

Myanmar
Data Collection Survey on Technical and
Vocational Education and Training

Final Report

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JAPAN INTERNATIONAL COOPERATION AGENCY

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Abbreviations

ADB	Asia Development Bank
AIT	Asia Institute of Technology
AQRF	ASEAN Qualification Reference Framework
ASEAN	Association of Southeast Asian Nations
ASSA	ASEAN Skill Standard Authority
AusAID	Australian Agency for International Development
BAJ	Bridge Asia Japan
BE	Basic Education
BE	Bachelor of Engineer
BEHS	Basic Education High School
CAD	Computer-Aided Design
CAM	Computer Aided Manufacturing
CBMSCs	Competency-based Modular Short Courses
CESP	Costed Education Sector Plan
CESR	Comprehensive Education Sector Review
CIF	Cost, Insurance and Freight, named port of destination
CMP	Cut-Make-Pack
CNC	Computer Numerical Control
CSO	Central Statistical Organization
CV	Curriculum Vitae
CVT	Center for Vocational Training
DG	Director General
DLR	Department of Labour Relations
DoL	Department of Labour
DPs	Development Partners
DTPC	Department of Technical Promotion Corporation
DTVE	Department of Technical and Vocational Education
EOSWG	Employment Opportunity Sector Working Group
EP	Employment Permit
ESD	Employment and Skill Development
ESDL	Employment and Skill Development Law
ETD	Department of Education and Training
EU	European Union

FDI	Foreign Direct Investment
FEG	Future Engineering Generation
FESP	Framework for Economic and Social Reform
FGLLID	Factories and General Labour Law Inspection Department
FOB	Free on Board
GDP	Gross Domestic Product
GIZ	Gesellschaft für Internationale Zusammenarbeit
GoJ	Government of Japan
GoLux	Government of Luxembourg
GoM	Government of Myanmar
GTC	Government Technical College
GTHS	Government Technical High School
GTI	Government Technical Institute
HTI	Hotel Training Initiative
ILO	International Labour Organization
IMF	International Monetary Fund
IOM	International Organization for Migration
IT	Information Technology
ITC	Industrial Training Center
JAVADA	Japan Vocational Ability Development Association
JCCM	Japan Chamber of Commerce and Industry, Myanmar
JESWG	Joint Education Sector Working Group
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JMA	Japan Myanmar Association
KfW	Kreditanstalt für Wiederaufbau
KOICA	Korea International Cooperation Agency
LEO	Labour Exchange Office
LNG	Liquefied Natural Gas
LuxDev	Luxembourg Development Agency
LVT	Local Vocational Training
MDCF	Myanmar Development Cooperation Forum
MES	Myanmar Engineering Society
METI	Ministry of Economy, Trade and Industry
MIA	Myanmar Industrial Association

MJJI	Myanmar Japan Joint Initiative
MJTD	Myanmar Japan Thilawa Development Limited
MoBA	Ministry of Border Affairs
MoE	Ministry of Education
MoHLW	Ministry of Health, Labour and Welfare
MoHT	Ministry of Hotels and Tourism
MoI	Ministry of Industry
MoLES	Minister of Labour, Employment and Social Security
MoLIP	Ministry of Labour, Immigration and Population
MoST	Ministry of Science and Technology
MoSWRR	Ministry of Social Welfare, Relief and Resettlement
MoU	Memorandum of Understanding
MPTA	Myanmar Private TVET Association
MRC	Migrant-worker Resources Center
NCDP	National Comprehensive Development Plan
NEPC	National Education Policy Commission
NESP	National Education Sector Plan
NGO	Non Government Organization
NLD	National League for Democracy
NSDA	National Standard Development Authority
NSSA	National Skills Standards Authority
NYRDC	Nationalities Youth Resource Development College
OECD	Organisation for Economic Co-operation and Development
OJT	On the Job Training
OSF	Open Society Foundation
PDCA	Plan Do Check Act
PDM	Project Design Matrix
PPP	Public Private Partnership
PPT	Powerpoint
RACT	Refrigeration and Air-Conditioning Technology
SDC	Swiss Agency for Development and Cooperation
SDD	Skills Development Division
SES	Secondary Education Subsector
SEZ	Special Economic Zone
SHL	Swiss Hotel Management Academy Lucerne

SMVTI	Singapore-Myanmar Vocational Training Institute
SSB	Social Security Board
STC	Skills Training Center
SWG	Sector Working Group
TOEIC	Test of English for International Communication
TOT	Training of Trainers
TQM	Total Quality Management
TSWG	Tourism Sector Working Group
TTTI	Technical Teachers Training Institute
TU	Technological University
TVET	Technical and Vocational Education and Training
UMFCCI	Union of Myanmar Federation of Chambers of Commerce and Industry
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
WB	World Bank
WP	Work Permit

Executive Summary

1. Overview of Study

1.1 Background

Since 2012, Myanmar has experienced steady growth of its Gross Domestic Product (GDP), as a result of rapid democratization, and the International Monetary Fund (IMF) estimates that this growth will continue at over 7 percent per year. However, Myanmar remains anxious about the shortage of human resources that will be required to sustain its industries during this time of dramatic change in the country's economic and social environments.

1.2 Purpose

This study aims to propose an effective, cooperative approach to the Technical and Vocational Education and Training (TVET) required to meet the human resource demands of the related industries in Myanmar, based on the collected data and a detailed analysis.

1.3 Content

The study has conducted data collection, and analysis, through the process of literature review, questionnaires, conversational interviews, field visits, workshops, and study tours. Based on feedback provided by stakeholders, the study team has compiled a final report.

2. Current Situation of TVET

2.1 Laws, Organizations, and System Concerning TVET

Plural Ministries in Myanmar have implemented TVET based on their own individual policies, without a set of common definitions, or, any inter-ministerial coordination.

TVET law, based on the Comprehensive Education Sector Review (CESR) and the National Education Sector Plan (NESP) is currently under deliberation in parliament. The law mentions the organization of a TVET Council, and its requirement to coordinate TVET across the different Ministries.

However, the National Skills Standards Authority (NSSA), established in 2007 to address the country's integration into ASEAN, and the resulting Employment and Skill Development Law, enacted in 2013 under NSSA, is not in practical use, as there were no by-laws developed to support it.

In regards to National Skills standards in Myanmar, 15 joint (public and private) industrial committees identified 173 skills, and the Cabinet established a set of 4 different skill levels for 92 identified skills. GIZ supported the preparation of the guidelines in regards to skills standards for the different skill levels.

Of the 1.2 million students that enter primary education annually in Myanmar, only 108,000 will complete a higher-secondary education, resulting in the demand for proper skills among the "missing 1 million" in order to find appropriate work.

2.2 Formal TVET Organization

Prior to the reconstruction of the country's Ministries, TVET was divided into 3 categories: Formal TVET with an academic diploma, Non-Formal TVET wherein each Ministry provided vocational training in order to achieve policy goals, and, Private TVET which had no official

registration or certification system, but, was more flexible and able to better meet people's needs.

The Ministry of Education (MoE) administers the Government Technical High School (GTHS) and Government Technical Institute (GTI), and is expected to support in the preparation of the training standards for NSSA's skills standards.

There are currently 34 GTHS in Myanmar, and they accepted only 1,290 total enrollees in the 2013/14 academic year, and 1,516 total enrollees in the 2014/15 academic year. Almost half of this small number of enrollees each year quit the school after being admitted.

There are 22 GTI for GTHS graduates in Myanmar, and they provide courses such as civil engineering, electrical engineering, electronics, mechanics, and ICT. The number of students in GTI totals 1,500 each year.

The monthly salary for a principal in GTHS/GTI is only 360,000 kyats (383.3 USD), which is significantly lower than that of office staff in the service sector (438,000 kyats (466.3USD) monthly). People who wish to pursue a stable life in their own hometown tend to work as teachers in the schools.

Graduates of the Technological University (TU), under the Department of Higher Education, can become teachers of GTHS and GTI. However, TU does not offer separate courses for each technical category, such as civil engineering, electrical engineering, electronics, etc. Furthermore, the graduates who become teachers have no opportunity to update their knowledge about new technologies.

2.3 Non-formal TVET Organization

The Ministry of Industry (MoI) offers TVET in 6 Industrial Training Centers (ITC), for those students that do not pass the matriculation examination. The equipment and facilities were purchased with the support of the country's Development Partners (DPs).

The Ministry of Border Affairs provides opportunities in short-term TVET and higher education for those who are living in remote areas of the country and near the border. The Ministry of Social Welfare, Relief and Resettlement (MoSWRR) offers short-term TVET to those who require social support, such as orphans and disabled children.

The Ministry of Labour, Immigration and Population (MoLIP) implements short-term training programs for employment-support, prepares skills standards, and provides skill certification.

The Technical Promotion Training Center (TPTC) Baelin in Mandalay, a short-term training facility under MoE, provides 6 ToT courses.

2.4 Private TVET Institutes

According to TVET Private TVET Association, there are more than 550 private TVET institutes and most of them provide courses that do not require machinery like ICT.

Fuji Work provides in-company training requested by Japanese companies in the Thilawa Special Economic Zone (SEZ). Additionally, the Glory Career Training Center and the Okayama Kagisen jointly provide automobile maintenance courses. Furthermore, the Sakura Insein Technical Course receives support by the Kinden Corporation to offer electricity transmission and distribution courses, as well as, a 7 month general electrical course at the GTI.

3. Industry/Economy

3.1 Current Situation

Prior to 2010, Myanmar's economic growth rate was below the average GDP growth rate in Asia, but after the transition to civilian rule in 2011, and the resulting reforms, steady economic growth has been achieved, with average annual GDP growth rates of 8 percent.

When looking at the GDP structure, by industry sector, the industrial structure in Myanmar has shifted gradually in the 10 years from the agricultural sector to the industrial sector.

In 2014, the service sector was on top with 37.7%, followed closely by the industrial sector at 34.4%, with the ratio of the agricultural sector being reduced down to 27.9%.

In terms of investment approvals, 2014 had the highest number recorded with 211 cases. The manufacturing industry accounted for 141 cases, or 58.2% of the total, and amounted to 8 billion USD. While, by category, oil and gas (40.2%) was leading, followed by transport and communication (21.0%), and manufacturing (18.8%). Although garment items such as apparel footwear were still dominant, investment projects in the light industry sector such as food, beverages, and medical products have also been increasing.

3.2 Medium to Long-term Industry/Economic Growth Prospect

The Myanmar national socio-economic development policy framework and objectives have been documented into items such as (a) The “National Comprehensive Development Plan 2011-2013” (NCDP) established in order to indicate 20-year (2011-2031) long term goals, (b) “Framework of economic and social reform” (FESP) to demonstrate the policy priorities from 2011-2015 in order to achieve the goals of the NCDP, and (c) 5 year and annual plans for each ministry.

In the NCDP, there are goals: prioritized policy reform programs, development of the labour market, development strategy of small and medium-sized enterprises, and, development of policies and institutions related to participation of the private sector in national economic activity. FESR plays a role as a prioritized policy to achieve sustainable industrial development while implementing poverty reduction and rural development. Among the plans of each ministry, for example, there is an industry policy paper (MoI) as items related to industrial development. The paper shows industrial sectors which should be encouraged in the long run.

For the supply and demand of the future working population, analysis was done in Myanmar's moment: Unique opportunities, major challenges (McKinsey Global Institute, June 2013). According to the same report, if an annual economic growth rate of 8% continues, and real GDP reaches 220.6 billion USD by 2030, a labour force of 2 million people will be insufficient as a whole.

When viewed by skill level, while skilled labour and semi-skilled labour is lacking within the 13 million people, it is estimated that a surplus labour force of 11 million people in Low-skilled labour will be generated.

When considering exporting and productivity, in the case of Myanmar, chemical products, refined petroleum products, electrical machinery and apparatus, automobiles, and communication equipment are all promising industries.

Above all, the government of Myanmar and private enterprises expect the Japanese automobile industry to contribute most to the advancement of ASEAN's industrialization. Suzuki has

already started production of about 300 auto units yearly, and the company is committed to transfer its production base to the Thilawa industrial park. In addition, Nissan Motors has also started car production in Myanmar.

Thanks to the legislative relaxation on imports of used cars in 2012, vehicle maintenance services have been expanding significantly from the levels of 2010/11; 2.6 times higher in Yangon and 2.2 times higher nationally. Likewise, the number of registered vehicles (mostly Japanese cars) leaped to 5,077,699 (2014/15) from 442,264 (2000/01) in 15 years. While Hybrid cars have also been imported into the country in recent years (Toyota), there is the risk of getting an electric shock when trying to maintain them, unless technicians receive regular training, and, therefore, along with growing number of traditional automobiles, a variety of mechanic training programs are urgently required.

According to a survey conducted by OECD, a shortage of skilled workers was identified as the most challenging obstacle for the country in order to pursue business development. In addition, more than half of the companies already operating in Myanmar are experiencing a shortage of skilled workers.

4. Labour/Employment

4.1 Current Trend

40% of teenagers in Myanmar between the ages of 16 to 19 are job-seekers or unemployed, and half of them start their careers by looking for a job at company. However, more people in their 20s and 30s choose to be self-employed rather than working for a company.

Young people in Myanmar tend to quit their jobs without any significant cause. Furthermore, it is said that these same young people lack patience, when compared to Japanese workers, while Japanese companies also think highly of mental maturity and common sense.

In terms of the population in rural areas by educational background, most people that have not taken a matriculation exam live in countryside. Therefore, we can expect a serious shortage of skilled labourers as the demand for skilled human resource in these areas increase.

4.2 Mid-term Plan

Create domestic and foreign employment based on the following measurements.

- A smooth shift of workers from agriculture to other employment opportunities created by FDI.
- Regulation of employment for the irregular migrant workers.
- Improvement in labour-management relations, enhancement of labour conditions, adjustment of working hours, and regular payment of wages.
- Reinforcement of national skills standards, considering migration within ASEAN countries.

4.3 Current Situation Regarding Mid-term Plan

Regional and State labour exchange offices are the limited public organizations which can collect labour market information. Regional and State labour exchange offices can collect information on occupation, number of persons, qualification and educational backgrounds, etc. after the reception of job vacancies. However, Regional and State labour exchange offices deal with the number of job vacancies, and valuable information such as the number of job seekers and the number of placements, occupation, qualification and educational backgrounds are not

organized. Therefore, the government cannot understand and analyze the actual qualitative and quantitative situations of the country's human resource needs.

University graduates and pre-graduates with a formal education take training courses at night or weekdays and during holidays at the private TVET institutions. Their purpose is to acquire practical skills that they could not acquire when they were at school. Generally, they obtain certificates by acquiring practical skills at the private TVET institutions after their formal education graduation. But, the certificates are issued by the private TVET organization, and they cannot publicly certify the acquired skills.

The establishment of a fund for skill development of workers is written in article 26 of The Employment and Skill Development law. This article mentions that companies must have a portion of responsibility in the human resource development of their workers. The employer must pay contributions for the fund according to the article, but, most of them have never paid, and thus, there are financial problems with the fund. The Skill Development Fund Committee was established within MoLIP.

MoLIP declared that it emphasizes the supporting policies for the future of overseas workers. NSSA is establishing the national skill standard system, and the domestic skill assessment standard is just getting started. This situation means that the domestic workers skills are not yet qualified, officially, and overseas workers skills' qualification will be far ahead of the domestic workers, based on the differences of the different country's skill standards.

Therefore, the workers that come back to Myanmar from overseas tend to request more salary than the average local worker salary. This causes one of the mismatches for employers and job seekers.

5. Human Resource Demands

5.1 Demands of Foreign Investors

Many Japanese companies assume that they will provide in-company training for local employees. Whereas, some other companies hire local staff whom have completed basic vocational training, but, they also expect safety education to be conducted at TVET institutions in Myanmar.

The expectation of training on automobile maintenance is high, because of the surge in imports of second-hand vehicles from Japan to Myanmar. However, a mechanic with NSSA's skill standard level 1 is not eligible to perform practical maintenance work. Furthermore, the construction industry requires skilled labourers, even if it might cost the company more to ensure the quality and ultimate safety of their work. In addition, some other companies suggest that Myanmar might try introducing more advanced technologies than other ASEAN countries, as well as, basic skill sets, as it is considered a late developed country.

The study team sent questionnaires to the members of the Japan Myanmar Association (JMA) and the Japan Chamber of Commerce and Industry, Myanmar (JCCM).

According to the results of the questionnaires, Japanese companies that are still hesitant about entering the Myanmar's market pointed to higher than expected wages for locally hired staff, and the difficulty in finding qualified mid-level management, as issues of concern when starting a joint venture with local enterprises.

Further, many replied "basic skills are not sufficient" and "adjustability to new technology is low". However, they are trying to overcome the weakness by OJT.

In local companies, safety education is not adequate, and therefore, Japanese safety standards and basic skill education are becoming basic needs. Above all, there is high demand for English language skills and mathematics from the primary to tertiary education level.

Most Japanese companies mentioned that they also require soft skills (safe action, 5S, and group action) among their local employees. However, they additionally require hard skills like welding, electric wiring, and the ability to interpret and understand blueprints.

Most JMA members also belong to JCCM and the majority is currently in the service industry in Myanmar, while more and more manufacturing and construction companies are also trying to start a business. Among manufacturing companies, Kirin Holdings and Hitachi Soe have already launched joint ventures in Myanmar. Both companies have succeeded in transferring the Japanese know-how by investing in local operations with sufficient facilities and high quality employees. For the time being, many Japanese companies try to launch their businesses in Myanmar by following a similar system. In other words, many companies wish to collaborate with well-established local enterprises, instead of training quality human resources by themselves.

5.2 Demands of Myanmar Domestic Investors

In-company training is not sufficient in local small and medium size companies (less than 100 staff) and therefore, they have a higher demand for basic skills among the employees. In addition, they require soft skills, as well. In Yangon, GTHS/GTI are expected to be re-established, and tentatively, training for existing workers in the industrial zones is expected to commence.

5.3 Required Human Resource Development Policies for Quick Response to Demands

The Center for Vocational Training (CVT) has previously provided free training, with the support of 500 sponsor companies and the Swiss Government (it will take tuition fees from trainees from now on).

The Yangon Regional Government organized the Yangon Industrial Promotion Committee and started discussions with the related Ministries and managers of SEZ, and is now preparing a plan to activate the industrial zones.

Concerning the vitalization of industrial zones, the Myanmar Industrial Association (MIA) in UMFCCI has also started taking measures. As an example, it started a plan for building training centers within the industrial zones for vocational training.

6. Activities of Development Partners (DPs)

Existing projects

- Asian Development Bank (ADB) has been developing Competency-Based Modular Short Courses (CBMSCs) in order to keep a good balance between secondary education and TVET, by addressing policy, access, and quality, all at the same time.
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) has been supporting the preparation of TVET law, and capacity development of NSSA, through technical assistance projects.
- Swiss Agency for Development and Cooperation (SDC) has been supporting training courses of CVT and has provided grants for the projects of GIZ.

- Korea International Cooperation Agency (KOICA) is developing TVET facilities as a component of the Technical Teachers Training Institute (TTTI) Master Plan on the premises of the University of Information Technology (Insein campus).
- The Government of Singapore is supporting the Singapore Myanmar Vocational Training Institute (SMVTI) and has developed 6-month training courses.
- International Labour Organization (ILO) is providing policy and technical support in the tourism and agriculture sectors.
- United Nations Educational, Scientific and Cultural Organization (UNESCO) has supported the preparation of CESR and NESP with ADB.

Upcoming interventions

- ADB is going to provide grants for curriculum reform in GTHS, expansion of CBMSCs, and improvement of access to TVET.
- GIZ is planning to support policy proposal, and capacity development of NSSA, and, ToT implementation through a TVET Reform Program in cooperation with Kreditanstalt für Wiederaufbau (KfW).
- European Union (EU) has the intention of supporting ADB's project by providing grants.

7. Challenges and Future of TVET

7.1 Challenges of TVET

The number of enrolled students of GTHS is below its quota, and, the total number of schools is quantitatively low (36 schools), and, while the increase of schools cannot be the solution alone, as social recognition of TVET is low and many students prefer to pursue higher education. Although ITC seems meaningful in that it focuses on students who failed the matriculation exam and cannot enter into other higher education, the number of these facilities is limited (only 6 centers currently exist).

Myanmar does not have a system in place to support industrial promotion and economic development policy, in order to assist targeted promising industries while the industry structure shifts from agriculture to manufacturing.

Regarding the labour market and labour policy, qualification and information about various employment and labour trends remain undeveloped. Although reinforcement of skills standards is regarded as an urgent issue, consistency in standards between NSSA and ASEAN has not been established. Further, TVET institutions are not providing the required training for the companies and they do not have sufficient social acknowledgement of their worth.

Concerning access to TVET, a lack of social value, the difficulty in entering higher education, an insufficient number of TVET institutions, and limited career options for TVET graduates are the main issues.

As for the overall quality of TVET, the limited budgets and staff, low salary levels, and a lack of PDCA cycles are the main obstacles for good management. Further, the lack of a structural ToT system and comprehensive follow-up training schemes for teachers makes it very difficult to maintain instructors of good quality. The syllabus and curriculums are not reflecting the actual situation and there is limited scope for each TVET organization to modify them by themselves. Further, there is no career counseling or data collection system on the labour market, which causes a gap between students and industry.

Different organizations have initiated various activities on TVET as supportive measures because TVET covers a broad range of Ministries, and the actual function of Private TVET is unclear. This fact bears the needed strengthening of TVET, and, in order to solve the issue, a public-private partnership and coherent public policy will be the key elements of improved TVET management.

7.2 Industrial Human Resource Development

To accelerate the industrial advances during the integration to ASEAN's competitive market, technicians, coordination of engineers, and skilled workers could be quite important, as well as, leaders (senior engineers) and pushers (skilled workers) of industry.

The shortage of TVET organizations, the unpopularity of TVET related careers and the overall poor quality of TVET, causes unskilled labourers to enter into the skill-based manufacturing industry.

Most graduates of GTHS enter GTI, and, therefore, GTHS graduates cannot play an important role in compensating for the lack of skilled workers.

The lack of simple knowledge and skills of basic production technology among the engineers coming from TU as a supervisor of the technical department is defined as one constraint. In addition, improvement of the current situation wherein this type of unskilled TU graduates becomes a teacher at GTHS and GTI is another urgent issue.

Furthermore, there is no established career path wherein graduates of GTI return to GTHS or GTI as teachers, nor, do they receive any respect from society as technicians or estate engineers. This fact is a serious obstacle to increasing the motivation to become technicians among the younger generation in the country.

7.3 Prospect to Solution

Enhancement of skill levels in production, fostering engineers, and the establishment of skills standards are necessary, as well as, the development of TVET-related laws and systems, budgeting for improvement of access, quality, and overall management of TVET by the Government of Myanmar. Furthermore, an increase of TVET's social value is expected, since this is a pre-condition for the success of TVET.

The goal of TVET (improvement of access, quality, and management) is mentioned in NESP. According to the plan, improvement of access or quality alone cannot solve the root causes of the problem, and, management needs to be addressed as well.

7.4 TVET Demand

It is urgent to enhance the ability of the instructors in basic courses like construction, electronics, mechanics, automobile maintenance, and electrical at GTHS, considering the discussions regarding the promising industries, basic skills, priority in skills standards, and the demands of the companies working in these highly technical industries. Foreign companies demand more skilled workers of high quality, while domestic companies have comprehensive demand on skilled workers, technicians, and engineers.

Among industrial zones, Yangon has the highest number of total plots and their use ratio is also high. Therefore, it would seem TVET's need for industrial promotion in Yangon is very high.

7.5 Clarification of TVET Issues by Component

Instructors have no access to learn the proper methodology of teaching. Furthermore, TU has no specific curriculum for learning the TVET pedagogy, nor, any preparation for practical work.

As for the private TVET institutions, the instructors who have enough experience and technical knowledge in actual business operations have been proven effective. Hence, the government is expected to certify these TVET organizations and allocate skilled instructors to keep the consistency between public and private TVET.

Curriculum and syllabus of GTHS and GTI are somewhat consistent. They were prepared and instructed by the Ministry of Education (formerly known as Ministry of Science and Technology). However, there are several difficulties in implementing them at the respective institutions. Different subjects are required if GTHS and GTI intend to respond to the needs of the nearby industries that are potential employers of the graduates.

As for the curriculum of other TVET organizations, it is not clear whether they fulfil the skill level of NSSA's skills standards. Therefore, they need to adjust their curriculum to the standard to make them more useful. The curriculum and syllabus for the private TVET institutions are not clear whether they were designed to build the capacity to the level where the NSSA skills standard is complied with, and, therefore, the content needs to be reviewed.

Required teaching materials of GTHS and GTI are clearly indicated in curriculum and syllabus, however, they are not available or usable. In addition, the number of equipment is not appropriate for the number of students. Therefore, the instructors have no other option but to explain the process by writing on the blackboard, and the students take notes instead of having a hands-on practical training experience with the intended equipment.

Priority should be given to establishing a proper maintenance system for the equipment. In addition, the registration system for the equipment and machines is not well maintained and this should be developed for better maintenance of both.

As for the private TVET institutions, most are offering the subjects which do not require heavy or expensive equipment like the ICT course.

Many TVET institutions do not focus on generating professional human resources for private companies. Private TVET needs to grasp industrial human resource needs and strengthen the employment support system for their graduates in the view of introduction of certification and evaluation systems for each TVET organization.

7.6 Inter-Ministerial Coordination

TVET law is currently under discussion in the Parliament. In the meantime, the by-laws of ESD law are not finalized, and therefore, the law is not fully active. Furthermore, it is also not clear how to coordinate the by-laws. Particularly, as a function of TVET council, the focus is on how to manage and control the respective TVET organizations.

TVET in Myanmar is administered by many Ministries. Above all, MoE, running GTHS and GTI; MoI, managing a good TVET model through ITC; and MoLIP, preparing national skills standards and leading Ministries. Regarding ESD law, prompt formulation and enforcement of the by-laws is expected.

In addition, MoLIP should effectively control the Skill Development Fund and ensure the smooth cycle of fund collection from companies, and distribution of incentives.

Furthermore, TVET needs to take sufficient budgetary measures to implement various projects. In particular, the low salary of TVET teachers interrupts the enhancement of the quality of TVET instructors, and as a result, it keeps the graduates from being successful in industry.

Financial support for TVET students is also an important issue, as it successfully increased the number of enrollees of GTHS in 2014/15.

Incentives to winners of skill competitions is also worth considering. Maintenance of equipment and machines, and ensuring operational budgets of TVET management are important issues concerning clarification of function of each TVET institute.

Regarding national skills standards, ensuring continuous skill assessment and formulation of skills standards are important issues. Furthermore, skill certification systems for private TVET and private companies have to be considered.

7.7 Future Vision of TVET

The government's support is insufficient for unemployed and employed people. It is preferable for the government to collaborate with private TVET and partly delegate duties, if necessary, as well as, providing sufficient support since it requires a great deal of effort.

As for TVET for the pre-employed, it is a qualitative issue and it is difficult to solve issues regarding TVET in the short term. Furthermore, the government needs to decide the priority for TVET projects, which require urgent support considering the DPs' upcoming projects, as a large budget will be required.

Existing workers need skill development on a large scale. Government ensures the consistency between TVET providers and industry by creating opportunity for discussion among TVET organizations and local companies. In addition, evaluation systems will be established for employment and create the coherent assessment systems from TVET to industrial human resources. Furthermore, improvement based on PDCA cycles will be continued and modification systems of curriculum will be developed.

Additionally, creation of certification systems among private TVET and a division of function between private and public TVET are expected, based on TVET council to support mid-term TVET expansion plans. ToT organizations should be spread through re-education of existing TVET teachers, certification of teachers, and development of a teachers' employment system. As for skills standards, universal curriculum and syllabus needs to be developed by preparing training standards as well as assessment standards for 25 priority fields.

Integrating these schemes, TVET will be established as a comprehensive model. Based on the evaluation of the respective programs, TVET will be a core part of industrial human resource development by realizing the prevalence of comprehensive and systematic TVET by 2030.

8. Suggestions for an Effective TVET Cooperation Approach

8.1 Focuses of Cooperation Approach

Stakeholders need to take different measures before and after the enactment of TVET law. Before the enactment, a short-term approach on urgent issues is expected based on existing measures. On the other hand, a mid- and long-term approach needs to be considered after the enactment of TVET law. However, it is not likely that TVET law would be active and smoothly followed soon after the enactment and therefore, experts as advisors who can facilitate necessary procedures will be required to monitor the process to a new TVET. Many Japanese

companies assume they can provide in-company training to their own staff and at the recruitment, they require the candidates with basic safety knowledge and fundamental skills education. Under this context, it is important for a cooperation approach to consider provision of required human resources by domestic and foreign companies and collaboration with them. Among domestic companies in Myanmar, there is a high demand of basic skills for existing workers, as well as, pre-employed people.

Upcoming industries in Myanmar seem to be garment, automobile, tourism, construction, and ICT.

Above all, the automobile repair and maintenance sector is promising, considering its history of engine production, and surge of motorization thanks to the alleviation of import regulations.

Especially, important skills are the 25 fields decided by NSSA.

Above all, the preparation of machines for training is easy for garment and ICT industries and it is possible for private companies to manage the facilities for in-company training.

The following viewpoint will be important for a better solution.

- Capacity development of skilled workers, technicians, and engineers in collaboration with private companies.
- Provision of practical courses in priority fields (electrical, electronics, mechanical, construction, and automobile maintenance).
- Gradual approach to improve quality and access in various time frames.
- Priority on the Yangon region as high demand of TVET and collaboration with Thilawa SEZ can be expected due to high industrial density.

8.2 Suggestions for Cooperation Approach

Grasping the situation before and after the enactment of TVET law, clarification of function of respective TVET organizations related to TVET council, and coordination with issues and measures shall be important. Therefore, it is expected to send advisory experts to MoE to lead the task. At the same time, short-term experts and senior volunteers can be utilized to implement pilot schemes of model training for the priority fields.

ToT is an urgent issue as discussed above. Therefore, technical assistance projects as a short-term approach to spread training for those who can provide appropriate practical courses should be considered to provide effective education and training in priority fields. In addition, it is preferable to send study teams for detailed project designs as Government and DPs are modifying and coordinating their schemes.

Curriculum development and ToT for existing labourers should be also prioritized as it is expected to fall in the short term due to foreign investment.

The management committee of existing industrial zones mentioned that they had their own funds to procure the necessary equipment, and they had potential instructors for the training courses. Subjects covered by the training courses would be generic and basic technical skills (especially private power generation, and maintenance and repair of electric wiring are commonly required skills), which can be utilized in most of the factories. Support for curriculum development for a 2-months course (after 5 pm on weekdays and weekends, if possible) and ToT would be effective.

Training support for existing workers can be combined with the spread of ToT. For example, ToT for existing industrial zones can be provided at Thanlyin TU and teachers of TU can be brought to industrial zones as part of their practical subjects.

GTHS provides good TVET in preparation to enter the labour market, not in preparation for higher education. Furthermore, it is expected to create the environment to supply good industrial human resources.

In order to increase the quality as well as access to TVET nationwide, at least one GTI should be established in each state/region. Further, introduction of advanced technologies should be considered to excel other countries within ASEAN.

Important aspects of mid-term and long-term cooperation approach are as follows:

- Organization, Structure, and Curriculum
 - Clarification of the function of each of the TVET institutions
 - ToT for TVET instructors
- Trainers
 - Certification system for quality trainers
 - System for adapting to new technologies
- NSSA Skills Standard
 - Expansion of support to assessors' training
 - Ensuring consistency between skills standard and training
 - Holding skill competition
- Collaboration with private sector
 - Understanding industrial human resource demand and providing employment support

Based on the earlier discussions and Japan's experience, it will be important to increase the capacity of each TVET institution and expand the collaboration schemes between TVET and industries, in order to foster practical engineers, technicians, and skilled workers, based on each industrial demand. Assuming foundation and policy would be clear though (a) to (d), the quantity of GTHS and GTI should be increased in the future.

- (a) Fostering skilled workers based on industrial demand
- (b) Fostering technicians through capacity development of existing GTI
- (c) Consideration of TU's function in engineer's and instructor's training
- (d) Capacity development of labour office
- (e) Quantitative/qualitative expansion of GTHS/GTI

8.3 Suggestion

Creation of industrial human resources is necessary to develop unique industries in ASEAN by reflecting rapid increase of foreign direct investment and stable development. Japan and Myanmar needs to jointly promote the following policies to achieve the goal.

- I. Expand training opportunities for TVET teachers and instructors to ensure provision of TVET which can adequately respond to industrial demand. Provide opportunities of training in Japan to enhance the quality of TVET. Conduct pilot program of teachers and instructors for fostering automobile mechanics that urgently require Japanese technology.
- II. Establish a base for technology transfer for Myanmar to nurture unique advanced industries. Expand TVET by introducing new technologies and skills which Japanese companies require.

Chapter 1 Overview of Study

1.1 Background of Study

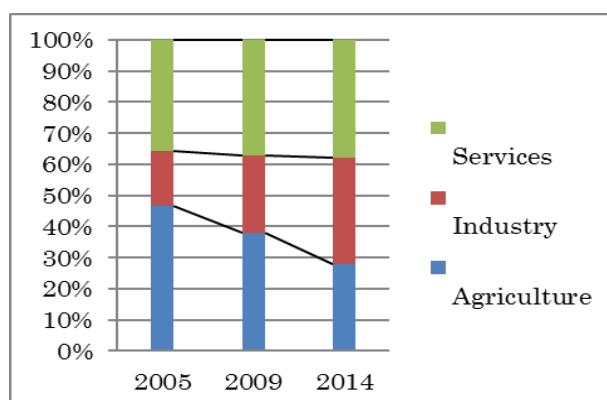
Myanmar is on course to break away from its previous political isolation, since the economic sanctions by Western countries were partially lifted in 2012, after rapid democratization by the new political regime. As a result, the Gross Domestic Product (GDP) of Myanmar is steadily growing as shown in Table 1.1, due to political liberations like the ease of trade regulations, the enactment of foreign investment law, the enforcement of the labour organizations act, the abolishment of the dual exchange rate system, and the introduction of a managed float system.

Table 1.1: GDP Growth Rate

Year	2012	2013	2014	2015	2016	2017	2018
Growth rate	6.7%	6.5%	8.7%	7.0%	8.6%	7.7%	7.8%

Sources: (IMF, 2016)

The International Monetary Fund (IMF) predicts that the GDP growth rate of Myanmar will be over 7 percent, which exceeds that of Association of Southeast Asian Nations (ASEAN)'s top economies. According to the sector-wise analysis, the GDP of first industry is decreasing, while second and third sectors are rapidly growing (Figure 1.1). Table 1.2 indicates the surge of Foreign Direct Investment (FDI) in Myanmar.



Source: Prepared by JICA study team from [ADB, 2015]

Figure 1.1: GDP Structure by Industry Sector

Table 1.2: Transition of Sector-wise FDI

	2013/14		2014/15		2015/16 (April -October)	
	Number	Amount	Number	Amount	Number	Amount
Agriculture	4	20.269	4	89.016	-	-
Livestock, forestry	2	39.666	5	26.861	-	-
Mining	2	32.730	1	6.259	-	2.183*
Oil, gas	-	-	27	3,221.806	10	2,049.200
Manufacturing	95	1,837.119	140	1,500.512*	83	610.079*
Logistics, communication	4	1,190.232	8	1,679.304*	1	736.711*
Hotel, tourism	5	434.210	5	357.949	1	57.830*
Real estates	4	440.573	6	780.745	2	232.872
Power plant	1	46.511	1	40.110	-	-
Others	6	16.394	14	357.320	9	108.199*
Total	123	4,107.054	211	8,010.532	106	3,797.074

*Including increase of investment

Source: Central Statistical Organization, 2015

The amount of FDI increased by 1.95 times from 2013/14 (4,107.054 million USD) to 2014/15 (8,010.532 million USD). Manufacturing leads all other sectors in terms of the number of FDI. According to the “FDI questionnaire” by the Japan Bank for International Cooperation (JBIC), more than 70 percent of private companies answered the existence of “cheap labour” being attractive in Myanmar in 2014, however, the figure decreased to 50 percent in 2015.

On the other hand, less than 10 percent of companies answered the existence of “excellent human resources” as being attractive in Myanmar (JBIC, 2015). The outflow of the labour force across the border to neighbouring countries lies behind the transition of the trend. According to Ministry of Labour, Immigration and Population (MoLIP), more and more labourers continue to outflow (2013: 62,000 persons, 2014: 71,000 persons, April to October 2015: 59,000 persons) to neighbouring countries like Thailand and Malaysia.

1.2 Purpose of Study

TVET organizations in Myanmar used to be under the Ministry of Education (MoE) until the 1970s, and its function was divided into several Ministries, whereas, the current MoE is responsible only for engineering-related TVETs. Therefore, the respective Ministries have their own policies on TVET without sharing common definitions. After the election of 2015, the new regime integrated the Ministry of Science and Technology (MoST) to MoE in 2016.

Furthermore, the National Education Strategy Plan (NESP) has been developed based on a Comprehensive Education Sector Review (CESR) with the help of Development Partners (DPs). According to NESP, TVET needs to consider strategic collaboration with primary and secondary education based on industrial needs and competency in order to reach a wider range of beneficiaries. New TVET laws have been prepared based on NESP and is under discussion as of October 2016. The National Skills Standards Authority (NSSA) was established in 2007 and its committee consists of 28 Director Generals (DG) from 14 TVET-related Ministries. Furthermore, the Minister of MoLIP was appointed to Chairperson and the DG of the Department of Labour acts as Secretary General of the committee. NSSA has been developing a skill standard based on ASEAN’s skill standard after discussions with the ASEAN Skill Standard Authority (ASSA). NSSA identified 173 categories of vocational skills and it is preparing a 4-level skill standard for respective skills. Gesellschaft für Internationale Zusammenarbeit (GIZ) and other DPs have supported the development of 25 occupational competency standards and 11 assessment standards for level 1 (lowest level). In addition, NSSA has already started a skill exam for 5 categories. Further, MoLIP held a skill exam of electric wiring for 100 examinees as a criterion in a 100-day goal of the new regime, in order to increase the social recognition of the certificate of skill exam. This represents that the new regime acknowledges national skills standards as an important issue. Likewise, as a part of the 100-day goal, MoLIP jointly implemented skill improvement activities in border areas with the government of Thailand and Inter National Labour Organization (ILO). In addition, MoLIP requested Thailand to enhance the working conditions of Myanmar labourers in the country and MoLIP took various measures for human resource development under economic integration of ASEAN. In May 2016, Mr. Fumio Kishida, the Minister for Foreign Affairs of Japan, and Ms. Aung San Suu Kyi, the National Advisor of Myanmar shared the efforts concerning “Japan-Mekong Connectivity Initiative” and ensured human development based on industrial demands by improving “Japan-Myanmar Joint Initiative” for a better investment environment. Ms. Aung San Suu Kyi emphasized TVET as an important pillar of the new government’s policy. According to the census of 2014, only 0.13% of Myanmar’s population receive TVET and the new regime declared to increase the figure by ten times. Further, the government ordered the Minister of the Yangon Region to restore the closed Government Technical High School (GTHS) and Government Technical Institution (GTI) under the military regime and to ensure general education and TVET for children of domestic migrants from countryside dwellings

around existing industrial zones. This movement stands for the surge of interest in TVET as a measurement for poverty reduction as well as economic development which sustains industry in Myanmar.

Therefore, the objective of the study is to collect basic information regarding formal TVET (eligible for academic diploma) at higher secondary and at bachelor level, and in non-formal TVET (ineligible for academic diploma) for pre-employed and existing workers by focusing on the 5 following points. The compiled information is expected to contribute to effective cooperation by achieving the following criteria.

- 1) Clarify policies, systems, current situations, and challenges concerning TVET and the general education sector.
- 2) Clarify policies, systems, current situations, and challenges concerning industrial promotion and economic development.
- 3) Clarify policies, systems, current situations, and challenges concerning labour and employment.
- 4) Capture human resource demands of industries.
- 5) Suggest an effective cooperation approach for TVET in accordance with human development needs of industries in Myanmar based on the collected information and analysis.

The coverage of the TVET organization in this study includes GTHS, Government Technical College (GTC), GTI, Technological University (TU) and private TVET institutions (including organizations oriented for sending workers abroad). Further, this study excluded the agriculture and transport fields, where JICA already has intervention and TVET is concerned with the staff of the Ministries, and focuses only on TVET led by MoE, Ministry of Industry (MoI), Ministry of Border Affairs (MoBA), Ministry of Social Welfare, Relief and Resettlement (MoSWRR) and Ministry of Construction.

1.3 Content of the Study

This study includes 3 field surveys, 2 domestic explanatory sessions, 2 study tours in Japan and a workshop for local companies in Yangon. See the annex below for the list of visited places. In the first field survey (30th March 2016 to 10th April 2016), the team explained the purpose of the study and collected answers to the questionnaires which had been sent to related offices in advance. In order to confirm the urgent human resource demand, the team visited TVET organizations in Yangon and Mandalay; and the main supporters among DPs, ADB and GIZ. Further, the team interviewed the Union of Myanmar Federation of Chambers of Commerce and Industry (UMFCCI) and other private TVET organizations to identify the human resource and training demand of the private sector. In the second field survey (23rd May 2016 to 2nd July 2016), the team tried to deepen the answers to the questionnaire and investigated actual situations of the facilities and machines at TVET institutions. Further, the team visited various DPs that are working in the TVET field in Myanmar and asked the future prospect about their intervention. In addition, the team organized progress report meetings and exchanged opinions regarding the existing challenges and possible solutions on 21st June 2016. In the study tour in Japan (4th August 2016 to 11th August 2016), 3 officials from the Government of Myanmar (MoE, MoI and MoLIP) and a general secretary of the Myanmar Engineering Society (MES), as a representative of the private sector, were invited. The invitees visited Rokugo Technical High School, Chiba Polytechnic College, Kanto Polytechnic Center, Shinohara Press Service Co., Ltd. and Mitutoyo Corporation, and learned the application of Plan-Do-Check-Act (PDCA) cycle. On the last day of the study tour, the JICA consultants shared the current situation, challenges, and future prospect of TVET in Myanmar with more than 50 Japanese companies in domestic explanatory session. The team also invited two guest lecturers; the general manager of Kinden

Corporation and the program manager of Bridge Asia Japan (BAJ) to share their activities regarding TVET in Myanmar. In the third field survey (from 31st August 2016 to 16th September 2016), the team conducted additional data collection and started the selection of delegate members for second study tour in Japan (4th October 2016 to 6th October 2016). Further, the study team held local workshop in Yangon and invited about 100 participants including, Minister-Counsellor of Embassy of Japan in Yangon, representatives of local private companies, Japanese enterprises, DPs, officials of government of Myanmar. Then, 3 government officials (director general to director class) from MoE, MoI and MoLIP, and one representative from MES were invited to Japan through second study tour. They visited Polytechnic University, Amada School in order to learn the system of training of trainers (ToT) in Japan and how they can apply it to Myanmar. On the last day, the study team held second domestic explanatory session and invited participants from Japan Myanmar Association, Ministry of Foreign Affairs of Japan and private companies. In the session, Director of Japan Vocational Ability Development Association introduced skill standard and skill exam of Japan and their activities to promote skill standard in Myanmar. Furthermore, the representative of the delegation (from MoI) shared their measurements and future plans regarding TVET.

1.4 Structure of the Report

Chapter 2 of this report clarifies the demand of supply-side of TVET by explaining the TVET system and TVET organizations in Myanmar. Chapter 3 provides an overview of promising industries in the short run, by analyzing the industrial structure and economic conditions. Chapter 4 identifies the labour market, labour policies, and the new government's employment promotion policies, as well as clarifying the gaps between required human resources and skills of existing labourers. Chapter 5 discusses the demand of foreign investors and the domestic private sector in Myanmar based on the feedback from the previous chapters. Chapter 6 categorizes the existing DPs activities and future prospect of their intervention in TVET field. Chapter 7 sorts out the challenges, and draws the road map for accomplishing the goals of TVET in Myanmar. Chapter 8 proposes the feasible and concrete aid schemes for both Myanmar and Japan.

Chapter 2 Current Situation of TVET

2.1 National Skills Standard Authority (NSSA)

NSSA was founded in 2007 to prepare for liberation of skilled labourers in ASEAN countries, and to establish national skills standards for improving labour productivity. Then, 15 industrial committees identified 173 skills and the Cabinet determined to set 4 different skill levels¹ for 92 skills. GIZ supported the establishment of skills standards and prioritized 25 sectors with high demand of human resource development based on discussions with various stakeholders. Skills standards consist of the competency standard, the training standard and the assessment standard². Further, the competency standard includes technical competency, industrial competency and basic competency, and the system is different from that in Japan³. GIZ and the Government of Switzerland supported to finalize the assessment standard of 6 fields in 2014 and 5 fields in 2015, and skill exams were held. Table 2.1 shows the 25 sectors by industry. The remaining 14 industries also require assessments reflecting the industrial human resource development demand.

Table 2.1: Prioritized Skills Standards of NSSA

Industrial committee	2014	2015	2016 or later
Metal and processing	Arc Welder Air Con Installer Electrician (Building)		Gas Welder Automotive Mechanic Heating & Plumbing Foundry Worker Pneumatic Controller
Construction	Carpenter	Brick Layer	Concreter Tiler Plumber
Wood processing	Cabinet Maker		
Tourism and hotel	Waiter	Room Attendant	Bell Boy Housekeeping
Agriculture			Motorized Farm Equipment Mechanic
ICT			Computer Operator Hardware Technician
Oil and gas			
Commerce		Sales Person Cashier	
Manufacturing		Garment Sewing Machine Operator	
Mining			Miner
Total	6	5	14

Source: NSSA

Japan Vocational Ability Development Association (JAVADA) has also supported the development of assessors in mechanical maintenance and plastering as one of the components supported by skills evaluation system transfer promotion program since 2013. The Study team observed that the skill exam of electricians was conducted with 4 out of 7 assessors being trained by JAVADA. Further, those assessors used the check-sheet, which was also used in the skill assessment exam in Japan. NSSA has been prioritizing the prevalence of level 1 skill standard and JAVADA's training turned out to be useful since the trained assessors were properly functioning at the exam. Thus, the establishment of the remaining 14 skill exams will require JAVADA's further assistance.

¹ Level 1: Semi-skilled Worker, Level 2: Skilled Worker, Level 3: Advanced Skilled Worker, Level 4: Supervisor/Technician.

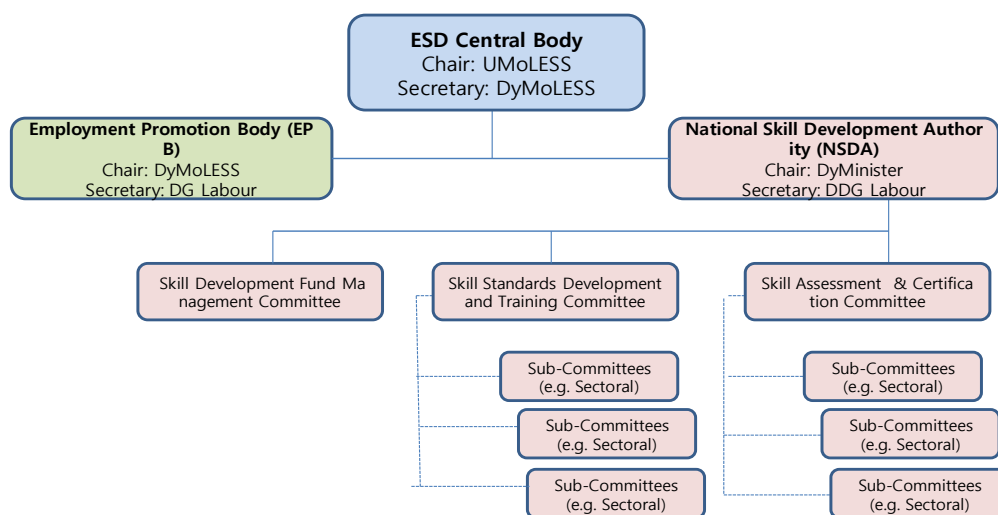
² Criteria of skill level for skill exams

³ In Japan, skills and knowledge of skilled workers are defined as skills standards and they are certified through skill exams.

2.2 Laws, Organizations and System Concerning TVET

2.2.1 Laws Regarding TVET

The primary law concerning TVET in Myanmar used to be “The Agriculture, Technical, and Vocational Education Law” (enacted in 1974, amended in 1989 and in 1991). The law was originally created to sustain the socialist state; however, it was amended in 1989 to adjust to the market economy. The main purpose of its amendment was 1) to train engineers and skilled labourers to establish a solid manufacturing industry and 2) to develop human resources for the modernization of the agriculture and livestock industry. In order to achieve such objectives, “The Council for Agriculture, Technical, and Vocational Education” and supporting committees were organized. However, TVET was transferred to MoST from MoE in 1996, and currently, “National Education Policy Commission (NEPC)” takes the role of the main decision-making organization. Reflecting the achievement of CESR (Comprehensive Education Sector Review) in 2012, the new TVET law (hereinafter referred to as TVET law) is currently under parliament deliberation. Under the TVET law, TVET council is organized and the related government organizations will coordinate the overall TVET. TVET council will be established after the parliament passes by-laws. This procedure may take a long time. Therefore, TVET council may only be effective much later than the enactment of the law itself. Further, after the ministerial restructuring under the new regime, most was integrated into MoE. Then, MoE was divided into three departments: Department of Primary Education, Department of Higher Education and Department of Technical and Vocational Education (DTVE). Accordingly, TU became under the jurisdiction of Department of Higher Education. Further, the establishment of the National Skills Standards is one of the most important advancements for TVET. In order to respond to the liberation of human resources in ASEAN in 2015, Myanmar started establishing more educational institutions, and skill exams based on the ASEAN standards. NSSA and committee were established in 2007 to support the movement, and MoLIP created the ESD law in 2013. The structure based on the ESD law is as follows.



Sources: MoLIP

Figure 2.1: Legal Structure based on ESD Law

2.2.2 Organizations Related to TVET

TVET in Myanmar is divided into 3 categories: 1) Formal TVET, which is a part of the formal education process to achieve academic diplomas, 2) Non-formal TVET, which is administered by the respective Ministries and aimed for vocational training and 3) private TVET, which is not officially acknowledged or registered although it can respond to various emerging needs.

Identified TVET organizations administered by each Ministry is shown in Table 2.2 although some Ministries were purposely excluded in this study. (after the Cabinet restructuring in April 2016) According to the ESD law, NSDA is expected to register private TVET institutions; however, they are currently not identified in the absence of by-laws. According to Private TVET Association (PTA) in Myanmar Engineering Society (MES), there are 564 private TVET organizations in Yangon and Mandalay alone, and they provide courses in more than 50 different fields and train 20,000 trainees annually.

**Table 2.2: Formal TVET Organizations and Responsible Ministries
(After Cabinet Restructuring)**

Current Ministries	Previous Ministries	Field	TVET organizations	No. of org.
MoE	MoST	TVET	<Under DTVE> Technological Universities (27), University of Technology ICT (1), Government Technical Colleges (3) ⁴ , Government Technical Institutes (11), <i>Government Technical High School (36)</i>	108
	MoE	Higher education	< Under Department of Higher Education > Technological Universities (33), Universities of Computer Studies (2)	
		Literature/ Engineering	Arts and Science University (32)	32
		ToT	<i>Education Colleges</i>	20
		Vocational education	<i>Pre-vocational schools (attached to high schools)</i>	120
MoLIP	MoLES	Engineering, language, IT	<i>Skills Training Centers (Short Course)</i>	5
Ministry of Agriculture, Livestock, Irrigation	Ministry of Agriculture and Irrigation	Agricultural science	Yesin Agricultural University (1), Agricultural Institute (10)	11
	Livestock and fisheries	Veterinary Science	Yesin University of Veterinary Science (1), <i>Fisheries Science School (1), Breeding Training Centers (2)</i>	4
Ministry of Commerce	Ministry of Commerce	Trade	<i>Trade Training Institution in Yangon (Short Course)</i>	1
	Ministry of Cooperatives	Arts, Business Management and Accounting	Cooperative Universities (2), Cooperative Colleges (2)	4
		Cottage Industries	Lacquer ware College (1), <i>The Saunders Waving School(2), Basic Weaving Schools (5), High-level Weaving Schools (8) (Short Course)</i>	16
Ministry of Transport and Communication	Ministry of Transport	Maritime Engineering etc.	Myanmar Maritime University (1), <i>Myanmar Mercantile Marine College (1)</i>	2
	Ministry of Rail Transportation	Rail Transportation	<i>Central Institute of Transport and Communications (Short Courses)</i>	1
	Ministry of Information			
Ministry of Resources and Environmental Conservation	Ministry of Environmental Conservation and Forestry	Forestry	University of Forestry (1), Forestry Training Centre (1), Central, Forestry Development Training Centre (2)	4
	Ministry of Mining			
Ministry of Defense	Ministry of Defense	Military Training, Medical Science, Engineering etc.	Defense Service Academy, Defense Service Medical Academy, Defense Service Technological Academy, Defense Service Institute of Nursing, Paramedical National Defense College	5

⁴ Already integrated to GTI.

Current Ministries	Previous Ministries	Field	TVET organizations	No. of org.
Ministry of Border Affairs	Ministry of Border Affairs	Teacher Education Arts and Science	<u>University for the Development of the National Races of the Union, Nationalities Youth Resource Development Degree Colleges and Central Training Schools (2)</u>	3
		Vocational Education	<i>Vocational Training Schools of Domestic Science for Women (39), Training Schools for Development of Nationalities Youth from Border Areas (29)</i>	58
Ministry of Industry	Ministry of Industry	Engineering	<i>Industrial Training Centers (1-year certificate course)</i>	6
Ministry of Health and Sport	Ministry of Health	Health Science	University of Medicine (4), University of Pharmacy (2), University of Paramedical Science (2), University of Dental Medicine (2), University of Nursing (2), University of Public Health (1), University of Community Health (1), <i>Nursing and Midwifery schools (46)</i> , University of Traditional Medicine (1)	61
	Ministry of Sport	Sport Education	<i>Sport and Physical Science School (High school level)</i>	2
Ministry of Social Welfare, Relief and Resettlement	Ministry of Social Welfare, Relief and Resettlement	Non-Formal Education	<i>Youth Care Centers and Vocational Training Centers for Disabled Adults (10), Schools for Visual and Hearing Impairment and Students with Disability (4)</i>	14
Ministry of Hotel and Tourism	Ministry of Tourism	Tourism Education	<i>Tourism Training School (Short Course)</i>	1
Ministry of Religious Affairs and Culture	Ministry of Religious Affairs	Religious and Missionary Works	<u>International Theravada Buddhist Missionary University</u>	1
	Ministry of Culture	Music, Sculptures, Drawing, etc.	National University of Arts and Culture	1
Ministry of Construction	Ministry of Construction	Construction and Civil Engineering	<i>Central Training Centers (3)</i>	3

Black: Higher education institutions which provide undergraduate Diplomas or higher degrees related to technical and vocational education

Red italic: TVET institutions which do not provide degrees

Italic with underline: Higher education institutions which provide both undergraduate Diplomas or higher degrees and TVET without degrees.

Sources: Organized by author based on (JICA, 2013)

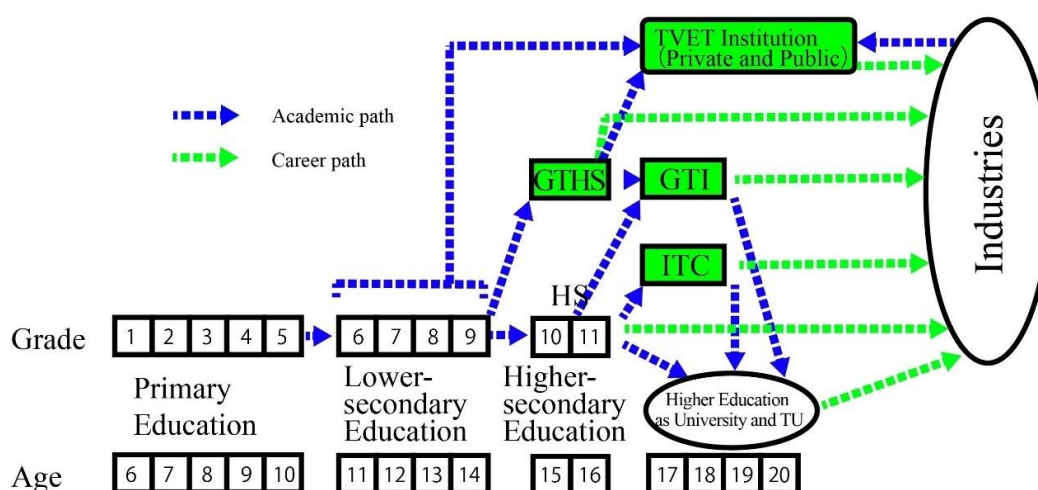
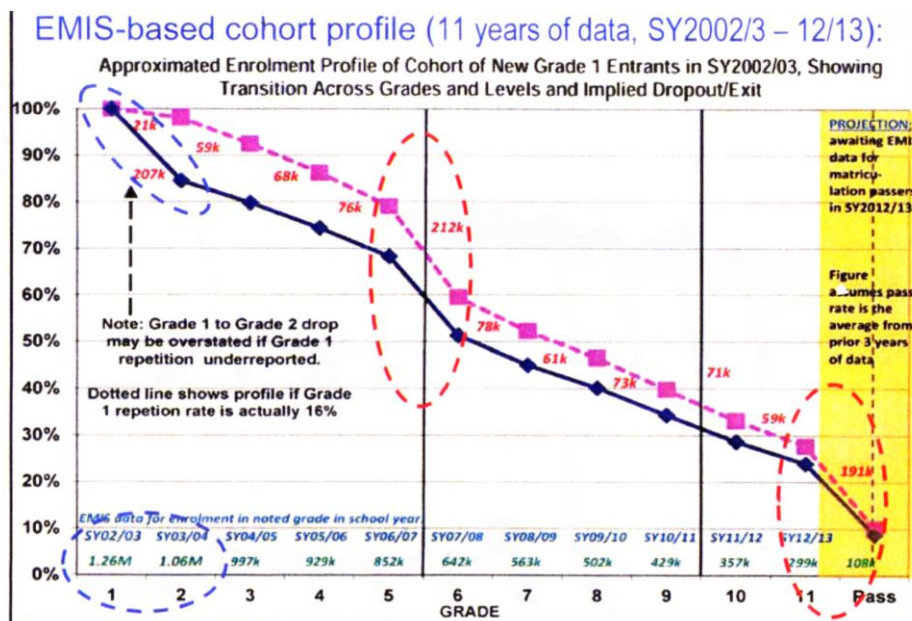


Figure 2.2: Academic and Career Path

2.2.3 Roles of Ministries on TVET

According to ADB, only about 100,000 students can complete higher secondary education while 1.2 million students start primary education. Further, the number of drop-outs is increasing.



Source: ADB

Figure 2.3: Number of Students by Grade

Several Ministries are responsible for students who cannot continue higher education after completion of higher secondary schools to provide TVET, and help them obtain a decent job. MoE is expected to promote GTHS and GTI for the youth, who do not attend general high schools and to support the development of training modules for the skills standards by NSSA. MoI provides 1-year training courses and each training center issues certificates of completion for the trainees. However, they are planning to offer 2-year courses, which aim for their students being able to pass the skills exam of NSSA level 2. MoBA offers short-term TVET among people in remote areas. Further, Ministry of Social Welfare, Relief and Resettlement (MoSWRR) provides short-term TVET for orphans and children with disabilities. MoLIP provides short-term employment promotion courses, develops skill standards, and prepares the skill standard certification. There are actually opportunities for students to start higher education after graduating from TVET institutions. Some graduates of TU become teachers of GTHS and GTI although TU does not have special courses for training their students to be teachers. Further, there is no established system to acquire, practice and transfer basic technical (hard) skills in GTHS or GTI. In addition, students in primary schools do not have a chance to learn soft skills like 5s, and that is a serious obstacle to improving TVET.

2.3 Formal TVET Institutions

Chiefly directed by DTVE, formal TVET institutions are under the jurisdiction of MoE and act as a government body responsible for diploma-awarding institutions. Those institutions under the jurisdiction of MoE include 22 GTIs and 34 GTHSs. Under the MoST's administration, 33 TUs and 3 B. Tech-awarding GTCs that send teachers to GTHSs and GTIs, used to serve as TVET institutions. Currently, however, they are under the jurisdiction of Department of Higher Education of MoE. GTCs have already suspended new intakes since 2014/15, thus, only Year-3

and Year-4 students are currently enrolled. Upon their graduation, GTCs will be officially closed. Once they are closed, they will accommodate GTIs, using the remaining facilities. Since 2014/15, GTIs have started accepting admission of new students. At the time of the Survey (in September 2016), the first- and second-year students were enrolled.

2.3.1 Basic Information on Government Technical High School (GTHS)

(1) Organization Chart of GTHS (Common to All GTHSs)

The organization chart of GTHS is applicable across the county, as shown in Figure 2.4. The personnel structure is drawn from the existing allocation in GTHS Naypyitaw, comprising the Administrative Division (7 staff members) and the Academic Division (41 Specialized Course teachers and 22 General Course teachers) headed by a principal.

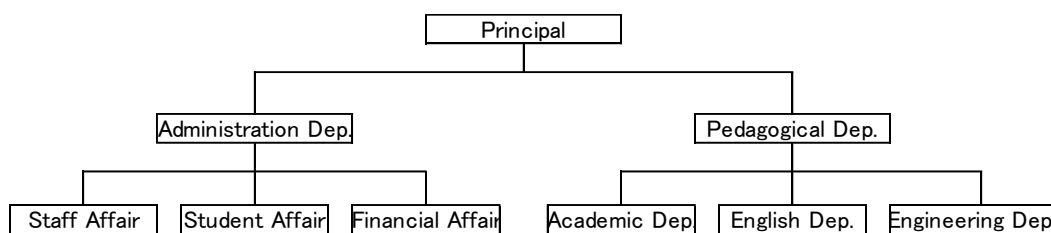


Figure 2.4: Organisation Chart of GTHS

(2) Number of Students per Teacher in Comparison with Neighbouring Countries

The pupil-teacher ratio (PTR) of the neighbouring countries, including Japan, is shown in Table 2.3. PTR is apparently high in Myanmar.

Table 2.3: PTR Comparison with Those of Neighbouring Countries in 2014

	Primary School	Junior High School	High School
China	16.2	12.6	16.5
Singapore	17.4	14.9	14.9
Vietnam	19.2	15.6	–
Japan	16.7	13	10.5
Myanmar	27.6	35.7	22.7

Source: UNESCO Institute of Statistics

(3) Ratio of the Number of Students to the Number of Teachers

Table 2.4 shows the number of students enrolled in GTHS Naypyitaw in 2015/2016 (the total number of Year-1 and Year-2 students), the number of teachers, PTR, and PTR calculated on the basis of the intake capacity. With PTRs, less than 15.0, the number of teachers instructing practical subjects are currently considered as adequate. However, these ratios are obtained under the existing situation, in which the number of students in these courses are substantially lower than the intake capacities. When students are enrolled to meet respective intake capacities in the near future, teachers for the following courses are expected to be in short supply as indicated in PTRs (based on intake capacities). The courses include those for electronics technology, IT, and refrigeration and air-conditioning technology. As for general subjects, an actual student to teacher ratio is not available, unless it is calculated by allocating all teachers to each of the six general subjects. Supposing that 22 teachers are allocated equally for the six subjects; each subject is instructed by 4 teachers. Accordingly, when these four teachers instruct 271 students, the PTR is 67.8:1, indicating a significant shortage of teachers compared with that for the practical subjects. Given that PTRs are approximately 15 in general high schools, as shown in

Table 2.3, the number of teachers required per subject is 18. That means that 4.5 times more teachers are needed in the current PTR situation. Furthermore, when 560 students are admitted to meet an intake capacity of general subjects, 37 teachers will be required per subject in order to achieve a PTR of 15. This necessitates 9.2 times more teachers than the current four teachers available per subject.

Table 2.4: Students and Teachers Ratio (GTHS Naypyitaw) in Year 2016/17

No	Department of Trade	No. of Students (1st + 2nd Year)	No. of Teachers	PTR	Capacity (G10+G11)	PTR (Capacity)
1	Building Technology	45	10	4.5	80	8.0
2	Electronic Technology	38	4	9.5	80	20.0
3	Electrical Technology	44	9	4.8	80	8.9
4	Auto Mechanics Technology	40	7	5.7	80	11.4
5	Information Technology	43	3	14.3	80	26.7
6	Machining Technology	40	6	6.6	80	13.3
7	RACT	21	2	10.5	80	40.0
	Sub Total	271	41	6.6	560	13.7
	Academic (6 Subjects)	271	22	12.3	560	25.5
	Averaged 1 Subject	271	4	67.8	560	140.0
	Total	271	63	4.3	560	8.9

Source: Ministry of Education and GTHS Naypyitaw

Table 2.5 shows the number of students enrolled in GTHS Ywama in 2015/2016 (the total number of Year-1 and Year-2 students), the number of teachers, PTR, and PTR calculated based on the intake capacity. Although not many students (the sum of Year-1 and Year-2 students) are enrolled in GTHS Ywama, PTRs in metal processing technology and IT technology are 32 respectively, which requires 2.1 times more teachers than the currently available teachers. Furthermore, if the standard PTR of 15 is to be achieved for the general subjects, 11 times more teachers are required for Physics and Chemistry, 7 times for Myanmar, Mathematics, and Computer, and also 2.7 times for English, respectively. When students are admitted to meet each intake capacity, 2.7 times more teachers are required than the existing teachers for instructing metal processing technology and IT, if the standard PTR of 15 is also to be achieved for the practical subjects. The general subjects will require 13.3 times more teachers than the existing teachers for Physics and Chemistry, 8.9 times more for Myanmar, Mathematics, and Computer, and 3.3 times more for English, respectively.

Table 2.5: Numbers of Students and Teachers PTR (GTHS Ywama) in Year 2016/17

c	Subjects	Existing No. of Students			Capacity	
		Students (P)	Teachers (P)	Ratio	Capacity (P) (G10+G11)	PTR (Capacity)
1	Machining Technology	65	6	10.8	80	13.3
2	Electronic Technology	70	6	11.7	80	13.3
3	Electrical Technology	63	9	7.0	80	8.9
4	Metal Process Technology	64	2	32.0	80	40.0
5	Information Technology	64	2	32.0	80	40.0
	Sub Total	326	25	13.0	400	16.0
6	Myanmar	326	3	108.7	400	133.3
7	English	326	8	40.8	400	50.0
8	Mathematics	326	3	108.7	400	133.3
9	Physics	326	2	163.0	400	200.0
10	Chemistry	326	2	163.0	400	200.0
11	Economics	326	3	108.7	400	133.3
	Sub Total	326	21	15.5	400	19.0
	Total	326	46	7.1	400	8.7

Source: Ministry of Education and GTHS Ywama

Table 2.6 shows the number of existing teachers in GTHS Pathein compared with the number of teachers prescribed by DVTE. As indicated in the table, the school allocates only 16 teachers, as opposed to 64 at the maximum level. Therefore, the placement rate remains as low as 25%.

Table 2.6: Organized Numbers and Assigned Numbers, of Teachers (GTHS Pathein)

No.	Rank	Organized Number	Assigned Numbers	Excessive	Necessary Nmbers	Remarks
1	Director	1	-	-	1	
2	Deputy Director	-	1	-	-	Principal
3	Lecturer	18	2	-	16	
4	Assistant Lecturer	44	13	-	31	
	Total	64	16	-	48	

Source: GTHS Pathein

(4) Number of GTHS and Subject Areas

At the inception of the Survey, the number of GTHSs was reported 36 across the country. It turned out to be 34 after the Survey once started. When asked by the study team about any reason of the missing two schools, DTVE replied that one located in a conflict area, and the other located in the countryside had no student intake. Accordingly, 34 schools are listed in Table 2.9 and Table 2.10. The majority of the GTHSs were established during 2009 and 2010. Designated by DTVE, areas of education range from one to seven subjects, depending on each GTHS. Their main fields of study include building technology, refrigeration and air-conditioning technology, electrical technology, machining technology, auto mechanics technology, electronics technology, metal processing technology and IT.

(5) Admission Requirements and Post-graduate Path

In order to satisfy admission requirements for GTHS, the applicants need to have a diploma of upper secondary education (Grade 11) and take an entrance examination assigned by GTHS. Their admissions will be granted after successful interviews with the school committee and its approval. An annual tuition fee for the first year is 3,200 kyats (approximately 320 yen), and 4,000 kyats for the second year (approximately 400 yen). The school registration is processed in every May, and a new academic year starts in June. The examination at the end of the first term takes place in October, and that of the second term (a promotion examination or the graduation examination) in March. The academic year is completed in following May. The schooling continues for two years in addition to a four-month OJT at plants. According to the school descriptions of GTHS Ywama prepared in a Power Point format, their students are allowed to graduate by passing the national promotion examination taken at the first year, the graduation examination at the end of the second year, and the post-OJT technical skill examination. The completion of their studies is certified by a GTHS-issued technical high school diploma. Failure in the graduation examination does not authorize the students to graduate, resulting that their qualification remains with the secondary school diploma.

Prior to enforcement of the National Education Law enacted in September 2014, those students scored 40 to 75 in the graduation examination were graded with an Ordinary Pass, and they were allowed to admit to GTI. After three years of studies there, a graduation diploma (Association of Government Technical Institutes: AGTI Diploma) were awarded to the successful students. Those students scored 75 and above in the graduation examination were graded with a Credit Pass, and then they were allowed to admit to TU. After five years of studies there, a bachelor of engineering (B.E) that certified their graduation were awarded to the

students. Consequently, approximately 70% of the graduates were admitted to TUs, GTIs, or GTCs. Some of those graduates who did not go to universities chose to learn at technical schools. Those who obtained jobs were quite few, accounting for approximately 5% of the total graduates (according to the interview survey in GTHSs). Upon the enforcement of the National Education Law; however, a policy has been reoriented to separate TVET from higher education. That led to restructuring of the existing situation back then that GTHSs provided a progressive route to move on to TUs. Since then, GTHSs are mandated to highly specialize themselves as technical schools to train skilled workers and technicians. Accordingly, students are no longer able to enter TUs, even when they score high enough in their graduation examinations. GTIs are the only choice they have to continue their studies. In order to obtain a higher degree after the completion of GTIs, they are transferred into the fourth year of TUs, with a condition of their outstanding academic performances. In practice, MoE has not yet authorized this system. The study team inquired DTVE about the transfer admission to TUs, and DTVE responded that although the system would not be operational during the 2016 academic year, it was still considered to accept transfer students from the following academic year and after. Having learned core skills of TVET at GTHSs, the students can more smoothly move into GTIs, which are now available in 22 locations, increased from previous 11 locations. The students have then more chances to obtain an AGTI Diploma, upon the completion of their studies. In the meanwhile, those students with an AGTI Diploma awarded when graduating from GTIs are not qualified as teachers. Eventually, they must study at TUs.

Apart from an admission to GTIs, students are admitted to transfer into the second year of BEHSs, when they successfully pass the graduation examination. Those students who passed the Matriculation Test are eligible to enter TUs. However, academic courses to be admitted are decided by their scores of the Matriculation Test. Therefore, whether students can be admitted to their desired courses or not depends on their scores.

Those students who failed in the Matriculation Test would not receive a graduation diploma. A number of graduates spend another extra year to prepare themselves for the test, and continue studying until they pass it. Table 2.7 shows the passing rates of the Matriculation Tests. Indicated in the total columns, the passing rate of the current students is 34.3%, and that of test re-takers is 33.1%, resulting 33.8% in total all together, which accounts a small proportion of the entire test takers.

Table 2.7: Passing Ratio of Matriculation Test at BEHS

No.	Academic Year	Internal Candidate			External Candidate			Total		
		Sit exam	Pass exam	%	Sit exam	Pass exam	%	Sit exam	Pass exam	%
1	2010-2011	289,123	109,124	37.74%	180,729	55,883	30.92%	469,852	165,007	35.12%
2	2011-2012	290,493	107,864	37.13%	177,356	52,914	29.83%	467,849	160,778	34.37%
3	2012-2013	297,940	105,457	35.40%	189,473	64,586	34.09%	487,413	170,043	34.89%
4	2013-2014	335,052	108,376	32.35%	221,172	67,091	30.33%	556,224	175,467	31.55%
5	2014-2015	359,933	129,446	35.96%	237,911	95,313	40.06%	597,844	224,759	37.59%
6	2015-2016	393,743	113,360	28.79%	242,494	77,028	31.76%	636,237	190,388	29.92%
	Total	1,966,284	673,627	34.26%	1,249,135	412,815	33.05%	3,215,419	1,086,442	33.79%

Source: Ministry of Education

(6) Number of New Students, an Intake Capacity, the Placement Rate, and the Number of Graduates in Each Study Field at GTHSs

Table 2.8 shows the number of new students in each study field offered at GTHSs. The number of students entered in 2010/11 was 3,058, and among them, 963 students graduated in 2012/13, which is equal to only 31% of the students entered. Of 1,638 students entered in 2011/12, 785

students or 48% of students graduated in 2013/14. Of 1,449 students entered in 2012/13, 641 students or 44% students graduated in 2014/15. The reasons why only a small proportion of students complete their studies to graduate include failure in examinations for promotion and graduation, and dropout due to family issues, which have lowered the rate of graduation. The declining rate of graduation has conceivably undermined the number of new students.

Table 2.8: Numbers of Enrolled Students and Numbers of Graduates of GTHS

Subject	2010/11		2011/12		2012/13		2013/14		2014/15	
	Enrollment	Completed	Enrollment	Completed	Enrollment	Completed	Enrollment	Completed	Enrollment	Completed
Building Technology	838	1,278	507	334	460	359	386	269	502	211
Electronics Technology	461	639	218	155	177	156	180	107	207	84
Machining Technology	303	464	197	73	176	96	127	101	172	97
Auto Mechanics Technology	886	832	385	217	337	182	220	138	266	87
Electrical Technology	385	527	281	130	257	139	272	160	253	117
Refrigeration & Air-Conditioning	114	212	-	23	-	22	-	-	1	-
Metal Processing technology	71	-	50	12	42	9	39	10	42	12
Information Technology	-	-	-	-	-	-	66	-	73	33
Total	3,058	3,952	1,638	944	1,449	963	1,290	785	1,516	641

Source: Ministry of Education

Table 2.9 and Table 2.10 show specific study fields at each GTHS, the number of students, and an intake capacity on the basis of 40 students assigned in each study field. A placement rate in each GTHS is indicated by the ratio of the number of enrolled students in Year 1 and 2 to the intake capacity. According to DTVE's reference, the number of new students substantially increased by 2.61 times in a period from 2014/15 to 2015/16. This is presumably the result of the announcement made by the State Counsellor Suu Kyi about TVET being a key pillar of economic development. The policy objective has been oriented to provide people with more opportunities to obtain TVET. Accordingly, an interest in TVET has been growing, it is now regarded as useful means to address poverty as well as develop sectors such as power, civil engineering, and tourism, which underpin economic development. The study team, furthermore, inquired about any reasons for the fluctuating number of new students. It was revealed that the number of intakes at GTHSs has been increased by adjusting the benchmark passing score in order to make it consistent with the policy intention.

In addition, it was decided in December 2015 to provide students grants (30,000 kyat per month, equivalent to 23 US dollars per month) to cover their tuition fees. Started in June 2016, this provision has reduced economic burdens on the parents who have their children go to GTHSs. This has presumably led to an increase in the number of students.

Table 2.10 indicates the overall placement rate of 49%, averaging Year-2 students enrolled in 2015/16. The placement rate ranges from the lowest in GTHS Lashio (11%), GTHS Pinlon (13%), GTHS Putao, and GTHS Hkamti (14%) to the highest in GTHS Mandalay (125%). New students in 2015/16, furthermore, have the lowest placement rate in GTHS Pinlon (24%) and GTHS Myeik (36%), whereas they have the highest rate in GTHS Tidein (120%). The average placement rate is 26% higher than the level in Table 2.10. The number of students are likely to increase in the near future, and thus adequate supply of training equipment and an increase in teachers need to be addressed urgently.

**Table 2.9: Number of First Year Students in Each GTHS
by Course in Year 2015/2016**

No	Institutes	Majors									No.of Major / Students limit	Occupancy Rate
		BT	EcT	MT	AMT	ET	RACT	MPT	IT	Total		
1	GTHS(Putao)	18	—	—	14	16	—	—	—	48	3/120	40.0%
2	GTHS(Myitkyina)	33	31	—	31	31	—	—	—	126	4/160	78.8%
3	GTHS(Banmaw)	—	30	—	18	19	—	—	—	67	3/120	55.8%
4	GTHS(Khamti)	22	20	—	19	14	—	—	—	75	4/160	46.9%
5	GTHS(Mindat)	—	10	—	—	29	—	—	—	39	2/80	48.8%
6	GTHS(Kalay)	43	40	—	41	38	—	—	—	162	4/160	101.3%
7	GTHS(Monywa)	35	32	37	32	34	—	—	—	170	5/200	85.0%
8	GTHS(Kyaukse)	33	14	13	16	16	—	—	8	100	6/240	41.7%
9	GTHS(Pakokku)	36	38	34	42	46	—	—	—	196	5/200	98.0%
10	GTHS(Lashio)	40	40	—	34	32	—	—	—	146	4/160	91.3%
11	GTHS(Pinlon)	11	10	—	15	3	—	—	—	39	4/160	24.4%
12	GTHS(Taunggyi)	52	—	—	41	43	—	—	—	136	3/120	113.3%
13	GTHS(Kyaingtong)	—	—	—	—	30	—	—	—	30	1/40	75.0%
14	GTHS(Meiktila)	31	32	31	29	31	25	—	—	179	6/240	74.6%
15	GTHS(Loikaw)	48	34	44	—	40	—	—	—	166	4/160	103.8%
16	GTHS(Naypyitaw)	25	22	25	22	28	—	—	21	143	6/240	59.6%
17	GTHS(Magway)	27	22	20	28	33	—	—	22	152	6/240	63.3%
18	GTHS(Pyay)	37	24	—	33	25	—	—	21	140	5/200	70.0%
19	GTHS(Taunggo)	52	41	42	46	40	—	—	—	221	5/200	110.5%
20	GTHS(Sittway)	23	30	—	—	32	—	—	—	85	3/120	70.8%
21	GTHS(Hinthada)	43	43	39	42	42	—	—	—	209	5/200	104.5%
22	GTHS(Maubin)	45	39	38	43	40	—	—	—	205	5/200	102.5%
23	GTHS(Pathein)	45	29	—	50	38	—	—	—	162	4/160	101.3%
24	GTHS(Hpa-an)	36	21	20	35	21	—	—	—	133	5/200	66.5%
25	GTHS(Mawlamyir)	24	21	30	24	25	—	—	—	124	5/200	62.0%
26	GTHS(Dawei)	30	20	—	20	17	—	—	—	87	4/160	54.4%
27	GTHS(Myeik)	20	—	—	19	4	—	—	—	43	3/120	35.8%
28	GTHS(Pangpet)	—	12	25	—	24	—	—	—	61	3/120	50.8%
29	GTHS(Myingyan)	—	42	40	40	39	—	—	—	161	4/160	100.6%
30	GTHS(Chaung Oo)	36	—	—	—	—	—	—	—	36	1/40	90.0%
31	GTHS(Ywama)	—	35	33	—	37	—	34	35	174	5/200	87.0%
32	GTHS(Lakhukgon)	15	23	—	19	—	—	—	—	57	3/120	47.5%
33	GTHS(Tiddim)	46	—	—	—	50	—	—	—	96	2/80	120.0%
34	GTHS(Mandalay)	—	44	—	—	45	—	—	—	89	2/80	111.3%
Total		906	799	471	753	962	25	34	107	4,057	134/5,360	76.1%

BT = Building Technology
RACT = Refrigeration and Air-conditioning Technology
ECT = Electronics Technology
MT = Machining Technology
AMT = Auto Mechanics Technology
ET = Electrical Technology
MPT = Metal Processing Technology
IT = Information Technology

Source: DTVE

Table 2.10: Number of Second Year Students in Each Institution in Year 2015/2016

No	Institutes	Subjects									Subjects/Students Limit (per)	Occupancy Rate
		BT	EcT	MT	AMT	ET	RACT	MPT	IT	Total		
1	GTHS (Putao)	10	—	—	7	—	—	—	—	17	2/80	21.3%
2	GTHS (Myitkyina)	22	9	—	11	—	—	—	—	42	3/120	35.0%
3	GTHS (Banmaw)	—	9	—	8	7	—	—	—	24	3/120	20.0%
4	GTHS (Hkamti)	16	1	—	6	—	—	—	—	23	3/120	19.2%
5	GTHS (Mindat)	1	—	—	7	6	—	—	—	14	3/120	11.7%
6	GTHS (Kalay)	27	3	—	10	—	—	—	—	40	3/120	33.3%
7	GTHS (Monywa)	20	15	18	21	17	—	—	—	91	5/200	45.5%
8	GTHS (Kyaukse)	22	16	7	12	12	—	—	7	76	6/240	31.7%
9	GTHS (Pakokku)	41	—	13	23	16	—	—	—	93	4/160	58.1%
10	GTHS (Lashio)	11	—	—	3	4	—	—	—	18	3/120	15.0%
11	GTHS (Pinlon)	10	—	—	10	1	—	—	—	21	3/120	17.5%
12	GTHS (Taunggyi)	25	—	—	22	28	—	—	—	75	3/120	62.5%
13	GTHS (Kyaingtong)	17	—	—	7	11	—	—	—	35	3/120	29.2%
14	GTHS (Meiktila)	55	19	22	36	33	—	—	—	165	5/200	82.5%
15	GTHS (Loikaw)	65	20	11	32	29	—	—	—	157	5/200	78.5%
16	GTHS (Naypyitaw)	20	16	15	18	16	21	—	22	128	7/280	45.7%
17	GTHS (Magway)	56	22	15	45	25	—	—	4	167	6/240	69.6%
18	GTHS (Pyay)	32	13	—	24	9	—	—	7	85	5/200	42.5%
19	GTHS (Taunggo)	71	20	21	27	31	—	—	—	170	5/200	85.0%
20	GTHS (Sittway)	26	9	—	1	14	—	—	—	50	4/160	31.3%
21	GTHS (Hinthada)	23	15	20	25	17	—	—	—	100	5/200	50.0%
22	GTHS (Maubin)	30	26	21	27	20	—	—	—	124	5/200	62.0%
23	GTHS (Patheingyi)	22	6	—	15	6	—	—	—	49	4/160	30.6%
24	GTHS (Hpa-an)	19	11	4	11	10	—	—	—	55	5/200	27.5%
25	GTHS (Mawlamyine)	25	19	12	20	20	8	—	—	104	6/240	43.3%
26	GTHS (Dawei)	9	20	—	2	—	—	—	—	31	3/120	25.8%
27	GTHS (Myeik)	12	—	—	7	3	—	—	—	22	3/120	18.3%
28	GTHS (Pangpet)	—	4	20	—	13	—	—	—	37	3/120	30.8%
29	GTHS (Mingyan)	—	32	39	19	48	—	—	—	138	4/160	86.3%
30	GTHS (Chaung Oo)	23	—	—	—	11	—	—	—	34	2/80	42.5%
31	GTHS (Ywama)	—	35	32	—	26	—	30	29	152	5/200	76.0%
32	GTHS (Lakhukgon)	11	4	—	12	—	—	—	—	27	3/120	22.5%
33	GTHS (Tiddim)	31	—	—	—	15	—	—	—	46	2/80	57.5%
34	GTHS (Mandalay)	63	45	—	43	49	—	—	—	200	4/160	125.0%
Total		815	389	270	511	497	29	30	69	2,610	134/5,360	49.0%

BT = Building Technology
RACT = Refrigeration and Air-conditioning Technology
ECT = Electronics Technology
MT = Machining Technology
AMT = Auto Mechanics Technology
ET = Electrical Technology
MPT = Metal Processing Technology
IT = Information Technology
Source: DTVE

(7) Academic Qualifications and Number of Teachers

Table 2.11 shows the distribution of teachers in each academic qualification. With a view to raising the level of education, GTHS teachers are required to have a bachelor of engineering (B.E) or higher in order to be appointed. However, the number of teachers holding B.E is declining, whereas those holding other degrees are slightly increasing. As indicated by PTR in

Table 2.4 and Table 2.5, teachers to instruct general subjects are in significant short supply. Closing GTCs will further deteriorate the shortage of teachers, because B. Tech holders will no longer exist.

Table 2.11: Statistics of Academic Career of GTHS Trainers

Year	Ph.D(Eng/Arch)	Ph.D(Phys. Chem, Maths, Bio, GHT)	Ph.D(Thesis)	M.E	B.E	B.Tech	AGTI	M.I.Sc/M.A.Sc/M.C.Sc/M.C.Tech	MISc/M.A.Sc/M.C.Sc/M.C.Tech(Thesis)	M.S/M.Sc/	M.A/M.E.S.P	B.E.d	B.Sc/B.C.Tech/B.C.Sc	B.A/B.A(D.E.S.P)	Dip/D.C.Sc/D.C.M	Total
2010/11	1	-	-	9	173	68	320	11	6	234	113	3	99	105	15	1,157
2011/12	-	1	-	3	199	66	263	5	4	243	113	2	69	116	7	1,091
2012/13	-	-	-	6	266	47	264	4	5	270	120	2	96	116	11	1,207
2013/14	1	-	3	12	302	55	239	5	2	249	100	1	91	96	11	1,167
2014/15	-	-	-	16	298	58	227	3	3	222	98	3	93	90	12	1,123

Source: Ministry of Education

(8) Salary of Teachers and a Ratio of Male and Female Teachers

Although the legal minimum wage in Myanmar is 108,000 kyats per month (82.8 US dollars per month), salaries of store workers (food services) are below the legal minimum wage. Salaries of workers in the non-manufacturing sector (general office workers) are 438,000 kyats per month (335.8 US dollars per month). Teachers are paid at least 100 US dollars less than this standard, according to their salaries indicated in Table 2.12. Newly graduated teachers who start teaching as assistant lecturers, and their salaries are 270,000 kyats per month (207.0 US dollars per month). Salaries of general lecturers are approximately 300,000 kyats per month (230.0 US dollars). Although they are a B.E-awarded elite group of teachers who graduated from one of 33 TUs across the country, and have undergone the competitive examination system, their salaries remain lower than those paid for workers in the non-manufacturing sector (general office workers).

Graduated from Yangon Technological University, a person with B.E who works at a private enterprise may be able to attain the highest status as an engineer known as Chief Engineer. Within a few years, furthermore, he or she can be promoted to a manager and then to the middle-level manager (salary of 1,240,000 kyats per month, or 950.7 US dollars per month), which allows them to earn more than quadruple of the salary for a newly graduated teacher.

Table 2.12: Standard Salaries of TU, GTI & GTHS (Year 2016)

No	Salary (US\$)	Technological University	GTI	GTHS
1	383.3	Rector		
2	291.3-307.7	Pro Rector	Principal	
3	260.7-276.0	Professor	Acting Principal	Principal
4	237.7-253.0	Associate Professor		Acting Principal
5	214.7-230.0	Lecturer		
6	191.7-207.0	Assistant Lecturer		
7	149.5-157.2	Tutor, Technical Staff (1), Superintendent & Accountant (1)		
8	138.0-145.7	Demonstrator, Technical Staff (2) CP Operator, Branch Clerk, Librarian		
9	126.5-134.2	Technical Staff (3), Senior Typist, Upper Desk Clerk, Accountant, Assistant Librarian		
10	115.0-122.7	Technical Staff (4), Lower Desk Clerk, Accountant & Junior Typist		
11	103.5-111.2	Technical Staff (5) Filing Staff, Driver, Guards & Security		
12	92.0-99.67	Office Boy & Assistant Gardener		

Source: DTVE and GTHS Ywama

This salary system has encouraged fewer number of men who are willing to become teachers. Those who wish to become teachers are more likely women, seeking for work at their hometowns where they can live together with their parents. Table 2.13 is indicative of such reality. As far as the practical subjects are concerned, the male-female ratio of teachers is 1:6 in electronics technology, in which the largest number of female teachers work. As for the general subjects, moreover, the male-female ratio is 1:26 in Myanmar, 1:9.1 in English, 1:46 in Mathematics, 1:14 in Physics, and 1:12 in Chemistry, respectively. Overall, the male-female ratio is 1:5.1, revealing that female teachers generally account for higher proportion.

Table 2.13: Teachers List for All GTHS Schools (Year 2016)

No	School	Practical Subject												General Subject								Total		Total											
		C		EC		EP		Mech		MP		MC		MT		AMT		IT		Myn		Eng			Maths		Phys		Chem		Other				
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		M	F	M	F	M	F	M	F	M	F	
1	GTHS (Myitkyina)	5	1	2		3	1	5													2		3		2		2		1		2	16	14	30	
2	GTHS (Bamaw)		1		2	1	2		4												3	1	1		1		1			4	2	20	22		
3	GTHS (Khamti)		2		3	2			2		2				1								3		2		2				2	17	19		
4	GTHS Kalay)	1			4		2		3						2						1		2		3		2		2	1	1	22	23		
5	GTHS (Teetain)	3			1	1															1		2		1		2		1		4	8	12		
6	GTHS (Mindat)				3	1	1		1												2	1	2		1		1	3		5	12	17			
7	GTHS (Monywa)	3	6	1	6		8			1	8				1	4					3		7		9		5	2	8	14	14	72	86		
8	GTHS (Chaungoo)		3	1	3	1	2		1						1						1		3		5		3		2	1	3	24	27		
9	GTHS (Myingyan)			1	3		3		4	1											1		4		2		2	1	1	1	3	21	24		
10	GTHS (Pripat)				4	1	4		4												1		3		3		2		2		1	23	24		
11	GTHS (Taunggyi)		4	1	1	1	3		1					1	1	1	2				1	1	4		3		3		2		5	25	30		
12	GTHS (Lashio)	1	2	1		1	4		2												2		2		2		1		2		3	19	22		
13	GTHS (Pinlon)		2		3		2		1		1										1	1	3		2		1		1	2	1	20	21		
14	GTHS (Meikhtila)		3	1	2	1	6		2		4				1						1	1	5		5		2		2	2	3	35	38		
15	GTHS (Pakokku)		7	1	5	2	7	1	3	1	1				1	1					2	1	7		7	2	4		2	10	9	56	65		
16	GTHS (Magway)		5	1	4	1	6	1	5	1	1				2							1	3		3		1	2		2	8	40	48		
17	GTHS (Kyaukse)		4		8		6		14		3				1	1	2				1	6		2	2	4		6	3	3		4	62	66	
18	GTHS (Naypyitaw)	2	7	1	5	1	10	1	4		4				2	2					3		2		8		3	1	3	2	1	11	51	62	
19	GTHS (Taunggoo)		6		4	2	4			1	4											3		2		3		2		4		4	36	40	
20	GTHS (Pyi)		4		3	2	4	2	7												6		2		5		3		3		3	4	40	44	
21	GTHS (Loikaw)	1	3		3	1	4		1						4	1	1					2		4		2		2	1		2	8	24	32	
22	GTHS (Hpaw-an)	1	2		2	1	2	1	2	1												1		3		2	1	1		2		6	17	23	
23	GTHS (Mawlamyaing)	1	3	1	2		3		4	1												2		4		2		4		2	5	5	31	36	
24	GTHS (Patheingyi)	1	1	1	3		4	2	2	1	1											3		2	1	7		3		6		6	34	40	
25	GTHS (Maubin)	1	2		3	4	2	1	2	1					1	3	1	1				1	1		4		2		2	6	12	28	40		
26	GTHS (Hinthada)		4	2	2	2	5	1	2						5	1						1	1	1	6		3		4	2		12	30	42	
27	GTHS (Dawei)	2	2	2	1	3		3														1		3		2		3		2		10	14	24	
28	GTHS (Myeik)	1	1			1			1													1	1	2	1		2		1		4	9	13		
29	GTHS (Ywama)				7		9	1	1						2	1					2		2	2	8		4		7	4	2	5	47	52	
30	GTHS (Latkokekone)	1	1		2		2		3													1		1		3		1		2		1	16	17	
31	GTHS (Sittway)	1	2		2	1	1								1							2		1		5		3	1	1	1	1	5	18	23
32	GTHS (Kyaingtone)		1			4		2														1		1		1	1			1		1	12	13	
33	GTHS (Putao)																						1	1		1		2		1		1	5	6	
35	GTHS (Mandalay)	1	4		4	2	5															4		1		4	1	1		2	3		4	28	32
	Total	26	83	17	95	35	117	19	76	11	30	0	3	27	24	3	6	5	26	2	51	14	128	2	92	6	84	5	60	11	55	183	930	1113	
	Ratio F/M	1:	3	1:	6	1:	3.3	1:	4	1:	3	0:	3	1:	1	1:	2	1:	5	1:	26	1:	9.1	1:	46	1:	14	1:	12	1:	5	1:	5.1		

Source: DTVE

(9) GTHSs Targeted in the Survey

The on-site study was carried out in three GTHSs out of 34 GTHSs nationwide, located in the proximity of cities and close to industrial estates, namely GTHS Ywama (Yangon Region), GTHS Kyaukse (Mandalay Region), and GTHS Mandalay (Mandalay Region). GTHS Patheingyi (Ayeyarwady Region) and GTHS Dawei (Tanintharyi Region) were also surveyed to understand the current situations in local areas. These urban and local schools are purposefully selected to examine any differences that may be due to their locations in urban areas close to industrial estates and/or in local areas where students have access to jobs in distant regions.

As shown in Table 2.9, GTHS Ywama in an urban area enrolls 174 students in Grade-10 (G-10) and 152 in Grade-11 (G-11) against its 200-intake capacity, which indicates a placement rate

of 82% on average. GTHS Kyaukse, on the other hand, enrolls 40 students in G-10, and 76 in G-11 against its 240-intake capacity, which indicates a placement rate of 48% on average. Please note; however, that GTHS Kyaukse is jointly operated with GTI, therefore it lacks the number of classrooms. With 14 available classrooms, lectures are delivered by GTI (441 students) in eight classrooms, and by GTHS in the remaining six classrooms. Of these 14 classrooms, four off site classrooms have been constructed for GTI, however, is still not sufficient. Thus, additional budgetary allocation is being proposed to DTVE to finance additional school construction. Under these circumstances, GTHS has been unable to fully meet the intake capacity. GTHS Mandalay enrolls 89 students in G-10 and 200 in G-11 against its 80-intake capacity, which indicates the excessive placement rate reaching 111% in G-10, and 250% in G-11.

GTHS Pathein enrolls 162 students in G-10 and 49 in G-11 against its 160-intake capacity, which indicates a placement rate of 66%. Located in Pathein, a modest-sized industrial estate accommodates companies operating on a small scale. Finding jobs is difficult there.

GTHS Dawei enrolls 87 students in G-10 and 31 in G-11 against its 160-intake capacity, which indicates a placement rate as low as 37% on average. Dawei has no industrial estate nearby, and thus has few employment opportunities. Some graduates have to cross the border to Thailand to work, which is located close to the city.

The study team inquired DTVE about any reasons for GTHSs' being not popular. Although the reasons given may not be applicable to all regions, two reasons were pointed out. One reason is that economically underdeveloped regions offer few employment opportunities. Another reason is that students seek higher academic degrees leading to their higher career development in the future. Many parents share similar ideas, thinking that obtaining B.E or M.E will help their children find jobs. Accordingly, they are not much interested in GTHS and GTI. Please see Appendix for the number of study fields in GTHSs, GTIs, and TUs, a list of an intake capacity and the number of students in each year, and a location map plotting these schools.

(10) Curriculum of GTHSs

DTVE provides a fixed national curriculum, syllabus, instructional materials and equipment. It does not allow schools to make any revision of the curriculum and syllabus at their discretion. Table 2.14 and Table 2.15 show the curriculum of machining technology for Year 1 and Year 2. The study team focused on machining technology because it was a pivotal study field, among others trained at GTHSs, which would underpin the manufacturing sector that is essential to Myanmar's development in years to come. The curriculum prescribes 35 lecture hours per week, which counts more hours than that in technical high schools in Japan (30 hours) shown in Table 2.22. Also, more hours are dedicated to practical skill education compared with that of technical high schools in Japan. GTHS's curriculum, as originally intended, is to train skilled workers by which students are engaged in training programs to become lathe workers, milling machine operators, or welders. In this regard, it is similar to that of vocational training.

As revealed in the curriculum, GTHSs provides 400 hours of lathe work combining both lectures and practical hands-on training. If GTHS students spend 100 hours in basic lathe practices under competent and experienced trainers, provided with appropriate equipment and materials, and the remaining 300 hours in preparing for technical skill testing, they will probably be able to achieve the level equivalent to Grade 3 of National Trade Skill Test certified in Japan.

Table 2.14: Curriculum of Machining Technology for the First Year

No.	Subject	Code	Lecture	Tutorial	Practical	Total	Remark
1	Myanmar	GS-100	2	1	0	3	Hours
2	English	GS-101	2	1	0	3	Hours
3	Mathematics	GS-102	2	1	0	3	Hours
4	Physics	GS-103	2	0	1	3	Hours
5	Chemistry	GS-104	2	0	1	3	Hours
6	Lathe Work	MT-106	2	0	6	8	Hours
7	Shaper Work	MT-107	2	0	6	8	Hours
8	Drawing	MT-108	1	0	3	4	Hours
Total			15	3	17	35	Hours

Source: Ywama GTHS

Table 2.15: Curriculum of Machining Technology for the Second Year

No.	Subject	Code	Lecture	Tutorial	Practical	Total	Remark
1	Myanmar	GS-200	2	1	0	3	Hours
2	English	GS-201	2	1	0	3	Hours
3	Mathematics	GS-202	2	1	0	3	Hours
4	Physics	GS-203	2	0	1	3	Hours
5	Chemistry	GS-204	2	0	1	3	Hours
6	Lathe Work	MT-206	2	0	6	8	Hours
7	Shaper Work	MT-207	2	0	6	8	Hours
8	Drawing	MT-208	1	0	3	4	Hours
Total			15	3	17	35	Hours

Source: Ywama GTHS

Table 2.16: Class Hours

Class hours/day	= 7 hours
Class hours/week	= 35 hours
Class week/ Academic year	= 40 weeks
Class hours/ Academic year	= 1400 hours

Source: Ywama GTHS

According to the information obtained from GTHS Kyaukse, the revised curriculum, originally created by DVTE, was said to be implemented from June 2016. It should be noted, as shown in Table 2.17, that the number of lectures in Myanmar, which is one of the general subjects, has been reduced in Year 1. In Year 2, furthermore, lectures in Myanmar, Physics, and Chemistry have been completely eliminated. This has spared four hours to be allocated for practical-subject exercises in workshops as well as lectures and practical exercises on lathe work. Accordingly, previously allocated 20 hours have been increased to 24 hours. Nonetheless, total lecture hours per week are reduced from 35 to 32. When the three hours are spared every week, a total of 120 hours would become available over 40 weeks per year. The three hours spared due to the revised curriculum are allowed to be spent at school's discretion. The study team inquired the principal of GTHS Ywama about how the school would use these hours. As responded by the school, for instance, Myanmar Engineering Society (MES) was invited to deliver a lecture on solar panels. According to the principal, furthermore, the school would intend to spend extra hours on issues relevant to the interests of students.

Table 2.17: Revised Curriculum of Machining Technology for the First Year and the Second Year

First Year							Second Year						
No.	Subject	Code	Lect:	Tut:	Pract:	Total	Subject	Code	Lect:	Tut:	Pract:	Total	
1	Myanmar	M-101	1	-	-	1			0	-	-	0	
2	English	E-101	2	-	-	2	English	E-201	2	-	-	2	
3	Mathematics	Ma-101	2	-	-	2	Mathematics	Ma-201	2	-	-	2	
4	Physics	Ph-101	2	-	1	3			0	-	-	0	
5	Chemistry	Ch-101	2	-	1	3			0	-	-	0	
6	Engineering Drawing	AT-101	1	-	3	4	Engineering Drawing	AT-201	1	-	3	4	
7	Fitting & Bench work	MT-101	1	-	9	10	Welding Technology	MT-201	2	-	10	12	
8	Lathe Work	Mt-102	1	-	9	10	Milling Machine Work	Mt-202	2	-	10	12	
Total			12	-	23	35	Total			9	-	23	32

Source: Kyaukse GTHS

Table 2.18: Class Hours of GTHS

Lesson Hour/Day	= 7 Hours	Lesson Hour/Day	= 7 Hours
Lesson Hour/Week	= 35Hours	Lesson Hour/Week	= 32 Hours
Lesson Week/ Year	= 40 Weeks	Lesson Week/ Year	= 40 Weeks
Lesson Hour/ Year	= 1,400 Hours	Lesson Hour/ Year	= 1,280 Hours

Source: Kyaukse GTHS

(11) Comparison with a Curriculum of Japanese Technical High School

The tables below show the curriculum of mechanics course for Year 1, 2, and 3 in a technical high school in eastern Japan.

Table 2.19: Machining Technology for the First Year in Japan

No	Required Subject	Units	Remark
1	Integrated Japanese Language	3	
2	World History	2	
3	Mathematics I	3	
4	Mathematics A	2	
5	Science and Our Daily Life	2	
6	Physical Education	2	
7	Health	1	
8	Music	2	
9	English Communication I	3	
10	Foundation of Industrial Technology	3	
11	Drawing	2	
12	Foundation of Information Technology	2	
13	Mechanical Design	2	
Total		29	

Source: Kanagawa Technical High School in Kanagawa Prefecture

The total number of credits are 30, including one credit for a homeroom activity.

Table 2.20: Machining Technology for the Second Year in Japan

No	Required Subject	Elective Subject	Units	Remark
1	Contemporary Japanese Language B		2	
2	Japanese History A		2	
3	Mathematics II		4	
4	Basic Physics		3	
5	Physical Education		2	
6	Health		1	
7	English Communication II		2	
8	Basic Home Economics		2	
9	Practice		5	
10	Drawing		2	
11	Mechanical Design		2	
12	Choose 1 unit from 7 units	Classics A	2	
		Mathematics B		
		Basic Chemistry		
		Basic English Usage		
		Basic Environmental Engineering		
		Mechanical Working		
		Information Processing Engineering		
Total			29	

Source: Kanagawa Technical High School in Kanagawa Prefecture

Table 2.21: Machining Technology for the Third Year in Japan

No	Required Subject	Elective Subject	Units
1	Contemporary Japanese Language B		2
2	Contemporary Society		2
3	Physical Education		3
4	English Communication		2
5	Project Study		3
6	Practice		4
7	Drawing		2
8	Manufacturing System Technology		3
9	Mechanical design		2
	Choose 6 units from 21 units	Japanese Language Expression (2units)	6
		Classics A (2units)	
		Language Life (2units)	
		Geography A (2units)	
		Ethics (2units)	
		Politics and Economy (2units)	
		Mathematics III (6units)	
		Mathematics B (2units)	
		Advanced Physics (4units)	
		Advanced Chemistry (4units)	
		English Conversation (2units)	
		Basic English (2units)	
		Advanced English (2units)	
		Foundation of Industrial Mathematics (2units)	
		Motor (2units)	
		Electronic Machinery (2units)	
		Machine design drafting (2units)	
Information Processing Engineering (2units)			
Power distribution systems engineering (4units)			
Basic fashion molding (2units)			
Food design (2units)			
Total			29

Source: Kanagawa Technical High School in Kanagawa Prefecture

Table 2.22: Class Hours in Japanese Technical High School

Lesson Hour/Week	= 30 Hours
Lesson Week/ Year	= 35 Weeks
Lesson Hour/ Year	= 1,050 Hours

Source: Kanagawa Technical High School in Kanagawa Prefecture

Lecture hours are 1,050 per year, totaling 3,150 hours in three years (1,050 hours x three years). The ratio of general subjects to specialized subjects is approximately 6:4. In Japan, extracurricular activities are pursued after school and during a vacation period, such as technical skill testing and internships, which are not counted in the lecture hours.

The mechanics course in a technical high school disciplines wide-ranging of expertise on mechanics and processing techniques, using machines. It trains students spending hours on mechanical work, practical exercises, and a study on a given thematic topic, using a lathe, milling machine, NC lathe, machine center, welding, and laser processing. Facilities for mechanical demonstration and practical are equipped so that students can use personal computers, while also provided with numerically controlled machine tools. They are well equipped to sufficiently accommodate needs to learn up-to-date technologies. The curriculum allows students to decide on their own career path, after they learn broad-ranging technical skills and technologies, in which they may be specialized. With respect to acquisition of certification, a mechanics course in a Japanese technical high school requires approximately 80 hours of hands-on training on lathe work. Under supervision of an instructor, students practice to accomplish a task assigned in the previous skill testing, using their after-school and vacation time. Some of them have passed Grade 3 or Grade 2 in lathe work.

(12) Present Conditions of Equipment and Tools

In Myanmar, all GTHSs train students by a fixed national curriculum, syllabus, and textbooks⁵. Because of inadequately allocated budget; however, equipment and teaching materials required to implement GTHS's curriculum are not supplied. Practice is thus not delivered adequately.

⁵ In the Survey, MoE revealed that it would give GTHSs some discretion in the future.

Table 2.23: Tool List to be checked for Lathe Work (Kyaukse GTHS/GTI)

Preparation work for Lathe		Necessary tools & materials			Survey Result	Comments
		Working cloth, safety shoes, cap, goggle			None	No attitude for machine work.
		Flat Table			None	Important tool for machine process.
		surface Gauge			2Pcs with bend and rust	
		Vee block			4Pcs	
		Hermaphrodite Caliper			None	Accurate mark off line cannot do.
		Hummer			Yes	
		Punch			Yes	
Lathe Work		Lathe	Working:2	Broken:2	Yes	
		slide Oil			None	
		Cutting Oil			None	Cannot high grade process
		Cleaning cloth			None	Cannot clean the Lathe
	Appliances	Center Work	Turning Panel	Lathe dog		Need for center work
		Universal Chuck	Combination Chuck	Chuck Handle	No chuck Handle	Standard tool of Universal Chuck and Combination Chuck for Lathe
		Center Drill	Drill Chuck	Chuck handle	None	Changing Chuck, wooden plate and round Stick need to prepare.
	Tools	Cutting Tools	Variety of bite	Finishing, Rough	Keep them on the shelf with rough.	Select the bite by shape of end surface, round surface, purpose of finishing level and rough finish, and hardness of material.
			End surface, Outside diameter	High speed/high hardness	Keep them on the shelf with rough.	
		Others	Knurling			Knurling, Threading
		Measurement Tools	Scale	Vernier Caliper	Stored in shelves with lock.	Vernier Caliper, Micrometer, block gauge are standart tools.
			Micro Meter	Center Gauge	Stored in shelves with lock.	
		Materials			Diameter 20mm, Length 4m	
		Preparation or drawing			Students are transcribe from JOB sheet	Using theory text.

Source: Study Team

Accordingly, the study team surveyed GTHS/GTI Kyaukse to cross-check the available equipment and tools with a list of necessary equipment indicated in an outline of Chapter 1 in its Year-1 textbook (MT-106). The study findings are shown in Table 2.23.

(1) Safety measures and a working environment

GTHS/GTI Kyaukse and other schools surveyed do not supply any safety shoes, work clothes, caps, and goggles that should be prepared to ensure safety, as instructed in the textbook. While the schools clean up and organize workshops properly and the surrounding areas, equipment

items are placed in the confined space, because storing multiple equipment requires space. As a consequence, a safe working environment is not secured against the instruction in the textbook.

(2) Essential handling of equipment

For lathe work, for instance, the textbook first instructs to set a V-block on a surface plate, and to demonstrate a basic technique of aligning the center, using a caliper or a surface gauge. Although these steps are indispensable in lathe work, the surface plate is not provided. Students are thus unable to practice this important step to center lathe work.

(3) Items displayed in workshops

As far as machine work (including lathe, milling machine, and drilling machine) is concerned, the underlying essence is to finish a product with precision. However, many of the produced items displayed in the workshops are made of teak wood, instead of steel materials. Working on production using wood does not ensure the precision of 1.0 mm to 0.01 mm required by industry standard for any product of machine work. In other words, lathe work instructed at GTHSs shows merely parts of production processes in different forms, and not the entire processes. In essence, it is not enough for students to practice for acquiring the skills needed. According to the school, it is due to its limited budget that makes it difficult to purchase steel materials to aid teaching. Nonetheless, such education largely compromises what is essentially sought in metal processing.

(4) Machines for industrial production

In several GTHSs, the study team found out that some of the lathes in the workshops were supplied during 1979 to 1980 under a grant aid scheme of the Japanese government (the Colombo Plan⁶). They were manufactured 30 to 40 years ago, for industrial use in metal processing. It does not mean that these lathes are no longer operable although they are outdated. With proper maintenance carried out after each use, the equipment is durable and in good running conditions, it only needs its consumables replaced when and where necessary. Much of the equipment in the workshops; however, is covered with dust and rust. It has not been maintained at all, and even left disused.

(13) Practical Training with Inadequate Equipment and Processing Materials

Indicated in the revised curriculum, hours of practices for handling lathes are 360 per year for Year 1, and those for handling milling machines are 400 for Year 2. The present situations; however, reveal that equipment for practice is not supplied or inadequate, nor processing materials are. The study team asked about how the training actually would take place. According to the response received, the following steps are taken, “in lieu of practice, a teacher reviews the production and processing procedures (Job Sheet), writes intended work steps on the blackboard, students take notes of them and hand them to the teacher at the end of class. After the notes are checked, the teacher returns them.”

Students mainly study by rote learning, instead of practical training. Practice prescribed in the curriculum are not workable as of now, thus the students are unable to gain technical skills at all.

(14) Employment Assistance of GTHSs

The study team conducted interviews with the target GTHSs regarding their efforts towards job placement for their students, which was the major purpose of TVET institutions. The study team also explored to what extent qualifications and technical skills obtained at school would help

⁶ Economic Cooperation Agency with the purpose of facilitation for economic development in South Asia and South East Asia, advocated in conference of foreign ministers of the commonwealth, and established in the next year. Japan joined the agency in 1954.

their students to find jobs. Findings revealed that almost no students had found any employment. A law in Myanmar prohibits a person aged under 18 to be employed. Graduates of GTHSs are usually 16- or 17-years old, thus they are not allowed to start working legally. A person aged 16 and older can be permitted to serve on a probational basis as an apprentice in a family business (factory). As a consequence, GTHSs do not consider that it is their institutional responsibility to place their students in employment. Thus, they do not even carry out a survey on their students' post-graduate careers. Accordingly, statistical data on their employment situations has not been collected. In a technical high school in Japan, on the other hand, the employment rate of new graduates directly affects reputation of the school. Job placement is thus an important task for the school administrative office, and receives institutional supports.

The study team shared the existing problem identified with DTVE. According to DTVE, the issue has been addressed, as Article 16 of the National Education Law stipulates that one of the preschool years will be integrated into a formal school education, and that a total period of basic education will be extended from 11 years to 12 to complete the high school education, which will be for three years instead of two years. This system will be enforced for those high school students to be admitted in June 2018 and onward.

(15) Tie-up with Regional Industries and Neighbouring Industrial Estates

In recent years, economic and industrial activities are increasingly vigorous. Human resources required in different industries depend on regions' undergoing, for instance, an increase in manufacturing plants resulting from growing foreign investments, infrastructure development, and expanding construction work. Cooperative relationships with local industrial communities are essential to identify human resource needs in those regional industries. Under the existing circumstances; however, graduates aged under 18 are not allowed to obtain jobs legally. Accordingly, GTHSs have not provided them with employment assistance, as mentioned above. They have virtually no relation with neighbouring industrial estates, because they have not needed a collaboration with the local industries. GTHSs require students to undertake a four-month OJT after completing two years of schooling. Engaging in more direct dialogues with their neighbouring industrial estates for information sharing, the schools will be able to ask if the estates can host OJT of their students. Therefore, they are encouraged to seek more active communications to build relationships with local industrial estates more robustly.

(16) Specifications of School Building

Specifications of the building are outlined in Table 2.24, according to the findings obtained in the on-site study. A regular classroom is sized 7.2 m in width and 9 m in length to accommodate 40 students, which is a standard size of a classroom in Myanmar. An RC rigid frame structure applied in a school building is a low-cost construction method generally used in Japan.

While recent workshops are built with steel columns and light steel beams, those workshops provided many years ago, are made of reinforced concrete or wooden columns with light steel frames. Floor areas of workshops have not taken into account of storing equipment, probably because the buildings had been completed before placing the equipment. Workshop spaces in some GTHSs are apparently small, where they have subjects handling many apparatuses. Floor areas of workshops will be inadequate, when a proper number and types of equipment is allocated in accordance with the syllabus. In supply of equipment, a layout of the existing and additional equipment needs to be designed beforehand. When a workshop requires more space, additional area must be provided in connection to the main building.

Table 2.24: Specifications of Building

	Class Room Building	Workshop
Structure	Reinforced Concrete	Steel or Wooden
Wall	Brick laying, plastering, painting finish	Wainscot wall: Brick laying, plastering, painting finish Wall: Corrugated slate or corrugated metal panel
Roof	Steel or Wooden structure, corrugate metal sheet or slate plate	Steel or Wooden structure, corrugate metal sheet or slate plate
Floor	Concrete slub, Mortar finish	Concrete slub, Mortar finish
Window Flame	Steel or Wooden flame	Steel or Wooden flame

Source: Study team

2.3.2 Basic Information of Government Technical Institute (GTI)

(1) Overview of GTI

① Objectives of establishment

GTIs are established to train skilled workers to contribute to industrial development of Myanmar.

② Academic calendar and available qualification

The first semester begins in January and the semester-end examination is given in June. The second semester begins in July and the year-end examination is given in October. Students are required to participate in 2-week OJT every year. After the completion of the 3-year program, students receive AGTI diploma. With the diploma, national government employees are entitled up to Estate Engineer (EE), at highest.

Table 2.25: Available Professional Titles Based on Academic Qualification (National Government Official)

Title	Title by Academic Background
Director General (DG)	-
Deputy Director General (DDG)	-
Chief Engineer (CE)	Possible to become CE if graduate TU (B.E).
Division Engineer (DE)	Equivalent to Chief of 7 Divisions, 7 States.
Estate Engineer (EE)	EE is the highest position to GTI graduate.
Assistant Engineer (AE)	After 3 years' experience of SAE, possible to become AE. (No Machine operation)
Senior Assistant Engineer (SAE)	Possible to become SAE after graduating GTC (B.Tech), GTI (AGTI Diploma). It is possible to become SAE through examination conducted by each Ministry.

Source: Hearing at Ministry of Education

③ Number of GTIs and situation of newly established GTIs

There are 22 GTIs in the country. GTI Chauk has the longest history established in 1973, followed by GTI Thandwe, which was established in 1988. There had been 12 GTIs before the enforcement of Basic Education Law in September 2014. Later, three GTCs were integrated to GTIs and seven new GTIs were established. Table 2.26 s the list of GTIs and the number of students.

GTC Moehnyin (No. 1) began accepting GTI students three years ago. GTC Shwebo (No. 2), GTC Myingyan (No. 3), and GTIs from No. 13 to No. 19 began accepting GTI students in 2014/15. GTIs from No. 20 to No. 22 opened in 2015/16 and they have only first-year students.

Table 2.26: Number of Students in Each GTI by Course in 2016/2017

No	Institutes	AGTI First Year						AGTI Second Year						AGTI Third Year						G-Total
		Civil	EC	EP	Mech	IT	Total	Civil	EC	EP	Mech	IT	Total	Civil	EC	EP	Mech	IT	Total	
1	GTC (Moehnyin)	42	31	39	40	-	152	11	10	9	11	-	41	7	5	15	10	-	37	230
2	GTC(Shwebo)	54	42	44	43	-	183	37	35	34	33	-	139	-	-	-	-	-	-	322
3	GTC (Myingyan)	45	52	44	53	-	194	32	30	25	24	-	111	-	-	-	-	-	-	305
4	GTI (Kyaukpadaung)	53	41	43	46	-	183	49	42	43	48	-	182	26	13	29	53	-	121	486
5	GTI(Kyaukse)	51	52	50	50	-	203	44	25	32	39	-	140	38	19	22	19	-	98	441
6	GTI (Yenanchaung)	40	45	48	49	-	182	46	31	27	38	-	142	35	30	32	44	-	141	465
7	GTI(Chauk)	47	37	41	49	-	174	63	43	55	51	-	212	29	15	41	47	-	132	518
8	GTI((Thayet)	42	37	42	45	-	166	64	35	55	39	-	193	37	28	37	33	-	135	494
9	GTI(Wakema)	50	42	45	45	-	182	63	39	38	51	-	191	31	25	36	26	-	118	491
10	GTI(Putao)	10	9	20	-	-	39	9	-	3	6	-	18	5	3	5	2	-	15	72
11	GTI(Khamti)	37	18	15	19	-	89	11	8	3	6	-	28	9	3	-	7	-	19	136
12	GTI(Hakha)	41	30	36	40	-	147	28	9	17	17	-	71	23	14	12	10	-	59	277
13	GTI(Ganggaw)	42	38	41	43	-	164	17	14	15	10	-	56	-	-	-	-	-	-	220
14	GTI(Thandwe)	43	-	44	46	-	133	40	-	33	27	-	100	-	-	-	-	-	-	233
15	GTI(Kantbalu)	41	45	39	38	-	163	32	31	31	23	-	117	-	-	-	-	-	-	280
16	GTI(Magway)	52	52	38	50	-	192	32	16	30	25	-	103	-	-	-	-	-	-	295
17	GTI (Mawlamyine)	42	42	49	46	-	179	43	39	38	36	-	156	-	-	-	-	-	-	335
18	GTI (Letpandan)	39	41	49	48	-	177	46	34	42	75	-	197	-	-	-	-	-	-	374
19	GT I(Kyaukphyu)	42	-	43	-	32	117	28	-	27	-	28	83	-	-	-	-	-	-	200
20	GTI (Shwepyithar)	30	38	40	37	-	145	-	-	-	-	-	-	-	-	-	-	-	-	145
21	GTI(Mandalay)	40	41	40	42	-	163	-	-	-	-	-	-	-	-	-	-	-	-	163
22	GTI(Latputtar)	35	32	34	34	-	135	-	-	-	-	-	-	-	-	-	-	-	-	135
Total		918	765	884	863	32	3,462	695	441	557	559	28	2,280	240	155	229	251	-	875	6,617

Source: Ministry of Education

C - Civil

EC - Electronics

EP - Electrical Power

Mech - Mechanical

MC - Mechatronics

IT - Information Technology

Established before September 2014

New GTIs are not in newly built schools. GTI Kyaukse is renting a part of GTHS Kyaukse and GTI Mandalay uses renovated teachers' accommodation. Since they do not have their own facilities, they are facing problems like shortage of classrooms and instructors. When a building that was not originally built for school is used, they have to purchase training equipment. See the appendix for the address, the number of courses, their capacity, and the number of students and teachers of GTIs.

The number of courses varies by institute from three to five and the subjects are decided based on the instruction from DTVE. Main courses are civil engineering, architecture engineering, electric engineering, electric power engineering, mechanical engineering, mechatronics engineering and IT engineering.

④ Requirement for enrollment

Candidates need to pass matriculation exam (university entrance examination) at Grade 11 or they can be accepted based on the score of English, math and physics. Candidates from GTHSs need to pass the graduation exam and complete the four-month OJT program.

⑤ Capacity and competition rate of each course

The seats of each engineering course are 40. As there are some candidates who do not enter after passing the exam and some students drop out in the second and third year, the number of students in third year decreases by approximately 30% to 50%.

Table 2.27 provides the number of students who were enrolled and who completed the program.

Table 2.27: Number of GTI Students by Course

No.	Subject	2013-2014		2014-2015		Total	
		Enrollees	Graduates	Enrollees	Graduates	Total Number of Students	Total Number of Graduates
1	Civil	448	-	426	-	874	-
2	EC	311	-	270	-	581	-
3	EP	330	-	361	-	691	-
4	Mech	484	-	379	-	863	-
5	IT	-	-	34	-	34	-
Total		1573		1470	-	3043	-

Source: Ministry of Education

The admission is becoming more and more competitive: approximately, 60% and 40% of candidates were accepted in 2013/14 and 2014/15, respectively. However, as the number of GTIs increased rapidly from 12 to 22, some of them are not equipped with sufficient classrooms or workshop equipment and thus the competition rate is not based on the full capacity.

⑥ Academic background of teaching staff

Table 2.28 provides the academic background of teaching staff. Although the figures include liberal arts and special subjects, the number of instructors with a BE degree is increasing. Although the academic background is improving, the increase rate of the number of instructors is low for the 100% increase of the number of schools and there is concern over the shortage of instructors of special and liberal arts subjects.

Table 2.28: Teachers of GTI by Academic Background

Year	Ph.D(Eng/Arch)	Ph.D(Phys. Chem, Maths, Bio, CHT)	Ph.D(Thesis)	M.E	B.E	B.Tech	AGTI	M.I.Sc./M.A.Sc./M.C.Sc./M.C.Tech	MISc./M.A.Sc./M.C.Sc./M.C.Tech(Thesis)	M.S/M.Sc/	MA/MESP	B.Ed	B.Sc/B.C.Tech/B.C.Sc	B.A/BA(D.E.SP)	Dip/D.C.Sc/D.C.M	Total
2010/11	22	3	-	15	159	58	152	1	2	77	36	3	20	53	7	608
2011/12	24	4	-	50	175	98	79	2	-	95	39	3	24	61	3	657
2012/13	24	2		58	218	97	95		1	112	41	3	21	58	4	734
2013/14	20	4	-	72	268	44	117	1	2	131	41	3	16	34	5	758
2014/15	14	1		69	340	48	148		1	160	56	3	22	46	6	914

Source: Ministry of Education

⑦ Salaries of teaching staffs

According to Table 2.12, there is a significant gap between the salary instructors (national government employees) and that of private company employees. The number of job offers from private companies is increasing in line with industrial and economic development. As many graduates work in private sectors with good salary, less people become instructors with low salary.

⑧ Male/female ratio of teaching staff

Table 2.29 provides the number of GTI instructors and their male/female ratio. Female ratio is high particularly for civil engineering (C: Civil), electronics technology (EC), and electrical power technology (EP) among practical subjects and for English, math, physics and chemistry in liberal arts. Although the female ratio is lower than that of GTHSs, it is obvious that there are more female instructors than male counterparts also in GTIs.

Table 2.29: Number and Male and Female Ratio of GTI Teachers in FY 2016

School	C		EC		EP		Mech		MP		MC		MT		IT		Myn		Eng		Maths		Phys		Chem		Other		Total		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
GTC (Moehnyin)		7	3	9		10	4	7						1	7	1	1	1	6		4		3		2			10	56	66	
GTC (Shwebo)		11	3	15	1	19	1	16						2	16		3	1	14		22		5		3	2	3	10	127	137	
GTC (Myingyan)	1	13	3	12		15	8	13						1	15	1	1	2	14	1	8		3		3			17	97	114	
GTI (Kyaukpadaung)		9		6	1	10	4	10						2	2		8		9		3		3		1		31	37	68		
GTI (Yenanchaung)		11		6		10	1	5					3	2			2	2	9	1	10		4		4	3	1	10	64	74	
GTI (Chauk)	1	13		4		11	2	12	1				1				2	1	10		10		4		5	1	1	7	72	79	
GTI (Wakema)	1	7	3		6	1	2	1				3					1		6		5	1	3		3			13	30	43	
GTI (Thandwe)	9	1	1	2	15	5	9										1		6		5		4		4			34	28	62	
GTI(Hakha)		6	1	5	1	8	1	3		2			1	1			2	1	5		4	1	3		4		1	6	44	50	
GTI (Gantgaw)	3	1		3		8	2	3									2		7		4		2		2			5	32	37	
GTI (Thayet)		5		6	1	9	1	1	1	2				1												15	1	18	25	43	
GTI(Putao)		2	1	2	1	2	2									1		3		2		1		1				12	6	18	
GTI (Khamti)	2	1		6	1	2	2	2				1				1		3	1	1		1		1				13	12	25	
GTI (Kantbalu)	1	6	1	13	3	8	1	9			3	2		1	6	2		6		10	1	1		2				31	45	76	
GTI (Magway)		5	3	11		13	4	16									2		7		4		4		5		1	7	68	75	
GTI (Mawlamyaing)	1	7	1	6	1	7	5					1					3		8		3		2		2			9	38	47	
GTI (Kyaukse)		2	1	3		7	2	8							1			2	2		2					1	1	6	26	32	
GTI (Letpadan)		5	2	4		4	3	7									1		6		2		3		3			5	35	40	
GTI (Latputta)		3	1	2	1	1	1	2									1		1		2		1		1			3	14	17	
GTI (Kyaukphyu)		3		1	2	3	1	2				1		1	3		1		2		2		2		3			4	23	27	
GTI (Mandalay)	1	5	1	3	1	5	6	3									1		3		2		1		1			9	24	33	
GTI (Shwepyithar)	1	2	1	3	3	3	3	2								1	1		3		2		2		4			9	22	31	
Sub Total	21	125	26	122	38	161	65	122	2	4	3	6	7	4	6	50	9	25	30	110	24	92	8	46	7	49	23	9	269	925	1,194
F/M Ratio	1:	6.0	1:	4.7	1:	4.2	1:	1.9	1:	2.0	1:	2.0	1:	0.6	1:	8.3	1:	2.8	1:	3.7	1:	3.8	1:	5.8	1:	7.0	1:	0.4	1:	3.4	

Source: DTVE

⑨ Transfer to TU

If those who have completed a GTI program hope to obtain a higher degree, they can transfer to the fourth year of TU so long as their academic performance is good. However, it is not actually practiced as it has yet to be approved by the MoE.

⑩ Modification of curriculum and syllabus

Article 40 of Basic education Law, enforced in September 2014, allows application for the change of curriculum and syllabus to promote the development of human resources who will contribute to socioeconomic activities and who are needed by the local industry. With the approval of course directors from 22 GTIs, they can apply the proposal of curriculum and syllabus modification to DTVE.

For example, regular course directors' meeting was held three times, where they sorted out what were not necessary in chemical experiments and proposed omit the description from the syllabus in April 2016. As a result, the DTVE officially approved the proposal and directions

for the change were issued to all GTIs in June 2016. In addition to the modification of curriculum and syllabus, they can also propose dress code during practical work.

(2) Target GTIs

The field survey was conducted at two GTIs (Kyaukse and Mandalay) near industrial zones in suburban areas. GTI Kyaukse is operated by renting a part of GTHS Kyaukse.

(3) Curriculum of GTIs

Curriculum, syllabus, teaching materials and equipment are offered by DTVE and schools cannot change the curriculum or syllabus by themselves in principle. The curricula of first, second and third years of the mechanical course is shown in Table 2.30, Table 2.31, Table 2.32, and Table 2.33. 7 classes (an hour each) are held a day (35 hours a week). Although the curriculum is designed to enable students to obtain wide range of general knowledge about mechanics, it is unlikely that the practice courses are carried out judged by the maintenance condition of equipment in workshop.

Table 2.30: Curriculum of GTI (First Year of Mechanical Engineering: 1 Week)

No	Subject	Code	First Semester				Second Semester			
			Lect:	Tut:	Pract:	Total	Lect:	Tut:	Pract:	Total
1	Myanmar	M-11011	1	-	-	1	1	-	-	1
2	English	E-11011	1	1	1	3	1	1	1	3
3	Mathematics	EM-11011	2	1	-	3	2	1	-	3
4	Engineering Science	ES-11011	2	-	2	4	2	-	2	4
5	Engineering Mechanics	ME-11015	2	1	-	3	2	1	-	3
6	Basic Technical Drawing	ME-11011	1	-	5	6	1	-	5	6
7	Workshop Technology	ME-11012	1	-	10	11	1	-	10	11
8	Principles of Electrical Technology	EP-11013	1	-	3	4	1	-	3	4
Total			11	3	21	35	11	3	21	35

Source: Kyaukse GTI

Table 2.31: Curriculum of GTI (Second Year of Mechanical Engineering: 1 Week)

No.	Subject	Code	First Semester				Second Semester			
			Lect:	Tut:	Pract:	Total	Lect:	Tut:	Pract:	Total
1	English	E 21011	1	1	1	3	1	1	1	3
2	Mathematics	Ma-21021	2	1	-	3	2	1	-	3
3	Engineering Drawing	ME-21021	1	-	5	6	1	-	5	6
4	Strength Materials	ME-21014	2	-	2	4	2	-	2	4
5	Thermodynamics	ME-21013	1	-	4	5	1	-	4	5
6	Internal Combustion Engines	ME-21023	1	-	5	6	1	-	5	6
7	Theory of Machines	ME-21015	2	1	-	3	2	1	-	3
8	Production Technology	ME-21022	1	-	4	5	1	-	4	5
Total			11	3	21	35	11	3	21	35

Source: Kyaukse GTI

Table 2.32: Curriculum of GTI (Third Year of Mechanical Engineering: 1 Week)

No.	Subject	Code	First Semester				Second Semester			
			Lect:	Tut:	Pract:	Total	Lect:	Tut:	Pract:	Total
1	English	M31011	1	1	1	3	1	1	1	3
2	Refrigeration and Air-conditioning	ME-31017	1	-	4	5	1	-	4	5
3	Automotive Technology	ME-31035	1	-	5	6	1	-	5	6
4	Internal Combustion Engines	ME-31033	1	-	5	6	1	-	5	6
5	Fluid Mechanics	ME-31016	2	1	-	3	2	1	-	3
6	Control Technology	ME-31026	2	-	2	4	2	-	2	4
7	Design of Machine Elements	ME-31031	1	-	3	4	1	-	3	4
8	Estimating & Shop Management	EP-31018	2	1	1	4	2	1	1	4
Total			11	3	21	35	11	3	21	35

Source: Kyaukse GTI

Table 2.33: Class Hours (for 3 Consecutive Years)

Class hours/day	= 7 hours
Class hours/week	= 35 hours
Class week/ Academic year	= 40 weeks
Class hours/ Academic year	= 1,400 hours

Source: Kyaukse GTI

(4) Curriculum of Colleges of Technology in Japan

Japanese colleges of technology are five-year program and similar to the combination of GTHS (2 years) and GTI (3 years). Their characteristics are compared below.

As shown in Table 2.14, Table 2.15 and Table 2.16, the curriculum of GTHS consists of 1,400 hours in the first year and 1,280 hours in the second year (2,680 hours in total).

As for the counterpart of GTI, each year consists of 1,400 hours of classes, which totals 4,200 hours in three years. Thus, the total of five years of GTHS and GTI is 6,680 hours.

The class hours of Japanese colleges of technology are 1,320 hours each in the first, second and third years, 1,440 hours in the fourth year, and 1,280 hours in the fifth year, which amounts to 6,680 hours. Thus, the class hours are the same. The ratio of class hours of liberal arts and practical subjects of GTHS and GTI is 2 to 8 hours a week. The ratio of practical courses is very high as it focuses on vocational training.

Five-year curriculum of a mechanical engineering course of a college of technology in Tokai region is provided below. It shows that the ratio of the general subjects and special subjects is 1 to 1. Thus, the number of hours for practical courses of GTHS and GTI is extremely larger than that of Japanese college of technology. This may be because the Myanmar schools are very much keen to develop skilled workers as quickly as possible. However, they need excellent and experienced instructors in charge of practical courses as well as the good curriculum.

Table 2.34: Curriculum for First Year to Fifth Year of Mechanical Engineering in Japanese Technical College

First Year			Second Year		
No	Required Subject	Units	No	Required Subject	Units
1	Japanese Language A	2	1	Integrated Japanese Language	2
2	Japanese Language B	2	2	Ethics	2
3	History	2	3	History	2
4	Geography	2	4	Mathematics A I	2
5	Mathematics A I	2	5	Mathematics A II	2
6	Mathematics A II	2	6	Mathematics B	2
7	Mathematics B	2	7	Physics B I	2
8	Physics A	1	8	Physics B II	2
9	Chemistry A I	2	9	Chemistry B	1
10	Chemistry A II	2	10	Health	1
11	Health	1	11	Physical Education I	2
12	Physical Education	2	12	English A	2
13	Art and Design	1	13	English B	1
14	Music	1	14	English C	2
13	English A	2	15	Mechanical Technology I	1
14	English B	2	16	Mechanical Technology II	1
15	English C	2	17	Computer Literacy	1
16	Introduction to production	3	18	Mechanical Design Drafting I	2
	Total	33	19	Practical Training in Machining I	3
				Total	33

Third Year			Fourth Year		
No	Required Subject	Units	No	Required Subject	Units
1	Integrated Japanese Language	2	1	Integrated Japanese Language	1
2	Politics and Economy	2	2	Jurisprudence	2
3	Mathematics A I	2	3	Physical Education	2
4	Mathematics A II	2	4	English A	2
5	Physical Education I	2	5	Germany	2
6	English A	2	6	Applied Mathematics I	2
7	English C	2	7	Applied Mathematics II	1
8	Applied Physics I	2	8	Applied Mathematics III	1
9	Mechanical Dynamics	2	9	Applied Physics II	1
10	Mechanism	2	10	Dynamics of Machinery I	1
11	Strength of Materials I	1	11	Strength of Materials I	1
12	Materials Technology I	1	12	Fluid Dynamics I	2
13	Measurement Engineering	1	13	Thermodynamics I	2
14	Mechanical Design I	1	14	Heat Transfer Engineering I	1
15	Information Processing I	1	15	Materials Technology II	1
16	Information Processing II	1	16	Technology of Plasticity I	1
17	Mechanical Design Drafting II	2	17	Technology of Plasticity II	1
18	Experiment of Mechanical Engineering I	2	18	Control Engineering I	1
19	Practical Training in Machining II	3	19	Mechanical Design II	1
	Total	33	20	Numerical Calculation Method I	1
			21	Introduction to Electrical Engineering	1
			22	Experiment of Mechanical Engineering II	2
			23	Practical Training in Innovative Mechanical	3
			24	Industrial English	1
			25	Basic Research of Mechanical Engineering	2
				Total	36

Fifth Year

No	Required Subject	Elective Subject	Units
1	English A		2
2	Germany		2
3	Applied Physics III		1
4	Dynamics of Machinery II		1
5	Strength of Materials III		1
6	Fluid Dynamics II		2
7	Thermodynamics II		1
8	Energy Engineering		1
9	Materials Technology III		1
10	Industrial Engineering		1
11	Control Engineering II		1
12	Electronic Circuit		1
13	Engineering Analysis		2
14	Engineering Ethics		1
15	Graduate Study		8
	Choose more than 6 units from 21 units	Elastic Mechanics (1 unit)	6
		Plastic Mechanics (1 unit)	
		Numerical Calculation Method II (1 unit)	
		Heat Transfer Engineering II (1 unit)	
		Fluid Machine(1 unit)	
		Energy and Environment (1 unit)	
		Systems Engineering (1 unit)	
		Mechatronics (1 unit)	
	Robotics (1 unit)		
Total			32

Source: Gifu Prefectural Gifu National College of Technology

(5) Equipment

All the GTIs use common curriculum, syllabus and textbooks. However, training equipment varies school by school as each GTI has different background of establishment. For instance, GTI Mandalay opened in January 2016. The building was constructed as a technical high school in 1967 and it was closed in 1996. The building was used as a TVET office of upper Burma and then renovated to current GTI. The workshop on the same premises used to be a staff dormitory of Mandalay TU and it became vacant as another dormitory was built on other premises. Thus, it began to be used again as workshop. Because the building was once used for other purpose, there was no training equipment in the building at that time. As it opened in January 2016, it has only first-year trainees. No training equipment was available then except for a few in the workshop.

GTI Kyaukse operates classes by renting GTHS Kyaukse's building. Although a building (4 classrooms) was constructed on separate premises, no workshop was added and they share the one with GTHS and there is not sufficient amount of equipment. Thus, they cannot have practical training mentioned in the curriculum and syllabus.

(6) Job Placement Support by GTI and Collaboration with Nearly Industrial Zones

As there was no need for job placement support or OJT, there was little need for collaboration with local industry. However, the collaboration with nearby industrial zones has become essential because of the rapid economic development these days. Principal of both GTI Kyaukse and GTI Mandalay understand the importance of human resource development for nearby industrial zones. Students are required to have 2-week OJT at the end of the first and second years and they have active communication with the industrial zones. It is expected that active involvement of the principal in such activities will increase their opportunities of communication with the business owners of the industrial zones for job placement of trainees.

(7) School Building Specifications

The construction method of reinforced concrete structures which is also seen in school construction in Japan is used and they are ordinary and economical specifications. There were some cracks on the floor and thus some floor surface was uneven at GTI Mandalay. This was caused by insufficient underfloor surface compaction and no use of rebar in the floor slab. These problems need to be eliminated in the design and construction of schools that will be newly built. Probably because the building of the workshop was completed before equipment was installed, necessary space was not taken into consideration. The school building of GTI Mandalay that was originally constructed in 1967 and renovated to be used as the school looks new from outside with decorative laminate panels on the exterior wall. However, the floor is old wooden and the it may need safety checkup to see the structure of the building, although structural strength was examined before the renovation.

Table 2.35: Specifications of GTI Building

	Class Room Building	Workshop
Structure	Reinforced Concrete	Steel or Wooden Structure
Wall	Brick laying, plastering, painting finish	Wainscot wall: Brick laying, plastering, painting finish Wall: Corrugated slate or corrugated metal panel
Roof	Steel or Wooden structure, corrugate metal sheet or slate plate	Steel or Wooden structure, corrugate metal sheet or slate plate
Floor	Concrete slub, Mortar finish	Concrete slub, Mortar finish
Window Flame	Steel or Wooden flame	Steel or Wooden flame

Source: Field survey by the study team

2.3.3 Basic Information on Government Technical College (GTC)

There are three GTCs (Moehnyin, Shwebo and Myingyan) in Myanmar. After the enforcement of the Basic Education Law in September 2014, it was decided that GTCs would be closed after current students complete their programs and that the school buildings would be used as GTIs thereafter. Thus, as shown in Table 2.36, acceptance of new GTC students was terminated and acceptance of GTI students started instead in January 2015. As of September 2016, there were third-year (B-Tech III) and fourth-year (B-Tech IV) GTC students and there will be no GTC after they complete the programs. AGTI (1) and AGTI (2) students have been learning at school buildings of the three GTCs since 2014. GTC addresses are provided in the appendix.

(1) An Overview of GTC Shwebo

Presiding ministry: MoE

Address: Shwebo, Sagaing Region (5.6 km from town center Area of the premises: 32.0 ha

GTC established: January 20, 2007

Number of students: 183 newly admitted in February 2016, 1,584 students in total in 2016

Facility: 16,810 m² (capacity: 2,500 trainees), 1 workshop building with four rooms

Number of teaching staff: 105 technical instructors and 48 teachers of general subjects

Courses: civil engineering, electronics technology, electric engineering, mechanical engineering and IT engineering



Front of GTC Shwebo



Workshop
(Mechanical Engineering, Civil Engineering)

The school building is facade in the same scale as TUs.

Although students were able to acquire a BE degree from B-Tech after they complete one-year university education after receiving four-year education at a GTC until the enforcement of the Basic Education Law in September 2014, the scheme has been abolished. There is no student in the electronics technology in GTC or GTI because they are not accepting students due to the lack of instructors. They plan to start accepting new students in 2017/18.

Table 2.36: Number of Students of GTC/GTI (Shwebo) in FY 2016

No	Department	GTC			GTI		Total
		B.E	B-Tech (Yr.IV)	B-Tech (Yr.III)	AGTI (Yr.II)	AGTI (Yr.I)	
1	Civil	171	105	66	37	54	433
2	EC	106	91	77	35	42	351
3	EP	134	86	83	34	44	381
4	Mech	98	80	85	33	43	339
5	IT	34	46	-	-	-	80
	Total	543	408	311	139	183	1,584

Source: GTC Shwebo

Students used to be able to acquire B-Tech after receiving four-year education at GTC. As GTCs are abolished, no educational institute will issue B-Tech any more. Thus, there will be no qualification between the AGTI diploma given to GTI graduates and the BE diploma given to TU graduates.

The courses taught by GTCs and GTIs are identical. As GTCs become GTIs, students will be engineers with an AGTI diploma after receiving three-year education. Those who become national government employees with an AGTI diploma will be able to be promoted up to the estate engineer (E.E) as shown in Table 2.25 and they required BE degree to become chief engineer which is the highest engineer post.

According to DTVE, the examination for transfer to TUs was held for those with B.Tech degree in August 2016. The system is for B.Tech holders to upgrade to BE and there was strong request for the examination from B.Tech holders. The Minister of Education approved holding examination.

2.3.4 Basic Information on Technological University (TU)

(1) An Overview of TU

① Number of TUs

The MoST was then presiding 27 TUs as formal TVET. The Ministry was merged to MoE in accordance with the enforcement of the Basic Education Law in September 2014. As a result, 27 TUs presided by the MoST became under department of higher education of MoE and six technological universities (Yangon TU, Mandalay TU, Pyay TU, West Yangon TU, Myanmar Aerospace Engineering University, and TU Yadanarpon Cyber City) that belonged to the department were added to the same categories as TUs. Thus, there are 33 TUs in Myanmar and there is at least one TU in each State excluding Chin State⁷.

② Fields of education

The fields of education used to be decided by each university faculties based on directions from the DTVE under MoST. There are some ranges from four courses of Dawei TU and Pakokku TU to nine courses of Thanlyin TU. The overall picture is provided in Table 2.39. Major courses with many new students are civil engineering, mechanical engineering, electrical power technology and electric engineering courses in the order, which indicates that infrastructure-related courses excluding mechanical engineering are popular. These are followed by architectural engineering, electronics technology, electrical power technology, mechanical engineering, mechatronics engineering, electronics technology, IT engineering, chemical engineering and fuel engineering, etc.

③ Requirements for enrollment

Those who come from BEHSs are admitted by passing the matriculation examination (university entrance examination) of Grade 11 or being accepted based on English, math and physics examination results. Although GTHS graduates needed to pass matriculation exam as well as completing four-month OJT to enter TU until 2014, they are no longer able to enroll in TU due to Basic Education Law enforced in September 2014. However, there is a plan that entrance examinations will be held from 2016 and anyone graduated from BEHSs and GTHSs will be qualified to take the test although MoE has not issued formal notice. Student quota of each course of TUs is provided in Table 2.38

④ Academic calendar, enrollment period and available qualification

The first semester is from December to April in the following year and the second semester begins in May after Myanmar New Year and ends in September. Examinations are given at the end of each semester. Students are required to conduct research or OJT at factory in October. The universities are closed in November.

The enrollment period was extended from five to six years after the educational reform in September 2014. As a result, as show in Table 2.37, students who enrolled in five-year programs and six-year programs are studying together at all TUs to acquire a BE degree. Those who become national government employees with BE begin working as assistant engineers (AE) and can be promoted up to chief engineer (CE) after experiencing estate engineer (EE) and division engineer (DE).

⁷ See appendix for maps.

Table 2.37: Number of Students at TU Thanlyin

No.	Department	6 Years School		5 Years School			Total
		BE Year I	BE Year II	B.Tech Year III	B.Tech Year IV	B.E Final Year	
1	Civil	64	143	264	490	749	1,710
2	Architecture	44	62	57	98	68	329
3	Electronics	46	108	157	253	383	947
4	Electrical Power	47	136	147	282	314	926
5	Mechanical	59	169	214	300	356	1,098
6	Mechatronics	52	76	72	89	72	361
7	IT	41	79	67	140	111	438
8	Chemical	42	30	31	27	26	156
9	Petroleum	55	83	62	56	51	307
	Total	450	886	1,071	1,735	2,130	6,272

Source: TU Thanlyin

⑤ Capacity and number of students in each course

Seats of each course is provided in Table 2.38. A total of 6,680 students can be accepted by all TUs. As for the number of students who were admitted to TUs in 2016, Yangon TU in and Mandalay TU, Sittwe TU, and Myanmar Aerospace Engineering University had 68%, 84%, 82% and 87% of each capacity, respectively, because of the number of teaching staff, and other 29 TUs have students close to the capacity--above or slightly below the capacity, according to the list of number of teaching staff.

**Table 2.38: Fixed Numbers of Technical University by Course
(Except for Those of TU Yadanarpon Cyber City and MAEU)**

No	Name of Universities	Student Number Limit for one grade														Total	
		Civil	EC	EP	Mech	MC	IT	ChE	Min	Tex	Pet	Met	Arch	BioT	NT		
1	Yangon Technological University	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	480
2	Mandalay Technological University	40	40	40	40	40	40	40	40				40	40	40	440	
3	Technological University(Kyingtong)	40	40	40	40											160	
4	Technological University(Kyaukse)	40	40	40	40		40					40		40	40	320	
5	Technological University(Kalay)	40	40	40	40											160	
6	Technological University(Taunggyi)	40	40	40	40		40		40							240	
7	Technological University(Taungoo)	40	40	40	40											160	
8	Technological University(Dawei)	40	40	40	40											160	
9	Technological University(Pakokku)	40	40	40	40											160	
10	Technological University(Pinlon)	40	40	40	40											160	
11	Technological University(Pathein)	40	40	40	40											160	
12	Technological University(Banmaw)	40	40	40	40											160	
13	Technological University(Hpaan)	40	40	40	40											160	
14	Technological University(Magway)	40	40	40	40											160	
15	Technological University(Mandalay)	40	40	40	40	40	40					40				280	
16	Technological University (Myitkyina)	40	40	40	40											160	
17	Technological University(Myeik)	40	40	40	40											160	
18	Technological University(Hmawbi)	40	40	40	40	40	40						40			280	
19	Technological University(Maubin)	40	40	40	40											160	
20	Technological University(Meiktila)	40	40	40	40		40									200	
21	Technological University(Monywa)	40	40	40	40	40	40			40						280	
22	Technological University (Mawlamyine)	40	40	40	40	40	40									240	
23	Technological University (Yamethin)	40	40	40	40											160	
24	Technological University(Lashio)	40	40	40	40											160	
25	Technological University (Loikaw)	40	40	40	40											160	
26	Technological University(Thanlyin)	40	40	40	40	40	40	40			40		40			360	
27	Technological University(Hinthata)	40	40	40	40											160	
28	Pyay Technological University	40	40	40	40	40				40						240	
29	West Yangon Technological University	40	40	40	40	40	40						40			280	
30	Technological University(Sagaing)	40	40	40	40											160	
31	Technological University(Sittwe)	40	40	40	40											160	
	Total	1,240	1,240	1,240	1,240	360	440	120	120	120	80	120	200	80	80	6,680	
	Civil- Civil Engineering																
	EC- Electronic Engineering																
	EP- Electrical Power Engineering																
	Mech- Mechanical Engineering																
	MC- Mechatronics Engineering																
	IT- Information Technology																
	ChE- Chemical Engineering																
	Min- Mining Engineering																
	Tex- Textile Engineering																
	Pet- Petroleum Engineering																
	Met- Metallurgy Engineering																
	Arch- Architecture																
	BioT- Biotechnology																
	NT- Nuclear Technology																

Source: DTVE, Ministry of Education

Table 2.39: Number of Completion Students of TU/GTC (5 Years Course) for FY 2010-2011 to FY 2014-2015

No.	Department	2010/11		2011/12		2012/13		2013/14		2014/15		Total	
		Entrance	Graduate	Entrance	Graduate	Entrance	Graduate	Entrance	Graduate	Entrance	Graduate	Entrance	Graduate
1	Civil	10,398	1,817	9,253	2,149	5,079	2,230	2,845	3,864	1,622	3,598	29,197	13,658
2	Electronics:EC	4,140	1,182	6,299	1,705	3,610	1,467	2,336	1,518	1,375	1,485	17,760	7,357
3	Electric Power:EP	5,252	890	7,401	1,702	4,394	1,248	2,344	1,334	1,462	1,063	20,853	6,237
4	Mechaical:Mech	6,572	1,102	9,044	2,252	5,539	1,578	2,535	1,364	1,643	1,340	25,333	7,636
5	Mechatronics:MC	532	375	1,678	594	1,366	169	323	126	254	131	4,153	1,395
6	IT	1,060	618	1,994	815	1,368	411	598	299	399	189	5,419	2,332
7	Nuclear Tech:NT	272	-	424	11	257	8	32	5	35	8	1,020	32
8	Chemistry:Chem	116	194	206	209	171	62	35	75	50	37	578	577
9	Mining:Min	192	10	223	46	117	25	113	22	65	12	710	115
10	Texture:Tex	227	69	319	83	220	34	105	13	68	17	939	216
11	Petroleum:Pet	130	72	184	78	124	27	68	28	46	26	552	231
12	Metallurgy:Met	150	36	90	48	43	18	34	24	34	16	351	142
13	Bio-Tech	441	52	519	28	401	22	246	31	245	29	1,852	162
14	Architecture:Arch	13	124	66	133	44	135	42	212	43	151	208	755
15	ICT	508	-	417	-	196	-	94	-	93	263	1,308	263
16	EcE	280	-	237	-	100	-	51	-	54	143	722	143
17	PrE	60	-	155	-	79	-	49	-	38	36	381	36
18	Auto Mechanic:AM	84	-	148	-	92	-	49	-	38	65	411	65
Total		30,427	6,541	38,657	9,853	23,200	7,434	11,899	8,915	7,564	8,609	111,747	41,352

Source: Ministry of Education

⑥ Quota of teaching staff and their academic background

The academic background of instructors is summarized in Table 2.40. Instructors who hold Ph.D., master's or bachelor's degree are increasing. According to the DTVE, newly hired teaching staffs are required to hold a BE or higher degree and they will no longer hire B.Tech holders or AGTI holders as teaching staff.

Table 2.40: Number of TU Teachers by Academic Career

Year	Ph.D(Eng/Arch)	Ph.D(Phys. Chem/Maths, Bio, CHT)	Ph.D(Thesis)	ME	BE	B.Tech	AGTI	M.I.Sc/M.A.Sc/M.C.Sc/M.C.Tech	M.Sc/M.A.Sc/M.C.Sc/M.C.Tech(Thesis)	M.S/M.Sc	MA/M.E.S.P	B.E.d	B.Sc/B.C.Tech/B.C.Sc	B.A/B.A.(D.E.S.P)	Dip/D.C.Sc/DC.M	Total
2010/11	204	92	-	430	1,112	200	112	86	5	398	289	25	59	129	23	3,164
2011/12	242	81		545	976	167	90	80	1	385	293	19	54	192	19	3,144
2012/13	241	77		544	1,120	129	87	56		448	300	17	51	190	25	3,285
2013/14	289	85	-	653	1,351	136	81	50	1	595	349	14	53	124	26	3,807
2014/15	298	97		674	1,359	141	86	59	-	595	329	13	51	131	18	3,851

Source: Ministry of Education

⑦ Male/female ratio of teaching staff

Table 2.41 provides the male/female ratio of teaching staff of each TU. The overall ratio is 1 to 4.91. As for the male/female ratio of GTHS teaching staff, it is 1 to 5.1 and that of GTI teaching staff is 1 to 3.4. The overall male/female ratio of teaching staffs in Myanmar is 1:4.47. These figures show that teaching staffs in Myanmar is female dominant. The female ratio is highest at No. 19 TU Loikaw in Kayah State. There is only one male instructor and all the other teaching staff are women (male/female ratio at 1 to 73). No. 15 TU Pinlon in Shan State has the second highest female ratio at 1 male to 20.67 females, which is followed by No. 29 TU Myeik in Tanintharyi at 1 to 13.50. This is likely to be caused as the working places are located far from cities and most male TU graduates find employment at private companies with better salary.

Table 2.41: Ratio of TU Male and Female Teachers (2016)

No.	Technological University	Male	Female	Total	F/M Ratio
1	YTU	68	152	220	1 : 2.24
2	MTU	88	135	223	1 : 1.53
3	PTU	28	152	180	1 : 5.43
4	WYTU	41	213	254	1 : 5.20
5	MAEU	54	54	108	1 : 1.00
6	TU(Mandalay)	63	269	332	1 : 5.27
7	TU(Hmawbi)	21	209	230	1 : 9.95
8	TU(Thanlyin)	35	236	271	1 : 6.74
9	TU(Myitkyina)	12	62	74	1 : 5.17
10	TU(Banmaw)	9	47	56	1 : 5.22
11	TU(Kalay)	8	70	78	1 : 8.75
12	TU(Monywa)	17	185	202	1 : 10.88
13	TU(Pakokku)	9	119	128	1 : 13.22
14	TU(Lashio)	9	56	65	1 : 6.22
15	TU(Pinlon)	3	62	65	1 : 20.67
16	TU(Taunggyi)	25	114	139	1 : 4.56
17	TU(Kyingtong)	11	53	64	1 : 4.82
18	TU(Meiktila)	19	121	140	1 : 6.37
19	TU(Loikaw)	1	73	74	1 : 73.0
20	TU(Magway)	27	162	189	1 : 6.00
21	TU(Taungoo)	19	122	141	1 : 6.42
22	TU(Sittwe)	9	78	87	1 : 8.67
23	TU(Hinthata)	12	76	88	1 : 6.33
24	TU(Maubin)	11	81	92	1 : 7.36
25	TU(Pathein)	14	142	156	1 : 10.14
26	TU(Hpaan)	12	68	80	1 : 5.67
27	TU(Mawlamyine)	29	132	161	1 : 4.55
28	TU(Dawei)	14	65	79	1 : 4.64
29	TU(Myeik)	4	54	58	1 : 13.50
30	TU(YCC)	66	163	229	1 : 2.47
31	TU(Yamethin)	14	83	97	1 : 5.93
32	TU(Sagaing)	13	125	138	1 : 9.62
33	TU(Kyaukse)	33	184	217	1 : 5.58
	Total	798	3,917	4,715	1 : 4.91

Source: DTVE of Ministry of Education

(2) Target TUs

The field survey was conducted at four TUs near industrial zones in suburban areas among 33 TUs in the country. They are Thanlyin TU, Pakokku TU, Dawei TU and Patheingyi TU.

(3) TU Curriculum

Curriculum, syllabus, teaching materials and equipment are offered by the department of higher education under MoE and schools are not supposed to change the curriculum or syllabus by themselves. According to the Principal of Pakokku TU, they will see the situation as they have already changed the curriculum and syllabus two years ago when TU programs were reorganized into 6-year programs.

As for the education programs of TUs, general subjects are offered mostly in the first and second years in the mechanical engineering course, for example, which is the same as that of Japanese university education. TU programs have more practical subjects in later years. Education in overall mechanical engineering is planned to be offered and the practical fields cover a wide range. Each course also has one to two hours of practice hours weekly. Table 2.42 is a summary of curriculum from the first to sixth years of the mechanical engineering course of TUs.

**Table 2.42: Curriculum for Bachelor of Engineering
(New 6-year Direct Intake System)**

First Year

Semester One (18 weeks)							
Sr. No	Code	Courses	Period/week				Credit Points
			Lect	Tut	Pract	Total	
1	M 11001	Myanmar	2	0	0	2	2
2	E 11011	English I	3	1	0	4	4
3	EM 11011	Introductory Mathematics I	2	1	0	3	3
4	EM 11012	Calculus and Analytic Geometry I	3	1	0	4	4
5	Ph 11001	Engineering Physics I	3	1	2	6	5
6	Ch 11001	Engineering Chemistry I	3	1	2	6	5
7	ME 11011	Basic Engineering Drawing I	1	0	3	4	2.5
8	ME 11012	Workshop Practice	0	0	3	3	1.5
Total			17	5	10	32	27

Semester Two (18 weeks)							
Sr. No	Code	Courses	Period/week				Credit Points
			Lect	Tut	Pract	Total	
1	M 11001	Myanmar I	2	0	0	2	2
2	E 11011	English I	3	1	0	4	4
3	EM 11011	Introductory Mathematics I	2	1	0	3	3
4	EM 11012	Calculus and Analytic Geometry I	3	1	0	4	4
5	Ph 11001	Engineering Physics I	3	1	2	6	5
6	Ch 11001	Engineering Chemistry I	3	1	2	6	5
7	ME 11011	Basic Technical Drawing I	1	0	3	4	2.5
8	ME 11012	Workshop Practice	0	0	3	3	1.5
Total			17	5	10	32	27

Second Year

Semester One (18 weeks)							
Sr. No	Code	Courses	Period/week				Credit Points
			Lect	Tut	Pract	Total	
1	E 21001	English III	3	1	0	4	4
2	EM 12022	Calculus and Vector Analysis I	3	1	0	4	4
3	EM 21013	Complex Analysis I	2	1	0	3	3
4	ME 21021	Machine Drawing I	1	0	3	4	2.5
5	ME 21022	Workshop Technology I	2	1	1	4	3.5
6	ME 21015	Engineering Mechanics I	3	2	0	5	5
7	ME 21013	Thermodynamics I	2	1	1	4	3.5
8	EP 21013	Principle of Electrical Engineering I	2	1	1	4	3.5
Total			18	8	6	32	29

Semester Two (18 weeks)							
Sr. No	Code	Courses	Period/week				Credit Points
			Lect	Tut	Pract	Total	
1	E 22011	English IV	3	1	0	4	4
2	EM 22022	Calculus and Vector Analysis II	3	1	0	4	4
3	EM 22013	Complex Analysis II	2	1	0	3	3
4	ME 22021	Machine Drawing II	1	0	3	4	2.5
5	ME 22022	Workshop Technology I	2	1	1	4	3.5
6	ME 22015	Engineering Mechanics II	3	2	0	5	5
7	ME 21013	Thermodynamics I	2	1	1	4	3.5
8	EP 22013	Principle of Electrical Engineering II	2	1	1	4	3.5
Total			18	8	6	32	29

Third Year

Semester One (18 weeks)							
Sr. No	Code	Courses	Period/week				Credit Points
			Lect	Tut	Pract	Total	
1	E 31011	English	3	1	0	4	4
2	EM 31014	Differential Equations I	3	1	0	4	4
3	ME 31013	Thermodynamics II	2	1	1	4	3.5
4	ME 31014	Strength of Materials I	2	1	1	4	3.5
5	ME 31016	Fluid Mechanics I	2	1	1	4	3.5
6	ME 31015	Theory of Machines I	2	2	1	5	4.5
7	Met 31071	Engineering Materials I	2	1	0	3	3
8	ME 31022	Production Technology II	2	1	1	4	3.5
Total			18	9	5	32	29.5

Semester Two (18 weeks)							
Sr. No	Code	Courses	Period/week				Credit Points
			Lect	Tut	Pract	Total	
1	E 32011	English	3	1	0	4	4
2	EM 32014	Differential Equations II	3	1	0	4	4
3	ME 32013	Thermodynamics II	2	1	1	4	3.5
4	ME 32014	Strength of Materials I	2	1	1	4	3.5
5	ME 32016	Fluid Mechanics I	2	1	1	4	3.5
6	ME 32015	Theory of Machines I	2	2	1	5	4.5
7	Met 32071	Engineering Materials I	2	1	0	3	3
8	ME 32022	Production Technology I	2	1	1	4	3.5
Total			18	9	5	32	29.5

Fourth Year

Semester One (18 weeks)							
Sr. No	Code	Courses	Period/week				Credit Points
			Lect	Tut	Pract	Total	
1	E 41011	English	3	1	0	4	4
2	EM 41015	Discrete Mathematics I	3	1	0	4	4
3	ME 41032	CAD/CAM	1	0	2	3	2
4	ME 41031	Design of Machine elements I	3	3	0	6	6
5	ME 41033	Heat Transfer	2	1	1	4	3.5
6	ME 41014	Strength of Materials II	2	1	1	4	3.5
7	ME 41016	Fluid Mechanics III	2	1	1	4	3.5
8	ME 41015	Theory of Machines II	3	1	1	5	4.5
Total			19	9	6	34	31

Sr. No	Code	Courses	Period/week				Credit Points
			Lect	Tut	Pract	Total	
1	E 42011	English	3	1	0	4	4
2	EM 42015	Discrete Mathematics I	3	1	0	4	4
3	ME 42032	CAD/CAM	1	0	2	3	2
4	ME 42031	Design of Machine elements I	3	3	0	6	6
5	ME 42033	Heat Transfer	2	1	1	4	3.5
6	ME 42014	Strength of Materials II	2	1	1	4	3.5
7	ME 42016	Fluid Mechanics III	2	1	1	4	3.5
8	ME 42015	Theory of Machines II	3	1	1	5	4.5
Total			19	9	6	34	31

Fifth Year

Semester One (18 weeks)							
Sr. No	Code	Courses	Period/week				Credit Points
			Lect	Tut	Pract	Total	
1	E 51011	English V	3	1	0	4	4
2	ME 51042	Manufacturing System and Automations I	2	1	1	4	3.5
3	ME 51043	Gas Turbine	2	1	1	4	3.5
4	ME 51035	Vibration and Control I	2	1	1	4	3.5
5	ME 51017	Refrigeration and Air-conditioning I	2	1	1	4	3.5
6	ME 51028	Industrial Management I	3	1	0	4	4
7	ME 51023	Internal Combustion Engines I	2	1	1	4	3.5
8	ME 51031	Machine Design	2	1	2	5	4
Total			18	8	7	33	29.5

Semester Two (18 weeks)							
Sr. No	Code	Courses	Period/week				Credit Points
			Lect	Tut	Pract	Total	
1	E 51011	English V	3	1	0	4	4
2	ME 51042	Manufacturing System and Automations I	2	1	1	4	3.5
3	ME 51043	Gas Turbine	2	1	1	4	3.5
4	ME 51035	Vibration and Control I	2	1	1	4	3.5
5	ME 51017	Refrigeration and Air-conditioning I	2	1	1	4	3.5
6	ME 51028	Industrial Management I	3	1	0	4	4
7	ME 51023	Internal Combustion Engines I	2	1	1	4	3.5
8	ME 51031	Machine Design	2	1	2	5	4
Total			18	8	7	33	29.5

Sixth Year

Semester One (18 weeks)							
Sr. No	Code	Courses	Period/week				Credit Points
			Lect	Tut	Pract	Total	
1	E 61011	English	3	1	0	4	4
2	ME 61020	Sustainable Energy	3	1	1	5	4.5
3	ME 61019	Computer Application in Mech Engg	3	0	6	9	6
4	HSS 61012	Huminities and Social Science	3	0	0	3	3
Total			12	2	7	21	17.5
Semester Two (18 weeks)							
Graduation Project/ Research Report/ Mini Thesis (30 Credit Points)							

Source: DTVE of Ministry of Education

As the curriculum shows, the mechanical engineering course of TUs does not offer subjects in which students learn turning skills or milling skills that are included as practical subjects of GTHSs. It clarifies that BE holders who graduated from TUs are to be trained as engineers who supervise the overall works.

(4) Equipment of TU

Training equipment of TUs differs partly because of their different background. It is because all TUs originally started as GTHSs, GTIs or GTCs and they have gradually upgraded. They all became TUs in 2007 and new university buildings were constructed in suburbs, 5km to 10km away from the city center. Some TUs were not equipped with workshop and they could not conduct practical classes at the beginning. New buildings of some TUs were constructed where there were GTI or GTC buildings with facilities for practical classes. The scale of recently-established workshops is small and poorly equipped with facilities. Because such workshops do not have sufficient quantity of equipment, practical courses cannot be conducted properly. The following photographs are workshop of Thanlyin TU. As it used to be a GTC, it is equipped with equipment. However, as TUs are now under the supervision of the department of higher education, such machining equipment is no longer in need.



Thanlyin TU Workshop
From behind of Lathe Machine



Thanlyin TU Workshop
From the front of Lathe Machine

Equipment necessary for experiments in education of engineering courses of the department of higher education has been gradually installed. The civil engineering course of all of the visited TUs is equipped with equipment of same specifications and equipment to demonstrate theories of applied dynamics and hydrology. They are provided by the department of higher education of the MoE.

(5) Job Placement Support by TUs and Collaboration with Nearby Industrial Zones

Thanlyin TU began the survey on the career path of their graduates in 2015 and they produce a list of employment they found. The human resource department and international exchange section consult with students about their occupation after graduation as part of job placement support. They put up notices and distribute brochures of job offers. Students directly contact the companies after looking at them or schools contact them instead. As Thanlyin TU is situated near the Thilawa SEZ developed by Japanese companies, it is attempting to help students find employment at Japanese companies there. As a specific measure, Thanlyin University is trying to provide Japanese language education after class hour or on holidays at campus. Although university administration understands the need for developing human resources by the industrial zone, they do not have such basic information as what are manufactured there. Some expressed such positive views that they would find opportunities of dialogues with companies, visit their factories and ask them to have regular meeting with company managers. Students are required to participate in internship programs in the final year. Some also expressed their view that school officials would visit the companies so that they can offer internship opportunities in which students are interested. This gave an impression that they are building collaborative relationship with nearby industrial zones.

(6) University Building Specifications

The building in front of the entrance of all TUs is facade design, which means you can see the building of the same design at any TU in Myanmar. TU campus is situated on large premises in suburbs 5km to 10km away from city center. Although it costs and takes time to commute, the sites can be expanded in the future. Buildings are reinforced concrete structures in principle and the wall is brick masonry with mortar and paint finish. The roof structure of classroom buildings has wooden framework, roofing board is put on it and it is roofed with tile-shaped steel sheets. The workshop building has light steel columns and beams and is roofed with corrugated steel sheet. The window back of the wall is brick masonry with mortar finish and the wall often has the same material as the roof material. As no TU paints the wall for maintenance after the completion of building construction, there are many black spots of molds formed on the paint of exterior wall.

Table 2.43: Specifications of TU Buildings

	Class Room Building	Workshop
Structure	Reinforced Concrete	Steel or Wooden
Wall	Brick laying, plastering, painting finish	Wainscot wall: Brick laying, plastering, painting finish Wall: Corrugated slate or corrugated metal panel
Roof	Steel or Wooden structure, corrugate metal sheet or slate plate	Steel or Wooden structure, corrugate metal sheet or slate plate
Floor	Concrete slub, Mortar finish	Concrete slub, Mortar finish
Window Flame	Steel or Wooden flame	Steel or Wooden flame

Source: Field Survey by Study Team

(7) Teaching Methodology Course for TVET Instructors

Although ToT is offered at schools that train elementary, middle and high school teachers, TUs do not offer courses for TVET teachers and thus they do not teach any TVET teaching methodologies, according to the president of Thanlyin TU. They offer teaching methodology seminar session internally about once a year. Although they do not offer teaching methodology

classes, they hope to do so in the future. He also mentioned that many students would take the classes if someone teaches them.

(8) Collaboration with Educational Institutions In and Outside Myanmar and Overseas Companies

Thanlyin TU formed partnership with Asia Institute of Technology (AIT) in January 2016 and it sends its graduates or teaching staffs to Thailand with scholarship from AIT. Four students and one faculty member of the architecture course have been sent to study. It has also signed the memorandum of understanding with Saga University and the consortium of Ehime and Osaka Universities. It sends one student to Saga University every year and it is now examining which faculty they will have collaboration with Ehime University.

As for collaboration with overseas companies in the SEZ, it has concluded a five-year MoU with Indorama (a mold manufacturer, it is likely to be a company in nearby industrial zone as there is no such a company that has acquired investment permit in Thilawa SEZ.) It has sent 12 freshmen to Thailand for training. It is also consulting with Hoeven (Chinese mobile phone company) about internship training.

(9) New TU Students

According to the president of Dawei TU, the seats for freshmen are 160 to 40 in each course. Four GTHS graduates were admitted with Credit Pass and 156 students were admitted based on the matriculation test results. However, as GTHS graduates are not able to go to TU with the Credit Pass any longer, students who received general education at BEHS are now able to go to TUs. If the new TU entrance examination system is introduced, the majority will be BEHS graduates who received regular education. This means that human resources who have never received TVET will become TVET instructors of GTIs and GTHSs if TU graduates choose to be TVET instructors as their occupation. They cannot be TVET instructors without some special training after graduating from TUs.

(10) Employment Situation of Dawei TU Near the Border with Thailand

According to the interview with the president of Dawei TU near the border with Thailand, the university is located at the tip of the peninsula that has rubber production and fisheries as industries. As they are not related to the courses the TU offers and there is no industrial zone in proximity, there is no job placement opportunity. 75% of graduates find jobs not as engineers. Even when engineers who graduated from the TU with a BE degree find employment in Thailand, most of them work in the field not related to their BE qualification. Graduates of IT courses that are popular in urban areas cannot find employment as IT professionals. Under the circumstances, it is necessary to research the human resources needed by factories located near TUs and how to match them with students as job placement support provided by TUs for their graduates. It is essential to provide regular employment consultation services considering what are manufactured and what kinds of human resources are demanded at industrial zones near the TU and introducing the job types to students.

2.3.5 Nationalities Youth Resource Development Degree College: NYRDC

Location: Plot No. 3383, Land Surveying Quarter No. 61, Sittaung Road, Dagon Seikkan Township, Yangon

Site area: 31.516 Acre (12.75 ha)

Established at another location in 1988 under the military regime, constructed building to move to the current place. The campus is located in Sagaing.

Appearance:



Number of personnel: Management staffers: 54, Teaching staffers: 27, University staffers: 162, 245 in total

(1) Objectives of Establishment

1. The university was established to nurture the Union Spirits of Myanmar among students who are ethnic minorities residing near the national border.
2. Development of
 - (1) country that does not collapse
 - (2) country in which the solidarity is not ruined
 - (3) country that can maintain sovereignty
3. Respect cultures and customs of ethnic minorities
4. Raise passion and spirit for development of border regions
5. Construction of new modern state
6. Return to their local border regions after receiving higher education to tackle challenges for development

(2) Purpose

The university was established for many children who became orphans in the battle between the liberation army and military forces. It is operated with the budget of the Ministry of Border Affairs for youth development in rural areas.

(3) Requirements for Enrollment

1. Students who are from rural areas and who have passed the matriculation examination
2. Students who are orphans, from single-parent families, or poor ethnic minority and who have passed the matriculation examination

(4) Number of Students

There are 838 students (male only) in 2015/2016 and 1,000 students will be enrolled next year (2016/2017). Dormitories for female students will be constructed on the premises.

Students use Myanmar language as they are from 31 tribal groups and their mother tongues are different.

Table 2.44: Students from Ethnic Minorities

No.	Minority Groups	1 st Year			2 nd Year			3 rd Year		Remedial		Total
		Arts	Science	Engineering	Arts	Science	Engineering	Arts	Science	Arts	Science	
1	Kachin				1	4	1		3			9
2	Kadu					1	3	1	1			6
3	Kanan					1	2		2			5
4	Kayah	2	5	1	4	1	2		5	2	4	26
5	Kayan		4			4	4	1	5		1	18
6	Kayaw							1				1
7	Kayin		7	3	1	2	12	1	5	1	3	36
8	Kokhant						1					1
9	Khami	1			1	1			6			9
10	Khumi					1	1					2
11	Chin	9	18	3	12	28	10	3	12		5	100
12	Daingnet		1						1			2
13	Danu					3	9		4		2	18
14	Naga		2			11	2	3	7	2	2	29
15	Palaung			1		2	7	2	7		3	22
16	Pa-O		2	4		5	4		4	2	1	22
17	Mon		3	16		1	16		2	1	2	41
18	Myo	1	3	1		2			3			10
19	Yintale				1							1
20	Rakhine	4	23	5	3	19	21	3	8			86
21	Shan	1	11	4	1	17	21	3	12	2	4	76
22	Lisu		2				2	1	2			7
23	Lahu					1	1		2		1	5
24	Wa		3			2					1	6
25	Thet	1	1			1	2		1			6
26	Inthar					5	2		3	1	4	15
27	Akha		1		1	1	1	2	5	1	1	13
28	Bamar								8			8
29	Taihlan		3						1			4
30	Gahbar			1								1
31	Taungyoe					1	2		3			6
Total		19	89	39	25	114	126	21	112	12	34	591
		147			265			133		46		

Source: NYRDC

(5) Courses

1. Arts (Myanmar, geography and history): 4-year program, B.A, attached to Yangon University
2. Natural science (chemistry, physics and math): 4-year program, B.Sc., attached to Yangon University
3. Engineering (civil, M.P, E.P and E.C): 3-year program, AGTI, attached to Yangon Technological University

Students in arts (Myanmar, geography and history) with excellent performance can be transferred to Yangon University or Yangon Technological University and advance to master's and Ph.D. courses. 14 graduates have acquired Ph.D.

Students in engineering (Civil, M.P, E.P and E.C) with excellent performance can be transferred to B.E, M.E or Ph.D. courses of Yangon TU or Mandalay TU.

(6) Support from University

The university provides dormitory lodging, meals (3 times a day), clothing, tuition, healthcare and transportation expenses to return home once a year (1.5-month summer vacation), etc.

(7) Curriculum and Syllabus

The curriculum and syllabus from the MoE are used (same as other universities).

(8) Career Course after Graduation

They are expected to work at government offices in border regions (where they are from) to contribute to local development. All students are to become local government employees.

(9) Equipment

Although there was some equipment, there was not enough kinds of quantity for many students to use.

2.4 Non-formal TVET Organizations

MoLIP controls non-formal TVET organizations, which we have targeted for the survey. Each organization belongs to MoI, MoBA and MoSWRR, and they operate such organizations respectively.

The training period and target persons for Non-Formal TVET Organizations are shown in the following table.

Table 2.45: Training Period and Trainees for Non-Formal TVET Organizations

Ministry	Name of Training Center / School	Training period	Training Target
MoLIP	Skill Training Center: STC	4-6 weeks	Un employed workers. No age limitation.
MoI	Industrial Training Center: ITC	1 year training ITC Sinde become 2 years from 2017	G-10 completed and between 17 and 25 years of age
MoBA	National Youth Resource Development Degree College: NURDDC	3 years: AGTI 4 years: B.A, B.Sc.	Minority youth group who pass the matriculation exam from youth training schools or Government state schools
MoSWRR	Vocational Training School for Adult with Physical Disabilities: VTSAPD	3 months course 1 year course	Between 18and 45 years of age with physical disability (as long as he can manage himself).

Source: Pamphlet published by each TVET organization

2.4.1 Basic Information on Skill Training Center (STC)

(1) Purpose of Establishment

MoLIP oversees 4 Ministries, which implement Non-Formal TVET. MoLIP was established and has been operating 5 STCs in total; 2 Skill Training Centers (STC) in Yangon, one in each city (Mandalay, Patheingyi and Mawlamyine). The purposes of their establishment are described as follows:

STCs are intended to:

- 1) Offer training programs to skilled workers positioned as trainers,
- 2) Make arrangements and implement training programs before and after the trainee is employed in the manufacturing industry,
- 3) Implement various skills training programs required by the labour market, and
- 4) Introduce standard level skills to establish a national system on skills testing and issue relevant certificates.

MoLIP targets factory workers and unemployed workers for their skills training programs, and usually organizes around four to six weeks of training programs. Only those with academic background of junior high school graduation and higher are qualified to receive the training program, and their tuitions are exempted.

At the time of the study, only STC of Yangon (Yankin) was operational and other STCs were not due to lack of staff members. The 5 STCs are located at two places in Yangon, one in Mandalay, one in Patheingyi, and one in Mawlamyine according to the information provided by vice Minister of Department of Labor. He mentioned that the training school of Patheingyi STC was leased to a Singapore company, and MoLIP carried out a field survey at Yankin STC, Mandalay STC and Patheingyi STC to assess the current situations.

Figure 2.5 shows the administrative body of STC and 5 STCs have the same organizational system.

(2) Summary of STC Yankin

- Establishment: January 1st, 1972
- Area: 1.75 Acre (7,082 m²)
- Facility: An administration bldg. (1st floor: office, 2nd floor: class room), and a workshop (metalwork and welding, automobile maintenance, mechanical engineering, electric, facility plumbing and skills development center established with financial support from Open Society Foundation (OSF))

PTTEP, an oil related company assisted the renovation of the workshop for welding course, and the renovation was completed in January 2016. Out of workshops of STC Yankin, those of cable rendering work and air conditioning work were acknowledged as a skills test center of NSSA Level 1 and were used in April and May 2016 as the test center.



Workshop renovated for Welding department

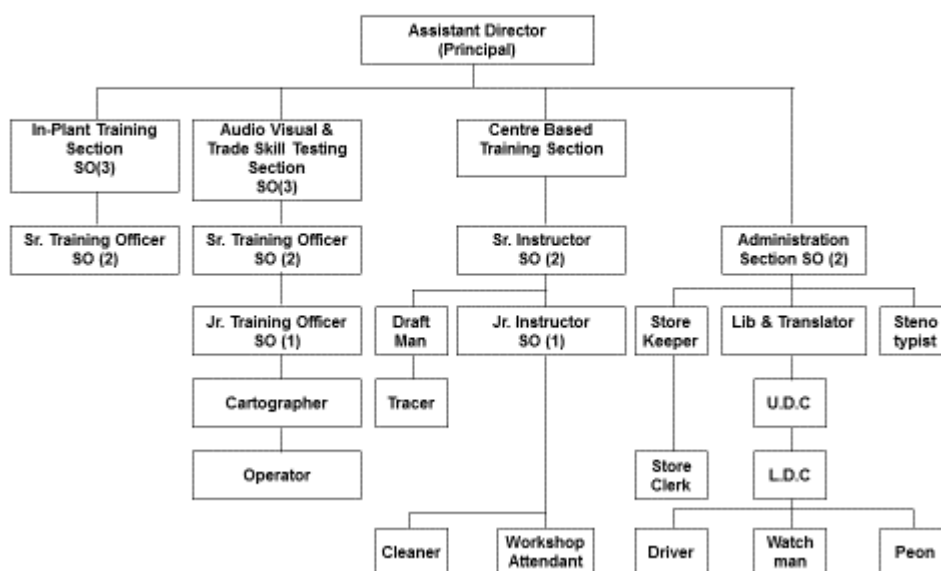


Training Panel for Cable Rendering

① Management Organization and Management Staff

As Figure 2.5 shows the organization chart, the STC plans to assign 25 staff members in total.

ORGANIZATION CHART OF SKILLS TRAINING CENTRE



Source: STC Yankin

Figure 2.5: STC Organization Chart

② Training Equipment

The workshop was authorized as a NSSA Level-1 skills examination center for electric wiring work and air conditioning installation. Recently, a skill examination was carried out so the room was clean and the equipment used for the examination were placed properly. As the workshop of the welding course just got renovated, the welding booth was painted neatly, and chairs and desks were adequately placed in the lecture space in the workshop.

Apart from that workshop, other workshops are not cleaned up, and some equipment was covered in dust.

Although the mechanical course has been equipped with several numbers of lathe machines and milling machines, it seems that its maintenance has not been performed properly with rubricants as they have not been used.

③ Training Contents

(1) Training courses at the Workshop

- Supervisor course
- Practice teaching course
- Vocational practice test technique course
- Productivity enhancement course

(2) Training courses at STC Yankin

- Basic welding course
- Basic mechanical course
- Basic electrification course
- Basic air-conditioning maintenance course
- Basic hygienic plumbing course
- PC application course

(3) Summary of STC Mandalay

STC Mandalay is located on the site adjacent to Mandalay industrial zone, and a 2-story new training ridge (office, and seminar room) is completed next to an existing workshop in May 2016 (Building area: 28.2 m X 12.0 m X 2 Floor = 676.8 m²). The new building will be equipped with furniture for an office, classrooms, training equipment going forward. In addition, these facilities were already acknowledged as skills evaluation test centers (for welding, and electric wiring work) of NSSA.

Establishment: The operation started upon completion of the workshop in 1998.

Area: 9.0 Acre (3.64 ha) using the reclaimed land (partially wetland where reed grows)

Building scale: Labour Exchange Office/MoLIP Mandalay sub office Area: around 150 m²

Workshop: 36.6 m × 15.6 m = 561.6 m² (as wide as STC Pathein)

New office/Seminar room: 28.2 m × 12 m × 2 Floor = 673.8 m² 2 story building, completed in May 2016

① Management staff members

Currently, there are 5 staff members working. They are in charge of operating the government office, the Labour Exchange Office and STC, and only 2 practice training instructors are working. As the management organization should be the same as the other STCs, this STC should plan to assign 25 staff members. However, in reality, only 5 members are assigned.

② Training equipment

Ten welders were installed in the welding booth. However, the study team confirmed that they were not in use at all as they were covered full of dust. Furthermore, there was no equipment other than ten welders.

Appearance of building



Workshop (New training ridge at behind)



Inside of the workshop (welders at rear part)

③ The training achievements and future training program

- The STC carried out the basic welding training program (six weeks) for 153 people in the past five years between 2011 and May 2016 (how many and how frequent the training program was implemented is not known). The training program was mainly targeted to unskilled workers who worked in a governmental factory (National Railways repair shop.) The trainees went to the factory and received some training by using eight welders of the factory.
- The basic welding training program was carried out (six hours a day for 4 weeks) using eight welders in National Railways repair shop during the period of May to June 2016.
- Number of the attendants are 31, and the training content includes plumbing, drawing /designing, welding, metal materials, and safety education. Five welding instructors (two instructors of this center, and three dispatched instructors from Naypyitaw) carried out the training program.
- According to the budget allocation of this year, the same training program will be carried out three times more. The training program will be carried out for around four weeks, a 6-hour seminar a day, but the training theme is yet to be decided.
- A skill certificate: a certificate of completion will be issued to a person who successfully complete the training program under the name of Director General of MoLIP in Naypyitaw.
- An instruction from MoLIP: Instruction is given to organize a seminar outside of working hours in the morning, in the evening, on Saturdays and on Sundays. Therefore, MoLIP planned to organize 2 to 3 seminars a year with the MoLIP budget, but the theme is yet to be decided.

As a result of the field survey, it was confirmed that the total number of students who attended the lecture was 184 people. But it was not confirmed that how often and how many training programs were organized. It is estimated that most probably each training program had 30 trainees, and there were six training programs a year for five years from June 2011 to 2016, which would be a reasonable calculation for the rough estimate. According to this estimate, in average, STC holds a training in every 10 months. In other words, STC is not properly functioning considering the frequency of training. In its workshop, there were only welders placed, which collected full of dust. Despite the fact that neither the welder nor the workshop is actively used, the seminar ridge and the 2-story office were recently completed.

(4) Summary of STC Pathein

Establishment: April in 2011

Site area: 106.7 m × 85.3 m 2.054 Acre (0.83 ha)

Facility scale: 36.6 m × 15.2 m Height: 6.1 m, there exist three office rooms located at the second floor of the facility or a workshop

① Management staff members

There used to be 3 staff members working for this STC in total; one training instructor, one administrator, and a manager. However, as of June 2016, only one administrator works there alone. Just as other STCs, 25 staff members should be assigned to this STC; however, in reality one person is working.

② Achievements of training

Welding course (Basic): 20 trainees: 5 July 2011 to 20 August 2011

The same training course was organized 4 times after completing the first basic welding training course.

Welding course (Basic): 11 trainees: 23 July 2014 to 5 September 2014

As of June 2016, no other training course was organized after this.

③ Qualification to receive training and tuition fee

There is no qualification requirement to join the training course. Many of the trainees are junior high school graduates, and it is free of charge.

④ Training material

The curriculum and training materials designated by MoST were unified nationwide and the training course was organized based on such curriculum and materials.

Trainees' motivation to attend the training course:

Those who attended the training course had different motivations and expectations for the training course. For example, some mentioned about working abroad, helping to repair agricultural machinery, finding job opportunities in the industrial area, and starting out his own business. STC did not identify from which training course the respondents were chosen.

⑤ Public relations activities

MoLIP recruit training participants through public relation activities such as distribution of training pamphlets directly to potential candidates in industrial zones and other areas since MoLIP started its training course.

The MoLIP has not carried out any training course since 5 September 2014. The staff members of Pathein office went to the Pathein industrial zone nearby, and conducted a public relation activity, but the response was not favourable. They explained to the study team that such low interest and response can be explained as follows.

- In this particular industry zone, there is no big factory but rather some small-scaled factories. They may not be able to afford to send their workers to be trained outside.
- The workers cannot carry on with their lives if they are not paid during the training period. Although the tuition of STC training course is free of charge, it is too much burden for the workers to bear the expenses on food and travel.

⑥ Leasing STC workshop to a Singapore company

A Singaporean company (Efficiency Performance Co., Ltd. Language Performance) with its office located in Pathein has an agreement with Minister of Department of Labour to use STC facilities on lease. Efficiency Performance Co. renovated the facilities as of June 2016. It has an intention to use the facilities as a training facility for hotel-related and language study training. MoLIP explained the reason behind its decision to lease out STC. They thought it would be a

good deal for the STC facilities as they would be returned upon completion of the 3-year lease with all the renovation work carried out by the tenant.

⑦ Acknowledgement on evaluation test center by NSSA

They say that no information is available in this regard.

2.4.2 Basic Information on ITC Controlled by MoLIP

(1) Summary of Industrial Training Center (ITC)

MoI established the following ITCs at 6 places with the assistance of Germany, Korea, China, and India. They are well-planned in terms of workshop space and well equipped with training equipment in comparison with schools of formal TVET institutes and STC of MoLIP, thus they are most developed as TVET institutes in Myanmar. Above all, Germany continues to provide assistance till now for ITC Sinda to develop its facilities and equipment, with 4 full-time German experts. Accordingly, ITC Sinda is ranked as the most superior TVET institute in Myanmar.

ITC provides training course for one year, and the trainees can be trained well with the specialized training course. The following tables show training courses, fixed numbers of trainees, training period, expenses, and entrance conditions of ITC.

Table 2.46: Summary of 5 ITCs

Name of ITC	Establishment (Year)	Training Course	Cooperated country	No. of Trainees (Persons)	Training Standard	Training Fee (Kyats)	Condition of Admission
No. (1) ITC (Sinda)	1979	1. Machine Tool Operator 2. Tool & Die Maker 3. Machinery Fitter 4. Motor Vehicle Mechanic 5. Electrical Machine Maker 6. Electric Fitter 7. Pattern Maker 8. Mechanical Draftsman	Germany	200	5 days a week, 8 hours a day, 1600 hours a year	Dining Fee: 25,000 (19.1 USD)	School: Graduate from Level 10. Age:17 - 25
No. (2) ITC (Mandalay)	2008	1. Machine Tool Operator 2. CNC Machine Tool Operator 3. CAD/CAM 4. Electric Fitter 5. Welding	China	180			
No. (3) ITC (Thagaya)	2009	1. Machinery 2. Electricity 3. electronics 4. CAD/CAM 5. Foundry Worker	Korea	150			
No. (4) ITC (Pakokku)	2010	1. Machine turner 2. CNC Machine 3. Automobile Mechanic 4. Heat Treatment Worker	India	215			
No. (5) ITC (Magway)	2011	1. Automobile 2. CAD/CAM	Korea	150			
No. (6) ITC (Myingyan)	2013	1. Machine turner Miller 2. CNC Machinist 3. Tool & Die Making 4. Sheet Metal & Welding 5. Foundry 6. Industrial Electrician 7. Electronic Mechanic	India	190			

Source: data of ITC pamphlet edited by the survey team

① Establishment purpose

Establishment purpose of ITC by MoI is described hereunder:

Vision

To foster excellent human resources to sustain the country through the learning of advanced skills.

Duty

- To train skilled labors nationwide as a driving force for industrial development, and to secure their proper working conditions and environments so as to keep mobilizing interests to specialized skills development,
- to adjust imbalance between supply and demand of qualified labors,

Purpose

- to educate vocationally trained human resources nation-wide,
- to create employment opportunities for the youth employment needs in industries,
- to develop capacity of workers who received skills training and prepare them to take the NSSA tests,
- to improve factory productivity and adopt skills to ensure quality control,
- to establish capable design and enhance R&D activities to improve the capacity to explore innovative approaches for the future

② Requirements for enrollment and training hours

Requirements for enrollment and class hours defined by MoI are as summarized below. As the NSSA skills test development advances from Levels 1 to 4, the length and content of training course are likely to change.

Requirements for enrollment: To have completed Level 10 and be qualified to enroll at a university, and between 17 and 25 of age.

Enrollment screening: 1st round—screening of application documents (Grade 10 high-school level certificate and the health report)

2nd round—interview test

Standard training ratio: Skills training curriculum consists of 30% of theory learning and 70% of practical training.

Training hours/length: a 60-minute class, 8 classes a day, 5 days a week from Monday to Friday (40 hours a week and 44 weeks a year) 1,600 class hours a year

The survey team studied three ITCs out of five—ITC Sinda assisted by Germany continuously and most well organized, ITC Magway assisted by Korea with clear focus on automobile maintenance, and ITC Mandalay established by the Chinese aid.

(2) Industrial Training Center (ITC) – Sinda (German Aid)

① Establishment of ITC (Sinda)

The construction of ITC (Sinda) facility started in 1977 with German aid (GIZ and KfW-German development bank) and its training program started on December 1, 1979, while part of the facility was still under construction (108 trainees and 6 courses). All construction work was completed in May 1981. The agreement with Government of Germany was made for five years from the partial opening, and a total of 200 trainees were accepted to eight training courses. German dual-system was employed, which consists of both training at the training center and OJT at nearby MoI-related factory. Since its opening, ITC Sinda experienced several different

training periods as shown below. From November 2017, two-year education courses are expected to be offered.

1979 – 1999	batches 1 to 17	3-year education	Grade 9	in socialist era
1998 – 2009	batches 18 to 27	2-year education	Grade 9	in military government era
2008- 2016 government	batches 28 to 36	1-year education	Grade 11	under democratic

(NSSA Level 2 is targeted)

2017 - batches 37 and thereafter 2-year education Grade 11 expected to start in November

(NSSA level 2 to 3)

Three-year programs (NSSA Levels 3 to 4) and four-year programs (NSSA Levels 3 to 4) are aimed to be offered in the near future. ITC Sinda receives financial support, technical cooperation from GIZ to conduct tasks such as standardizing certification exams of NSSA, and plans to improve its training content.

Table 2.47: Training Course and Number of Trainee in ITC Sinda

No.	Training Course	Trainee (P)
1	Machine Tool Operator Course	30
2	Tool and Die Maker Course	15
3	Machinery Fitter Course	30
4	Motor Vehicle Mechanic Course	30
5	Electrical Fitter Course	35
6	Electrical Machine Maker Course	35
7	Pattern Maker Course	10
8	Mechanical Drawing Course	15
	Total	200

Source: Extract from ITC Sinda PPT

Although the German aid was temporarily suspended when the military government took over in 1988, it resumed in 2012 under a five-year agreement. The KFW employee in charge confirms the achievements and the training situation realized from its investment were reviewed when the agreement was renewed in 2016, and a possibility for the following aid (4 Mil Euro in three years) was explored in June 2016.

As shown in the table below, which gives the actual number of trainees, the number has been around 200 in recent years although it fluctuates in accordance with the political climate. As for their employment, 100 percent of trainees who completed the training in the batches 1 to 17 found employment with companies related to MoI or other ministries. Those from batches 18 and thereafter found their employments with private companies and the ratio of those who became self-employed was on the rise, which indicated that the privatization of state-run companies had significantly affected the employment situation.

Table 2.48: Training Batch, Number of Trainees and Job Placement

No.	Batch	Opening Date	Finishing Date	Intake Trainees			Certified Trainees			Ministry of Industry			Other Ministries			Private Companies			Own Business			Total			Job Search			Remark %
				Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	
1	1	1.12.79	2.12.82	108	-	108	99	0	99	99	0	99										99	0	99	0	0	0	100
2	2	20.6.81	15.6.84	130	-	130	128	0	128	128	0	128										128	0	128	0	0	0	100
3	3	1.7.82	14.6.85	110	20	130	107	20	127	71	18	89	36	2	38							107	20	127	0	0	0	100
4	4	1.7.81	3.6.86	110	20	130	103	19	122	71	14	85	32	5	37							103	19	122	0	0	0	100
5	5	12.7.84	12.6.87	111	20	131	102	20	122	60	16	76	42	4	46							102	20	122	0	0	0	100
6	6	1.7.85	22.7.88	110	20	130	85	20	105	55	18	73	30	2	32							85	20	105	0	0	0	100
7	7	1.7.86	29.6.90	110	20	130	47	20	67	47	20	67										47	20	67	0	0	0	100
8	8	1.8.87	28.6.91	110	20	130	62	19	81	50	19	69	12		12							62	19	81	0	0	0	100
9	9	1.8.88	20.6.92	103	20	123	87	19	106	87	19	106										87	19	106	0	0	0	100
10	10	1.10.90	20.6.93	44	8	52	40	8	48	35	6	41	5	2	7							40	8	48	0	0	0	100
11	11	5.8.91	25.6.94	96	20	116	93	20	113	77	20	97	16		16							93	20	113	0	0	0	100
12	12	10.8.92	26.6.95	90	40	130	56	40	96	38	40	78	18		18							56	40	96	0	0	0	100
13	13	9.8.93	25.6.96	90	40	130	57	39	96	38	37	75	19	2	21							57	39	96	0	0	0	100
14	14	9.8.94	25.6.97	110	20	130	74	18	92	58	17	75	16	1	17							74	18	92	0	0	0	100
15	15	14.8.95	25.6.98	110	40	150	67	36	103	59	36	95	8		8							67	36	103	0	0	0	100
16	16	16.8.96	12.10.98	110	40	150	92	36	128	81	36	117	11		11							92	36	128	0	0	0	100
17	17	17.8.97	5.7.99	130	21	151	103	19	122	91	17	108	12	2	14							103	19	122	0	0	0	100
18	18	3.8.98	30.7.00	119	22	141	87	22	109	19	17	36	28		28	30	5	35	10		10	87	22	109	0	0	0	100
19	19	2.8.99	30.7.01	162	30	192	127	28	155	34	20	54	8	2	10	50	4	54	35	2	37	127	28	155	0	0	0	100
20	20	14.8.00	1.8.02	121	25	146	99	24	123	17	7	24	28	12	40	18	1	19	36	4	40	99	24	123	0	0	0	100
21	21	6.8.01	31.7.03	95	10	105	66	10	76	26	2	28			0	17	3	20	23	5	28	66	10	76	66	10	76	100
22	22	5.8.02	30.7.04	83	7	90	69	5	74	41	4	45			0	14		14	14	1	15	69	5	74	69	5	74	100
23	23	4.8.03	29.7.05	34	2	36	28	2	30	25	2	27			0			0	3		3	28	2	30	0	0	0	100
24	24	9.8.04	31.7.06	49	3	52	40	3	43	11		11	14		14	5	2	7	10	1	11	40	3	43	0	0	0	100
25	25	8.8.05	31.7.07	52	9	61	41	8	49	14	3	17	5		5	14	3	17	8	2	10	41	8	49	0	0	0	100
26	26	7.8.06	4.8.08	57	8	65	50	7	57	23	5	28	10	1	11	8		8	9	1	10	50	7	57	0	0	0	100
27	27	6.8.07	2.2.09	65	5	70	59	5	64	22	4	26	4		4	9	1	10	24		24	59	5	64	0	0	0	100
28	28	4.8.08	31.7.09	102	14	116	98	14	112	22	9	31	5		5	42	2	44	25	2	27	94	13	107	4	1	5	95.54
29	29	3.9.09	30.7.10	158	58	216	148	58	206	56	25	81	48	33	81	39		39	5		5	148	58	206	0	0	0	100
30	30	6.9.10	29.7.11	171	31	202	165	31	196	41	23	64	15		15	42	2	44	59	5	64	157	30	187	8	1	9	95.41
31	31	5.9.11	27.7.12	178	73	251	170	73	243	47	24	71	24	1	25	79	26	105	18	15	33	168	66	234	2	7	9	96.3
32	32	3.9.12	26.7.13	150	70	220	146	68	214	48	2	50	14	3	17	70	41	111	10	17	27	142	59	201	4	9	13	93.93
33	33	2.9.13	15.8.14	167	56	223	161	53	214	1		1	12	5	17	107	38	145	27		27	147	43	190	14	10	24	88.79
34	34	3.11.14	2.10.15	148	42	190	146	41	187	4	1	5	16		16	109	35	144	7	2	9	146	41	187	0	0	0	100
Total				3693	834	4527	3102	805	3907	1596	481	2077	488	77	565	653	163	816	323	57	380	3070	777	3847	32	24	56	98.46

Source : Extract from ITC Sinde PPT

② Overview

ITC Sinde is situated 277 kilometers away from Yangon, which is approx. six hours by car. It is approx. 30 minutes from central Pyay by car.

- Site area: 107.7 ha
- Trained professions and number of trainees: See Table 2.26 – Training Courses and Number of Trainees.
- Number of those who completed training: 3.907 out of 4.727 trainees from the beginning of training in 1979 (batch 1) to 2015 (batch 34) completed the courses. (See above Table 2.27 Training Batch, Number of Trainees and Job Placement.)

③ ITC Training Curriculum

The duration of the vocational education training course conducted by ITC is for one year, during which 1,600 hours of training are provided. The mechanical engineering course at ITC Sinde includes minor subjects such as science and technology, materials, calculation and drawing, each of which 80 hours are allocated. 120 hours of shaper processing, 580 hours of turning process, 460 hours of miller processing and 120 hours of basic metal processing are allocated for the course. The following table shows the curriculum of the ITC Sinde mechanical engineering course:

Table 2.49: Mechanical Engineering Course. (Sinde: 1-year Course: 1600 Hours)

No.	Sub Subject	Subject		Remarks
		Training Hours (Hrs)	Major Subject (Lecture & Practice)	
1	Science Technology	80	Shaper Process	120
2	Materials	80	Lath Process	580
3	Calculation	80	Milling Machine Process	460
4	Drawing	80	Metal Working (Basic)	120
	Total	320		1,280

Source: ITC Sinde

This time allocation for vocational training program is sufficient to develop trainees to become skilled workers. Many hours for practical training are also provided to allow trainees to operate machinery in order to be functional soon after they join a company after graduation. It is important to arrange three kinds of machine tools to be operated and clarify training targets so that trainees' motivation can be sustained. Also, at this center, it is emphasized that all trainees are provided with training on discipline before starting the training course, reflecting their aim to nurture self-driven independent learners as working adults and professionals. Additionally, the facility has to strive to convey the importance of 5S to all parties and have the trainees form groups to inspect improvements in training facilities, which is very useful. Also, during the practice, even female trainees wear the practice clothes and safeguards. This is a clear manifestation of this center's prioritization on safety management.

④ Expansion of training building

A three-story building for training courses is under construction with the budget from Myanmar state. Equipment procured by GIZ is planned to be installed there soon and training courses are to start shortly.

An air-conditioned workshop equipped with CNC lathe, machining center, wire-cut electrical discharge machine and other precision machines has already been constructed with the budget from Myanmar. The training course is about to start with the arrival of CNC lathe and other equipment.

⑤ ITC (Sinde) operation structure

Although the total employees in the operation structure are to be 55 under the MoI rule, there are actually 46 employees. In addition, there are four full-time German instructors, who provide instructions on new equipment assembly, installation and development of its curriculum for teacher training (ToT).

Although there are dormitories for staff members on site, they were quite damaged, thus some renovation works were conducted to upgrade the facility for instructors. There are 25 rooms in each of two instructors' dormitories to accommodate 50 people. There are also detached houses for staff members with family.

Table 2.50: ITC Management Staff (Mol Mandatory)

No.	Job Title	Officer/ Instructor	Others/ Tutor	Total
1	Principal	1	-	1
2	Vice-Principal	1	-	1
3	Administrator	2	9	11
4	School Affair Section	2	2	4
5	Training Section	10	22	32
6	Financial Section	2	3	45
	Total	18	37	55

Source: Extract from ITC Sinda PPT

⑥ Future plans -Training period: 2 years Target NSSA Level 2

By order of Minister of Industry, it was decided that ITC Sinda alone should tentatively extend its training course period from one to two years to enhance skill levels among ITT trainees. The change is expected to be introduced in the fiscal year of 2017. Under the guidance of a German advisor, work is now underway to prepare the new curriculum. Target trainees include Grade 11 graduates and those who failed to go to university (those seeking jobs and employment).

Currently Batch 35 is in training, which is scheduled to complete its training on 21st October 2016.

Batch 36 will start its one-year training from 7th November 2016.

Batch 37 will start its two- year training from November 2017.

During the two-year training course, the training content varies and the curriculum is currently being reviewed, which may require procurement of additional training equipment. This process is part of efforts made to help trainees acquire the skill level commensurate with NSSA level 2. With German support for NSSA, the curriculum is being coordinated in line with these criteria. In the future, there are plans to set a three-year training course for Level 3 (Advanced Skill), including six months of OJT in a plant and six months' practice in ITC within the final year or also, for Level 4 (Supervisor), to add OJT for six months in a plant and six months of practice in ITC to Level 3.

Since the government-affiliated factory was privatized, they have been seeking hosts, which accept OJT in accordance with Public/Private/Partnership (PPP), survey the needs on the factory side, and add modifiers to the training content to adjust it in line with the needs. Currently, completion of training is marked with a certificate issued by Ministry of Industry. However, once the skills evaluation test of NSSA is developed, a unified competency certificate will be issued in Myanmar.

⑦ Trainee recruiting and selection methods

Trainees are recruited via newspaper advertisements, word of mouth from current/previous trainees, direct advertisement to local governments and industrial zones. The institute received approx. 600 applicants and they were shortlisted to 250 to 260 based on the screening process of their application documents, and 200 were selected after the individual interview.

⑧ Cost borne by trainees

- There is no tuition. Many of trainees' parents are farmers (in rural areas) or public servants.

- Although meal expenses are 25,000 kyats per month, MoI provides a subsidy of 500 kyats per day (15,000 kyats per month).
- 26,000 kyats required to purchase three sets of school uniform, hat and shoes
- Textbooks are paid by MoI.
- The dormitory is available on site and provided free of charge.

⑨ Academic achievement assessment per semester and dropout

The academic year starts in November and ends in October of the following year

1st semester: November to April. Written and practical examinations.

2nd semester: May to October. Written and practical graduation examinations in October.

There is an assessment check sheet. Trainees' workmanship, discipline and attitude in the class are assessed in five grades—from Grade 1 (failure) to Grade 5 (excellent). Although no trainee repeat the same year, there are some trainees, who are expelled due to their bad behaviors.

An average of five trainees drop out per year mainly because of financial reasons of their parents or their own health problems. Trainees with behavioral problems are expelled.

⑩ Short-term training course

Because the previous minister of industry was an assembly member selected from Rakhine State that was adjacent to the state where the training institute was situated, three training courses below were provided near Rakhine State in response to his request.

- 1) Electric cable installation work into buildings under construction and motor repair skills
- 2) Small farm machinery and motorcycle repair skills
- 3) Arc welding and facility pipework skills

GIZ assisted the budget for the above-mentioned training courses. Three training sessions with 70 trainees in each session were provided and 209 trainees completed the program. It was completed in March 2015 and currently no short-term course is offered.

⑪ Training equipment management

An equipment list is produced for each course, and the quantity required for the course, equipment status and its allocation are confirmed every month based on the list. When any equipment failure is found out, quotation for its repair is obtained immediately, the priority order for repairing it is obtained, replacement by other equipment is needed, and whether it can be repaired by the staff or it should be outsourced is decided before it is being repaired.

⑫ Mobile unit training

A short-term training course which is the same as the training (8) was offered 20 times in total with the budget from MoI and Rakhine State, and 403 trainees completed this training course.

⑬ Cooperation for NSSA

ITC Sinde assists the development of NSSA skills standard conducted by skills standard MoLIP and it is recognized as a skills assessment center of Competency Assessment. There is a plan of having 100 trainees pass the Level 1 of electricians by 16th June 2016, as a 100-day plan is after inauguration of the new. Two examiners are planned to be dispatched to the electrician skills test to be conducted at CVT that is assisted by Switzerland.

⑭ Training curriculum and textbook

Under the current curriculum, the training time is allocated as 30 percent being allocated to lectures and 70 percent to practical training programs. The textbook was compiled by the German experts, who were dispatched to the institute when the assistant from Germany started in 1977 and even now, it has been used. A new textbook is planned to be compiled based on the textbook by Germans and Myanmar people and staff members in charge of NSSA.

Because the duration of training course is extended to two years, a framework of training courses will be revisited and the current curriculum will be revised as the goal and equipment will be procured.

- Owned equipment
- Equipment that can be procured from Germany
- Training content in line with NSSA Competency Guideline

Although companies' needs have yet to be found, collaboration with neighbouring industrial zones are indispensable for OJT, etc., thus the needs will be identified through collaboration and accordingly the curriculum will be revised.

Although there are six ITC across the country, the curriculum differs according to its main donor. Germany also assists NSSA through GIZ and it will be easy to adjust the curriculum.

⑮ Additional training courses

There were six training courses when the institute was opened, and eight courses have been currently offered. It was decided in the discussions between MoI and GIZ. Two courses of mold making and metal processing were added in 1980. Construction of an air-conditioned NC machining building that will house CNC lathe (computer-controlled lathes), etc., had been completed at the survey in 2016. Arrival of CNC lathe, machining center and six wire-cut electrical discharge machines was waited for. Two computer rooms for CAD that is essential for CNC lathe were arranged and each room is equipped with a computer for the instructor and six computers for trainees with CAD software and training started.

⑯ Employment

187 out of 197 trainees of batch 35 of FY2015 were hired by a total of 30 companies. Communication is maintained to check the situation every three months after the completion of training and the employment rate is rising according to the communication report. Although some go abroad and whereabouts of some finishers are unknown, "overseas" in the item of employment means working or studying abroad. Some retake an examination for the high school diploma to go to university.

⑰ Trainers of Training (ToT)

ITC Sinda plans and provides training course for below teachers and instructors and skills improvement.

- a. Training to improve English conversation skills– ITC (Sinda)
An instructor of English literature of the University of Yangon comes to ITC (Sinda) to teach English.
- b. Training of teaching and learning methods– ITC (Pakokku) & ITC (Magway)
Joint training with other ITC
- c. Teaching practice (teacher training course) – Erfurt, Germany
30 course instructors of ITC Sinda are dispatched to Germany for teaching practice.

- d. Practical training (instructor course)– Erfurt, Germany
40 ITC Sinda instructors of practical training are dispatched to Germany for practical training.
- e. Global leadership training – Magdeburg, Germany
Four MoI staff members were dispatched for training and they now work as trainers at ITC, etc.
- f. In-school skills training (welding, automobile and automobile control) – ITC (Sinda)
German experts came to teach the skills.
- g. Training center operation training (RECOTVET) – Bangkok, Thailand
The principle participated in the training (also participated in by ASEAN member countries)
- h. Practical 5S training for TQC-ITC (Sinda)
With participation of five other ITC, training was conducted. TRICO – participation of Indonesian instructors
- i. Training center operation training – ITC (Sinda)
Conducted at the seminar room two weeks ago.
- j. Training center operation training – Germany, Korea, Indonesia
Instructors of the MoI, MoLIP, and ITC participated.

18 New ITC Sinda instructors

A trainee who completed the course at the ITC in 1977 went to university to be an engineer and worked as such. He passed an MoI employment test (written and practical examinations and work experience) and he became an instructor at ITC Sinda. As the employment of instructors by MoE not only requires the academic background but also limits the age of applicants, it is difficult for engineers who have worked at companies to apply for the job. If the instructor employment test conducted by MoI has no age limit, it can increase instructors with much work experiences and likewise for the content taught in ITC, skills matching practical operations can be taught and enhanced practical efficiency can be expected.

19 Cooperation in instructor and teacher education with other ministries

Although the skills standard for welding of NSSA Level 1 is established, that for other skills including electricity, automobile and machinery is to be established. It is possible to collaborate with instructors of training institutes of other ministries for the establishment in addition to the ToT at ITC Sinda. Instructors of other ministries can participate in ToT at ITC Sinda. Technical exchange between MoE and MoI is important. MoI needs support from other ministries in teaching theory of training subjects although it does not need such support in providing practical training.

20 Budget

The budget for school operations (excluding salaries for German staff members) is normally 200 million kyats (154,000 USD), but this year it is 225 million kyats (173,000 USD). Almost all of the budget is provided by the Government.

(3) Industrial Training Center – Mandalay (Chinese Assistance)

The survey, design supervision, teacher training and equipment procurement of ITC-Mandalay started in May 2003 with the grant aid (4.8million USD) from the Government of China according to the consultation with the Institute of Project Planning & Research Engineering International ITC-Mandalay. The facility was constructed with the MoI budget (4.73million USD) and it was delivered in August 2008 after the completion of equipment installation. The table below shows its training courses and quota of trainees.

Table 2.51: Training Courses and Number of Trainees at ITC Mandalay

No.	Training courses	Trainees (Persons)
1	Machine Tool Operator Course	30
2	CAD/ CAM & CNC Course	40
3	Electrical Fitter Course	40
4	Welding, Electro-plating & Surface Course	30
Total		140

Source: Extract from ITC Mandalay PPT

Address: Aung Myay Tharzan Township, Mandalay City, Mandalay Division,

Site area: 85.92 Acre (=34.77h)

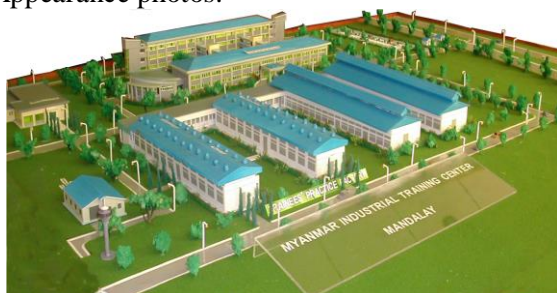
Opening: 29th August 2008

Facility: classrooms and an administration building, a multi-purpose hall, an instructor practice room, four workshop buildings, and a canteen

Number of trainees: trainee quota in 2015/ 2016: 150

Number of teaching staff: 40 for quota of 55

Appearance photos:



Perspective Drawing



Administration and Training building

Candidates for the trainees need to be at least high school graduates (completed G10) aged between 17 and 25. The admission process consists of screening of application documents and an interview.

① Length of training

- 1 year (hours of vocational education: 1,600 hours/year)
- Each training course consists of 30 percent of lecture-based learning and 70 percent of practical training.

② Training equipment

The kinds and number of training equipment are as shown in the table below. The actual situation was not confirmed in the survey.

Table 2.52: Kinds of Equipment in Workshop

No	Workshop	Type	Number (Pcs)
1	Machining Workshop	22	30
2	CNC Workshop	7	7
3	Stamping & Welding Workshop	21	21
4	Electrical & Electroplating Workshop	32	66
5	Foundry, Forging & Heat Treatment Workshop	27	29
6	Laboratories	50	54
7	Printing Workshop	6	6
Total		165	213

Source: Extract from ITC Explanatory PPT prepared by MoI

Number of trainees who enrolled in the course and completed the course:
The table below provides the number of trainees who enrolled in the training course and successfully completed it.

It shows that 125 percent of the enrollment quota of 150 trainees were actually enrolled in when the institute first opened. The recent number of trainees who enrolled in the training course has been close to the quota. The institute is also popular among women as shown in the table below. It is confirmed by the fact that female trainees account for 20 to 30 percent of all trainees in some years. The dropout rate tends to be higher among men than women. Nearly 10 percent of trainees drop out before the completion.

Table 2.53: Number of Trainees and Completed Training

Batch No	Number of Trainees (Persons)		Total	Number of Completed (Persons)		Total	Completion rate (%)
	Male	Female		Male	Female		
1	155	45	200	135	42	177	88.5
2	106	19	125	92	16	108	86.4
3	137	43	180	128	41	169	93.9
4	123	57	180	121	54	175	97.2
5	86	94	180	84	92	176	97.8
6	122	58	180	112	57	169	93.9
7	127	22	149	125	19	144	96.6
Total	856	338	1,194	797	321	1,118	93.9

Source: Extract from ITC Explanatory PPT prepared by MoI

③ Employment rate

The table below shows the employment rate of trainees after their graduation.

The trainees in batch 1 to 3, 20 to 30 percent of them found their employment with MoI. But such trend gradually died down, and the percentage decreased to nearly zero. In the meanwhile, the employment rate with private companies is on the rise, and it is nearly 100 percent. Some trainees who successfully completed the course have an opportunity to go to the Department of International Studies (1 year), which is offered by Sankou, a Japanese subsidiary, and work in Japan as interns.

Table 2.54: Number of Training Completed and Ratio of Employment at ITC Mandalay

Batch No.	Opening Date	Finishing Date	Number of Trainees			Ministry of Industry			Other Ministries			Private Companies			Total			Job Search			Employ Ratio (%)
			M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	
1	16.10.08	20.8.09	135	42	177	49	20	69	30	-	30	40	20	60	119	40	159	16	2	18	89.83
2	21.9.09	6.8.10	92	16	108	39	10	49	-	-	7	31	2	33	70	12	82	22	4	26	75.93
3	13.9.10	4.8.11	128	41	169	68	33	101	15	1	16	31	2	33	114	36	150	14	5	19	88.76
4	12.9.11	2.8.12	121	54	175	22	1	23	-	-	-	62	40	102	84	41	125	37	13	50	71.43
5	10.9.12	25.7.13	84	92	176	-	-	0	5	-	5	70	71	141	75	71	146	9	21	30	82.95
6	9.9.13	1.8.14	112	57	169	1	1	2	2	-	2	84	46	130	87	47	134	25	10	35	79.29
7	24.11.14	23.10.15	125	19	144	-	-	-	-	-	-	55	16	71	55	16	71	70	3	73	49.31
Total			797	131	1118	179	65	244	52	1	53	373	197	570	604	263	867	193	58	251	77.55

Source: Extract from ITC Explanatory PPT issued by MoI

(4) Industrial Training Center – Magway by Korean Assistance

① Summary

Location: Near Magway City, Magway Division
Are: 159 acres (62.3 ha)

Establishment: The construction of the training center began on 7 November 2010, and completed in 2011 and it was inaugurated on 10 July 2011.

Project cost: KOICA provided 3 million USD for the facility design, technical assistance and equipment procurement. MoI constructed the building with the budget of 6 billion kyats.

Reason for establishment of ITC Magway:

ITC of automobile maintenance was established in Magway because it was located in an area, which was used to be a heavy industrial zone, and TATA's gear and transmission factory was constructed next to the training center. ITC Magway was established in response to the need for workers, engineers and skilled workers at the industrial zone.

Number of teaching staff: 29 (the quota is 55, thus there is a shortage of 26.)

Just like other ITCs, there is a shortage of staff in ITC Magway. Currently, 29 administrative staff and instructors against the quota of 55. Only those who have adequate academic background and work experiences are hired, and assigned as staff members including the principal. Applicants with relevant technical experiences are recruited, and no applicant with experiences in office work was recruited. The staff was in short from the start and it is not due to resignation of the staff.



Bird Eye View 1

Source: Extract from PPP that introduces ITC Magway



Bird Eye View-2

② Training subjects

The main feature of ITC Magway is that the training course is specialized in automobile maintenance. 120 trainees are divided into four groups and they take different sub-courses for 10 weeks in rotation to complete the entire course curriculum in one year.

Training course and quota of trainees: 2 courses 150

1. Automobile maintenance course: 120 trainees (1 year, 40 weeks)
 - ① Engine maintenance course 30 trainees 10 weeks
 - ② Electrical and electronic control course 30 trainees 10 weeks
 - ③ Transmission and chassis course 30 trainees 10 weeks

- ④ Auto body repair and paint course 30 trainees 10 weeks
2. CAD/CAM 30 trainees (1 year : 40 weeks)

③ Number of trainees

There were 147 trainees in 2011, 142 in 2012, 134 in 2013, 144 in 2014 and 143 in 2015, against its quota of 150. A decrease of 0.3 percent to 10 percent is observed and it is most likely due to the declining number of admission.

④ Employment after completion of the training

The employment rate of trainees upon completion has been 100 percent since its opening. It is because of a sharp increase in demand for automobile mechanics supported by a sharp increase in number of imported vehicles along with a sharp increase in repair and maintenance after the automobile import regulations was lifted in 2014. If the current upward trend continues, the automobile maintenance training course of ITC Magway will continue to be popular. However, keeping up with the rapid development in auto-related technologies and providing relevant training courses is the key to maintain its popularity, and it is a challenge as auto-related technologies are evolving day by day.

Table 2.55: Number of Training Completed and Ratio of Employment at ITC Mandalay

Batch No.	Opening Date	Finishing Date	Trainees			Government Services			Ministry of Industry			Private Companies			Japan Trainees			Own Business			Total			Job Search			Rmk %	
			M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total					
1	19,8,11	25,6,12	106	41	147	24	9	33	41	24	65	13	1	14	-	-	-	28	7	35	106	41	147	0	0	0	100	
2	23,7,12	31,5,13	89	53	142	5	7	12	16	7	23	68	18	86	-	-	-	-	21	21	89	53	142	0	0	0	100	
3	17,6,13	4,4,14	95	39	134	6	1	7	-	-	-	72	27	99	-	-	-	17	11	28	95	39	134	0	0	0	100	
4	5,5,14	3,4,15	124	20	144	9	1	10	-	-	-	92	4	96	11	8	19	12	7	19	124	20	144	0	0	0	100	
5	18,5,15	25,3,16	119	24	143	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	191	24	143	0
Total			533	177	710	44	18	62	57	31	88	245	50	295	11	8	19	57	46	103	414	153	567	191	24	143	79.9	

Source: Extract from ITC Explanatory PPT Prepared by MoI

⑤ Training equipment

Training equipment of the automobile course is provided by a Korean auto body manufacturer. Curriculum and syllabus

- Training for making the annual plan was provided, the curriculum and syllabus were developed with assistance from GIZ. A Korean model-based curriculum was provided by the Korean Chamber of Commerce and Industry. Since it aims to address the need of Korean automobile industry, ITC led by Myanmar instructors revised the content of the curriculum to be more suitable and relevant to the automobile industry in Myanmar. Thus, its curriculum is unique, and it consists of 70 percent of practical training and 30 percent of lecture-based learning. It is written in Myanmar language in general with some parts in English.
- One of NSSA skills test assessors is an ITC Magway employee, and the curriculum is developed in consideration of the skills standards.
- Those who successfully complete the ITC Magway training course are assumed to have ability of NSSA Level 2. (Since there are multiple donors including Germany, Korea and India, there is a need to standardize the skills assessment method.)
- Syllabus needs to be revised based on the demands of neighbouring industrial zones.
- Equipment necessary for training of automobile maintenance and repair, and CAD/CAM is available.

- Two years have passed since the completion of Korean assistance. Currently, there is only one Korean volunteer specialized in electrical engineering working there. Although the survey team could not observe the training activity due to the timing of the field survey being held during the vacation period for the institute, we received an impression that the training equipment was not fully utilized.

2.4.3 TVET Organizations Managed by MoSWRR

(1) Vocational Training School for Adult Disable (VTSAD)

① Buildings

- Location No. 65, Kyaik Wine Pagoda Road, Mayangone Township, Yangon
- established in 1954 and stated training activities at neighbouring buildings. At the moment, the neighbouring building is used as a dormitory. As it has been 60 years this year since its establishment, the anniversary ceremony was held in August 2016.
- Areas: around 0.56 acres (2,266 m²)



Appearance of the school

② Equipment

Main equipment of each course is shown in the following table.

Table 2.56: VTSAD Main Equipment

Subjects	Main equipment
Electronics	Repair tool sets for electric appliances (drivers, punches, multimeters soldering iron etc.)
Tailoring	8 manual sewing machines (made in 1954) etc.
Silk Screen Printing	Large and small Silk screen frame and brush etc.
Photography	Digital cameras: 4 nos., Application: old version of Photoshop etc.
Hair Dressing	Scissors, lasers, mirrors, chairs, etc. provided by Konica
Computer	PC14numbers (OS: Windows 98) etc.

Source: VTSAD of MoSWRR

③ Staff organization and careers

The number of staff members including supporting staff working in this building is 16, against the maximum capacity of 25.

Principal: 1, Deputy Principal: 1, trainers: 3 (nominal: 6), assistant trainers: 4 (nominal: 6), clerical staff: 2, cleaners: 2, kitchen staff: 2, gardener: 1

Number of trainers and assistant trainers for the training course

Table 2.57: Numbers of VTSAD Staff Members

Electronics	Trainer: 1, Assistant Trainer: 1
Tailoring	Assistant Trainer: 1
Silk Screen Printing	Trainer: 1
Photography	Assistant Trainer: 1
Hair Dressing	*Trainer: 1 (+ Korean, KOICA volunteers- 2 years
Computer	Trainer: 1, Assistant Trainer: 1

Source: VTSAD of MoSWRR

④ Wages (monthly)

Principal: 250,000 kyats (192 USD), Deputy principal: 170,000 kyats (130 USD), Trainer: 150,000 kyats (115 USD), Assistant trainer: 120,000 kyats (92 USD), Others paid less: 100,000 kyats. The legal minimum wage: 3,600 kyats × 30 days = 108,000 kyats (83 USD)

⑤ Training expenses

Table 2.58: VTSAD Tuition Fee, Travel Expenses and Others

Entrance fee/tuition fee	Free of charge
Dormitory fee	Free of charge
Travel expense	Only expense for return trip is covered by VTSAD
Other subsidiary	432 kyats for three meals (=0.33 USD)/man day provided by the government

Source: VTSAD of MoSWRR

⑥ Acceptable number of trainees

On average about 60 (up to around 70 trainees can be accepted)

⑦ Most recent starting date of the new school term

12 September 2016 (applications accepted till September 10)

Current status of applicants: Tailoring: 10, Computer: 8, Hair Dressing: 2, Photography: 2, Silk Screen Printing: 8, Electronics: 7

3-months course: the courses for Tailoring, Silk Screen Printing, Photography, Hair Dressing and Computer are implemented three times a year.

⑧ Implementation period

(May, June, July/August, September, October/November, December, January)

- The one-year course (Electronics) starts in every May.
- Admission requirements: Age limit 18 - 45 years old (the average age of trainees: about 40)

Table 2.59: Qualification for VTSAD Training

Electronics	High school diploma and higher
Tailoring	Primary school graduates, no entrance exam
Silk Screen Printing	Literate, no entrance exam
Photography	Primary school graduates, no entrance exam
Hairdressing	Literate, no entrance exam
Computer	High school diploma and higher

Source: VTSAD of MoSWRR

⑨ About invitations of trainees

Trainee candidates are recommended/nominated by the social welfare office of states/regions, national rehabilitation hospitals for the disabled people, and some applications are sought by public notices on paper. Ministry of Defense can also recommend/nominate the candidates, as this program was originally started as a support for wounded soldiers.

⑩ Training record

Table 2.60: Trainees of VTSAD

Year	Electronic (P)	Tailor (P)	Photo (P)	Silk screen (P)	Hair cutting (P)	Computer (P)	Total (P)
2011-2012	12	28	19	29	42	25	155
2012-2013	16	43	20	26	46	37	188
2013-2014	17	23	12	15	41	33	141
2014-2015	11	25	26	15	37	35	149
2015-2016	14	22	17	24	38	32	147

Source: VTSAD of MoSWRR

⑪ Current situation of Training offered

The annual budget for each respective training course is limited to 200 USD, which makes it extremely challenging to make the training course efficient and relevant. The equipment used for the training is outdated and often found broken, yet they cannot be replaced due to the limited budget. This situation leads to producing low quality products during the training course. Those products, even if they are sold, would not make enough money to cover the costs of training courses.

⑫ Training budget

Originally the budget requested for six training courses was 4 million kyats (3,077 USD). However, only 1.5 million kyats (1,153 USD) was granted. When allocated to six courses, the budget for each training course becomes just under 200 USD per year, and less than 20 USD per month. This is not at all enough to prepare proper teaching materials. Moreover, since the products made by the trainees are not marketable, they cannot be sold at the price necessary to offset the facility operation costs.

⑬ Overview of the employment opportunities

It seems that there was no employment support system in the school for those who complete the training course. Although they wish to provide such support, they are unable to do so in reality, hence there is no explanatory material available.

⑭ Certificate of completion of training

The Center Principal issues the Certificate of completion on behalf of the Ministry

2.4.4 TVET Institutes under the Supervision of MoE

(1) Singapore Myanmar Vocational Training Institute (SMVTI)

Surveyed institute: Singapore Myanmar Vocational Training Institute (SMVTI)

Location: 123, Nat Mauk Road, Bahan Township, Yangon Division

Site area: 9.39 Acre = 3.8 ha

Completion of building construction: It originally opened as Rangoon Polytech in 1954 and it was renovated to reopen as SMVTI in November 2016.

① Facility

Rangoon Polytech designed and constructed by the British Government was completed in 1954 in line with the Colombo Plan and the facility was renovated to be used as a training institute. Number of accepted trainees: 400 in the first batch of November 2015 to April 2016 and 400 in the second batch of May to October 2016 (in practice).

② Requirements for enrollment: Those who passed matriculation test and aged 16 or older 16 years old or above with matriculation exam pass.

③ Qualification received upon completion of training: MoE certified SMVI certificate

Number of staff members: total of 84 (28 administrative staff and 56 teaching staff (three Singaporean staff including the principal)

Overview:



Plaque of the Project located at the entrance gate



Entrance of Training Building by UK architects

④ Overview of the training courses:

(1) Hospitality and travel course

- ① Front office operation
- ② Housekeeping operation
- ③ Restaurant operation
- ④ Retail operation

(2) Electrical and electronics course

Electrical engineering (electrical device and its installation)

(3) Engineering service

- ① General welding ② Mechanical electronic service

(4) Building maintenance

- ① Residential air conditioning ② Building fixtures and fittings

(5) IT department

- ① PC operation

SMVTI and private companies concluded an MoU. Training facilities, products and equipment are provided by the partner companies to be used in the training courses. The training courses are offered in line with the manuals provided by the partner companies. The welding machine for the engineering service department and the air conditioner for the building management department are provided by a Singaporean company, and the training follows manufacturing and installation rules applicable to Singapore. Therefore, the skills gained from training at SMVTI make it easy for the trainees to work in Singapore. The course consists of 30 percent of lecture-based learning and 70 percent of practical training. The training course is conducted in English (80%) and in Myanmar language (20%).

As for the employment opportunities after completion of the training course, the most competent trainees are headhunted for jobs in Singapore or they can find employment as hotel room maids. Other trainees can also find employment in the partner hotels which have provided their guest rooms for practice during the training period. The major equipment used in the workshop of the school is shown in Table 2.61.

Table 2.61: Outline of SMVTI Training

Subject	Quantity	Comments
School of Hospitality & Tourism		
Hotel Guest Room (Park Royal Hotel Specification)	1	Each partner company from the hotel industry, restaurant business, merchandising business Inc. constructed a training facility according to the company specification free of charge. The training course was conducted based on the company manual. Eventually, they provide employment opportunities for the outstanding trainees.
Restaurant (Bistro Golden Brown Specification)	1	
Super Market (City Mart Specification)	1	
Stage for walking practice	1	
Electric Technology		
Electric Wiring Practical Board, Electric Apparatus, Electric Tools	20	It uses the air conditioner, the control system of Mitsubishi Electric (Singapore). They were installed free of charge. The training course is implemented based on the Singaporean standard.
Air-Conditioner Separate type (Mitsubishi Electric Products)	20	
Electric Circuit Practice Panel Board	10	
General Welding		
Arc Welding	10	Sufficient numbers of welding machines for the trainees were equipped with exhaust facilities. Trainees' overalls, steel-toed shoes, safety gears etc., are also provided.
Acetylene Gas Welding	10	

Source: Survey Team edit the SMVTI Brochure

(2) Basic Data for TPTC

Summary of Technical Promotion Training Center (TPTC) is described hereunder:

Location: Baelin, Sink Kai Township, Mandalay Region (1 hour by car from Mandalay city center)

Area: 123 Acre (=49.78 h)

Establishment: 15 February 2011

Facilities: main building 1 -2story bldg., Lecture and research bldg. 3 bldgs., Workshop eight bldgs., Hostel for trainers: 2 bldgs. (6 units/bldg. of two story.), Foundry Shop one bldg., hostel for trainers 1-2 sotry bldg. (12 units/bldg.), Hostel 1- 2 Story bldg.

Trainees: 356 in 2015

Number of staff members: 56 (assigned)/79 (planned)

Appearance:



Front gate and management bldg.



Workshop bldg.

① Establishment

The objectives of TPTC Establishment are described as follows.

- 1) Promotion of skills improvement and effective education of instructors in the TVET field.
- 2) Implementation of training for young, energetic, able and qualified workers working in the industrial field of Myanmar.
- 3) Implementation of research and workshops to strengthen the capacity for industrial development of Myanmar.

② Fields to conduct skill improvement education

The center president explained that the three departments (4), (5) and (6) were currently not operational due to absence of required professionals. While the original plan of TPTC was to have the following six departments, the three department stated above are planned to be omitted from the TPTC training targets and its organization chart.

- (1) Civil engineering and architectural engineering
- (2) Electrical engineering, electronics and information engineering
- (3) Mechanical engineering
- (4) Applied science
- (5) Education policies and plans
- (6) Teaching method and media

- Training Period and its timing
Start timing: Anytime
Training period: Unspecified (from two weeks to four months or so)
- Curriculum and teaching materials: The curriculum to be prepared uniquely by the responsible faculty and teaching materials to be selected by the responsible instructors.
- The equipment list at the workshop of the school.
- Academic background and experience of trainers: As for the academic background of trainers, at least a Bachelor of Engineering is required and they tend to be engineers with B.E, M.E or Ph.D. degrees, or former trainers at higher education institutions.

③ Affiliation of instructors who train other instructors

While they used to belong to the Department of Science and Technology, after the government reorganization, they now belong to the Department of Education. During the time when they belong to the Department of Science and Technology, they also belonged to the Department of Technical Promotion Corporation (DTPC), which prepared the curriculum, TVET and

equipment planning. The budget for DTPC operation is allocated from DTVE and cannot be used for any purpose other than TVET. Therefore, instructors who belong to GTHS, GTI and GTC and who conduct TVET are considered eligible for further training opportunities, but trainers from TU, which became a higher education institution, are not deemed eligible. Just like the time the survey team was explained at the Ministry of Industry and Ministry of Labour, it was explained that instructors from departments where TVET was conducted were eligible for further training opportunities. They explained, from 2011 to 2015, with training programs using equipment unique to TPTC, TU trainers were included but in the near future, they would need to be obliged to follow the aforesaid condition and it was deemed unfeasible for TU trainers to be trained.

④ Intended trainees and recruiting method

The instructor of the department who conducts the training program summarizes all the training details including training assignments, the content, the training duration and the targeted academic background for the training recipients (ex – GTI graduated, etc.), years of work experience, minimum age, etc. into a report. The training program details are then submitted to DTPC. If approved, DTVE notifies the respective schools to proceed to training planning. Applicants are invited to take part in the training program via newspaper advertisements. To date, a four-month CNC training course and a three-month CAD training course were conducted. Since the number of applicants was less than the maximum capacity of the training course, all the applicants could receive the training they applied for. The training fee is about 20,000 kyats (about 2,000 yen) excluding accommodation and food expenses. It is paid by the participants themselves. The training organizers explained that in the future, they would determine training topics through conducting a survey on industry needs, and will provide training course other than CNC and CAD.

⑤ Current number of staff and the quota

The quota of staff is 79. However, currently 56 staff is working. The number is even less than the total number of staff in the table below, because additional four members resigned since April 2016. As things stand now, only three departments: Civil, Architectural Engineering Department, Electrical and Electronic Engineering Department and Mechanical Engineering Department remain operational.

Table 2.62: Academic Careers and Numbers of TPTC Staffers

No.	Name of Department	Current Staffs						
		Ph.D.	M.E	B. E	B.Tech	AGTI/ EGTI/ TTS	Others	Total
1	Admin;	1	1	1			19	22
2	Civil		1	2				3
4	EP	1	2	1	1			5
4	EC		2	2				4
5	Mechanical		3	7	2	10		22
	Total	2	9	13	3	9	20	59

Source: PPT for explanation of TPTC

⑥ Trainers of TPTC with practical work experience

There is no instructors with practical experience as skilled workers. However, there are some instructors who acquired PhD in Germany with the support of GIZ. Further, some other instructors attended pedagogy course in Yangon with the help of GIZ and SDC.

⑦ Training program in Construction Machinery using equipment provided by Komatsu

When this course started, with equipment provided by Komatsu, a one-off seminar was held for ten days at TPTC. At the seminar, Komatsu instructor taught training methods using the equipment. The content included fields such as engine, hydraulics and electronics, etc. using the equipment. The participants were the instructors in automotive-related domains from all over Myanmar. Also, invited by Komatsu, three people stayed in Komatsu City, Japan for two weeks and a practical training seminar was conducted there. Two instructors from TPTC and one from GTI participated in the training seminar. The Deputy Director and the staff member who took the training seminar became instructors. MoU regulates that the training equipment provided by Komatsu only be used in the TVET field.

2.4.5 Basic Information on TVET Organizations Operated by MoBA

(1) BAJ Hpa-an Technical Training School

Location: Hpa-an, Kayin State

Project period: December 2013 to November 2019 (6 years: BAJ contract period)

Opening: 29 August 2008

Site area: 6.0 Acre (2.42 ha)

Facility: Classroom building (3 rooms), Workshop (1 building-Automobile Maintenance Course, and 1 building-electric and welding course), Administration building, Dormitory (3 buildings), and Toilette-Shower building.

The content of vocational education

- 4 courses: ①Construction, ②Auto Mechanics, ③Electric, ④Welding
- Please see the summary of the training course details in the table below.

Table 2.63: Training Schedule of BAJ Hpa-an Technical Training School (3 Years)

	Grade 1 (Dec. 2013 ~ Nov. 2014)		Grade 2 (Dec. 2013~Nov. 2014)		Grade 3 (Dec. 2013~Nov. 2014)	
	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
Construction of School	Working Area, Internal Road, Drainage, Generator Rm				Fence, Gate	
Technical Training						
Construction	Phase 1	Phase 2	Phase 3		Phase 4	
Auto Mechanics			Phase 1	Phase 2	Phase 3	Phase 4
EFI						
Electric			Pha 1	Pha 2	Pha 3	Pha 4
Welding				Phase 1		Phase 2

Source: Extract from BAJ Explanatory PPT

Table 2.64: Outline of Training Subject BAJ Hpa-an Technical Training School

Subject	Outline of the Training/Training Target	Duration	Trainees (Person)	Academic Back Ground
Construction	Basic Construction Technic of Wooden Building, Brick Building, RC Building (Carpentry Work, Brick Work, Re bar work)	6 months	30	Grade 5 pass or higher
Automotive Mechanics	Equal technic to Japanese Automechanics 3rd grade	6 months	30	Grade 8 pass or higher
EFI	Advanced course for excellent Auto Mechanic Course	1 month	10	Automotive Mechanics
	: Electronic Fuel Injection			Excellent Score mark
④ Electric	Electric wiring work inside the building	3 months	30	Grade 9 pass or higher
Welding	Metal Processing Technology by Arc welding, Gas Welding/Cutting	6 months	30	Grade 8 pass or higher

Source: Extract from BAJ Explanatory PPT

① Counterpart

Department of Education and Training: DET

② Funds

Year 1 to Year 3: NGO grant aid provided by the Ministry of Foreign Affairs of the Government of Japan + own funds

Year 4 to Year 6: The project planned to continue with public funds and donation from companies.

③ The project goal

Technical training and employment support for motivated local young people

④ Project purpose

- To provide young people who had no opportunity to receive education with quality technical training and education.
- To expand employment opportunities and to increase income of those who have completed the training program.
- To economically vitalize Hpa-an City and Kayin State through skills improvement in and around Pha-an

⑤ Trainee selection method

BAJ, ETD, and the Kayin State Government form a student selection committee to select students.

The selection criteria: age (between 18 and 35), academic background (construction department: Pass Grade 5 or higher, automobile maintenance and welding departments: pass Grade 8 or higher, and electric department: pass Grade 9 or higher

⑥ Trainee selection process

Distribution of application guidelines and forms

Kayin State: seven township offices, NGO/UN offices in Pha-An, public facilities (church, etc.), nationwide: national newspaper advertisement Karent

Table 2.65: Number of Trainees in BAJ Hpa-an Technical Training School

Subject		Applicants (Female)
Construction	Phase 3	56 (7)
Auto Mechanics	Phase 1	388(1)
Electric	Phase 1	80(5)
Sub Total		524(13)
Auto Mechanics	Phase 2	141(0)
Electric	Phase 2	45(0)
Welding	Phase 1	30(0)
Sub Total		216(0)
Construction	Phase 4	13(0)
Auto Mechanics	Phase 3	183(0)
Electric	Phase 3	50(2)
Sub Total		246(2)
Total		986(15)

Source: Extract from BAJ Explanatory PPT

2.5 Private TVET Institutes

Private TVET institutes are supposed to be registered with NSDA under the ESD law. However, as described earlier, bylaws of the law have yet to be formulated and the registration is not officially conducted. Thus, no list of private TVET institutes is currently available. However, according to the Private TVET Association, there are 564 companies in Yangon and Mandalay alone. They provide training programs on 50 categories and more than 90 qualified instructors are working for more than 20,000 trainees per year.

Although the scale of each training program may not be large, many private TVET educational institutes offer vocational training program and education in Myanmar. Among these organizations, UMFCFI integrated all the organizations in Yangon and Mandalay to establish a Union of Myanmar Private TVET Association (MPTA). Apart from MPTA, there exists a specialized committee to deal with issues related to TVET. There are many more TVET institutes that provide training programs without belonging to any association. Thus, it is hard to know the accurate number of private TVET institutes all together. Each private TVET institute has its own TVET education program, thus the duration of the training program as well as skill level may vary. It is difficult to find out the content of the training program, as well as to assess the skills level. While these types of private TVET institutions are used by the unemployed, they are often used to accommodate employed people who seek further training opportunities at night or during holidays to upgrade their skill level.

Characteristics of these private TVET institutions, as revealed by the current survey, show that their focus is placed on providing short intensive skill-acquisition. They do not consider providing long-term training programs provided by the formal TVET institutions such as two-year course of GTHS, three- year course of GTI and six- year of TU, which allow the trainees to pursue academic degrees or trainer's development, etc. The short intensive skill-acquisition

programs provided by private TVET institutions require about three months and classroom learning for about a year, and target diploma qualification.

The following outlines are considered:

- a. The training facilities are small in scale and often provided in small buildings after repair or with a portion of the building leased for use.
- b. Instructors are active trainers of GTC, GTI and TU, or retired former trainers, who are (re-) hired (full- /part-time) to conduct training programs.
- c. As training with small investment, computer application course can be seen many private TVET as well as basic course for Microsoft Word and Excel, graphic designing, Auto CAD, accounting and bookkeeping.
- d. Language training courses
Language training courses in English, Japanese, Chinese, etc.

Many of those who are unable to take training courses for financial reasons can still find employment at companies using personal connections and learn new skills from senior workers in OJT, just like those workers in car maintenance plants, construction work sites and small home manufacturing, etc. can be trained on site.

2.5.1 Basic Information on TVET Organizations under the Private TVET Association

(1) Myanmar Engineering Society (MES)

Supervising agency: Myanmar Engineering Society

Location: No. 151 (4th Floor), Myanmagonyee Street, Kandawgalay, Mingalar Taung Nyunt Township, Yangon

Training center: SAKURA TRADE CENTER (South Okkalapa Township, Yangon)

Building area: Workshop is approx. 140 m²

Facility overview: The training room is approx. 300 m² (10m x 20m). Although it is equipped with air conditioners, they are not sufficient enough to keep the room temperature at decent level .

Opening: MES vocational training course started on 17 January 2014.

Trainees: 30 to 40

Teaching staff: There is no specified teaching staff. Those from MES member companies serve as teachers.

① Training course

Basic course (3 months for people without prior knowledge): This course was offered only once. The target participants were those with high school diploma with no prior knowledge about vehicle maintenance. Those who complete the training course is expected to reach the level of NSSA Level 1.

Advance course (2 months for experienced automobile mechanics, certified engineers are also qualified.) This course was offered seven times. The target participants were those with high school diploma or higher qualifications (general line graduates are also qualified). Those who complete the training course are expected to be equipped with the NSSA Level 2 skills and knowledge

Photos:



Lecturing in the class room



Self-made Engine cut model

② Class

In terms of teaching materials, MES develops its unique textbooks by extracting information from original vehicle manuals. Sheet metal and coating are not included in the course. MES would like to keep teaching materials up to date to include successively advancing technologies (diesel, gasoline engine models, transmission models, motor models, etc.), for which MES often contact Japanese car manufacturers to obtain some teaching materials, but they do not receive much response from them. Nevertheless, they keep updating their knowledge on a daily basis by downloading information from the Internet, and they can even taught themselves how to repair hybrid cars and they can teach other trainees. Using three vehicles donated by MES members, practical training programs are conducted, while engine and transmission cutting models made in house were used in courses as well. In the training room, 32 trainees are currently taking the final training class (the completion ceremony date is scheduled on 8th April, 2016). We interviewed some trainees to know their motivation in taking a training program at MES. They explained that they were attending the course because it was conducted by MES and the lecture was cheaper.

MES company members, Uni Motor Asia, Myanmar Motor Cooperation and other companies made partnerships to teach both theory and practice of vehicle maintenance to externally chosen trainees who were selected through public recruitment. They were selected based on an interview conducted by engineers (Messrs. Phone, Soe and Sann). The interview in which explanatory feedback on the engine dismantling method and mechanism was asked revealed the skill level of each candidate. Since the manual of the vehicle diagnostic device is written in English, minimal English reading ability is required. The actual cost is about 300,000 kyats per person, although 100% subsidized by MES. Actual expenses for documentation such as documents, graduation certificates, etc. are collected but school fees are not collected. As for the recruitment method, they used to use newspaper ads, which costed 300 USD, but to save some costs, they now use YouTube to recruit trainees. Trainees are often sent from military car maintenance factories (five of which are currently enrolled). Even TU trainers come to take training programs at MES.

(2) Fujiwork Myanmar Thilawa SEZ Co., Ltd.

Surveyed institute: Fujiwork Myanmar Thilawa SEZ Co., Ltd.

Overview: Fujiwork Myanmar Thilawa SEZ Co., Ltd. is constructing a vocational training center in Thilawa Special Economic Zone (10 classrooms and multi-purpose room with a capacity of 400) and the estimated completion is in June 2016. Location: Yangon branch: 1503 Sakura Tower, 339 Bogyoke Aung San Road, Kyaukutada Township, Yangon

Training center: Lot No. A22, Thilawa SEZ Zone A, Yangon

Site area: 7,323 m², building area: 2,500sqm (RC structure)

Planned building completion: June 2016, beginning of operation (accepting students): June 2016

Facility overview: 10 regular classrooms and a multi-purpose room (capacity of 400)

Number of students: No fixed number or length of training because the training programs are offered entrusted by companies.

Expected training courses: management, IT, business, accounting, manufacturing, Japanese language, etc.



Vocational training center by Reinforced
Concrete under construction

The training center aims to provide pre-employment training programs for workers hired by companies (labour intensive business), which will establish their factories in the Thilawa industrial zone as one of their business goals. It also provides training programs for workers in Myanmar who will be dispatched to Japan on behalf of companies that receive trainees in Japan. Such training programs would reduce the training costs for workers upon arrival in Japan, thus much demand is expected. Another business goal is to place human resources to the factories with shortage in workers. When the Thilawa industrial zone is completed, there will be approx. 40,000 to 60,000 workers in manual labor, distribution, food and automobile industries, etc. Since many workers have no experience in working at factories, approx. 10 percent of all workers are expected to leave their job every month. Accordingly, they plan to gather as many prospective workers possible, who are farmers and/or young people with low-level of academic background. Then, they plan to register them for pre-employment training programs in their own way to secure a pool of workers to fill any vacancy at all times.

Logistics companies (Sumitomo Metal Logistics Service + Kamigumi) have decided to establish their business in the industrial zone and the training center has already provided a training program of forklift operations, which is essential for their business, and safety lecture (Toyota method) at their roofed practice center. It issues a completion certificate to trainees who have met a certain level in the course. The issuer of such certificate is the same company they will work for, and it is valid only for the company to prevent job hopping.

In order to effectively use the facility, the roofed practice center is used as a bonded warehouse and an inspection center when no training program of forklift operations or safety lecture is conducted.

(3) Myanmar TECH Institute

Location: No. 11, Aung Myay Thar Si Street, 1st Quarter, Kamayut Township, Yangon

Site area: old building (old school building) 2,400 square feet (223 m²)

Building area: old building (old school building) 6,000 square feet (557.4 m²), new school building (RC structure) 8,100 square feet (752 m²)

Establishment: 1998

Facility overview: old building—five-story building, new school building (RC structure)—three-story building

Number of staff members: 70 (10 administration staff and 60 teaching staff (30 full-time and 30 part-time))

*Teaching staff are YUT graduates and master's degree holders.



Appearance



Training scene

① Training courses (5 courses):

1. Bachelor's degree course in engineering (4 years + 1 year)

- Civil engineering (B.Sc. Honours)
- Electrics/Electronics (B.Eng. Honours)
- Mechanical Engineering (B.Eng. Honours)

*They are currently under preparation. The content of training courses, teaching staff or teaching materials have yet to be finalized. Each course requires total of five years to complete. Students take the course in Myanmar for the first four years, and then move to complete the final year in the UK. Students who are granted with a graduation certificate in the UK are regarded equivalent to having graduated from the UK university.

2. City & Guilds (UK) Engineering Diploma & IT Diploma courses

- Electrics/Electronics
- Mechanical Engineering
- Civil engineering
- Air-conditioning /Refrigerating
- Electric appliances installation
- Plumbing
- IT system assistance
- Software development

3. English diploma course

English conversation course and nine other courses

4. Vocational skills course
Computer program logic control (PLC) and 13 other courses
5. Computer operation course
Windows & Office operation and nine other courses

② Training contents (length of training, hours of training, tuition fees, and current enrollment)

The course level differs from NSSA or other standards.

**Table 2.66: Outline of Training Course of Myanmar TECH Institute
(2. City & Guilds (UK) Engineering Diploma & IT Diploma Courses)**

	Duration	Training Hours	Training Fee		Number of Trainee (Current)
		(Minimum)	Kyat	USD	
Level 2 course	6 months	Min. 900	300,000	230	30
Level 3 course	1 year	Min. 360 Max 900	600,000	460	400
Level 4 course	1 year	Min. 540 Max 900	800,000	613	20
Level 5 course	1 year	Min. 540 Max 900	1,000,000	766	30
				Total	480

Source : Extract from Myanmar TECH Institute explanatory documents

- There is a total of approximately 500 trainees.
- The Engineering Degree Program is under planning.
- The levels are defined as below.
 - Level 2 is equivalent to high school diploma.
 - Level 3 is designed for the trainees to find new jobs or to change jobs.
 - Levels 4 and 5 are new levels. Only the trainees from the first batch found employment.
 - Since 80 percent of the trainees work and study, it is difficult for them to take any course work during the day.
- Levels 3 to 5 require enrollment in the UK university. Thus, the British Embassy sends an embassy official to Myanmar to supervise the enrollment test. The answer sheet is sent to the UK university via Malaysia for grading. The graded answer sheet is then sent from the UK to Myanmar, and the results are notified to the students.
- Because a majority of the trainees' work, it is difficult for them to attend all classes.

③ Employment

Although 80 percent of trainees work, 20 percent do not work. Some trainees went abroad after completing the course. For example, some GTC graduates enroll in the school to obtain a diploma to work overseas. Also, some people who have worked overseas enroll in the school to find a new job in Myanmar.

*In general, universities offer non-practical classes, many people take classes at such an informal educational institute to gain more practical skills and knowledge after they finish their work.

④ Job-related information

Overseas-based companies value workers' qualifications and they use a different salary scale for university graduates and equivalent qualifications. Therefore, many workers enroll in informal TVET schools to get more qualifications while working so that they can get paid better.

⑤ NSSA

Myanmar TECH Institute believes its own skills standards and NSSA's skills standards are almost at the same quality.

(4) Future Engineering Generation (FEG)

Location: 2nd floor, 38th Street & Seik Kan Thar Street, Kyauktada Township, Yangon

Establishment: March 2006, it was relocated to the current site in 2008.

Building area: second floor of a building--4,000 square feet

Facility overview: 7 classrooms (capacity of 15 to 20), 2 multipurpose room, and administration office

Teaching staff: 3 (full-time)



Entrance



Practical Training

① Training courses (11 courses)

- (1) M & E Working Drawing (With Auto CAD)
- (2) Perspective Revit (MEP)
- (3) Electric design
- (4) Mechanical design
- (5) Civil engineering
- (6) Perspective Revit (Construction)
- (7) Civil Auto CAD (2D, Isometric and 3D)
- (8) Perspective 3D studio Max
- (9) Auto CAD (Basic Course)
- (10) English and Career (EAC)
- (11) English Conversation

② Details of teaching staff

3 full-time teaching staff

- Air conditioning and electronics: 1 instructor
- Auto CAD + electrical design 1 instructor
- Electrical design + computer operation (basics) 1 instructor

*Most of full-time teaching staff members are GTI teachers. They became instructors of the school after their retirement.

10 part-time teaching staff: Most instructors are school teachers.

③ Training

Number of trainees per class

15 to 20

Background of trainees

Although FEG accepts G-9 graduates (aged 14 or 15), there are not many of them. It also accepts school dropouts. Majority of trainees are G-11 graduates (aged 17 or 18) and instructors who graduated from GTI are also taking the course. They are enrolled in the course while working for further skills improvement and rise in income. About 60 percent of trainees have a job.

Class hour

1 training course (2 months in principle) consists of 56 class hours, two hours per day and three days a week. Classes are organized based on the timeframe when the instructors can teach.

Tuition fee

- Electric wiring/Air conditioning: 50,000 kyats
- Auto CAD (3D) (2.5 months): 75,000 kyats

Recruitment of trainees

Although newspaper advertisement was used before, nowadays Facebook is used reflecting the ways in which people communicate along with the recent IT advancement.

Qualifications

FEG issues a completion certificate of its own when trainees complete the training course. Although FEG recognizes the NSSA qualifications, it is not yet ready to incorporate them into their training courses. Eventually, they hope to incorporate them into its curriculum. However, as of now, they do not have enough teaching staff to make any change in its curriculum or not equipped to do so.

2.5.2 TVET of Private Sector Operated by Japanese Enterprises/ Private NGOs

(1) Glory Career Training Center in Collaboration with the Okayama Institute of Science and Training: OIST

Location: No. 343, G-Floor, Dhamayone (1) Street, Hlaing Township, Yangon Division

Establishment: August 2004

Two training centers in the city: Dhamayone center: total floor space 3,716 m² in a two-story building

Ordinary classrooms: three classrooms, Control rooms: three rooms, Workshop: the entire first floor and four rooms on the second floor

Number of trainees(2015/2016)

Total for two training centers: 650

Total number of training graduates: 17,000

Number of trainers: 30 staff (full- and part-time)



Lecture room located on the 1st floor



Workshop on the ground floor

- ① The content of services provided
 - Providing training courses in engineering, expertise, vocational skills, etc.
 - Providing the existing training package to companies and organizations.
 - Implementing the qualification exam for employers and companies that dispatch personnel.
 - Publication of teaching materials.
- ② Training course
 - 15 training courses (Diploma) of NQF Level 3 City & Guilds
 - Vocational training courses of Glory CTC - 28 courses
 - Automobile maintenance course of Okayama Institute of Science and Technology
- ③ City & Guilds authentication training center

Glory CTC was authorized as a City & Guilds authentication training center in the UK in 2005 and has conducted classes adopting the City & Guilds curriculum (except for automobile maintenance). An Engineering Diploma Course, a Vocational Engineering Course by the original Glory CTC curriculum and a Computer and Language Course are all provided. Upon graduation with a diploma of the Engineering Diploma Course of City & Guilds (a training course for six months to one year), a National Qualification Frame (NQF) Level 3 can be acquired. Furthermore, if the trainee successfully advances to Advanced Engineering, completes NQF Levels 4 & 5 and passes the qualification exam, s/he is allowed to proceed to any college authorized by City & Guilds and to be located worldwide (over 100 schools in the UK, Singapore, Malaysia, Australia, Indonesia, etc.). The qualification exam of City & Guilds is conducted in the facility by the Training Session department in the British Embassy (Online test/Written test). There is no practical exam. The curriculum and syllabus of City & Guilds are followed and a twice-yearly inspection by the Training Section of the British Embassy is conducted. During practical skills practices, trainees are taken to factory tours, etc. Upon completion of the tours, the trainees are expected to summarize what they have learned there and write Assignment Reports to be submitted without practical skill practices. City & Guilds from the UK is a system for those who have acquired skills via apprenticeships, to further advance their skills backed by more theory behind them. Moreover, advancing the skill level from NQF Level 3 to Levels 4 & 5 paves the way even for those who had dropped out from formal education to continue to college education, if they work hard. They can obtain a college graduation credit under this system. However, here in Myanmar, given the lack of such facilities to acquire skills or trainers capable of such practical teaching at universities or technical high schools, there is technically no opportunity for students in Myanmar to acquire practical skills. Most of the training opportunities are based on theory learning. It seems that among trainees

who have entered the school, only few have some idea about kinds of structure motors and electric bulbs, etc. have.

④ Automobile maintenance training at Okayama Institute of Science and Training: OIST

OIST leveraged the JETRO business matching service to gain an introduction to Glory CTC and came to provide a training course. Since the import of used cars was liberalized and with the high occupancy rate of Japanese cars (90%) in the market, it is most expected that the need for maintenance skills for Japanese cars is on the rise. Accordingly, automobile maintenance courses was launched in 2014 with the training period for one year.

The teaching course follows the curriculum and syllabus prepared by OIST of Japan, and provides an opportunity for the trainee to gain a skills certificate (OIST) upon successful passing of the certification exam. This certificate provides a qualification equal to the third-grade automobile mechanic in Japan. Currently, they are proceeding with preparations to issue a certificate for a second-grade mechanic. Over the course of one year, the trainee needs to maintain at least 90 points out of 100. 100 points are weighted differently among various aspects of the trainee's student life, for example, ten points are allocated for the trainee's attitude towards life, ten for his/her attendance, 40 for the written examination and 40 for practical practices., The passing grade is a score of 90 and above. For those who fail, a relief system featuring supplementary lessons is provided. Although OIST applied for the permission to issue a third-grade automobile mechanic certificate as part of the Japanese national qualification to the Ministry of Land, Infrastructure, Transport and Tourism of Japan, it was rejected. Among all the graduates so far, 11 could manage to go to OIST in Japan to study in Japan as foreign trainees at their own expense. They study Japanese language for one year and automobile maintenance for two years. Their aim in Japan is to obtain the certificate for the second grade automobile mechanic. They have not yet graduated from the training course.

⑤ Training facility, equipment

Under the supervision by a Japanese lecturer (automobile mechanic) on site, the workshop is methodically organized, and regular cleaning is conducted. The quantity of training equipment matches with the number of trainees. In addition, OSH training in workwear, hats and shoes is also conducted.

(2) AGTI Society Training Center

Location: Ex- GTI Insein school in Yangon City

Establishment: The basic assistance agreement for 3 years was concluded in June 2013 between AGTI (Association of Government Technical Institute) and Kinden-Sumitomo Corporation.

Facility summary: School building (former GTI construction was renewed) and outdoor maneuvering ground (for power distribution)

Number of trainers: Six (A training program is organized in Japan for seven months, including two months of Japanese language training initially and five months of OJT at "Kinden Gakuen").

During the first period, a Japanese expert supports the local trainers in Myanmar, but from the second period, the Japanese expert comes only once every several months or so to Myanmar, so the training program here is basically conducted only by the local trainers.

Teaching materials, etc.: Kinden provides the English editions of textbooks, which are also used at "Kinden Gakuen" in Japan. Tools and equipment for introducing practical skills are all arranged by Kinden.

① Training course

- Power transmission and distribution work course: the fixed number of trainees: 20, seven months, training construction engineers/technicians capable of creating/maintaining electric power infrastructure (distribution/transformation)
- General electric work course: the fixed number of trainees: 20, seven months, training construction engineers/technicians capable of work constructing and maintaining factories/buildings

② Eligibility criteria:

Age: From 18 to 25

Academic background: Basic education high school 9 grade (junior high school graduate) or higher

Entrance exam: Basic knowledge: English, Math, Practical coping: color-blindness test, grip strength test

Interview: evaluating communication skills

In 2015, 34 of 67 applicants passed the exam. Many of those who did not pass the exam fell short on math scores.

③ School fee:

1.4 million kyats (about 140,000 yen) (200,000 kyats × seven months)

Chapter 3 Industry/Economy

3.1 Industry/Economy Current Situation

Myanmar's economic growth rate was below the average GDP growth rate in Asia before 2010, but with reforms after the transition to civilian rule in 2011, a steady economic growth has been achieved. The annual GDP growth rates for the 2012 Fiscal Year, 2013 Fiscal Year, and 2014 Fiscal Year, recorded at 7.3%, 8.3%, and 7.7%, respectively. However, the national GDP per capita has just exceeded 1,000 USD and it is still at a low level compared to that of neighbouring countries.

Table 3.1: Economic Growth Rate in Myanmar and the Changes in GDP Per Capita

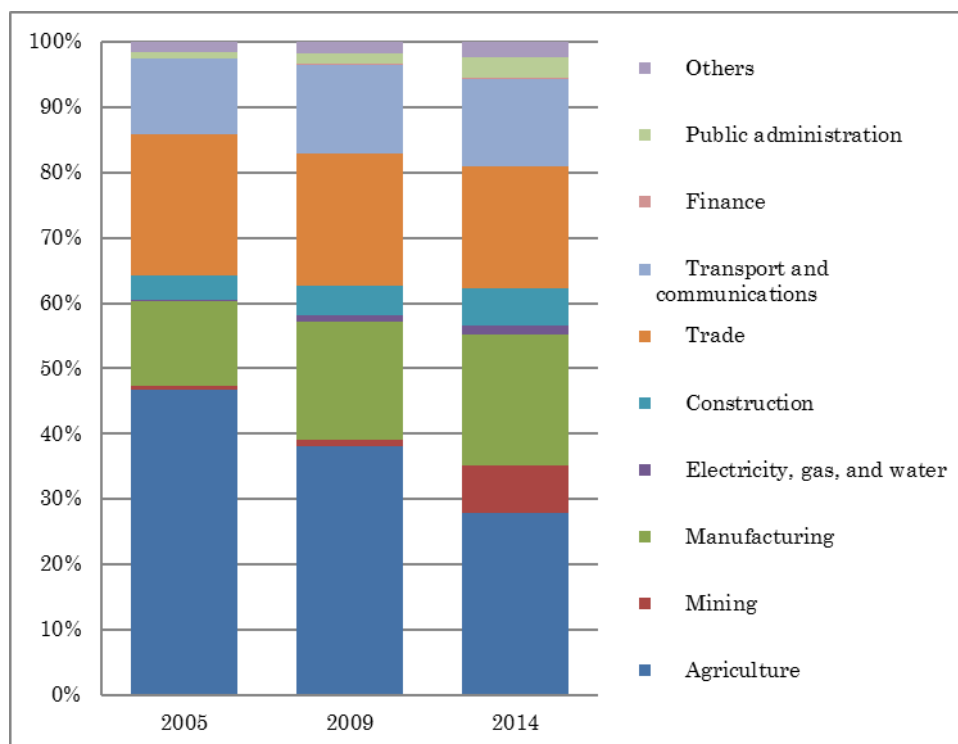
	2010	2011	2012	2013	2014
Real GDP Growth Rate (% , Fiscal Year)	5.4	5.9	7.3	8.3	7.7
Nominal GDP per capita (USD)	999.38	1120.94	1103.33	1113.37	1,221.36

Source: JETRO

When the GDP structure is analyzed by industry sector, the industrial structure seems to have been shifted gradually during the last 10 years from the agricultural sector to the industrial sector.

In the 2005 Fiscal Year, the agriculture sector accounted for about half (46.7%), followed by the service sector at 35.8% and the industrial sector at 17.5%, but after that, for the next 10 years, the service sector substantially maintained a constant ratio, but the ratio of the agricultural sector decreased and the ratio of the industrial sector increased. As a result, in the 2014 Fiscal Year, the service sector was placed at the top with 37.7%, followed by the industrial sector at approximately the same rate (34.4%), and the ratio of the agricultural sector was reduced to 27.9%⁸. Furthermore, when the GDP structure is analyzed by industry sector through subdividing the industrial sectors, the manufacturing industry accounted for a large weight (19.9%), and other industries such as mining, manufacturing (7.3%) and construction (5.8%) had some shares. Both of these sectors had extended their distribution ratio compared with that of the 2005 Fiscal Year. On the other hand, in the service sector, the trade sector (18.7%) and the transport and communications sector (13.3%) occupy large weights. There was a slight reduction in the ratio of the trade sector over the past decade, and while the transport and communications sector slightly stretched out their ratio, it occupied an almost constant ratio.

⁸ The agricultural sector includes agriculture, forestry, and fishing. The industrial sector includes mining, manufacturing, electricity/gas/water, construction and so on. The service sector includes wholesales/retail trade, financial activities, real estate and so on.



Source: Prepared by JICA study team from [ADB, 2015]

Figure 3.1: GDP Structure by Industry Sector (Details) (2005, 2009, 2014)

When the trade in the 2014 Fiscal Year being analyzed, imports had a year-on-year increase of 11.8% to 12,524 million USD, and exports had an increase of 20.9% to 16,633 million USD. Many areas were deregulated after the transition to the civilian rule, imports advanced significantly and the trade deficit fell.

Natural gas accounts for the largest share in exports with 41.4%. It shows a high growth rate of 57.0%, due to the recent opening of a natural gas pipeline to China, and its full operation. After natural gas, beans and garment products follow in that order. In agriculture, forestry and fishery products, there are items such as rice, corn and sesame seeds in addition to cereals, and fish is ranked at 8th place.

As far as imports go, there was a year-on-year decrease of 18.3% in general for the transport machinery (natural gas drilling equipment and materials, construction and mining development for machinery, trucks, passenger cars, etc.). Nonetheless, the transport machinery still occupies the top share. Subsequently, there are petroleum products (mainly diesel oil) and precious metals/copper products, in that order. According to the JETRO Myanmar Basic Information Annual Report (from the World and Trade Investment Report), within General/Transport Machinery, about half of this accounts for cars and the same parts. For these cars, imports of used vehicles from Japan have been increasing rapidly through deregulation of used car imports that was introduced in September 2011. In addition, according to the same report, import of construction material has been increasing rapidly in order to cope with the construction demand for hotels and office buildings in major urban areas.

**Table 3.2: Myanmar Imports and Exports by Main Product Category
(Customs Clearance Basis)**

Unit: 1,000,000 USD, %

	Exports (FOB)				Imports (CIF)				
	2013 Fiscal Year	2014 Fiscal Year			2013 Fiscal Year	2014 Fiscal Year			
	Amount	Amount	Composition Ratio	Growth Rate	Amount	Amount	Composition Ratio	Growth Rate	
Natural Gas	3,299	5,179	41.4	57.0	General/ Transport Machinery	4,145	3,387	20.4	▼18.3
Beans	896	1,140	9.1	27.2	Petroleum Products	2,300	2,576	15.5	12.0
Garment Products	885	1,023	8.2	15.7	Base Metals/ Copper Products	1,543	1,346	8.1	▼12.8
Jade	1,012	1,018	8.1	0.6	Electrical machinery/ equipment	708	380	2.3	▼46.3
Rice	460	652	5.2	41.7	Edible vegetable oil	515	341	2.1	▼33.7
Base metals/ minerals	130	440	3.5	238.5	Plastics	468	326	2.0	▼30.4
Corn	286	393	3.1	37.4	Cement	204	301	1.8	47.6
Fish	311	227	1.8	▼27.2	Pharmaceuticals	253	300	1.8	18.7
Sesame	341	182	1.5	▼46.6	Other	3,623	7,676	46.2	111.9
Other	3,585	2,270	18.1	▼36.7					
Total	11,204	12,524	100.0	11.8	Total	13,760	16,633	100.0	20.9

Source: Myanmar Central Bureau of Statistics, JETRO Myanmar Basic Information Annual Report

Foreign direct investment (permission based) has demonstrated close to a double year-on-year growth in the 2014 Fiscal Year, with 8,011 million USD in an amount base. By country, Singapore stands at the 1st place with 53.6% in an amount base, followed by the United Kingdom (10.6%), and then Hong Kong (7.8%). Japan is at 14th place with a composition ratio of 1.1%⁹. As far as “by category” goes, the oil/gas industry stands at the 1st place with a composition ratio of 40.2%, followed by the transport and communication industry (21.0%) and the manufacturing industry (18.8%) respectively.

In terms of investment approvals, the 2014 Fiscal Year had the highest number of approvals recorded (211 cases). The manufacturing industry accounted for 141 cases, or 58.2% of the total. According to the JETRO Myanmar Basic Information Annual Report (from the World Trade and Investment Report), while sewed items such as apparel footwear remained large, investment projects in the light industry sector such as food, beverages and medical products have been increasing.

⁹ JETRO Myanmar Basic Information Annual Report (from the World Trade and Investment Report)

Table 3.3: Myanmar Foreign Direct Investment by Industry (Permission based)

Unit: cases, 1,000,000 USD, %

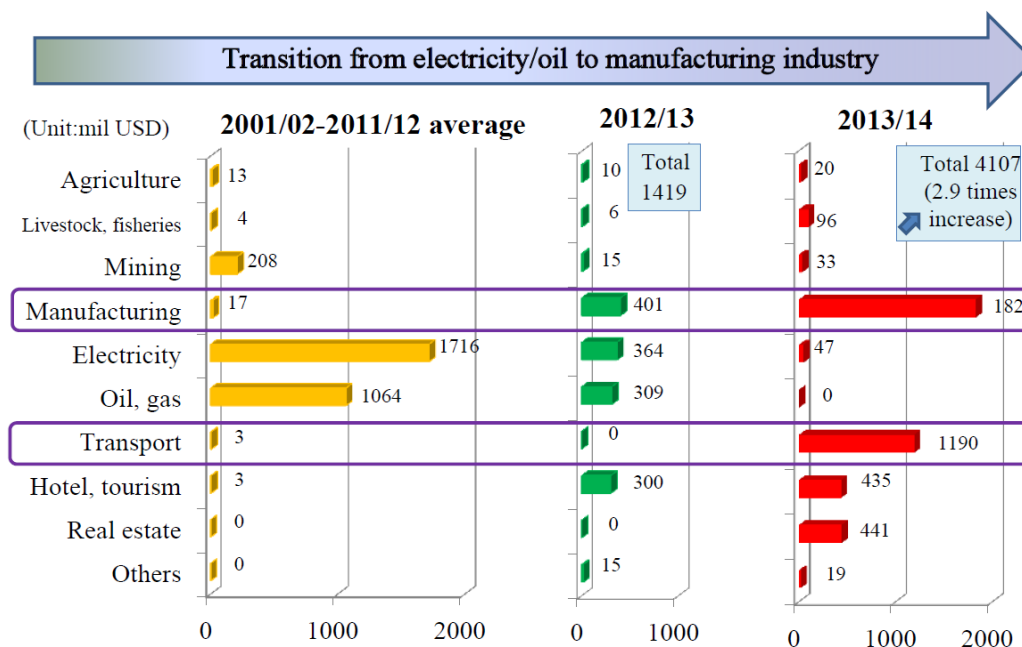
	2013 Fiscal Year		2014 Fiscal Year			
	Number	Amount	Number	Amount	Composition Ratio	Growth Rate
Oil/Gas	—	—	26	3,220	40.2	All increase
Transport and Communication Industry	4	1,190	8	1,679	21.0	41.1
Manufacturing Industry	95	1,837	141	1,502	18.8	▼18.2
Real Estate Development	4	441	6	781	9.7	77.2
Hotels/Sightseeing	5	434	5	358	4.5	▼17.6
Electric Power	1	47	1	40	0.5	▼13.8
Agriculture	4	20	4	40	0.5	95.7
(Livestock) Fishing Industry	2	89	5	27	0.3	▼69.8
Mining	2	33	1	6	0.1	▼80.9
Other	6	16	14	357	4.5	2,079.4
Total	123	4,107	211	8,011	100.0	95.0

Note: The 2014 Fiscal Year includes the livestock industry in the fishing industry.

Source: Myanmar Central Bureau of Statistics (Fiscal Year 2013), Myanmar Investment Company Management Bureau (Fiscal Year 2014), JETRO Myanmar Basic Information Annual Report

This shows an expansion in foreign direct investment field in general. JICA’s investment promotion advisers¹⁰ also confirmed Myanmar is experiencing the increase of FDI. As shown in the figure below, investments that have traditionally focused on electric power and oil/gas seem to be expanding to different industries such as manufacturing industry and transport/communications.

Transition of FDI



*Fiscal year in Myanmar is April to March (same as Japan)

Source: Homma, 2015

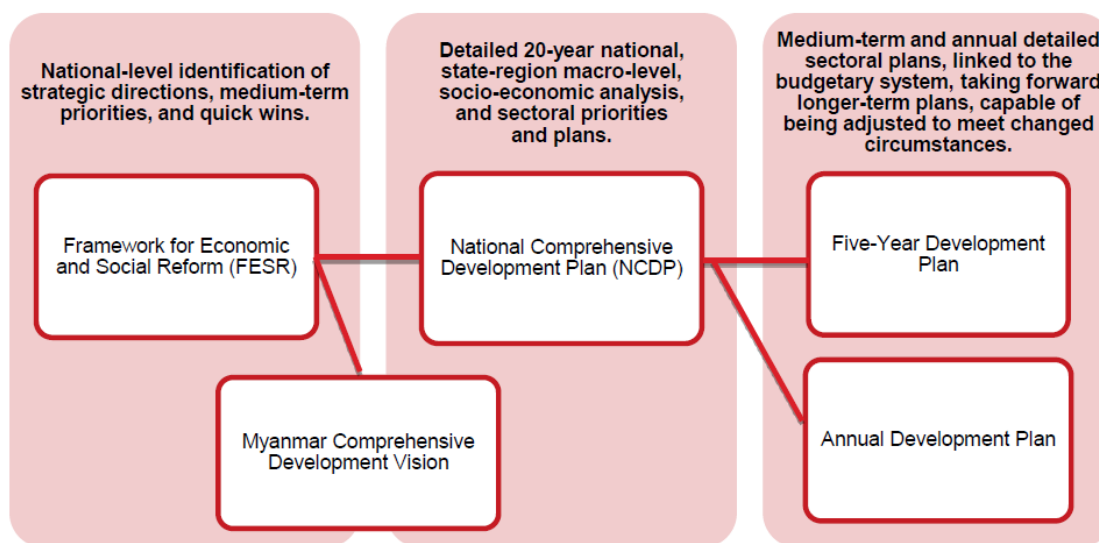
Figure 3.2: Foreign Direct Investment Changes

¹⁰ Material from “‘The Last Frontier’ Myanmar Investment Environment JICA Emerging Investment Seminar” (11th March, 2015 Tokyo).

3.2 Prospects for Medium to Long-term Industrial/Economic Development

3.2.1 Myanmar Socio-economic Development Strategy/Planning

The Myanmar national socio-economic development policy framework and objectives can be found in the following documents such as (a) The “National Comprehensive Development Plan 2011–2013” (NCDP) established in order to show 20-year (2011-2031) long term goals¹¹, (b) “Framework of Economic and Social Reform” (FESR), which articulates the policy priorities during 2011-2015 in order to achieve the goals of the NCDP, and (c) 5 year and annual plans in each ministry.



Source: Framework for Economic and Social Reform (FESR).

Source: ILO Asia-Pacific Working Paper Series: Assessment study of technical and vocational education and training (TVET) in Myanmar (December 2014, ILO)

Figure 3.3: Myanmar Socio-economic Development Planning Framework

In the NCDP, concrete goals are set to achieve economic growth and job creation through prioritized policy reform programs, development of the labour market, development strategy of small and medium-sized enterprises and development of policies and institutions related to participation of the private sector in the national economic activity.

FESP is a central document with prioritized policies and acts as a bridge between the NCDP and the development plans of each ministry and agency. FESP is a driving force of agricultural reform, and it aims to achieve sustainable industrial development while implementing poverty reduction and rural development, with a view to distribute resources equitably between the local and state level while promoting domestic and foreign investments for regional development. FESP also provides summaries of statistics and information that are reliable and up-to-date. It encourages human-centered development through participatory approach and mobilization of communities in order to improve education, health and living standards.

As far as plans of each ministry go, an industry policy paper (Ministry of Industry) is relevant to review the industrial development. The paper shows industrial sectors which should be encouraged in the long run.

¹¹ National Comprehensive Development Plan 2011-2031

Table 3.4: Industry Sectors that Need to Develop Policies

Time axis	Industrial sectors which should be encouraged
Short term	Labour-intensive industries: 1) weaving/garment industry, shoes making industry, flat-rate pay CMP industry and packaging industry, 2) Wood-based furniture and finished products industry Primary products industries: 1) Primary commodity industries which breed and produce directly such as agriculture products, vegetables, fruits and fishery products, 2) Value added food products such as canning, fruit beverages, fruits jam, sesame oil and high quality fish source manufacturing industries Basic manufacturing industries without advanced technology: 1) Textile & Garment Industry and Weaving Industry, 2) Spare parts manufacturing industry which are used in vehicles, motorcycles, agricultural machinery and other related industries, 3) Electronic and electrical devices manufacturing industry, 4) Plastic and fiber products manufacturing industry
Medium term	Industries requiring medium level technology: 1) Textile and garment dyeing and painting industry, 2) Equipment and tire and rubber products manufacturing industry, 3) Automobile parts manufacturing industry, 4) Ship building and related industry
Long term	Industries requiring advanced technology: 1) Pharmaceutical industry by using nanotechnology, 2) Advanced chemicals manufacturing industry which has less environment effects, 3) Semi-conductor manufacturing industry, 4) Advanced ICT accessories manufacturing industry Infrastructure industries: 1) Iron, Steel and metal refining and manufacturing industry, 2) Cement industry, 3) Industries related to land transportation, water transport and air transportation, 4) Electric power industry, 5) LNG industry, 6) Transport and Tourism industry, 7) Construction machinery & equipment manufacturing industry, 8) Petro-Chemicals Industry

Source: Prepared by a study group from Industrial Policy (Ministry of Industry, February 2016)

3.2.2 Prospects for Medium to Long-term Industrial/Economic Growth

(1) Prospects for Industrial/Economic Growth

For the medium- and long-term economic development prospects of Myanmar, some institutes such as ADB, OECD, and the McKinsey Global Institute evaluated the possibilities and constraints of Myanmar. They drew growth scenarios and eventually studied strategies and policies for the key industrial sectors to become the driving force for growth. For example, Myanmar's strengths, constraints, opportunities and risks in Myanmar in Transition: Opportunities and Challenges (ADB, August 2012) are summarized in the table below. If various reforms steadily make progress Myanmar will have a possibility of economic growth at an annual rate of 7%-8%. The report also points out that agriculture, tourism, communication, manufacturing, construction and finance industries are the driving force for the high economic growth rate.

Table 3.5: Myanmar Strengths, Constraints, Opportunities, Risks

<p>(Strengths)</p> <ol style="list-style-type: none"> 1. Strong commitment to reform 2. It is possible for overseas investment to provide attractive and cheap labour through a rich and young population 3. Abundant natural resources, (land, water, gas minerals) 4. There is room for productive industry with abundant agricultural resources 5. Tourism development potential 	<p>(Constraints)</p> <ol style="list-style-type: none"> 1. Lack of experience towards market mechanisms and fragile macro-economic management 2. Mobilization of limited financial resources 3. Undeveloped finance sector 4. Inadequate infrastructure, especially for transportation, access to power, communication 5. Poor results in the education and health sectors 6. Limited economic diversity
<p>(Opportunities)</p> <ol style="list-style-type: none"> 1. Strategic location 2. Possibility of renewable energy 3. The possibility of investing in a wide range of economic sectors 	<p>(Risks)</p> <ol style="list-style-type: none"> 1. Risks occurring from economic reforms and liberalization 2. Risks occurring from climate change 3. Pollution from economic activity 4. Tension due to the collision of ethnic minorities within the country

Source: Myanmar in Transition: Opportunity and Challenges (ADB, August 2012)

As shown in the table below, several studies/researches including the one by ADB identified some key industrial sectors to act as driving forces for economic growth.

Table 3.6: Industrial Sectors that Can be Developed in the Future

Surveys/research reports	The possibility of economic growth	The driving force for growth Industry sector
Myanmar in Transition: Opportunity and Challenges (ADB, August 2012)	GDP will grow at an annual rate of 7%–8%, and real GDP will reach 2000 USD- 3000 USD per capita by 2030	Agriculture, Tourism, Communications, Manufacturing, Finance
OECD Development Pathways: Multi-dimensional Review of Myanmar, Volume 2. In-depth Analysis and Recommendation (OECD, January 2015)	N/A	Agriculture, Manufacturing, Transport/Logistics, Tourism
Myanmar's moment: Unique opportunities, major challenges (McKinsey Global Institute, June 2013)	GDP will grow at an annual rate of 8%, and real GDP will reach 220.6 billion USD in 2030.	Agriculture, Manufacturing, Infrastructure, Energy/Mining, Tourism, Finance, Communications, and especially Agriculture, Manufacturing, Infrastructure, Energy/Mining
Country Diagnostic Study: Myanmar Unlocking The Potential (ADB, August 2014)	GDP will grow at an annual rate of 7%-8%, and real GDP will reach 3000 USD per capita by 2030. Prepare multiple economic growth scenarios. Analyze the factors that are positives towards the most economic growth	Agriculture, Natural Resources, Manufacturing, Tourism

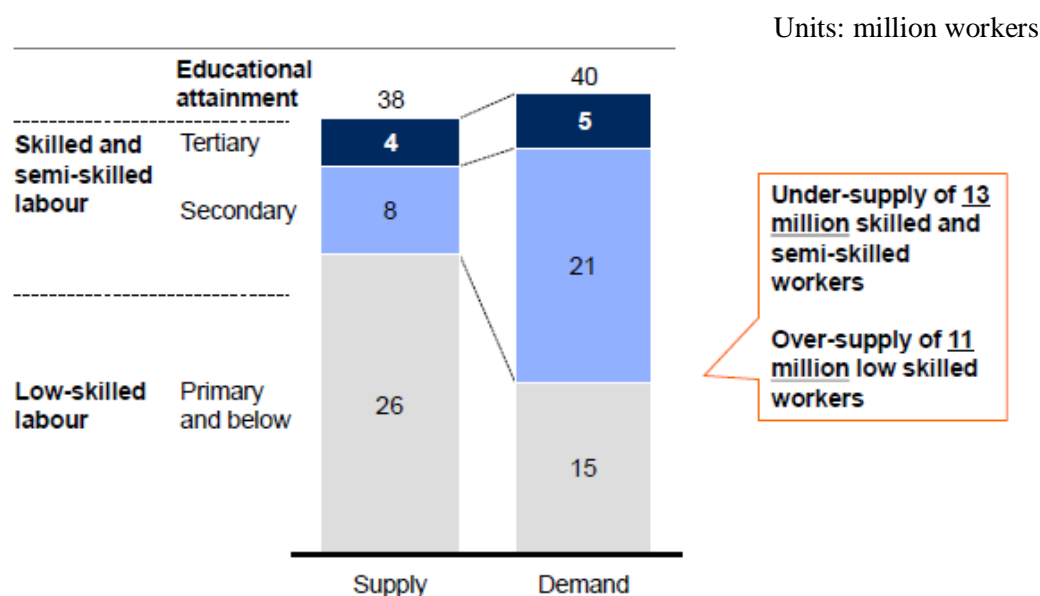
Source: Prepared by JICA study team from each report

As seen in the table above, surveys/researches have similar conclusions where key industrial sectors are identified and they should be prioritized to intensify Myanmar's economic growth and its potentials for further development.

(2) Labour Force Forecast

In order to achieve the high level of economic development, changes in the labour force in terms of both quantity and quality are required. In terms of the supply and demand of the future working population, an analysis was conducted by McKinsey Global Institute in its report titled Myanmar's moment: Unique opportunities, major challenges (McKinsey Global Institute, June

2013). According to the report, if Myanmar continues to achieve an annual economic growth rate of 8%, the real GDP reaches 220.6 billion USD by 2030, and its labour force of 2 million people will be insufficient. In terms of required labour force by skill level, it is estimated that a surplus of 11 million people in Low-skilled Labour while a deficit of 13 million people in Skilled and Semi-skilled labour will be observed as shown in Figure 3.4.



NOTE: Numbers may not sum due to rounding.

SOURCE: Central Statistical Organisation, Myanmar; United Nations Population Division; US Census Bureau; World Bank; McKinsey Global Institute analysis

Source: (McKinsey Global Institute, 2013)

Figure 3.4: Labour Demand and Supply Balance (2030)

In addition, labour demand in key 7 economic sectors, which will become the driving force of industrial and economic development according to the McKinsey Global Institute's report is estimated as shown in the table below. Employment in these seven sectors accounts for about 61 percent of the total employment in 2010, but in 2030 the rate will rise to about 72%.

Table 3.7: Labour Demand in Key Sectors (2030)

Unit: People

Industry sector	2010 (Reference)		2030	
Agriculture	15,600,000	(52.00%)	15,600,000	(39.00%)
Manufacturing industry	1,800,000	(6.00%)	7,600,000	(19.00%)
Infrastructure	500,000	(1.70%)	2,300,000	(5.75%)
Energy/Mining	90,000	(0.30%)	250,000	(1.00%)
Communications	2,600	(0.09%)	240,000	(0.60%)
Finance	7,000	(0.04%)	400,000	(1.00%)
Sightseeing	270,000	(0.90%)	2,300,000	(5.75%)

Note) % represents the percentage of the total labour demand in 2030.

Source: Myanmar's moment: Unique opportunities, major challenges Prepared by a study group from (McKinsey Global Institute, June 2013)

(3) Quality of Human Resources

Myanmar needs to improve quality of its human resources in addition to filling in the gap between labour supply and demand, along with the changes in economic structure as described above. For example, according to a survey conducted by OECD¹², a shortage of skilled workers was identified as the most challenging obstacle among all the obstacles in order to pursue business development. In addition, more than half of the companies are experiencing a shortage of skilled workers. While technology in general as well as specific technologies are lacking, it is reported that a lack of independence, creativity and technology related to ICT and computers in addition to scientific technologies is prominent.

Table 3.8: Skill Gap Facing Myanmar Companies

	Unit: %			
	All sectors	Key sectors		
		Manufacturing	Construction	Hotels and restaurants
Lack of skilled workers is a severe or very severe obstacle to operations	41*	43	34* (equal with lack of technology and corruption)	42
Experienced shortage of skilled workers	57	59	66	61
Experienced technical or professional skills problems	44	45	55	40
Top 3 ranked skills gaps**	1. Computer and ICT 2. Technical skills 3. Creativity and initiative	1. Computer and ICT 2. Technical skills 3. Creativity and initiative	1. Computer and ICT 2. Technical skills 3. Creativity and initiative	1. Computer and ICT 2. Creativity and initiative 3. Technical skills

Notes: *top ranked of all obstacles. **respondents chose from a list of nine potential skills gaps: management and leadership; creativity and initiative; analytical thinking and problem solving; technical skills; finance, accounting and budgeting; computer and ICT; selling and customer services; communications, interpersonal and work ethics, teamwork; and foreign language capability.

Source: OECD (2014), Multi-dimensional Review of Myanmar: Volume 2. In-depth Analysis and Recommendation, OECD Development Pathways. OECD Publishing.

<http://dx.doi.org/10.1787/9789264220577-en>

In addition, the World Bank Myanmar Enterprise Survey (2014) reveals some important facts related to training opportunities for employees including, provision of regular training to employees by company scale, employee training history and an excess or shortage of skills. According to this report, the bigger in scale the company is, the more companies provide employees regular training, thus the percentage of companies that provide employees regular training becomes higher. Yet, compared to a similar survey in Asia and Pacific Ocean region, the percentage figure is still limited. As far as the employee training history goes, the percentage of employees who have received formal training falls disproportionately to the size of the company. In addition, 11%-14% of the companies regardless of its size pointed out that the labour force being inadequately educated had been a major challenge in their business operations.

¹² OECD (2014) Multi-dimensional Review of Myanmar: Volume 2. In-depth Analysis and Recommendation, OECD Development Pathways. OECD Publishing. <http://dx.doi.org/10.1787/9789264220577-en>

Table 3.9: Human Resource Skills Shortage, etc. by Company Size

Sample level/ company size	Percent of firms offering formal training programs for its permanent, full- time employees	Percentage of permanent, full-time employees that have received formal training*1	Percent of firms identifying an inadequately educated workforce as a major constraint
East Asia & Pacific	32.8	66.9	14.1
Myanmar	All sample	15.1	12.4
	Small (5–19)	10.3	11.6
	Medium (20–99)	25.6	14.9
	Large (100+)	31.4	11.4

Note 1) This is limited to the manufacturing industry.

Source: Prepared by JICA study team from the 2014 Myanmar Enterprise Survey (WB)

(4) Outlook for Industry Sectors that will Become Driving Forces for Growth

① Agriculture

It is generally believed that Myanmar has advantages such as 1) abundant agricultural resources in terms of volume and type: water supply, marine resources, tropical forests, which leads to the possibility to produce a variety of agricultural commodities, 2) a good geographical location that shares borders with Southeast Asia and nodal points with large markets such as China and India, 3) the possibility to access a yet larger market through establishment of the ASEAN Economic Community. Against this background, agriculture shines as an industrial sector with potential for further growth in the short as well as medium to long term.

In fact, agriculture contributed to 21.2 billion USD of GDP (2010), and had created jobs for 15.6 million people. By 2030, agriculture sector is expected to contribute 49.1 billion USD, while agriculture jobs are expected to remain at the level of 2010 (15.6 million people)¹³. In the medium to long term, there will be demands for development of a competitive and export-oriented agricultural industry, coupled with provision of opportunities for foreign direct investments and participation to the agriculture global value chain.

② Manufacturing Industry

The manufacturing industry contributed to 9.8 billion USD of GDP (2010), and created jobs for 1.9 million people. By 2030, it is expected that manufacturing industry is to contribute 69.4 billion USD and to create jobs for 7.6 million people¹⁴. In the short term, domestic demands are on the rise with a possibility of exports, and a labour-intensive manufacturing industry, which has been consistent with the current capacity of Myanmar: food and beverages, products based on mineral resources, textiles, clothing, footwear, furniture, jewellery and toys that require various rubber/plastic parts. In addition, Myanmar has a potential to join the early stages of automotive industry development while making progress in the transition to the production of small parts and assembly. In the long term, capital-intensive development of value-added manufacturing is expected to rise along with development of infrastructure such as electric power, roads and ports. Productivity is high in export growth industries, and chemical products, refined petroleum products, electrical machinery, equipment, automobiles and communication facilities are powerful as industries in which Myanmar can have a competitive advantage.

Out of all the manufacturing sectors, automotive sector carries a significant weight and importance in Myanmar as it is considered that automotive sector had largely contributed to the promotion of industrialization of ASEAN countries. Both Myanmar government and the private sector expect the advance of Japanese companies in this industry. Suzuki has already started

¹³ Myanmar's moment: Unique opportunities, major challenges (McKinsey Global Institute, June 2013)

¹⁴ Myanmar's moment: Unique opportunities, major challenges (McKinsey Global Institute, June 2013)

production of about 300 units yearly, and the company is committed to transfer its production base to the Thilawa industrial park. Nissan Motor Co. has also started its production operation in Myanmar. Nissan has a history and experience of manufacturing, although there is an extremely limited number of buses and trucks, including engines, after compensation support. In 2005/06 there were 173 state-owned automotive-related factories¹⁵. However, in 2014/15 173 state-owned automotive-related factories plummeted to 12. It is supported by evidence that structural changes from the state-owned operation to the private sector are happening, and focuses for its operation have shifted to repairs, etc. from manufacturing.

Prior to reaching to the full-scale production of motor vehicles, thanks to a legislative relaxation for imports of used cars in 2012, car maintenance services have been expanding significantly from the level of 2010/11; 2.6 times higher in Yangon and 2.2 times higher. Changes in the number of registered vehicles are as shown in Table 3.9, and most of these cars are Japanese vehicles.

Table 3.10: Number of Registered Vehicles

Year	2000-01	2005-06	2010-11	2011-12	2012-13	2013-14	2014-15
Yangon	158,803	168,533	261,330	268,710	369,686	513,935	679,485
Other	283,461	810,755	2,047,191	2,095,037	3,329,423	3,723,747	4,398,214
Total	442,264	979,288	2,308,521	2,363,747	3,699,109	4,237,682	5,077,699

unit: vehicles

Source: (Department of Road Transport Administration, Ministry of Transport and Communication, Myanmar, 2015)

It is speculated that there will be an extremely large demand related to car maintenance because almost all registered vehicles are used cars. According to the local interviews, some opinions clearly support such speculation as respondents mentioned a need to replace tires every month due to poor road conditions, and a need for repairs at least twice a year. Statistics related to traffic accidents are shown in Table 3.10. In the same statistics, the number of accidents has increased, while the number of accidents due to inadequate vehicles has decreased, which suggests that a certain degree of vehicle maintenance is carried out.

Table 3.11: Number of Traffic Accident Incidents

Year	Number of traffic accidents	Accident type		Accident cause	
		Automobile Both	Automobile and pedestrian	Automobile Poor maintenance	Driver carelessness
2010	9,020	2,687	1,894	483	6,508
2011	10,123	4,069	2,125	666	6,688
2012	11,675	5,362	2,167	520	7,876
2013	13,912	7,635	2,146	408	9,306
2014	14,997	5,677	2,468	381	12,366

Source: (Myanmar Police Force, 2015)

As far as garages dealing with auto maintenance go, only four companies are registered as garages in Yangon, however, in reality it is considered that an extremely large number of unregistered garages are operating. While hybrid cars have also been imported into the country in recent years (Toyota Co. story), regular training and automobile mechanic training programs are required with great urgency as maintenance services for hybrid cars can be dangerous with a risk of electric shocks.

¹⁵ While the import of used cars has been limited, used cars are dismantled, and there were descriptions from the industrial park management committee of businesses that had been made up to sell Myanmar-made vehicles that had been reassembled.

a. Infrastructure/Construction industry

In response to the rapid increase in different types of investments, such as overseas investment and investment in manufacturing industry and service sector, the number of completed houses and the amount of money poured into the country is on the rise as shown in Table 3.12. The growth in number of beneficiary households compared to the number of completed houses is significantly large. It seems to indicate that large housing that can be used by many households has increased. In addition, it also suggests that there is a growth in the amount of money in large housing complexes.

Table 3.12: Changes in Completed Housing

Year	Annual completed housing				Construction amount (000 Kyat)	Gross floor area (Sq. feet)
	Yangon		Other regions			
	Number	Beneficiary households	Number	Beneficiary households		
2005-06	229	633	-	-	9,860	1,447,158
2010-11	27	336	6	46	6,075	329,736
2011-12	266	1,223	12	130	30,254	1,262,537
2012-13	231	1,204	-	-	43,282	1,338,529
2013-14	186	2,380	77	738	69,927	3,017,230
2014-15	218	5,678	64	1,248	131,442	4,155,600

Source: (Department of Human Settlement and Housing Development, Ministry of Construction, Myanmar, 2015)

For infrastructure development, more than 150 billion yen in total has been committed to the development of items such as roads, transmission and distribution and industrial maintenance by ODA loans alone in 2015, and if the actual construction for these items starts, large orders to the construction industry are expected. In addition, the Asian Development Bank and the World Bank both consider that infrastructure development will continue to grow rapidly. In such situation where the aid is received until the electrification rate reaches at the 30% range, whether each company has in-house power generation equipment, and maintains these pieces of equipment or not has become the lifeblood of its business. According to the Construction Department Chairman of the Japan Chamber of Commerce and Industry, Myanmar, it is common for an international construction company to pass its orders to local professional firms (welding, steel frame assembly, concrete form manufacturing, etc.) in case of large-scale projects being implemented. However, there are no such specialized companies in Myanmar at this point, and each business has to gather skilled labour individually. If the public and private sector construction demand is increasing as it has been, it is anticipated that specialized companies with skilled labour will be created even in Myanmar, and it is pointed out that this increase will lead to its efficient implementation.

Chapter 4 Labour/Employment

4.1 Current Situation of Labour Market and Employment Trends

4.1.1 Current Situation of Employment by Age and Sex; Area and Sex; and Educational Background

(1) Current Situation of Employment by Age and Sex

MoLIP prepares the statistics on Labour and Employment in Myanmar. The current situation of Labour and Employment are discussed in this chapter.

The current situation of employment by age and sex is shown in Table 4.1. “Others” in Table 4.1 indicate persons who did not seek employment, full-time students, household workers, pensioners, retired people, elderly, disabled people and etc. in one group.

Table 4.1: Current Situation of Employment by Age and Sex (2014)

Administrative units and Selected age groups	Total	Economically Active						Others
		Employed					Unemployed	
		Employee (government)	Employee (private)	Employer	Own account worker	Unpaid family worker	Sought work	
Both Sexes	40,988,693	1,346,111	7,385,567	1,042,235	8,718,292	3,923,374	954,506	17,618,608
(%)	100%	3.3%	18.0%	2.5%	21.3%	9.6%	2.3%	43.0%
Males	19,527,559	770,640	4,819,808	775,197	5,659,633	1,570,015	567,329	
Females	21,461,134	575,471	2,565,759	267,038	3,058,659	2,353,359	387,177	
10 – 14	5,108,362	-	219,479	-	88,429	235,132	77,282	4,488,040
(%)	100%	-	4.3%	-	1.7%	4.6%	1.5%	87.9%
10 – 14	2,595,749	-	121,342	-	47,855	119,046	47,259	
10 – 14	2,512,613	-	98,137	-	40,574	116,086	30,023	
15 – 19	4,625,989	23,708	1,053,347	19,950	394,461	671,801	244,704	2,218,018
(%)	100%	0.5%	22.8%	0.4%	8.5%	14.5%	5.3%	43.4%
15 – 19	2,290,998	17,777	612,364	12,277	225,384	359,540	147,980	
15 – 19	2,334,991	5,931	440,983	7,673	169,077	312,261	96,724	
20 – 24	4,331,069	168,960	1,295,331	41,646	685,449	677,774	269,010	1,192,899
(%)	100%	3.9%	29.9%	1.0%	15.8%	15.6%	6.2%	27.5%
20 – 24	2,091,525	103,737	775,488	27,820	413,591	338,792	141,750	
20 – 24	2,239,544	65,223	519,843	13,826	271,858	338,982	127,260	
25 – 29	4,146,134	222,101	1,146,796	73,046	948,768	545,492	147,291	1,062,640
(%)	100%	5.4%	27.7%	1.8%	22.9%	13.2%	3.6%	25.6%
25 – 29	1,995,465	124,152	737,564	52,608	609,846	232,931	84,641	
25 – 29	2,150,669	97,949	409,232	20,438	338,922	312,561	62,650	
30 – 34	3,898,861	197,492	954,176	104,747	1,093,948	434,458	82,296	1,031,744
(%)	100%	5.1%	24.5%	2.7%	28.1%	11.1%	2.1%	26.5%
30 – 34	1,884,549	104,070	651,479	78,723	714,228	161,021	51,132	
30 – 34	2,014,312	93,422	302,697	26,024	379,720	273,437	31,164	

35 – 39	3,563,480	168,929	777,531	125,725	1,124,022	350,280	48,740	968,253
(%)	100%	4.7%	21.8%	3.5%	31.5%	9.8%	1.4%	27.2%
35 – 39	1,705,630	87,714	541,507	95,527	730,698	108,038	32,619	
35 – 39	1,857,850	81,215	236,024	30,198	393,324	242,242	16,121	
40 – 44	3,283,073	162,159	619,065	137,297	1,109,400	291,022	31,147	932,983
(%)	100%	4.9%	18.9%	4.2%	33.8%	8.9%	0.9%	28.4%
40 – 44	1,548,942	89,057	434,236	103,725	719,086	76,208	22,128	
40 – 44	1,734,131	73,102	184,829	33,572	390,314	214,814	9,019	
45 – 49	2,946,148	152,144	490,405	135,721	1,011,589	240,508	22,007	893,774
(%)	100%	5.2%	16.6%	4.6%	34.3%	8.2%	0.7%	30.3%
45 – 49	1,375,041	86,261	346,639	102,731	658,870	57,770	16,305	
45 – 49	1,571,107	65,883	143,766	32,990	352,719	182,738	5,702	
50 – 54	2,559,232	127,608	358,828	125,474	863,020	190,119	14,652	879,531
(%)	100%	5.0%	14.0%	4.9%	33.7%	7.4%	0.6%	34.4%
50 – 54	1,182,341	76,753	257,200	94,900	572,799	43,476	10,948	
50 – 54	1,376,891	50,855	101,628	30,574	290,221	146,643	3,704	
55 – 59	2,051,937	102,226	241,318	102,991	634,234	131,466	9,171	830,531
(%)	100%	5.0%	11.8%	5.0%	30.9%	6.4%	0.4%	40.5%
55 – 59	935,979	64,373	174,267	77,408	430,319	30,313	6,814	
55 – 59	1,115,958	37,853	67,051	25,583	203,915	101,153	2,357	
60 – 64	1,576,845	14,577	133,366	77,116	405,091	80,772	4,410	861,513
(%)	100%	0.9%	8.5%	4.9%	25.7%	5.1%	0.3%	54.6%
60 – 64	712,040	12,028	97,904	57,875	282,473	20,937	3,300	
60 – 64	864,805	2,549	35,462	19,241	122,618	59,835	1,110	
65 – 69	1,064,493	3,212	59,873	46,514	208,784	41,570	2,025	702,515
(%)	100%	0.3%	5.6%	4.4%	19.6%	3.9%	0.2%	66.0%
65 – 69	466,618	2,591	44,018	34,333	147,799	11,563	1,426	
65 – 69	597,875	621	15,855	12,181	60,985	30,007	599	
70 – 74	713,170	1,198	20,425	25,220	85,853	17,659	767	562,048
(%)	100%	0.2%	2.9%	3.5%	12.0%	2.5%	0.1%	78.8%
70 – 74	301,679	951	14,785	18,397	61,277	5,396	487	
70 – 74	411,491	247	5,640	6,823	24,576	12,263	280	
75 +	1,119,900	1,797	15,627	26,788	65,244	15,321	1,004	994,119
(%)	100%	0.2%	1.4%	2.4%	5.8%	1.4%	0.1%	88.8%
75 +	441,003	1,176	11,015	18,873	45,408	4,984	540	
75 +	678,897	621	4,612	7,915	19,836	10,337	464	
Population Age 10-17	7,862,576	-	754,304	9,520	282,615	607,975	210,943	5,997,219
(%)	100%	-	9.6%	0.1%	3.6%	7.7%	2.7%	76.3%
Population Age 10-17	3,970,272	-	430,016	5,783	157,953	320,305	129,986	
Population Age 10-17	3,892,304	-	324,288	3,737	124,662	287,670	80,957	
Population Age 15-64	32,982,768	1,339,904	7,070,163	943,713	8,269,982	3,613,692	873,428	10,871,886
(%)	100%	4.1%	21.4%	2.9%	25.1%	11.0%	2.6%	33.0%
Population Age 15-64	15,722,510	765,922	4,628,648	703,594	5,357,294	1,429,026	517,617	
Population Age 15-64	17,260,258	573,982	2,441,515	240,119	2,912,688	2,184,666	355,811	

Source: Central Statistical Organization (CSO)

The overview of employment by age and sex in 2014 is shown. There are approximately 40 million people in Myanmar. Male workers are 19.5 million, a little bit fewer than female counterparts. Female workers are 21.5 million. “Others” include unemployed persons who are not seeking employment, full-time students, unpaid family workers, pensioners and the disabled, as those people are not economically active.

About 40% are students or job seekers, and about 20% starts their jobs in a company as late a teenager. From early twenties to late thirties, for about 15 years, those 20% of employees seem to decrease, instead the number of “own account worker” seems to increase. While not only the number for employee (private)” but also “unpaid family worker” and “sought work” decreases, the number for “own account worker” increases. Most of the workers who were not employed by a company were possibly forced to start their own business, which lead to increase the number of “own account worker”. From early forties to mid-sixties, the number of “employee (private)” shows a sharp decline. From mid-forties to mid-fifties, for 10 years, the number of “own account worker” climbs up to the peak. Historically in Myanmar, most of the people from thirties and up have lead in the economically active lives without democratic economy or society. It is imagined that most of them were not employed or they could not get jobs when they were young. After mid-sixties, unemployed persons who do not look for jobs and pensioners increase. This is the current employment situation in Myanmar.

(2) Current Situation of Employment by Area and Sex

The “unemployment rate”, “labour force participation rate” and “employment rate” in 2014 are shown in Table 4.2. Firstly, with regards to the “employment rate” by region, 81.9% of male are employed while 48.4% of female are employed. In total, 64.4% of population are employed in all unions. That means that more than 80% of male population are employed, but less than 50% of female are employed. The difference between male and female employment situation is larger in the overview of whole union employment situation.

Kaya state and Shan state mark high employment rate with more than 70% of population being employed. In Kaya state, 85.7% of male and 58.9% of female population are employed, and in total 72.3% of population is employed. In Shan state, 86.8% of male population and 65.1% of female population are employed, and in total 75.9% of population is employed. As mentioned above, the differences between male and female employment situation are observed clearly. Female high employment rate seems to have contributed to the overall high employment rate in both states.

In the meanwhile, there are some areas with alarmingly low employment rate, where the total employment rate is lower than 50%. In Kayin state, while 81.4% of male population is employed, only 39.5% of female population is employed, and the overall employment rate is 56.2%. In Bago region, the smallest region, 81.4% of male and 39.5% of female population is employed, and the overall employment rate is 59.2%. In Mon state, 76.2% of male and 40.3% of female are employed, and the overall employment rate is 57.2%. In Rakhine state, 75.6% of male and 33.2% of female population is employed, and the overall employment rate is 52.6%. Those regions and states are geographically close to Yangon region. Female employment rate is 10% lower than the union average. Such low employment rate for female population in those areas suggests a necessity for possible policy interventions to improve the current situation.

Table 4.2: Labour Force Participation Rate, Unemployment Rate and Employment Rate (2014)

Region	Labour force participation rate (%)			Unemployment rate (%)			Employment rate (Population ratio) (%)		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Whole Union	67.0	85.2	50.5	4.0	3.9	4.1	64.4	81.9	48.4
Kachin State	67.2	85.7	45.9	3.7	3.5	4.3	64.6	82.6	44.0
Kayah State	74.2	88.1	60.4	2.7	2.7	2.6	72.3	85.7	58.9
Kayin State	60.7	81.4	41.2	7.5	7.8	7.1	56.2	75.1	38.3
Chin State	64.8	77.6	53.8	5.4	5.9	4.7	61.4	73.0	51.3
Sagaing State	72.3	87.5	59.1	3.6	3.4	3.9	69.7	84.5	56.8
Tanintharyi Region	64.2	86.3	42.3	4.6	4.3	5.2	61.3	82.7	40.1
Bago Region	62.4	85.4	42.0	5.1	4.7	5.8	59.2	81.4	39.5
Magway Region	71.3	86.8	58.5	3.3	3.1	3.6	69.0	84.1	56.4
Mandalay Region	67.9	85.4	52.4	3.1	3.1	3.2	65.7	82.8	50.8
Mon State	61.0	81.2	43.0	6.2	6.1	6.4	57.2	76.2	40.3
Rakhine State	58.8	83.2	38.1	10.4	9.1	12.8	52.6	75.6	33.2
Yangon Region	63.1	81.8	46.4	4.1	4.3	3.9	60.5	78.3	44.6
Shan State	77.5	88.6	66.4	2.0	2.1	1.9	75.9	86.8	65.1
Ayeyarwardy Region	63.8	85.6	43.5	3.4	3.2	3.8	61.6	82.9	41.8
Nay Pyi Taw	69.8	87.1	53.7	2.9	2.9	2.9	67.8	84.5	52.1
Urban area	62.6	80.5	46.8	4.8	4.9	4.7	59.6	76.4	44.6
Rural area	69.1	87.5	52.2	3.6	3.4	3.8	66.6	84.5	50.2

Source: UNFPA, 2014

Table 4.3 shows the share of workers and numbers by industry and region in 2014. The top two to three industries for each region and state are highlighted in pink. “Public administration and defense; compulsory social security” and “Not stated” will be excluded for mentioning here.

There are 21 million workers in total in Myanmar, and 52.4% (11 million persons) works in the “agriculture forestry and fishing” industry (A). After the “agriculture industry”, 9.2% (1.9 million persons) works in the “wholesale and retail trade; repair of motor vehicles and motorcycle” (G) industry. As four different industries are merged into the “wholesale industry”, the exact number for each industry is not known.

“Wholesale industry” occupies the industry share of 5% to 15%. “Manufacturing industry” or “construction industry” are dominant industries in each region or state.

Table 4.3: No. of Workers by Industry and Region (2014)

Industry	Sex	State/Region																															
		Total	Kachin	Kayah	Kayin	Chin	Sagaing	Tanintharyi	Bago	Magway	Mandalay	Mon	Rakhine	Yangon	Shan	Ayeyawady	Nay Pyi Taw																
Total	Total	21,060,531	100.0%	536,058	100.0%	123,573	100.0%	505,452	100.0%	165,975	100.0%	2,411,133	100.0%	516,602	100.0%	1,944,177	100.0%	1,819,286	100.0%	2,714,957	100.0%	727,783	100.0%	695,391	100.0%	3,011,867	100.0%	2,829,210	100.0%	2,570,387	100.0%	488,680	100.0%
	Male	12,624,395		342,319		70,800		323,662		90,217		1,339,986		340,708		1,250,338		998,783		1,584,629		454,008		452,318		1,844,666		1,577,498		1,662,671		291,792	
	Female	8,436,136		193,739		52,773		181,790		75,758		1,071,147		175,894		693,839		820,503		1,130,328		273,775		243,073		1,167,201		1,251,712		907,716		196,888	
A - Agriculture forestry and fishing	Total	11,026,852	52.4%	264,190	49.3%	78,622	63.6%	285,375	56.5%	122,811	74.0%	1,491,665	61.9%	282,805	54.7%	1,130,796	58.2%	1,202,244	66.1%	1,087,208	40.0%	338,065	46.5%	359,155	51.6%	444,420	14.8%	2,056,424	72.7%	1,671,324	65.0%	211,748	43.3%
	Male	7,006,944		175,811		44,014		196,515		67,580		874,046		215,798		792,073		677,895		671,978		245,318		275,203		323,946		1,142,253		1,174,145		130,369	
	Female	4,019,908		88,379		34,608		88,860		55,231		617,619		67,007		338,723		524,349		415,230		92,747		83,952		120,474		914,171		497,179		81,379	
B - Mining and quarrying	Total	168,103	0.8%	30,745	5.7%	3,720	3.0%	1,157	0.2%	117	0.1%	39,404	1.6%	1,468	0.3%	9,876	0.5%	12,943	0.7%	43,294	1.6%	2,123	0.3%	1,686	0.2%	3,955	0.1%	10,641	0.4%	4,178	0.2%	2,796	0.6%
	Male	138,060		28,645		2,784		844		89		31,530		1,062		7,528		11,040		34,737		1,604		1,286		3,213		8,230		3,448		2,020	
	Female	30,043		2,100		936		313		28		7,874		406		2,348		1,903		8,557		519		400		742		2,411		730		776	
C - Manufacturing	Total	1,431,134	6.8%	16,717	3.1%	2,677	2.2%	21,808	4.3%	1,588	1.0%	149,341	6.2%	24,082	4.7%	123,000	6.3%	85,885	4.7%	291,371	10.7%	46,333	6.4%	22,745	3.3%	445,401	14.8%	60,825	2.1%	119,838	4.7%	19,523	4.0%
	Male	613,450		8,525		1,755		11,109		531		56,681		12,376		48,377		38,917		133,944		20,062		10,464		168,839		29,317		61,167		11,386	
	Female	817,684		8,192		922		10,699		1,057		92,660		11,706		74,623		46,968		157,427		26,271		12,281		276,562		31,508		58,671		8,137	
D - Electricity gas steam and air conditioning supply	Total	44,695	0.2%	608	0.1%	76	0.1%	296	0.1%	28	0.0%	1,794	0.1%	803	0.2%	2,049	0.1%	1,096	0.1%	8,120	0.3%	1,240	0.2%	510	0.1%	22,270	0.7%	1,757	0.1%	2,841	0.1%	1,207	0.2%
	Male	40,347		546		71		262		28		1,674		733		1,886		1,026		7,589		1,174		464		19,475		1,639		2,642		1,138	
	Female	4,348		62		5		34		-		120		70		163		70		531		66		46		2,795		118		199		69	
E - Water supply; sewerage waste management and remediation activities	Total	26,421	0.1%	524	0.1%	66	0.1%	469	0.1%	9	0.0%	2,211	0.1%	614	0.1%	2,571	0.1%	1,366	0.1%	4,414	0.2%	625	0.1%	188	0.0%	8,234	0.3%	1,675	0.1%	2,395	0.1%	1,060	0.2%
	Male	21,701		447		51		423		8		1,883		494		2,226		1,159		3,686		511		120		6,456		1,371		2,000		866	
	Female	4,720		77		15		46		1		328		120		345		207		728		114		68		1,778		304		395		194	
F - Construction	Total	956,613	4.5%	20,974	3.9%	6,089	4.9%	22,659	4.5%	3,189	1.9%	75,420	3.1%	29,145	5.6%	75,760	3.9%	46,263	2.5%	159,405	5.9%	47,925	6.6%	22,570	3.2%	263,880	8.8%	91,930	3.2%	60,771	2.4%	30,633	6.3%
	Male	858,932		18,601		5,094		20,768		2,895		65,632		26,483		70,297		40,881		136,290		45,126		19,281		242,565		82,787		56,254		25,978	
	Female	97,681		2,373		995		1,891		294		9,788		2,662		5,463		5,382		23,115		2,799		3,289		21,315		9,143		4,517		4,655	
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	Total	1,946,852	9.2%	64,884	12.1%	7,655	6.2%	44,518	8.8%	3,071	1.9%	163,525	6.8%	57,116	11.1%	163,739	8.4%	109,252	6.0%	312,075	11.5%	86,947	11.9%	48,597	7.0%	476,047	15.8%	160,969	5.7%	200,973	7.8%	47,484	9.7%
	Male	905,021		32,042		3,191		19,409		1,514		66,113		18,080		74,353		45,728		156,386		33,535		20,274		255,483		72,266		85,928		20,719	
	Female	1,041,831		32,842		4,464		25,109		1,557		97,412		39,036		89,386		63,524		155,689		53,412		28,323		220,564		88,703		115,045		26,765	
H - Transportation and storage	Total	813,048	3.9%	16,848	3.1%	3,173	2.6%	23,342	4.6%	1,089	0.7%	50,220	2.1%	24,105	4.7%	72,636	3.7%	35,556	2.0%	105,375	3.9%	37,668	5.2%	21,405	3.1%	274,751	9.1%	54,689	1.9%	72,826	2.8%	19,365	4.0%
	Male	786,939		16,440		3,104		22,927		1,039		47,540		23,462		70,873		34,269		101,488		36,865		20,327		266,458		52,847		70,516		18,784	
	Female	26,109		408		69		415		50		2,680		643		1,763		1,287		3,887		803		1,078		8,293		1,842		2,310		581	
I - Accommodation and food service activities	Total	983,210	4.7%	22,055	4.1%	2,517	2.0%	15,284	3.0%	656	0.4%	76,371	3.2%	20,809	4.0%	90,642	4.7%	50,251	2.8%	167,674	6.2%	46,245	6.4%	25,161	3.6%	282,883	9.4%	60,869	2.2%	98,981	3.9%	22,812	4.7%
	Male	403,115		7,162		974		6,263		216		26,802		6,080		34,583		18,772		70,051		15,420		7,836		139,628		22,826		37,242		9,060	
	Female	580,095		14,893		1,543		9,021		440		49,569		14,729		56,059		31,479		97,623		30,825		17,325		143,055		38,043		61,739		13,752	
J - Information and communication	Total	48,092	0.2%	754	0.1%	119	0.1%	712	0.1%	210	0.1%	2,044	0.1%	629	0.1%	2,243	0.1%	1,612	0.1%	6,189	0.2%	1,064	0.1%	613	0.1%	26,799	0.9%	2,430	0.1%	1,840	0.1%	834	0.2%
	Male	29,996		494		73		444		149		1,374		386		1,490		1,020		3,950		656		412		16,327		1,544		1,164		513	
	Female	18,096		260		46		268		61		670		243		753		592		2,239		408		201		10,472		886		676		321	

K - Financial and insurance activities	Total	42,891	0.2%	535	0.1%	173	0.1%	526	0.1%	178	0.1%	2,013	0.1%	891	0.2%	2,766	0.1%	2,349	0.1%	6,580	0.2%	1,231	0.2%	1,039	0.1%	17,554	0.6%	2,760	0.1%	2,883	0.1%	1,413	0.3%
	Male	17,535		221		66		262		83		940		308		1,238		1,107		2,958		467		450		6,500		1,101		1,250		584	
	Female	25,356		314		107		264		95		1,073		583		1,528		1,242		3,622		764		589		11,054		1,659		1,633		829	
L - Real estate activities	Total	10,806	0.1%	132	0.0%	13	0.0%	30	0.0%	-	0.0%	106	0.0%	29	0.0%	185	0.0%	47	0.0%	2,241	0.1%	68	0.0%	20	0.0%	7,065	0.2%	631	0.0%	132	0.0%	107	0.0%
	Male	7,019		74		8		19		-		76		19		147		33		1,582		54		13		4,433		381		101		79	
	Female	3,787		58		5		11		-		30		10		38		14		659		14		7		2,632		250		31		28	
M - Professional scientific and technical activities	Total	29,549	0.1%	665	0.1%	91	0.1%	323	0.1%	29	0.0%	2,141	0.1%	705	0.1%	2,008	0.1%	1,459	0.1%	5,453	0.2%	1,127	0.2%	513	0.1%	10,758	0.4%	1,737	0.1%	1,810	0.1%	730	0.1%
	Male	20,007		427		54		229		22		1,596		519		1,400		1,100		3,910		715		379		6,644		1,157		1,357		498	
	Female	9,542		238		37		94		7		545		186		608		359		1,543		412		134		4,114		580		453		232	
N - Administrative and support service activities	Total	249,437	1.2%	2,447	0.5%	448	0.4%	3,020	0.6%	163	0.1%	11,248	0.5%	6,145	1.2%	9,111	0.5%	6,757	0.4%	28,903	1.1%	3,175	0.4%	2,650	0.4%	150,777	5.0%	9,413	0.3%	7,484	0.3%	7,696	1.6%
	Male	150,595		1,636		310		1,891		120		7,332		3,642		5,948		4,326		17,063		1,995		1,864		88,025		6,076		5,074		5,293	
	Female	98,842		811		138		1,129		43		3,916		2,503		3,163		2,431		11,840		1,180		786		62,752		3,337		2,410		2,403	
O - Public administration and defence; compulsory social security	Total	617,224	2.9%	16,547	3.1%	5,995	4.9%	12,898	2.6%	7,127	4.3%	43,055	1.8%	14,047	2.7%	59,043	3.0%	53,567	2.9%	75,076	2.8%	19,405	2.7%	22,635	3.3%	138,229	4.6%	55,736	2.0%	40,716	1.6%	53,148	10.9%
	Male	439,737		13,092		4,275		10,355		5,239		30,098		10,589		43,279		37,314		52,310		13,796		18,531		91,558		43,954		30,032		35,315	
	Female	177,487		3,455		1,720		2,543		1,888		12,957		3,458		15,764		16,253		22,766		5,609		4,104		46,671		11,782		10,684		17,833	
P - Education	Total	390,189	1.9%	12,682	2.4%	2,873	2.3%	9,054	1.8%	5,229	3.2%	42,375	1.8%	11,214	2.2%	38,757	2.0%	32,712	1.8%	51,711	1.9%	17,800	2.4%	18,334	2.6%	64,680	2.1%	30,231	1.1%	45,129	1.8%	7,408	1.5%
	Male	74,220		1,743		405		1,347		2,145		10,297		1,019		6,833		7,703		11,244		1,705		5,466		10,165		4,427		8,323		1,398	
	Female	315,969		10,939		2,468		7,707		3,084		32,078		10,195		31,924		25,009		40,467		16,095		12,868		54,515		25,804		36,806		6,010	
Q - Human health and social work activities	Total	113,060	0.5%	5,239	1.0%	1,097	0.9%	2,358	0.5%	1,677	1.0%	9,569	0.4%	2,644	0.5%	8,608	0.4%	6,308	0.3%	14,407	0.5%	4,472	0.6%	3,040	0.4%	32,670	1.1%	10,007	0.4%	8,747	0.3%	2,217	0.5%
	Male	44,732		2,433		221		781		571		4,517		876		3,462		2,318		5,957		1,891		1,362		12,153		3,760		3,629		801	
	Female	68,328		2,806		876		1,577		1,106		5,052		1,768		5,146		3,990		8,450		2,581		1,678		20,517		6,247		5,118		1,416	
R - Arts entertainment and recreation	Total	58,493	0.3%	840	0.2%	113	0.1%	897	0.2%	36	0.0%	4,007	0.2%	620	0.1%	3,615	0.2%	2,675	0.1%	15,499	0.6%	1,524	0.2%	529	0.1%	19,976	0.7%	3,118	0.1%	3,476	0.1%	1,568	0.3%
	Male	42,832		597		81		752		31		3,123		482		2,846		2,131		11,458		1,249		439		13,891		1,971		2,808		973	
	Female	15,661		243		32		145		5		884		138		769		544		4,041		275		90		6,085		1,147		668		595	
S - Other service activities	Total	476,207	2.3%	9,131	1.7%	1,809	1.5%	6,881	1.4%	2,904	1.7%	34,837	1.4%	5,087	1.0%	27,316	1.4%	29,746	1.6%	82,928	3.1%	17,059	2.3%	22,538	3.2%	97,453	3.2%	41,463	1.5%	77,149	3.0%	19,906	4.1%
	Male	294,692		5,844		1,156		4,878		2,259		20,029		3,033		17,631		17,189		44,266		11,589		15,321		62,907		25,046		51,180		12,364	
	Female	181,515		3,287		653		2,003		645		14,808		2,054		9,685		12,557		38,662		5,470		7,217		34,546		16,417		25,969		7,542	
T - Activities of households as employers; undifferentiated goods- and	Total	288,763	1.4%	6,644	1.2%	929	0.8%	5,822	1.2%	453	0.3%	46,400	1.9%	6,827	1.3%	47,496	2.4%	39,400	2.2%	52,012	1.9%	7,213	1.0%	12,284	1.8%	32,399	1.1%	9,406	0.3%	16,767	0.7%	4,711	1.0%
	Male	158,392		4,164		548		3,885		233		26,625		4,333		29,889		22,041		26,872		4,272		7,922		12,517		3,424		9,228		2,439	
	Female	130,371		2,480		381		1,937		220		19,775		2,494		17,607		17,359		25,140		2,941		4,362		19,882		5,982		7,539		2,272	
U - Activities of extraterritorial organizations and bodies	Total	2,862	0.0%	167	0.0%	34	0.0%	27	0.0%	31	0.0%	62	0.0%	56	0.0%	31	0.0%	149	0.0%	199	0.0%	70	0.0%	68	0.0%	1,598	0.1%	156	0.0%	184	0.0%	30	0.0%
	Male	1,472		99		16		13		23		29		27		17		77		90		24		48		823		80		90		16	
	Female	1,390		68		18		14		8		33		29		14		72		109		46		20		775		76		94		14	
Not stated	Total	1,336,030	6.3%	42,730	8.0%	5,284	4.3%	47,996	9.5%	15,380	9.3%	163,325	6.8%	26,761	5.2%	71,929	3.7%	97,649	5.4%	194,823	7.2%	46,404	6.4%	109,111	15.7%	190,068	6.3%	162,343	5.7%	129,943	5.1%	32,284	6.6%
	Male	568,657		23,276		2,549		20,286		5,442		62,049		10,907		33,962		32,737		86,820		15,980		44,856		92,460		71,041		55,093		11,199	
	Female	767,373		19,454		2,735		27,710		9,938		101,276		15,854		37,967		64,912		108,003		30,424		64,255		97,608		91,302		74,850		21,085	

Source: Central Statistical Organization

(3) Current Situation of Employment by Educational Background

There are no statistics for the current situation of employment by educational background¹⁶.

(4) Current Situation of Domestic Employment through Region and State Labour Exchange Offices

The Region and State Head office of labour exchange offices (16 head offices) and the Region and State branch labour exchange offices (60–63 offices (Number of branch offices varies each year)) under Department of Labour of MoLIP implement job seeker registration, job vacancy registration etc. Statistics are shown in Table 4.4. The number indicated in the table is the sum of all the numbers provided by the Region and State Head labour exchange offices and the Region and State branch labour exchange offices.

Table 4.4: Number of Job Seekers, Job Vacancies and Job Placements through Regional and State Labour Exchange Offices

Year	Exchange	Fresh registration	Persons placed in employment	Lapsed register	Persons on register at the end of year	Vacancies notified	Vacancies outstanding at the end of year
2000	79	362,675	54,913	347,365	382,067	55,431	518
2005	77	354,926	64,730	391,830	189,684	65,765	1,035
2010	77	701,834	265,794	413,969	172,007	269,132	3,338
2011	77	816,421	318,017	486,633	183,778	320,648	2,631
2012	77	1,037,340	397,539	585,721	237,858	401,740	4,201
2013	76	1,115,405	417,678	217,446	718,139	418,962	1,284
2014	77	990,091	327,509	620,640	760,081	329,530	2,021

Source: Central Statistical Organization, 2015

54,913 persons were placed in employment in 2000, and 64,730 persons were placed in 2005. Within five years, approximately 10,000 persons were placed in employment. From 2005 to 2010, the figure quadrupled to 265,794. The number of notified vacancies to the region and state labour exchange offices were 55,431 in 2000 and 65,765 in 2005. As we saw in the figure for placed persons, the figure for “vacancies notified” increased significantly to 269,132 in 2010, which was four times larger than the level of 2005. The increase in “vacancies notified” and “persons placed in employment” was seen proportionately.

(5) Current Situation of Overseas Employment

MoLIP reports the statistics of overseas employment, and details are shown below in Table 4.5.

Table 4.5: The Number of Myanmar Overseas Employment

Country	2010–2011	2011–2012	2012–2013	2013–2014	2014–2015
Total	5,603 (100%)	28,347 (100%)	75,584 (100%)	61,645 (100%)	70,788 (100%)
Thailand	1,658 (30%)	12,827 (45%)	43,099 (57%)	33,172 (54%)	35,820 (51%)
Malaysia	2,442 (44%)	12,469 (44%)	28,892 (38%)	23,243 (38%)	29,224 (41%)
Korea	666 (12%)	2,348 (8%)	2,931 (4%)	4,366 (7%)	4,220 (6%)
Singapore	687 (12%)	476 (1%)	605 (-)	699 (-)	493 (-)
Qatar	-	13 (-)	29 (-)	71 (-)	-
UAE	138 (2%)	189 (1%)	20 (-)	12 (-)	2 (-)
Kuwait	-	18 (-)	-	-	-
Japan	12 (-)	7 (-)	8 (-)	63 (-)	875 (1%)
Hong Kong	-	-	-	19 (-)	154 (-)

Source: Ministry of Labour, Immigration and Population with modification made by the Survey team.

¹⁶ The answer from CSO is that there are no statistics by educational background in the first survey.

The above statistics were provided based on the reports by each regional and state branch labour exchange offices to the regional and state head labour exchange offices, and each regional and state head office report to MoLIP.

Thailand and Malaysia are the top destinations for Myanmar overseas employment. While only 5,603 persons are reported working overseas in 2010–2011, 28,347 persons are reported working overseas in the following year, which indicates a huge increase in overseas employment (5 times more) in 2011–2012. Following the period, 75,584 persons work overseas in 2012–2013. The number of overseas workers increased thirteen times from the level of 2010–2011 to 2012–2013 just within two years. The huge increase in the number of overseas workers in 2011 coincided with the time when Myanmar’s democratic administration started. After that period, it seemed that the upward trend calmed down the figure stays around 60,000 to 70,000 between 2012 and 2015.

(6) Current Situation of Technical Intern Trainees to Japan

The number of technical intern trainees from Myanmar has rapidly increased after the democratization of Thein Sein regime in 2011 as shown in the following table.

Table 4.6: The Trends of Technical Intern Foreign Trainees in Japan

Origin country	2012	2013	2014	2015
Total	151,477	155,206	167,626	192,655
China	111,395	107,174	100,093	89,086
Viet Nam	16,715	21,632	34,039	57,581
Philippine	8,842	10,077	12,721	17,740
Indonesia	9,098	10,064	12,222	15,307
Thailand	3,464	3,947	4,923	6,084
Myanmar	87	120	631	1,978
Mongolia	421	449	516	624
Nepal	310	416	305	247
Sri Lanka	173	180	183	223
Others	972	1147	1,993	3,785

Source: Data by Immigration Bureau of Ministry of Justice and modified by JICA Survey team

The number of Myanmar persons who have residence qualification in Japan increased significantly to 1,978 in 2015 while only 87 did so at the end of 2012. Furthermore, it is projected that the number will rise to 3,500 to 4,000 by the end of 2016.

A possible explanation for this trend is due to a dramatic decrease in number of Chinese technical trainees from 111,395 in 2012 to 89,086 in 2015, and this downward trend seems to continue for Chinese trainees. Another explanation could be a very stable and good relationship between Japan and Myanmar with religious similarities, and a high regard for Myanmar trainees by Japanese employers based on previous experiences. The Technical Intern Trainee Program (TITP) is designed to support the human resource development of emerging economies. Trainees are expected to acquire industrial skills in Japan during their stay at training organizations. TITP has two categories of candidates. Those who belong to the first category can stay only for one year in Japan and after obtaining certain level of skills, they are entitled to become candidates for the second category and permitted to stay for a longer period of time in Japan. However, there is no concrete agreement between Japanese and Myanmar government with regards to TITP. Therefore, responsibilities of sending organizations, intermediate agents and recipient companies/organizations are not clearly defined. This may have triggered disappearance of many trainees during the training period without provision of appropriate training programs, proper supervision for their treatments including illegally low amount of

remuneration etc. In response to the fact, Cabinet of Japanese government drafted a legislation for the proper implementation of TITP and protection of trainees. The law will be enacted shortly. With proper enforcement of this law (expected to be enacted in 2017 or later), it is expected that suitable conditions for accomplishing the original purpose of “human resource development” for Myanmar will be created, while both governments agree on responsibilities for each organization. Under the new system, governments provide a permission for supervising organizations to protect the trainees as they send them to Japan. Furthermore, the training period can be extended to 5 years (previously 3 years) for good trainees. In addition, trainees will be able to change their training organizations if there is any unavoidable reason. As of April 1, 2016, 74 occupations (in agriculture, fisheries, construction, food processing, garment, machine, metal etc.) and 133 tasks are included in TITP, and the number of agents working for TITP increases to 300 in Myanmar. The agents gather trainees and send them out to Japan in response to Japanese government’s requests. At their embarkation, each trainee is required to possess a smart card with recipient’s name on it issued by Ministry of Health, Labour and Welfare (MoHLW) of Japan. Recipient organizations generally ask trainees to have a minimum level of Japanese language skill as well as basic technical skills. Therefore, many agents collaborate with private educational institutions to provide basic education to prospective trainees. The range of training programs varies from a short-term language training program to a long-term cultural education program. Myanmar Sakou Co., Ltd, a Japanese private company, provides courses for technical trainees in collaboration with MoI. Furthermore, Myanmar Sankou established an international department in ITC (Mandalay) requested by MoI. The department accepts graduates from 6 ITC in Myanmar and offers a one-year training program including a Japanese language course and send the trainees to Japanese automobile companies through agents. Before the international department was established, the trainees of ITC (all are staffs of MoI) were supposed to work for companies under MoI. However, the international department created a new opportunity to work for Japanese companies and to acquire new skills through the training program in Japan. One example of a recipient company is JFE Engineering Corporation (JFEE). JFEE accepts trainees through Construction Industry Promotion Foundation in Japan and a local agent, Myanmar Engineering Society (MES). MES recruits trainees via newspaper advertisement and sends them to Japan. 240 trainees received JFEE’s training program, and after the training, some of them were employed by the joint venture of JFEE and Myanmar government in Myanmar. Trainees do not need to pay any fee to the agent and they receive smart cards directly from MoHLW, according to MES. Most formal educational institutions in Myanmar do not offer employment support. Hence, the career prospects to work for Japanese companies through TITP can call up strong interests in education and training. Myanmar Sankou has been considering on introducing the previous trainees of TITP to Japanese companies in Myanmar. The cultivation of young skilled labourers who had learned Japanese work culture, Japanese language and team work will contribute to the provision of good human resources for Japanese companies in Myanmar as well as to the development of human resources in Myanmar.

(7) Current Situation of Vocational Awareness and Initial Phase of Vocational Career for Myanmar Youth

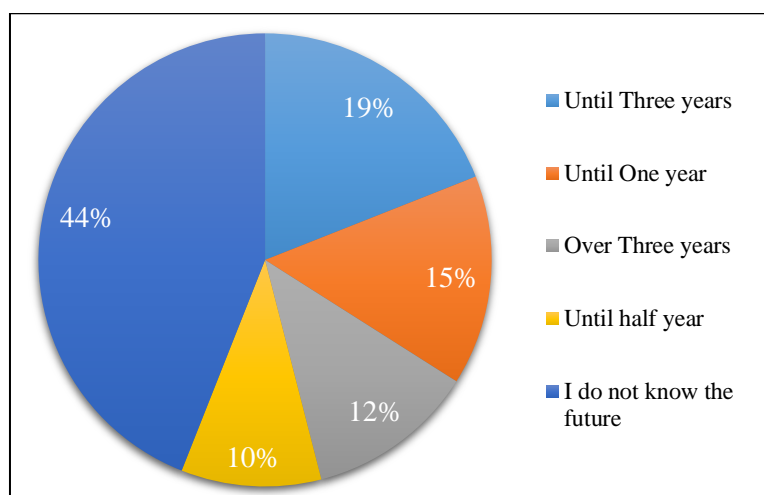
The youth of Myanmar generally have limited vocational awareness and work ethics for their jobs, and they are not mentally prepared to work for a long time with the same employer. They tend to resign from their work even when they do not have any specific reason to resign. This tendency is a visible risk for Japanese employers¹⁷. And it is considered that Myanmar youth are less patient than Japanese youth¹⁸. In general, Japanese companies tend to value more on their employees’ mental maturity such as sense of self-sufficiency and patience rather than professional knowledge and/or technical skills. Thus, there is a gap between the demand-side

¹⁷ The survey team confirmed this point through an interview with some private job placement agencies.

¹⁸ The survey team confirmed this point through an interview with some private job placement agencies.

and the supply-side in the labour market. It is also considered that such vocational awareness and work ethics cannot be taught through educational system as high schools and universities do not have a specific department to support employment placement for students nor they have paid a particular attention to preparing students to be vocationally aware. Furthermore, educational curricula have not included basic education for the youth to become mentally ready for their life as workers. In addition, it is considered that parental guidance on vocational awareness is limited as well. It seems to be challenging for the youth to become prepared to work in Myanmar, which is yet to have a mature employment society¹⁹.

The thought of Myanmar youth for future jobs and skills is shown in the following figure. This pie chart is created by the online-survey conducted by JICA team with 559 respondents²⁰. 19% of the youth thinks about their future jobs and skills within the time frame of 3 years and longer. 10% of the youth thinks about them within the time frame of a half year. However, 44% of the youth answered that they could not imagine their future jobs and skills at that moment. The respondents were roughly divided into two groups, indicating that a half of the youth is not prepared for their future and the rest is well prepared for their jobs in mid-term and short-term future.



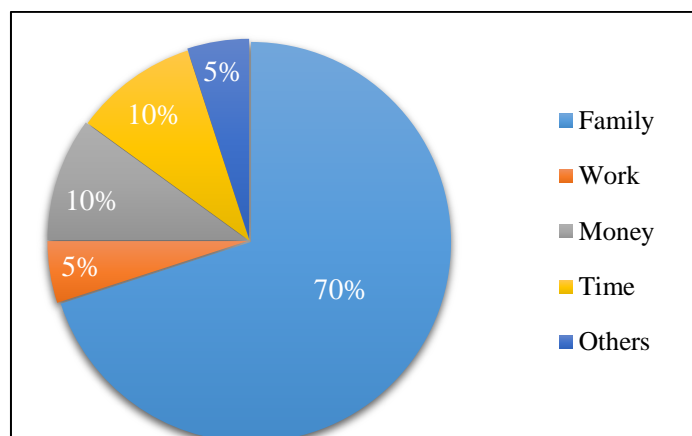
Source: J-SAT, Survey result for Myanmar Human resources seminar (2015) and modified by JICA survey team

Figure 4.1: Future Jobs and Awareness of Myanmar Youth

Thoughts by Myanmar youth and sense of values in their lives are shown in the following figure. 70% of respondents valued family as their top value. Their thoughts and activity patterns tend to reflect those of their parents. After Family, Work, Money and Time are important to them. They value their parents' thoughts and expectation on their jobs. This tendency sometimes influences their employment selection and job hopping attitude. For example, some female workers find job opportunities outside of their hometown, but they tend not to pursue such opportunities due to parents' negative views on them. If their self-fulfilment and parents' expectations are in line, they can smoothly start their employment life; however, when they are not in line, they tend to follow what their parents expect them to do.

¹⁹ The survey team confirmed this point through an interview with some private job placement agencies. Working type of "Employed" is not general in Myanmar for long time, while working type of "Own account workers" in formal and informal economy are main working styles for long time. Figure 4.3. also shows it.

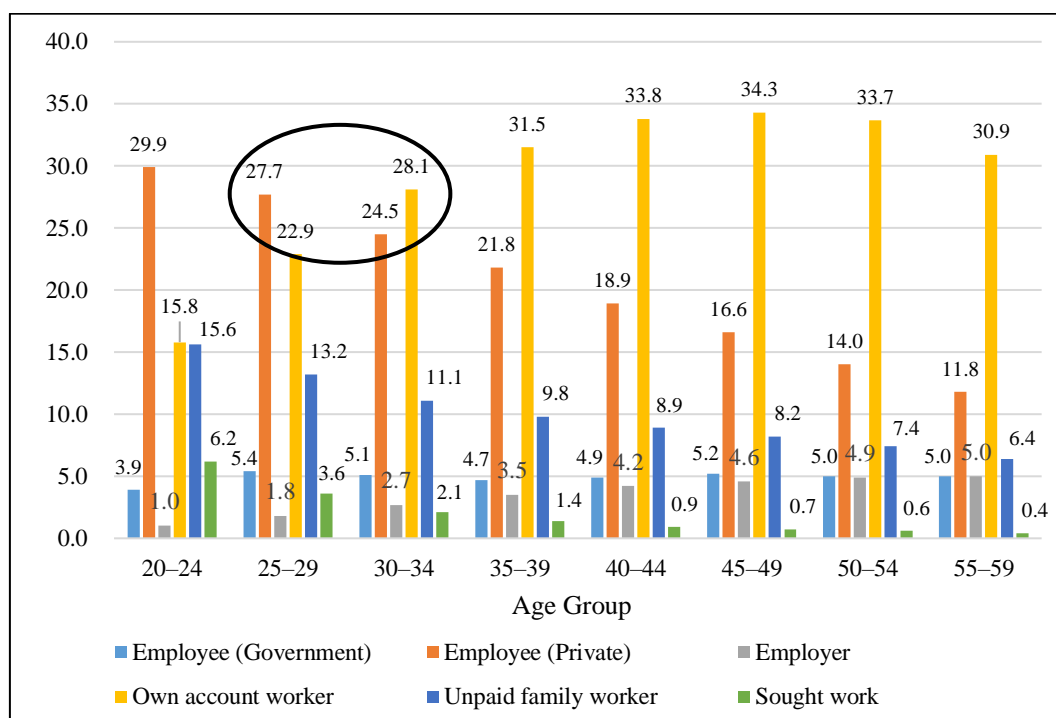
²⁰ This survey is implemented by J-SAT through an on-line survey. Total number of respondents is 559. Male ratio is 69% and female one is 31%. Age group ratio of respondents are 1% for under 10-year-old, 23% for teenagers, 60% for 20th, 14% for 30th, 2% for 40th. Educational background is not confirmed in this on-line survey.



Source: J-SAT, Survey result for Myanmar Human resources seminar (2015) and modified by JICA survey team

Figure 4.2: Values of Myanmar Youth

The changes of employment types by age group are shown by the following figure. The statistics show that a gradual decline in “employee (private)”, which represents about 30% of the population starting in early twenties. At the same time, a gradual and steady increase is observed in “own account worker”, which represents about 20% of the population starting in early twenties. The “own account workers” outnumber the workers in “employee (private)” in early thirties. By analyzing the statistics, it is assumed that people start their work lives in their early twenties as employees of some companies. They gain work experiences for some ten years there, and then move onto become “own account workers”. Prior to the democratization of the country in 2011, people worked mostly as own account workers and agricultural workers as an employment type of “employed” was not common in Myanmar. It implies that the notion of vocational career has recently been introduced in Myanmar.



Source: Central Statistical Organization (CSO) (2014) and modified by JICA survey team

Figure 4.3: The Ratio of Employment Types by Age

Generally speaking, it seems that the youth in Myanmar can be divided roughly into two groups; the ones who have a clear vision for their future employment, and the others who do not have a vision. For both groups, it seems that they tend to emphasize their parents' expectations more than their own when it comes to their employment situation. After graduating from educational institutes, most of the youth are successfully employed in some companies. However, they do not last long and start to resign from their jobs as employed workers in their thirties. Most of them have a vision for their career as an independent worker ever since they were students. So, when their vision is supported and blessed by their parents, they become own account workers²¹. In the meanwhile, some youth do not have their career vision and tend to hop jobs for better and bigger deals in the labour market without being tied down to an age-based remuneration system.

The youth has to consider and plan their future vocational careers with a clear understanding of their real abilities. The youth has to understand their parents' expectations and requests for them and share their views. The youth should start job placement activities only after the above-mentioned steps are taken. That would minimize risks for early resignation from job and would help them feel satisfied with their vocational careers.

4.1.2 Labour Population by Industry, Unemployment Rate, Labour Participation Rate, Current Situation of Employment by Industry and Education

(1) Current Situation of Labour Population by Industry

The current situation of labour population by age and industry is shown in Table 4.7.

²¹ In some interviews, respondents pointed out that the sense of independence among Myanmar youth is high in general. This point was confirmed by some private job placement agencies as well. Some youth even become own account workers without having a clear vision for their future employment situation.

Table 4.7: Labour Population by Industry (Industry and Age)

Industry	Sex	Age Group														
		Total	10-14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 -69	70+	
Total population in employment	Total(#)	21,060,531	514,924	1,958,519	2,546,150	2,681,680	2,618,795	2,430,352	2,229,809	1,963,978	1,617,700	1,181,372	695,114	353,185	268,953	
	Male (#)	12,624,395	269,673	1,087,290	1,433,753	1,574,813	1,587,046	1,477,148	1,355,814	1,202,912	1,009,864	753,681	459,253	235,428	177,720	
	Female (#)	8,436,136	245,251	871,229	1,112,397	1,106,867	1,031,749	953,204	873,995	761,066	607,836	427,691	235,861	117,757	91,233	
A - Agriculture forestry and fishing		11,026,852	11,026,852	300,043	1,036,543	1,210,973	1,287,383	1,280,043	1,229,233	1,155,851	1,048,089	917,086	688,181	451,020	236,930	185,477
			100.0%	2.7%	9.4%	11.0%	11.7%	11.6%	11.1%	10.5%	9.5%	8.3%	6.2%	4.1%	2.1%	1.7%
		7,006,944	7,006,944	161,523	591,834	714,702	794,954	816,192	790,929	747,445	685,877	611,767	471,073	317,674	169,966	133,008
B - Mining and quarrying		4,019,908	4,019,908	138,520	444,709	496,271	492,429	463,851	438,304	408,406	362,212	305,319	217,108	133,346	66,964	52,469
		168,103	168,103	3,222	22,189	27,485	26,954	24,387	20,636	16,568	12,134	7,504	4,313	1,692	646	373
			100.0%	1.9%	13.2%	16.4%	16.0%	14.5%	12.3%	9.9%	7.2%	4.5%	2.6%	1.0%	0.4%	0.2%
C - Manufacturing		138,060	138,060	2,129	17,089	22,555	22,598	20,556	17,163	13,745	10,032	6,276	3,646	1,427	532	312
		30,043	30,043	1,093	5,100	4,930	4,356	3,831	3,473	2,823	2,102	1,228	667	265	114	61
		1,431,134	1,431,134	35,820	204,058	252,415	211,685	179,761	147,657	120,765	98,934	73,414	50,902	29,357	14,953	11,413
D - Electricity gas steam and air conditioning supply			100.0%	2.5%	14.3%	17.6%	14.8%	12.6%	10.3%	8.4%	6.9%	5.1%	3.6%	2.1%	1.0%	0.8%
		613,450	613,450	12,068	68,554	89,320	83,312	78,641	68,340	58,661	50,364	39,865	29,562	17,982	9,437	7,344
		817,684	817,684	23,752	135,504	163,095	128,373	101,120	79,317	62,104	48,570	33,549	21,340	11,375	5,516	4,069
E - Water supply; sewerage waste management and remediation activities		44,695	44,695	259	3,497	7,130	7,418	6,844	5,727	4,386	3,532	2,611	1,729	937	402	223
			100.0%	0.6%	7.8%	16.0%	16.6%	15.3%	12.8%	9.8%	7.9%	5.8%	3.9%	2.1%	0.9%	0.5%
		40,347	40,347	224	2,898	6,047	6,447	6,251	5,324	4,137	3,355	2,504	1,650	906	388	216
F - Construction			100.0%	0.6%	7.8%	16.0%	16.6%	15.3%	12.8%	9.8%	7.9%	5.8%	3.9%	2.1%	0.9%	0.5%
		4,348	4,348	35	599	1,083	971	593	403	249	177	107	79	31	14	7
		26,421	26,421	551	3,212	3,859	3,526	3,322	3,076	2,722	2,335	1,695	1,128	567	273	155
G - Wholesale and retail trade; repair of motor vehicles and motorcycles		21,701	21,701	393	2,565	3,131	2,905	2,730	2,529	2,253	1,931	1,429	964	499	238	134
		4,720	4,720	158	647	728	621	592	547	469	404	266	164	68	35	21
		956,613	956,613	16,382	112,249	137,613	135,096	130,173	119,697	102,277	80,595	57,023	35,964	18,123	7,476	3,946
H - Transportation and storage			100.0%	1.7%	11.7%	14.4%	14.1%	13.6%	12.5%	10.7%	8.4%	6.0%	3.8%	1.9%	0.8%	0.4%
		858,932	858,932	12,653	95,872	119,116	118,963	116,893	108,872	94,322	75,255	54,070	34,394	17,510	7,241	3,771
		97,681	97,681	3,729	16,377	18,497	16,133	13,280	10,825	7,955	5,340	2,953	1,570	613	235	174
I - Accommodation and food service activities		1,946,852	1,946,852	23,452	131,921	209,786	238,095	257,444	252,648	240,872	209,209	160,929	110,139	63,037	29,743	19,577
			100.0%	1.2%	6.8%	10.8%	12.2%	13.2%	13.0%	12.4%	10.7%	8.3%	5.7%	3.2%	1.5%	1.0%
		905,021	905,021	11,857	63,300	99,263	115,545	123,833	115,262	107,290	93,056	72,429	50,375	29,863	13,853	9,095
J - Information and communication		1,041,831	1,041,831	11,595	68,621	110,523	122,550	133,611	137,386	133,582	116,153	88,500	59,764	33,174	15,890	10,482
		813,048	813,048	2,423	36,469	92,480	123,066	135,146	121,947	103,534	82,309	57,634	34,488	14,987	5,563	3,002
			100.0%	0.3%	4.5%	11.4%	15.1%	16.6%	15.0%	12.7%	10.1%	7.1%	4.2%	1.8%	0.7%	0.4%
K - Arts, sports and recreation		786,939	786,939	2,081	34,358	88,200	118,647	131,305	118,733	100,851	80,299	56,172	33,544	14,551	5,365	2,833
		26,109	26,109	342	2,111	4,280	4,419	3,841	3,214	2,683	2,010	1,462	944	436	198	169
		983,210	983,210	20,490	77,908	102,468	113,902	124,048	123,436	120,161	106,640	82,734	55,890	31,485	14,759	9,289
L - Health and social work and activities			100.0%	2.1%	7.9%	10.4%	11.6%	12.6%	12.6%	12.2%	10.8%	8.4%	5.7%	3.2%	1.5%	0.9%
		403,115	403,115	11,715	36,205	45,542	49,707	52,491	48,149	44,927	39,355	31,264	21,623	12,593	5,834	3,710
		580,095	580,095	8,775	41,703	56,926	64,195	71,557	75,267	75,234	67,285	51,470	34,267	18,892	8,925	5,579
M - Education		48,092	48,092	379	3,243	8,823	9,194	7,245	5,348	4,259	3,311	2,594	1,941	974	461	320
			100.0%	0.8%	6.7%	18.3%	19.1%	15.1%	11.1%	8.9%	6.9%	5.4%	4.0%	2.0%	1.0%	0.7%
		29,996	29,996	222	1,979	4,952	5,339	4,596	3,351	2,637	2,201	1,854	1,437	780	385	263
N - Other services		18,096	18,096	157	1,264	3,871	3,855	2,649	1,997	1,622	1,110	740	504	194	76	57

	42,891	42,891	32	777	11,694	9,744	5,762	4,506	3,592	2,475	1,632	1,542	587	306	242
K - Financial and insurance activities		100.0%	0.1%	1.8%	27.3%	22.7%	13.4%	10.5%	8.4%	5.8%	3.8%	3.6%	1.4%	0.7%	0.6%
	17,535	17,535	12	428	4,615	3,702	2,215	1,659	1,227	1,071	901	908	385	237	175
	25,356	25,356	20	349	7,079	6,042	3,547	2,847	2,365	1,404	731	634	202	69	67
L - Real estate activities		100.0%	0.1%	1.2%	5.4%	8.2%	10.8%	13.9%	16.1%	16.4%	12.7%	8.2%	4.3%	1.7%	1.0%
	7,019	7,019	4	72	302	543	795	1,019	1,088	1,156	888	606	334	130	82
	3,787	3,787	2	55	283	343	370	483	648	611	484	282	136	59	31
M - Professional scientific and technical activities		100.0%	0.3%	4.3%	12.9%	19.1%	17.8%	10.3%	8.0%	6.7%	6.5%	6.5%	4.2%	2.3%	1.2%
	20,007	20,007	56	936	2,419	3,084	2,996	2,123	1,837	1,511	1,523	1,532	1,069	600	321
	9,542	9,542	21	325	1,392	2,550	2,254	925	538	464	393	389	179	83	29
N - Administrative and support service activities		100.0%	0.5%	5.8%	17.9%	19.2%	14.9%	10.5%	8.5%	7.0%	5.8%	4.9%	2.8%	1.3%	0.8%
	150,595	150,595	595	7,821	22,120	24,495	21,004	16,175	13,804	12,403	11,466	9,956	6,164	2,947	1,645
	98,842	98,842	704	6,729	22,615	23,370	16,069	10,107	7,377	5,008	3,116	2,196	924	361	266
O - Public administration and civil servants		100.0%	0.1%	1.6%	8.7%	13.6%	14.6%	13.9%	14.2%	12.7%	10.1%	8.5%	1.2%	0.4%	0.3%
	439,737	439,737	396	6,990	35,661	57,915	61,772	58,962	62,306	57,984	47,797	39,936	6,265	2,188	1,565
	177,487	177,487	271	3,138	18,034	26,099	28,455	27,069	25,300	20,219	14,818	12,228	1,250	339	267
P - Education		100.0%	0.0%	1.3%	12.1%	17.1%	14.8%	12.5%	11.5%	12.6%	10.1%	7.0%	0.6%	0.2%	0.2%
	74,220	74,220	25	1,273	9,123	11,012	8,878	6,888	6,975	11,085	9,723	7,237	1,174	486	341
	315,969	315,969	72	3,671	38,009	55,899	49,042	41,967	37,702	37,951	29,562	19,984	1,332	368	410
Q - Human health and social work activities		100.0%	0.1%	13.0%	17.6%	15.0%	11.5%	9.7%	8.4%	8.0%	7.2%	3.5%	2.0%	1.8%	
	44,732	44,732	40	740	3,567	6,813	5,343	4,185	4,206	4,564	4,647	4,396	2,831	1,790	1,610
	68,328	68,328	54	1,614	11,181	13,069	11,629	8,868	6,782	4,948	4,431	3,784	1,096	475	397
R - Arts entertainment and recreation		100.0%	1.2%	8.6%	13.7%	14.3%	13.5%	11.3%	9.5%	8.3%	7.1%	5.4%	3.7%	1.9%	1.3%
	42,832	42,832	432	2,982	4,997	5,727	5,798	4,945	4,350	3,843	3,407	2,694	1,947	1,006	704
	15,661	15,661	290	2,020	3,040	2,642	2,123	1,674	1,227	996	739	490	238	102	80
S - Other service activities		100.0%	2.6%	11.1%	14.0%	14.1%	13.2%	11.5%	9.6%	8.0%	6.2%	4.5%	2.8%	1.4%	0.9%
	294,692	294,692	5,988	27,763	37,306	41,224	40,704	35,806	29,665	25,118	19,504	14,613	9,331	4,783	3,087
	181,515	181,515	6,268	25,219	29,315	26,134	22,286	19,161	16,221	13,208	9,884	6,860	3,830	1,859	1,270
T - Activities of households as employers; undifferentiated goods- and services-		100.0%	3.6%	13.1%	13.4%	13.0%	12.5%	11.2%	9.8%	8.3%	6.2%	4.5%	2.5%	1.2%	0.8%
	158,392	158,392	4,191	16,633	19,873	21,343	21,181	19,037	16,507	13,944	10,392	7,544	4,338	2,127	1,282
	130,371	130,371	6,218	21,078	18,711	16,294	14,792	13,314	11,744	9,988	7,578	5,382	2,901	1,430	941
U - Activities of extraterritorial organizations and bodies		100.0%	0.1%	1.0%	9.2%	21.2%	20.1%	15.1%	12.4%	7.5%	5.5%	4.6%	2.1%	0.8%	0.3%
	1,472	1,472		17	105	250	289	215	199	117	116	96	46	15	7
	1,390	1,390	3	11	157	357	286	218	155	99	42	37	15	7	3
Not stated		100.0%	6.5%	14.8%	15.2%	13.2%	11.1%	9.2%	7.9%	6.7%	5.4%	4.1%	2.8%	1.5%	1.5%
	568,657	568,657	43,069	106,981	100,837	80,288	62,583	47,682	37,382	28,391	21,870	15,895	11,584	5,880	6,215
	767,373	767,373	43,172	90,385	102,377	96,166	85,971	75,818	68,809	60,807	50,464	39,018	25,364	14,638	14,384

Source: Central Statistical Organization

Highlighted in pink are the top two age groups for each industry according to the statistics by industry and age. The total labour population is 21 million. More than 2 million workers are in the age groups starting from 20 years-old up to 44 years-old in each group. They have the largest share in the total labour population. There are 2.5 million persons (20 to 24-year-old), 2.6 million persons (25 to 29-year-old), 2.6 million persons (30 to 34-year-old), 2.4 million persons (35 to 59-year-old) and 2.2 million persons (40 to 44-year-old) in each age group.

The primary industry such as agriculture, forestry and fishery industry (A) has half of all workers (11 million persons) and the leading age group for those workers is the bracket of 25–34 years of age. Other industries such as mining and quarrying industry (B) (hereinafter “mining

industry”) (0.1 million workers), manufacturing industry (C) (1.4 million workers), electricity gas steam and air conditioning supply (D) (0.04 million workers), water supply; sewerage waste management and remediation and activities (E) (0.02 million workers), construction (F) (0.9 million workers) have more people in the bracket of 20–29 years of age than any other age group.

Wholesale and retail trade; repair of motor vehicles and motorcycles (G) (hereinafter “Wholesale industry”) shows a variety of workers. Many workers are in the bracket of 30–39 years of age. Transportation and storage (H) (hereinafter “Transportation industry”) (0.8 million workers) has more people in the bracket of 25–34 years of age. Accommodation and food service activities (I) (hereinafter “Accommodation industry”) (1 million workers) has more people in the bracket of 30–39 years of age. Information and communication (J) (hereinafter “Information industry”) (0.04 million workers) has more people in the bracket of 20–29 years of age. Financial and insurance activities (K) (hereinafter “Financial industry”) (0.04 million workers) has more people in the bracket of 20–29 years of age. Real estate activities (L) (hereinafter “Real estate industry”) (0.01 million workers) has more people in the bracket of 40–49 years of age. Professional scientific and technical activities (M) (hereinafter “Professional industry”) (0.02 million workers) has more people in the bracket of 25–34 years of age. Administrative and support service activities (N) (hereinafter “Administrative industry”) (0.2 million workers) has more people in the bracket of 20–29 years of age. Public administration and defence; compulsory social security (O) (hereinafter “Public administration industry”) (0.6 million workers) has more people in the bracket of 30–34 years of age and 40–44 years of age. Education (P) (hereinafter “Education industry”) (0.4 million workers), Human health and social work activities (Q) (hereinafter “Human health industry”) (0.1 million workers) has more people in the bracket of 25–34 years of age. Arts entertainment and recreation (R) (hereinafter “Arts entertainment industry”) (0.05 million workers), other service activities (S) (hereinafter “Other services industry”) (0.4 million workers) and Activities of households as employers; undifferentiated goods and services (T) (hereinafter “Activities of households industry”) (0.2 million workers) has more people in the bracket of 20–29 years of age. Activities of extraterritorial organizations and bodies (U) (hereinafter “Activities industry”) has more people in the bracket of 25–34 years of age.

“Agriculture industry” is the largest industry and most populous with at least 1 million workers in every age group ranging from 15 years to 49 years of age. The secondary and tertiary industries have less workers than the primary industry does. Two million workers are in the age groups of 20–44 years old, indicating that “Mining industry” and “Manufacturing industry”, “Administration industry” and “Other services industry” have more people in the age group of 20–44 years old. “Wholesale industry”, “Accommodation industry” have more people in the age group of 35–44 years old. Semi-skilled workers and services workers are in those industries.

According to Table 4.1, the share of “employed (private)” is 30% in the early twenties, and the share starts to decline as the age grows older. In the meanwhile, the share of “own account workers” is 16% in the early twenties, and it increases as the age of the worker grows older. The share of “own account workers” reached its peak in the late forties. As shown in the employment trends in Table 4.1 and Table 4.7, those workers in their early twenties to mid-thirties tend to work in manufacturing and administration services activities as employed workers. From late thirties to mid-forties, however, the statistics shows that employed workers and own account workers change their jobs to the jobs in the following industries such as wholesale, retail trade, repair of motor vehicles and motorcycles, and accommodation and food services. The average number of times for a Myanmar worker to experience job hopping is not known, nor the tendency for a worker to hop jobs during the course of an economically active life is not clearly shown in the statistics. However, the employment tendencies as mentioned above are implied in the current statistics.

(2) Current situation of Unemployment Rate and Labour Participation Rate

The Ministry of labour, Employment and Social security reported the statistics of unemployment and labour participation rate.

Myanmar's unemployment rate and labour participation rate is shown below in Table 4.8. It is reported every five years since 2000 until 2010, and after that it is reported every year.

Table 4.8: The Trends of Unemployment Rate and Labour Participation Rate

Year	No. of labour (Million)			Labour participation rate (%)			Unemployment rate (%)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
2000	15.02	9.28	24.30	79.68	47.32	63.18	3.60	4.74	4.03
2005	17.22	10.63	27.85	81.07	49.14	64.96	3.66	4.61	4.01
2010	19.13	11.83	30.96	82.36	50.04	66.06	3.66	4.55	4.00
2011	19.40	11.99	31.39	82.38	50.02	66.04	3.66	4.59	4.01
2012	19.66	12.16	31.82	82.67	50.23	66.28	3.66	4.58	4.01
2013	19.86	12.28	32.14	83.50	50.73	66.94	3.66	4.58	4.01
2014	13.40	8.70	22.11	85.20	50.50	67.00	3.90	4.10	4.00

Source: MOLES and Central Statistical Organization, 2015

Firstly, male unemployment rate shows little change between 2000 (3.60%) and 2013 (3.66%). The unemployment rate in 2014 is 3.90%. Female unemployment rate improved from 4.74% (2000) to 4.58% (2013), then further improved to 4.10% in 2014. The overall unemployment rate, on the other hand, did not show much change from 4.03% in 2000 to 4.00% in 2014.

15.02 million persons (79.68%) participated in the labour market in 2000. In 2005, 17.22 million persons (81.07%) participated in the labour market, which indicates 2.2 million increase in number of workers and 1.39% increase in labour participation rate. In 2010, the number of persons in the labour market is 19.13 million, which indicates an increase of 1.91 million persons since 2005. Subsequently, the labour participation rate increased by 1.29%. In 2013, 19.86 million males participated in the labour market and the labour participation rate increased to 83.50%. In the latest statistic in 2014, the number of persons in the labour market showed a sharp decline to 13.40 million persons, which means 6.46 million less people work in 2014 compared to the level of 2013. However, labour participation rate increased from 83.50% (2013) to 85.2% (2014). 6 million persons in productive labour population decreased, but the youth in education and the elders seemed to have decreased even faster than productive labour population.

With regards to female labour participation, 9.28 million female (47.32%) participated in the labour market in 2000, and 10.63 million female (49.14%) participated in 2005, which indicates an increase of 1.35 million female workers and a 1.82% increase in participation rate. In 2010, 11.83 million female workers participated in the labour market with an increase of 1.20 million female workers compared to the level of 2005 and a 0.9% increase in labour participation rate. Up until 2010 statistics, female labour participation rate showed a slow but steady increase to 50.73% with 12.28 million female workers in the labour market. However, the upward trend reversed in 2014 with 8.70 million female workers, which was 3.58 million less workers than that of 2013. Accordingly, the labour participation rate slightly decreased from 50.73% in 2013 to 50.50% in 2014. Not as much as the male counterparts experienced, female productive labour population also decreased to 3.58 million, while female youth in education and the elder showed less decrease compared to the male counterparts. In sum, the upward trend is observed that the number and participation rate of male and female increased until 2014 and after that, the trend reversed.

(3) Current Situation of Employment by Industry and Education Background

1) Current situation of employment by industry

While there are some types of employment in Myanmar, employment statistics are not categorized by the types of employment such as “permanent”, “temporary”, “part-time job”. Table 4.3 presented earlier are used as proxy statistics for this purpose.

2) Employment situation by educational background

The statistics by educational background is not available²². While the employment statistics by educational background is not available, the following statistics by living area was obtained. The living areas are categorized into three areas such as “Metro”, “Urban”, “Rural”, as shown in Table 4.9.

Table 4.9: Education Level of Residents by Living Areas

	Metro	Urban	Rural	Total
Illiterate	1%	2%	4%	4%
No formal Education	3%	3%	9%	7%
Some Primary School Level	6%	14%	22%	18%
Some Middle School Level	27%	32%	42%	38%
Some High School Level	28%	24%	14%	18%
High School Finished or University Student	15%	10%	5%	7%
Graduate / Post Graduate	20%	15%	4%	8%
Total	100%	100%	100%	100%

Source: Myanmar Marketing Research & Development Co., Ltd (2012)

Each living area is not specifically defined in this table, and only percentage figure is given for each entry, so this table should be understood and used only to have an overview of educational level of the population and its geographical distribution.

Table 4.9 shows that most of the persons (totally 37%) did not finish “Some Middle School Level” education reside in “Metro” area, while 20% of persons finished “Graduate/Post Graduate” and people with high educational level reside in the “Metro” area.

32% of persons who did not finish “Some Middle School Level” education reside in the “Urban” area. 14% of persons did not finish even “Some Primary School level” education in “Urban” area, and this percentage is about twice larger than that of “Metro” area (6%). Ratio of the persons graduated from “Graduate/Post Graduate” in the “Urban” area, 15%, is slightly smaller than that in the “Metro” area, 20%.

9% of persons who have “No formal Education” reside in the “Rural” area. In total, 13% of persons are either illiterate or have no formal education in the “Rural” area. 42% of persons did not finish “Some Middle School Level” education and 22% of them did not finish “Some Primary School Level”. It seems that the people in the “Rural” area have limited educational level.

38% of persons did not finish their education at “Some Middle School Level” education and many of them also did not finish even “Some Primary School Level” education. Myanmar has a realm that is 1.8 times larger than that of Japan with its population that is a half of that of Japan. There are some educational difficulties identified in Myanmar such as access to education,

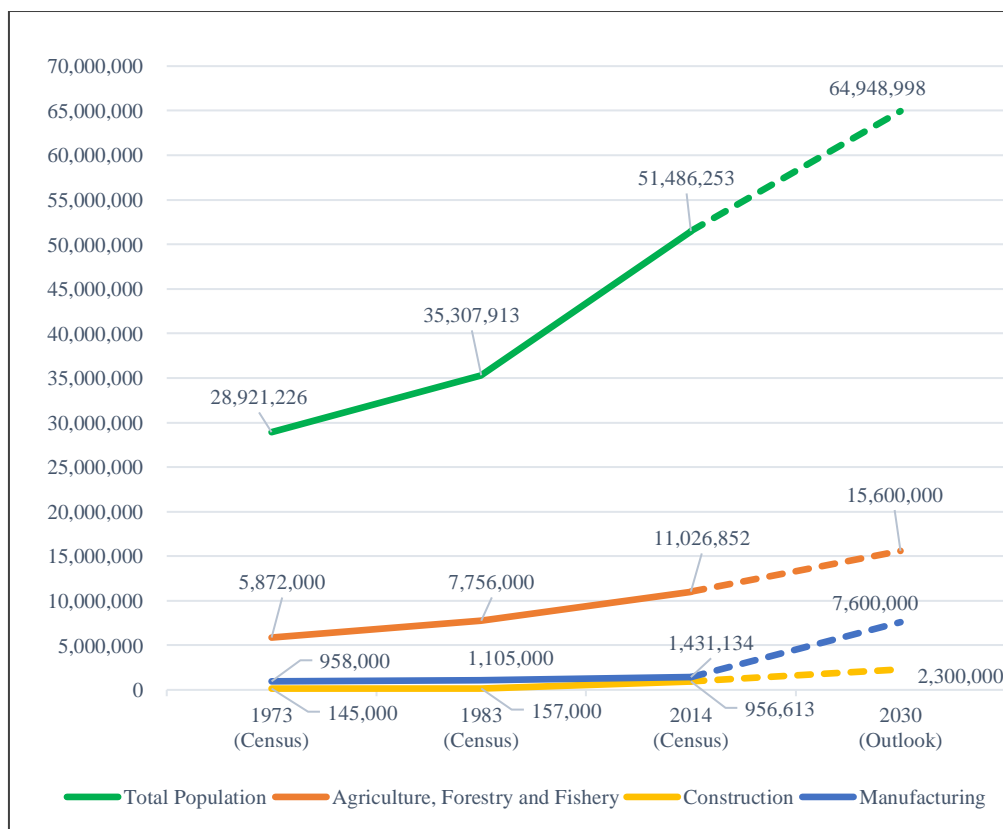
²² The response from CSO confirmed that no statistics by educational level was available after the 1st survey. MoLIP confirmed this point as well.

completion of education and its completion level. Furthermore, quality of education provided in Myanmar is also identified as a critical issue to be addressed.

Technical education is provided starting from the upper middle level education in Myanmar, for example at GTHS. Table 4.9 includes categories such as “Some High School Level”, “High School Finished or University Student”, “Graduate / Post Graduate”. However, those people marked in the category of “Some High School level” do not necessarily mean that they are high school graduates. Only those people marked in the category of “High School Finished or University Student” and “Graduate / Post Graduate” indicate that they are high school graduates and only 15% of the total population completed high school education in the country. TVET recipients are fewer than this number. There is a room for improvement in the TVET system with new legislation for TVET, responsive TVET programs to the industry needs, and promotion of technical education among the youth.

(4) Trends of Number of Workers in Industry

The number of workers by industry is confirmed by three national censuses surveyed in 1973, 1983 and 2014. The following figure shows its trend clearly. Additionally, a private institute provided its forecasted number of workers by industry in 2030.



Source : (1) Total Population in 1973 is cited by Mr. Ismail Khin Maung, The population of Burma: An analysis of the 1973 Census (1986). (2) The population in 1983 is cited by S. Gunasekaran & Mya Than, Population Change in Burma: A Comparison of the 1973 and 1983 Censuses. (3) The number of workers in three industries in 1973 and 1983 are cited by Mr. Ismail Khin Maung, The Myanmar labour Force Growth and Change, 1973-83. Total Population and the number of workers in three industries in 2014 are cited by Ministry of Immigration and Population, The 2014 Myanmar population and Housing Census, The Union Report, Census Report Volume 2. Total Population in 2030 is cited by the World Bank, <http://data.worldbank.org/country/myanmar> The number of workers in three industries in 2030 are cited by McKinsey Global Institute, Myanmar’s moment: Unique opportunities, major challenges. And revised it by JICA survey team.

Figure 4.4: Number of Workers in Industry (Census)

Figure 4.4 shows a clear upward trend in total population as well as in all categories of industry until 2014. As far as the increase from 1973 to 2014 goes, the total population increased 1.23 times, in Agriculture, Forestry and Fishery the workers increased 1.32 times, in Manufacturing 1.15 times, and in Construction 1.08 times. Among all the industries, the increase for the workers in Agriculture, Forestry and Fishery was the largest.

Looking at the change from 1983 to 2014, the total population increased 1.45 times, the workers in Agriculture, Forestry and Fishery increased 1.42 times, in Manufacturing 1.30 times and in Construction 6.09 times. It is worth noting that the increase for the workers in Construction is much higher than that for the total population. It is expected that labour demand in construction is high in the long term. From 2014 to 2030, it is projected that the total population will increase 1.26 times, the workers in Agriculture, Forestry and Fishery will increase 1.41 times, in Manufacturing 5.31 times and in Construction 2.4 times. It is projected that more workers will be needed in manufacturing and construction industries until 2030. It is expected that Myanmar's economy, society and industry will be further developed by the increase in FDI, and more production activities in industries will boost labour demands. Educating more and better engineers, technicians and highly skilled workers will be necessary.

4.1.3 Number of Foreign Residents by Industry and Education

(1) Number of Foreign Residents

There are no statistics of foreign workers by industry or no statistics of foreign workers by educational background in Myanmar. Alternatively, Central Statistical Organization (CSO) provides statistics of number of registered foreigners as per the law of foreigner registration shown in Table 4.10. Major foreigners registered in Myanmar are Chinese and Indian. Using the statistics in 2008, 2011 and 2014, four tables are created; the total number of foreign residents in Myanmar, the regions and states with more than 4,000 foreign residents (1), the regions and states with fewer than 4,000 foreign residents (2) and the regions and states with very few foreign residents (3).

Table 4.10: Number of Foreign Residents

No.	Region and State	Year	Chinese		Indian		Others		Pakistani		Bangladeshi		Grand Total
			Total	%	Total	%	Total	%	Total	%	Total	%	
	UNION TOTAL	2008	32,046	43.0%	29,174	39.1%	9,657	12.9%	2,761	3.7%	949	1.3%	74,587
		2011	28,656	41.7%	27,480	39.9%	9,253	13.5%	2,544	3.7%	859	1.2%	68,792
		2014	23,812	40.5%	23,903	40.6%	8,103	13.8%	2,286	3.9%	755	1.3%	58,859

(1) Regions and States where about more than 4,000 foreign residents stayed (order from North to South)

1	Kachin State	2008	9,151	86.6%	845	8.0%	426	4.0%	48	0.5%	97	0.9%	10,567
		2011	9,094	87.3%	848	8.1%	428	4.1%	47	0.5%	2	0.0%	10,419
		2014	7,779	87.0%	768	8.6%	353	3.9%	45	0.5%	1	0.0%	8,946
2	Shan State	2008	7,056	53.3%	1,093	8.2%	4,829	36.4%	266	2.0%	5	0.0%	13,249
		2011	5,942	50.1%	1,012	8.5%	4,666	39.3%	236	2.0%	5	0.0%	11,861
		2014	4,936	50.5%	778	8.0%	3,843	39.3%	210	2.1%	3	0.0%	9,770
3	Mandalay Region	2008	2,221	27.1%	2,408	29.4%	3,349	40.9%	177	2.2%	40	0.5%	8,195
		2011	1,994	25.6%	2,250	28.9%	3,335	42.8%	165	2.1%	39	0.5%	7,783
		2014	1,637	23.0%	2,015	28.3%	3,301	46.3%	142	2.0%	36	0.5%	7,131
4	Bago Region	2008	1,685	33.7%	3,104	62.2%	12	0.2%	49	1.0%	143	2.9%	4,993
		2011	1,462	31.4%	3,003	64.5%	12	0.3%	42	0.9%	137	2.9%	4,656
		2014	1,187	29.9%	2,612	65.9%	8	0.2%	44	1.1%	114	2.9%	3,965
5	Ayeyarwady Region	2008	2,069	27.9%	5,041	68.0%	22	0.3%	229	3.1%	49	0.7%	7,410
		2011	1,550	25.3%	4,271	69.7%	7	0.1%	210	3.4%	94	1.5%	6,132
		2014	1,268	24.2%	3,719	70.9%	5	0.1%	175	3.3%	76	1.4%	5,243
6	Yangon Region	2008	8,278	34.0%	14,169	58.1%	262	1.1%	1,295	5.3%	368	1.5%	24,372
		2011	7,380	32.1%	13,739	59.8%	266	1.2%	1,237	5.4%	361	1.6%	22,983
		2014	5,916	30.1%	11,995	61.1%	239	1.2%	1,137	5.8%	348	1.8%	19,635

(2) Regions and States where about less than 4,000 foreign residents stayed (order from North to South)

1	Sagaing Region	2008	427	49.4%	350	40.5%	47	5.4%	38	4.4%	2	0.2%	864
		2011	325	45.7%	315	44.3%	33	4.6%	34	4.8%	4	0.6%	711
		2014	262	43.7%	278	46.4%	25	4.2%	33	5.5%	1	0.2%	599
2	Magway Region	2008	130	13.6%	814	85.3%	1	0.1%	5	0.5%	4	0.4%	954
		2011	73	8.4%	776	88.8%	1	0.1%	12	1.4%	12	1.4%	874
		2014	68	9.0%	669	88.7%	1	0.1%	12	1.6%	4	0.5%	754
3	Rakhine State	2008	144	16.3%	37	4.2%	-	0.0%	544	61.4%	161	18.2%	886
		2011	99	13.5%	19	2.6%	-	0.0%	478	65.2%	137	18.7%	733
		2014	97	14.9%	18	2.8%	-	0.0%	414	63.5%	123	18.9%	652
4	Kayah State	2008	69	9.2%	36	4.8%	623	83.3%	8	1.1%	12	1.6%	748
		2011	30	6.0%	32	6.4%	420	84.3%	5	1.0%	11	2.2%	498
		2014	17	5.2%	22	6.7%	275	84.4%	4	1.2%	8	2.5%	326
5	Mon State	2008	206	24.9%	525	63.5%	-	0.0%	73	8.8%	23	2.8%	827
		2011	172	23.8%	481	66.4%	-	0.0%	54	7.5%	17	2.3%	724
		2014	141	22.3%	425	67.4%	-	0.0%	49	7.8%	16	2.5%	631
6	Tanintharyi Region	2008	587	41.4%	734	51.8%	70	4.9%	25	1.8%	2	0.1%	1,418
		2011	520	39.1%	719	54.0%	69	5.2%	21	1.6%	2	0.2%	1,331
		2014	495	43.0%	596	51.8%	44	3.8%	15	1.3%	-	0.0%	1,150

(3) Regions and States where few foreign residents stayed (order from North to South)

1	Chin State	2008	1	33.3%	-	0.0%	-	0.0%	-	0.0%	2	66.7%	3
		2011	1	33.3%	-	0.0%	-	0.0%	-	0.0%	2	66.7%	3
		2014	1	33.3%	-	0.0%	-	0.0%	-	0.0%	2	66.7%	3
2	Kayah State	2008	22	21.8%	18	17.8%	16	15.8%	4	4.0%	41	40.6%	101
		2011	14	16.7%	15	17.9%	16	19.0%	3	3.6%	36	42.9%	84
		2014	8	14.8%	8	14.8%	9	16.7%	6	11.1%	23	42.6%	54

Source: Data by Central Statistical Organization and modified by JICA survey team

75,000 foreign residents are recorded in 2008, but the number of foreign residents declined significantly to about 59,000 in 2014. Among all foreigners, Chinese and Indian occupy 40%. Across the regions and states, the number of foreign residents decreased and the total foreign residents dipped to about 80% of 2008 level in 2014. As mentioned earlier, there is no specific data on foreign workers, thus this table was used as proxy data to the number of foreign workers. Foreign residents are not necessarily the same as foreign workers; however, it can be easily imagined that the number of foreign workers and the number of foreign residents positively correlate.

Firstly, the regions and states with more than 4,000 foreigners are discussed. In Kachin state located in the northern area of the country next to China, about 90% of the foreigners are Chinese. In Shan state, which is located next to China, the number of Chinese residents decreased while other foreign residents increased. Nationality of other foreign residents are not known, but they are about 40% of the foreign residents. In Mandalay region located at the heart of Myanmar, the ratio of foreign residents is equally divided among Chinese (about 40%), Indian (about 30%) and other nationals (about 40%). Many foreign nationals live in Mandalay region. In Bago region, Ayeyarwady region and Yangon region, the ratio of Indian nationals increased significantly to about 50% while Chinese ratio decreased to about 30%. Other foreign nationals are negligible in number. More foreign residents live in Yangon region with about 24,000 foreign residents in 2008, but they decreased to about 19,000 in 2014.

Secondly, the regions and states with fewer than 4,000 foreign residents are discussed. Only few thousands foreign residents live in those regions and states.

In Sagaing region located in the northern area of Myanmar, the ratio of Chinese and Indian are the same (around 45%). In the south of Sagaing region, the ratio of Chinese decreased. The ratio of Indian increased in Magway region and Mon state. In Rakhine state located near Bangladesh, the ratio of Pakistani increased, and this is a unique situation observed in Rakhine state. In Kayah state, the ratio of Chinese and Indian are much lower than other states; instead high ratio of other nationals is observed. Tanintharyi region located in southern part of Myanmar, the ratio of Chinese and Indian are almost the same.

Finally, in the state with fewer foreign residents, the ratio of Bangladeshi is much larger than other areas.

It can be concluded that foreign residents live in the northern to central areas of Myanmar. More than 10,000 foreigners live in Kachin state and Shan state. About 20,000 foreign residents live in Yangon region. More Chinese live in the area next to China such as Kachin state and Shan state. The ratio of Indian is larger than Chinese in Mandalay region and Yangon region. Other foreign nationals live in Shan state and Mandalay region.

4.2 Policies, System, Organization and Issues Concerning Labour Market and Employment Trends

4.2.1 Labour and Employment Policies

(1) Labour and Employment Policies

1) Organization and duties of Ministry of Labour, Immigration and Population

Ministry of Labour, Employment and Social Security (MoLES) changed its name to Ministry of Labour, Immigration and Population (MoLIP). The duties of Department of Labour (DoL) are shown below in Table 4.11. MoLIP is composed of six divisions and the duties include

vocational training, overseas employment, domestic employment, labour union, and labour disputes as shown in Table 4.11²³.

Table 4.11: Organization of Department of Labour and Its Duties

Name of Division	Duties (Political Responsibilities)
Skill Development Division	<ul style="list-style-type: none"> • Vocational Training, issues related to Skill enhancement
Migration Division	<ul style="list-style-type: none"> • Overseas Employment
Employment Division	<ul style="list-style-type: none"> • Domestic Employment
Research and Organization Division	<ul style="list-style-type: none"> • issues related to research on Labour and Employment • issues concerning coordination with International Labour Organization (ILO) • issues related to Labour Union (Related to The Labour Organization Law)
Regional and Coordination Division	<ul style="list-style-type: none"> • Labour Dispute and Settlement (issues related to Department of Labour Relations) • The settlement of conciliation adjudication which cannot be settled by township court (Responsible department is Department of Labour Relations)
Administration Division	<ul style="list-style-type: none"> • Administration and Management of DoL

Source: Organization chart provided by MoLIP and modified by JICA Survey team

The following departments are not directly related to TVET, but it is considered as a same level department of DoL in MoLIP. Table 4.12 provides the overview.

Table 4.12: Departments of MoLIP (Excluding DoL)

Name of Department	Duties (Political responsibilities)
Social Security Board (SSB)	<ul style="list-style-type: none"> • Social Welfare for nationals Ex. Social Security Board decides the guarantee fee payment for injured workers. DoL decides the price of payment. • Issues related to Department of Labour and Social Security Board etc.
Factories and General Labour Law Inspection Department (FGLLID)	<ul style="list-style-type: none"> • Safety and Health at workplace. (Inspection of working environment) Ex. If a worker dies at workplace, FGLLID forces the concerned factory to suspend its business and operations, and demands improvements. After improvements, FGLLID permits the factory to resume its business and operations. • Inspection of company's clerical and factory worker's overtime work etc.
Department of Labour Relations (DLR)	<ul style="list-style-type: none"> • Labour dispute and settlement

Source: Organization provided by MoLIP and modified by JICA Survey team

2) Labour and Employment Policy

[Labour and Employment Policy]

Since 2015, a new administration has been in place, and this administration declared that employment creation is the most important issue as far as the administration policy goes. MoLIP has to implement the new labour and employment policy as soon as possible. MoLIP will implement the policy as per plan of MoLES²⁴. But all the labour and employment policies

²³ The survey team confirmed it on 10th June in the interview.

²⁴ The survey team confirmed it on 10th June in the interview.

do not have each specific political name since MoLES. According to the MoLIP, the duties are written in the detailed policies²⁵. The utmost urgent task for labour and employment policies is the implementation of “a hundred- day plan”. A hundred-day plan will be discussed later.

[Important areas of Labour and Employment Policy]

MoLES changed its name and duties to MoLIP, but all of the labour and employment policies remain important. Especially, domestic employment and overseas employment are important. Those are elaborated below²⁶.

Employment creation emphasized by the government implies the meaning of “poverty reduction”. Many workers depend on their work in the primary industry, but work in this industry does not provide stable income and it is vulnerable to external factors such as weather. Therefore, the government aims to bring more foreign companies and Japanese companies to Myanmar and develop other industries to support income generation, and employment creation for its citizens. The government believes the more foreign companies come to Myanmar, the more stable income generating opportunities arise through participating in economic activities.

MoLIP plans to encourage “overseas labour migration”. If the overseas employment situations for migrant workers are stable, the government plans to promote a policy to convert temporary migration workers to become permanent workers. By changing employment status from temporary to permanent, they can enjoy benefits of long-term employment.

MoLIP also plans to stress the importance of “labour rights (protection of worker’s rights)” in its policy. “Labour rights” start with a proper employment agreement between the employer and its employee and the rights of workers according to the principles of human rights are enshrined in the agreement. Labour disputes in Myanmar generally concern demands for the basic labour rights of employees, and many kinds of disputes are reported in each industry²⁷. The labour union in each industry demands decent working conditions for workers with appropriate working hours, regular wage payment etc. and fights for their rights. The government also declared its commitment to protect the rights of vulnerable employees such as people with disabilities. The government has clear rules on non-discriminatory recruitment process for people with disabilities in its labour laws²⁸.

Labour recruitment situation in Myanmar seems to have become more competitive among ASEAN countries by becoming a member of ASEAN Economic Community (AEC). In this context, labour forces, implies skilled and educated competitive workers in economies and industries. MoLIP plans the following policies to retain competitive workers²⁹. As of now, all the topics are still under discussion.

- 1) Strengthening the framework of skill certification for workers
- 2) Enhancing the quality of vocational training for strengthening the skill certification
- 3) Tax deduction for company

3) Tax deduction for company is planned to give tax deduction for companies which provide training for their employees to advance internal human resource development. Competitive

²⁵ The survey team confirmed it on 10th June in the interview.

²⁶ The survey team confirmed it on 10th June in the interview.

²⁷ Details are in the website of JILAF

2014 http://www.jilaf.or.jp/rodojijyo/asia/southeast_asia/myanmar2014.html

2015 http://www.jilaf.or.jp/rodojijyo/asia/southeast_asia/myanmar2015.html

²⁸ The survey team confirmed it on 10th June in the interview.

²⁹ The survey team confirmed it on 10th June in the interview. All the topics are being planned and not yet fixed.

labour recruitment situations will not benefit everyone equally, for some people they bring more opportunities for better employment conditions such as better remuneration, better social welfare benefits etc. For some, they may pose more challenges with tight competitions. In addition, it seems that employer's recruitment policies will influence the retention rate of its competitive workers.

[Obstacles in Labour and Employment Policy]

As stated above, creating more employment opportunities is important. Yet, little know how on creating employment opportunities is known, which is considered as one of the obstacles in labour and employment policy³⁰. The government thinks that foreign investment possibly creates more employment opportunities. Indeed, the flow of Japanese and foreign companies coming to the market in Myanmar creates lots of employment opportunities.

Construction industry for infrastructure is expected to create a large number of employment opportunities as a potentially leading industry³¹. Construction industry is for creating stable power supply³² by the electrical skilled technician, larger size of roads and bridges construction. Since it is a labour-intensive industry, the importance of such industry in terms of creating employment opportunities is significant. This industry is also important in a sense that it requires technical professionals and technicians large pool of un-skilled workers. Generally speaking, those general workers have limited professional and technical knowledge and skills, and their labour productivity is lower when they first start their employment. MoLIP plans to develop those workers as important human resources, and enhance their placement. For example, the government promotes foundry industry as one of the industries to create employment opportunities for male workers. Unfortunately, it is not generally suitable for female workers due to its tough working conditions³³. In the meanwhile, Myanmar government does not allow some foreign companies to enter the Myanmar market³⁴, and there are some protective laws, rules and regulations for the national industry and employment, which pose some serious challenges for foreign companies to come to Myanmar.

[A Hundred-day plan of MoLIP]

Twelve projects in total are planned as a hundred-day plan by MoLIP³⁵. Those projects are planned with regards to TVET, domestic and overseas employment opportunities, labour migration, labour standards and safety and health as shown below in Table 4.13.

³⁰ The survey team confirmed it on 10 June in the interview.

³¹ The survey team confirmed it on 10 June in the interview.

³² Low power supply and less labour skilled workers will be the negative elements of private business in Part 3.1.1. Economic Outlook in this report

³³ The survey team confirmed it on 10 June in the interview. Referencing the economic outlook in Part 3.1.1. Needs of construction of hotel and office building.

³⁴ Foreign workers' employment, recruitment ratio, occupations etc. are regulated in the Foreign Investment Law of Myanmar. Details are following website. <http://www.moj.go.jp/content/000123996.pdf>
Revised Foreign Investment Law (2015) are following website.
<http://www.burmalibrary.org/docs21/2015-Myanmar-Investment-Bill-V2-24-02-2015.pdf>

³⁵ The survey team confirmed it on 10 June in the interview. The survey team could not obtain any document and the interviewer took some notes and provided inputs to this report. Some of the topics in the twelve topics are not covered in the interview.

Table 4.13: A Hundred-day Plan of MoLIP

Plans	Contents
To implement the skill assessment of Electrician (Level 1) based on the NSSA standards	Skill assessment (Level 1) for electrical technicians by NSSA standards will be held. (10 persons ×10 days) (The first assessment was held from 3 June to 17 June 2016)
To hold a skill development forum to encourage and enhance skill development	A National Skill Development Forum will be held. (It was already held 27 and 28 May 2016)
To establish a Migrant-worker Resources Center (MRC)	Two institutes will be established in Ayeyarwady Region and Rakhine State for development of migrants 'abilities
To review working conditions and improve them.	The projects will be planned and implemented for prevention of labour disputes. (FGLLID is responsible) Details are not yet finalized.
To improve social welfare benefits (such as social security)	Projects to provide social welfare benefits to the social security beneficiaries will be planned and implemented. Details are not yet finalized.
To implement projects to improve working conditions and working environments of Myanmar workers working in Thailand	The project for migrants are planned in the prioritized labour and employment areas. Details are not yet finalized.

Other five projects are regarding immigration issues but details are not known³⁶.

4.2.2 Labour Law

(1) Composition of Labour Laws

Myanmar Labour Laws are composed of several labour related laws. Those labour related laws are articulated in the laws listed in Table 4.14. Since the beginning of democratization process in 2011, and the new government administration started in 2015, amendment of laws and regulations for employment creation has been prioritized. Labour related laws listed on the MoLIP website as well as those laws not listed on the website are summarized in Table 4.14.

³⁶ The survey team confirmed it on 10th June in the interview. Seven topics are explained and five topics are not explained.

Table 4.14: Labour Related Laws of Labour Laws

Detailed Labour Laws (L: Year of Establish, R: Year of Revision)
1) The Labour Organization Law (2011) ←The Trade Union Act (1926)
2) The Labour Organization Rule
3) The Settlement of Labour Dispute Law (2012) ←Trade Dispute Act (1929)
4) The Edited Settlement of Dispute Law (September 2014)
5) The Social Security Law (2012)
6) The Social Security Rule (2012)
7) The Minimum Wages Law (2013)
8) The Minimum Wages Rule
9) The Employment and Skill Development Law (2013) ←Employment Training Act (1950)
10) The Leave and Holiday Law (1951, 2014)
11) The Amended Law for Leave and Holiday Law 1951(July 2014)
12) The Workman’s Compensation Act (1923)
13) The Payment of Wages Act (1936)
14) The Employment Statistics Act (1948)
15) The Factories Act (1951)
16) The Oilfields Labour and Welfare Act (1951)
17) The Shops and Establishment Act (1951)
18) The Employment Restriction Act (1959)
19) The Law relating to Overseas Employment (1999)

Source: The names of laws and acts from 1) to 11) are cited from the MoLIP web site <http://www.mol.gov.mm/en/laws-and-regulations/>, The name of laws and acts from 12) is cited from Guidebook of labour (Oct. 2015) published by JETRO Yangon office, and modified by JICA study team.

(2) Labour Related Laws by after Revision and Future Revision

Revised labour related laws and future revisions of labour laws are discussed below³⁷.

The Employment Statistics Law (1948) listed in the table above (14) will be revised, but details are not yet clarified. Updating statistics related labour laws enables people and related organizations to obtain the current labour and employment information, and realistic view on the actual situations. Based on that, domestic labour and employment related organizations can analyze the trends.

The Minimum Wages Law (1949, 2013) (19) was already revised and the revision came into force, but the minimum wage was not specified when it came into force in 2013. The daily minimum wage of 3,600 Kyat is regulated in June 2015 and the payment of the minimum wage for workers was guaranteed under the labour laws³⁸.

There is no plan to revise individual labour laws such as the Factories Act (1951) (15), the Oilfields Labour and Welfare Act (1951) (16) and the Shops and Establishment Act (1951) (17) in the recent months. They will remain the same as they are, which came into force in 1951.

As stated before, Myanmar labour laws are composed of several labour related laws. As of now, they will not be organized into one labour law. As each law has its different focus and influence, it is difficult to consolidate them into one.

³⁷ The survey team confirmed it on 10th June in the interview.

³⁸ Details can be found at the following website by JILAF <http://www.jilaf.or.jp/mbn/2015/327.html>

4.2.3 Current Situation of Foreign Workers Replacement Policy

(1) Foreign Workers Replacement Policy in the Future Establishment of Foreign Labour Laws

As of now, only one foreign workers' replacement policy is planned. That means foreign workers labour law (tentative name) will be drafted.

Myanmar shares borders with other countries. The statistics of migrants from foreign countries and overseas workers from Myanmar are summarized in the table below, Table 4.15, created by ILO.

Table 4.15: Overview of Migrants in Myanmar and Overseas Workers (2013)

Population	International migrant stock	Stock of nationals abroad	Where do migrants come from (stock)?		Where do nationals go to (stock)?	
52,984,000	103,000	2,648,000	China	48,000	Thailand	1,892,000
			India	37,000	Malaysia	248,000
			Pakistan	4,000	Bangladesh	198,000

Source: Quoted and some modification made by the survey team [ILO, 2015]

Many Chinese, Indians and Pakistanis come to work in Myanmar. Chinese migrants are about 48,000, Indian migrants are about 37,000, Pakistani migrants are 4,000 and some migrants from other countries come to Myanmar, totalling 103,000 immigrants to Myanmar [ILO, 2015]. In the meanwhile, overseas workers from Myanmar are about 2,648,000, which is about 25 times more than the inflow of migrants to Myanmar³⁹.

The government is planning on issuing labour and employment permits for foreign workers with reference made to the Singapore labour immigration laws and system, but the details are not yet clarified. There are two types of labour permits, which are Work Permit (WP) and Employment Permit (EP). Myanmar is planning on using foreign labour forces, thus planning on making some laws and policies in the near future.

(2) Statistics about Foreign Workers

MoLIP aims to generate and use labour and employment statistics by foreign workers' labour law (tentative name) as stated above (1). One of the expected usages is to analyze educational backgrounds of foreign workers in Myanmar. Numbers of foreign workers and nationals are in the statistics shown in Table 4.10, but the professional skill levels of those foreign workers are not identified. Myanmar government plans to include the skill levels and educational backgrounds as variables for analyzing the supply situation of foreign workers. ASEAN region is experiencing a transformation in its labour forces. Those laws intend to attract and retain competitive foreign human resources and simple labour workers as minimum.

(3) Obstacles for Foreign Workers Replacement

Foreign Investment Law, revised in 2012, is a law of deterrent to prevent foreign companies from entering to its market and foreign workers from working in the specific industries⁴⁰. Foreign investment law regulates foreign companies to hire a certain number of Myanmar

³⁹ The survey team confirmed it on 10th June in the interview.

⁴⁰ It is discussed and being planned that Foreign Investment Law (2012) and Myanmar Citizens Investment law (2013) will be united or not. The recruitment of foreign workers will be flexible.

nationals as general workers and clerks, which do not require technical or professional knowledge and skills and it is still active.

In the meanwhile, high level executive and managerial positions are replaced by foreign workers because not many Myanmar workers can do such high-level jobs⁴¹. Similarly, supervisors at construction sites in thirty sites are desperately needed, but Myanmar workers cannot take such responsible either⁴². Those high-level executives and managers are not enough in the labour market for the supply side, and it seems to be difficult to those core occupations by Myanmar people. It takes longer time to groom experienced managerial professionals, thus it is a challenge for Myanmar to make policies and laws to support smooth transition from foreign managers to Myanmar managers.

4.3 For Improvement of Labour Market and Employment Trends

4.3.1 Reinforcement of Labour Market Infrastructure

(1) Collection and Analysis Function of Labour Market Information

The above identified issues are not an exhaustive list of issues to collect sufficient labour market information for the government to analyze the current labour market and employment trends. Normally, regional and state labour exchange offices are the designated public organizations which can collect labour market information and related data. Regional and state labour exchange offices can collect the information on workers in terms of his/her occupation, number of persons, qualification and educational background etc. after reception of job vacancies. As regional and state labour exchange offices deal with the number of job vacancies, valuable information on the number of job seekers, the number of job placement, the type of occupation, worker's qualification and educational background are collected. Therefore, the government cannot directly collect or analyze the actual human resources needs in both qualitative and quantitative senses. MoLIP pointed out that there is a clear need to establish a vocational training research and information center when the survey team visited MoLIP⁴³. MoLIP intends to understand the specific abilities required for each occupation and to analyze quantitatively the actual situations of its labour market. However, unfortunately MoLIP is not equipped with know-hows necessary to establish such research body, thus they will not. For specific occupations, necessary valuables (necessary qualification and educational background) are included in the job vacancy data collected by the regional and state labour exchange offices. Its staffs know how to input data into the system for DoL of MoLIP to be able to analyze the labour market situation. National capacity to collect and analyze government information will be strengthened. As of now, only when a foreign worker is registered with an educational background valuable during application and registration period, educational backgrounds of workers will be known.

(2) Certification of Private TVET Institutions and Quality Assurance for Training Contents

University graduates and pre-graduates of formal education normally seek training courses on weekday nights and during holidays at private TVET institutions. Their motivation is to do so is to acquire practical skills and more hands-on training because normally they would not receive such training opportunities in the formal schooling. Generally, they are awarded with certificates on certain practical skills by the private TVET institutions after completion of their training courses. However, those certificates are issued only by the private TVET organizations and their certifications are not publicly and officially recognized as they are not accredited by the

⁴¹ Survey team confirmed it on 3rd June in the interview at private placement agency.

⁴² Survey team confirmed it on 17th June in the interview at private placement agency.

⁴³ The survey team confirmed it on 10th June in the interview at a private placement agency.

government. In general, Japanese companies value one's attitude towards work, work ethics, 5S, KAIZEN etc. much more so than one's certificates issued by private TVET institutions during the recruitment process⁴⁴. This point is confirmed by the fact that Japanese companies train their staffs through OJT based on their own methodologies. It seems that certification supremacism will continue in Myanmar. It is important for training courses to be in line with NSSA's skills standards, and quality assurance of the training contents by private TVET training institutions. If government provide the subsidy to private TVET institutions, they can invest and prepare for their equipment for training program. The study team learned from small private TVET institutions that they run with tight budget and have difficulties in purchasing training equipment⁴⁵. Many youths receive training from those institutions day and night. Small private TVET institutions have a roll to fill in the gap between the government's expectation and what formal education can offer. With a view to provide comprehensive supports to those who have given up formal education, private TVET institutions need to reinforce their functions.

4.3.2 Improvement of Labour Laws

(1) Ability to Collect Contributions by Skill Development Fund under The Employment and Skill Development Law

The establishment of a fund for workers' skill development is articulated in the article 26 of The Employment and Skill Development law. This article mentions that companies must have a responsibility of human resource development for their workers. Employers have to pay contributions towards the fund according to the article, but most of them have never paid, thus, this fund faces a serious financial challenge. Skill Development Fund Committee was established in MoLIP by The Employment Skill Development law. This committee can use this fund for Skill Standards Development and Training Committee and Skill Assessment & Certification Committee, but because of the limited budget⁴⁶, they cannot use those contributions for expected purposes. Regulations are already in place in the law, but the contributions are not properly collected. The government or MoLIP will assess each company's concrete responsible condition and based on that, they will have to collect contributions under the law. MoLIP will decide those conditions and responsible staffs etc. The region and state labour exchange offices are responsible for the inspection of employment agreement between the employer and the employee. Further, the region and state labour exchange offices will support above mentioned collection of the contributions.

4.3.3 Expansion of Foreign Workers Replacement

(1) Skills Qualification for Overseas Workers

Supporting policies for overseas workers upon their return and their employment placement in Myanmar are not sufficient as they stand now. Accordingly, MoLIP declares that it places utmost importance in preparing adequate supporting policies for overseas workers and their future.

Currently NSSA is in the process of establishing a national skill standard system and domestic skill assessment standard is just being set. It means that even the skill level of domestic workers is not yet assessed based on the newly set standards. Accordingly, it will take much longer time for the government to assess the skill level of overseas workers as their acquired skills can be different from the national standard. Another point that needs to be addressed is the gap between the on-going salary rate for the workers with same or similar skill level, and the demanded

⁴⁴ The survey team confirmed it in the interview at a private placement agency.

⁴⁵ The survey team visited a private TVET institution named AKI School Engineering and interviewed its staff on 4th June 2016. The principal of AKI is the president of Member of Private TVET Association (MPTA) and he commented on behalf of presidents of all private TVET institutions.

⁴⁶ The survey team confirmed it on 10 June in the interview.

salary rate by the workers who have returned to Myanmar after working overseas. This results to constant mismatches between employers and job seekers⁴⁷. Job seekers have to objectively assess their own abilities and qualifications, while understanding the current labour market and the on-going salary rate in Myanmar. Accordingly, the establishment of NSSA system is urgently needed for overseas workers. The more freely ASEAN region transforms itself to be in terms of labour mobility, the more competitive recruitment of labour forces will become. In order to retain competitive labour forces in Myanmar, it is imperative for the government to prepare the national wage standards, decent working environment, and adequate skills qualification. AQRF needs to keep its consistency with NSSA. While AQRF is established with 8 levels, NSSA is established with 4 levels. The system of Myanmar, NSSA, has to be designed well in line with the skills qualification system in the ASEAN region.

⁴⁷ The survey team confirmed it in the interview at a private placement agency.

Chapter 5 Human Resource Demands

5.1 Demands of Foreign Investors

5.1.1 Trend of Companies Planning to Start Operations in Thilawa and Other Special Economic Zones (SEZ)

According to Mr. Yanai, developer of Thilawa Special Economic Zone (SEZ), the expectation towards TVET among Japanese companies in Thilawa SEZ is quite low, as they believe they need to train their workers themselves by using their own methods and facilities. On the other hand, Suzuki (Japanese automobile manufacturer), which decided to open their factory in Thilawa SEZ, employs a number of staff from the local workforce that have completed basic local vocational training at TVET. Furthermore, Suzuki is willing to hire more local workers who have attended basic vocational training courses. For example, Suzuki employed graduates of the automobile mechanic course at the vocational training institute under MoBA run by BAJ in Hpa-an. According to Suzuki, they are well-equipped with basic education skills (including English proficiency) which are higher than its expectation. Suzuki has already started assembly of automobiles in South Dagon Industrial Zone and is eager to develop its management staff as it plans to increase its manufacturing line in the future. In the screening process of employees at Suzuki, candidates answer questions using the online skill exam software which Suzuki uses worldwide. Instructors at the vocational training institute in Hpa-an have been trained by Japanese instructors from BAJ and this seems effective enough for them to acquire the necessary skills required to work for Japanese companies.

NSSA's skill standard level 1 for automobile mechanics cannot even reach the skill level of automobile mechanic level 3 (entry level) in Japan. However, Japanese car manufacturers require a higher skill than NSSA's level 1. Toyota, the world largest automobile manufacturer, says about 650,000 cars are registered without proper maintenance, check-up, or insurance in Myanmar, although most of them are second hand from Japan. Today, the number of the latest model cars from Japan is increasing in Myanmar while the maintenance skills remain unchanged in most workshops. Toyota pointed out that Myanmar urgently requires vocational institutes where trainees can acquire skills equivalent to a level 2 of Japan's certified auto mechanics, in order to catch up with the increasing demand for skilled mechanics. Toyota was once planning to initiate ToT courses for instructors of TU for auto mechanics at West Yangon University with MoST under Thein Sein regime. However, Toyota hesitated as MoST requested that Toyota donate the necessary machinery to several TUs throughout the country to continue the training. Subsequently, the scheme failed as MoST was integrated into MoE after a new regime came to power in Myanmar. Instead, Toyota is currently considering to negotiate with MoI regarding a new TVET project. At the same time, Toyota is developing a policy proposal concerning the automobile industry with the help of UMFCCI. The policy proposal has been referred to in the draft automobile law which is under discussion in parliament, and it suggests the introduction of an automobile type approval certificate, an automobile inspection system, compulsory automobile liability insurance, automobile weight tax, fuel tax, other car-related taxes, road maintenance and improvement, and safety facilities. Among these propositions, a type approval certificate and automobile inspection system will be the core component, and Toyota concluded that these procedures will require the introduction of an auto mechanic qualification. Furthermore, the proposal mentions that Myanmar will require a long period of time to begin car manufacturing, and the country should start with a car part manufacturing industry, which will sustain other car manufacturers within ASEAN. As Myanmar supplies car parts to car manufacturers, it can accumulate know-how and develop technicians and engineers, as the customs on industrial products become alleviated. Therefore, Japanese car manufacturers need to provide further training to develop the skill levels of their staff. Fuji Work provides

short-term vocational training programs in Thilawa SEZ. For example, ALSOK⁴⁸ held a training program for security guards, and a logistics company offered a fork lift training program for safe driving skills. After the training programs, the trainees received certificates that are only valid within the companies where they are currently employed, so that they do not switch their workplaces. Fuji Work needs cooperation with other organizations to hold vocational training programs as it does not own any machinery. For example, neighbouring Thanlyin University has various machines that Fuji Works can possibly use for their training programs, so it should seek collaboration with the university.

5.1.2 Demands of Existing Japanese Companies in Myanmar

FDI has been increasing in Myanmar since 2012 and many Japanese companies have invested in the Myanmar market. However, many companies have yet to launch factories in the country. The Government of Myanmar created a Myanmar-Japan Joint Initiative to discuss the investment environment in 2012 although TVET has not been discussed. The garment industry, where skilled labourers are not required, is the most competitive in Myanmar and it has been a main target of FDI, including from Japan. According to JCCM, the employment of mid-level management staff is comparatively easy because of good employment conditions and many labour exchange enterprises. In the opinion of the Chairman of JCCM, Myanmar will not be competitive as long as the country tries to follow the same path as the other ASEAN countries. Rather, Myanmar has to consider introducing advanced technologies in order to compete with the other ASEAN countries. In the interim, the Chairman of the Construction Committee believes that the demand for skilled labour in regards to piping, wiring, and steel frame assembly is higher than that for mid-level management in the short-run, and it would attract more foreign investors, as well as, Japanese companies. Furthermore, there is a higher demand for fundamental safety knowledge and basic soft skills. In the meantime, Kirin Beer has invested in Myanmar Brewery Limited, famous for “Myanmar Beer” brand, and put “Ichiban shibori” brand on sale in Myanmar. According to the Managing Director of Myanmar Brewery Limited, managers and engineers used to receive high-quality training in Singapore as the company was a joint venture with Singaporean counterpart. Therefore, Kirin did not need to provide additional training after it came to management. He also added “I could not imagine launching a factory by hiring new staff.” Additionally, the Managing Director of Hitachi Soe Electric & Machinery told the study team that he had the same opinion. However, it will not be as easy for Japanese companies coming to Myanmar in the future to employ such skilled and experienced workers as Kirin and Hitachi Soe. If Myanmar can establish an employment system that can provide its work force with basic skills, it will definitely promote the possibility of Japanese companies to start business in Myanmar as they provide further in-company training.

5.1.3 Current Situation and Expectation of Japanese Companies

The Study team sent questionnaires to foreign investors, especially to Japanese companies that are interested in business in Myanmar. The target companies are the members of Japan Myanmar Association (JMA) and Japan Chamber of Commerce and Industry, Myanmar (JCCM). JMA distributed a set of questionnaire to the members (153 companies) in April and received responses from 70 companies. Among the respondents, 48 companies have already launched their business and 22 are currently considering starting their operation in Myanmar. Further, the study team sent the questionnaire to JCCM members, especially those who belong to industrial and construction committees (197 companies in total) and received responses from 28 companies. All of these companies are already operating their business in Myanmar.

⁴⁸ Japanese security company. Registered name of the company is “Sohgo Security Services Co., Ltd.”.

5.1.4 Challenges of Human Resources in Myanmar

According to 22 companies that have not started their operation in Myanmar among the respondents of JMA's questionnaire, 7 answered that "poor infrastructure" is the main challenge for their business. In addition, several answered with comments such as "laws and regulations are not transparent", "difficult to acquire land" etc. Many Japanese companies observe the wage level of Myanmar is comparatively high for their skills, especially among highly educated population like college graduate and higher.

Likewise, JCCM pointed out that Japanese companies tend to pay competitive wages and therefore, they have succeeded gathering good human resources in the country. On the other hand, Japanese companies that are still hesitant about entering the Myanmar market pointed out the difficulty in gathering mid-level management when they start a joint venture with local enterprises.

5.1.5 Expectation to Vocational Trainings

According to the answer received for the questionnaire of JMA, few companies expect vocational training programs in Myanmar. Only 10 percent of all the 70 respondents answered that they have hired human resources who had received TVET. Among the 7 companies, only 2 answered that they were fully satisfied with the skill level of their employees, 4 partly satisfied and 1 partly not satisfied. One unsatisfied company mentioned that "the employees lack fundamental spirit that they work for a Japanese company". Among the partly satisfied, some answered that "basic skill is lacking and the employees cannot easily adjust themselves to new technologies". Considering the answers, many Japanese companies expect workers to have substantial skills and basic mindset. We can also observe the same result in JCCM's questionnaire and it represents that many Japanese companies are concerning about the lack of basic skills among local workers. In addition, more than the half of the respondents answered that they are anxious about the poor loyalty and low soft skill level of the local human resources. In the meantime, one company answered that "provided that they take enough time for in-company education through OJT, the employees can soon acquire basic skills". Suzuki observed that "is it easier to nurture good human resources by offering company's own training program rather than general training through formal or non-formal TVET". This fact indicates that general TVET may not be useful among manufacturing industries and many Japanese companies think more highly of OJT than general training programs. Further, more than 50 percent answered "local employees have motivation to improve their skills" to the question "what is good aspect(s) of the local workers?" in the questionnaire of JCCM. In other words, you can expect local employees to be good employees as long as the company provides training programs within their companies since local employees are eager to learn new skills although they may not appear to be useful at the beginning.

5.1.6 Expectation to Japanese-style Vocational Training

The team interviewed with Suzuki, which pointed out the importance of unique vocational training program in Myanmar. Suzuki employed some graduates of Vocational Training School in Hpa-an, Karen State run by Bridge Asia Japan (BAJ), Japanese NGO. According to Suzuki, they hired the graduates because they had basic knowledge and skills equivalent to the qualification of "automobile mechanic 3rd grade (entry level)" in Japan. Japanese companies generally train required human resources in their own company. However, many of them are feeling the necessity to modify the training programs since even experienced mechanics lack very basic safety education like wearing proper uniform, safety boots and welding goggles. Under this circumstance, BAJ succeeded in transferring knowhow of Japan's safety education and fundamental skills education in Myanmar. Further, some companies found that Japanese training system works out in Myanmar and expect the emergence of similar vocational training

institutions. Moreover, some companies mentioned that they are willing to hire skilled local human resources although the number of graduates of well-qualified institution is limited. Most of JMA members also belong to JCCM and the majority is in service industry currently in Myanmar, while manufacturing and construction companies are also trying to start business in Myanmar. Among manufacturing companies, Kirin Holdings and Hitachi Electronics have already launched joint ventures in Myanmar. Both companies have succeeded in transferring the Japanese knowhow by investing in local operations with sufficient facilities and good quality of workers. For the time being, many Japanese companies try to launch their businesses in Myanmar by following the similar system. In other words, many companies wish to collaborate with well-established local enterprises instead of growing quality human resources by themselves.

5.1.7 Demand for Basic Education and Soft Skill

According to the questionnaire to JCCM member companies, the majority answered that they expect substantial education and soft skill training program for the employees. Above all, there is high demand in English and mathematical knowledge at primary to tertiary education level. As for English comprehension, 50 percent of the companies answered that they expect their employees to score 600 or above at TOEIC exam, which is equivalent to the average score of employed people in Japan. On the other hand, 60 percent of the companies answered that they require staffs who have mathematical knowledge of high school graduate level (trigonometric functions, international standard units, statistics etc.) in Japan. Furthermore, more than half of the respondents answered they require soft skills (safe action, 5S and group action) among their local employees.

5.1.8 Demand for Hard Skills

According to the JCCM's questionnaire, 9 out of 17 respondents answered the necessity of welding training and 8 answered for electric wiring. As for welding, the respondents referred to basic level of arc welding and gas welding as necessary skills. Regarding electric wiring, 2nd level of electrician qualification is required by the companies. In addition, some other companies responded that they need 2nd level civil engineering construction management and the ability to comprehend plans.

5.2 Demands of Myanmar Domestic Investors

5.2.1 Overall Demands through Chamber of Commerce and Industry

UMFCCI organized the TVET committee in 2013 and implemented several short-term training courses (air-conditioner mounting and others). However, the Chairman of the committee is aware that they do not have the appropriate mechanism to capture demand in each sector. The mechanism for capturing demand of private companies is rather limited, although some companies under UMFCCI participate in the sectional committees of NSSA. NSSA states that the participation of UMFCCI in its meeting is limited. Furthermore, the Myanmar Private TVET Association (MPTA) organized by private TVET institutions is also trying to exchange information. Currently, about 600 TVET organizations are members of the association in Yangon and Mandalay alone, and most of them offer short-term training courses, while a few others own expensive machines and provide CAD training courses. MoLIP and NSSA do not have any registration or certification system to certify the instructors, curriculum, or quality of training courses in the private TVET organizations. They say that many private TVETs are oriented to acquire foreign skill qualifications. The number of private TVET organizations is not clear. The Myanmar Industrial Association (MIA) also organized the TVET committee and started discussing the activation of SEZ in June 2016. The committee's urgent agenda is staff training of existing companies within the premises to improve the skill level of the existing workers. Furthermore, the study team noted that most companies in Shwe Pyi Tar SEZ own

generators. thus, maintenance and repairing skills of generators is necessary. As for the repair of other machines, companies depend on repair shops in South Dagon, and for more advanced machines, they rely on the foreign manufacturers. If the companies wish to produce high value-add products, they need to consider the skill development for repairing the advanced machines. The study team observed the “safety first” sign board; however, they also often came across workers without safety boots or helmets in some factories. As a reference to consider the TVET needs of private companies by scale, the study by World Bank, which targeted more than 1,000 companies, is helpful. Thus, the improvement of soft skills is also an important agenda. According to the study, most companies replied that workers in Myanmar lack soft skills regardless of the scale of the company. Responses received from the companies concerning soft skills are comparatively positive among small enterprises. Larger companies provide more in-house training, and the service industry has more training opportunities than the manufacturing industry. Management of a company in Mandalay SEZ mentioned that they do not want to provide any skill-up training opportunities for the employees because they are afraid that the workers would move on to the next workplace once they acquire specialized skills. Especially among mid-size and small-size companies, they do not provide many opportunities for the workers even though they know the skills provided by general TVET are not sufficient. As Myanmar does not have clear industrial policies, JICA and other DPs need to help propose them. However, it significantly depends on which kind of companies run businesses in Myanmar, and we have to continue observing the situation.

Table 5.1: Weak Point of Education System in Myanmar by Scale and Category of Companies

Category and scale of companies	Weak point of education system in Myanmar				Ratio of companies which provide any form of training to employees	Number of sample companies
	Moral and discipline	Categories of skills required by employers	Levels of skills required by employers	Knowledge about methods, materials and technology		
Manufacturing and service	77.8%	82.3%	84.9%	85.6%	8.6%	1,092
Micro	73.2%	82.7%	84.8%	86.7%	3.0%	454
Small	82.2%	81.7%	86.7%	84.3%	12.0%	375
Medium	85.6%	81.9%	80.2%	85.1%	21.0%	161
Large	84.1%	84.2%	84.5%	83.0%	29.4%	102
Manufacturing	68.5%	76.6%	73.0%	73.0%	9.6%	469
Micro	46.3%	72.1%	59.8%	82.5%	7.6%	107
Small	65.7%	80.3%	79.7%	77.4%	8.0%	165
Medium	81.7%	72.7%	69.3%	75.3%	4.9%	99
Service	79.9%	83.5%	87.5%	87.5%	8.0%	623
Micro	75.3%	83.5%	86.8%	87.0%	2.6%	347
Small	85.9%	82.0%	88.3%	85.9%	12.9%	210
Medium	89.6%	91.1%	91.1%	95.0%	37.0%	62
Large	100.0%	100.0%	78.5%	100.0%	52.1%	4

5.2.2 Re-activation of SEZ and Industrial Zones

The Yangon Regional Government declared it would re-activate the SEZ within the Region to reduce poverty and promote employment, after receiving the instruction by the new regime. At the end of May 2016, the Yangon Regional Government implemented a survey with a view to displace squatters and to effectively utilize the land around Hlaingtharyar and Shwe Pyi Tar SEZ. According to the Yangon Regional Government, only 10 percent of the SEZ is properly functioning, although there are as many as 19 SEZ in the Yangon Region. One of the reasons for the current situation is the expensive rent caused by speculation when they were acquired by the government. The Minister of Yangon Regional Government mentioned that “squatters from the countryside are illegally staying at the places without any education or job”. While some

internally-displaced people are employed in the SEZ with low wages, they are sustaining the factory operations because the factory owners can take advantage of the low labour cost.

Therefore, the displacement of squatters can cause a new problem among factories in the SEZ. In order to solve these problems, the Yangon Regional Government organized the Yangon Industrial Promotion Committee and started discussions with related ministries and managers of the SEZ. Furthermore, the Yangon Regional Government regards the re-activation of the SEZ as poverty reduction and support for internally displaced people. Thus, they insist on the importance of education for the children around the areas as well as the existing workers. In addition, the Yangon Region is planning to allocate different functions (e.g. one SEZ for only the automobile industry, another SEZ only for the garment industry) to a respective SEZ. Countries like Sweden and Korea have already raised their hands for a concession at the SEZ. MIA under UMFCCI, on the other hand, is also making efforts to energize the existing SEZ. According to Chairman of MIA, Mr. Saw Min Win, MIA established the SEZ Development Committee to discuss industrial promotion, development of the SEZ, troubleshooting of the SEZ, human resource development, development of engineers, etc. In addition, MIA is planning to build training centers at each SEZ, and provide training courses. During the training courses, MIA would like to improve the soft skills as well as hard skills of the trainees. MIA does not have a clear idea about the plan of the Yangon Regional Government. However, they have already started basic 2-week training courses for motor repairing and maintenance, and electric wiring, in collaboration with MoI. The last training course was held on 24th June 2016 at Shwe Pyi Tar SEZ by utilizing a mobile unit from ITC (Sinde) and taught 25 trainees for each course. Additionally, GIZ is going to provide welding training courses in the near future. The responsible person of TVET in MIA gathered Chairmen and Director Generals of SEZ management committees and discussed what kind of training courses can be offered at the respective SEZ. And they found that some SEZ were going to invite a foreign specialist and offer training courses. Furthermore, they are also trying to build training centers at each SEZ because of high demand for training courses for advanced technologies. The responsible person of TVET also mentioned that they need to take measures to prevent the loss of specialized/experienced personnel like supervisors and forepersons to Thilawa and other SEZ after the establishment of the training centers. At the training centers, the existing workers learn basic skills and specialized skills for each SEZ within 1–3 months. After the training course, they return to the original workplace. SEZ Development Committees of MIA will be in charge of curriculum development. They are going to share a common syllabus and textbooks for a basic training course while each SEZ will use a different syllabus and textbooks for specialized subjects based on MIA's survey. The Yangon Regional Government has also asked MES for advice regarding the re-activation of SEZ; however, there is limited coordination between MES and MIA. Myanmar has discussed re-activation of SEZ several times by the organizing committees, nevertheless, the idea has not come true yet under the military regime. Therefore, people are expecting the re-activation of SEZ under the democratic regime in collaboration with the Regional Government and the private sector. Furthermore, business owners are being more active than ever. Thus, if the government can successfully assist the movement of the private sector, that will help accomplish the re-activation of SEZ.

5.3 Required Human Resource Development Policies for Quick Response to Demands

5.3.1 Practical Trainings after Graduation from GTHS/GTI

TVET organizations that offer 2-6-month soft skill and hard skill training courses are effective even if GTHS and GTI improve their practical training courses. The electric wiring training course provided by Kinden in Insein is one of the examples. It is preferable for the government and the whole sector to support the TVET considering the expenses of facilities and practical

activities required for the training courses. For example, CVT has provided vocational training courses for free of charge (it will partly charge tuition fee in the future) with the financial help of 500 partner companies and the Swiss Government. CVT applies a dual system (teaching the theoretical part of training at the center and providing practical work experiences accompanied by instructors utilizing factories). This is a realistic approach and other TVETs should also consider introducing the same or similar system since machines used for training are limited in most TVET organizations.

5.3.2 Training Centers in SEZ and Industrial Zones

Some instructors, who have received high-quality vocational training during the period when the technical level of Myanmar was as good as the other ASEAN countries, sustain the quality of the factories. Vocational training centers for existing labourers are highly required considering the following situations.

1. The number of workers without any practical experience (graduates of GTHS, GTI and TU) is increasing
2. Experienced workers may have limited opportunities to learn new technologies
3. Many labourers may switch their jobs for better pay as FDI increases

Training curriculum and instructor development to introduce new technologies will be effective in the short run because facilities and machines can be prepared by companies in SEZ. Utilization of mobile units may be one solution; however, training facilities are limited, and scheduling maintenance is difficult. Considering the above factors, it is preferable to establish training centers in SEZ.

Chapter 6 Intervention of Development Partners in TVET

6.1 Existing TVET Projects Implemented by DPs

6.1.1 ADB

ADB has been playing a leading role in the development of CESR and NESP, and, therefore, it has significant influence on the education sector (especially in secondary education and TVET), at the policy level, in Myanmar (ADB, 2015) (MoE, 2015). ADB is currently implementing 3 Technical Assistance (TA) projects, which focus on population, mainly at the lower-secondary level. Through the series of interventions, ADB has been trying to keep a good balance between secondary education and TVET by addressing policy, access, and quality, at the same time. Furthermore, ADB is the co-coordinator (along with GIZ) of TVET DPs Working Group, which aims to support coordination and joint policy dialogue across TVET-related DPs in Myanmar. In regard to the shortage of human resources, ADB is designing projects to address the issue, in order to catch up with the rapid economic development and surge of human resource demand in Myanmar. From 2017, ADB is going to launch a loan project in the same field to reinforce the lower-secondary education and TVET in Myanmar.

(1) Support for Post-Primary Education Development: TA, 2013-2017 (Extended)

The Government of Australia, and ADB, is providing support through MoE. Their main activity is at the policy level, such as curriculum and framework development regarding TVET and lower-secondary education in Myanmar. The three main components are as follows:

- 1) Post-primary education analysis**
Thorough analysis on challenges and solutions in secondary education, TVET, and higher education.
- 2) Reinforcement of post-primary education policy and planning framework**
Formulate the framework and implement the plan of curriculum renovation and share with stakeholders through use of a forum.
- 3) Feasibility study and clarification of priority issues**
Analyze promising investment destinations concerning CESP and prepare a report.

(2) Skills Development for Inclusive Growth: TA, 2014-2017

ADB is administering a 2 million USD grant from the Japan Fund for Poverty Reduction for this project. MoE (formerly known as MoST) is the executing agency for the TA, which has 2 main government implementation partners: MOE and MoI. The main objective (targeted outcome) is to create models to equip disadvantaged young adults with job-ready, highly demanded skills and to demonstrate them to be successful and adaptable to market demand. In addition to the policy-level support and capacity building, a key focus is the development of competency-based modular short-courses (CBMSCs). The target group is young people and existing labourers who do not have access to a higher-secondary education or existing TVET in rural areas. The project also intends to increase the living standard of the target population. The TA is supporting pilot testing of CBMSCs at 5 sites: ITC (Mandalay), ITC (Pakokku), GTHS (Mandalay), GTHS (Nay Pyi Taw) and GTHS (Yangon) (ADB, 2014). The TA provides the 7 following areas of pilot components: 1) road construction and concrete technologies; 2) cement shuttering; 3) bar-bending (for concrete reinforcement); 4) brick-laying; 5) MIG-MAG welding; 6) arc welding; and 7) maintenance and repair of farm equipment and other common rural-use machinery; and 8) maintenance/repair of motorcycles. These skills were selected considering

NSSA's priority, general versatility, and market demand. ADB plans to support the government's scale-up of CBMSCs (a core TVET program listed in the NESP) based on the lessons learned from the pilots.

(3) Project Preparatory Technical Assistance for “Preparing the Youth for the Workplace Sector Development Program”: TA, 2015-2017

ADB is providing a 1 million USD grant in support for this project and MoE is the main implementing partner of GoM. The main objective of the TA is to develop the detailed design of the forthcoming program, “Equipping Youth for Employment Sector Development Program” and to ensure the smooth start-up of the program by providing capacity building activities to support the program management. Detailed information regarding the program is described below.

(4) Equipping Youth for Employment Sector Development Program: Loan, 2017-2022

Building on the policy-level support to date, as well as, the pilot testing of CBMSCs under the noted TA for Skills Development for Inclusive Growth (funded from the Japan Fund for Poverty Reduction), which ends in March 2017, ADB is planning to support a new program, Equipping Youth for Employment Sector Development Program (EYE, a concessionary loan project) for 6 years with a budget of 98.5 million USD. EYE will support cohesive reforms of secondary education and TVET as the main pillars of the program, which aims to realign the outcome of secondary education and TVET to match the ever-evolving labour force needs.

6.1.2 Government of Singapore

The Government of Singapore has started a large-scale intervention on TVET of Myanmar in 2014. It has participated in the TVET DPs Coordination Meeting (one time). The Government of Singapore has not disclosed detailed information of its projects. Singapore is planning to delegate the authority of SMVTI to Myanmar personnel by replacing the current Singaporean principal with the Myanmar counterpart as Singapore continues its technical assistance in TVET. As of now, Singapore does not have any other plan for investment in TVET in Myanmar on a large scale. Singapore supposes that TVET may be required in labour-intensive industries like the garments sector, since the wage of workers in Myanmar is comparatively high regardless of their poor skills.

(1) Singapore-Myanmar Vocational Training Institute (SMVTI): 2014-2017

Singapore renovated the former polytechnic school which had been closed since 1988. The renovation was completed in November 2015 and SMVTI started offering courses. SMVTI is located in an area of about 3.8 ha, and there are 84 staff members (including 3 Singaporean nationals). Each course (100 % taught in English) accommodates 40 students. Duration of the courses is 6 months (5 days a week from 9 am to 5 pm) and it uses a two-semester system (each semester begins every May and November). Its target population is GTI graduates, youth of 16 years old and above, and existing workers. All of the applicants are required to pass the matriculation exam. SMVTI has not introduced the NSSA's skills standard; however, it has the intention to apply the standard if it is widely acknowledged among private enterprises. SMVTI is actively collaborating with the private sector, especially with hotels. For example, Sedona Hotel accepts interns from SMVTI. Furthermore, Golden Brown Hotel and SMVTI hold joint training programs for the SMVTI trainees. Moreover, Park Royal provided guest room facilities for training purposes and some SMVTI graduates have been employed at the hotel. Finally, it offers employment support and career counselling for the trainees.

Table 6.1: Subjects and Courses of SMVTI

Subject	Course
School of hospitality and tourism	Front office operations
	Housekeeping operations
	Restaurant operations
	Retail operations
School of electrical and electronics	Electrical Technology (Electrical Appliances and Special Installations)
	Electronics (Computer and Networking)
	Information Technology
School of Engineering Services	General Welding
	Mechatronics (Basic Services)
School of Facilities Management	Residential Air Conditioning
	Building Fixtures and Equipment

Source: Interview with SMVTI staffs and introduction brochure

6.1.3 KOICA

KOICA has supported the establishment, facility investment, and start-up of ITC (Thagaya) in 2009, and ITC (Magway) in 2011. KOICA sends a 2-year volunteer (a recent college graduate) for technical instruction of electric courses in ITC (Magway). KOICA has not been so active in collaboration with the Korean automobile industry in Myanmar. However, KOICA is currently working closely with Hyundai Motors, which is willing to provide practical and updated training opportunities to ITC students. Furthermore, KOICA is seeking opportunities for cooperation with the garment industry, for which KOICA is planning to align ongoing and upcoming projects. KOICA has attended TVET DPs Coordination Meeting (soft-sector sub-group) twice⁴⁹. Additionally, KOICA has supported the preparation of the NSSA's skills standard and is focused on the quality and accessibility of TVET at the field level.

At this moment, KOICA is also planning to implement a small-scale project for ITC Magway for sustainable operation and capacity building of the employees. Furthermore, KOICA Myanmar is following the Korean Government's initiative, 'Better Life for Girls', which focuses on providing 'skills and technology for work' and 'life skills for empowerment'. Accordingly, it is planning to add more subjects, such as fashion and cooking in the following project (see below), which could equip girls with the skills to pursue better opportunities. Since one of the main focuses of KOICA Myanmar is TVET, it is conducting a series of surveys with a view to develop new projects for 2018, and it is working closely with MoSWRR, Korean private sectors, and Korean NGOs in Myanmar.

(1) The Project to Establish the Institute for Technical Vocational Education and Training (TVET) Teacher in Myanmar: Grant, 2015-2019

The Government of Korea has disbursed 11.5 million USD through KOICA in order to construct a technical teachers' training center (including ToT facilities), to develop the TTTI (technical teacher training Institute) master plan, to establish a Model GTI, and, to establish a research and development (R&D) center with the help of MoE. The project was launched in October 2015, and it is estimated to end in December 2019. It is in the process of collecting data for preparing a master plan for the center. After the completion of the facility development, Korean experts are going to provide technical instructions for the first 3 months. The new GTI is going to have a function as a model that works closely with the market and private sectors with modernized facilities. The TVET Training center will provide 4 programs (electrical engineering, electronic engineering, mechanical engineering, and automobile engineering), and

⁴⁹ From interview with KOICA

KOICA is planning to add 2-3 more programs, which will focus on empowering girls in such areas as garment design, cooking, hair dressing, etc.

6.1.4 LuxDev

LuxDev has begun its activities since 2015 in Myanmar, and its Hanoi (Vietnam) office (LuxDev, 2016) is responsible for the activities in Myanmar. LuxDev attended the TVET DPs Coordination Meeting and shared its intervention scheme with other donors. Furthermore, LuxDev is currently developing level 4 (supervisor level) NSSA skills standards in regards to hospitality. In addition, it is going to provide diploma courses in tourism at Vocational Training Center in Nyaung Shwe under MoE and diploma courses in hospitality at schools under MoHT⁵⁰.

(1) Human Resource Development for Tourism: TA, 2015-2020

The Government of Luxembourg provided 5 million EUR over 5 years through the Ministry of Hotel and Tourism in Myanmar. This is the first development project for the Government of Luxembourg in Myanmar. The objective of the project is to help Myanmar achieve the Myanmar Tourism Master Plan 2013–2020 (especially, to contribute to hospitality and service improvement, employment promotion, and income increase through human resource development in the tourism industry). Expected outputs are 1) improvement of organizational capacity in the tourism industry, 2) promotion of administrative skills of existing trainers and 3) skill development of existing human resources in the tourism sector. (LuxDev, 2016)

6.1.5 GIZ

GIZ has long supported TVET in Myanmar and has played important roles in the preparation of CESR with ADB (ADB, 2013). Furthermore, it is leading TVET in Myanmar as the co-chair of TVET DPs Coordination Group with ADB. GIZ has collaborated with Swiss Agency for Development and Cooperation (SDC) and is willing to cooperate with other DPs as well. GIZ offers a comprehensive approach to policy issues, access, and quality of TVET. It has sent some German TVET experts to UMFCCI in response to its request, and they are working to develop TVET modular courses among private enterprises. Furthermore, it is currently developing components of the “TVET Reform Programme” as a subsequent program to the existing project, “Strengthening the Vocational Training System”. In addition, it is going to collaborate with NSSA, TPTC, ITC (Sinde) and other educational institutions for the training of both students and trainers. GIZ also focuses on embedding TVET in secondary education, as well as, training for existing workers. Furthermore, GIZ shows positive attitude towards the coordination with other DPs at Insein GTI, TUs, TPTC etc. so long as it can ensure compartmentalization with its counterparts⁵¹. At the same time, it is making an effort to spread the training model of ITC Sinde to other TVET institutions by offering certificates, and in the future, the trainees will be expected to obtain NSSA’s level 4 certificates.

(1) Strengthening the Vocational Training System: TA, 2012-2016

Since 2013, Germany through GIZ and KfW has provided 12.8 million EUR to support the promotion of TVET in collaboration with its government partners (counterpart: MoI, supporter: MoLIP and MoE). This project is a component of the Sustainable Economic Development Programme and consists of the following 4 activities. (GIZ, 2015)

⁵⁰ Representative of LuxDev at TVET DPs Coordination Group Meeting

⁵¹ Interview at GIZ

a. Advocacy to TVET-related departments and support to TVET law preparation

GIZ provides support to TVET key partner ministries (MoE, MoI and MoLIP) in their development and implementation of the TVET regulatory framework. GIZ implements advocacy activities to TVET-related Ministries and departments in order to establish a market-demand-based TVET system and to develop a coordination structure among government partners and DPs.

b. Organizational capacity development of NSSA

GIZ provides support to the National Skills Standards Authority (NSSA) in the development of a widely recognized technical and vocational skills qualification scheme, and a system for the certification of skilled workers and their skills development. Activities include the preparation of skills standards by NSSA, and the development of assessment methods. Furthermore, it assisted NSSA to bring its skills standard up to the level of ASEAN requirements.

- Supported establishment of the NSSA Technical Office at the Skills Training Center under MoLIP (located in Yankin),
- Piloted the skills assessment and certification procedures/functions with a view to developing an organizational structure for NSSA as stipulated in the Employment and Skills development Law (enacted in 2013),
- Conducted a fast-track skills testing project (up to three rounds) and awarded 678 NSSA level 1 certificates to semi-skilled workers from Yangon in 11 priority occupations,
- Provided technical and financial support to NSSA/MoLIP for the establishment and accreditation of skills assessment centers at Skills Training Center (Yankin), CVT Myanmar, Kabar Training Center, Arbourfee Training Center, Star Resource Training Center, TRC Training Center, Construction Training Center (Thuwana),
- Supported the organization of the National Skills Competition 2016, held at the Construction Training Center (Thuwana)

c. Capacity development of TVET organizations and introduction of market-needs-based skill trainings

GIZ supports ITC Sinde to introduce needs-based training courses with modern equipment, updated curricula, teaching, and management system. GIZ also provides technical instruction with the financial assistance (208,800 EUR) from SDC for 50 trainees nominated by DTVE. Based on their performance, 30 out of the 50 trainees received the opportunity for a second series of training and DTVE selected the best 10 trainees out of the 30 and sent them to Germany for a one-year training series. The 10 trainees have completed the overseas training and some of them are currently working as trainers in ITC Sinde. KfW has implemented a feasibility study for further interventions and it is waiting for its approval by MoE. At the same time, KfW and GIZ are in the process of selecting 8 to 11 pilot formal TVET institutions. KfW provides facilities through financial cooperation and GIZ supports organizational capacity development, training module preparation, and institutional management, as soon as the pilot institutions are selected.

d. Collaboration with private sector through UMFCCI

GIZ sent short-term German TVET experts to the TVET Committee of UMFCCI after receiving the request from UMFCC in 2015. The main role of the experts is the development of tailor-made TVET courses for private enterprises. UMFCCI is currently planning to support domestic entrepreneurs through the TVET courses in order to respond to the skills demanded by foreign and domestic investors.

(2) TVET Reform Programme: Grant, 2017–2019

The Government of Germany provides a TVET grant up to 11 million EUR. The goal of the program is to promote poverty reduction, social stabilization, and economic development through the following expected outcomes:

The graduates of GTHS and GTI

- 1) are employed where they can utilize the skills learned during the training
- 2) increase their income
- 3) contribute to productivity in companies

The target group is unemployed youth under a disadvantaged environment. GIZ is planning to mobilize them by providing long and short-term opportunities for vocational training so that they can become a competitive workforce in the modern industry. (KfW, 2014)

The program consists of the following components:

- 1) drafting a policy proposal regarding TVET
- 2) organizational capacity development of NSSA based on the regulatory framework
- 3) ToT at TPTC Baelin
- 4) provision of a need-based TVET

Furthermore, GIZ cooperates with the following partners:

MoE, MoI, MoLIP, UMFCCL, MIA, ITC (Sinde), Shwe Pyi Tar GTI, Insein GTI, Ywama GTHS, Mandalay GTI/GTHS, Taunggyi GTHS (GIZ, 2016)

GIZ basically focuses on TA and not on renovation or construction of structures on a large scale. It is planning to make GTI Insein similar to ITC Sinde and TPTC as a ToT-focused institution although it is only providing advice to the latter. GIZ, in regards to the shortage of TVET instructors, would like to resolve the issue by promoting ToT in parallel with the establishment of a training-employment system by developing NSSA's skills standards. As for the framework of the standards, it does not cling to the German system, and, rather, it would like to select the most suitable one for Myanmar.

6.1.6 SDC

Swiss Agency for Development and Cooperation (SDC) provides grants through various implementing organizations like GIZ, IOM and Swisscontact. SDC mainly supports non-formal TVET institutions, and the main government partners are MoLIP and MoHT. The objective of its activities is to provide socially vulnerable youth (especially migrants and internally displaced people) with opportunities to receive market-demand-based vocational training programs. SDC is willing to continue its support to CVT. In addition, SDC has shown a positive attitude towards further support to VDSP.

(1) Institutional Support to the Centre for Vocational Training (CVT): Grant, 2013–2018

SDC provides a grant of 4.43 million Swiss francs and supports five 3-year courses, as shown in the following table. Each course has different target groups of trainees. CVT receives grants from private enterprises in addition to SDC, and it is currently building a new CVT in Yangon. It will be able to accommodate twice as many trainees (1000 trainees) as the existing CVT. CVT hires teachers mostly from local human resources and only a few teachers are foreigners. SDC encourages ToT and some graduates of CVT to become trainers at CVT.

Table 6.2: Courses and Target Group of CVT

Course	Target
Cabinet makers	Secondary school graduate
Metal workers	
Electrician	College graduate
Commercial assistants	
Hotel and gastronomy	

Source: Interview at SDC

(2) Vocational Skills Development Program (VSDP): Grant, 2014-2018

SDC disburses 3.9 million Swiss francs to Swisscontact to implement 3 training components among socially vulnerable youth with the help of Swiss Hotel Management Academy Lucerne (SHL), IOM, and GIZ.

a. Hotel Training Initiative (HTI) component implemented by SHL

The main objective of this component is to cultivate human resources in the tourism industry among 3,000 disadvantaged youth and 1,000 existing hotel staff. Famous hotels in Yangon, Nay Pyi Taw and other related industries support the component and SDC has a MoU with MoHT. Furthermore, the component has a scope of ToT and some trainees become master trainers after they have completed the courses. (Swisscontact, 2016)

b. Local Vocational Training (LVT) component implemented by IOM

3,000 disadvantaged youth (18–25 years old) in Mon and Kayin States are targets of this component and IOM offers a 3-month basic skills training program. IOM is in charge of the field operation and implementing activities with the help of Swisscontact. The existing courses are as follows: 1) beautician, 2) house wirer, 3) tailoring, 4) rural mechanic. Furthermore, LVT provides life skill classes (the topics include how to write a CV, healthy life style, management, gender, migration, etc.) and it offers support for job searching and employment for graduates. As of 2015, 560 people have completed the courses and its drop-out rate is quite low. [Swisscontact, 2016]

c. NSSA component closely aligned with GIZ

SDC supports the preparation of a guideline and regulations for skills standard certificate exams, capacity development of the NSSA certificate assessors, exam question preparation, and instructor education for organizations that accept interns. Furthermore, SDC contributes 1 million Swiss francs yearly to the NSSA exam center for purchasing the necessary facilities in collaboration with GIZ. (Swisscontact, 2016)

(3) Support to TVET Teachers Training Programme: Grant, 2016

SDC disbursed 200,000 EUR (in 8 months) through GIZ for vocational training in ITC (Sinde). For details, see Capacity development of TVET organizations and introduction of market-needs-based skill trainings by GIZ.

6.1.7 UNESCO

UNESCO used to lead the TVET DPs Coordination Group as the co-chair and was a core member in the preparation of CESR. UNESCO is playing a leading role in the development of NESP with ADB (ADB, 2013). The key role of UNESCO in TVET in Myanmar is delivery of upstream advocacy and coordination of TVET-related DPs. In addition, UNESCO coordinated PepsiCo and MoE during the PPP project (Strengthening Business Skills for Youth Employment in Myanmar) (Trzmiel, 2015).

6.1.8 EU

EU has not directly implemented any project regarding TVET; however, it is going to provide a grant for the program, “Equipping Youth for Employment Sector Development Program” by ADB. EU has yet to announce the scale of its support.

6.1.9 ILO

ILO is influential at the policy level regarding employment promotion in Myanmar and acts as the co-chair in EOSWG. ILO is especially focusing on the tourism industry in the TVET sector and supporting NSSA for the preparation of skills standards. Furthermore, ILO extended the “Skills for Trade and Economic Diversification (STED) Project” for human resource development in the commercial sector in Myanmar although its budget is rather limited in Myanmar. The Government of Japan financially supports the project and it offers vocational training to unemployed youth in the tourism and agriculture sector.

6.1.10 AusAid, UNICEF

Neither AusAid nor UNICEF have proposed to enter TVET in Myanmar, although they are active players in providing primary education opportunities to disadvantaged children in Myanmar.

Table 6.3: Existing and Planned TVET-related Projects in Myanmar (TA, Grant, Loan)

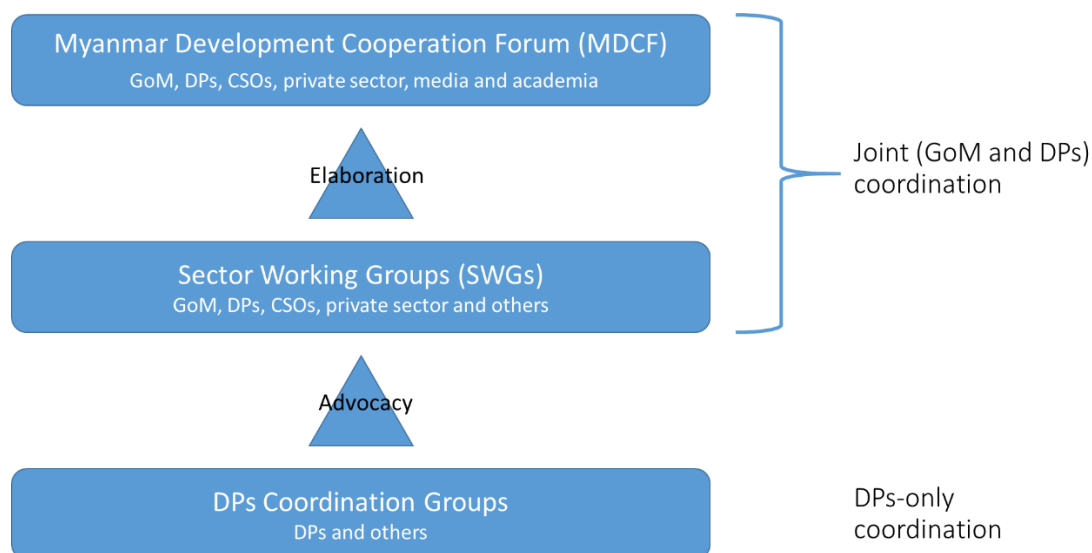
S/N	Project title	Fund from	Implementation	Type	From	End	Duration (Years)	Target population					Focus			Government partners				Status	Budget	Unit	USD Equivalent (from Mohinga)	
								Matriculation		Skill condition			Policy	Access	Quality	MoE	MoLIP	MoI	MoHT					
								Passed	Not passed	Pre-employed (students)	Employed	Unemployed												
1	Support for Post-Primary Education Development	ADB, Gov of Australia	ADB	TA	16/08/2013	31/07/2017	4.0							○			○				On-going	2,200,000	USD	
2	Skills Development for Inclusive Growth	ADB	ADB	TA	01/04/2014	30/04/2017	3.1		○	○	○	○		○	○	○	○	○	○		On-going	2,000,000	USD	
3	Project Preparatory Technical Assistance for "Preparing the Youth for the Workplace Sector Development Program"	ADB	ADB	TA	01/07/2015	31/03/2017	1.8		○	○	○	○		○	○	○	○	○	○		On-going	1,000,000	USD	
4	Equipping Youth for the Workplace Sector Development Program	ADB	ADB	Loan	18/02/2017	18/02/2022	5.0		○	○	○	○		○	○	○	○	○		Proposed	98,500,000	USD		
5	Singapore-Myanmar Vocational Training Institute (SMVTI)	Gov of Singapore	SMVTI	TA	01/04/2014	31/03/2017	3.0	○		○		○		○	○	○				On-going	Undisclosed			
6	The Project to Establish the Institute for Technical Vocational Education and Training(TVET) Teacher in Myanmar	Gov of Korea	KOICA	Grant	01/10/2015	31/12/2017	2.3	○	○	○	○			○	○	○				On-going	11,000,000	USD		
7	Human Resource Development for Tourism	Gov of Luxembourg	LuxDev	TA	02/03/2015	28/02/2020	5.0	○	○	○	○				○				○	On-going	5,000,000	EUR	6,050,000	
8	TVET Reform Programme/ Teacher Training Institute	Gov of Germany	KfW	Grant	01/08/2017	01/12/2019	2.3	○	○	○	○			○	○	○				Pipeline	Up to 11,000,000	EUR	12,470,000	
9	Strengthening the Vocational Training System	Gov of Germany	GIZ	TA	01/10/2012	31/12/2016	4.3	○	○	○	○		○	○	○	○	○			On-going	12,800,000	EUR	16,550,000	
10	Institutional Support to the Centre for Vocational Training (CVT)	SDC	CVT	Grant	15/05/2013	30/06/2018	5.1	○	○	○	○			○	○		○			On-going	4,430,000	CHF	4,750,000	
11	Vocational Skills Development program (VSDP)	SDC	Swiss contact	Grant	01/09/2014	31/01/2018	3.4	○	○	○	○	○	○	○		○				On-going	3,900,000	CHF	4,250,000	
12	Support to TVET Teachers Training Programme	SDC	GIZ	Grant	01/01/2016	31/10/2016	0.8	○	○	○	○		○	○	○		○			On-going	208,800	EUR	236,450	

Sources: Data from Mohinga, interview with respective DPs

6.2 Existing TVET-related Coordination Meeting

The coordination structure between GoM and DPs is as follows (partly omitted):

Myanmar Development Cooperation Forum (MDCF) is located at the top of the joint coordination meeting between GoM and DPs, where they collect and elaborate on TVET issues discussed in the respective Sector Working Groups (SWGs). The DPs Coordination Groups (only DPs participate) discuss and coordinate advocacy among DPs. Among all the coordination meetings, only TVET-related ones will be illustrated in the following section.



Source: (MIMU, 2015)

Figure 6.1: Coordination Structure between GoM and DPs

(1) Joint Education Sector Working Group (JESWG)

Education Minister (Chair), UNICEF (Co-chair) and AusAid (Co-chair) are leading JESWG where participants discuss education policies in Myanmar. CESR was the main agenda until 2014, but, NESP is the current core topic of discussion. TVET-related departments and DPs discuss TVET laws and TVET-related policies in the TVET Technical Working Group (sub-group of JESWG). [Joint Education Sector Working Group, 2013] JESWG is held on an irregular basis although it is supposed to be held once every 2 months (MIMU, 2015).

(2) Employment Opportunity Sector Working Group (EOSWG)

Minister of MoLIP (Chair), GIZ (Co-chair) and ILO (Co-chair) are leading EOSWG. The SWG focuses on employment promotion in the TVET field. EOSWG has contributed to the amendment of Labour law in 2014 (ILO, 2014).

(3) Tourism Sector Working Group (TSWG)

Minister of MoHT (Chair) and WB (Co-Chair) are leading TSWG. The main agenda covered in this group is implementation, monitoring, and sector-wide impact assessment of the Myanmar Tourism Master Plan (MTMP). Furthermore, it also addresses capacity development of tourism human resources and promotion of hospitality, which are related to the projects implemented by GIZ and SDC (HSF, 2014) (HSF, 2015).

(4) TVET DPs Coordination Group

ADB and GIZ are the chairs of the TVET DPs Coordination Group. The meetings are used to coordinate the opinions of DPs on TVET advocacy to GoM. The TVET DPs Coordination Group was originally developed from the TVET Technical Working Group of CESR and most members from the previous working group participate in the current group. However, decisions made in this coordination group do not have any legal status since the group holds an unofficial status.

Table 6.4: List of TVET-related Coordination Meeting

	Name	Chair	Member	Frequency
1	Joint Education Sector Working Group (JESWG)	Minister of MoE, UNICEF, AusAid	MoE, MoLIP, MoI, MoHT, ADB, KOICA, JICA, GIZ, SDC, UNESCO, EU, NGOs, etc.	Irregular
2	Employment Opportunity Sector Working Group (EOSWG)	Minister of MoLIP, GIZ, ILO	MoE and other Ministries, ADB, SDC, KOICA, UNESCO etc.	Irregular
3	Tourism Sector Working Group (TSWG)	Minister of MoHT, WB	SDC, ADB, ILO, GIZ, JICA, KOICA, UNESCO	Every six months ⁵²
4	TVET DPs Coordination Group	ADB and GIZ	EU, UNESCO, ILO, KOICA, SDC, DFID, Embassy of Singapore	Every month

Source: (TVET DPs Coordination Group, 2016)

⁵² (HSF, 2014)

Chapter 7 Challenges and Future of TVET

7.1 Challenges of TVET

7.1.1 Academic and Career Path

Enrolment in GTHS can be an alternative to general education for students. However, the number of enrolled students in GTHS is below its quota, and the number of schools is quantitatively low. While an increase in the number of schools cannot be a solution alone as social recognition on TVET is still limited and many students pursue higher education instead of taking the TVET route. Most graduates of lower-secondary education start general high school education despite the fact that high school graduation rate is merely 30%. Thus, many continue to take the exam while the others start their jobs. In other words, there is no established system for labour production through TVET. Although ITC seems meaningful as it focuses on students who failed the matriculation exam and could not start GTHS, the number of their facilities is too limited (only 6 centers exist) to accommodate all the qualified students.

7.1.2 Environmental Issues of TVET

With regards to external factors relevant to TVET, Myanmar does not have a system to support industrial promotion or economic development policy in order to assist promising industries targeted by the government while the industry structure shifts from agriculture to manufacturing. Under TVET law, TVET Council will be organized and it will coordinate stakeholders. However, it is still under discussion in Parliament, therefore, there does not exist any practical framework as of now. Regarding labour market and labour policy, qualification and information about various employment and labour remain undeveloped. Although reinforcement of skills standards is regarded as an urgent issue, consistency between that of NSSA and that of ASEAN has not been established. Further, labour laws and measurement on foreign labourers are under development. As for diversified human resource needs of Japanese companies in industrial zones, TVET institutions are not providing training programs demanded by the companies. Further, TVET has not enjoyed sufficient social acknowledgement as a meaningful measure to obtain jobs and young generation prioritizes higher education to joining a pool of required human resources in different industries. As a result, there is a gap between human resource needs by industries and human resources supplied through TVET. Myanmar has responded to the skills gap caused by the structural shift of industries, diversification of investment field with the help of DPs through TVET promotion policy. However, Myanmar also requires a TVET promotion framework as an urgent issue.

7.1.3 Internal Issues of TVET

Constrained by external environmental factors, TVET organizations, which cannot accommodate most workers, are facing various issues. Main issues include access to TVET, lack of social value, difficulty of entering higher education, insufficient number of TVET institutions and limited career options for TVET graduates. As for the quality of TVET, limited budget and staffs, low level of salary, lack of PDCA cycle are main obstacles to achieve good management. Further, lack of structural ToT system and comprehensive follow-up training schemes for teachers make it difficult to maintain instructors of good quality. Syllabus and curriculum are not reflecting actual situations and there is a limited scope for each TVET organization to modify them by themselves. Further, there is no career counseling or data collection system on labour market, which causes a mismatch between potential workers and the industry. Therefore, TVET Council needs to discuss on which group of people to take which training program at which institution under TVET law. Different organizations launched various activities on TVET as supportive measures since TVET covers a wide range of ministries, and functions of private TVET are not clearly defined. This fact hampers efforts to strengthen TVET,

and, in order to address the issue and to improve TVET management, public-private partnerships and coherent public policies will be the key elements.

7.1.4 Problems Concerning TVET

Under the constraints like industrial promotion policy, economic development policy, TVET policy, labour market policy, labour policy and industrial human resource needs, as external factors, TVET organizations are prone to bear problems in terms of access, quality and management of TVET. In other words, unsystematic TVET that does not reflect industrial needs nor results in continuously producing effective labour force is a main issue. Therefore, Myanmar needs to establish a systematic structure that reflects human resource needs of companies, provides practical TVET based on industrial demands, lets the students graduate within a proper timeframe and sustains required labour force. The following issue tree shows the identified problems.

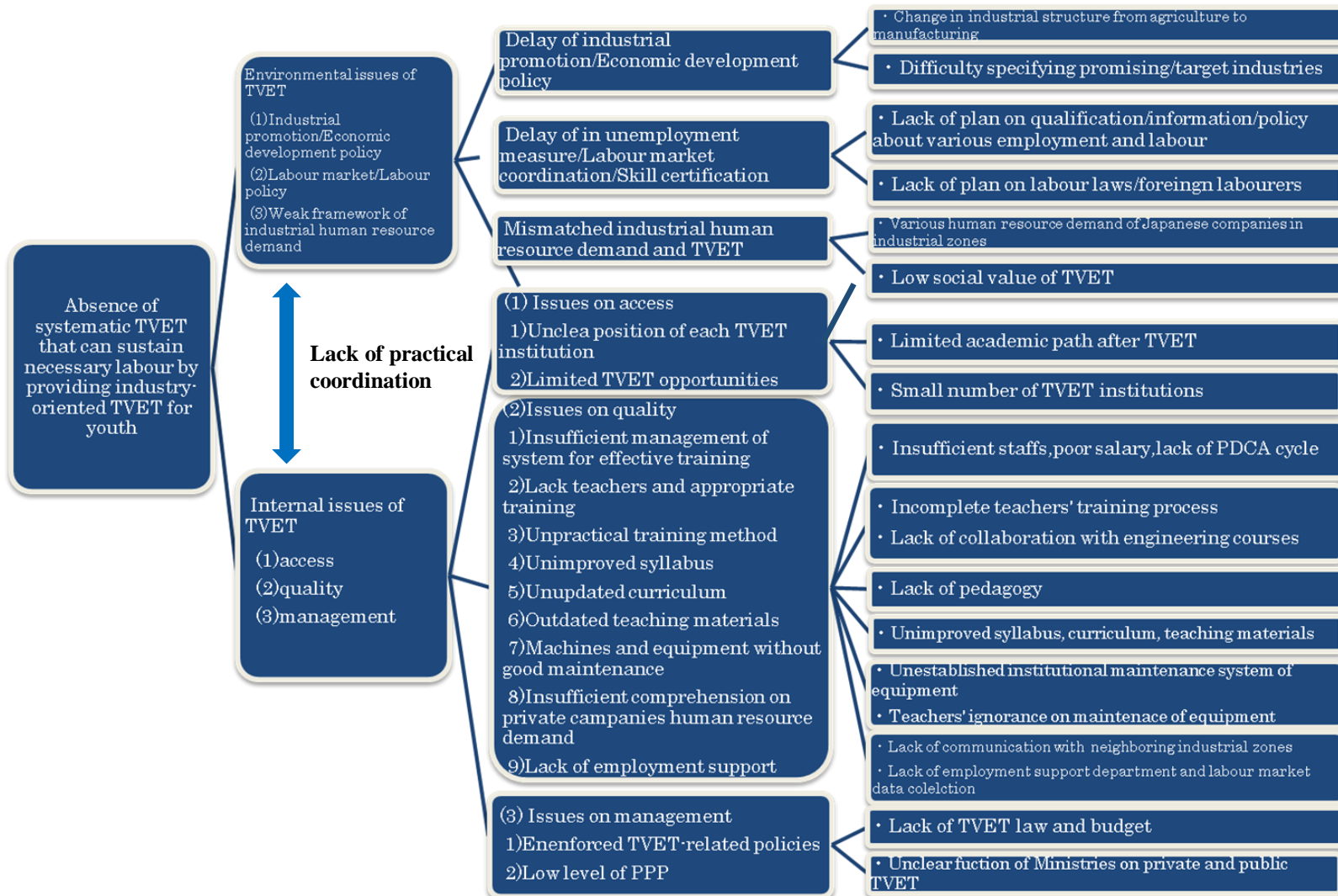
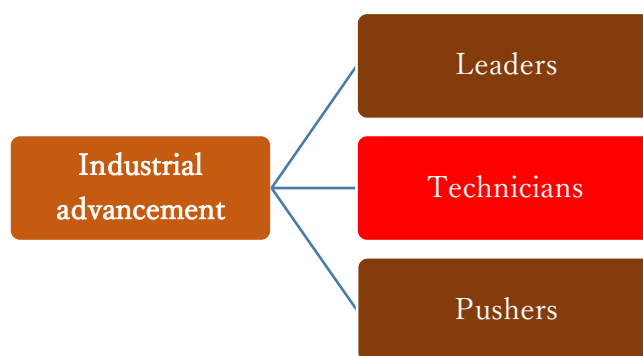


Figure 7.1: Issues on TVET in Myanmar

7.2 Industrial Human Resource Development

7.2.1 Industrial Human Resource Demand

In order to address the shortage of industrial human resources, it is important to promote TVET. As discussed in Chapter 3, 1.3 million skilled workers will be in short supply and 1.1 million unskilled labourers will become excessive by 2030 provided that the economic growth continues to grow at the current level. To respond to this issue, unskilled labourers have to be trained to become skilled workers, and the number of skilled workers has to increase. This prediction is made assuming that the industrial structure will shift from agriculture-based industry to manufacturing industry. In order to accelerate the industrial advancement along with the integration to ASEAN’s competitive market, technicians, coordinators of engineers and skilled workers could be as important as leaders (engineers) and pushers (skilled workers) of industry as shown below.

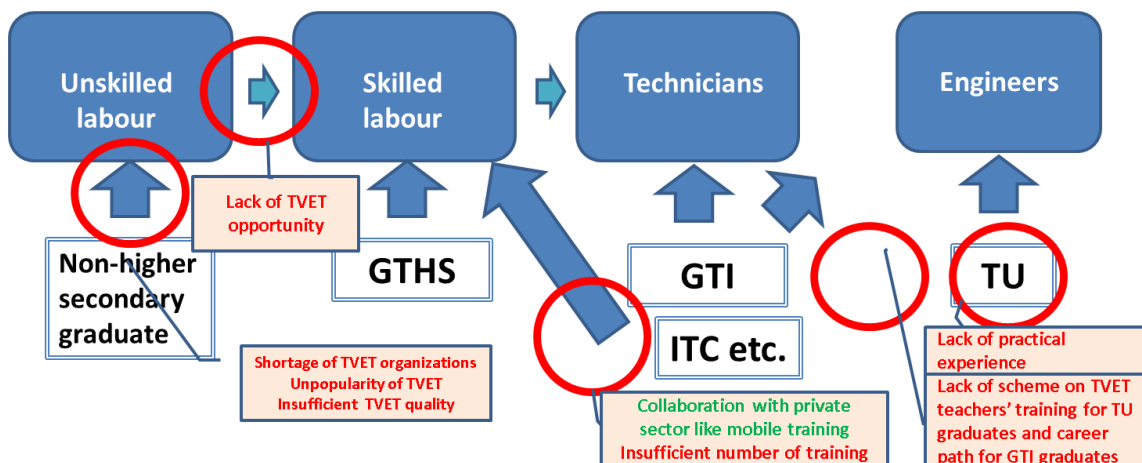


Source: Study Team

Figure 7.2: Industrial Advancement and Supporting Actors

7.2.2 TVET and Industrial Career

Shortage in number of TVET organizations, unpopularity of TVET type career and poor quality of TVET has pushed unskilled labourers to be engaged in manufacturing industry. This fact generates arguments regarding industrial needs on human resources. One example of such arguments is the limited TVET opportunities for unskilled labourers to become skilled workers through relevant training. Further, most graduates of GTHS enter GTI, therefore, GTHS graduates cannot play an important role in compensating the shortage of skilled workers. ITC accepts those who did not manage to pass the matriculation exam and provides TVET. However, they cannot quantitatively satisfy the industrial demand due to the limited number of facilities. Mobile Unit of ITC and training center in Industrial Zones by UMFCCI also play important roles as means to provide training opportunities in industrial zones. However, the number of facilities is still limited. GIZ supports in-company training programs through ToT with a cascade system on skills relevant to construction and based on Singapore pedagogy. However, they are both small in scale. The lack of knowledge and skills on production basic technologies among engineers from TU as supervisors of technical department is identified as one of the constraints. In addition, the current career path where TU graduates become teachers of GTHS and GTI needs to be reconsidered. Further, there is no established career path for graduates of GTI to return to GTHS or GTI as teachers, nor they receive any social respect as technicians or estate engineers. Ever after they start working, there is a huge skill and career gap between technicians (GTI graduates) and engineers (TU graduates). This point is a serious obstacle to increase the motivation of young generation to become technicians as shown in the following figure.



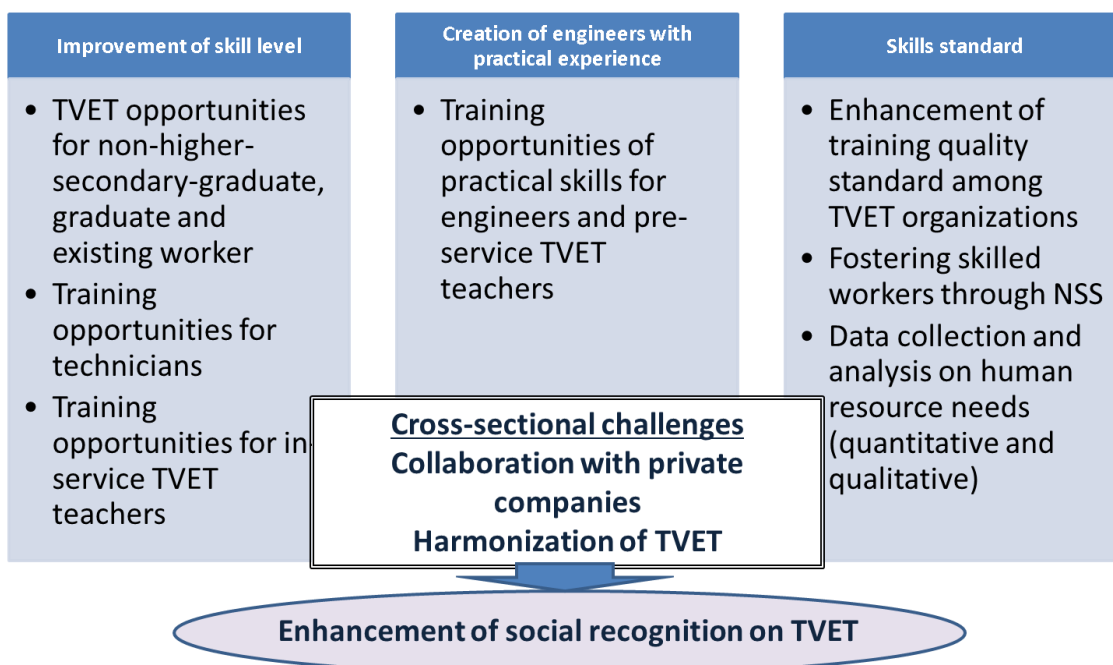
Source: Study Team

Figure 7.3: Analysis on Academic and Career Path Concerning TVET

7.3 Prospect to Solution

7.3.1 Categorization of Issues from Current TVET

Considering the above discussion, we can conclude that enhancement of skill level in production, fostering engineers and establishment of skills standards are necessary as well as development of TVET-related laws and systems, provision of adequate budget for improvement in access, quality and management of TVET by Government of Myanmar. Coordination with private enterprises and development of TVET organizations/systems is a cross-cutting issue, and furthermore, improvement on TVET's social status is expected since this is a pre-condition for the success of TVET.

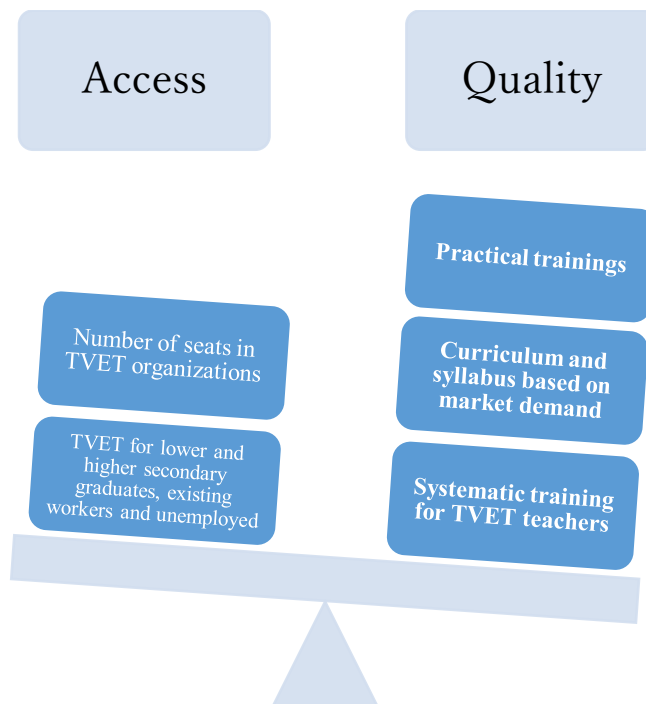


Source: Study Team

Figure 7.4: Categorization of TVET-related Issues

7.3.2 Remarks to Solution

Goals of TVET (improvement in access, quality and management) are articulated in NESP. According to the plan, improving access or quality of TVET alone cannot solve the root causes of the problem, thus management issues need to be addressed as well.



Source: Study Team

Figure 7.5: Balance of Framework: Access, Quality and Management

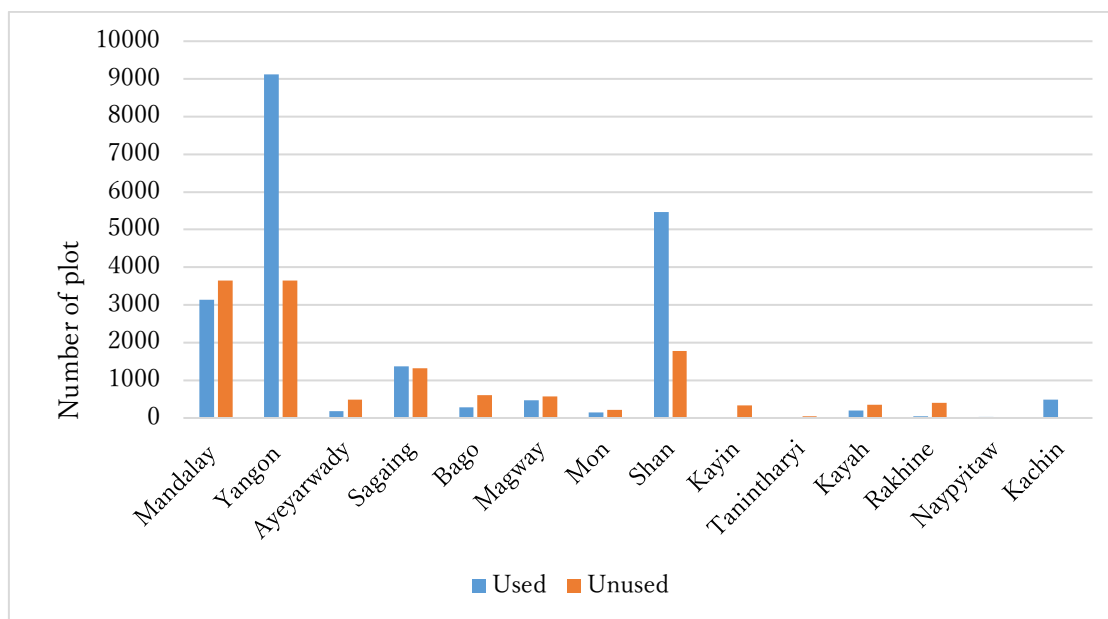
7.4 TVET Demand

7.4.1 Fields of Instruction

It is urgent to enhance instructional ability in basic courses in construction, electronics, mechanics, automobile maintenance, and electricians at GTHS, considering the current discussions regarding promising industries, basic skills, priority placed on skills standards and increasing demands of companies. Japanese companies expect TVET institutions to provide safety measures and basic soft skills to the students while they provide in-company training programs for additional hard skills necessary for employees to perform well in the assigned positions. On the other hand, small and medium-sized companies in Myanmar are not able to provide sufficient in-company training programs to their employees, therefore, these local companies expect TVET to provide basic hard skills as well as soft skills. Based on this background, foreign companies demand more skilled workers of high quality while domestic companies have wider-range of demand on skilled workers, technicians and engineers.

7.4.2 Density of Industry

Among different industrial zones, Yangon has the most number of total plots and their occupancy rate is the highest. Therefore, it seems that the TVET needs for industrial promotion are high in Yangon.



Source: Industrial Policy (MoI, 2016)

Figure 7.6: Number of Plot in Industrial Zones

7.5 Clarification of TVET Issues by Component

7.5.1 Instructors

Issues to be addressed in TVET can be categorized into three components; 1) instructors, 2) curriculum, syllabus and teaching materials, and 3) equipment and facilities. It is obvious that the instructors of GTHS and GTI are not well equipped with experience or knowledge relevant to the current job operations by judging from the types and conditions of machines in GTHS and GTI. This is due to the fact that instructors have no access to learn proper teaching methodology. In order for them to adapt to new technologies, it is necessary for the instructors to keep up with the current technological advancement and continue to deepen their understanding of the discipline. Although TU graduates can become instructors of GTHS and GTI, TU has no specific curriculum for learning the TVET pedagogy nor preparation for the practical work although some of TUs are well-equipped with better facilities compared to GTHS and GTI. Further, there is no effective communication channel with private sectors, thus, training programs that they provide are no necessarily practical in the real job situations or does not reflect what companies want for their potential employees. As for ITC, some instructors are selected among trainees who had studied at ITC, and gone through the technical training programs by relevant DPs.

GIS support the effort to disseminate good practice of ITC to other TVET organizations, which is considered important as GIZ has declared further support to ITC Sinda and its training system is close to an ideal form. As for the private TVET institutions, the instructors who have sufficient experience and technical knowledge in actual business operations have been proven effective. Hence, it is expected that the government certify these TVET organizations and allocate skilled instructors to keep the consistency between public and private TVET.

7.5.2 Curriculum, Syllabus and Teaching Materials

Curriculum and syllabus of GTHS and GTI are somewhat consistent. They were prepared and instructed by Ministry of Education (formerly known as Ministry of Science and Technology). However, when it comes to implementing them, there are several difficulties at respective

institutions. Different subjects are required if GTHS and GTI intend to respond to the needs of the nearby industries, which can potentially employ their graduates. Currently, GTHS is allowed to use their own curriculum for 3 hours a week, and GTI has the right to propose modification of their syllabus to DTVE based on the consensus by the regular committee of principals. Although flexible modification on the curriculum and syllabus should be welcomed, certain standards have to be maintained to adjust to the local needs. As for the curriculum of other TVET organizations, it is not clear whether they satisfy the skill level of NSSA's skills standards. Therefore, they need to adjust their curriculum to the standards to make them more useful and relevant. The curriculum and syllabus for the private TVET institutions are not clear whether they were designed to build the capacity of students to the level of NSSA skills standards. Therefore, the content needs to be reviewed. The curriculum and syllabus of CVT and Kinden applied for their respective TVET institutions are well-prepared to develop the capacity based on the international skills standards. Particularly, the curriculum of Kinden includes the soft skills training program and provide practical skills. This kind of curriculum should be shared with other TVET institutions. Further, it is also important to share good practices with other TVET organizations to ensure the comprehensive development of TVET system.

7.5.3 Equipment and Facilities

Required teaching materials at GTHS and GTI are clearly indicated in their curriculum and syllabus; however, they are not either available or usable. In addition, the number of equipment is not adequate for the number of students. Therefore, the instructors have no other option but to explain the process by writing on the blackboard, and the students take notes instead of having hands-on practical training opportunities with proper equipment. Teachers of GTHS and GTI complained about their equipment being too old; however, the survey team observed even such old equipment can be utilized in Japan under proper maintenance. Thus, the priority should be given to establish a proper maintenance system for equipment. In addition, the registration system of equipment and machines is not well maintained, and this should be developed for their better maintenance. As for ITC, equipment is well-prepared thanks to the support from respective DPs. However, some equipment has not been utilized effectively after termination of DPs intervention. As industry relevant for the ITC training exist near ITC, collaboration with those industries could improve the effective use of the equipment. As far as the private TVET institutions go, most of them do not offer subjects which require heavy or expensive equipment, not like the case of ICT course. In the meantime, CVT is well equipped with sufficient machines, which were sponsored by the Government of Switzerland and private sponsors. If more similar cases are supported, the private TVET institutions will be able to broaden their scope of training in collaboration with government institutions.

7.5.4 Others

Many TVET institutions do not have a clear vision to train their students to become professional human resources for private sectors. While many students still think highly of their certificates or qualification, they also need to understand the industrial trend and demands by private companies, and systematically approach them to let the graduates work for such companies. In this regard, they need to grasp the human resource needs by industry and to strengthen the employment support system for their graduates by introducing certification and evaluation system of each TVET organization.

7.6 Inter-Ministerial Coordination

7.6.1 TVET Law and ESD (Employment and Skill Development) Law

TVET law is currently under discussion at Parliament. In the meantime, by-laws of ESD law are not finalized, therefore, the law is not fully enacted. Further, it is not clear how to coordinate the

by-laws. Particularly, as a function of TVET council, the focus is on how to manage and control respective TVET organizations.

7.6.2 Focus on Industrial Human Resource Development and Concerning Ministries

TVET in Myanmar is administered by many ministries. Above all, MoE, which oversees GTHS and GTI; MoI, which manage a good TVET model through ITC; and MoLIP, which prepare the national skills standards are the leading ministries. The following table shows the focuses of the three ministries in regard to fostering skilled workers, technicians and engineers, and match-making between human resource demand and supply

Table 7.1: Activities of 3 Leading Ministries

MoE	Strengthening GTI as a training institute for technicians and TU as a development facility for engineers and instructors
MoI	Consolidating ITCs to be the main vehicle to foster skilled workers in a large scale by intensifying TVET among workers in industrial zones
MoLIP	Strengthening the function of labour offices to collect human resource needs by industry and to provide employment support

7.6.3 Current Measurement and Required Intervention

Enactment and enforcement of TVET law is an urgent issue for the government of Myanmar. Further, one of the biggest issues regarding the law is clarification of TVET Council's function and realization of an adequate TVET system. Regarding ESD law, prompt formulation and enforcement of by-laws are expected. In addition, MoLIP should effectively control the Skill Development Fund and ensure the smooth operation of fund collection from companies and distribution of incentives. Further, TVET needs to take sufficient budgetary measures to implement various projects. Especially, low salary scale for TVET teachers hampers the efforts to improve the quality of TVET instructors. As a result, it prevents the graduates from becoming successful in industries. Provision of financial support to TVET students is also an important issue as it would successfully increase the number of enrollees of GTHS in 2014/15. It is worth considering providing incentives to the winners of skill competition. Maintenance of equipment and machines, securing budgetary requirements for the TVET management are important issues when the function of each TVET institute is considered. With regards to the national skills standards, main issues include ensuring continuous skill assessments and formulation of skills standards. Furthermore, building a skill certification system for private TVET and private companies has to be considered.

7.7 Future Vision of TVET

7.7.1 Challenges and Future of TVET

Education policy of Myanmar has been consolidated in NESP based on the discussions with DPs. TVET is also articulated in NESP, and it defines access, quality and management of TVET as an analytical framework. According to NESP, the Government of Myanmar aims to achieve the following criteria.

Table 7.2: Goals for Each Criterion by 2021 in NESP

Access	<ul style="list-style-type: none"> • Increase of TVET opportunities among youth regardless of region. • Expansion of options for TVET graduates to access to higher education
Quality	<ul style="list-style-type: none"> • ToT of TVET instructors based on skills standards of NSSA • Improvement of training contents in accordance with companies' demand and employment conditions
Management	<ul style="list-style-type: none"> • Inter-Ministerial coordination • Enhancement of public-private partnership

Source: Study Team based on NESP

In the meanwhile, existing problems are identified and described in the following table.

Table 7.3: Overview of Overall Situation and Issues

Access	<ul style="list-style-type: none"> • Appropriate TVET institution by academic background or academic/career path is not clear • Limited number of available seats of TVET • Some regions and states do not have specialized TVET institutes
Quality	<ul style="list-style-type: none"> • Practical classes are not offered • There is no established system for ToT • Curriculum and syllabus do not match private companies' demand
Management	<ul style="list-style-type: none"> • TVET Council has not been established • There is no financial management system • There is no system for data collection, data sharing or evaluation • Public-private coordination is lacking

Source: Study Team

7.7.2 Priority for Future Vision

In general, TVET targets three categories of people: 1) pre-employed youth, 2) unemployed and 3) existing employees with intention to further advance their skill. As of now, the government's support is not sufficient for unemployed and employed people although it is currently easing regulations to address much wider range of people.

It is preferable for the government to collaborate with private TVET institutions and partly delegate its responsibilities with them, if necessary, as well as to provide sufficient support to them since addressing all three categories of people requires a great deal of effort. As for TVET for pre-employed youth, it bears qualitative issue and it is difficult to improve TVET in a short period of time. Further, the government needs to prioritize the issues for TVET according to urgency of the issues considering DPs' upcoming projects as improvement of TVET requires huge amount of budget.

7.7.3 TVET for Pre-Employed Youth

As for TVET for youth, the target people should be divided into two groups: those who have admitted to TVET institutions (GTHS and GTI) and those who have continued general education.

For TVET students, it is important to ensure their social value and create more opportunities for them to become TVET teachers as well as to assure the quality of their education.

In the short run, the government needs to focus on fostering teachers, establishing strong ties with private companies, developing teaching materials for teachers to offer practical courses, and ensuring sufficient number of machines at each TVET institution.

In this field, GIZ, KfW, SDC and KOICA are currently providing assistance and the government needs to coordinate the interventions by each organization.

Further, through discussions with related-industries, curriculum, teaching materials, machines have to be reviewed to determine if they are suitable for expected training.

As industrial advancement continues, TVET will be required to introduce new technologies to the students, thus the teachers are expected to acquire new knowledge at TU.

In addition, TU needs to collaborate with private companies to learn know-hows and skills on basic production technologies so as to stay current with latest technology developments.

It is also necessary to indicate as a rule of thumb that the trainees are expected to acquire the skill level equivalent to the NSSA's level 1 and level 2-3 at GTI with some exceptions.

The government has to clarify the point that the system allows ITC to accept students who did not graduate from general high school to its 1-year course. Further, upon completion of the course, the students can acquire skills at NSSA's level 2.

7.7.4 TVET for Unemployed

For those who have lost their jobs for various reasons, public as well as private TVET institutions provide various short-term training programs. However, they are not providing their students and prospective students comprehensive information regarding their TVET and prospective employment opportunities upon completion of TVET.

MoLIP should take a responsibility to more actively disseminate useful information for job seekers. According to ESD Law, registration of private TVET institutions is requested; however, as the authorization of by-laws has not made, it is recommended that a pilot program be implemented on a township basis.

An employer can also approach directly to prospective candidates with necessary skill sets. In order to develop such system mentioned above, a mechanism to check the quality of training programs and the curriculum of TVET services needs to be established.

In some fields of TVET, private companies are in the better position to take initiative to lead the sector. However, for those who do not have access to these private TVET due to financial and geographical reasons, the government needs to provide various extra supports to compensate the inequality in access.

This kind of coordination will be one of the important roles of TVET Council under TVET law.

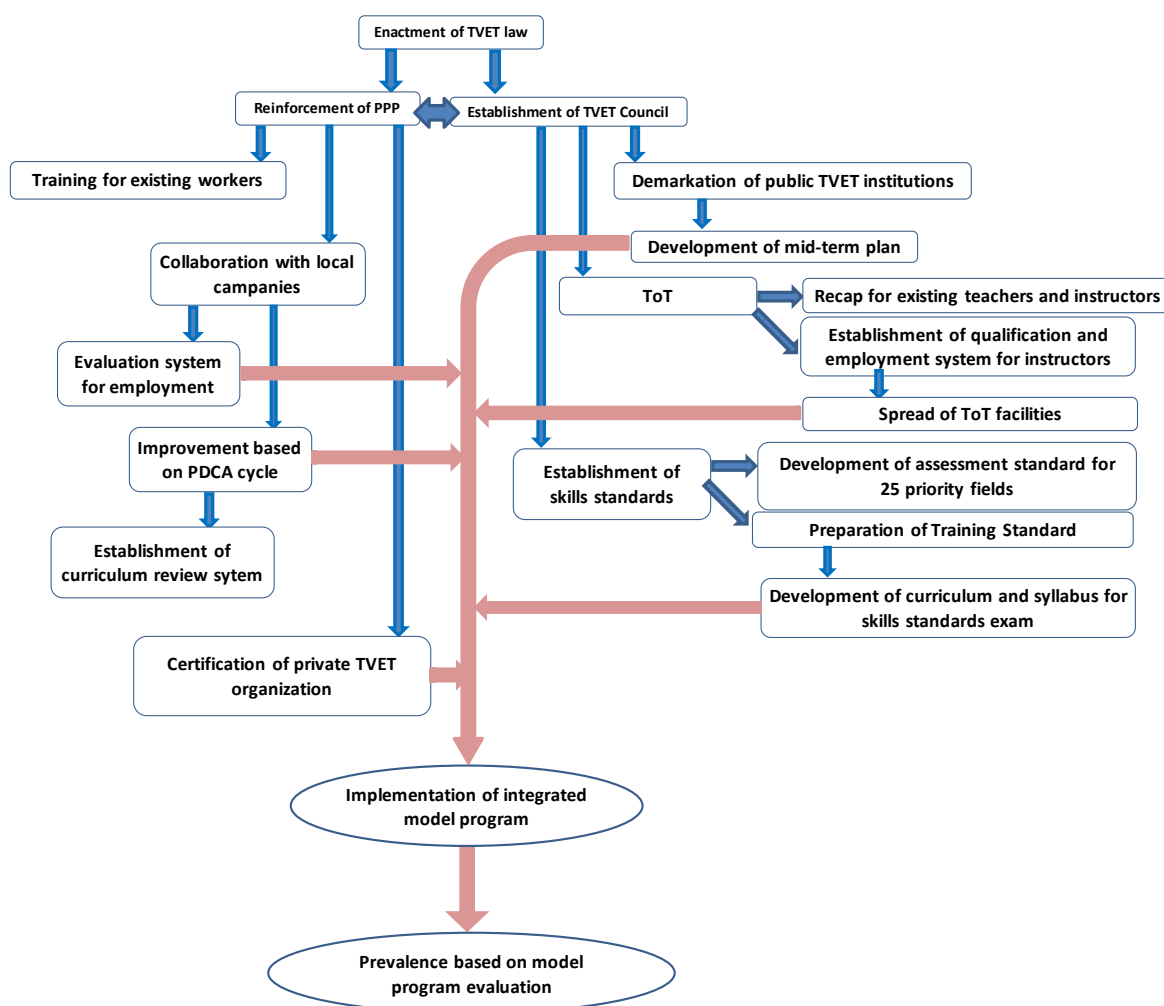
7.7.5 TVET for Existing Workers

Existing workers also need skills development in a large scale. New staff members have limited access to skills development opportunities except OJT although private TVET started introducing a dual system and ITC can provide some courses for them. ITC Sinda provides mobile unit courses in industrial zones throughout Myanmar, and their activity is expected to expand furthermore. Administrative committees of industrial zones promote the preparation of training centers within their premises, and they are required to develop curriculum on basic skills training for their mid-level workers. GIZ has been actively supporting industrial zones to provide in-company training for private companies. Further coordination and collaboration are necessary.

7.8 Scenario to Successful TVET

7.8.1 Road Map to Successful TVET

Currently, respective TVET organizations are working on different aspects of TVET such as development of skills standards, preparation of training programs based on the skills standards, training programs for non-graduates of higher-secondary education at ITC, utilization of a mobile unit for existing workers in the industrial zones, collaboration for in-company training programs with private TVET institutions, comprehensive and systematic reinforcement of TVET. Although the efforts are underway, they are not well harmonized in line with TVET law. Therefore, they lack speedy implementation and significant impact. Until the enactment of TVET law, the government is supposed to focus on urgent issues. After the law is enacted, the government has to declare its clear policy and take immediate measures to cooperate with DPs. Further, public-private partnership under the integrated policy framework needs to be prioritized as an important issue. This is the only way that the government can smoothly and immediately provide training programs to existing workers in a large scale. Further, the government ensures to maintain consistency between TVET providers and different industries by creating opportunities for discussions. In addition, evaluation system needs to be established for ensuring the coherent assessment system from TVET to industrial human resources. Furthermore, improvements will be made based on PDCA cycle and a system to revise and improve curriculum will be developed. Additionally, an accreditation system for private TVET institutions will be established, and a clear division of functions will be expected between private and public TVET institutions according to the mid-term TVET expansion plan supported by TVET council. Further, ToT organizations should be mobilized to upgrade education for the existing TVET teachers, to certify teachers and to develop an employment system for teachers. As for skills standards, universal curriculum and syllabus need to be developed through preparation of training standards as well as assessment standards for 25 priority fields. Integrating these schemes, TVET will have a comprehensive model. TVET is expected to be the heart of industrial human resource development by realizing comprehensive and systematic TVET by 2030. The road map is shown below.



Source: Study Team

Figure 7.7: TVET road map

7.8.2 Steps to Successful TVET

Access

The targets set for TVET access by 2021 indicated in NESP are as follows:

- 1) Increased access to TVET opportunities for most young TVET learners
- 2) More TVET opportunities for students in rural areas as well as urban counterparts
- 3) More opportunities for students at various levels of TVET
- 4) More stipend and scholarship programmes for TVET students
- 5) More pathways for students from TVET to higher education

In order to achieve the above targets, the following institutional and systematic approaches are necessary:

- 1)-1 At least one GTI shall be established in each state / region so that the TVET services not only by GTHS but also by GTI can be provided. This approach also contributes to the target 2).
- 1)-2 Institutional arrangements (facilities, website and other tools) to provide comprehensive

- information on all available TVET services shall be enhanced. This approach also contributes to the target 3)
- 2)-1 An evaluation system to make sure that all TVET services are provided on a non-discriminatory manner in each state and region shall be developed.
 - 3)-1 Age restriction to admit to TVET institutions shall be relaxed (already partially lifted). Restriction on prior educational achievement shall be relaxed by introducing an entrance examination.
 - 4)-1 A conference between TVET institutions and relevant private industries shall be held to reach a mutual understanding of human resource requirements. Through exchanging opinions at the conference, mutual understanding, including on necessity to expand stipend and scholarships, shall be reached.
 - 4)-2 Joint technical development shall be arranged between the private industries and TU, which has professional technical capacity to respond to the industrial demand. In addition, particular polytechnics courses shall be established so that various collaboration shall be strengthened in order to introduce new technologies.
 - 5)-1 Higher educational institutions shall provide new technologies to TVET institutions systematically so that students of GTHS and GTI can have an opportunity to get accurate and up-to-date information on higher education.
 - 5)-2 An entrance examination to higher educational institutions shall be introduced in addition to the matriculation test so that another pathway to obtain higher education shall be developed.
 - 5)-3 Skills standards above Level 4 shall be developed so that continuity to higher education shall be enhanced.

In addition to the above institutional and systematic approaches, each TVET institution shall examine the possibility to introduce the following approaches:

- 1) Collaboration with private sectors shall be strengthened through mobilizing instructors from private sectors to TVET institutions and an internship program for TVET students to private sectors.
- 2) Increasing employment rate of graduates shall be a key indicator for each TVET institution, then the necessary actions to improve this indicator shall be taken on a priority basis.

Quality

The targets of TVET quality are as follows:

- 1) The TVET managers and management staff improve the overall management of TVET institutions
- 2) Pre-service and in-service teachers be trained to develop new competencies in order to be able to teach their students in line with competency standards
- 3) TVET graduates acquire skill sets and achieve skill levels required by industries
- 4) TVET curricula that meets the local demand shall be developed
- 5) Quality-assured TVET institutions and graduates achieve the national skill standards

In order to achieve the above targets, the following institutional and systematic approaches should be taken;

- 1)-1 The school management issue should be one of the subjects for ToT (already commenced partially). A self-evaluation of TVET institutions and an evaluation by the supervised ministries shall be implemented so that any annual management issue shall be identified.
- 1)-2 The number of school management staffs including the principal shall be increased, and necessary training opportunities shall be provided.
- 2)-1 The competency standard shall cover all the occupations that NSSA identified as soon as possible. In addition, the assessment standard and training standard shall be developed, then, the methodology for ToT shall be defined.
- 2)-2 Capacity development achieved by TVET institutions shall be evaluated by the NSSA skills standards. The methodology of such evaluation shall be established.
- 3)-1 A conference between TVET institutions and relevant private industries shall be held to share the results of the evaluation of employed persons who are trained by TVET institutions and by the private sectors so that the points for improvement become clear.
- 4)-1 The conference also examines the TVET curriculum in detail, discusses on how to improve it and identify the points for revision.
- 5)-1 At graduation or completion of TVET, the skills standard examination shall be systematically implemented so that the graduates shall be able to demonstrate their skills standard.
- 5)-2 As one of the evaluation criteria of TVET institutions, the passing rate of skills standard examination shall be institutionalized.
- 5)-3 A nation-wide skill competition shall be organized every year so that representatives shall be able to participate in the ASEAN Skill Olympic Game and aim for the medals.

In addition to the above institutional and systematic approaches, each TVET institution shall examine the possibility to introduce the following approaches:

- 1) The curriculum, syllabus and practical training targets shall be revised based on the opinions of relevant private sectors.
- 2) The curriculum of non-formal and private TVET shall be checked to guarantee its high quality in collaboration with private sectors.
- 3) Opportunities to share good practices shall be expanded without any restriction.
- 4) Each TVET institution shall develop and implement a maintenance system for equipment, which is considered a common and essential practice for the private sector.

Management

The targets set for the TVET management by 2021 articulated in NESP are as follows;

- 1) Better cooperation shall be achieved among ministries, the government and private sectors under the coordination by the TVET Council
- 2) Effective financial management by ministries should be achieved under the established financial management system, which facilitates budget flow
- 3) Data management system, data analysis, reporting and evidence-based decision-making by TVET managers shall be improved
- 4) Senior government officials and industrial representatives shall use research data to improve policies and programs
- 5) PPP programs shall improve access and quality of TVET

In order to achieve the above targets, the following institutional and systematic approaches are expected:

- 1)-1 An annual PDCA cycle for each TVET institution shall be developed. Each TVET institution shall set the annual targets, conduct an evaluation at the end of each year, then, provide feedbacks to improve the system.
- 2)-1 When the annual targets are set, budget availability should also be confirmed.
- 3)-1 Performance data shall be obtained from time to time not only at the end of each year. Then, necessary actions to respond to the needs, including revision of the annual targets, revision of budget and arrangement of necessary staffs, shall be taken as and when required.
- 3)-2 School principals shall evaluate each instructor, then, his/her human resource development plan shall be made according to the individual evaluation.
- 4)-1 Relevant ministries shall set a guideline to allow each TVET institution to revise the curriculum and syllabus in order to reflect the needs of private sectors.
- 5)-1 The conference between TVET institutions and relevant private industries shall make some recommendations to improve access and quality of TVET. Both public and private sectors shall implement the recommendations effectively.

In addition to the above institutional and systematic approaches, each TVET institution shall examine the possibility to introduce the following approaches:

- 1) All equipment should be systematically registered and an inventory of equipment should be checked periodically to suggest if any action for replacement and updates is needed.
- 2) Result of the modification of curriculum based on private sector's demand shall be reviewed for further improvement.

Chapter 8 Suggestions for Effective TVET Cooperation Approach

8.1 Focuses of Cooperation Approach

8.1.1 Strategy for TVET Issues

Stakeholders will need to take different measures before and after the enactment of TVET law. Before the enactment, short-term approaches on urgent issues are expected, based on existing measures. Additionally, mid- and long-term approaches will also need to be considered after the enactment of TVET law. However, it is not likely that TVET law will be active and smoothly followed soon after its enactment, and, therefore, experts acting as advisors who can facilitate necessary procedures will be required to monitor the process towards new TVET. In order to respond to TVET issues, under this policy, short-, mid- and long-term approaches shall be considered.

8.1.2 Industrial Human Resource Demand

Among domestic companies in Myanmar, there is a high demand for basic skills of existing workers, as well as, pre-employed people. On the other hand, engineers (graduates of TU), who lead production departments, lack knowledge and skills on basic production technology, and, thus, TU also needs to provide adequate skills training and education. Many Japanese companies assume they can provide in-company training to their own staff, but at the recruitment level, they will still require that the candidates have basic safety knowledge and a fundamental skills education. Under this context, it is important for a cooperation approach to consider the provision of required human resources by domestic and foreign companies and collaboration with them.

8.1.3 Screening Priority Fields

In order to address urgent issues in Myanmar, the reinforcement of basic skills, in construction, electronics, mechanical, automobile maintenance, and electrical will be priority subjects. Growth industries in Myanmar seem to be garment, automobile, tourism, construction, and ICT. Above all, the automobile repair and maintenance sector is promising, considering its history of engine production, and the recent surge in the number of cars in the country, thanks to the alleviation of import regulations. This includes important skills in 25 fields as decided by NSSA. Generally speaking, the preparation of machines for training is not difficult, as it pertains to the garment and ICT industries, and, it is possible for some private companies to manage their facilities for in-company training.

For 11 out of the 25 skills, DPs are currently providing support, and therefore, the remaining 14 fields will also need to be addressed. In these remaining fields, the government needs to consider the function of private TVET and try to delegate responsibilities, where possible, as well as, considering the coordination with other DPs.

Table 8.1: Activities of Private TVET and DPs on Priority Skills by Industry

Industry	No.	Skills	Private TVET	DPs
Metal, Manufacturing	1	Gas Welder	Partially	GIZ/ADB
	2	Automotive Mechanic		KOICA
	3	Heating & Plumbing		
	4	Foundry Worker		
	5	Pneumatic Controller		
Construction	6	Concreter		ADB
	7	Tiler		
	8	Plumber		
Tourism, Hotel	9	Bell Boy	Available	SDC/Singapore/LuxDev
	10	Housekeeping	Available	
Agriculture	11	Motorized Farm Equipment Mechanic		ADB
ICT	12	Computer Operator	Available	Singapore
	13	Hardware Technician	Available	
Mining	14	Miner	Available	

8.1.4 Ideas for Solutions

The following viewpoints will be important when considering the above discussion and TVET road map in Chapter 7.

- Capacity development of skilled workers, technicians, and engineers in collaboration with private companies.
- Provision of practical courses in priority fields (electrical, electronics, mechanics, construction, and automobile maintenance).
- Gradual approach to improve quality and access in various time frames.
- Priority on the Yangon region as high demand of TVET and collaboration with Thilawa SEZ can be expected due to high industrial density.

Based on the government's effort on TVET, the following table shows the possible measures for solution.

(1) Organization, system, and curriculum are urgent issues as a short-term approach and they are closely connected to fostering skilled workers, technicians, and engineers as part of a mid- and long-term approach.

(2) instructors, (3) NSSA's skills standards and (4) collaboration with the private sector will be necessary elements for comprehensive reinforcement of TVET at each phase. Furthermore, at each stage, the development of instructors, curriculum, syllabus, teaching materials, equipment, and facilities will need to be considered.

Table 8.2: Existing Issues and Possible Measures on TVET

Challenges	Measures	
TVET for non-graduates / graduates of higher secondary and existing workers	(1) Organizations, system and curriculum • Clarification of role of each TVET organization • Training for TVET instructors	Development of more skilled workers
Establishment of technicians		Creation of more technicians
Practical ability of engineers		Development of skilful engineers
TVET trainers' training	(2) Trainers • Certification system for quality trainers • System for adapting to new technologies	
Enhancement of training standard of respective TVET organizations	(3) NSSA Skills Standard • Expansion of support to assessors' training • Ensuring consistency between skills standard and training • Holding skill competition	
Enhancement of national skills standard accreditation system		
Data collection and improvement of data analysis capacity concerning human resource demand	(4) Collaboration with private sector • Understanding industrial human resource demand and providing employment support	

8.2 Suggestions for Cooperation Approach

8.2.1 Short-term Cooperation Approach

(1) Follow-up of TVET Law

It is important to fully grasp the situation before and after the enactment of TVET law, to include clarification of functions of the respective TVET organizations related to TVET council, and overall coordination with issues and measures discussed in Chapter 7 and Chapter 8. Therefore, it is expected that advisory experts will be sent to MoE in order to lead the task. At the same time, short-term experts and senior volunteers can also be utilized to implement pilot schemes of model training for the priority fields.

(2) Expansion of Training of Trainers (ToT)

As previously discussed, ToT is an urgent issue. Therefore, a technical assistance project as a short-term approach, to spread training for those who can provide appropriate practical courses should be considered in order to provide effective education and training in the priority fields. In addition, it is preferable to send a study team for a detailed project design as the Government and DPs are modifying and coordinating their schemes.

In order to consolidate the education and training for students who pursue expertise after grade 9 rather than entering higher education, it is necessary to offer opportunities of recap among the instructors of GTHS and GTI before introducing training equipment.

At present, 2,000 instructors are working at GTHS and GTI. This figure includes teachers of general subjects, and, assumes that half of all the teachers are TVET instructors. GIZ is planning to expand ToT at TPTC Baelin with the necessary equipment funded by KfW. It is expected that each practical training course can accommodate 30 participants at maximum in order to ensure proper implementation. Provided that the duration of each course is 3 months, then, 4 training courses can be scheduled each year. This is based on the assumption that only 120 trainees, at maximum, can attend the course in a year. In the meantime, MoE assumes that 1-year courses may be required for ToT based on the pilot projects of GIZ. In any case, the training demands of instructors at GTHS and GTI needs to be clarified, although, the detailed plan study and the duration of projects also needs to be considered. According to the demand requirements, coordination among DPs on the parallel provision of plural subjects will be necessary. If the provision of year-long courses becomes difficult, DPs will need to reconsider the probability of

additional support. The accommodation capacity of TPTC also needs to be considered, in case the number of courses is increased. Furthermore, other facilities, with better access to/from cities, can be candidate locations, considering the geographical disadvantage (about 50 km from Mandalay downtown) of TPTC. GIZ presumes ITC Sinda can accept some trainees from TPTC. However, MoE insists that teachers of GTHS and GTI are not allowed to take courses at the facility of MoI.

KOICA acknowledged that they would establish TTTI (ToT facility) within the premises of the University of Information Technology and begin operations in 2019. The new institution accepts a wider range of trainees, and therefore, it can take some trainees who cannot be accommodated in the other ToT institutions.

Additionally, overseas training can increase the motivation of the trainees and provide the participants with skills in various fields as master trainers. 'Kinden' and 'Komatsu' demonstrated the effectiveness of overseas ToT in Japan, as the trainees experienced advanced training methods and were exposed to the latest technologies. Thus, in the case of ToT, a few months-long training program in Japan needs to be included in Japan's cooperation component.

In addition to TVET instructors, teachers of general subjects are also recommended to visit ITC Sinda or any other available facilities to understand the actual training that is taking place. It is important for teachers to have good experiences in order to ferment high motivation for fostering industry-qualified students. As an example of the cooperation approach for highly-demanded fields, automobile mechanics are considered, and the necessity of automobile mechanics is elaborated upon in Chapter 3. Most of the increase in registered automobiles in the country is second-hand cars from Japanese manufacturers, including hybrid vehicles. In order to provide maintenance and repair services for such vehicles, existing mechanics need urgent training as they do not have knowledge or information about the new models.

Skill standards level 1 for automobile mechanics⁵³ developed by NSSA is regarded lower than skill level 3, grade ⁵⁴ for Japanese automobile mechanics, according to the Japanese expert working at the Hpa-an training center ⁵⁵ in Hpa-an. In this regard, MoLIP explained that NSSA would like to develop a skill level 2 and 3 for automobile mechanics; however, this will require that the training center be equipped with the necessary machines in order to provide for the assessment test. At present, only ITC Magway has the requisite equipment which may be used for the assessment. Therefore, NSSA believes that development of skills standards level 2 and 3 will not progress without the proper environment, where trainees can receive both training and assessment at the same location.

A private TVET institute, Okayama Science and Technology School and Glory Career Training Enterprise manage jointly, provides automobile mechanics training courses. Graduates from this TVET institution were employed at HTS Myanmar-Japan Car Workshop where Japanese experts provide further skill training on maintenance and repair services of the latest models including hybrid cars and electric vehicles .

Based on these successful cases, ToT by Japanese experts is indispensable in order to make both private and public TVET programs effective. The pros and cons of the options for cooperation are summarized below.

⁵³ Most of workshops are not registered and the capacity of workshop is very limited thus different type of workshops are in charge of limited work.

⁵⁴ In Japan, 3rd grade is the lowest and introductory level in its skill standards. On the other hand, 1st grade is the highest.

⁵⁵ The training center is jointly managed by Ministry of Boarder Affairs and Bridge Asia Japan (Japanese NGO) at Hpa-an. Details are explained in Chapter 2.

Table 8.3: Possible Approaches of Support for Highly-demand Fields

	Option 1	Option 2	Option 3
Outline	<ul style="list-style-type: none"> • The subject of automobile mechanics is added to ToT program at ITC Sinda. • Trainers (open application, diploma/B-tech holders) will be invited to Japan for 6 months training program. • Theoretical lessons are taught at ITC Sinda (GIZ will support) • Trainees at TOT can become Trainers for TVET institutions other than ITC. 	<ul style="list-style-type: none"> • Establishment of ToT program at ITC Mandalay. • Japanese instructors conduct ToT (open application, diploma/B-tech holders). • Short-term training program in Japan shall be designed. • Transfer of equipment from ITC Magway and additional support. • Trainees of ToT can become trainers of private TVET institutions as well as ITC. 	<ul style="list-style-type: none"> • ToT program focusing on practical courses through public-private partnership at Thanlyin TU. • ToT at TPTC can be possible as well. • Japanese instructors conduct ToT (teachers of GTHS/GTI plus open application, diploma/B-tech holders). • Short-term training program in Japan shall be designed. • Trainees of ToT can become trainers of private TVET institutions as well as GTHS/GTI.
Pros	<ul style="list-style-type: none"> • Coordination with GIZ is possible. • Training program in Japan focuses on technical issues and coordination with standards of MoI is possible. • If trainees can temporarily belong to MoI, training program in Japan can be covered by Technical Intern Training Program in Japan. 	<ul style="list-style-type: none"> • With the equipment from Magway, training can be started without extra purchase. • Trainees at ITC can adjust themselves to private TVET institution without difficulty. 	<ul style="list-style-type: none"> • Coordination with GIZ is easy. • Popular subjects may have good impact on increasing the applicants of GTHS/ GTI. • Issues of skill standard development can be separated. • Can be starting point of addressing important issues, that is, TVET at TU and fostering engineers.
Cons	<ul style="list-style-type: none"> • Difficulty in finding institutions that can accept ToT in Japan. • High cost. • Development of skill standard level 2 for automobile mechanics may be requested by Government of Myanmar. (Hard to find an expert to handle the issue) • Approach can be different from that of GIZ. 	<ul style="list-style-type: none"> • Coordination will be necessary with GIZ and KOICA. • Additional support may be required if the provided equipment is insufficient. • Development of skill standard level 2 for automobile mechanics may be asked by Government of Myanmar. 	<ul style="list-style-type: none"> • Several equipment is required. • MoE may not accept to associate TU with ToT. (“spread of TVET” can be used as counterargument)

(3) Training Support for Existing Workers in Industrial Zones

Curriculum development and ToT for existing labourers should also be prioritized as it is expected to fall short, due to foreign investment.

Increasing foreign direct investment, including Japanese investment to Thilawa SEZ, is expected, and can lead to industrial advancement and international competitiveness, which are required in Myanmar. On the other hand, the outflow of labour from local companies are expected on a large scale. Local managers recognize that such a negative impact cannot be avoided; however, they would like the Japanese companies in the country to support the skill development of existing workers. In order to avoid the possible criticism that Japanese companies generate a negative impact, and, in order to increase the competitiveness of Japanese companies in SEZ, Japan has to emphasize their positive impact, as they contribute to the overall skill development of the country in the long run. The management committee of existing industrial zones mentioned that they had their own funds to procure the necessary equipment, and they had potential instructors for the training courses. Subjects covered by the training courses would be generic and include basic technical skills (specifically, private power generation, and maintenance and repair of electrical wire, are commonly required skills), which can be utilized in most of the factories. Support for curriculum development for 2-months courses (after 5 pm on weekdays and weekends, if possible) and ToT would be considered effective.

According to the management committee of existing industrial zones, GIZ will provide welding as a part of its support to ITC Sinda. Therefore, support to the same field needs to be avoided. Training support for existing workers can be combined with the spread of ToT, as previously discussed above.

For instance, ToT for existing industrial zones can be provided at Thanlyin TU and the teachers of TU can be brought to the industrial zones as part of their practical subjects.

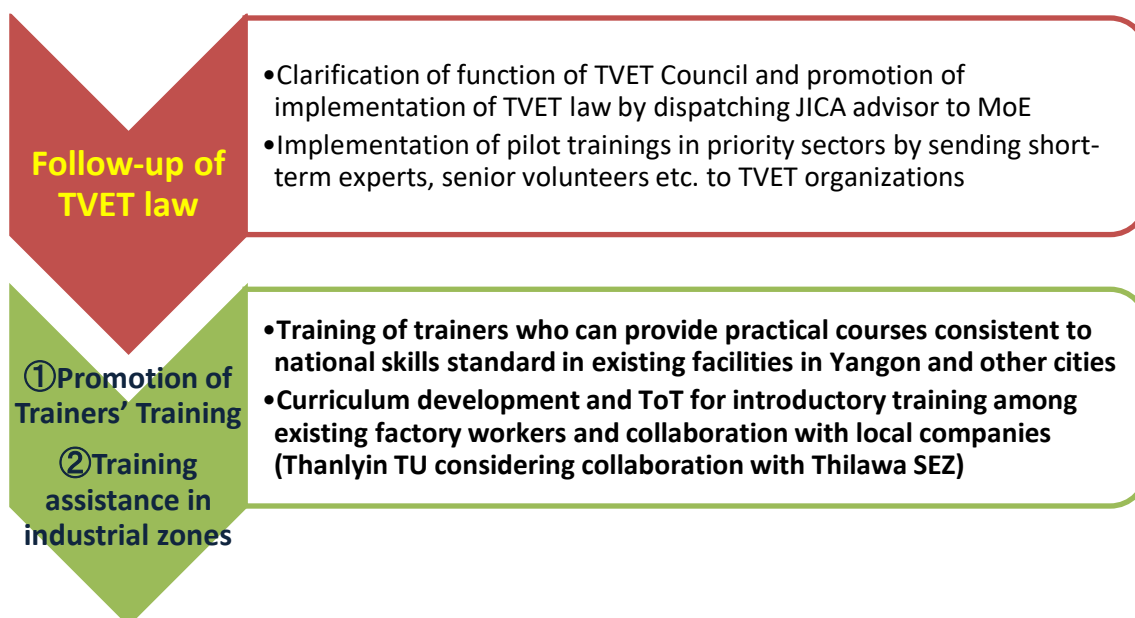


Figure 8.1: Short-term Cooperation Approach

8.2.2 Mid-term and Long-term Cooperation Approach

(1) Organization, Structure, and Curriculum

GTHS provides good TVET in preparation for students to enter the labour market, not in preparation for higher education. In order to reflect the respective industry's practice to training, GTHS should have the authority to revise the current curriculum to respond to the needs of the private sector. As GTI extends its term to 3 years, the graduates are expected to take mid-level management positions for technical work. They are also expected to have the ability to adapt to new technologies, based on their basic knowledge. In order to increase the quality, as well as, access to TVET nationwide, at least one GTI should be established in each state/region. This change also requires improvement of school management through training for principals, and clarification of goals for each TVET institution, as defined by TVET Council. In addition to training for existing instructors, a training system for instructors who understand and implement the practical training program on business operations at TU should also be established. It is also possible that a pilot TU might introduce internationally competitive, advanced technologies, which are not currently available in Myanmar, in order to excel in relation to other ASEAN countries. For example, they might want to provide computer graphics technology for industrial design, as some Japanese companies had emphasized its importance in JCCM questionnaires. As GTHS and GTI focus on the repetition of basic technical skills, and on the development of basic skills and knowledge, the introduction of new technologies can be difficult. If TU has such a function, the needs of foreign investors would be well recognized, and the overall direction of the required collaboration would become clearer.

As for the role of ITC, it is designed to provide the necessary human resources for inland industrial zones and industries. In collaboration with DPs like Germany, Korea, China, and India, ITC is well equipped, so that an ordinary high school graduate can be trained to develop a capacity for the neighbouring industries within one year. Particularly in ITC Sinda, where, with the technical cooperation of GIZ, practical training based on actual business operations is conducted. However, in other ITCs, some equipment is not fully utilized for training purposes after the experts from DPs have left. For those who had intended to pursue a higher education after graduating from a general high school, but had to start working due to various reasons, to have a pathway to receive training opportunities after graduating from high school is extremely important.

The Ministry of Border Affairs (MoBA) and Ministry of Social Welfare, Relief and Resettlement (MoSWRR) provide TVET services to the people who cannot have access to other TVET institutions. However, their skills training programs do not fit into the actual demands of the related industries. Collaboration with NGOs and the private sector may overcome such shortcomings, such as the collaboration between MoBA and BAJ in Hpa-an.

As for private TVET institutions, a registration system is urgently required so that the quality of training can be assured by the supervisory body, which shall check the curriculum and confirm whether or not it is in line with the NSSA skills standard requirements. Through this practice, awareness on the NSSA skills standard is enhanced as well. MoLIP is expected to collaborate with MoE on the development of a training standard, which can also be a good practice of inter-Ministerial collaboration.

Based on the above-mentioned recommendations, this report proposes to conduct systematic human resource schemes for skilled workers, technicians, and engineers in the long term, after consolidating ToT of TVET institutions.

(2) System for New Instructors

Systematic ToT is a core topic both for short-term and long-term approaches. TU is now operated under the supervision of the Higher Education Department; however, it remains important as a training institute for TVET teachers. Furthermore, TU can be a place for the improvement of production technology, in collaboration with neighbouring local companies. It is also expected that TU deepen the collaboration with industries; and students will thus understand the root of technologies and core issues of private companies. This can contribute to the introduction of new high technology machines in Myanmar. Additionally, it is also required to increase the recognition of better product quality through the installation of a measurement room at TU, and by letting private companies use the room. By instilling respect towards higher accuracy, the leaders of Myanmar can make the country into a manufacturing giant. It is not realistic to support all of the TUs, thus, the study team recommends supporting the TU which is located near Thilawa and Dawei SEZ, where many large Japanese companies operate their businesses. This scheme can benefit these companies through the improvement of local companies. For this kind of measure, participants should be selected from a wide range of candidates, and not limiting the selection to only teachers of GTHS and GTI; and the systematic ToT of TVET is also an important step. Furthermore, the creation of a system is necessary wherein the pursuit of TVET can be a goal for all youth in the country, in addition to conducting the practical courses, by expanding the pathway where GTI graduates become TVET instructors. The series of measures should be institutionalized as a part of the clarification of TVET instructors' qualifications and a systematic training system; and acquisition of new technologies for TVET instructors.

(3) NSSA's Skills Standard

Supporting the development of NSSA's skills standards is important in the long term, as well as, the short-term approach. In order to increase the awareness of the NSSA's skills standards, actual and constant implementation of assessment and issuance of certificate is important. As for the 11 skills standards, whose level 1 assessment standards have already been developed, more assessors need to be fostered in order to increase the opportunity of examination. Japan Vocational Ability Development Association (JAVADA) conducted a training course for assessors in Myanmar. The training course turned out to be very practical and contributed greatly to improve the quality of the assessors. Therefore, further support is necessary to expand the field of intervention and target populations.

It is necessary to design a system for fostering assessors, and implementation of skill exams in order to manage the assessment standards of the 14 fields, which government is drafting, as well as, the other 11 fields whose assessment standards have already been developed. If there is any field where Japan can provide support, it would be meaningful as well. If Japan has a priority to support certain skills, NSSA and GIZ welcome such commitment as far as Japan follows the guideline for the standard (format, wording, and style) since it is too much for any one DP to address all 14 skills.

GIZ expressed that a priority should be given to the preparation of an all skills' level 1 standard. However, it would seem to be preferable to develop level 2, 3 and 4 for a particular occupational competency. For example, the skill level of automobile mechanic level 1 cannot include sufficient knowledge and skill for general car repair. Furthermore, some private TVET pursue a higher skill level than level 1.

In order to make the skill development visible to the public and gain public interest, a domestic skills competition, conducted as part of the qualifying trial for the ASEAN Skills Competition can be a realistic and effective measure.

(4) Public Private Partnership (PPP)

Government and private sectors should promote PPP jointly by clarifying each other’s agenda and by taking advantage of the vitality which private companies have in the country. The skill assessment for an electrician at CVT can be a successful model for Japan’s intervention as the organization is well institutionalized and it has received sufficient equipment and machines from private companies, as well as, gaining financial assistance from the Swiss Government. The government needs to reinforce the function for data collection and analysis on human resource demand in the short term. Furthermore, employment support also needs to be considered in the long term.

8.2.3 Provision of Mid-term and Long-term TVET Model

This section clarifies the long-term cooperation approach based on the earlier discussions and Japan’s experience in this field. The transfer of Japan’s manufacturing technology that respects continuous accumulation of small efforts through the systematic innovation of basic and practical TVET would be the main focus. In the case of Myanmar, it will be important to increase the capacity of each TVET institution and to expand the collaboration schemes between TVET and key industries in order to foster practical engineers, technicians, and skilled workers based on the demands of industry. Education models are shown as counter-measures to the existing issues. Assuming that the foundation and policies are clear through (a) to (d), the quantity of GTHS and GTI in Myanmar should be increased in the future.

Table 8.4: TVET Issues and Measures

Measures		Education models
(1) Organizations, system and curriculum Clarification of role of each TVET organization Training for TVET instructors	Development of more skilled workers	(a) Fostering skilled workers based on industrial demand
	Creation of more technicians	(b) Fostering technicians through capacity development of existing GTI
	Development of skilful engineers	(c) Consideration of TU’s function in engineer’s and instructor’s training
(2) Trainers Certification system for quality trainers System for adapting to new technologies		Concerning (a)-(c) Especially relationship between TU and TVET instructors of (c)
(3) NSSA Skills Standard Expansion of support to assessors’ training Ensuring consistency between skills standard and training Holding skill competition		Concerning (a)-(d) Support for assessors already provided
(4) Collaboration with private sector Understanding industrial human resource demand and providing employment support		(d) Capacity development of labour office



(e) Quantitative/qualitative expansion of GTHS/GTI

(a) Fostering skilled workers based on industrial demand

Implementation of pilot training among existing workers at ITC considering employment support to local and Japanese companies.

- Employment support for unemployed people through training.
- Training for ASEAN skills competition.

(b) Fostering technicians through capacity development of existing GTI

Implementation of pilot training for industrial technology college level at GTI in Yangon and other cities.

- Project-based learning in collaboration with local companies.
- Subjects will be mechanical, electrical, electronics, and construction as focused on basic training.
- Hold manufacturing competition and create system where all the GTHS and GTI can participate.
- Standardized teaching content will be established at GTI under TVET law.

(c) Consideration of TU's function in engineer's and instructor's training

Training on basic industrial technology through project-based learning at Thanlyin TU can be considered. Project-based learning in collaboration with local companies can increase the education quality of TU and consolidate the relationship with the surrounding community. It is necessary for instructors of engineers to experience product development in Japanese companies. Therefore, this learning style can introduce the advanced technologies in a Japanese manner to TU.

- Teach skills and technology about blueprint, CAD/CAM, machining, precision work, assembly parts.
- Collaboration with local companies through project-based learning.
- Subjects include instruction skills, pedagogy, practical educational training and assessment.
- Consideration of systematic teachers' training and addressing the issue of instructor's license.

(d) Capacity development of labour office

Consolidation of knowledge management capacity of labour office can be considered.

- Creation of database of existing information and online disclosure.
- Enhance the matching function between labour office and industry through data collection, storage, analysis, and disclosure.
- Deepen the cooperation with TVET institutions

(e) Quantitative/qualitative expansion of GTHS/GTI

Establish formal TVET by increasing the quality of GTHS/GTI, collaboration with industry, enhancement of TVET's social value.

8.3 Suggestion

Creation of industrial human resources is necessary to develop unique industries in ASEAN by reflecting rapid increase of foreign direct investment and stable development.

Japan and Myanmar needs to jointly promote the following policies to achieve the goal.

- I. Expand training opportunities for TVET teachers and instructors to ensure provision of TVET which can adequately respond to industrial demand. Provide opportunities of

training in Japan to enhance the quality of TVET. Conduct pilot program of teachers and instructors for fostering automobile mechanics that urgently require Japanese technology.

- II. Establish a base for technology transfer for Myanmar to nurture unique advanced industries. Expand TVET by introducing new technologies and skills which Japanese companies require.

Necessary action are as follows in order to realize the two pillars of intervention.

I-1: **Enactment and enforcement of TVET law**

- An adequate TVET system shall be established under TVET council by clarifying the function of each TVET institution over 13 Ministries

I-2: **Improvement of working conditions for TVET teachers**

- Development of a process which can generate excellent TVET teachers who can continuously provide high quality TVET by revising TVET teacher's salary scale.

I-3: **TVET subsidies to private companies**

- Support the institutionalization of by-laws of ESD law, especially a skill development fund.
- Enrich the training program in Japan by providing information regarding a similar system of Japan.
- Prepare sufficient funds for TVET through PPP.

I-4: **Scholarship for TVET students**

- Provide incentives to prize winners at skills competitions with Japanese brand as well as offering financial support to TVET students.

I-5: **Enrichment of TVET in existing industrial zones**

- Establish TVET facilities in order to enhance basic skills of existing workers in industrial zones by management committees.
- Support ToT through curriculum development and other processes by dispatching senior volunteers from Japan.

I-6: **Implementation of technical cooperation projects to realize pilot models regarding automobile maintenance**

- Provide pilot training at ITC Mandalay or TPTC Baelin where ToT of automobile mechanics is active.
- Conduct detailed planning survey, at an early stage, for technical cooperation projects which include sufficient training packages in Japan.

I-7: **Continuous development of skill assessment of national skills standards**

- Comprehensive system development, such as qualification for private TVET and institutionalized certification systems shall be considered.

II-1: **Introduction of Japanese-style project-based learning in collaboration with local companies**

- Implement technical cooperation projects in collaboration with Japanese companies in Thilawa SEZ through ToT courses in Thanlyin.
- Conduct detailed planning survey at an early stage of this scheme.

II-2: **Reinforcement of effective collaboration between industry and TVET institutions**

- Establish a system where TVET institutions can timely grasp necessary skills which companies in Thilawa SEZ require among local industry based on discussion of Japan-Myanmar Joint Initiative.

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Appendix

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1. Ywama GTHS Yangon District Pictures of facilities



Work shop



Classrooms



Classroom



Metal Workshop



Workshop



Workshop

2. Ywama GTHS Yangon District Pictures of machines Machining Technology Workshop



Machine workshop



Lathe: Unused without grease



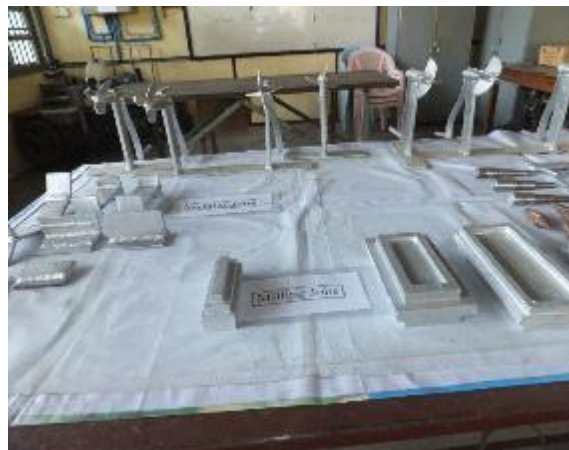
Arch welding machine: Japanese brand made in Thailand



Drill and mill: wood is used instead of metal for practice



Missing machine unused although it looked new



Sample works: welding, milling and lathe

Electrical Technology Workshop



Electric appliances



Electric wiring



Motors



Electric heaters

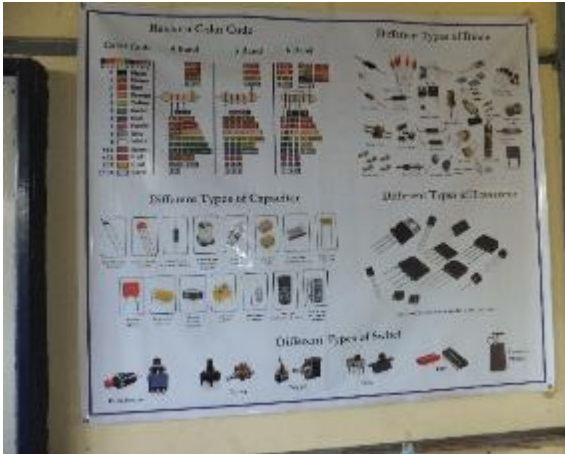
Electronic Technology Workshop



8 & 10 channel switch circuit



Electric appliances



Electric appliances sample panel



Water level sensors

Metal Process Technology Workshop



Workshop without any machine



Tools

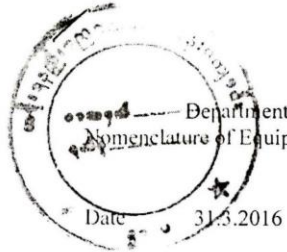


Fireplace behind workshop



Newly introduced welding machines

3. Equipment List of Ywama GTHS



EQUIPMENT CENSUS INITIAL RETURN

Department Machining Technology Department Sheet No. 1

Nomenclature of Equipment - Tools and Equipment

Date 31.3.2016

Condition
 RN-Runner
 RP-Repairable
 US-Unserviceable
 W/O - Write Off

1001 -A
 Deployment
 FT-Full Time
 PT-Part Time
 RS-Reserve
 SP-Surplus

Sr. No	Dept No.	Location	Condition	Deployment	Maker, Model & Type	Date Received	Technical Details	Quantity	Remark
1	2	3	4	5	6	7	8	9	
1	WS -4	MT SHOP	RN	PT	Anvil , England	14.6.2010 14.7.2014	1 cwt	2 No	From DTVE
2	WS -4	MT SHOP	RN	PT	Argon cylinder, Local	14.6.2010 14.7.2014	TP 22.5	2 No	From DTVE
3	WS -4	MT SHOP	RN	FT	Ball peen hammer, china	14.6.2010 14.7.2014	2 lb	12 No	From DTVE
4	WS -4	MT SHOP	RN	FT	Ball peen hammer, china	14.6.2010	3 lb	5 No	From DTVE
5	WS -4	MT SHOP	RN	FT	Caliper inside, china	14.6.2010	8"	5 No	From DTVE
6	WS -4	MT SHOP	RN	FT	Caliper outside, china	14.6.2010	8", spring type	5 No	From DTVE
7	WS -4	MT SHOP	RN	FT	Caliper vernier, china	14.6.2010 14.7.2014	6", 150mm	15 No	From DTVE
8	WS -4	MT SHOP	RN	PT	Cylinder accetylen, local	14.6.2010 14.7.2014	T1000	4 No	From DTVE
9	WS -4	MT SHOP	RN	PT	Cylinder oxygen, local	14.6.2010 14.7.2014	3000 lb	4 No	From DTVE
10	WS -4	MT SHOP	7 RN 10 RP	FT	Hack saw frame, Thailand	14.6.2010 14.7.2014	12"	17 No	From DTVE
11	WS -4	MT SHOP	RN	PT	Cutting machine, Hand press, JIG-HZ-355, china	14.6.2010	2000W,	1 No	From DTVE
12	WS -4	MT SHOP	RN	PT	Micrometer, outside, china	14.6.2010 14.7.2014	0-25 mm	5 No	From DTVE

A-5

4

13	WS -4	MT SHOP	RN	PT	Micrometer, outside,china	14.6.2010 14.7.2014	25-50 mm	5	No	From DTVE
14	WS -4	MT SHOP	RN	PT	Micrometer, outside,china	14.7.2014 14.6.2010	50-75 mm	5	No	From DTVE
15	WS -4	MT SHOP	RN	PT	Micrometer, outside.china	14.6.2010	0-1"	2	No	From DTVE
16	WS -4	MT SHOP	RN	PT	Micrometer, outside.china	14.6.2010	1-2"	2	No	From DTVE
17	WS -4	MT SHOP	RN	PT	Micrometer, outside.china	14.6.2010	2-3"	2	No	From DTVE
18	WS -4	MT SHOP	RN	FT	Plier, cutting,china	14.6.2010 14.7.2014	Medium quality	3	No	From DTVE
19	WS -4	MT SHOP	RN	FT	Plier, combination,china	14.6.2010 14.7.2014	Medium quality	11	No	From DTVE
20	WS -4	MT SHOP	RN	PT	Try square,china	14.6.2010 14.7.2014	12"	6	No	From DTVE
21	WS -4	MT SHOP	RN	PT	Try square.china	14.6.2010	8"	5	No	From DTVE
22	WS -4	MT SHOP	RN	FT	Steel Rule	14.6.2010	12"	10	No	From DTVE
23	WS -4	MT SHOP	RN	PT	Tap & Die set,china	14.6.2010 14.7.2014	1/8"-1/2" ,BSW	4	set	From DTVE
24	WS -4	MT SHOP	RN	PT	Tap & Die set.china	14.6.2010	M3-M12	1	set	From DTVE
25	WS -4	MT SHOP	RN	PT	Tap Handle.china	14.6.2010	14"	5	No	From DTVE
26	WS -4	MT SHOP	RN	PT	Tap . china	14.6.2010	M10-P1.5	5	set	From DTVE
27	WS -4	MT SHOP	RN	PT	Tap . china	14.6.2010	M12-P2	5	set	From DTVE
28	WS -4	MT SHOP	RN	PT	Tape , china	14.6.2010	3 meter	2	No	From DTVE
29	WS -4	MT SHOP	RN	FT	Vice , china	14.6.2010 14.7.2014	5"	5	No	From DTVE
30	WS -4	MT SHOP	RN	FT	Vice . china	14.6.2010	6"	4	No	From DTVE
31	WS -4	MT SHOP	RN	FT	Welding Chair.Local	14.6.2010	1'x1'x18"	5	No	From DTVE
32	WS -4	MT SHOP	RN	FT	Welding Table.Local	14.6.2010	2'x2'x2.5'	5	No	From DTVE
33	WS -4	MT SHOP	RN	PT	Drill Gauge (Thickness).	14.6.2010	BSW & Metric	2	No	From DTVE
34	WS -4	MT SHOP	RN	FT	File Trainangle,china	14.6.2010	12",Medium cut	10	No	From DTVE
35	WS -4	MT SHOP	RN	FT	File Half Round	14.6.2010	12",Medium cut	10	No	From DTVE
36	WS -4	MT SHOP	RN	FT	File Flat . Rough	14.6.2010	12"	10	No	From DTVE
37	WS -4	MT SHOP	RN	FT	File Flat . Smooth	14.6.2010	12"	10	No	From DTVE

38	WS -4	MT SHOP	RN	FT	File set. china	14.6.2010	5 pcs/set,10"	6	No	From DTVE
39	WS -4	MT SHOP	RN	PT	G -camp	30.4.2012	3"	2	No	From DTVE
40	WS -4	MT SHOP	RN	PT	Knurling Tools	30.4.2012		2	pcs	From DTVE
41	WS -4	MT SHOP	RN	PT	Claw hammer	16.11.12		3	pcs	From DTVE
42	WS -4	MT SHOP	RN	PT	Dial indicator & magnetic base	14.6.2010 14.7.2014		5	pcs	From DTVE
43	WS -4	MT SHOP	RN	PT	Hammer	16.11.12 14.7.2014	4 lb	7	pcs	From DTVE
44	WS -4	MT SHOP	3 RN 1 RP	PT	Bench Grinding	16.11.12	8"	4	pcs	From DTVE
45	WS -4	MT SHOP	RN	PT	Cutting chopping saw	16.11.12	14"	4	pcs	From DTVE
46	WS -4	MT SHOP	RN	PT	Micrometer	16.11.12	75-100 mm	2	pcs	From DTVE
47	WS -4	MT SHOP	RN	PT	Screw thread gauge	16.11.12 14.7.2014		5	pcs	From DTVE
48	WS -4	MT SHOP	RN	PT	Pipe wrench	31.3.2013 14.7.2014	12"	5	pcs	From DTVE
49	WS -4	MT SHOP	RN	PT	Hand drill machine. china	14.6.2010	600 W,1.5-13mm	6	No	From DTVE
50	WS -4	MT SHOP	RN	PT	Hand drill machine. china	14.6.2010	700 W,1.5-16mm	1	No	From DTVE
51	WS -4	MT SHOP	RN	PT	63 Pieces Tools Box	14.7.2014		1	Set	From DTVE
52	WS -4	MT SHOP	RN	PT	65 Pieces Tools Box	14.7.2014		1	Set	From DTVE
53	WS -4	MT SHOP	RN	PT	99 Pieces Tools Box	14.7.2014		1	Set	From DTVE
54	WS -4	MT SHOP	RN	PT	186 Pieces Tools Box	14.7.2014		1	Set	From DTVE
55	WS -4	MT SHOP	RN	PT	275 Pieces Tools Box	14.7.2014		1	Set	From DTVE
56	WS -4	MT SHOP	RN	PT	322 Pieces Tools Box	14.7.2014		1	Set	From DTVE
57	WS -4	MT SHOP	RN	PT	333 Pieces Tools Box	14.7.2014		1	Set	From DTVE
58	WS -4	MT SHOP	RN	PT	Combination Try square	14.7.2014	3 Pcs/set	1	Set	From DTVE
59	WS -4	MT SHOP	RN	PT	Taper Sleeve	14.7.2014	1-2 MT	1	Nos	From DTVE
60	WS -4	MT SHOP	RN	PT	Taper Sleeve	14.7.2014	2-3 MT	1	Nos	From DTVE
61	WS -4	MT SHOP	RN	PT	Taper Sleeve	14.7.2014	3-4 MT	1	Nos	From DTVE
62	WS -4	MT SHOP	RN	PT	Long Nose Plier (C Mart)	14.7.2014	6"	1	Nos	From DTVE
63	WS -4	MT SHOP	RN	PT	Screw Driver	14.7.2014	4"	1	Nos	From DTVE
64	WS -4	MT SHOP	RN	PT	Center Drill	14.7.2014	6 Pcs/set	1	Set	From DTVE

65	WS -4	MT SHOP	RN	PT	Ball Center	14.7.2014	D2.D3,D4,D5	1 Set	From DTVE
66	WS -4	MT SHOP	RN	PT	Cutting + Welding Torch (Oxygen,Acetylene) (Weldro)	14.7.2014		1 Set	From DTVE
67	WS -4	MT SHOP	RN	PT	Oxygen Gauge & Acetylene Gauge (Weldro)	14.7.2014		1 Set	From DTVE
68	WS -4	MT SHOP	RN	PT	Nozzle	14.7.2014		1 Nos	From DTVE
69	WS -4	MT SHOP	RN	PT	Twin Hose	14.7.2014	50' = 1 Roll	1 Roll	From DTVE
70	WS -4	MT SHOP	RN	PT	Steel Rule	14.7.2014	40"	1 Nos	From DTVE
71	WS -4	MT SHOP	RN	PT	Drill Chuck (Bird)	14.7.2014	1/2"	1 Nos	From DTVE
72	WS -4	MT SHOP	RN	PT	Drill Chuck (Bird)	14.7.2014	5/8"	1 Nos	From DTVE
73	WS -4	MT SHOP	RN	PT	Drill Chuck (Bird)	14.7.2014	3/4"	1 Nos	From DTVE
74	WS -4	MT SHOP	RN	PT	Pipe Die Set (a) Pipe Die Body (b) 1/2" to 2" Die	14.7.2014	1/2" to 2"	1 Nos 1 Nos	From DTVE
75	WS -4	MT SHOP	RN	PT	Jaw Chuck (a) 6" chuck Head (b) 4 Jaw	14.7.2014	6' x 4	1 Nos 1 Nos	From DTVE
76	WS -4	MT SHOP	RN	PT	Cut-40 Plasma Cutter	14.7.2014		1 Nos	From DTVE
77	WS -4	MT SHOP	RN	PT	H.S.S Tool bite	8.1.2015		10 Nos	From DTVE
78	WS -4	MT SHOP	RN	PT	End Mill No.8	8.1.2015		4 Nos	From DTVE
79	WS -4	MT SHOP	RN	PT	Machine Vice	8.1.2015	6" China	1 Nos	From DTVE
80	WS -4	MT SHOP	RN	PT	Non Contact Techometer	23.7.2014		1 No	From DTVE
81	WS -4	MT SHOP	RN	PT	Plama cutter	23.7.2014		1 No	From DTVE
82	WS -4	MT SHOP	RN	PT	315 Amp AC/DC	23.7.2014		1 No	From DTVE
83	WS -4	MT SHOP	RN	PT	Moisturizer	23.7.2014		1 No	From DTVE
84	WS -4	MT SHOP	RN	PT	10" Mitter saw	23.7.2014		1 No	From DTVE
85	WS -4	MT SHOP	RN	PT	Belt Sender	23.7.2014		1 No	From DTVE
86	WS -4	MT SHOP	RN	PT	Orbital sander	23.7.2014		1 No	From DTVE
87	WS -4	MT SHOP	RN	PT	Electric router	23.7.2014		1 No	From DTVE
88	WS -4	MT SHOP	RN	PT	Electric Trimmer	23.7.2014		1 No	From DTVE

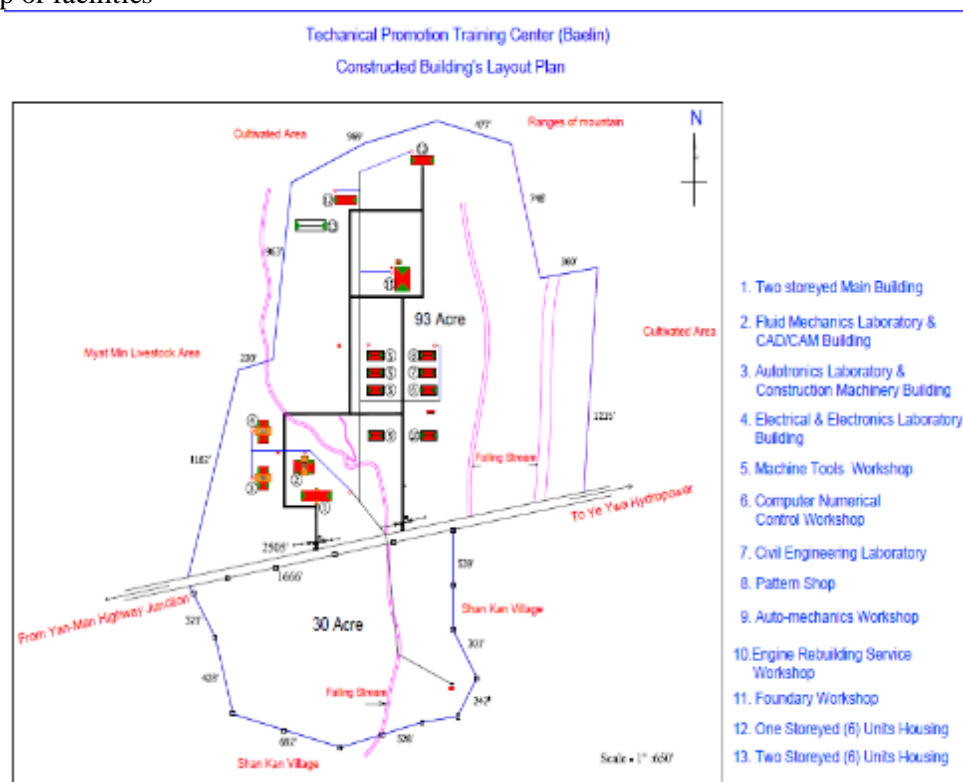
89	WS -4	MT SHOP	RN	PT	Polishing Machine	23.7.2014		1 No	From DTVE
90	WS -4	MT SHOP	RN	PT	Pressure Washer	23.7.2014		1 No	From DTVE
91	WS -4	MT SHOP	RN	PT	Machine Vice	8.1.2015 18.1.2016	6"	4 No	From DTVE
92	WS -4	MT SHOP	RN	PT	Combination square Set	18.1.2016		5 No	ဘတ်ဂျက်မှ ဝယ်သည်။
93	WS -4	MT SHOP	RN	PT	V- Block 6"	18.1.2016	6"	10 Nos	ဘတ်ဂျက်မှ ဝယ်သည်။
94	WS -4	MT SHOP	RN	PT	Drill Vice	18.1.2016		2 Nos	ဘတ်ဂျက်မှ ဝယ်သည်။

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4. Map of TPTC

Map of facilities



Constructed Building (Including under construction)

No.	Name of Building	Constructed	Under construction	Total
1	Two Story Main Building (190' x 56' x 30')		1	1
2.	One Story Lecture & Lab Building (121' x 100' x 25.5')	3	-	3
3.	Workshop (100' x 50' x 30')	8	-	8
4.	Service Unit (6 units) (140' x 40' x 14')	2	-	2
5.	Foundry Shop (135' x 90' x 38')	1	-	1
6.	Two Storied Service Unit (12 units) (148' x 68' x 24')	1	-	1
7.	Two Storied Hostel (257' x 237')	1	1	1
	Total	16	1	17

Current Staffs List including Technical Staffs

No.	Name of Department	PhD	ME	BE	B. Tech	AGTI/ EGTI/ TTS	Others	Total
1	Admin	1	1	1			19	22
2	Civil		1	2				3
3	Electric Power	1	2	1	1			5
4	Electronics		2	2				4
5	Mechanical		3	7	2	10		22
Total		2	9	13	3	10	19	56

Training Course for 2015

	Training Course	Training Period	Times	Number of Attendants
1	Fluid Mechanics Training for Civil Engineer	4 weeks	6	50
2	Basic electrical and Electronics Training	5 weeks	5	76
3	Fluid Mechanics and Machinery Training for Mechanical Engineering	4 weeks	3	43
4	General Machine Shop Training	8 weeks	4	50
5	CNC Machine Programming and Operation Training	8 weeks	4	31
6	Construction Machinery Training	4 weeks	5	53
7	Autotronics Lab Training	8 weeks	2	29
8	In-House Training	2 weeks	4	81



Gate and main building of TPTC



2 hostel buildings



Administration buildings



Workshop



Corridor of workshop



Department of construction machine

Autotoronic Lab.



Sample body of a vehicle in workshop



Sample of harnesses



Computer room next to lab



Sample engine



Transmission Simulator



Regulation system simulator

Department of heavy construction equipment



Models of heavy construction equipment donated by
Komatsu



Cut model (oil pressure control bulb)



Transmission



Diesel engine



Electric gear, cylinder, 3-gear sample



Oil pressure piston pump sample

Machine Tools Workshop



Workshop



Workshop



Workshop



Workshop



Milling machine



Shaver



Milling machine



Lathe made in Japan



Grant sticker of Japanese Government (1979-1980)



Wooden product sample

Machining center

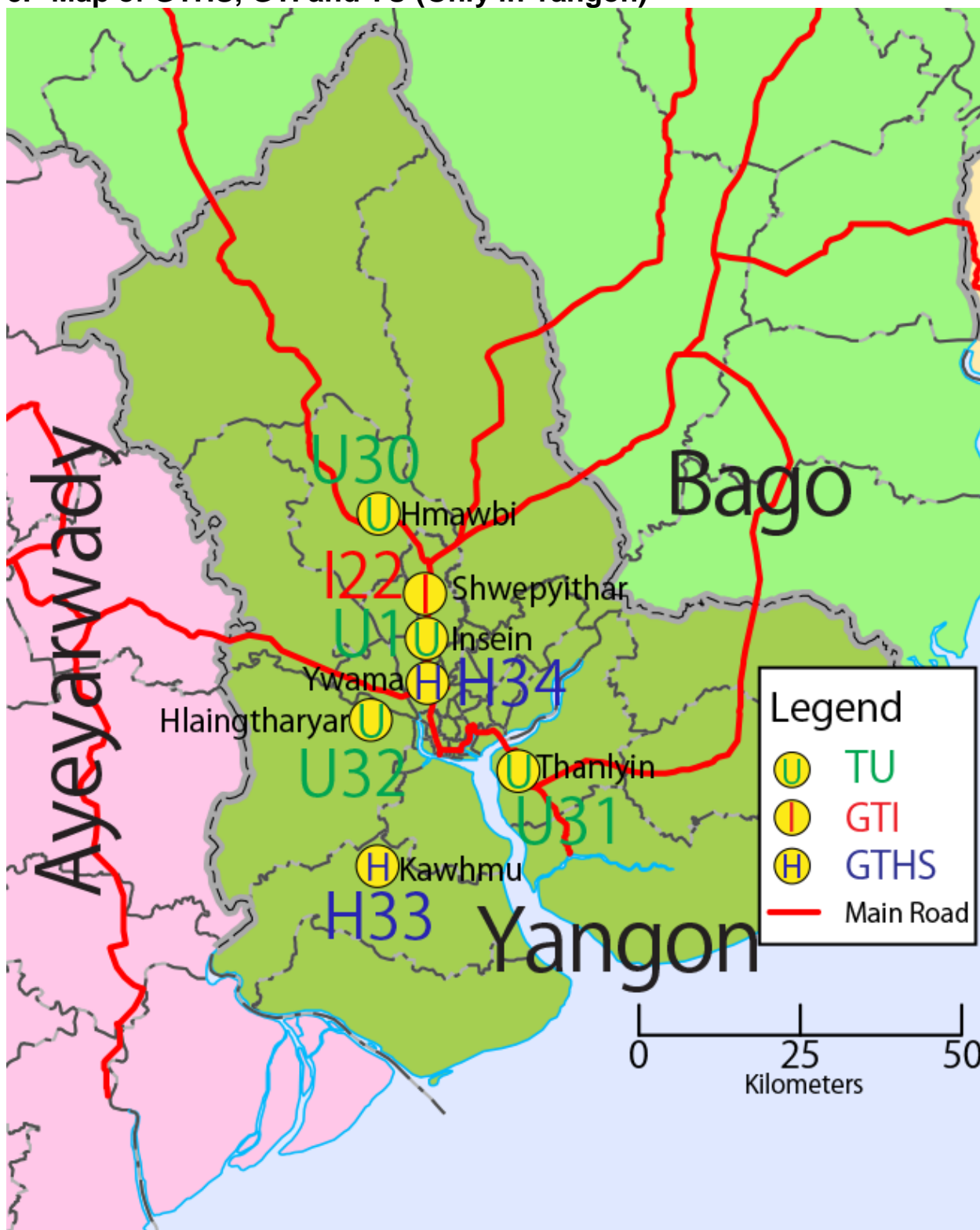


Workshop machining center



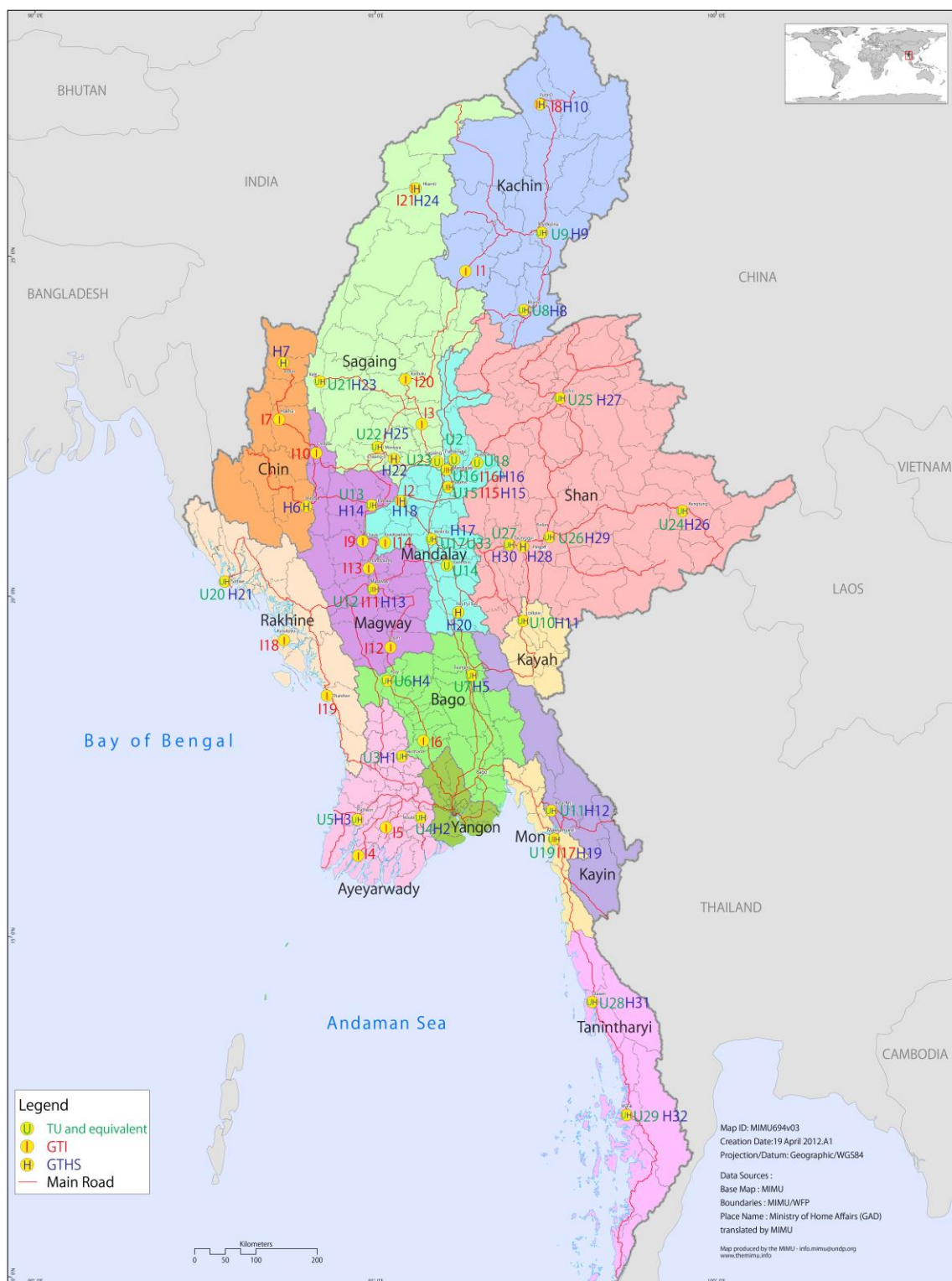
Machining center

5. Map of GTHS, GTI and TU (Only in Yangon)



The points on the map correspond to the numbers in the table on the following pages.
Source: MIMU (www.themimu.info)

6. Map of GTHS, GTI and TU (Outside Yangon)



The points on the map correspond to the numbers in the table on the following pages.

Source: MIMU (www.themimu.info)

7. List of GTHS

S/N corresponds to numbers of 5. Map of GTHS, GTI and TU (Only in Yangon) and 6. Map of GTHS, GTI and TU (Outside Yangon).

S/N	Name of GTHS	Stare /Region	No of subjects /seat	No of enrollees (G-10) /student-to-space ratio		No of students at G-11	Total students	No of teachers (practical and general subjects)
H1	GTHS (Hinthada)	Ayeyarwady	5 / 200	209	105%	100	309	42
H2	GTHS (Maubin)	Ayeyarwady	5 / 200	205	103%	124	329	40
H3	GTHS (Pathein)	Ayeyarwady	4 / 160	162	101%	49	211	40
H4	GTHS (Pyay)	Bago	5 / 200	140	70%	85	225	44
H5	GTHS (Taunggoo)	Bago	5 / 200	221	111%	170	391	40
H6	GTHS (Mindat)	Chin	2 / 80	39	49%	14	53	17
H7	GTHS (Tiddim)	Chin	2 / 80	89	111%	46	135	12
H8	GTHS (Banmaw)	Kachin	3 / 120	67	56%	24	91	22
H9	GTHS (Myitkyina)	Kachin	4 / 160	126	79%	42	168	31
H10	GTHS (Putao)	Kachin	3 / 120	48	40%	17	65	6
H11	GTHS (Loikaw)	Kayah	4 / 160	166	104%	157	323	32
H12	GTHS (Hpa-an)	Kayin	5 / 200	133	67%	55	188	23
H13	GTHS (Magway)	Magway	6 / 240	143	72%	128	271	48
H14	GTHS (Pakokku)	Magway	5 / 200	196	98%	93	289	65
H15	GTHS (Kyaukse)	Mandalay	6 / 240	40	17%	76	116	66
H16	GTHS (Mandalay)	Mandalay	2 / 80	89	111%	200	289	32
H17	GTHS (Meiktila)	Mandalay	6 / 240	179	75%	165	344	38
H18	GTHS (Myingyan)	Mandalay	4 / 160	161	101%	138	299	24
H19	GTHS (Mawlamyine)	Mon	5 / 200	124	62%	104	228	36
H20	GTHS (Naypyitaw)	Naypyitaw	6 / 240	143	60%	128	271	62
H21	GTHS (Sittway)	Rakhine	3 / 120	85	71%	50	135	23
H22	GTHS (Chaung Oo)	Sagaing	1 / 40	36	90%	34	70	27
H23	GTHS (Kalay)	Sagaing	4 / 160	162	101%	40	202	23
H24	GTHS (Khamti)	Sagaing	4 / 160	75	47%	23	98	19
H25	GTHS (Monywa)	Sagaing	5 / 200	170	85%	91	261	86
H26	GTHS (Kyaingtong)	Shan	1 / 40	30	75%	35	65	13
H27	GTHS (Lashio)	Shan	4 / 160	146	91%	18	164	22
H28	GTHS (Pangpet)	Shan	3 / 120	61	51%	37	98	24
H29	GTHS (Pinlon)	Shan	4 / 160	39	24%	21	60	21

S/N	Name of GTHS	Stare /Region	No of subjects /seat	No of enrollees (G-10) /student-to-space ratio		No of students at G-11	Total students	No of teachers (practical and general subjects)
H30	GTHS (Taunggyi)	Shan	3 / 120	136	113%	75	211	30
H31	GTHS (Daway)	Tanintharyi	4 / 160	87	54%	31	118	24
H32	GTHS (Myeik)	Tanintharyi	3 / 120	43	36%	22	65	13
H33	GTHS (Lakhukgon)	Yangon	3 / 120	57	48%	27	84	17
H34	GTHS (Ywama)	Yangon	5 / 200	174	87%	152	326	54
Total			134/5,360	3,981	75%	2,571	6,552	1,116

8. List of GTI

S/N corresponds to numbers of 5. Map of GTHS, GTI and TU (Only in Yangon) and 6. Map of GTHS, GTI and TU (Outside Yangon).

S/N	Name of GTI	State/ Region	No of subjects /seat	No of enrollees (AGTI-1) /student-to- space ratio		No of students at AGTI-2	No of students at AGTI-3	Total students	No of teachers (practical and general subjects)
I1	GTC→GTI (Moehnyin)	Kachin	4/160	152	95%	41	37	230	66
I2	GTC→GTI (Myingyan)	Mandalay	4/160	194	121%	111	-	305	114
I3	GTC→GTI (Shwebo)	Sagaing	4/160	183	114%	139	-	322	153
I4	GTI (Labutta)	Ayeyarwady	4/160	135	84%	-	-	135	17
I5	GTI (Wakema)	Ayeyarwady	4/160	182	114%	191	118	491	43
I6	GTI (Letpandan)	Bago	4/160	177	111%	197	-	374	40
I7	GTI (Hakha)	Chin	4/160	147	92%	71	59	277	50
I8	GTI (Putao)	Kachin	3/120	39	33%	18	15	72	18
I9	GTI (Chauk)	Magway	4/160	174	109%	212	132	518	79
I10	GTI (Gangaw)	Magway	4/160	164	103%	56	-	220	37
I11	GTI (Magway)	Magway	4/160	192	120%	103	-	295	75
I12	GTI (Thayet)	Magway	4/160	166	104%	193	135	494	43
I13	GTI (Yenanchaung)	Magway	4/160	182	114%	142	141	465	74
I14	GTI (Kyaukpadaung)	Mandalay	4/160	183	114%	182	121	486	68
I15	GTI (Kyaukse)	Mandalay	4/160	203	127%	140	98	441	32
I16	GTI (Mandalay)	Mandalay	4/160	163	102%	-	-	163	33
I17	GTI (Mawlamyine)	Mon	4/160	179	112%	156	-	335	47
I18	GTI (Kyaukphyu)	Rakhine	3/120	117	33%	83	-	200	27
I19	GTI (Thandwe)	Rakhine	3/120	133	33%	100	-	233	62
I20	GTI (Kantbalu)	Sagaing	4/160	163	102%	117	-	280	76
I21	GTI (Khamti)	Sagaing	4/160	89	56%	28	19	136	25
I22	GTI (Shwepyithar)	Yangon	4/160	145	91%	-	-	145	31
Total				3,310	95%	2,239	838	6,387	1,144

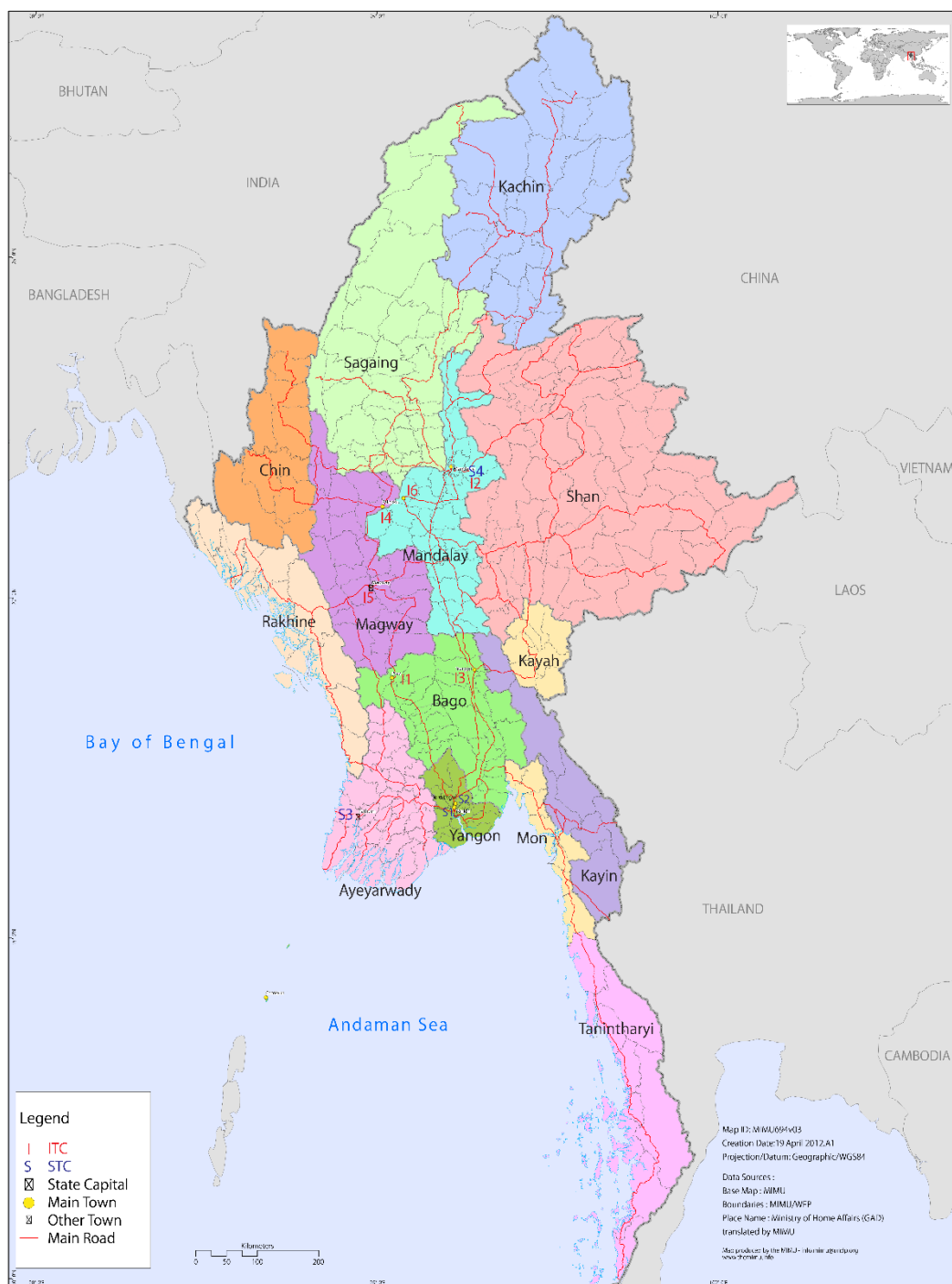
9. List of TU

S/N corresponds to numbers of 5. Map of GTHS, GTI and TU (Only in Yangon) and 6. Map of GTHS, GTI and TU (Outside Yangon).

S/N	Name of TU	State/ Region	No of subjects /seat	No of enrollees /student-to-space ratio		No of teachers (practical and general subjects)
U1	Yangon Technological University (CoE) / Insein	Yangon	12 / 480	325	68%	220
U2	Mandalay Technological University (CoE) / Patheingyi	Mandalay	11 / 440	369	84%	223
U3	Technological University (Hinthata)	Ayeyarwady	4 / 160	190	119%	88
U4	Technological University (Maubin)	Ayeyarwady	4 / 160	340	213%	92
U5	Technological University (Pathein)	Ayeyarwady	4 / 160	213	133%	156
U6	Technological University (Pyay)	Bago	4 / 160	152	95%	180
U7	Technological University (Taungoo)	Bago	4 / 160	198	124%	141
U8	Technological University (Myitkyina)	Kachin	4 / 160	191	119%	74
U9	Technological University (Banmaw)	Kachin	4 / 160	161	101%	56
U10	Technological University (Loikaw)	Kayah	4 / 160	218	136%	74
U11	Technological University (Hpaan)	Kayin	4 / 160	198	124%	80
U12	Technological University (Magway)	Magway	4 / 160	151	94%	189
U13	Technological University (Pakokku)	Magway	4 / 160	166	104%	128
U14	Technological University (Yamethin)	Mandalay	4 / 160	243	152%	97
U15	Technological University (Kyaukse)	Mandalay	8 / 320	331	103%	217
U16	Technological University (Mandalay)	Mandalay	7 / 280	280	100%	332
U17	Technological University (Meiktila)	Mandalay	5 / 200	202	101%	140
U18	University of Technology (Yadanarpon Cyber City)	Mandalay	4 / 160	238	149%	229
U19	Technological University (Mawlamyine)	Mon	5 / 200	195	98%	161
U20	Technological University (Sittwe)	Rakhine	4 / 160	131	82%	87
U21	Technological University (Kalay)	Sagaing	4 / 160	168	105%	78
U22	Technological University (Monywa)	Sagaing	7 / 280	293	105%	202
U23	Technological University (Sagaing)	Sagaing	4 / 160	196	123%	138

S/N	Name of TU	State/ Region	No of subjects /seat	No of enrollees /student-to-space ratio		No of teachers (practical and general subjects)
U24	Technological University (Kyingtong)	Shan	4 / 160	176	110%	64
U25	Technological University (Lashio)	Shan	4 / 160	175	109%	65
U26	Technological University (Pinlon)	Shan	4 / 160	256	160%	65
U27	Technological University (Taunggyi)	Shan	4 / 160	202	126%	139
U28	Technological University (Dawei)	Tanintharyi	4 / 160	208	130%	79
U29	Technological University (Myeik)	Tanintharyi	4 / 160	163	102%	58
U30	Technological University (Hmawbi)	Yangon	7 / 280	350	125%	230
U31	Technological University (Thanlyin)	Yangon	9 / 360	370	103%	271
U32	West Yangon Technological University	Yangon	7 / 280	313	112%	254
U33	Myanmar AeroSpace Engineering University (specialized University)	Mandalay	1/ 140	122	87%	108
Total			167/6,680	7,484	112%	4,715

10. Map of ITC and STC



The points on the map correspond to the numbers in the table on the following page.
 Source: MIMU (www.themimu.info)

11. List of ITC

S/N corresponds to numbers of 10. Map of ITC and STC.

S/N	Name of Institution	State/Region
I1	ITC Sinda	Bago
I2	ITC Mandalay	Mandalay
I3	ITC Thagaya	Bago
I4	ITC Pakokku	Magway
I5	ITC Magway	Magway
I6	ITC Myingyan	Mandalay

12. List of STC

S/N corresponds to numbers of 10. Map of ITC and STC.

S/N	Name of Institution	State/Region
S1	STC Yankin	Yangon
S2	STC North Dagon	Yangon
S3	STC Patheingyi	Ayeyarwady
S4	STC Mandalay	Mandalay

13. List of visited places

S/N	Date	Time from	Time to	Organization	City	Main host	Designation
1	31/03/2016	09:00	10:00	JICA Myanmar	Yangon	Mr. Keiichiro Nakazawa	Chiefs Representative
2	31/03/2016	11:30	12:30	Directorate of Investment and Company Administration	Yangon	Mr. Than Aung Kyaw	Deputy Director General
3	31/03/2016	14:30	15:30	UNESCO	Yangon	Dr. Robyn Jackson	TVET Specialist
4	31/03/2016	16:00	17:00	GIZ	Yangon	Dr. Jeanette Burmester	Head of Project (Promotion of TVET)
5	01/04/2016	09:00	11:30	Fuji Work	Yangon	Mr. Toshiyuki Morimatsu	Managing Director
6	01/04/2016	10:15	11:15	Suzuki Motors	Yangon	Mr. Keiichi Asano	Managing Director
7	01/04/2016	14:30	15:00	Myanmar Japan Thilawa Development Ltd	Yangon	Mr. Takashi Yanai	President and CEO
8	01/04/2016	16:00	17:00	UMFCCI	Yangon	Mr. Zaw Min Oo	Chairman
9	02/04/2016	09:00	12:30	Sankou	Yangon	Mr. Shunji Tsuda	CEO
10	02/04/2016	14:00	15:30	Hitachi Soe Electric	Yangon	Mr. Tatsutoshi Inagaki	Managing Director
11	03/04/2016	12:30	13:00	Uni Asia Motors (Honda)	Yangon	Mr. Shafiq ur Rahman	Chairman
12	03/04/2016	13:30	14:15	Desire Auto Work	Yangon	Mr. Win Min Latt	Service Manager
13	03/04/2016	14:30	14:40	Hero Cars	Yangon	N/A	N/A
14	03/04/2016	15:30	16:30	Emerald Crown	Yangon	Mr. Kyaw Soe Moe	Operation Manager
15	04/04/2016	10:00	12:00	Ywama GTHS	Yangon	Mr. Myat Ko	Principal
16	04/04/2016	10:15	11:00	Ministry of Education	Nay Pyi Taw	Dr. Soe Win	Permanent Secretary
17	04/04/2016	11:00	13:00	Bridge Asia Japan	Yangon	Ms. Akiko Mori	Country Representative
18	04/04/2016	12:15	13:00	Aung San Center	Yangon	N/A	N/A
19	04/04/2016	14:00	15:00	SDC	Yangon	Mr. Nay Myo Zaw	National Program Officer

S/N	Date	Time from	Time to	Organization	City	Main host	Designation
20	04/04/2016	14:15	15:00	Central Statistics Organization	Nay Pyi Taw	Dr. Wah Wah Maung	Director General
21	04/04/2016	15:20	17:40	Government Technical High School	Nay Pyi Taw	Mr. U Thet Lwin Toe	Principal
22	04/04/2016	16:00	17:00	National Skills Standards Association (NSSA)	Yangon	Ms. Khin Mar Aye	Head of Technical Office
23	05/04/2016	10:10	12:40	Ministry of Industry	Nay Pyi Taw	Mr. Ko Ko Tin	Director General (Directorate of Industrial Collaboration)
24	05/04/2016	10:30	12:30	Kyaukse GTHS	Mandalay	Mr. Zin Min Htun	Principal
25	05/04/2016	14:30	16:30	Industrial Training Center	Mandalay	Mr. Khun Sam	Vice principal
26	05/04/2016	16:30	17:30	Asian Development Bank (ADB)	Nay Pyi Taw	Mr. Christopher Spohr	Principal Social Sector Specialist
27	05/04/2016	19:00	20:30	Mr. Muta (JICA Expert at MoE)	Nay Pyi Taw	Mr. Hiromitsu Muta	JICA Expert (Ministry of Education)
28	06/04/2016	09:30	12:00	Technical Promotion Technical Center (TPTC) Baelin	Mandalay	Mr. Aung Nyi Nyi	Assistant Director (Mechanical)
29	06/04/2016	10:00	12:00	Ministry of Labour, Employment and Social Security	Nay Pyi Taw	Mr. U Myo Aung	Permanent Secretary
30	06/04/2016	13:00	14:30	Ministry of Social Welfare, Relief, Resettlement	Nay Pyi Taw	Dr. San San Aye	Deputy Director General (Department of Social Welfare)
31	06/04/2016	14:30	16:00	Automobile Technonoly Research Institute	Mandalay	Mr. Yan Naing Tun	Director (Mechanical)
32	06/04/2016	15:30	16:30	Ministry of Border Affairs	Nay Pyi Taw	Mr. Aung Myo	Director (Admin)
33	07/04/2016	11:00	13:00	Myanmar Engineering Society	Yangon	Mr. Sann Oo	Secretary
34	07/04/2016	13:00	15:00	Glory Career Training Center	Yangon		
35	07/04/2016	14:00	16:00	Myanmar A.G.T.I Society (Kinden)	Yangon	Mr. Pyi Sone	Administrator
36	08/04/2016	14:30	16:00	ILO	Yangon	Ms. Lourdes Kathleen Santos Macasil	Deputy Liaison Officer
37	09/04/2016	10:00	11:00	IMF	Yangon	Mr. Yasuhisa Ojima	Resident Representative
38	21/04/2016	15:00	16:30	Kinden Corporation	Tokyo	Mr. Koji Nishi	General Sales Manager, International Operation Division

S/N	Date	Time from	Time to	Organization	City	Main host	Designation
39	09/05/2016	13:00	14:00	Japan Vocational Ability Development Association	Tokyo	Mr. Fumio Inagawa	Former Project Leader of Hanoi Technical University
40	24/05/2016	10:30	11:30	JETRO	Yangon	Mr. Hirokazu Yamaoka	Managing Director
41	24/05/2016	13:00	14:00	GIZ	Yangon	Dr. Jeanette Burmester	Head of Project (Promotion of TVET)
42	24/05/2016	14:40	15:20	SDC	Yangon	Mr. Nay Myo Zaw	National Program Officer
43	25/05/2016	10:00	11:00	JICA Myanmar	Yangon	Mr. Jun Yamazaki	Representative
44	25/05/2016	13:00	14:30	Myanmar Japan Center	Yangon	Mr. Morimasa Kanamaru	Chief Adviser
45	26/05/2016	10:30	11:30	EU	Yangon	Ms. Elisabeth Pirnay	Programme Officer, Social Sector
46	26/05/2016	10:30	12:30	Shwe Pyi Thar Industrial Zone Committee	Yangon	Mr. Aye Ko	Chairman
47	26/05/2016	13:20	14:40	Hlaing Tharyar Industrial City Management Committee	Yangon	Mr. Myat Thin Aung Khin Maung Oo	President General Secretary
48	26/05/2016	13:30	14:30	UNICEF	Yangon	Ms. Jane Davies	Education Specialist, Policy
49	27/05/2016	10:30	12:00	UMFCCI	Yangon	Mr. Zaw Min Oo	Chairman, Myanmar Chamber Vocational Institute
50	27/05/2016	16:00	17:00	KOICA	Yangon	Ms. Chun Jiheh	Deputy Representative
51	30/05/2016	09:45	13:00	Singapore Myanmar Vocational Training Institute (SMVTI)	Yangon	Mr. Chong Chon Hsein Dr. Myo Thida Dr. Aye Thant Mrs. Ei Ei Zin	Principal Vice-Principal Manager, Admin, IT & Operations Manager, Finance & HR
52	30/05/2016	10:15	12:00	DTVE, MoE	Nay Pyi Taw	Mr. Win Maw Tun Mr. Sai Kyaw Naing Oo Mr. Chun Htoo Aung	Director General Deputy Director General Deputy Director
53	31/05/2016	10:00	11:00	Skills Development Division, MoLIP	Nay Pyi Taw	Mr. Kyaw Kyaw Lwin	Director

S/N	Date	Time from	Time to	Organization	City	Main host	Designation
54	31/05/2016	10:30	12:30	Myanmar TECH Institute	Yangon	Mr. Mr. Ham Myo Thu Mr. Myint Oo Ms. Zin Min Aung	Director Director Training Manager
55	31/05/2016	14:30	16:00	Future Engineering Generation (FEG)	Yangon	Mr. Tay Za Zaw	Founder
56	01/06/2016	10:00	11:30	Ms. Yamakawa (JICA Education Expert)	Yangon	Ms. Yumiko Yamakawa	Education Expert
57	01/06/2016	10:00	12:30	NSSA (2nd)	Yangon	Ms. Khin Mar Aye	Deputy Director
58	01/06/2016	14:45	15:45	IOM	Yangon	Mr. Jobst Koehler	Programme Manager
59	02/06/2016	10:00	10:30	DICA	Yangon	Ms. Tin Aye Han	Director
60	02/06/2016	10:00	10:45	Japan Chamber of Commerce and Industry, Myanmar (JCCM)	Yangon	Mr. Satoshi Hamaguchi	Director, Admin
61	02/06/2016	15:00	16:00	Skills Training Center (STC), Mandalay	Mandalay	Ms. Htin Thet Mon	Principal
62	02/06/2016	15:15	16:50	Labour Exchange Head Office	Yangon	Ms. Moh Moh Thawin	Director
63	02/06/2016	19:00	20:00	Government of Yangon Region	Yangon	Ms. H.E. Naw Pan Thinzar Myo	Minister, Karen Ethnic Affaires, Public Information Affaires, Hotels & Tourism Affaires
64	03/06/2016	9:40	12:30	Technical Promotion Technical Center (TPTC) Baelin	Mandalay	Dr. Aye Aye Mon Dr. Nay Myo Tun Dr. Zan Min Nong	Principal Director Deputy Director
65	03/06/2016	14:00	15:00	Komatsu	Mandalay	Mr. Takashi Ando	Managing Director
66	03/06/2016	14:30	16:00	J-SAT	Yangon	Mr. Akira Morikawa	Manager, Domestic Human Resource
67	03/06/2016	15:00	17:00	Mandalay Industrial Zone	Mandalay	Mr. Naing Oo Mr. Zaw Zaw Oo	Admin Officer President & CEO (U OHN HLAING & SONs Industry)
68	03/06/2016	15:15	16:50	Labour Exchange Office, Lathar Branch	Yangon	Ms. Hnin Yu	Manager
69	04/06/2016	10:00	12:30	AKI Engineering School	Yangon	Mr. Aye Min Min Dr. Cho Cho Ei	Principal Centre Manager

S/N	Date	Time from	Time to	Organization	City	Main host	Designation
70	06/06/2016	09:00	13:15	Bridge Asia Japan (BAJ)	Hpa-an	Mr. Shinya Yoshida Ms. Yumi Hisa Mr. Koreaki Kaizuka	Program Manager Automobile Maintenance Expert Automobile, Electric Expert
71	06/06/2016	15:00	16:00	United Nations Industrial Development Organization (UNIDO)	Yangon	Mr. Michele Boario Ms. Maureen Seng Taung	Chief Technical Advisor Jr. National Project Coordinator
72	07/06/2016	08:40	13:00	Industrial Training Center (ITC), Sinda	Sinda	Mr. Phone Kyaw Mr. Myint Shwe	Principal Head of Administration
73	08/06/2016	13:15	15:30	Industrial Training Center (ITC), Magway	Magway	Mr. Thant Zin	Principal
74	09/06/2016	13:00	14:30	Skills Development Division, MoLIP	Nay Pyi Taw	Ms. Mya Mya Thet	Deputy Director
75	10/06/2016	09:50	10:30	Skills Development Division, MoLIP	Nay Pyi Taw	Mr. Kyaw Kyaw Lwin	Director
76	10/06/2016	10:30	14:30	Skills Development Division, MoLIP	Nay Pyi Taw	Mr. Kyaw Kyaw Lwin	Director
77	10/06/2016	13:00	13:30	Budget Department, MoF	Nay Pyi Taw	Ms. Thida Tun Ms. Naw Wilmaer Oo	Deputy Director General Director
78	13/06/2016	10:00	11:40	Skills Training Center (STC), Pathein	Pathein	Mr. Hla Myint Thein	Staff Officer
79	13/06/2016	13:00	14:30	Pathein TU	Pathein	Dr. Kyaw Thu Ya	Principal Professor
80	13/06/2016	15:20	17:10	Pathein GTHS	Pathein	Mr. Aung Htike Thu	Principal
81	15/06/2016	10:00	12:00	Center for Vocational Training (CVT), Office	Yangon	Mr. Nay Myo Kyaw	PR & Communication Executive
82	15/06/2016	13:30	15:30	Thanlyn TU	Yangon	Dr. Kay Thi Lwin	Rector
83	15/06/2016	16:30	17:30	Myanmar Engineering Society	Yangon	Mr.(Engr) Aung Myint Mr.(Engr) Hla Kyaing	President Joint General Secretary
84	16/06/2016	09:00	12:00	Center for Vocational Training (CVT), NSSA Exam Center	Yangon	Mr. Kyaw Myat Khaing	Head of Vocational Training
85	16/06/2016	11:45	14:30	Dawei TU	Dawei	Dr. Aung Naing Myint	PhD Mechatronics

S/N	Date	Time from	Time to	Organization	City	Main host	Designation
86	16/06/2016	14:00	15:00	Center for Vocational Training (CVT), E4Y	Yangon	Ms. Htel Htel Ye Win	Head of Program
87	16/06/2016	14:00	16:30	GIZ Evaluation and Appraisal Mission	Nay Pyi Taw	Dr. Jeanette Burmester Ms. Naing Yee Mar	Head of Project Senior Advisor
88	16/06/2016	15:20	17:10	Dawei GTHS	Dawei	Ms. Aye Aye Thwe	Assistant Lecturer
89	17/06/2016	10:30	12:10	Myanmar JAPON	Yangon	Ms. Mayumi Mihara	Chief Operation Officer
90	17/06/2016	14:00	15:00	Dawei SEZ	Dawei	Mr. Suphap Sathatham Mr. Amnaj Chomphunooch	Project Engineer Project Enigneer
91	20/06/2016	10:00	11:30	Jobbank	Yangon	Ms. Tomoko Sogabe	Sales Representative
92	20/06/2016	10:30	12:30	Kyaukse GTHS/GTI	Mandalay	Mr. Zin Min Htun	Principal
93	20/06/2016	15:00	16:00	Embassy of Singapore	Yangon	Mr. Stephen Heng	First Secretary (Admin & Consular)
94	21/06/2016	10:00	11:10	Mandalay GTHS/GTI	Mandalay	Ms. Myint Myint Thein	Lecturer, Dept of AMT
95	22/06/2016	10:00	10:45	Yusen Logistics	Yangon	Mr. Yasuhiko Nojima	Managing Director
96	22/06/2016	10:00	11:40	Dream Job	Yangon	Mr. Kei Tamura Mr. Yuki Morishita	General Manager Sales & Marketing Manager
97	22/06/2016	12:25	15:00	Pakokku TU	Pakokku	Dr. Aung Kegae Soe	Principal
98	22/06/2016	13:45	14:45	AEON	Yangon	Mr. Yashimitsu Kawato	Chief Representative
99	22/06/2016	16:00	17:20	Fourth Valley	Yangon	Mr. Kunihide Nagano	Managing Director
100	23/06/2016	09:30	10:00	Oji Asia Packaging	Yangon	Mr. Seiro Tokunaga	Chief Representative
101	23/06/2016	10:45	11:30	Thai Takenaka International Ltd.	Yangon	Mr. Hiroshi Osaki	General Manager
102	24/06/2016	09:30	12:20	National Youth Resource Development Degree Collage	Yangon	Dr. Min Thant	Principal
103	24/06/2016	13:30	17:00	Shwe Pyi Thar Industrial Zone Committee	Yangon		
104	29/06/2016	10:00	11:30	SDD, MoLIP	Nay Pyi Taw	Mr. U. Myo Aung Mr. Kyaw Kyaw Lwin	Director General Director
105	30/06/2016	13:00	14:00	DTVE, MoE	Nay Pyi Taw	Dr. U Win Maw Tun	Director General

S/N	Date	Time from	Time to	Organization	City	Main host	Designation
106	30/06/2016	10:20	11:40	DICA, MoI	Nay Pyi Taw	Mr. Ko Ko Tin	Director General
107	02/07/2016	10:20	11:40	HTS Myanmar Japan Car Workshop	Yangon	Mr. Yasutoshi Mr. Fumio Sano	CEO Instructor
108	02/07/2016	13:00	15:00	Ree Blue Myanmar Ltd.	Yangon	Mr. Motokazu Imai	CEO
109	08/07/2016	13:00	15:00	Toyota	Tokyo	Ms. Takako Kubo	Director, Asia Australia Group 2
110	04/08/2016	14:00	16:30	Rokugo Technical High School	Tokyo	Mr. Manabu Nagata Mr. Yukihiro Nozawa	Vice principal Head of Dual System Department
111	05/08/2016	10:00	11:30	Tokyo Metropolitan Vocational Skills Development Center, Edogawa Campus	Tokyo	Ms. Kumiko Otani Mr. Katsuya Tstutsui	Principal Supervising Manager
112	05/08/2016	14:10	16:00	Ministry of Health, Labour and Welfare	Tokyo	Mr. Jinichi Miyano Mr. Kazushi Nishida	Director General, Human Resources Development Bureau Director, Overseas Cooperation Division
113	08/08/2016	10:00	10:30	Polytech College Chiba	Tokyo	Mr. Sachio Takihara Mr. Hiroshi Yamada	Principal Director, Capacity Development
114	08/08/2016	14:00	16:30	Shinohara Press Service	Tokyo	Mr. Masayuki Shinohara Mr. Kiyoto Shinohara	Chief Executive Officer Executive Director
115	09/08/2016	10:40	11:30	Polytech Center Kanto	Tokyo	Mr. Koji Matsunaka Mr. Hiroaki Miyoshi	Principal Vice-Principal
116	09/08/2016	10:40	11:30	Mitutoyo	Tokyo	Mr. Toshio Muto Mr. Daisuke Kato	Executive Director and Managing Executive Officer Deputy General Manager, Sales Division
117	01/09/2016	10:20	12:00	Vocational Training School for Adult Disabled	Yangon	Ms. Nyunt Nyunt Win	Principal
118	01/09/2016	13:20	15:50	Ywama GTHS	Yangon	Mr. Myat Ko	Principal
119	02/09/2016	10:30	12:00	Myanmar Engineering Society	Yangon	Mr. Hla Kyaing	Joint General Secretary
120	06/09/2016	10:00	11:20	Ministry of Industry	Nay Pyi Taw	Mr. Thaug Oo	Director, Planning Department
121	06/09/2016	14:40	16:00	Ministry of Labour, Employment and Social Security	Nay Pyi Taw	Mr. Kyaw Kyaw Lwin	Director

S/N	Date	Time from	Time to	Organization	City	Main host	Designation
122	07/09/2016	09:30	11:30	Ministry of Education, Department of Higher Education	Nay Pyi Taw	Prof. Dr. Thein Win	Director General
123	07/09/2016	14:10	15:10	JICA Myanmar, Naypyitaw Office	Nay Pyi Taw	Mr. Hiroshi Shirakawa	Chief Advisor(Project for Enhancement of Engineering Higher Education in Myanmar)
124	07/09/2016	15:30	16:10	Ministry of Education, Department of Technical and Vocational Education	Nay Pyi Taw	Dr. Pyae Kyaw Thu	Deputy Director
125	07/09/2016	16:00	17:00	Asian Development Bank (ADB)	Nay Pyi Taw	Mr. Christopher Spohr	Principal Social Sector Specialist
126	08/09/2016	13:00	14:00	SDC	Yangon	Mr. Nay Myo Zaw	National Program Officer
127	08/09/2016	15:00	17:00	Myanmar Private TVET Association	Nay Pyi Taw	Mr. Aye Chan Ko Ko	Vice President
128	09/09/2016	10:20	12:30	GTC Shwebo	Shwebo	Dr.Lay Man Wint	Principal
129	09/09/2016	11:00	13:00	Shwe Pyi Thar Industrial Zone Committee	Yangon	Mr. Kyaw Lwin	Managing Director, Pyilonechaniha Traiding
130	09/09/2016	15:00	16:30	UMFCCI	Yangon	Mr. U Kyaw Myint Oo Mr. Berti Wahl	Managing Director TVET Expert
131	12/09/2016	08:30	09:40	GIZ	Yangon	Ms. Naing Yee Mar	Senior Advisor
132	12/09/2016	13:00	14:00	Ministry of Industry	Nay Pyi Taw	Mr. Ko Ko Lwin	Permanent Secretary
133	12/09/2016	13:00	15:00	Central Training Center (Thuwunna)	Yangon	Ms. Kyi Thwin Oo	Principal
134	12/09/2016	14:00	14:45	Ministry of Education	Nay Pyi Taw	Dr. Sai Kyaw Naing Oo	Deputy Director General
135	12/09/2016	16:00	17:00	KOICA	Yangon	Ms. Chun Jiheh	Deputy Representative
136	04/10/2016	13:30	16:00	Polytechnic University	Tokyo	Mr. Takao Enkawa	President
137	05/10/2016	14:30	16:30	Amada School	Kanagawa	Mr. Chikahiro Sueoka	Chief Director

14. Responses to Questionnaire for Japan-Myanmar Association Members

Type of industry	Whether already invested in Myanmar	Reason not investing in Myanmar yet	Problems regarding human resources	Reason why invested	Number of employees in Myanmar	Academic level of employees	Experience of external TVET among employees	Reason not hiring workers with external TVET	Quality of external TVET	What to improve external TVET
Manufacturing and sales of industrial electrics	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased. Domestic resources can be utilized in Myanmar.	470	More high school graduates than university graduates.	No	Cannot confirm whether the workers have really taken TVET courses.		
Development consultancy	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased. Existence of excellent human resources.	5	More university graduates than high school graduates.	Yes		Satisfactory	OJT with sufficient time can be helpful for obtaining basic skills.
Total building administration	Yes			Market of Myanmar is attractive in the future.	100	More high school graduates than university graduates.	No	Japanese instructors internally offer trainings in Japanese style.		
Construction	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased. Existence of excellent human resources.	10	More university graduates than high school graduates.	No	In-company training is more effective in acquiring skills.		
Trading, investment	Yes			Market of Myanmar is attractive in the future.	30	More university graduates than high school graduates.	No	TVET is not required for the employees.		
Trading	Yes			Market of Myanmar is attractive in the future.	100	More university graduates than high school graduates.	No	N/A		N/A
Trading	Yes			Market of Myanmar is attractive in the future.	45	More university graduates than high school graduates.	No	TVET does not provide required skills for our company.		Training for Japanese staffs regarding organizational structuring should be provided based on the assumption of job-hopping of local office staffs.
Port transport	Yes			Market of Myanmar is attractive in the future.	8	More university graduates than high school graduates.	No			
Engineering, manufacturing and sales of environment and energy infrastructure	Yes			Market of Myanmar is attractive in the future. To use as a hub of research.	3	University graduates.	No	Employees can learn skills through OJT after employment.		
Trading, investment	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased.	150	More high school graduates than university graduates.	No	Cannot confirm whether the workers have really taken TVET courses. In-company training is provided for mechanics.		
Insurance	Yes			Market of Myanmar is attractive in the future.	5	More university graduates than high school graduates.	No	A few number of experienced people were required.		
Dental service	Yes			To reduce cost.	2	More high school graduates than university graduates.	No	Special dental skill is required.		
Administration of subsidiaries	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased.	4	More university graduates than high school graduates.	No	Graduates of TVET institutions are limited in their number.		
Manufacturing (motorcycle, vehicle etc.)	Yes			Market of Myanmar is attractive in the future.	88	More university graduates than high school graduates.	No	Appropriate TVET is not provided for our category of work.		Qualification is required to measure skill level
Transport	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased.	3	More university graduates than high school graduates.	No	Graduates of TVET institutions are limited in their number.		
Metal and materials	Yes			Market of Myanmar is attractive in the future.	2	University graduates.	No	No one with TVET has applied yet.		
Manufacturing and sales of liquor, beverage, medicine	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased.	1000	Almost all are non-graduates of high school.	No	In-company training is more effective in acquiring skills.		
Marine transportation	Yes			Market of Myanmar is attractive in the future.	1	More university graduates than high school graduates.	No	In-company training is more effective in acquiring skills.		Require more basic skill training
Garment	Yes			International competitiveness can be increased.	1400	Almost all are non-graduates of high school.	No	In-company training is more effective in acquiring skills.		
Communication	Yes			Market of Myanmar is attractive in the future.	100	More high school graduates than university graduates.	No	Cannot confirm whether the workers have really taken TVET courses.		
Banking	Yes			Market of Myanmar is attractive in the future.	24	More university graduates than high school graduates.	No	In-company training is more effective in acquiring skills.		

Type of industry	Whether already invested in Myanmar	Reason not investing in Myanmar yet	Problems regarding human resources	Reason why invested	Number of employees in Myanmar	Academic level of employees	Experience of external TVET among employees	Reason not hiring workers with external TVET	Quality of external TVET	What to improve external TVET
General construction and maintenance	Yes			Market of Myanmar is attractive in the future.		More university graduates than high school graduates.	No	In-company training is more effective in acquiring skills.		
Hotel	Yes			Market of Myanmar is attractive in the future.	70	More university graduates than high school graduates.	No	No one with TVET has applied yet.		
Manufacturing and service	Yes			Market of Myanmar is attractive in the future.	100	More university graduates than high school graduates.	No	Constructing own vocational training facility.	Unsatisfactory.	Require more basic hard skill and soft skill training
Transport	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased.	1	University graduates.	No	Not sure if there is any TVET regarding trading operation. We require employees with advanced English level.	Unsatisfactory.	Lack of information regarding private TVET
Architecture and consultation	Yes			Market of Myanmar is attractive in the future.	6	More university graduates than high school graduates.	No	Graduates of TVET institutions are limited in their number.		
Architecture	Yes			Market of Myanmar is attractive in the future.	17	More university graduates than high school graduates.	No	In-company training is more effective in acquiring skills.		
Credit card service	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased.	4	University graduates.	No	No idea about TVET.	N/A	
Port transport, logistics	Yes			Market of Myanmar is attractive in the future.	17	More university graduates than high school graduates.	No	No reason.	Partly satisfactory.	Require more basic soft skill training
Trading	Yes			Market of Myanmar is attractive in the future.	1010	More university graduates than high school graduates.	No	In-company training is more effective in acquiring skills.		
Machine, equipment and electric facilities	Yes			Market of Myanmar is attractive in the future.	1	University graduates.	No	In-company training is more effective in acquiring skills.	Partly unsatisfactory.	Require more basic skill
ICT and communication	Yes			Market of Myanmar is attractive in the future.	7	More university graduates than high school graduates.	No	Most employees are university graduates and we do not have any operation at factory.		
Communication	Yes			Market of Myanmar is attractive in the future.	385	More university graduates than high school graduates.	No	No idea about TVET.		
Metal and materials	Yes			Domestic resources can be utilized in Myanmar. Japan provides ODA.		More university graduates than high school graduates.	no			
Advertisement	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased.	11	More university graduates than high school graduates.	Yes		Partly unsatisfactory.	Attitude to work for Japanese company. Require more basic soft skill training.
Trading	Yes			Market of Myanmar is attractive in the future.	350	More high school graduates than university graduates.	Yes		Partly	Require more basic skill Application of basic skill has to be taught
Management of technical intern trainees	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased. Existence of excellent human resources. Domestic resources can be utilized in Myanmar.	20	More university graduates than high school graduates.	Yes		Partly satisfactory.	Require more basic hard skill and soft skill training Application of basic skill has to be taught
Development and sales of office equipment	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased.	5	More high school graduates than university graduates.	Yes		Partly satisfactory.	Require more basic skill
Architecture	Yes			Market of Myanmar is attractive in the future. Existence of excellent human resources.		More university graduates than high school graduates.	Yes		Satisfactory.	
Construction consultancy	Yes			Market of Myanmar is attractive in the future. International competitiveness can be increased.	40	More high school graduates than university graduates.	Yes		Partly satisfactory.	Require more basic skill Application of basic skill has to be taught
Transport	Yes			Market of Myanmar is attractive in the future.	Under preparation.					
Manufacturing and sales of electric appliances	Yes									
Manufacturing and sales of food	Yes			Market of Myanmar is attractive in the future.	Not decided yet.					
Trading of medicine and medical equipment	Yes			Market of Myanmar is attractive in the future.						
Technical assistance of poultry	Yes			Market of Myanmar is attractive in the future. Domestic resources can be utilized in Myanmar.	Up to 50.					
Manufacturing of machines	Yes			Market of Myanmar is attractive in the future.	Up to 100.					
Development and production of oil and gas	Yes			Domestic resources can be utilized in Myanmar.	0					

Type of industry	Whether already invested in Myanmar	Reason not investing in Myanmar yet	Problems regarding human resources	Reason why invested	Number of employees in Myanmar	Academic level of employees	Experience of external TVET among employees	Reason not hiring workers with external TVET	Quality of external TVET	What to improve external TVET
Construction consultancy	No	Main business is related ODA and demand is high.	Salary is higher than expected. Lack of human resources for middle management. Hard to employ good officers outside Yangon. High job separation rate.							
Gas energy	No	Legal system is unclear. Political situation is unstable.	No idea.	Market of Myanmar is attractive in the future. Existence of excellent human resources.	Less than 10	More university graduates than high school graduates.	No			
Engineering	No	Looking for airport-related projects.	Lack of human resources for middle management. Salary is higher than expected as competent employees in their 30s are former foreign workers (eg Singapore).							
Architecture	No	Group company already established branches in Myanmar								
Fisheries and marine business	No	Lack of infrastructure.								
Retailing	No	Lack of infrastructure.								
Manufacturing	No	Lack of infrastructure (especially electricity and machine tools)								
Export of second hand construction vehicle	No	Lack of infrastructure. Hard to assure land use. Legal system is unclear.								
ERP manufacturing control	No	Lack of infrastructure. Lack of market demand due to price.								
Energy	No	Lack of infrastructure. Legal system is unclear.								
Manufacturing and sales of transportation machines	No	Lack of infrastructure. Lack of market demand.								
Research on port	No	Under investigation								
Automobile retail	No	Lack of market demand.								
Manufacturing	No	Under investigation								
Metal product trading	No	Lack of market demand.								
Metal	No	Lack of market demand.								
Retail	No	Lack of market demand.								
Medicine	No	Lack of supportive law								
Retail of oil product	No	Regard Myanmar as target of export.								
Manufacturing of metal products	No	Under consideration								
	No									
Retail of petrol	No									
70 companies answered out of 153.										

14. Responses to Questionnaire for JCCM Members

Committee	Sector	Year entered Myanmar	Question 2 Positive aspect of local staffs in related companies.						Question 2 Negative aspect of local staffs in related companies.					Question 4 What kind (level of skills) of TVET should be focused in TU, GTHS, GTI?													
			Required basic skill	Required expert skill	Required attitude and discipline	Loyalty	Motivation to improve their skill	Motivation to increase their salary	Required basic skill	Required expert skill	Required attitude and discipline	Loyalty	Motivation to improve their skill	Math	Science	English	Safety	Group work	SS	Welding	Electric wiring	Machine	Plastering	Carpentry	Others		
Industrial	Metal bridge, port construction	2013	○				○			○					The 4 basic arithmetic operations		Basic English conversation	Safety action during machining operation		Not to litter garbage. Maintaining cleanliness and tidiness	JIS level						Slinging, forklift, crane operation, scaffolding
Industrial	Garment	2014	○							○	○	○					Overall safety knowledge	Overall safety knowledge	Overall knowledge								
Industrial	Wood processing	2015	○							○	○	○				Overall English skill	Overall safety knowledge										
Industrial	Manufacturing	2013						○	○	○				Division of fraction		Basic English conversation		Overall knowledge								Understanding blueprint	
Industrial	Concrete processing	2014				○	○		○	○	○						Overall safety knowledge	Overall knowledge									
Industrial	Manufacturing	2014					○	○	○	○				Combination of practical and theoretical learning.													
Industrial	Manufacturing	2015					○	○	○	○						TOEIC score 700			Maintaining cleanliness and tidiness, moral							Designing especially computer graphics	
Industrial	Manufacturing, marketing	2013					○	○	○	○				Basic internationally standardized units.	Recognition of importance of collecting and analyzing quantitative												
Construction	ITC	2015					○							The same level as Japanese high school graduates.		TOEIC score 650	Understanding on basic safety policy as Japanese companies teach				2nd class electric works specialist						
Construction	Interior, furniture	2015						○	○	○	○	○					Basic safety knowledge	Basic knowledge	Maintaining cleanliness and tidiness				Basic education and finishing				
Construction	Construction	2015						○	○	○	○	○		Basic calculation (the area of triangle and circle etc.)	Basic knowledge (definition of oxygen etc.)	Basic English conversation	Obeying rules	Understanding the impact of individual behavior								There is not sufficient work places where specialized skills can be utilized. Further, currently, workers with multi-skill are more appreciated than those with advanced expertise. This situation has to be changed.	
Construction	Construction	2013												Trigonometric function						Training based on the NSSA's exam					How to use electric tools like circular saw and electric drill		
Construction	Electric communication equipment construction	2015					○		○	○	○						Basic safety knowledge about high-place work and electrification				Basic communication system				Basic designing, process management and quantity survey.		
Construction	General construction	1996	○						○	○				Mental calculation						Qualification of welding			Skill of finishing with metal trowel finished mortar				
Construction	Construction consultancy	1997	○						○	○				Basic calculation		Basic English conversation	Overall safety knowledge	Overall knowledge	Overall knowledge	Arc welding	Building operation and management engineer					Geological survey engineering, registered surveyor	
Construction	Construction consultancy	2013	○						○	○	○	○		Statistics			Prediction of risk and safety administration								Professional construction skill		
Construction	Electric consultancy	2014																									
Construction	General construction	1996					○	○	○	○	○			Secondary education level		TOEIC score 650	Prevention measures of accidents	Awareness as a staff of an organization	Maintaining cleanliness and tidiness	Basic level of arc welding and gas welding	Electric works specialist		Registered plastering chief engineer	Framework construction engineer			
Construction	General construction	2013					○	○	○	○	○			Basic math and physics		TOEIC score 600	Minimum safety knowledge	Business coordination ability	Knowledge about maintaining cleanliness and tidiness	JIS level	Electric works specialist	Basic knowledge for setting up equipment		Framework construction engineer	Basic skill for simple labour. In case of construction, specialized companies need to be established by category of work.		
Construction	Real estate development	1996	○				○	○	○	○	○			Basic calculation		Writing skill	Basic safety knowledge	Sharing information with subordinate	Moral education	NSSA's skill exam				Basic framework construction	Basic skill of reinforcement works, masonry and water proofing work.		

Constructi	Service	2013					○									TOEIC score 600			Maintaining cleanliness and tidiness							Basic knowledge of math, physics and chemistry is necessary for whatever engineer.	
Constructi	Construction	2015		○												Trigonometric function	TOEIC score 700 (management), 650 (office staffs), 500 (workers)		Maintaining cleanliness and tidiness	Increase of motivation toward quality control, WES welding, semi-automatic arc welding qualification							
Constructi	Construction	2013								○																1st- and 2nd-lass engineer operation and management engineer, registered surveyor.	
Constructi	Construction	2013																		JIS, gas and TIG welding							
Constructi	Construction equipment	2015										○															
Constructi	Service	2013										○															
Constructi	General construction	1994																									2nd-lass engineer operation and management engineer
Constructi	Construction	1996																									
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15. Analysis on Questionnaire for JCCM Members (Industrial and construction committees)

(1) Target

Members of Industrial committee: 90 companies

Construction committee: 107 companies

(2) Survey method

Collected answers through email after face-to-face request to the both committee members.

(3) Survey period

From July 1, 2016 to July 12 2016.

(4) Number of valid responses

Industrial committee: 8 companies (response rate: 8.89%)

Construction committee: 20 companies (response rate: 18.69%)

Sample of questionnaire sheet

Question 1 : In which year did you establish office or factory?

【Year: _____】

Type of business

【 _____ 】

Question 2 : Which of the following aspects are advantages of local staffs engaged in production line, staffs, contractors etc.? (more than one items can be selected)

- 1) Basic skill required for skilled labourers.
- 2) Special skill required for skilled labourers.
- 3) Basic discipline for the professional. (e.g. be punctual)
- 4) Loyalty to company. (e.g. will to work for a long time)
- 5) Motivation to improve the skill.

Question 3 : Which of the followings are lacking among local staffs engaged in production line, staffs, contractors etc.? (more than one items can be selected)

- 1) Basic skill required for skilled labourers.
- 2) Special skill required for skilled labourers.
- 3) Basic discipline for the professional. (e.g. be punctual)
- 4) Loyalty to company. (e.g. will to work for a long time)
- 5) Motivation to improve the skill.

Question 4 : What kind of education/training should be more focused at university, high school, and GTI. What would you expect regarding the following fields of skills as recruitment? (e.g. TOEIC score 700, 2nd class automechanics, 2nd class electrician etc.)

<Basic subject>

- Math 【 _____ 】
- Science 【 _____ 】
- English 【 _____ 】

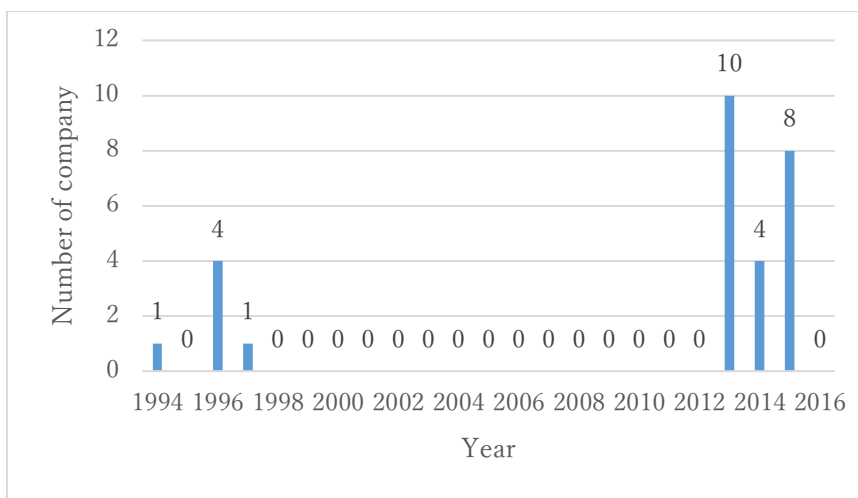
<Soft skills>

- Safety 【 _____ 】
- Group work 【 _____ 】
- 5S 【 _____ 】

<Hard skills>

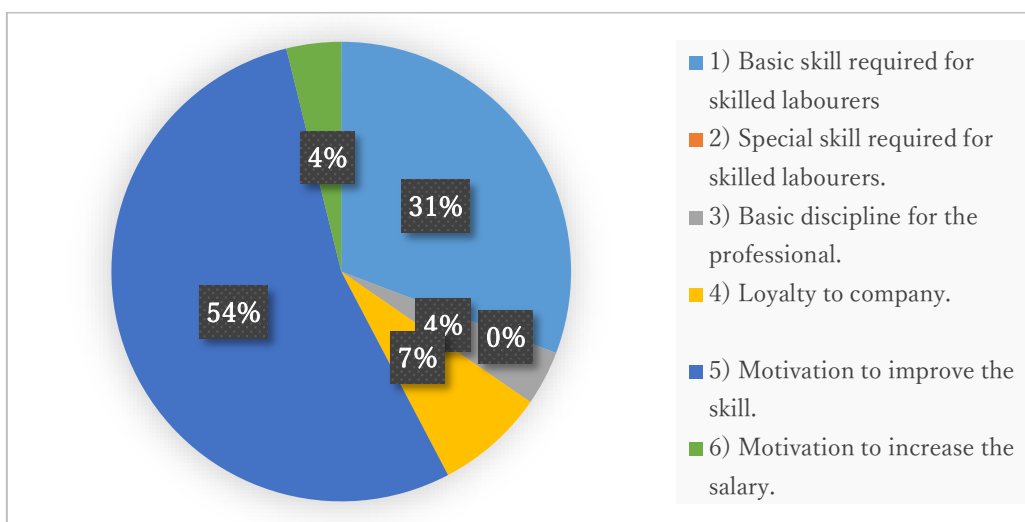
- Lathe 【 _____ 】
- Welding 【 _____ 】
- Electric wiring 【 _____ 】
- Mechanics 【 _____ 】
- Automobile maintenance
【 _____ 】
- Plastering 【 _____ 】
- Carpentry 【 _____ 】
- Others 【 _____ 】

Question 1 In which year did you establish office or factory?



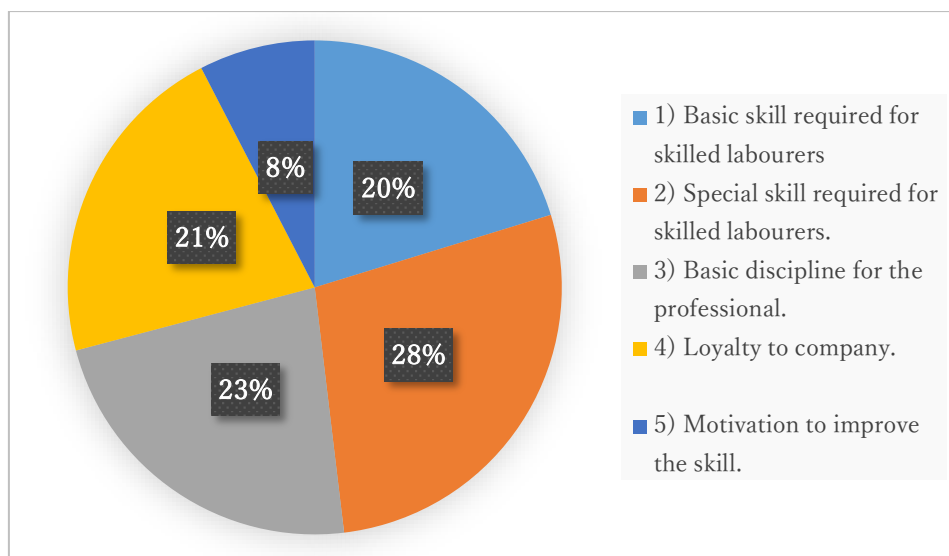
- 5 construction companies entered the market in Myanmar during 1994 and 1997.
- No company started business during 1998 and 2012.
- Many companies launched their business after the transition of the regime in 2013.

Question 2 Positive aspects of local staffs in Myanmar.



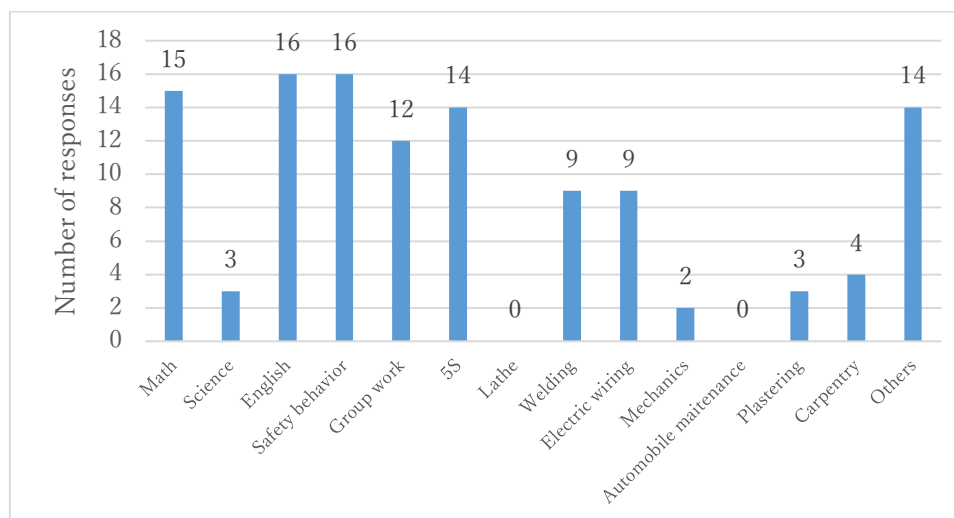
- More than the half companies perceive local staffs have motivation to improve their skills.
- 32% answered local staffs are equipped with good basic skills.
- On the other hand, few companies answered loyalty and basic discipline as good aspects.

Question 3 Lacking aspects of local staffs in Myanmar



- “Lack of special skill” earned most responses (28%) followed by “lack of basic discipline” (23%), “lack of loyalty to company” (21%) and “lack of basic skill” (20%).

Question 4 Education and training that should be emphasized



- Most companies answered that education and training should focus on fundamental skills like English, math, safety behavior and 5s.
- Among hard skills, welding and electric wiring are necessary since the skills can be utilized in various work.
- However, no company referred to the demand on lathe and automobile maintenance.