories. Main export markets are China, Japan, Malaysia, Thailand, Singapore, Saudi Arabia, Bangladesh, Austria, United Arab Emirates (UAE), and EU. One of the major constraints for cold storage industries is the shortage of skilled labors and engineers[12].

The value-added products—Fillet, Surimi and Fishmeal—are produced domestically and exported to foreign and neighbouring countries. Fishery businesses do not sell by-products to other domestic entrepreneurs. Instead, they establish their own industries to produce value-added products for export using these by-products. The buyers provide advanced technology and techniques to produce desirable products. The factories produce the products in line with international standard for safety. Buyers also

[11] Myanmar Fisheries Federation (MFF) is a leading organization body representing fisheries associations from the private sector in Myanmar. Local level associations are formed in line with public administrative structure such as division/state or districts for better coordination with local authorities and private chambers alike.

[12] 2009 Survey of Infrastructure Needs in Yangon area

have the necessary machines, technologies and experts to get quality goods.

2. COMPARISON OF INDUSTRIAL-SPECIFIC ADVANTAGES AND DISADVANTAGES

2.1. Infrastructure needs survey

At the end of 2009, with the support of the Bangkok Research Centre, CLMV countries have conducted the Survey of Infrastructure Needs. The purpose of the study is to answer the following research questions. How can the CLMV countries attract more FDI from the more advanced ASEAN nations? Which elements are needed to attract more FDI among: 1) development of infrastructure; 2) improvements of investment climate; and 3) human resource development? In case that hard infrastructure, investment climate, and human resource were to be improved in the future, what kind of "upgrading", like expansion of market and development of new products, is possible in the "existing industries"? Why have not CLMV countries been able to diversify their existing industrial structure?

The survey entails three steps to data collection by using semi-structured questionnaires.

1) Interview with business association and related policymakers
2) Targeting respondent firms
3) Interview with firms

The Infrastructure Needs Survey was conducted in Yangon in November and

Table 8: Sample of Infrastructure Needs Survey by Sector

No	Industrial sector	No of Sample	Factories' location
1	Electric parts	5	Yangon
2	Processed Food	4	Yangon
3	Garment	5	Yangon
4	Foot Wear	5	Yangon
5	Plastic Products	5	Yangon
6	Cold storage and Processing	5	Yangon
7	Automobile	1	Yangon
8	Motorcycle	1	Yenangyaung
	Total	31	

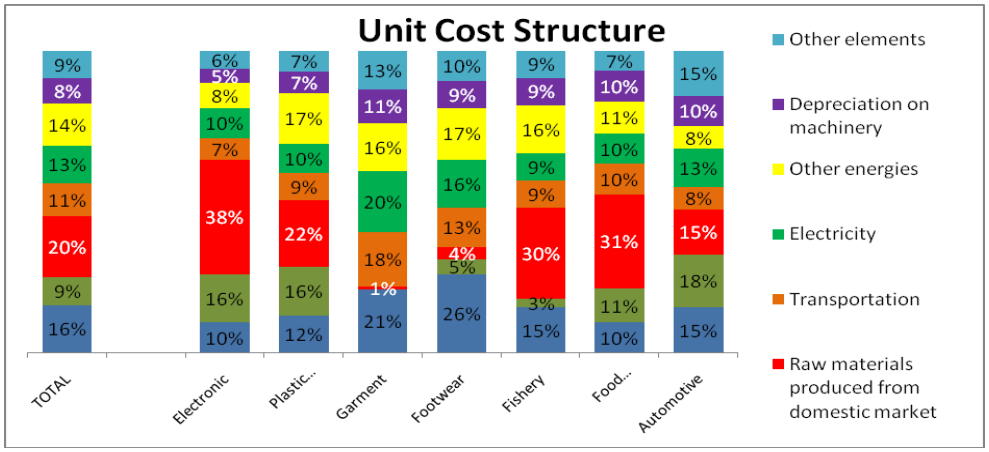
Source: Survey results, 2009.

December 2009. Five business associations and 31 private firms were interviewed in which 30 firms are located in Yangon and one motorcycle assembling factory is in Yenanchaung, central part of Myanmar.

2.2. Unit Cost Structure

In order to identify and compare industrial specific advantages and disadvantages, unit cost structure and total cost structure were surveyed. As shown in Figure 3, total cost structures vary with each sector. Cost of labor is the highest in footwear industry with 26 percent followed by the garment industry with 21 percent. Raw materials including imported items constitute the basic component of cost of production for food processing industry and plastic industry. Other industries do not rely on imported materials which are more costly and take more time to be available for production. Expenditures spent on transportation are remarkable in footwear and garment industries. Garment and footwear industry need more supply of electricity than others.

Figure 3: Unit Cost Structure by Industry



Source: Survey results, 2009.

2.3. Infrastructure and Service Link Cost

Cost for Infrastructure is directly linked with service link cost. Factories located in industrial zone enjoy significant advantages in terms of infrastructure but the level of industrial zone development varies from one zone to another.

2.3.1. Cost of electricity

The gap between electricity supply and demand is the most difficult problem for Myanmar and it severely affects the manufacturing industry. Demand for electricity is increasing overtime due to many factors [13]. Despite the hydropower projects implemented by government, the power supply cannot meet the increasing consumption (Table 9).

[13] Improvement of the living standard of the people, growth of population and expansion in urban areas, growth of industrial sector, overall economic growth of the country, building of a new capital city and its requirements for electricity.

Table 9: Yearly Power Capacity Development Prospect

Year	Plant	Existing generating capacity (MW)	Generating capacity to be increased (MW)	Availability of generating capacity (MW)	Demand estimated by the ministry (MW)
2009	30	2255	-	2255	1923
2010	32	-	865	3120	2069
2011	37	-	479	3599	
2012	40	-	312	3911	

Source: Ministry of Electric Power.

That is why every household as well as the industry are facing electricity shortage in Myanmar. The survey found out that 95 percent of the survey factories experience power interruptions frequently and only 5 percent have it for a few times within six months. These power interruptions either last longer than 30 minutes (90%) or sometimes 5-30 minutes (10%).

Insufficiency in the supply of electricity is a major problem of the manufacturing sector. Industrial zones are supplied with electricity on a rotation basis. The government charged electricity consumption for K50 per unit on private industrial use and $0.08 per unit for foreign firms. Due to black outs, factory-owned generators are used to operate the business. Therefore, daily average consumption of diesel for the industry is: Garment/footwear factory-150 gallons; electric/electronic plant-50 gallons; cold storage-300 gallons. It means that the garment/footwear factory has to spend an additional one-day cost of US$450 on diesel, US$150 for electric apparatus, and US$900 for the cold storage.

2.3.2. Cost of transportation

Industries relying on domestic market usually distribute their products through poor road infrastructure. For the export firms, due to the underdevelopment of upstream and supporting industries, garment factories in Myanmar have to import all raw materials and accessories from abroad. Then after manufacturing, all products are exported to overseas markets. These export products are transported from factories of the industrial zones in Yangon area to its port in one to two hours.

As shown in Table 10, export firms bear the transportation cost from the factory to the port while international buyers placing their orders on a CMP basis cover the transportation cost from the ports to their destination. Transportation fees to ship cargo to and from Yangon are higher than for other ports in neighbouring countries. Freight charges are volatile based on seasonal factors as Myanmar's primary export items, mostly agricultural products, are exported from February to May.

Table 10: Transportation Cost from Factory to Port in Yangon

(US$)

No	Industrial zone	Distance (Km)	Botahtaung (BSW)		Asia World (ASW)		Thilawa port terminal (MITT)	
			20' container	40' container	20' container	40' container	20' container	40' container
1	Downtown	5	50.0	70.5	55.0	82.5	78.5	127.5
2	Hlaing Tha Ya	16	73.0	107.0	73.0	107.0	127.0	179.0
3	Shwe Pyi Tha	16	73.0	107.0	73.0	107.0	127.0	179.0
4	Mingaladon/ Pyinma pin	25	79.5	115.5	84.5	125.0	127.0	179.0
5	South Dagon	25	62.0	93.5	67.0	104.5	75.5	119.5
6	Shwe Put Kan	25	68.5	101.0	735.0	111.0	120.0	170.0
7	Tharkatha	10	60.0	89.5	65.0	99.5	75.5	119.5
8	Hlegu	48	129.0	176.0	136.0	186.0	185.0	250.0
9	Mawbe	50	131.0	181.0	136.0	191.0	185.0	250.0
10	Bago	78	150.0	215.0	155.0	225.0	215.0	275.0

Source: Transportation Agency in Yangon Port.

Table 11: Freight Charges from Yangon Port to Other Destination Ports from 2007 to 2009 (US$)

Fright charges for 20' Container

Port of Destination	Freight Charges				Travel Time
	2007 March	2007 September	2008 March	2009 December	
Singapore	480	265	1050		6 days
Bangkok	685	475	1250	500	14 days
Port Klang	580	400	1038	185	5 days
Jakarta & Surabaya	800	460	1050	275	5 days
Yokohama	(All vessels go to Japan via Singapore or Port Klang.)				
Calcutta	925	940	1725		14 days
Qingdao	900	655	1350	600	10 days
Cebu	1150	800	1300		14 days

Source: Myanmar Freight Forwarders' Association.

2.3.3. Cost and time needed for customs clearance

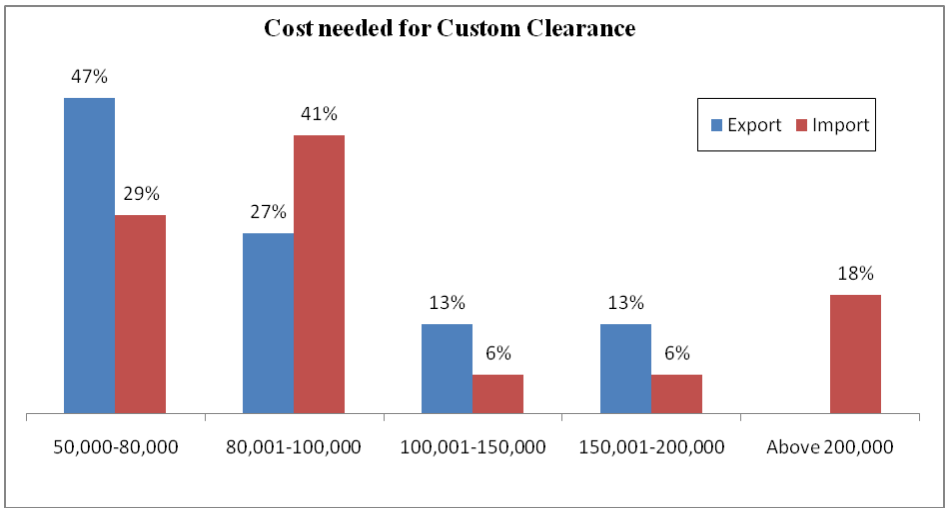
Institutional service link costs vary depending on the product items and the rules and regulations of respective departments. The procedures to apply for an export/import license entails 7 to 12 steps passing through various organizations including business associations and related departments. It usually takes two to three weeks to obtain a license. Customs clearance at Yangon Port costs from K 50,000 to 200,000 for a 20-feet container. Cost for exports is around K50,000 to 80,000 while imports cost K80,000 to 100,000 per container. The cost of customs clearance for imports is higher than exports (Figure 4). Time for export customs clearance is one day on the average while it takes three days for imports (Figure 5).

2.3.4. Production lead time

According to the survey, the period covered between customers' order and delivery of products in the export business is from three weeks to three months. This is the same

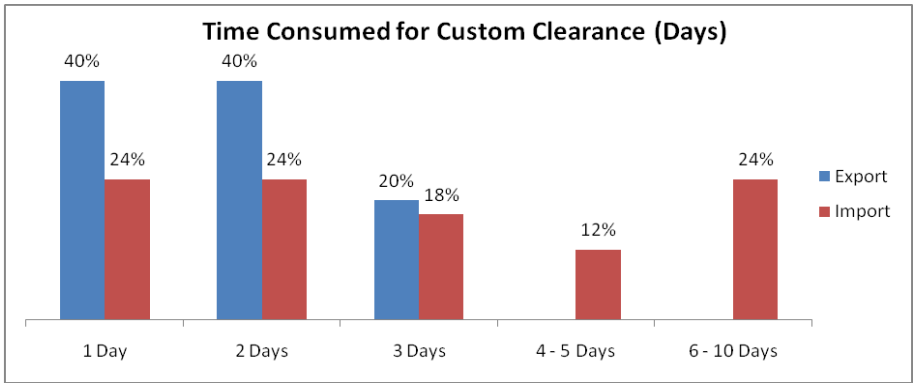
Figure 4: Cost for Customs Clearance for Exports and Imports

(kyats/20' container)



Source: Infrastructure Needs Survey, 2009.

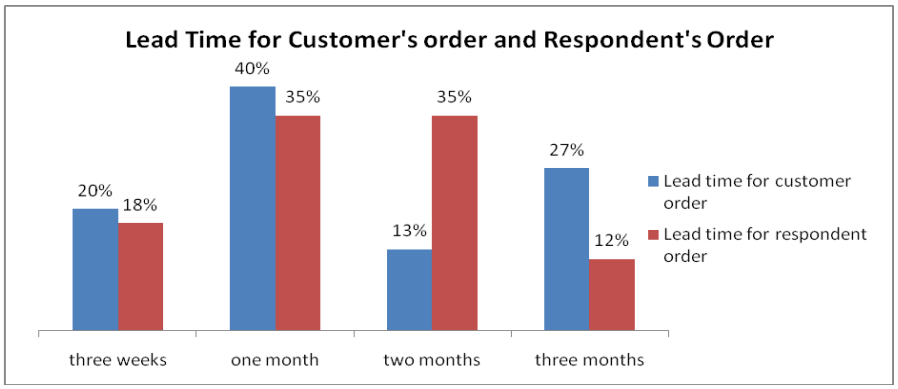
Figure 5: Time Consumed for Customs Clearance



Source: Survey results, 2009.

processing time for respondent's order on importing materials through delivery. Findings showed that lead time for the customer's order is longer than the respondents' order (Figure 6).

Figure 6: Lead time for exports and imports



Source: Survey results, 2009.

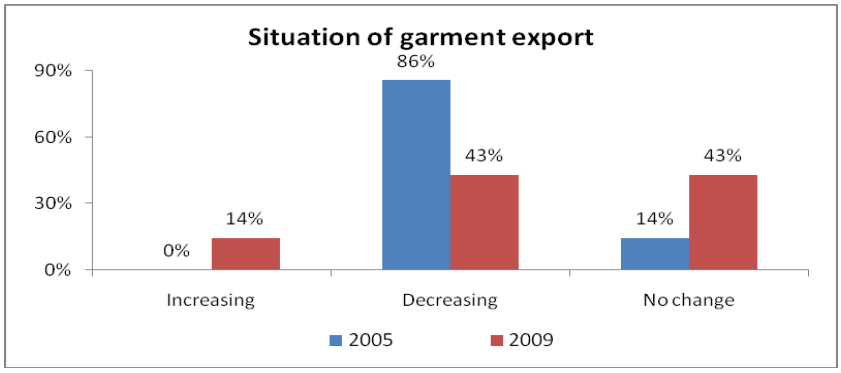
2.3.5. Turnover Ratio of Labor

According to the survey average wages for ordinary worker is K40,000 (US$40), for manager, K100,000 (US$100) and for engineer, K111,500 (US$ 111). It is quite cheap compared to Cambodia and Vietnam. Wages for workers in Lao is the cheapest in CLMV countries with US$28. Yet, labor turnover rate is nearly 10 percent, which means that employers have to spend more money to retain labor.

2.4. Comparison of Garment Industry in 2005 and 2009

In order to compare industrial specific location advantages and disadvantages, the survey chooses the garment industry as a benchmark. The analysis is based on the comparison between the 2005 and 2009 development situation of the garment industry. Seven garment factories were considered where the following variables were analyzed–amount of annual sales, time consumed for exports and imports, CMP charges, problems in investment climate, and future of the garment industry. Though according to statistics, Myanmar garments' sales/exports higher in 2009 than 2005 (Figure 7).

Figure 7: Situation of Exports by the Garment Factories



Source: Garment Survey, 2005 and 2009.

Surprisingly, many garment factories said that sales were decreasing. Time consumed for exports and imports is longer in 2009 than in 2005. The average time needed for export and import were between 12 to 17 days in 2005 while it was 21 to 30 days for imports and 36-50 days for exports in 2009. Garment factories in Myanmar faced longer lead time than in other countries. It is mainly because of the scarcity in skilled labor. Likewise, lead time in processing the transaction is another consideration in the import/export business.. Garment factories cannot accept orders with tight lead time and seasonal orders.

In adition, according to the survey data from garment factories, the average CMP charges in 2009 is higher than those in 2005. Most of the respondents in 2005 survey said CMP charges were decreasing but many respondents said CMP charges are stable or increased in 2009. Also,within five years, the average wages of hard labor increased by more than 100 percent while it is increased by 70-80 percent for white collar and semi-white collar labor (Figure 8).

Figure 8: Comparison of Average Labor Wages

Source: Garment Survey, 2005 and 2009.

Garment industries rely more on internet and email than before in order to respond to their buyers' orders and complaints. The unreliable regulatory policy has created more problems in 2009 than in 2005. Business licenses and operation permits are more difficult to obtain than before. The tenure of the exporter/importer license was one or two years' term according to the business preferences but now local and foreign firms are reduced to six months and one month, respectively. In 2005 the factories faced major obstacles in transportation but not anymore a big problem nowadays. There were more labor issues and regulations in 2005 but no longer controversial at present. Indeed, the garment factories are confronted with obstacles in doing business because of policy, regulations, and licensing in 2009.

Regarding operational issues and business growth, macroeconomic uncertainty was a major concern in 2005 due to diffuclties in license application process by shifting of the capital city and administrative organs from Yangon to Nay Pyi Taw. More important issue is on financing and corruption,. Most of the respondents observed that

the situation in 2009 is more promising than 2005 largely due to the dismal business prospect. Border trade developed after the government allowed garment exports through the check-point of Myawaddy, opening a new trade route from Yangon to Bangkok Port. Through this, other destinations can be reached. The overseas route to Bangkok Port from Yangon Port through Singapore takes at least 20 days.

2.5. Comparison of Labor in 2005 and 2009

In 2005, a Labor Survey on the Manufacturing Industry was conducted in 10 garment factories in Yangon. Again in 2009, the same survey was conducted in 9 garment factories in Yangon in order to compare the labor situation in two time-periods. A total of 100 workers were interviewed each for the year surveyed. In 2005, 13 males and 87 females, were interviewed. In 2009, 22 males and 78 females were interviewed. From the 2005 respondents, 95 percent were from production section and the remaining 5 percent were from Administrative Department. On the other hand, the 2009 respondents comprised of 84 percent production and 16 percent admin. Workers in the garment factories vary in their work areas, 43-50 percent were from Yangon City, 15-18 percent were from Bago Division, 10 percent were from Ayeyawaddy Division, and the rest were from other areas. The trend does not change significantly in 2005 and 2009. Most of them have worked at the garment factories in Yangon for 5 to 7 years. In 2005, 77 percent of them were living with their families. In 2009, it declined to 62 percent.. The distance between the workers' home and the factory was longer higher than in 2005. The 2009 conditions provide more access of the workers to the factories than the 2005...About 70 percent of the workers enjoyed ferry transport in 2009 while it was only 38 percent in 2005. Workers using public transport was only 2 percent in 2009.

The majority of workers spend less than 30 minutes coming to the factories. In terms of working hours, overtime after the regular 60 hours per week was common in 2009. Some 71 percent of garment workers assume that their wages are higher compared to other industries. Workers' remittances make more of the total family's income in 2009 than in 2005. Workers are provided with more training at the work place. Only 6 percent of workers were provided training in 2005. It has increased to 14 percent in 2009. People learned of job opportunities more often through friends. In 2005, the major reason for employment was having the appropriate skills obtained through vocational training (54%), But the 2009 data showed that employment based on skills was only 14 percent. Personal and family connection was said to be the main reason for employment at 41 percent.

2.6. Comparison of Industrial Specific Advantages and Disadvantages

Based on the findings of the three surveys, the advantages and disadvantages of the existing industries and new industries are shown Table 12 and Table 13, respectively. The main advantages that surfaced among existing industries are said to be: (1) abundant labor; (2) cheap wages; and (3) raw materials availability. On the other hand, the most common disadvantages are: (1) insufficiency of electricity; (2) high service costs due to the underdeveloped infrastructure; and (3) regulatory policy uncertainty and difficulty in business licensing.

Moreover, the common advantages for new industries are: (1) cheap wages of skilled and unskilled labor; and (2) enjoying the GSP status in some countries. Common disadvantages are: (1) scarcity of skilled labor, (2) scarcity of electricity; and (3) difficulty in business licensing.

Table 12: Advantages and Disadvantages of Existing Industries

No	Type of industries	Products	Location Advantages	Location Disadvantages
1	**Garment**	Knitting, coat, jacket, shirt, Trousers	•Abundant labors in industry •Labor wages are cheap •Enjoy special privilege for export to Japan	•Economic /trade sanctions hinders exports to US and EU •Insufficient electricity supply •Underdeveloped infrastructure in industrial zones •High transportation cost and service link cost •Regulatory policy uncertainty and difficult in business licensing and operation permits
2	**Processed food**	Juice, snack, instant noodle, dried tea	•Raw material available in domestic market •Increase production of raw materials •Substitute imported products •Availability of skilled labors •Regulatory body like FDA is relatively strong and it is good for qualified manufacturers	•Consumers have a limited knowledge on health and food •Raw materials are not available for the whole year, so products can be produced seasonally •Industrial Zone Infrastructure is underdeveloped •Scarcity of skilled labors •Insufficient electricity supply •High tax rate for manufacturers •Incentive program is not existed •There is no chemical contamination
3	**Plastic goods**	PP bags, PP Woven bag	•Increasing export volume of agro-based products from Myanmar •Increasing usage of PP woven bags in domestic market	• Limited market to export • Due to exchange rate fluctuation , price of plastic resin are unstable • Many competitors in local market.
4	**Cold storages**	Cold storage and Processing	•Abundant water resources that can produce fish and prawn •Availability of raw materials •Sufficient labor with cheap wages	•Insufficient electricity supply is main problem for 24 hour cold storage operation •Lack of advanced technology for fishing and fish breeding •Shortage of Fishermen and insufficient fishing boats and equipments

Source: Survey results, 2009.

Table 13: Advantages and Disadvantages of New Industries

No	Type of industries	Products	Location Advantages	location Disadvantages
1	Electrical goods	Electric cable, battery	•Improved infrastructure in some extent •Potential to export to neighbouring countries through borders •A few players in the industry •Wages of skilled and unskilled labor are cheap	•Scarcity of skilled labor •Insufficient electricity supply •Lack of supportive industry •lack of incentives for investment •Weak in license application process •Difficult to import chemicals related raw materials •Need to stock raw material for a year
2	Automobile	Car industry, Motorcycle Plant	•Illegal imported motorcycles are restricted to travel in many areas •Market is in growing stage •The existing number of motorcycles are not matched with population •Road infrastructure is improving overtime	•Local made cycles are difficult to compete with imported motorcycles. •No supportive industries for motorcycle industry •Authority limits quantity under production permit •Depending on imported engines & parts
3	Foot wear	Shoe, slipper	•Enjoy GSP status from some buyer countries like Japan •Wages of skilled as well as unskilled labors are cheap •Workers easily follow the techniques of footwear production	•The skilled labor is not easily available •Cannot accept seasonal order due to longer lead time •Regulatory policy uncertainty and difficult in business licensing and operation permits •Insufficient electricity supply

Source: Survey results, 2009.

3. CASE STUDY

The Survey on Infrastructure Needs revealed that needs are high in Myanmar. The following case studies of a garment factory, cold storage factory, footwear factory, and an electronic firm illustrate infrastructure related problems of private firms in Myanmar.

3.1. Jewoo Garment Factory

Jewoo Manufacturing Co., Ltd is a purely Korea-owned garment factory. It was established in the Thaketa Industrial Zone in 1998. Total investments for the Jewoo factory and workshop amounted to US$3 million. Annually, tt was able to produce an average of 340,000 pieces of garments.. Various kinds of jackets and trousers are also produced and exported.

There are 1,400 fulltime employees in the Jewoo garment factory. Skilled labor is scarce because most of the workers lack formal education. Skilled employees can can produce 130 pieces of garment per month. The main export markets are Hong Kong, Korea, and European countries. Most buyers place orders through the headquarters in Korea. As a CMP factory, raw materials are sent by the buyers, though some materials are bought from local market. Garment factories enjoy tax exemptions for raw materials. For export, they only pay a 10 percent tax.

Communication infrastructures like internet and phone lines are satisfactory in the Thaketa Industrial Zone. But public electricity is still unreliable for the 5-hour supply during working time. Jewoo has to run its own generator using 90-100 gallons of diesel a day. This result to 35 percent of total expenditure allotted for electricity generation and 20 percent on labor. Transportation is poor, unreliable, and inefficient. Lead time covers 90 days for customer's order and 30 days for Jewoo's order. The process includes import/ export license application and customs clearance.

The main difficulties are power shortage, high rate of labor turnover, and shortage of skilled labor and middle level technicians. Also, applying for export/import licenses is complicated. The June 2009 regulation of requiring a monthly renewal of licenses adds up to the burden. Factory operations are currently not very profitable. Support

from the headquarters diminishes every year. Its operations are more of striving to survive the business and for workers not to lose their jobs.

3.2. Great International Cold Storage

Great International Co. Ltd started its cold storage and processing business in 2001 when the fishery sector was considerably growing. The plant can produce an average of 1,200-1,800 metric ton of fish products a year. The company has already obtained ISO 9001: 2000 Quality Control Certificate and ISO 4001: 2000 Environmental Certificate. They have been operating according to GMP HACCP system.

Many prawn ponds were destroyed due to Nargis in Ayeyarwaddy Division, Yangon Division, and Rakhine State. The factory got their prawns from offshore fishing. Most marine products such as fishes and prawns are exported. Export is carried out through border-trade, by sea and air. They usually export to Japan, Korea, Australia, Hong Kong, China, Thailand, Vietnam, and EU countries. The industry benefits from the Generalized System of Preferential Tariff (GSP).

There are over 170 employees in the factory with an average wage range of US$40 to US$60. Most of the workers like to remain with the same company.

Telecommunication is much better than the previous years, but it takes time to connect to the internet. A power generator has to run to provide electricity—a very important input for a cold storage business. Total costs of operation come from 35 percent raw materials from domestic market, 20 percent electricity, and 15 percent labor wages.

The company forecasts growth by 10 to 15 percent in 2009. The main problems involve scarcity of raw materials and instability of prices after Nargis. The industry has

a high market potential because Myanmar's fishery industry is still growing and there is a huge diversity in aquatic resources. The company is trying to penetrate the EU market. Representatives of the EU Commission came and inspected the cold storage industries in Myanmar in October 2009 to check whether they are in line with EU Standards.

3.3. Myanmar Sunny Footwear Factory

Sunny Footwear Factory, a subsidiary of Sunny Incorporated, is a big shoe manufacturing company based in Seoul, Korea. It was lured to Myanmar because it benefits from the GSP adopted by Japan for developing countries.

Myanmar Sunny Footwear Co., Ltd exports only to Japan. Orders are placed with the Korean head office and transferred to the Yangon branch office. The company has one main product line—men’s shoes. Annual output is 840,000 pairs of shoes. Almost 80 percent of the raw materials that the factory uses come from China and Korea.

There are over 1,200 workers in the factory including five Chinese specialists and five Korean technicians. Skilled labor is scarce but workers become skilled by learning the job from three to six months.

The factory earned about US$672,000 in 2008 and it is hoped that annual sales will increase as the main buyer is one of the shareholders of the factory.

Myanmar Sunny also pointed out how inconvenient it is to renew export/import licenses monthly. The factory has to pay fines as punishment for the license overdue and it is trying to renew the license at a higher level authority to avoid such problems.

3.4. Nibban Electric and Electronics

The Nibban Electric and Electronics (NEE) was established in 1972 to manufacture

PAHO AC/DC adaptor. In 2006, Nibban expanded their 'Nibban' brand by introducing various new products.

Nibban started as a smallscale domestic enterprise producing all sorts of electronic goods. Later on, the company discovered that it is more advantageous to import than to manufacture them in Myanmar. Thus, Nibban started to import electronic products such as TV and EVD in 2008 and sell them with warranty. The company extended its product range by marketing audio and video products and home appliances.

Labor is and wages are cheap. Nibban has diversified its business from manufacturing to trading business which is more profitable with less problems. Nibban plans to manufacture domestically and compete with imported goods by 2015. Regarding the Asian AFTA process, the owner of Nibban said that it is necessary for local businessmen to improve quality or to reduce price of their products to be competitive. Nibban suggested that the import/export license application procedure be expedited and that financial assistance be provided for the expansion of private industries.

4. ANALYSIS AND FUTURE DEVELOPMENT AGENDA

4.1. Analysis of Comparative Advantages of the Industries

CLMV countries including Myanmar depend on resource-based economy especially agrobased. It is often said that these countries have a comparative advantage producing primary products, thus, should consider focusing on the primary sector development rather than attempting to industrialize. However, it is suggested that some of these have

Table 14: Layers of Transaction in Production and Distribution Network from Yangon, Myanmar

	Local market (Yangon)	Local market (Mandalay)	Neighbouring countries through China Border trade	Neighbouring countries through Thailand Border trade	Regional market (India, China, Japan, Korea)	Global market (EU,US, ME)
Average Lead time	1 day	3 days	7 days	7 days	14- 21 days	30 days
Frequency	Several time in a day	Once or few time in a week	Once or few time in a week	Once or few time in a week	fewer than one in a week	fewer than one in a week
Transport mode	Truck	Bus/ Truck	Truck	Truck	Sea/ waterway	Sea/ waterway
Trip length	14 Km	700 Km	1,100 Km	720 Km	1400-4,500 Km	8,000-12,000 Km

Source: Survey results, 2009.

good potential for participating in production networks[14].

Table 14 shows the layers of transaction in production and distribution network. It describes that industries in Myanmar rely on domestic and neighboring countries' markets. For external trade, utilizing the Myanmar-Thai border trade is an effective means of establishing connection with regional networks. The effective use of economic corridors may facilitate shorter processing periods for production and distribution.

Though Myanmar industries enjoy location advantages in some areas, the industries seem not to have competitive edge among others in CLMV in terms of capital, technology, infrastructure, and institutional support. Hence, the industries in CLMV with comparative advantages could have potential to participate in regional production networks. Because Myanmar have a variety of natural resources, the food processing

[14] Expansion of the production networks into the less developed ASEAN region: Implication for Development Strategy, Fukunari Kimura).

and cold storage industry or resource- based industries already have that comparative advantages. It is followed by garment, footwear, and plastic which are labor intensive and not much of a comparative due to the country's low human capital. Electrical and automobile are found to be less comparative. Table 15 shows the analysis of comparative advantages of selected industries.

Table 15: Comparative Advantages of Selected Industries in Myanmar

No	Industry	Garment	Footwear	Electrical	Automobile assembling	Processed food	Plastic	Cold storage
1	Startup capital requirement	Low	Medium	High	High	Medium	Low	Medium
2	Machinery requirement	Low	Medium	Medium	Medium	Medium	Medium	Low
3	Unskilled Labor	Available	Available	Available	Available	Available	Available	Available
4	Skilled labor	Available	Not adequate	Available	Not adequate	Available	Available	Available
5	Raw material	No	No	some	No	Available	No	Available
6	Electricity requirement	High	High	High	Medium	High	High	High
7	Telecommunication requirement	High	High	Medium	Medium	Medium	Medium	High
8	Transportation	High	High	low	low	High	Low	High
9	Other energy	High	High	Medium	Medium	High	Medium	High
10	Information	High	High	Medium	High	High	Medium	High
11	Laws and Regulations	Complicated	Complicated	Applicable	Complicated	Complicated	Applicable	Applicable
12	Technology	Low	Medium	Medium	Medium	Medium	Low	Low
13	Production cost	Low	Medium	High	High	Low	Low	Medium
14	Export Market accessibility	Medium	Medium	low	low	Low	Low	Medium
15	Tax rate	low	low	low	Medium	low	low	Medium
16	Special privilege (GSP, AISP)	No	Yes	No	No	No	No	Yes
	Overall status	**Slightly Advantage**	**Slightly Advantage**	**Less advantage**	**Less advantage**	**Advantage**	**Slightly Advantage**	**Advantage**

Source: Survey results, 2009.

4.2. Future Industrial Diversification in Myanmar

Most of the industries in Myanmar which started in the early stages of the market-oriented economy are standing with basic level industries which require low technology and ease in processing. Myanmar private manufacturers have introduced new industries since 10 years ago. The new industries apply more advanced technology, machinery, and equipments compared to the old or conventional. The new industries coming into Myanmar in the form of CMPs which are not just garment but various industries such as footwear, rubber boats and rafts, bag bindings, electrical apparatus, optical lense, plastic packaging, steel products etc. The existing industries can diversify more advanced industries in the future. The possible future industries are supporting industries in order to meet the requirement of local contents increase, rubber products, decoration materials, electronic goods, motor, and machinery (Table 16).

Table 16: Future Industrial Diversification in Myanmar

Existing Industry	New Industry	Future Industry
Garment	Footwear	Supporting industry
Crumb Rubber	Rubber Boats& Rafts	Rubber product
Lathe	Mould & Die	Plastic goods
Plastic bag	Plastic furniture	Decoration goods
Construction raw	Construction materials	Automobile production
Vehicle service	Automobile assembling	Motorcycle production
Motorcycle parts	Motorcycle assembling	Semi- conductor
Electric apparatus	Dental apparatus	Electronic goods
Packaging	Steel products	Motor and machinery
Wood-based industry	Food processing	
Cold storage and processing	Stationery	
Paper mill	Consumer goods	
Rice mill	Household goods	
Food semi-finished	Hair dressing	
Agricultural machinery & tool	Pharmaceutical Manufacturing	
Bag binding	Optical lenses	

Source: Survey results, 2009.

Table 18: Priority of Development Agenda to Attract More Production Blocks

Objective	Reduction in fixed cost/ set up cost	Reduction in service link cost	Reduction in production/ trading cost	Export Market access
Priority 1	Simplifying investment procedure	Improve industrial zone infrastructure	Improvement of transportation facilities	Drawbacks of import duty and export tax
Priority 2	Flexibility of minimum capital requirement	Electricity supply	Development of supporting service and industry	Access market information
Priority 3	Information on regulatory framework	Improvement of communications	Single and stable exchange rate	Streamlining the import/ export procedure
Priority 4	Obtaining license and permit	One stop service	Training and development programme for labors	GSP and regional privileges
Priority 5	Land lease rate	Improvement of banking system	Local raw material supply	Reduction/elimination of import/ export tax rate

Source: Survey results, 2009.

4.3. Prioritizing Development Agenda to attract more production blocks

Improvement of three kinds of costs such as network set-up, service link and production are essential to inviting fragmented production blocks. Comparative advantages will not be sufficient enough to compete with the same industries in the region. In order to gain competitive advantage, the industries must reduce the cost at the lowest level as possible. Table 18 shows the priority in reducing such costs to attract more production blocks.

5. POLICY RECOMMENDATIONS

Manufacturing and processing industries can be diversified from existing industries into new industries and advanced industries in the future. Most problems, challenges, and constraints facing the existing industries are poor infrastructure especially electricity supply, complicated and long documentation procedures, inconvenient license and

permit procedures, inconsistent tax regime, inefficient exchange rate, uncontrollable illegal imports of finished goods among others. Despite the competitive cheap labor cost and locally available raw materials which tend to reduce production cost, service link cost and other transaction costs are high in Myanmar which cannot attract investors or link with regional production blocks. The Table 19 and 20 shows the recommendations to attract more production blocks in industrial diversification. They are operational recommendations and policy recommendations as well.

Table 19: Recommendations for Export Industries to Attract More Production blocks (Continues)

No	Industry	Survey findings	Recommendations
1	**Garment**	▪ In the total cost structure, 21% for labors and 20% of electricity used in production. ▪ Easy to recruit the general workers ▪ Insufficient electricity supply ▪ Telephone charges are high to contact buyers. ▪ It is inconvenient to renew exporter/importer licenses in monthly basis ▪ Not allowed to extend the export & import license validity	▪ Improve electricity supply ▪ Should extend validity of importer/ exporter licenses to a year ▪ Import and export procedures should be streamlined ▪ Develop plans for shorter lead time
2	**Footwear**	▪ In the total cost structure, 26% for labors and 13% of electricity used in production. ▪ Too much taxation ▪ Renewal of exporters and importers license term on monthly basis ▪ Abundant labors but need to train to improve their skills. ▪ Inadequate electricity supply & power failure. ▪ Poor transportation when exporting goods	▪ Tax policy should be reviewed. ▪ Extension of validity of importer/ exporter license form monthly to yearly basis ▪ Regular electricity supply ▪ Skilled training for labors

Table 19: Recommendations for Export Industries to Attract More Production blocks (Continued)

No	Industry	Survey findings	Recommendations
3	**Electric and Electronic**	▪ In the total cost structure, 38 % for raw materials, 10% each for labors and electricity used in production. ▪ It makes no difference whether imported or produced in terms of taxation and procedures. ▪ Applying export/ import license take long and a bit complicated. ▪ Electricity supply is often disrupted It makes no difference whether imported or produced here	▪ Consider some kinds of relaxations for local electric and electronic products producers. ▪ Consistent supply of electricity ▪ Taxation should be favoured to manufacturers than traders
4	**Cold Storage**	▪ In the total cost structure, 30 % for raw materials, 15% for labors and 18% for electricity and energy used in production ▪ Inadequate and volatile electricity supply and have to use generator for 24 hrs ▪ Taking time to pass of the products through X-ray scanner in port which capacity is 120 containers a day	▪ Improve electricity supply ▪ Port and shipping facilities should be improved

Source: Survey results, 2009.

Table 20: Recommendations for Domestic Oriented Industries to Attract More Production Blocks (Continues)

No	Industry	Survey findings	Recommendations
1	**Food Processing**	▪ In the total cost structure, 31 % for raw materials, 10% for labors and 20% for electricity and energy used in production ▪ Complicated taxation system especially commercial tax and Profit tax. ▪ Raw materials are available seasonally Cost of transportation depends on the fluctuation of fuel price	▪ Relaxations on tax collecting system. ▪ Develop agriculture calendar and plan to supply raw materials

Table 20: Recommendations for Domestic Oriented Industries to Attract More Production Blocks (Continued)

No	Industry	Survey findings	Recommendations
2	**Plastic Processing**	▪ In the total cost structure, 38 % for raw materials, 12% for labors and 27% for electricity and energy used in production ▪ Muliple and unstable exchange rate system leads to fluctuation of raw material prices Movement of labor to other industries ▪ Essential for full supply of electricity ▪ Sudden changes of rules and regulations	▪ Improve electricity supply ▪ Review the foreign exchange policy and the policy and the policy of stable market exchange rate should be adopted. ▪ Allow doing business freely within the frame of rules and regulations by adopting clear-cut rules and instructions.
3	**Motorcycle**	▪ In the total cost structure, 40% for imported raw materials, 35 % for local raw materials, 15% for labors, 13% for electricity used in production ▪ Provision license to illegal import motorcycles Require financial support Unstable policy and rules on motorcycle production ▪ Need to change design to compete in the market ▪ Cannot compete used and low quality imported cycles with low prices	▪ Develop program to encourage localization to obtain machinery parts and components easily ▪ Develop supporting industry Provision license should not be issued to illegal import motorcycles ▪ Develop financing programme
4	**Automobile**	▪ In the total cost structure, 33 % for raw materials, 15% for labors and 13% for electricity and energy used in production ▪ Difficult to get engine and parts on quota basis Illegal import of motor vehicles Regulate annual production units	▪ Develop supporting industry The machineries and machinery parts should be sufficiently available in domestic market ▪ Annual production quota should be stable ▪ Car assembling industries should be controllable number

Source: Survey results, 2009.

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