Information Collection Survey on Industrial Human Resource Development in Tanzania

Final Report

March 2022

Japan International Cooperation Agency (JICA)

INTEM Consulting Inc.

UNICO International Corporation

Asia Engineering Consultant Co, Ltd

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Executive Summary

(1) Survey background

In 1999, the Government of Tanzanian, in its Vision 2025 (TDV2025: Tanzania Development Vision), has set a goal of becoming a middle-income country by 2025, emphasizing the promotion of industrialization. Promotion of industrialization through economic transformation and human resource development is a crucial policy issue in the Second Five Year National Development Plan (FYDP II, 2016/17-2020/21). Tanzania has maintained an average of 6 ~7 % GDP growth rate over the past 10 years. In 2019, the GNI per capita reached 1,080USD, positioning the country as a low-middle income country (previously low income) in the World Bank's classification. Meanwhile, unemployment is high at 9.7% (in 2018), and the trend is even more acute among young people. Although the working population has increased by 42.7% compared to 1990, this is due to the large proportion of young people in the total population. To realise the country's stated goal of economic development through industrial promotion, it is essential to take measures to make the most of this demographic bonus by providing and creating jobs for young people.

(2) Survey objectives

The survey aims to identify gaps in the knowledge and skills required by industry and the labour market in the target three trades (electrical installation, automobile maintenance, food processing) and the training content provided at TVET institutions. It also seeks to discover bottlenecks in industrial human resources development in Tanzania. Furthermore, a training model to solve the issues is proposed and trialled, and its effectiveness is verified to formulate JICA's support measures.

(3) Survey summary

The online survey was conducted from September 22nd, 2021, to March 15th, 2022 and the field survey was conducted in 2022 from January 15th to February 17th.

- Areas surveyed: Dar es Salaam, Arusha, Kilimanjaro, Dodoma, Mwanza, Zanzibar (6 regions)
- Research methods: literature review, web-based questionnaire survey (90 companies, 56 TVET institutions), online interviews, field surveys, verification of training models, etc.

(4) Challenges in developing industrial human resources in Tanzania.

1) Advancement from level 2 to level 3

In Tanzania, among the' Engineer', 'Technician' and 'Artisan' categories, the highest demand (and the biggest shortage) is for 'Technicians'. to increase the ratio of Technician, the smooth transition from NVA 3 level to NTA

level 4 is essential. However, as a preliminary problem, some unnumbered trainees progress to level 3 from level 2.

2) Coordination function among VETA institutions for company apprenticeships (FA: Field Attachment).

Public TVET institutions in Tanzania do not have a mutual coordination function. This could be one of the issues related to the failure to secure FA placements for all trainees due to overlapping implementation periods. In addition, the trainees themselves (and their guardians) are responsible for ensuring FA host companies and the necessary expenses, and the current FA system places a heavy burden on the trainees.

3) Catching up with market needs

VETA conducts market research with companies to reflect market needs in its curriculum. However, the speed of technological change in the market is so fast that VETA's curriculum updates have not kept pace. Furthermore, TVET institutions have not been able to identify the soft skills that companies demand and incorporate them into the curriculum.

4) Employment support services

TVET institutions do not provide employment support services for trainees, such as organising companies' guidance and job fairs. In addition, trainees are not provided with opportunities to acquire the preparedness and knowledge necessary to enter the labour market after graduation. They do not develop a sound business mindset during their training.

(5) **Validation of a training model involving TVET institutions and the private sector.**

1) Outline of the training model for verification.

- Course name: Training for the development of marketable car mechanics
- Objective: To test the effectiveness of the content of the training model. The three main modules are (1) 'technology adapted to company needs, (2) 'soft skills' and (3)'insertion to the world of work'.
- Schedule: February 7th -11th, 2022 (5 days)
- Cooperating parties:

  [Private sectors] Saint Parts Co Ltd., WASSHA, Inc. (dispatch of lecturers).

  [TKU/MIIT] CBE, SIDO Moshi Branch (dispatch of lecturers).

  [Vocational training institute] VETA Dar es Salaam RVTSC

2) Results of verification of the training model.

Technology adapted to company needs

- The introduction of training conducted in direct collaboration with the private sector is an effective and efficient way to keep up with the latest technologies used in the industry.
- To acquire practical skills to function in the industry, it is effective to establish a learning cycle in which knowledge and practice are combined into one training package and knowledge is output as practice.

Soft Skills

- Basic-level kaizen (including 5S and QC stories) can be expected to act as an accelerator to improve the efficiency of knowledge and skill acquisition. Therefore, it is effective to implement basic-level kaizen activities at training sites.
- Further focus on soft skills needed on the job (e.g., communication, problem-solving) would be helpful to enable trainees to gain a competitive edge in the labour market.

Insertion to the work of work (preparedness and necessary knowledge)

- For VET institutions to secure employment opportunities for trainees, they must establish an organised support system and vitalise employment support activities. This is expected to foster a mindset that proactively encourages trainees to enter the labour market. The same support can also help promote career development to advance to higher levels of training and entrepreneurship.

(6) **Support measures proposal**

1) Public-Private Partnerships support projects.

- Project Title: Dissemination, demonstration and business development project to train advanced vehicle mechanics to deal with environment-friendly vehicles (tentative).
- Summary: The proposing company, St Parts, will develop a 'training package for the maintenance, management and repair of environmentally friendly vehicles' and test the commercialisation of a training business that will be sold on an ongoing basis to TVET institutions interested in establishing short training courses for these vehicles. As potential sales partners, the company will expand its sales channels to a wide range of vocational training institutions, not limited to public and private institutions.

2) Technical cooperation projects.

- Project Title: Project for the development of industrial human resources with market value (tentative)
- Summary: In conjunction with the dissemination, demonstration and commercialisation project described above, while making effective use of the results and assets of the Kaizen projects to be completed in 2022

and the months ahead, technical cooperation will be designed to enable VETA to efficiently and continuously train trainees who will be recognised as valuable human resources in the labour market.

3) Grant Aid Cooperation

- Target area: Dar es Salaam and regional cities where pilot schools are located.
- Project name: Strengthening the development of marketable human resources in Tanzania through private sector partnerships in the Vocational Plan for expansion of training institute facilities and equipment (tentative title)
- Summary: Dar es Salaam RVTSC and other pilot RVTSCs will be equipped with the necessary equipment for short-term training courses for trainees and company employees on new technologies, such as inspection and maintenance of environment-friendly vehicles. The pilot RVTSCs to implement the training will be strengthened, and information services for employment support will be provided. The objective is to contribute to the development of marketable industrial human resources in the country by improving the efficiency of the implementation of training courses through the strengthening of network links necessary for the provision of training courses.

(7) **Recommendations for supporting Tanzania's industrial human resources development sector.**

1) Creating a structure to lead young people into the labour market

VETA graduates are human resources with the potential to work as skilled workers. It is essential to develop programmes and systems to guide young people into the labour market, working with public and private job placement services. Sharing know-how on employment support activities at the school level implemented in Japan with Tanzania, a latecomer to the labour market, would improve the employment rate in Tanzania.

2) Speedy technological development in line with company needs

TVET institutions need to be able to provide training quickly and at the speed of the private sector to develop the human resources required to meet the technical requirements of the private sector.

TVET institutions should be willing to work with companies and actively utilise their know-how and skills to promptly provide training that meets market needs.

3) Enabling TVET institutions to be self – reliant

Many African TVET institutions in Tanzania are financed by small government subsidies and tuition fees from trainees. Unless the financial sustainability or self-reliance of TVET institutions can be guaranteed to some extent, most activities will stagnate when external support ends. Supporting TVET institutions in securing financial resources through technical cooperation projects and private partnerships is considered essential for TVET

institutions to continue to provide the services demanded by society. Mechanisms that contribute to the autonomous development of vocational training institutions should be considered.

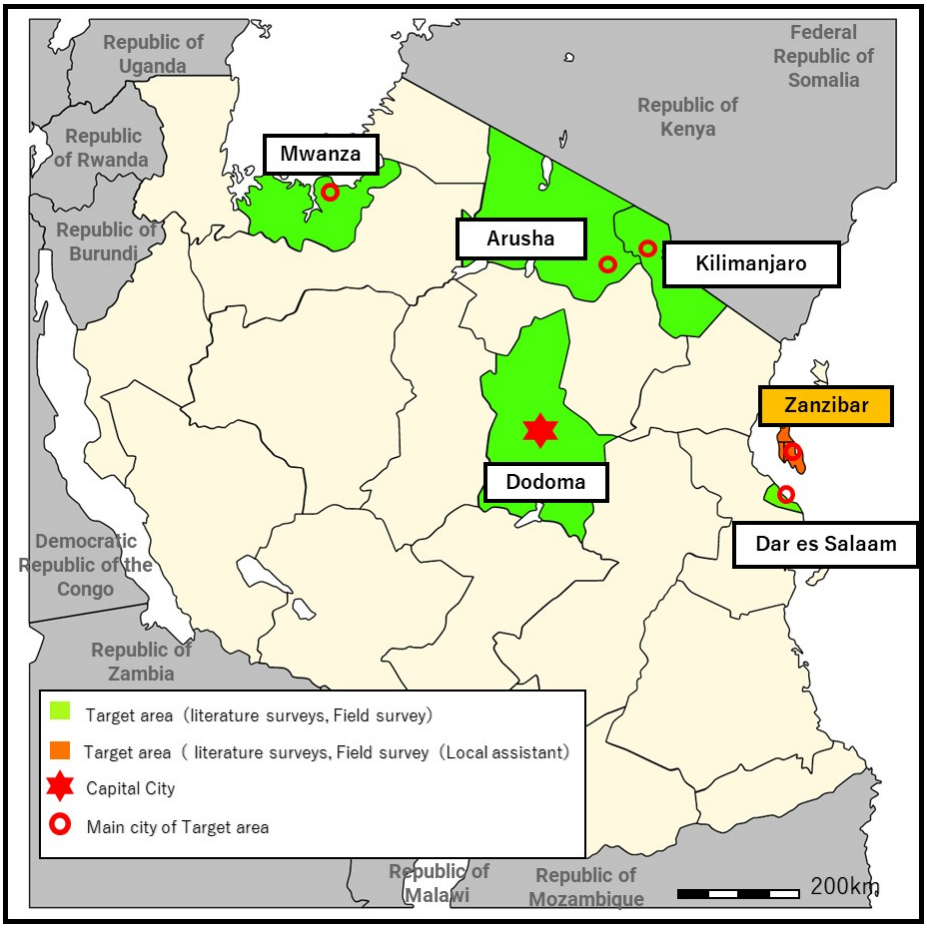
4) Promoting the development of industrial human resources from a medium- to long-term perspective

Tanzania's further industrialization will require the development of more technicians, and career paths should be prepared for VETA-trained personnel to participate in higher level (level 4-6) training to enable them to become technicians. It is also essential to establish a route for skilled workers who have graduated from VETA and entered the labour market to participate in technician-level training to advance their careers, thereby efficiently developing technicians who can handle advanced technology.

The survey examined support measures focusing on VETA's skilled workers or artisans. However, it was impossible to collect information on industrial human resources at the technician and engineer levels due to time constraints. As support in industrial human resources development should be implemented over a long period from 10 to 15 years, it is recommended that a sector survey be conducted to gain an overall picture of the country's industrial human resources development and the challenges it faces. Moreover, an exit strategy for support in the industrial human resources sector should be determined based on the survey results. This is crucial to ensure effective and efficient support measures.

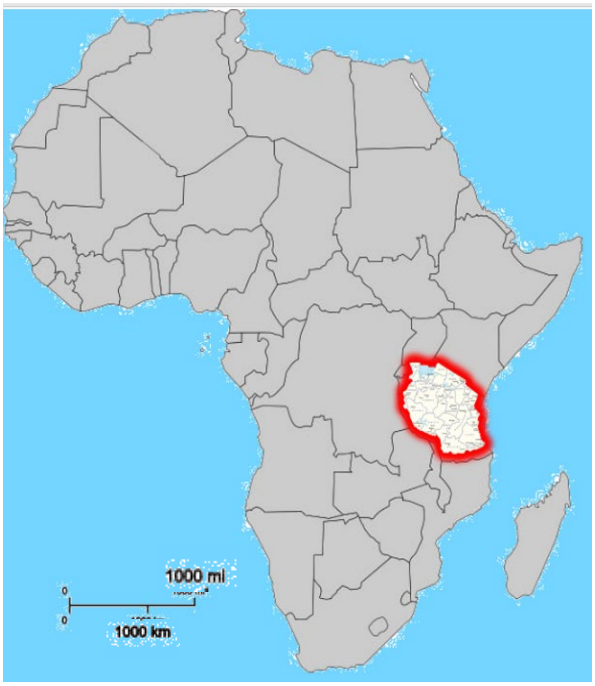
Map

■Map of Tanzania



Target regions of this survey

- Dal es Salaam
- Dodoma
- Arusha
- Kilimanjaro
- Mwanza
- Zanzibar



Position of Tanzania

Photos

Dodoma: Meeting at VETA Headquarters.

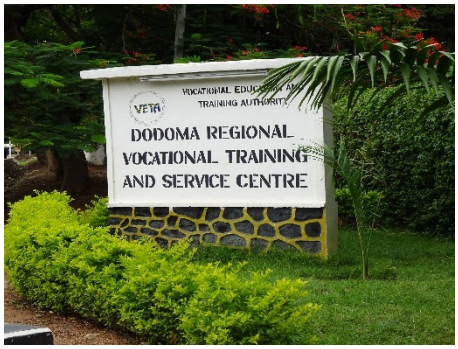
VETA Dodoma RVTSC: Group is receiving a briefing from Teacher at automobile department

VETA Dodoma RVTSC: Automobile Workshop

VETA Dodoma RVTSC: Class of the electrical department for level 2 trainees. Female trainees also participate in it.

VETA Dodoma RVTSC: Food Processing department updated facilities and equipment supported by government subsidy.

VETA Dodoma RVTSC: The storehouse at the electrical department with equipment is used for training, but some of them are outdated.



VETA Dodoma RVTSC: The leading VETA institution in the Dodoma region. They provide a wide range of long/short-term training courses

VETA Dodoma RVTSC: "Tanzania with Sufficient and Competent Artisans" aims to produce many quality artisans.

Dodoma Don Bosco Technical School: Group is receiving an explanation from the principal at the workshop of Mechanical fitting

Dodoma Don Bosco Technical School: Workshop of Department of Motor Vehicle Mechanics

Dodoma Don Bosco Technical School: The production unit which receives orders from local companies.

Dodoma Don Bosco Technical School: Group photo with a teacher responsible for job support.

Company Visit in Dodoma: Director of Jackma Co. ltd, attended a Kaizen training organised by JICA and now disseminates the taught know-how to affiliated companies.

Company Visit in Dodoma: This company produces sunflower oil and other food processing products.

Company Visit in Dodoma: The director fabricated equipment in the factory with skills he gained in training at VETA.

Company Visit in Dodoma: The company purchased an Automation machine for bottling.

Dar es Salaam: Group photo after the meeting at Confederation of Tanzania Industries

Dar es Salaam: Meeting with Dar es Salaam Institute of Technology.

VETA Dar es Salaam RVTSC: Preparation for Validation for Training Model.

VETA Dar es Salaam RVTSC: Group photo after the observation of workshop.

Saint Parts Tanzania Co., Ltd.: Meeting with a trainer at the company for designing on Training Model.

Dar es Salaam: Company Visit: Evolution Motors: Meeting with technicians in charge of Body Repair and Color Spray.

Arusha Technical College: Courtesy Visit to Lecter and Deputy Secretary-General at, Ministry of Education at the Lecter Office.

Arusha Technical College: Meeting with Director of Automotive Department.

Arusha Technical College: Trainees at practical training at of Automotive Maintenance Workshop.

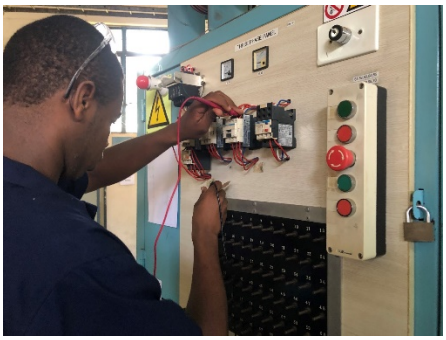
Arusha Technical College: Trainees at practical training at of Automotive Maintenance Workshop.

Arusha Technical College: Group photo after the visit to Automotive Maintenance workshop.

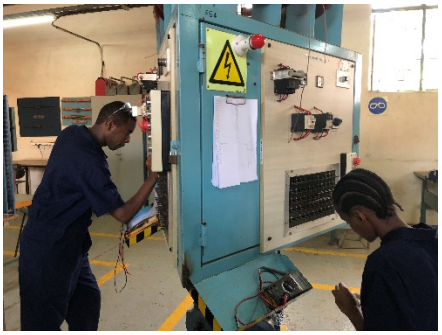
VETA Arusha VTC Agricultural Mechanics course: Level 1 trainees are doing a group work with the Agro-Tractor in the field.

Company Visit at Moshi: Jeck Electrical: Meeting with Owner of the company, who manufactures and sells materials for electrical equipment.

Company Visit at Mosh: Jeck Electrical: Newly purchased Vinyl pipe manufacturing machine. The owner said it is difficult to find technicians who can handle trouble.



VETA Moshi RVTSC: A Level 2 trainee of Electrical Installation is performing hands-on practice on wiring electrical circuit Machinery, which was given by companies.



VETA Moshi RVTSC: Practice for domestic and industrial installation equipment donated by the private sector.

VETA Moshi RVTSC: Level 3 trainees are practising the Pneumatic pressure testing equipment.

VETA Moshi RVTSC: Meeting with the director of vocational training at VETA headquarters and a former industrial information officer at Regional Office.

Company Visit in Moshi: Dormans Coffee improved production efficiency by installing an automatic bean sorter.

Company Visit in Moshi: The company takes trainees for field attachments from the local TVET institutions.

Company Visit in Moshi: Dormans Coffee is one of the leading food processing companies in Tanzania, some of whose products are exported to Japan.

Company Visit in Moshi: The survey team is receiving the explanation from the Director of Dormans on buying from farmers, storing and exporting beans.

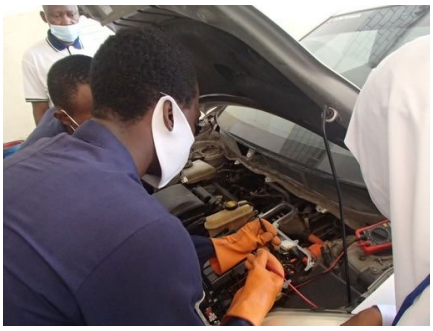
DIT Mwanza: Tanning workshop.

DIT Mwanza: Trainees are practising making leather shoes in the short course.

DIT Mwanza: Training workshop for sewing leather products.

Mwanza: Ukiruguru Institute of Agriculture (Main building)

Validation for Training Model: Workshop for developing the training model and schedule with teachers.



Validation for Training Model: Trainees are practising on maintenance of a hybrid vehicle (HV) with training from a technician of Saint. Parts. Ltd..

Validation for Training Model: Trainees are receiving instruction from a Saint Parts technician (experimenting with electrical circuits).

Validation for Training Model: Trainees are receiving a lecture from a technician of Saint. Parts. Ltd.

Validation for Training Model: Training of diagnosis using OBDII.

Validation for Training Model: To reduce the risk of Covid-19 infection, some trainees are learning via monitor while others are practising with HV.

Validation for Training Model: Group photo in front of the HV.

Validation for Training Model: Trainees are receiving a lecture on Kaizen /5S kaizen from a CBE Kaizen trainer.

Validation for Training Model: Trainees are receiving a lecture on QC stories from a SIDO Kaizen trainer.

Validation for Training Model: Trainees are doing group work as part of a QC story exercise.

Validation for Training Model: Group photo of all participants after the assessment.

Validation for Training Model: Trainees received a certificate of appreciation from VETA and JICA for their cooperation with the training model.

Abbreviations

Abbreviations	Official name
ABE	African Business Education
ATC	Arusha Technical College
BCC	Bangladesh Computer Council
BDS	Business Development Service
CBE	College of Business Education
COVID-19	Coronavirus Disease 2019
CSR	Corporate Social Responsibility
CTI	Confederation of Tanzania Industries
dSkills@EA	Digital Skills for an Innovative East African Industry
DATS	The dual Apprenticeship training system
DSM	Dar es Salaam
DF/R	Draft Final Report
DVoET	Diploma in Vocational Education and Training
EAC	East African Community
EASTRIP	East Africa Skills for Transformation and Regional Integration Project
EEZ	Exclusive Economic Zone
E4D	Employment and Skills for Development in Africa
EKI	Ethiopia Kaizen Institute
ESDP	Education and Training Policy and the Education Sector Development Plan
ESPJ	Education and Skills for Productive Jobs Project
EU	European Union
FA	Field Attachment
FBO	Faith-Based Organization
FDC	Folk Development Colleges
FYDP	Five Year Development Plan
GIZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit
GPSL	Global Programme on Skills and Lifelong Learning
HV	Hybrid Vehicle
HIPC	Heavily Indebted Poor Countries
HWK	Handwerkskamme
ICT	Information and Communication Technology
IIDS	Integrated Industrial Development Strategies
ITEE	Information Technology Engineers Examination
LTPP	Tanzania's Long Term Perspective Plan
IC/R	Inception Report
ILFS	Integrated Labour Force Survey
ILO	International Labour Organization
ITEE	Information Technology Engineers Examination
IT/R	Interim Report
IUCEA	Inter-University Council for East Africa
JICA	Japan International Cooperation Agency
Kaizen Project	Project on Strengthening Manufacturing Enterprises through Quality and Productivity Improvement（Kaizen）Phase 2
KOICA	Korean International Cooperation Agency
KTTC	Karanga Technical Training Centre
LATRA	Land Transport Regulatory Authority
LTPP	Tanzania's Long Term Perspective Plan
MCS	Meiji Cacao Support
MG	Motor Generator
MoE	Ministry of Energy

Abbreviations	Official name
MoEST	Ministry of Education, Science and Technology
MIIT	Ministry of Investment, Industry and Trade
MKUKUTA	Recipient's National Strategy for Growth and Reduction of Poverty
MoHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MOU	Memorandum of Understanding
MVTTC	Morogoro Vocational Instructors Training College
NACTE	The National Council for Technical Education
NAO	National Audit Office
NCA	National Construction Authority
NBS	National Bureau of Statistics:
NEP	National Employment Policy
NIT	National Institute of Transport
NORAD	Norwegian Agency for Development Cooperation
NQF	National Qualification Framework
NSDS	National Skills Development Strategy
NTA	National Technical Awards
NVA	National Vocational Awards
NVTI	Nakawa Vocational Training Institute
OBD	On-Board Diagnostics
OCGS	Office of the Chief Government Statistician Zanzibar
OFF-JT	Off-the-job-training
OJT	On- the-job- training
PMO-LYEP	Prime Minister's Office Labour, Youth, Employment and People with Disability
PPP	Public-Private Partnership
PRSP	Poverty Reduction Strategy Paper
QC	Quality Control
RDPU	Research & Development Production Unit
RVTC	Regional Vocational Training Centre
RVTSC	Regional Vocational Training Service Centre
SADC	Southern African Development Community
SDC	Swiss Agency for Development and Cooperation
SDL	Skills Development Levey
SDVTT	State Department for Vocational & Technical Training
SET	Skills for Employment Tanzania
SIDO	Small Industries Development Organization
SIDP	. Sustainable Industrial Development Policy
SSC	Sector Skills Council
STI	Science, Technology and Innovation
STEM	Science, Technology, Engineering and Mathematics
TANESCO	Tanzania National Electric Supply Company
TBS	Tanzania Bureau of Standards
TNBC	Tanzania National Business Council
TCU	Tanzania Commission of University
TDV2025	Tanzania Development Vision 2025
TET	Technical Education and Training
TI	Technical Institutes
TIC	Tanzania Investment Centre
TKU	Tanzania Kaizen Unit
ToT	Training of Trainers
TPSF	Tanzania Private Sector Foundation
TVET	Technical and Vocational Education and Training
TVETDP	Technical and Vocational Education and Training Development Programme
UEF	University of Eastern Finland
UNDESA	United Nations Department of Economic and Social Affairs

Abbreviations	Official name
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
VET	Vocational Education and Training
VETA	Vocational Education and Training Authority
VTC	Vocational Training Centre
VTOC	Vocational Teachers Certificate Course
WEE	Women's Economic Empowerment

Tanzanian Currency Conversion Rate

Tanzanian Shilling (TZS) → JAPANESE YEN (JPY)	19.9681
Tanzanian Shilling (TZS) → USD	2298.226

*Conversion rate applies intermediate value between the selling price and buy price

Source：Bank of Tanzania as of Feb 24, 2022

1. Survey Overview

1.1 Background of the survey

The Tanzanian government announced in Vision 2025 in 1999 that it would enter middle-income countries by 2025, emphasizing the promotion of industrialization. In the Five-Year Development Plan 2 (FYDP2) (2016/17-2020/21), economic transformation and promotion of industrialization through Human Resource Development are significant policy issues. Reflecting this policy, Tanzania has maintained an average GDP growth rate of 6 - 7% over the past decade, with gross national income (GNI) per capita reaching US$1,080 in 2019 (before corona damage) and has been positioned as a Lower Middle-Income Country (formerly a Low-Income Country) in the World Bank category. On the other hand, the unemployment rate is as high as 9.7% (2018), and the trend is even more severe among young people. According to a follow-up survey by the Vocational Education and Training Authority (VETA), which controls and operates vocational training schools in the country, 75% of graduates were employed (employed or self-employed), 30% of whom were non-regular employees. This also suggests that VETA-educated Human Resources are not sufficiently responding to what the industry requires.

FYDP2 addresses the issue of low efficient workers who lack technical and soft skills (leadership, teamwork, etc.) despite having appropriate educational qualifications and suggests the Human Resource Development in exact accord with industry needs.

However, according to the National Bureau of Statistics (2018), more than 60% of workers are engaged in agriculture, forestry and fisheries among Tanzania's approximately 28 million workers and Technical Vocational Education and Training (TVET) institutions also provide courses, including agriculture. In addition, Public TVET institutions are also offering Food production programs for agriculture in 12 sectors 76 Trades classes. Still, the ratio of students is about 3% of the total, which is very small compared to the working population in that industry.

In addition to the above issues, the survey team will further conduct the survey while noting the following points.

(1) The working population has increased by 42.7% compared to 1990. However, this is due to the large proportion of young people in the total population. To achieve the country's economic development through industry promotion, it is essential to make the most of this population bonus by creating jobs for young people.

(2) Tanzania's primary industries are agriculture, manufacturing, retail and hospitality, and are spread throughout the country. In the agriculture, forestry and fisheries industries, there are many

products such as grains, horticultural crops (spices, coffee, tea, nuts), freshwater fisheries, etc., with characteristics of each region, and the food processing industry using them is also developing. Mining is also carried out in the inland area, and deep-sea gas fields are also produced in the coastal region. On the other hand, there is a growing tendency for young people from rural areas to concentrate in urban areas such as Dar es Salaam to search for employment opportunities. It is necessary to grasp industrial needs in detail, considering these regional characteristics and demographics.[1]

(3) As one of the improvements in the employment of young people, it is essential to provide skills that meet the needs of the labour market, and it is necessary to develop industrial human resources in cooperation with private companies. It is essential to clarify the merits and roles of TVET institutions and the private sector and create a concrete cooperation framework.

(4) The industry's dissatisfaction with TVET institutions is that the human resources expected by companies have not been educated. The skills employers seek from their employees include (1) technical and professional skills, (2) communication skills, and (3) customer care skills, etc. However, the skills that companies seek are not accurately understood by TVET institutions due to the lack of communication between companies and TVET institutions and the lack of educational resources in the TVET institutions. Thus, it is necessary to conduct a gap analysis between industry and TVET institutions in two areas: "human resource ability" and "problem recognition".

1.2 Purpose

The purpose of this survey is to clarify bottlenecks that hinder human resource development and employment promotion by information collection and analysis on gaps that lay between Industrial needs on human resource abilities and training contents provided by TVET institutions. The survey also examines the possibilities of the JICA support program in Industrial Human Resource Development as a solution to resolve the abovementioned bottlenecks through verification of the training model.

[1]Source: JICA (2021) Basic Information on Expanding into Tanzania -2/12-For Webinars Connecting Developing And Tohoku Companies - Materials https://www.jica.go.jp/tohoku/topics/2020/ku57pq00000mb5eu-att/ku57pq00000mb5gu.pdf

Table 1 Target and scope of this survey

Target Regions	Dar es Salaam, Dodoma, Arusha, Moshi, Mwanza, Zanzibar
Scope of survey	The survey targets three industries; ① Electrical Installation, ② Motor Vehicle Mechanics, ③ Food Processing, all of which expect high demands for enlarging employment base and accelerating industrialization through human resource development, considering the industry/labour market trend and the actual situation of vocational training in Tanzania. Therefore, the survey limits the scope of "Industrial Human Resource Development" to formal and non-formal educations and training included in sub-sectors of TVET in Tanzania and focuses on human resource development in the three industries mentioned above.

1.3 Survey Overview

1.3.1 Survey Details

The survey was conducted as following points.

(1) Preparation, explanation and consultation of Inception Reports
(2) Implementation and analysis of questionnaire surveys (for companies and TVET institutions) on industrial Human Resource Development
(3) Implementation and analysis of online interviews (for government agencies, public institutions, companies, TVET institutions, and donors)
(4) Examination and preparation of a training model based on the above survey results
(5) Preparation, explanation and consultation of the Interim Report
(6) Filtering, negotiation, and consultation of cooperating companies for Verification of training models
(7) Implementation and analysis of field surveys (for government agencies, public institutions, companies, TVET institutions, and donors)
(8) Implementation of Verification of training models (workshops, demonstration classes, trial classes, joint evaluations)
(9) Suggestion for JICA's Future Cooperation Potential
(10) Preparation, explanation and consultation of Final Report

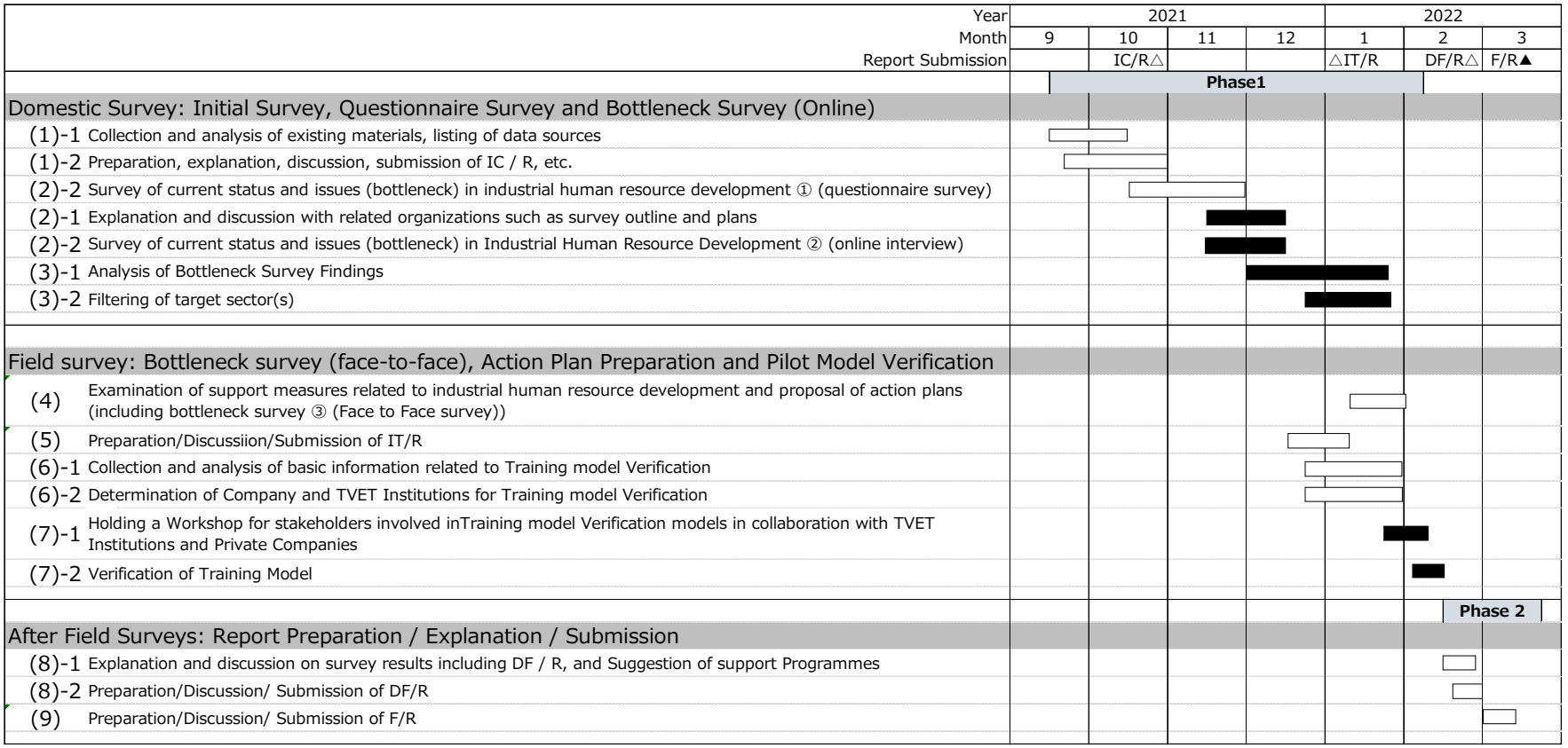
1.3.2 Survey Process

The implementation period of this survey is from September 22nd, 2021, to March 15th, 2022 (see "Figure 1 Work Plan"). The main activities of online surveys (literature, web questionnaires, interviews)

in Japan and field surveys conducted from January 15th, 2022, to February 17th, 2022, are summarised.

Table 2 Survey Process

Survey in Japan	1.	Preparation bottleneck survey points based on literature surveys
	2.	Preparation and implementation of Online questionnaires
	3.	Analysis of questionnaire response results
	4.	Conduct online interviews (remote interview surveys)
	5.	Identify bottlenecks based on questionnaires and remote interview findings
	6.	Examination and preparation of training models
	7.	Negotiation and consultation on participation in Verification training for Japanese companies operating in Tanzania
	8.	Preparation of field survey schedules
Field survey	9.	Conducting field surveys (government agencies, public institutions, companies, TVET institutions, donors) to identify, organise, and analyse bottlenecks
	10.	Filtering of cooperating organisations and companies for Verification of training models
	11.	Examination and preparation of training models with cooperating institutions and companies for Verification of training models
	12.	Implementation and review of demonstrations of training models Verification projects
	13.	Implementation and evaluation of Verification projects for training models (include video recording and editing)
	14.	Collection of data using questionnaires and videos on training model Verification projects (participants, companies, TVET institutions)



IC/R: Inception Report, IT/R: Interim Report, DF/R: Draft Final Report, F/R: Final Report

Phase 1: Analysis of Actul Situation and Challenges of Industrial Human Resource Development, Preparation and verification of support Programmes and Action Plans

Phase 2: Summarization of Verification Results and Suggestion of Support Programmes

Figure 1 Work Plan

1.3.3 Field survey schedule

The following is the field survey schedule dated February 17th, 2022, with abbreviations for government agencies, public institutions, companies, TVET institutions, and donors.

Table 3 Field Survey Schedule (as of February 17th, 2022)

date	Itinerary	Where to stay
Jan 15th (Sat)	Narita (21:55) → Doha (5:00)	Flying
Jan 16th (Sun)	Doha (18:00) → Dar es Salaam (00:05)	Dar es Salaam
Jan17th (Mon)	11:00 JICA Tanzania Office Meeting 13:00 Saint parts Co., Ltd. 14:00 VETA DSM RVTSC 16:00 NACTE	Dar es Salaam
Jan 18th (Tue)	11:00 CTI 13:00 JICA Safety Briefing 15:00 Zanzibar MIT 04:00 PM MoEST	Dar es Salaam
Jan 19th (Wed)	10:00 DIT 14:00 Superdoll Company	Dar es Salaam
	Movement by flight (Dar es Salaam → Dodoma) 9:30 Don Bosco TI 12:00 VETA Dodoma RVTSC 14:30 VETA HQ	Dodoma
Jan 20th (Thu)	8:00 SIDO HQ 12:00 BQ Contractor 15:00 Nature Ripe Kilimanjaro Company	Dar es Salaam
	8:00 VETA Dodoma RVTSC 11:00 PMO 15:30 MWT 17:00:00 MA	Dodoma
Jan 21st (Fri)	9:00 VETA DSM RVTSC 12:00 Evolution Motors	Dar es Salaam
	10:00 Jackma Company 14:00 Don Bosco TI Movement by flight (Dodoma→ Dar es Salaam)	Dodoma
Jan 22nd (Sat)	Team meeting	Dar es Salaam
Jan 23rd (Sun)	Movement by flight (Dar es Salaam→ Arusha)	Arusha
	Movement by flight (Dar es Salaam → Mwanza)	Mwanza
Jan 24th (Mon)	9:00 Arusha TC 12:30 Arusha VTC 15:00 Jeck Electrical Company Movement by car (Arusha → Moshi)	Arusha
	10:00 VETA Mwanza RVTSC 14:00 DIT	Mwanza
Jan 25th (Tue)	8:00 VETA Moshi RVTSC 11:00 FDC 13:00 KTTC 16:00 Dorman Company	Moshi
	9:30 VETA Mwanza RVTSC (Graduate) 11:00 TCCIA Mwanza 15:00 Malya FDC	Mwanza
Jan 26th (Wed)	9:00 Mr Arther (Kaizen Trainer) 11:00 Moshi Regional office Movement by flight (Moshi → Dar es Salaam)	Moshi
	9:00 Nile Perch Enterprise 11:00 MATI Ukiriguru Movement by flight (Mwanza → Dar es Salaam)	Mwanza
Jan 27th (Thu)	9:30 VETA DSM RVTSC	Dar es Salaam

date	Itinerary	Where to stay
	13:00 Saint parts Co., Ltd.	
	9:00 TPA 14:00 EPZA	Dar es Salaam
Jan 28th (Fri)	10:00 CBE 12:00 FMG 14:00 WASSHA	Dar es Salaam
	9:00 NIT 11:00 STAMICO 14:00 DMI	Dar es Salaam
Jan 29th (Sat)	Team meeting	Dar es Salaam
Jan 30th (Sun)	Data organization	Dar es Salaam
Jan 31st (Mon)	Workshop for discussion on Training model	Dar es Salaam
Feb 1st (Tue)	Preparation for Demonstration for Verification of Training 9:00 TPSF 12:00 TANESCO 14:00 TOYOTA Tanzania	Dar es Salaam
Feb 2nd (Wed)	Preparation for Demonstration for Verification of PPP Training 10:00 WHO 15:00 PCR test	Dar es Salaam
Feb 3rd (Thu)	Demonstration of Verification for PPP Training	Dar es Salaam
Feb 4th (Fri)	Review of Demonstration for Verification: of Training Progress Report on Activity in Tanzania at JICA Tanzania Office	Dar es Salaam
Feb 5th (Sat)	Document organisation for Verification of Training Dar es Salaam (11:15) → Doha (16:50)	Dar es Salaam 〈Survey Team Member〉
Feb 6th (Sun)	Document organisation for Verification of Training	Dar es Salaam
Feb 7th (Mon)	Verification of PPP training model (Day 1)	Dar es Salaam
	Movement by ferry (Dar es Salaam → Zanzibar) 09:00 MTID 10:30 SMIDA 11:30 ZIPA 14:00 Zanto Food industry	〈Local Assistant〉 Zanzibar
Feb 8th (Tue)	Verification of PPP training model (Day 2)	Dar es Salaam
	9:00 MoEVT 10:15 BPRA 11:30 OCGS 12:55 BUDDA Automotive Workshop	Zanzibar
Feb 9th (Wed)	Verification of Training Model (Day 3)	Dar es Salaam
	9:30 The state university of Zanzibar SUZA- School of Agriculture 11:00 VTA Movement by ferry (→ Dar es Salaam)	Zanzibar
Feb 10th (Thu)	Verification of Training Model (Day 4)	Dar es Salaam
Feb 11th (Fri)	Verification of Training Model (Day 5)	Dar es Salaam
Feb 12th (Sat)	Document organisation	Dar es Salaam
Feb 13th (Sun)	Document organisation	Dar es Salaam
Feb 14th (Mon)	Workshop for Evaluation /PCR Test	Dar es Salaam
Feb 15th (Tue)	Report on Activity in Tanzania at JICA Office	Dar es Salaam
Feb 16th (Wed)	Dar es Salaam (11:15) → Doha (16:50)	Flying
Feb 17th (Thu)	Doha (02:00) → Narita (17:55)	Homecoming

Source: Created by Survey Team

1.3.4 Member composition

The following five consultants will form an investigation team and manage the investigation practice in this survey.

1.	Leader/Industrial Human Resource Development Policy	Saeri Muto
2.	Sub Leader/Needs Analysis on Industrial Human Resources	Ryosuke Sakumasu
3.	Human Resource Development Planning	Yuko Tanaka
4.	PPP Promotion 1	Masaya Uesaki
5.	Coordinator /PPP Promotion 2	Kurumi Nonaka

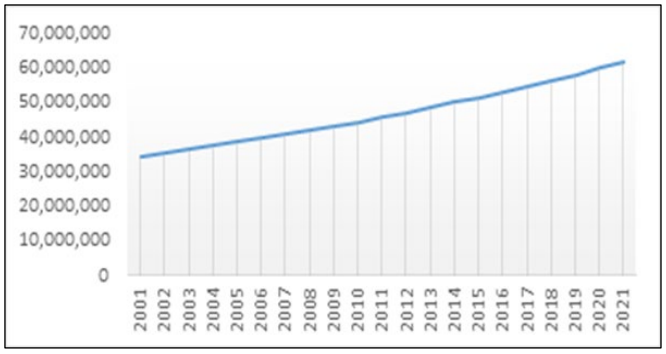
2. Current status of industrial human resource development in Tanzania

2.1 Labour market environment and regional characteristics of the industry

2.1.1 Labour market environment

(1) Trends of the working population in Tanzania (mainland)

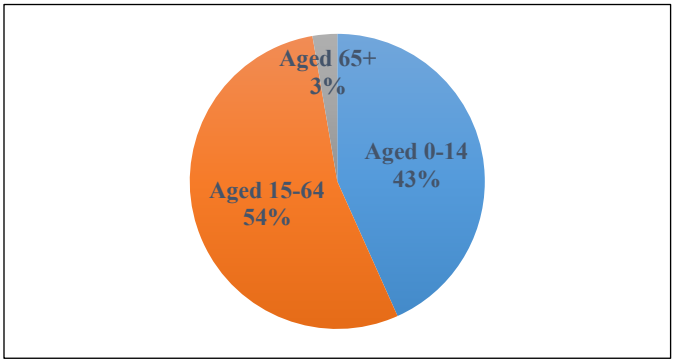
The population of Tanzania is about 61.5 million (UNFPA: United Nations Population Fund, 2021). In 2001, the population was almost 34.39 million, and in the past 20 years, the population has increased about 1.8 times. The male to female ratio is about 50:50.[2] The population growth rate averaged about 3% between 2015 and 2020, higher than the 2.6% for Eastern and Southern Africa.



Source： UNFPA

Figure 2 Population trends (Mainland Tanzania, 2021) (number of people)

The breakdown of the population by age group is as follows: Youths under 15 years old account for 43.3% of the total population, the working-age population between 15 and 65 years old for 54%, and the ageing population over 65 years old for 2.7%.



Source: UNFPA

Figure 3 Population ratio by age group (Mainland Tanzania, 2021)

[2] United Nations Department of Economic and Social Affairs (UNDESA)

According to the International Labour Organization (ILO), the employment-to-population ratio expresses the number of people employed as a working-age is 81.4%. Tanzania ranks 4th out of 189 countries.[3] However, the labour dependency ratio, which is the ratio of dependents to the total number of workers, is 1.18%. This is higher than fifth-ranked Rwanda (1.09%) and sixth-ranked Cambodia (0.83%). This means that Tanzania tends to have a relatively sizeable dependent population. There are still no signs of the so-called "demographic bonus" in which the dependent population proportionally declines. It is assumed that it will take some time before the economy enters a period of high growth.

Tanzania's labour force population[4] is estimated to be 28.04 million (2020) by the ILO, which is an increase of 4.9 million people (about 21%) in six years as the labour force population was 23.14 million in 2014. In addition, according to the 2014 Integrated Labour Force Survey (ILFS) conducted by the National Bureau of Statistics (NBS) of Tanzania, the number of people aged 15 and over in employment was 20.03 million (2014). In terms of its composition by type of employment, unpaid workers in self-employed farms accounted for the largest share (35%), followed by self-employed farmers (landowners) (31%), self-employed and Self-employed without employees (16%) and those in paid employment (14%) (Table 3). Among unpaid family helpers (agricultural and non-agricultural), women (4.8 million + 260,000) were more than twice as numerous as men (2.1 million + 110,000). According to the ILFS, the low number of self-employed female employees may mean that women have limited access to capital compared to men. Therefore, women tend to have smaller businesses. According to the report, the low number of women in paid employment may be related to their limited access to education.

Table 4 Number of employees by occupation (Mainland Tanzania, 2014)

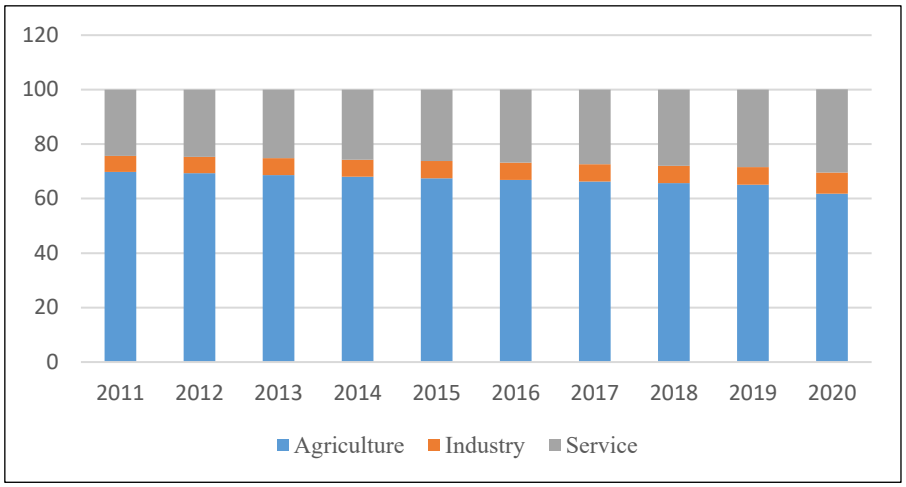
	Male	Female	Total	
Paid employees	1,820,658	950,217	2,770,875	14%
Self-employed with employees	393,096	164,933	558,029	3%
Self-employed without employees	1,562,225	1,614,418	3,176,643	16%
Unpaid family helper (non-agriculture)	107,770	256,958	364,728	2%
Unpaid family helper (agriculture)	2,069,923	4,843,794	6,913,717	35%
Working on own farm	4,189,727	2,056,419	6,246,146	31%
Total	10,143,399	9,886,739	20,030,138	100%

Source: NBS

[3] According to the JICA Basic Information Collection / analysis in Vocational Education Training (VET) System in Tanzania: Analytical Report, the high employment rate in Tanzania is due to agriculture that absorbs the majority of Tanzanians regardless of skill or education level. It is believed that this is due to the superiority of the informal sector.
[4] Of the population aged 15 and over, the total population of workers and the unemployed.

In the results of surveys on employment in the formal sector conducted by NBS in 2015 and 2016, the total number of people working in the formal sector was 2,141,351 in 2014[5], 2,334,969 in 2015 and 2,599,311 in 2016, which indicates an increase of 457,960 over the two years. The majority of workers in the formal sector were employed in the private sector, and in 2016, the breakdown of workers in two (2) sectors was 1,748,695 for the private sector and 850,616 in civil services. The proportion of full-time employment in the formal sector increased from 88.2 per cent in 2015 to 92.9 per cent in 2016, while temporary employment decreased from 11.8 per cent in 2015 to 7.1 in 2016. As for industries in the formal sector by occupation, education had the most significant share of 18.5%, followed by manufacturing (18.1%) and public administration/defence (13.6%).

Regarding the proportion of employment by sector, agriculture accounted for 62%, industry for 8% and services for 30%. The share of the agricultural industry, which accounted for 70% in 2011, has been declining over the years, with the percentage of employment in the service sector increasing instead. The fact that jobs in the industrial sector have increased by nearly 2% over the past decade may suggest a situation where industrialization and commercialisation are progressing, albeit gradually. The ILFS (2020) sees this phenomenon as a sign of economic reform - a decrease in the share of the agricultural sector means an increase in agricultural productivity, and an increase in the percentage of the industrial and service industries indicates an increase in workers' skills.



Source: NBS

Figure 4 The ratio of employment by sector (Mainland Tanzania, 2011-2020)

The workforce composition by educational background is approximately 17.2 million with less than basic education, 2.91 million with primary education, 830,000 completed secondary education, and 230,000 completed tertiary education. Far fewer people engaged have completed secondary education or higher. More than 80% of the total workforce has not completed primary education, much higher than

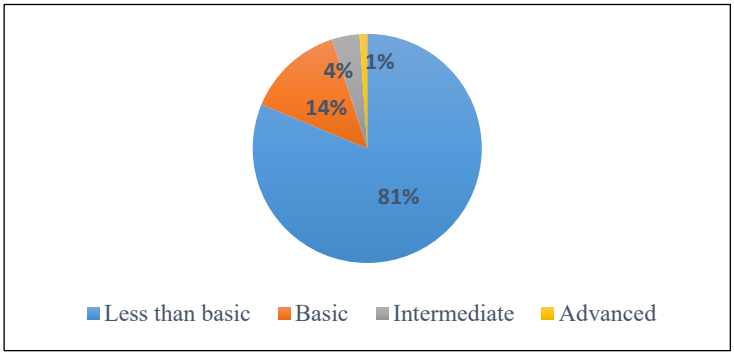
[5] Since the number of employees in 2014 was 20.03 million, it is estimated that about 11% were engaged in the formal sector.

in neighbouring Kenya and Uganda. This is partly because only about 20% of primary school children can go to secondary school due to insufficient secondary schools. The fees of public primary schools were not affordable before 2000. Since 2001, with the withdrawal of tuition fees from public primary schools, children and young people who had previously been unable to go to school have been enrolled in school, and it is expected that the proportion of those in employment with primary education will increase, as in Uganda and Kenya.

Table 5 Number of employment aged 15+ [6]by educational background (by gender) (Mainland Tanzania, 2014) (thousands)

	Male	Female	Total
Less than basic	8,391.7	8,805.3	17,197.0
Basic	1,678.8	1,230.2	2,909.1
Intermediate	483.1	344.0	827.1
Advanced	165.6	61.7	227.3

Source: ILOSTAT



Source: ILOSTAT

Figure 5 Composition ratio of employment aged 15+ by educational background (Mainland Tanzania, 2014)

Table 6 Composition of employment aged 15+ by educational background (%) [7] (Tanzania mainland (2014), Kenya (2016), Uganda (2012))

	Tanzania	Kenya	Uganda
Less than basic	81.3	10.1	56.9
Basic	13.7	48.7	34.9
Intermediate	3.9	36.6	2.0
Advanced	1.1	3.9	5.0
Level not stated	0	0.6	1.2

Source: ILOSTAT

[6] Since ILO data is used, the total number is 21.16 million, which is different from the ILFS figures.
[7] The proportion of 21,161 thousand people for Mainland Tanzania (2014), of 19,314 thousand people for Kenya (2016), of 10,603 thousand people for Uganda (2012).

In terms of employment by occupation, ILFS 2020/21 shows that the overwhelming majority of the workforce is engaged in agriculture and fisheries, accounting for 65.6% of the total workforce in 2014 and 58% of the entire workforce in 2020 revealing that the proportion has decreased. In addition, the balance of technicians and associate professionals, which is highly relevant to vocational and technical training education, has reduced from 2.2% in 2014 to 0.7% in 2020, and the ILFS 2020/2021 is concerned about the current situation where technicians, an essential occupation in the manufacturing sector, are not being cultivated. The highest growth rates of 3.6% for service and sales workers and 3.9% for those engaged in an elementary occupation, coupled with a declining proportion of technicians, suggests that the policy of encouraging vocational training to promote industrialization and produce human resources to meet the needs of industry has not yet been fully effective. Therefore, as pointed out in the survey, TVET institutions must introduce and implement a long-term human resource development plan that will enable them to develop a workforce with skills commensurate with labour market demands.

Table 7 Employment ratio by occupation in 2014 and 2020 (United Republic of Tanzania (URT[8], 2020) (%)

	2014	2020	Change
Legislators/administrators/managers	0.5	0.4	-0.1
Professionals	0.9	0.8	-0.1
Technicians/associate professionals	2.3	0.7	-1.6
Clerks	0.7	0.6	-0.1
Service workers/shop sales workers	10.2	13.8	3.6
Agricultural/fishery workers	65.6	58.0	-7.6
Craft/related workers	6.4	8.3	1.9
Plant & machine operators/assemblers	2.7	2.6	-0.1
Elementary Occupations	11.0	14.9	3.9

Source: NBS/ Office of Chief Government Statistician, Zanzibar (OCGS)

[8] United Republic of Tanzania (URT). This includes both mainland Tanzania and Zanzibar.

Table 8 Employment ratio by occupation and gender (URT, 2020) (%)

	Male	Female	Total
Legislators/administrators/managers	0.5	0.2	0.4
Professionals	1.1	0.5	0.8
Technicians/associate professionals	0.8	0.6	0.7
Clerks	0.6	0.5	0.6
Service workers/shop sales workers	9.4	18.5	13.8
Agricultural/fishery workers	58.1	57.9	58.0
Craft/related workers	10.7	5.7	8.3
Plant & machine operators/assemblers	4.5	0.6	2.6
Elementary Occupations	14.4	15.4	14.9

Source: NBS/OCGS

In comparing the number of males and females employed in different occupations, it can be said that although the vast majority of both men and women are employed in agriculture and fishing, men are more likely to be used in managerial, professional, technical, artisanal positions and as equipment and machinery operators and assemblers. In contrast, women are more likely to be used in service, sales and simple jobs. This may be related to fewer women having acquired science and engineering skills. There is a similar trend in the ratio of male to female enrolments in TVET institutions discussed later.

(2) Trends of the working population in Zanzibar

The population and labour force statistics are available in the 2014 Integrated Labour Force Survey conducted by the Office of the Chief Government Statistician (OCGS). The leading indicators are summarised as follows.

Table 9 Major labour force indicators in Zanzibar (2014) (Persons)

	Male	Female	Total
Population	676,251	696,267	1,372,518
Working-age population (aged 15+)	377,643	398,532	776,175[9]
Labour force population (aged 15+)	314,960	301,128	616,088
Number of people employed	295,920	232,170	528,090
Number of people unemployed	19,040	68,958	87,998

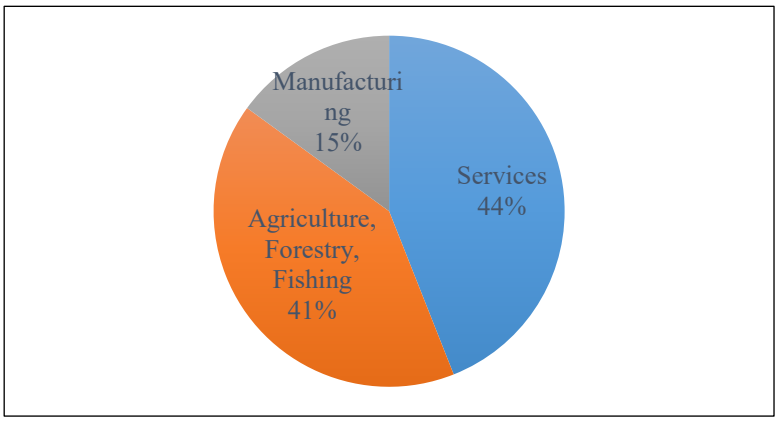
Source: OCGS

The composition of the population by age group was similar to that of mainland Tanzania, with the younger population (under aged 15) accounting for 43.4% of the total population, the working-age

[9] The total number of working age population as reported by the OCGS is 776,176, which differs by +1 from the total of men and women. The same applies to the labour force, which totals 616,089, with a margin of error of +1 between the total of men and women and the total of the employed and unemployed.

population (aged 15 to 65) for 53.6%, and the elderly population (aged 65+) for 3.0%. Comparing the results of the ILFS conducted in 2006 with the results of the same survey conducted in 2014, the population increased from 1,112,377 to 1,372,518, with an increased rate of 23.4%. Furthermore, the working-age population increased by 51%, from 514,632 to 776,175, and the labour force increased by 20%, from 514,632 to 616,088.

The employment ratio by sector in Zanzibar (2014) was 41% in agriculture, 15% in industry and 44% in the service sector, with a lower proportion in agriculture and a higher percentage in the service sector than the mainland. Underlying this trend is the large share of tourism in Zanzibar's GDP.



Source: OCGS (2014)

Figure 6 Composition of employment by sector (2014)

(3) Unemployment rate

As for the unemployment rate as a whole, the findings show that unemployment is higher in urban areas, including Dar es Salaam, in younger age groups (15-35 years) and those with secondary education or higher. In Dar es Salaam, the unemployment rate is very high for both men and women, almost twice that of other urban areas. In terms of educational level, the unemployment rate was highest for those who had completed secondary education (junior or senior secondary school) at 13.8%, followed by those who had completed vocational or technical training at 11.7%. In the case of figures for male workers only, the unemployment rate was higher for those who had completed tertiary education other than university, at 9.5%. Still, at all levels of education, the unemployment rate for those with secondary education or higher was in the 8% range, indicating slight variation by educational background. The unemployment rate is exceptionally high among young people compared to other age groups for both men and women. Although the Government is committed to promoting employment among young people, it needs further promotion. ILO (2020)[10] has identified a wider gender gap in labour force participation in rural areas as a feature of the African region, which is caused by differences in the

[10] Rural and Urban Labour Markets: Different Challenges for Promoting Decent Work (ILO, 2020)

structure of the labour market, employment opportunities, traditions and customs, mentioning the necessity to introduce measures that consider the unique circumstances of rural areas for accelerating gender equality in the labour market.

Table 10 Unemployment rate by region, educational background, age group, and gender (URT, 2020) (%)

		Male	Female	Total
Area	Rural	5.2	9.6	7.4
	Other Urban	5.4	16	11
	DSM	11.8	28.6	20.5
	Mainland Tanzania	5.7	12.2	9.0
	Zanzibar	10.4	29.7	19.7
	Total	**5.8**	**12.7**	**9.3**
Education level	Never attended	4.5	7.1	6.1
	Primary Education	5.1	12.5	8.8
	Secondary Education	8.5	20.1	13.8
	Vocational Training	8.1	16.4	11.7
	Tertiary/Non-University	9.5	14.1	11.4
	University	8.3	14.1	10.6
	Total	**5.8**	**12.7**	**9.3**
Age	15-35	8.3	16.7	12.6
	36-64	2.9	8.4	5.6
	65+	2.4	2.7	2.5
	Total	**5.8**	**12.7**	**9.3**

Source: NBS/OCGS

Of particular note is the high rate of unemployment among women, which is more than twice as severe as that of men. Female unemployment rates are relatively higher than men's by education and age. Although it can be seen in other countries that women face difficulties finding employment, there is a more significant gender gap in Tanzania than in other countries. Notably, because the female unemployment rate in Dar es Salaam is 28.6%, it is necessary to take some measures to address this issue.

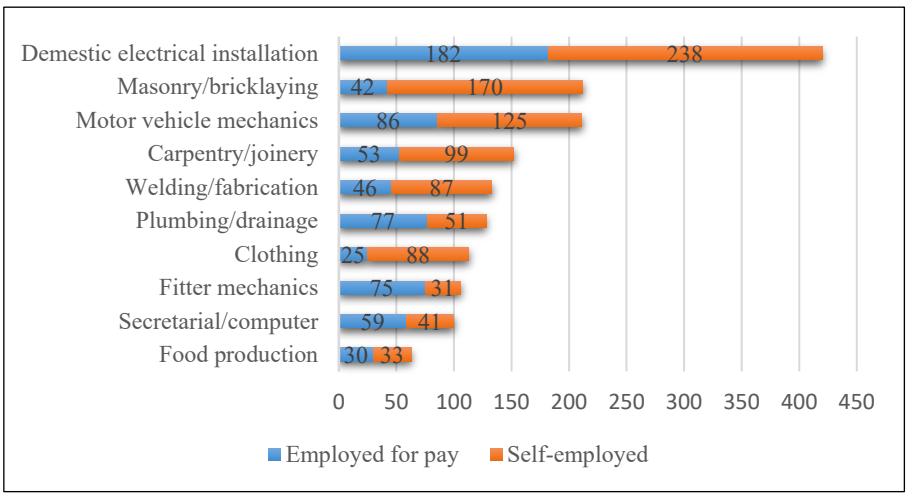
In addition, in Zanzibar, the growth of the labour force population has negatively affected the unemployment rate to a large extent. For example, the number of unemployed almost doubled from 28,451 in 2006 to 59,547 in 2014, the unemployment rate rose from 5.5% to 14.3% during the same period, and the figure reached 19.7% in 2020/21. Approximately 80% of the unemployed are concentrated among young people (aged 15-34), creating challenges to promote employment.

(4) Wage

In Tanzania, the Employment and Labour Relations Act (2004) regulates the minimum wage of the following industry sectors: health services, agriculture, trade/industries/commercial services, telecommunications, mining, private schools, domestic and hospital services, private security, energy, transport, construction, fishing/marine and others. The three sectors targeted in this survey are the agricultural sector (the minimum wage/month: TZS100,000), trade/industries/ commercial sector (the minimum wage/month: TZS115,000), transport sector (the minimum wage/month: TZS200,000 (Land transportation), the minimum wage/month: TZS300,000 (Airfreight)), construction sector (the minimum wage/month: TZS250,000-TZS325,000 (Depending on the type of contractor)). The minimum wage in the private sector is generally set low. As a reference for the actual situation, the Wage Indicator Foundation surveyed salaries in various countries and found that the average monthly wage for unskilled labour in Tanzania from 2015 to 2018 was TZS 396,050 (about ¥19,900)[11], which is close to the minimum wage for civil servants, which is TZS350,000 (mainland Tanzania).[12]

(5) Employment status of VET graduates by occupation

According to VETA's Tracer Study (2019) (see Figure 7 below), domestic electrical installation was the most common occupation for graduates, with masonry and bricklaying second and motor vehicle mechanics third. It is worth noting that self-employed accounted for a majority in many fields. The time is taken to secure a job after graduation was less than one year (18%), one year (30%), two years (20%) and three years (9%), with 70% of graduates obtaining a job within three years.



Source: Ministry of Education, Science and Training (MoEST)／VETA

Figure 7　Employment by the occupation of VET graduates (2019)

[11] The wages of low-skilled workers refer to the highest wages of low-skilled workers calculated from the wage samples collected by the Wage Indicator' survey.

[12] The minimum wage for Zanzibar civil servants is TZS 300,000.

(6) Labour market (the automobile sector)

In Tanzania, where the automobile industry is not well developed, graduates who have completed the automobile maintenance course are mainly employed at automobile maintenance factories, but the "Feasibility Survey for improving urban transport by transferring the know-how on importing, appraising and maintaining quality cars". Project conversion survey " (JICA, 2016) pointed out a shortage of high-quality maintenance workshops, inspectors and mechanics. According to the same survey, as of September 2015, approximately one (1) million vehicles were registered (excluding motorcycles) in Tanzania, and 80% of total vehicles were registered in Dar es Salaam. As the population grew in Dar es Salaam, so did the economic activity, with car registrations increasing at a rate of 7% per annum (on average between 2001 and 2010) that is rising faster than the population growth rate. Furthermore, Land Transport Regulatory Authority (LATRA) reports that the number of registered land transport companies[13] has grown every year, doubling from 82,077 in 2011 to 167,794 in 2018.

Table 11 Number of Road Transport Licenses Issued

	Passenger Services Vehicle Licenses	Goods Services Vehicle Licenses	Total
2011	33,020	49,057	82,077
2012	33,187	62,056	95,243
2013	37,884	63,345	101,229
2014	44,018	70,823	114,841
2015	47,451	81,567	129,018
2016	46,619	87,274	133,893
2017	51,749	99,484	151,233
2018	56,449	111,345	167,794

Source: LATRA

Most vehicles in Tanzania are imported used cars, and the vehicle inspection for imported used vehicles before exporting Tanzania was introduced in 2015.[14] Such inspection regulation was modified in April 2021. The vehicle inspection for imported used vehicles has to be carried out domestically upon arrival in Tanzania rather than in the export country. Tanzania Bureau of Standards (TBS) announced that, between April and August 2021, 11,179 vehicle inspections were conducted in the country. Consequently, a considerable number of jobs for youth in inspection and vehicle maintenance were created.

In the overall context of the current situation, it can be concluded that the demand for automotive mechanics is growing rather rapidly. However, according to the above feasibility survey, the low

[13] Target is commuter buses, intercity buses, goods carrying vehicles, taxi, motor cycle and try cycles.
[14] The regulation that obliges exporters to inspect used cars.

capacity of the Tanzania National Institute of Transport (NIT) and VETA to train inspectors and mechanics was addressed as a concern.

2.1.2 Regional Characteristics of Industry

Tanzania's GDP (nominal) is $63.18 billion (2019) and the composition of GDP (Nominal) by sector is as follows: services[15] (36.8%), mining / manufacturing / construction (28.6%), agriculture / forestry / fisheries (26.5%).[16]The service industry shows the highest ratio. The main export products are gold, cashew nuts, tobacco, sisal hemp, coffee, etc. Thus, mineral resources and the production and processing of agricultural products are the main industries. Sustainable Industrial Development Policy (SIDP) is currently being revised by the Ministry of Investment, Industry and Trade (MIIT), and the document will set out the future policy of industrialization.

As for the essential industries of agriculture, forestry, and fishery, the characters by regions are as follows: rainfall is low in the central and north-eastern areas of the country, and popular products by location are tobacco in the central part, irrigated rice in the northeast, and coffee beans in the highlands around Mt. Kilimanjaro where rainfall is relatively high. The south and west of the country have high rainfall, and agriculture is widespread - sesame and cashew nuts are prominent in the south and corns and bananas in the west. The northern lakeshore region has a thriving fishing industry on Lake Victoria. At the same time, agriculture is dominated by cassava, sugar cane and banana, which are the top products in the country. In particular, rice is a good product with growth potential[23] against the recent increase in consumption, not only in the domestic market but also in neighbour countries.[17]

A snapshot of business activity in each region of Tanzania by the number of establishments according to NBS's Statistical Business Registration Report (2014/15) of the 154,618 offices the survey covered: the highest number of 29,060 (18.8%) were located in Dar es Salaam, followed by 11,103 (7.2%) in Mbeya, 9,919 (6.4%) in Morogoro and 7,918 (5.1%) in Ruvuma, and 7,833 (5.1%) in the Arusha region. In terms of the type of business of the surveyed establishments, the highest number 54,017 (34.9%), were in the manufacturing sector, followed by 52,820 (34.2%) in the wholesale, retail trade, repair of motor vehicles and motorbikes, 13,572 (8.8%) in the education sector, 11,136 (7.2%) in the accommodation and catering services sector, and 4,763 (3.1%) were in the health sector.

The characteristics of the industries in the six regions of the targets of this survey and Mbeya, Morogoro and Ruvuma, where the majority of business establishments are located, are summarised in the section below.

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[15] According to Highlights on the Fourth Quarter GDP 2020 (BNP), services include public services such as education, business services such as commerce and repair, and personal services such as accommodation and eating and drinking.
[16] https://www.jetro.go.jp/ext_images/world/africa/tz/data/tz_202106.pdf
[17] Tanzania Industrial cluster development pre-FS quality control work completion report (JICA, 2018)

Dar es Salaam

The largest commercial city. Manufacturing, fishing, peri-urban agriculture, transport and communications, trade, tourism.

The Dar es Salaam region accounts for 43.1% of the country's manufacturing value-added, producing more than 140 different products, including steel and metals, machine tools, replacement parts plastics, glass, building materials, chemicals and pharmaceuticals, electronics, food and beverages, textiles and clothing, printing, furniture, jewellery and leather goods. In addition to fishing (snapper, grouper, flatfish, kingfish, mackerel, swordfish and tuna) and aquaculture on the 112 kilometres of coastline, small-scale fishers produce processed products. High valued fisheries products such as lobster, octopus, shrimps and crabs are essential export items. Tangier has a thriving suburban farming industry in agriculture, taking advantage of its proximity to the country's largest commercial centre, producing various horticultural crops. As the gateway to the landlocked countries, the region has a booming land, sea and air transport industry, with the largest port in Dar es Salaam handling over 90% of Tanzania's international trade.

Dodoma

Agro-processing (sunflower oil, maze milling, winemaking), woodworking (furniture).

The Dodoma region, located on the central corridor linking the port of Dar es Salaam with Rwanda and Burundi, has fertile soil suitable for the growth of maise, sorghum, millet, beans, cassava, groundnuts, sunflower, rice, sweet potatoes and sesame, and has promoted the production, processing and distribution of agricultural products. As a result, industrial clusters have grown between 2015 and 2020. Growth has been vital in the maise milling industry, which has increased to 1,262 mils (a 55% increase) over the five (5) years, and in sunflower oil factories, which have increased by 17% to 395 companies.[18] Grape production and wine production are also active, and the products have been adopted as the in-flight beverage for Air Tanzania.

Arusha

Tourism and services, agriculture (rice, cashew nuts, coffee)

Arusha is rich in resources for tourism and has a well-developed service industry and agriculture, forestry, livestock, leather, pharmaceutical and beer production.[19] Maise, rice, beans, bananas, and sorghum are produced as food crops. In contrast, coffee (the traditional Kilimanjaro variety), cashew nuts, wheat, barley tomatoes and cut flowers are grown as cash crops in the region. Mining is also an important economic activity in the Arusha region due to its mineral resources

[18] https://dailynews.co.tz/news/2018-08-215b7bd462b010f.aspx
[19] https://arusha.go.tz/

of gold, rubies, tanzanite and building materials. In the early 1980s, it was the second most industrialised region after Dar es Salaam. However, the public primarily owned the industry and privatised it due to its deteriorating performance.

Kilimanjaro

Agriculture (rice, coffee (traditional Kilimanjaro), wheat, maise and other cereals)

Kilimanjaro's primary industry is agriculture and horticulture, two of the leading export product categories accounting for about 60% of the region's GDP. In addition, the area is rich in resources for the tourism and service sector, and coffee and cereals such as rice and wheat, fish processing, and mining (gypsum, limestone, bauxite, copper, etc.) are flourishing. The manufacturing sector is also growing and is expected to further contribute to the region's GDP. There is growth potential, particularly in food processing, textiles and leather, wood products, paper and paper products, chemicals and machinery.

Mwanza

Seafood processing, agriculture (rice, groundnuts, cotton, horticultural crops)

Situated on the southern shore of Lake Victoria, Mwanza is a predominantly agricultural area, with tea, cotton and coffee plantations producing large quantities of cash crops.[20] It is home to the only textile mill factory in Mwanza, Mwanza Textile Mills, phrasing processing cotton. There is also a focus on producing groundnuts and sunflowers for oil and horticultural crops (tomatoes, onions, peppers, cucumbers, watermelons, pineapples, mangoes, avocados and pea pods).[21] Fishing and fish processing, including the Nile perch fishery, is also active.

Morogoro

Metallic processing, agriculture (hemp, rice, sugar)

The Kilombero Sugar Company Limited (75% owned by Ilobo of South Africa and 25% by the Tanzanian government) has a presence in Morogoro. The company has plans to increase its sugar production by 144,000 tons per year, from the current level of approximately 127,000 tons to 271,000 tons. In line with this plan, sugarcane supplies from growers are expected to increase by nearly another million tons from 600,000t to 1.7 million tonnes by 2026/27, which is estimated to create jobs in agriculture and food factories.

Mbeya

Agriculture (rice, peanuts, cashew nuts, coffee, tobacco, cocoa), mining

The primary industries are agriculture and forestry, mining (gold, semi-precious stones, marble and limestone) and other natural resource-based industries and processing.[22] Mbeya region is

[20] Tanzania Tourist Board
[21] President's Office Regional Administration and Local Government https://mwanza.go.tz/kilimo
[22] https://mbeya.go.tz/

famous as Tanzania's "Breadbasket", where various crops are grown, including potatoes, maise, rice, sorghum, beans, round potatoes, sweet potatoes, cassava, bananas, groundnuts, fruits, vegetables etc. The main cash crops in the region are coffee, tea, tobacco, pyrethrum, wheat, oilseed, sunflower, spices, cocoa and palm oil. Livestock rearing is the second most important industry after agriculture. The region is blessed with a large and unique natural resource base. Thus forestry, beekeeping, fishing (freshwater fish), mining and tourism, with two national parks and two animal reserves, are essential industries.

Ruvuma

Agriculture, animal husbandry, forestry, mining (coal, precious and semi-precious stones, etc.), fisheries

Approximately 75.8% of the population aged ten years and above is engaged in agriculture in the Ruvuma region. The main products are coffee, beans, maise, groundnut, rice, potatoes, tobacco, cassava, sesame, millet, coconut, cashew nuts, sorghum, and sunflower oil, and they are the leading source of cash income in the region. Horticultural crops such as bananas, ginger, pineapples, oranges, mangoes, tomatoes and onions are also widely produced.[23] There were 5,263 manufacturers (2015), of which 49.9% were grain millers of mainly maise and rice, and eight (8) of them are sunflower oil processors. Concerning the mining industry, deposits of precious stones, coal, uranium, gold, and diamonds are reported but remain undeveloped.

Zanzibar

Tourism, fish processing, food processing, agriculture (spices)

The tourism industry has a competitive advantage owing to its rich natural and cultural heritage, wildlife, traditions and hospitality. It is the backbone of the Zanzibar economy, accounting for 15% of GDP. The contribution of agriculture to GDP is also increasing in Zanzibar, with provisional data from OCGS showing that the GDP contribution from agriculture is expected to reach 28% in 2020 due to a significant increase in the price of Zanzibar's agricultural, forestry and fisheries products. Zanzibar has high potential export products, including spices such as cloves, cinnamon, cardamom, nutmeg, black pepper and chillies, as well as fish from the surrounding seas and Tanzania's Exclusive Economic Zone (EEZ) such as sardines, grouper, snapper, lobster, prawns, crab, octopus, squid, tuna and swordfish. Sardines, groupers, snappers, lobsters, shrimps, crabs, octopus, tuna, swordfish, marlin and swordfish.

[23] https://ruvuma.go.tz/

2.2 Government policy on industrial human resources development

2.2.1 Policy on industrial human resources development

（1）Long Term Development Plan (TDV2025:Tanzania Development Vision 2025)

Tanzania's long-term plan, TDV2025, published in 1999, aims to make Tanzania a middle-income country with high human resource development. To achieve this, it states that the following five factors are to be realised;

- High-quality livelihood
- Peace, stability and unity
- Good governance
- Well educated and learning society
- A competitive economy capable of producing sustainable growth and shared benefits.

The plan aims to achieve economic growth by promoting foreign and domestic investment in export industries, improving agricultural production, developing electricity, ports and roads, increasing income from oil and gas, and growing cities. The promotion of these industries requires more productive jobs that require skills and a variety of occupations.

The driving forces behind this vision are a "developmental mindset and empowering culture", "professional competence and competitiveness", and "good governance and the rule of law". The report also mentions the importance of education to foster these three drivers. It identifies human resource development as a vital part of the strategy needed to promote economic transformation.

In promoting a "developmental mindset and empowering culture", education is identified as a strategic instrument for changing the population’s mindset. It is proposed that the education system be restructured to promote creativity to develop a well-trained workforce with the necessary knowledge to meet its development challenges.

Furthermore, in promoting "professional competence and competitiveness", the report stresses the importance of creating an environment for the effective use of domestic resources to acquire competitive economic activities. It proposes the promotion of science and technology education. Specifically, it advocates the dissemination of quality education and the rise of ICT to instil a science and technology culture from primary education.

The measures for industrial human resource development in TDV 2025 focus on reducing illiteracy, promoting primary education and strengthening higher education and training. Particular emphasis is placed on improving labour skills, highlighting the need to develop a sound, skilled workforce to drive growth in key economic sectors and provide productive work for young people entering the labour market.

According to documents[24] prepared by the Ministry of Finance and Planning and the Tanzania Investment Centre (TIC), TDV2025 was initially planned to be implemented under the National Five-Year Development Plan (FYDP). However, due to priority given to the plan supporting Heavily Indebted Poor Countries (HIPC), the implementation of the FYDP was postponed. To receive HIPC debt relief, a Poverty Reduction Strategy Paper (PRSP) was required, focusing on achieving social sector development. As a result, the second version of PRSP, 'National Strategy for Growth and Reduction of Poverty (MKUKUTA I)', was developed in 2005 and followed by the development of the third version of PRSP; MKUKUTA II, in 2010, both of which focused on reducing dependence on aid.

At the review of TDV2025 held by the Government in 2009 and 2010, the Planning Commission assessed the implementation of the vision and concluded that it was still valid.

To implement TDV2025, the government developed Tanzania's Long Term Perspective Plan (LTPP) (2011/12-2025/26) and divided the implementation of the LTPP into 3 phases of FYDP I-III. The performance of the LTPP was divided into FYDPs I-III, with each plan having its own set of priorities and development.

Table 12 Five Year Development Plan (FYDP) in 3 phases

Plan	Period (years)	Development theme
The1 First National Five-Year Development Plan (FYDP I)	2011/12-2015/16	'Unleashing Tanzania's growth potential.'
The Second National Five-Year Development Plan (FYDP II)	2016/17-2020/21	'Growth of the industrial economy (at that time)
The Third National Five-Year Development Plan (FYDP III)	2021/22-2025/26	'Delivering competitiveness-led export growth.'

Source: Created by Survey Team

As mentioned above, FYDP I started in 2011/12 and FYDP III, the third phase of FYDP, is currently underway; the human resources development plan for each step of the FYDP will be described in 2.2.2 (2).

(2) National Skills Development Strategy ((NSDS), 2016-2022))

NSDS was developed by a cross-sectoral network of stakeholders in August and September 2015. The objective of the NSDS is to create a skilled workforce in vital economic sectors to support TDV 2025 and FYDP II. It also proposed the provision of skills training using innovative financing mechanisms. The strategy covers the complete range of skills that lead to employability, including skills development through informal and formal education and training, including apprenticeships,

[24] Tanzania Development Plan, Vision and Investment Priorities
To Achieve Middle Income Status By 2025, TIC/Ministry of Finance and Planning, Tanzania

entrepreneurship, vocational and technical education, and upgrading training for workers. It also focuses on job creation in the six critical economic growth sectors such as 'agriculture, agribusiness and food-processing, 'tourism and hotel services', 'transport and logistics, 'construction', 'ICT', and 'energy'.

(3) National employment policy (NEP)

The National Employment Policy (NEP), developed in 2008, aims to provide sustainable, decent and income-generating employment for all, reduce poverty and respond to globalisation. To achieve this, the policy focuses on building the skills needed for both formal and informal economic sectors and rural development.

(4) Education and Training Policy and the Education Sector Development Plan (ESDP)

Education development in Tanzania is implemented according to the ESDP (2016/17-2020/21), developed in 2014. The ESDP (has been prepared based on TDV 2025 and FYDP II. The current ESDP commits to providing free and compulsory education for 12 years and aims to increase the skilled human resources needed to become a middle-income country by promoting industrialization through the expansion of TVET. Therefore, the emphasis is on prioritising skills that meet labour market demands.

The objectives of TVET include the acquisition of entrepreneurial skills and the promotion of equitable access to the labour market. The ESDP also envisages a significant expansion of TVET, including investment in buildings, equipment and teachers, apprenticeships and distance learning. The ESDP sets a target that by 2025, TVET will absorb 80% of secondary school enrolments and 25% of higher education enrolments. The ESDP also aims to provide education and training opportunities for out-of-school children, young people and illiterate adults through informal[25] education and training and the transition to formal education.

2.2.2 Plan for industrial human resources development

(1) TVET Development Plan (2013/14-2017/18)

In 2013, the Government announced the Technical and Vocational Education and Training Development Programme (TVETDP) (2013/2014-2017/2018), which set very high targets for increasing enrolment and the number of teachers. It was planned to increase enrolment from 233,795 training/ students in 2012/2013 to at least 1,413,916 in 2017/2018, the number of teachers from 7,600 to 129,545, technical staff from 7,518 to 30,481 and administrative staff from 1,879 to 7,620. The plan

[25] According to the differences in educational functions, the provision of educational opportunities can be divided into 3 categories: (1) formal education (public education, school education), (2) non-formal education (education outside school, but organized and systematized educational functions), and (3) informal education (not organized and systematized, but habitual and unconscious educational functions). (Source: "Lifelong Learning Research e-Dictionary", Japan Society for Lifelong Education).

recommended acquiring relevant skills in the following key sectors: manufacturing, mining, agriculture, tourism, trade, finance, energy, maritime transport, railways, road transport, water, sanitation, science, technology and innovation (STI) education, health and welfare. It also suggested that the following skills gaps are expected to be filled through TVET in the short, medium, and long term.

Table 13 Short, medium and long term skills gaps according to TVETDP 2013/2014-2017/2018 (persons)

	Original	Short-term targets	Medium-term targets	Long-term goals
	2012/2013	2015/2016	2017/2018	2020/2025
Engineering, Manufacturing and construction	552,088	819,700	1,351,000	4,756,700
Science	2,8897	54,400	83,530	185,470
Agriculture	16,357,466	16,072,325	15,593,475	12,630,024
Health and well-being	112,135	151,000	233,600	556,500
Social sciences, commerce, law	1,468,560	2,035,800	2,692,040	5,993,120
Arts and Humanities	44,057	61,080	80,760	179,800
Education (TVET Teacher Training)	20,754	100,344	173,168	593,895
Services	1,382,075	1,695,600	1,976,440	3,155,840
Total	**19,965,648**	**20,940,177**	**22,097,429**	**27,748,888**

Source: TVETDP 2013/2014-2017/2018

The TVETDP emphasises the need to take into account the views of employers regarding filling skills gaps and suggests flexibility in training programmes, certification of prior learning and experience for untrained people entering training, balancing the needs of professional, semi-professional and skilled workers, and increasing the capacity of learners to get payable jobs. An appropriate ratio between learners and teachers has been proposed. It is also suggested that VETA and its affiliates fill at least 75% of their staff with qualified personnel[26], increase the percentage of female teachers from 28% to more than 40 %, and ensure that infrastructure, equipment, and teaching materials are of an appropriate size and quality.

[26] 'Performance Audit Report on Access to Quality Vocational Education and Training' published by the National Audit office in 2020 shows that teacher shortages have increased from 42% in 2013/14 to 69% in 2018/19, and that the number of qualified teachers has decreased year by year, as a result, there are more learners per teacher.

(2) Medium to long term development plan based on TDV2025

The LTPP (2011/12 - 2025/26), prepared by the Government to implement TDV2025, has been positioned as a roadmap for TDV2025, aiming to transform the country into a middle-income country over the next 15years.

1) The First National Five Year Development Plan (FYDP I (2011/12-2015/16))

The theme "Unleashing Tanzania's Growth Potential" aimed to address the various challenges constraining Tanzania's economic growth and prepare the country for a poverty-reducing change. Five priority areas were identified: infrastructure, agriculture, industry, human capital development and economic services (trade, tourism and financial services), and interventions to improve skill levels were proposed as a strategy for human capital development.

2) The Second National Five Year Development Plan (FYDP II (2016/2021))

The development goals include accelerating economic growth by promoting industrialization, reducing poverty and creating jobs, especially for youth and women. The report identifies economic transformation and human resource development as critical strategies and emphases addressing the skills gap to achieve these goals.

Concerning FYDP II, the evaluation shows that the Government has made excellent progress in maintaining macroeconomic stability. As a summary of the overall assessment, about 93.8% of the macroeconomic targets have been achieved, and about 75% of the industrial sector’s performance has also been completed. In addition, the manufacturing sector’s contribution to GDP has increased from 7.8% in 2016 to 8.5% in 2019. By the end of June 2020, about 8,477 companies had been established, and about 482,601 new jobs had been created. The manufacturing sector has achieved 66.6% of the target, and the agricultural industry and sub-sectors have also performed well, reaching about 77 % of the target. The mining sector achieved all the targets set in FYDP II. Significant achievements were reported in Tanzania's export share in the Southern African Development Community (SADC), which increased from 19.0% in 2015 to 24.5% in 2019. Good results have also been achieved in social services in general, with about 70% of the targets set being met. In education, results have been conducted mainly in developing the free education policy, the construction of classrooms, the increase in the number of students enrolled in teacher training colleges, and the supply of educational equipment, laboratory equipment and ICT.

However, human resource challenges have been identified in several sectors. Technology application is still low in the production sectors (agriculture, construction and manufacturing). In industrial development, soft skills are expected, pointing to the need to improve knowledge and skills through vocational and technical training and apprenticeships. In the infrastructure sector, the lack of capability

of local construction companies is also cited, specifically their ability to cope with rapid technological change and the lack of efficient maintenance management mechanisms.

3) The Third National Five Year Development Plan (FYDP III)

The FYDP III focuses on consolidating the status of middle-income countries and the quality of desired outcomes and sets out the following five sub-themes. Cross-sectoral coordination and cooperation are essential for implementation.

- Pursuing a more aggressive competitive edge driven by new knowledge, STI and the digital revolution
- Deepening of industrialization and service provision fuelled by new knowledge, STI and the digital revolution
- Growth in trade, investment and exports through increased competitiveness and deeper industrialization and service provision
- Increased allocation of resources to social development, including improved access to education, health, water, administrative services, law and order, etc.
- Amplifying skills development with a focus on addressing poor soft skills

Recognising that the primary source of competitiveness is the enhancement of human resources

FYDP III states that it is essential that human capital development includes creating and using knowledge and STI to improve productivity and competitiveness in all sectors. It is also emphasised that improving knowledge and skills in production activities and product industries, including manufacturing, agriculture, mining, construction and services, depends on human capital development. It further states that empowered human capital provides technological flexibility and enables innovative firms to respond quickly to changes in demand and preferences.

Accordingly, the FYDP III focuses on Science, Technology, Engineering, and Mathematics to promote the development of "human capital". It also emphasises the importance of capacity building for women, young people and people with disabilities, including encouraging female students to take STEM subjects and prioritising young people and people with disabilities. Thus, to promote STI and inclusive digital learning and education, the FYDP III plans to ensure the necessary resources for basic, advanced and higher education and technical and vocational training and proposes the following actions for the accumulation of human capital

- Continue to promote greater access to and improved quality of education at basic and advanced levels to cater to higher STI levels and digital learning and teaching.

・Universities, higher technical schools and research and development institutions will reorganise their curricula around STEM subjects and increase fieldwork and practical training. In addition, more formal links will be established between higher education institutions, vocational and technical training institutions and the labour market (public sector, business and private sector).

・Strengthen and expand the current technical and vocational education and training by designing advanced training programmes (3 – 4 years) to deepen technical expertise to strengthen the TVET system.

A special fund is provided to university graduates to motivate them to design collaborative projects and produce prototypes.

In addition, in FYDP III, based on the FYDP mentioned above II, the following coordinated skills development is planned among the stakeholders, as the sectors need to implement short- and medium-term training programmes to ensure that they have the appropriate competencies in specific areas.

・TVET and higher education programmes, particularly to strengthen the TVET sector.

・Government, private sector (industry) and NGOs/civil society.

4) Skills development interventions in the implementation of the FYDP III

Skills development in Tanzania aims to improve the national workforce's capabilities, knowledge, and attitudes to increase productivity, performance, and competitiveness. The linkage between theory and practice training in such skills development is essential. With this in mind, the FYDP III focuses on strengthening the operational management systems of the implementing agencies responsible for skills development. It also calls for more significant investment in skills development to ensure that learning materials, training rooms and qualified teachers are always available. The primary interventions in FYDP III are summarised below.

・Mainstream the integration of theory and practice in the development of training curricula.

・Improve the facilities of training and capacity-building institutions for unique and rare technical personnel.

・Increase access to post-primary learning opportunities, including work-based learning programmes.

・Mainstream the application of inclusive and user-friendly ICT in skills training and learning at all levels.

・Promote innovation and the transfer of skills and technology.

・Promote employability skills to special needs groups.

・Facilitate the implementation of the National Skills Development Programme (2021/22-2025/26).

Through the above interventions, the main goal is to reach 12.1 % of the total working population with a high level of skills and 54.0% for the medium level by 2025.

2.2.3 Industrial human resources development system

(1) TVET Programme

Tanzania's formal TVET institutions are divided into Vocational Education and Training (VET) and Technical Education and Training (TET). VET is managed and administered by VETA, established under the Vocational Education and Training Act of 1994. On the other hand, TET is governed by the National Council for Technical Education (NACTE), established by the National Council for Technical Education Act of 1997. At the same time, VET is designed to equip trainees with vocational skills. TET aims to provide students with the knowledge and skills necessary to perform higher roles and responsibilities in professional and technical fields and acquire a wide range of technical skills.

1) Vocational Education and Training (VET)

VET is training at the secondary level, supervised by VETA, and conducted in VETA-owned vocational training centres and other private centres. These centres provide training to enable people to become 'artisans' in the agricultural, industrial and commercial sectors. National Vocational Awards (NVA) 1-3 are awarded at the end of the training course. After obtaining the NVA level 1 and level 2, trainees find employment or start their own business in many cases. It is also possible for those who have achieved the NVA level 3 to go on to the TET programme and pursue the training to obtain the National Technical Awards (NTA). VET also offer long-term, short-term and tailor-made courses. VETA and other ministries run public VET centres, local authorities and state enterprises. The number of private VET centres significantly exceeds the number of general VET centres, including non-governmental (NGOs) and faith-based organisations (FBO).

2) Technical education and training (TET)

Apart from universities, TET is considered post-secondary technical education and training for technicians, semi-professionals, and higher education for institutions (under the supervision of NACTE). The programme awards certificates, diplomas, bachelor's degrees and master's degrees, depending on the course level at graduation.

In addition to these two TVET categories, there are also Folk Development Colleges (FDCs) under the MoEST, located mainly in rural and semi-rural areas, and other non-formal TVET institutions.

3) Folk Development College (FDC)

There is 54 FDC under the MoEST, which provides folk education and vocational training programmes and, more recently, early childhood education for local children before they enter primary education.

The FDC was established in 1975 as part of a comprehensive adult education programme. FDC's activities are being implemented in line with the Folk Education Development Programme I (FEDP I 2007-2012) and are essential in implementing education reform in Tanzania. This programme is currently in its third phase and aims to enhance vocational training for finishers of the post-literacy programme[27].

In addition to this, there are 137 other technical education institutions registered under MoEST, outside NACTE registration. In addition, the Tanzania Commission of University (TCU) oversees the education of applied technology offered at the university and higher education levels. In 2019, five universities were registered, but TVET was not included in the list.

While the above describes the educational structure and system of formal TVET, other non-formal TVET programmes are also widely implemented.

4) Non-formal education and training

Most non-formal education and vocational training courses are short-term for school dropouts. Non-formal education and training in Tanzania are organised and continuous activities conducted outside the school system. Specifically, they cover adult education (over 19 years old) and out of school children/students (from 11 to 18 years old). For adults, literacy education is provided for 2-to-3-years. Such non-formal education and training are provided by a network of FDCs in the 54 schools, mainly in rural or semi-rural areas. In addition to literacy, adult education includes extension services, income generation, vocational training and non-formal secondary education through open learning and distance learning.

In addition, in collaboration with donor agencies and the Tanzania Private Sector Foundation (TPSF), the Tanzanian government is implementing a short-term project to bridge the gap between the skills needed in the labour market and the skills and knowledge provided by TVET institutions.

Lastly, informal education and training forms by apprenticeships in specific handicrafts and

[27] https://uil.unesco.org/case-study/effective-practices-database-litbase-0/folk-development-colleges-tanzania (retrieved 05/01/2022)

businesses, on-the-job training, and skills transfer in informal family activities such as traditional farming and fishing. According to the Integrated Labour Force Survey, 12% of the workforce received some form of training, but more than one-quarter experienced an informal apprenticeship for an average period 10 of months. This accounts for almost 40 % of the workers in the informal sector. It is also estimated that about10% have received on-the-job training[28].

(2) Industrial human resources development system

The national authority responsible for the vocational training sector is MoEST, whose umbrella organisations are VETA and NACTE. The former has jurisdiction over VET and TET, accountable for registering relevant public and private educational institutions and accreditation their programmes. Both organisations develop TVET curricula based on labour market analysis. At the same time, VETA brings VET institutions under its jurisdiction and plays an administrative, coordination, financial management, programme promotion and delivery role at provincial and district levels. Unlike VETA, NACTE does not have direct control over TET institutions or directly administer them. NACTE's part is to register and accredit public and private technical education institutions, coordinate TET programmes, accredit teachers and lecturers, establish TET institutions and maintain a database.

In VETA, the Advisory Committee is responsible for assessing training needs, determining training standards and related specifications and coordinating training activities to ensure that vocational education and training programmes meet the needs of the labour market. For TET, on the other hand, the NACTE is responsible for setting standards for vocational training programmes through its subject committees and standard-setting committees.

As a result of the reorganisation of the TVET system in 2021, the regulatory and supervisory functions of VETA for the TVET institutions were transferred to NACTE, which is now responsible for quality control vocational and technical training in the TVET institutions as a Regulator. VETA will be accountable for managing VET registered under the VETA and their coordination.

(3) TVET programmes in the education system

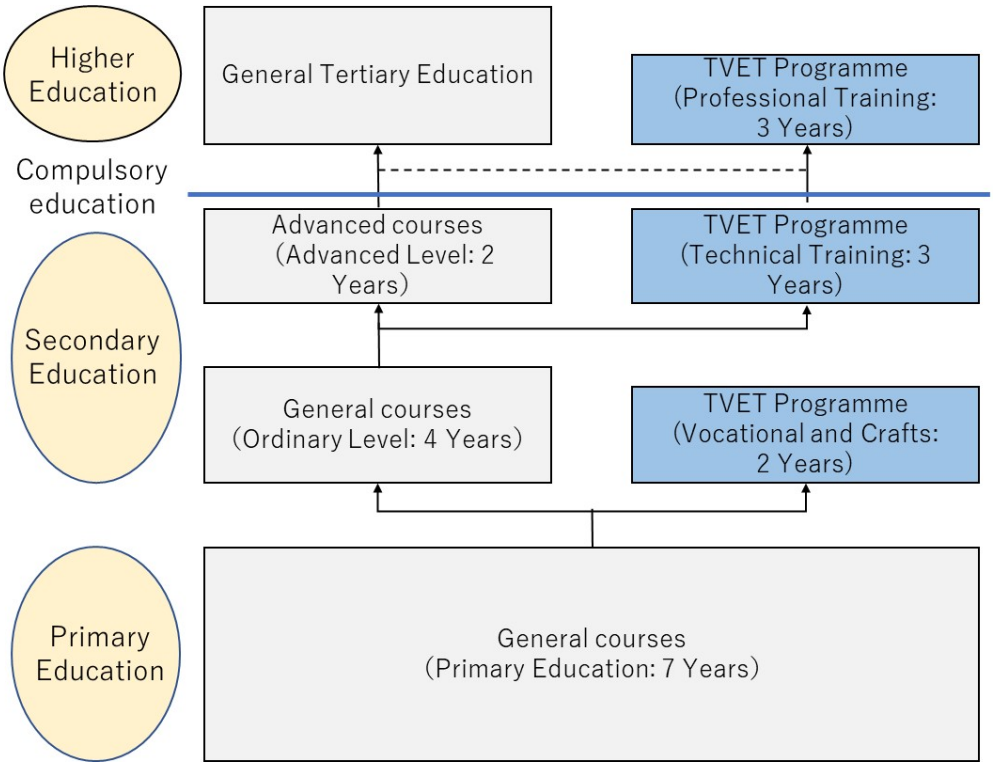
The Tanzanian education system is structured as follows: 2-7-4-2-3+[29]. After the pre-primary, seven years of primary education is compulsory. At the end of primary education, students take a final examination to move forward to secondary education. Secondary education consists of a 4-year long general course (O-level: Ordinary Level), followed by a 2-year long advanced course (A-

[28] ILO, State of Skills, 2020

[29] Years of pre-school education2, years of primary education7, years of early secondary education4, years 2of late secondary education, years 3of higher education and above (2-7-4-2-3+).

level: Advanced Level).

The TVET program is offered in both secondary and tertiary education in Tanzania. After completing the TVET O-Level, students do not continue to the next level. After completing an O-level in TVET, students do not progress to the next level of education and are usually employed. It is also possible for students who have completed O-Level in general education to go on to the 3-year A-Level l TVET and undertake technical training courses instead of going on to the 2-year A-Level. On the other hand, universities and tertiary institutions offer 3-year extended TVET programmes in higher education, an option alongside general higher education programmes.



Source: World TVET Database Tanzania (UNEVOC 2016) (Created by Survey Team)

Figure 8 Positioning of the TVET programme

(4) Finance

The TVET institutions are financed by the state budget (including donor support), company contributions and tuition fees. In the 2020/21 fiscal year, the state budget allocated 2,035, close to 15% of the MoEST budget of approximately 1,4000 billion TZS, to the TVET sector. The Vocational Education and Training Act14 (SDL) imposes an enterprise levy on employers with more than ten employees. It is 4 per cent of the total salary paid to all employees at a particular time (1 month) to be paid to the Tanzania Revenue Authority (TRA).

VETA's operating costs are financed from the VET Fund, managed by the VET Board. The fund consists of SDL, the government budget, donations and grants from external organisations, and

self-income from training fees (SDL is 81%). The assets inherited from VETA's predecessor, the National Vocational Training Department, have been transferred to VETA. On the other hand, the bulk of the NACTE budget is income generated by the technical training institutions under NACTE's jurisdiction. Additional operating costs are covered by student registration fees and contributions from the community and private institutions.

(5) Teacher development

Teachers for the VET programme are trained at the Morogoro Vocational Instructors Training College (MVTTC), which is under the jurisdiction of VETA: MVTTC offers two degree-granting programmes, the Vocational Teachers Certificate Course (VTOC) and the Diploma in Vocational Education and Training (DVoET), to develop and improve teaching and management skills.

On the other hand, TET does not have a similar teacher training institution, and graduates of TET or universities are employed as teachers. In both cases, however, there is little in-service training after recruitment, and few of them have any practical experience in the industry.

2.2.4 Framework for qualifications and degrees

The following degrees will be awarded on completing the TVET programmes outlined in diagram 9 above.

Table 14 Qualifications and degrees available on the VET programme

Programme	Duration	Degrees
Vocational and Crafts Training (General courses in the VET programme)	2 years	Competency Certificate for Trades (CST)
Technician Training (Advanced VET programme)	3 years	Certificate of Secondary Education Examinations (CSEE)
Technical Education and Training (TET Programme)	Depends on programme	Certificate, Diploma, Bachelor's Degree, Master's Degree and Doctor's Degree as Appropriate

Source: World TVET Database Tanzania (UNEVOC 2016) (prepared by the survey team)

In 2005, Tanzania set up the TVET National Qualification Framework (NQF) to promote comprehensive standardisation of TVET qualifications. It is hoped that the joint participation of VETA and NACTE in this development will lead to the harmonisation of the process for recognition of qualifications, the definition of occupational standards and the procedures for skills testing and certification. The proper framework is structured in terms of the ten levels of skills to be acquired, with VETA recognising qualifications from level 1 to 3 upwards and NACTE recognising qualifications from10 the remaining levels.

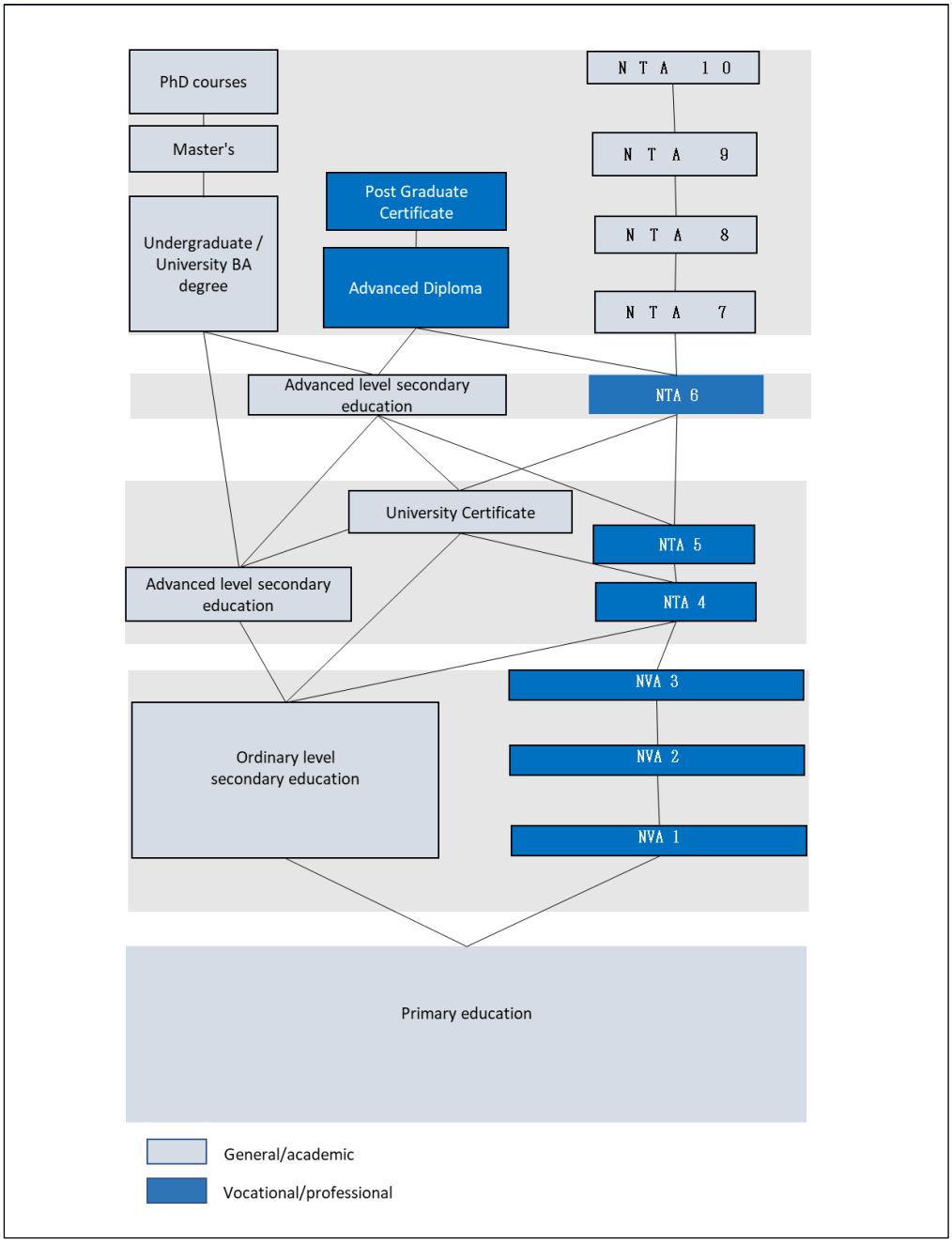
Table 15 Skills available in the TVET programme

	Levels	Degrees	Summary of skills eligible for certification
VETA Certification (NVA)	Levels1	-	Routine work, regular occupational duties, execution of work under control.
	Levels2	-	The performance of specific occupational duties and tasks, including a wide range of non-routine tasks.
	Levels3	-	Ability to carry out the above tasks in complex and varied situations. Includes significant responsibility, autonomy and supervision of others.
NACTE Certifications (NTA)	Levels4	Basic Technician Certificate	Skills and knowledge to carry out routine tasks.
	Levels5	Technician Certificate	Skills and knowledge of tasks with associated work responsibilities, including some non-routine tasks.
	Levels6	Ordinary Diploma	The skills and knowledge to carry out a wide range of non-routine and mainly routine tasks.
	Levels7	Higher Diploma	The skills, knowledge, and intelligence to carry out complex, extensive tasks and involve responsibility for the supervision of others.
	Levels8	Bachelor's Degree	In addition to the above, the skills, knowledge and intellectual capacity to carry out resource allocation, policy and planning development and evaluation.
	Levels9	Master's Degree	Skills, knowledge and intelligence in complex and specific fields. Ability to carry out research and advanced technical or professional activities. Ability to work independently in complex and unpredictable situations.
	Levels10	Doctorate (Doctor of Philosophy)	Advanced research knowledge and intellectual ability can significantly contribute to a particular field. Ability to determine and direct working methods and engage in critical consultation with colleagues. Ability to work independently in complex and unpredictable situations.

Source: World TVET Database Tanzania (UNEVOC 2016) (prepared by the survey team)

Until now, VETA and NACTE have each approved their training programmes, resulting in duplication of authority between the two organisations. This is expected to improve with the introduction of the NQF, but there is no clear framework between qualifications gained in general education and those gained in TVET. The NQF also maintains a different framework of qualifications for higher technical education at TCU institutions. In addition to this, the NQF does not[30] include the recognition of qualifications acquired through informal and non-formal training.

[30] ILO, State of SKILL Tanzania, 2020



Source: World TVET Database Tanzania (UNEVOC 2016) (prepared by the survey team)

Figure 9 Formal Education and Formal TVET in the Tanzanian Education System

(2) Quality assurance

Both VETA and NACTE have had the authority to register and accredit public and private TVET institutions. Both are responsible for analysing the alignment of curricula with market needs and developing the actual curricula. In the case of VET, the Trade Advisory Committee has been responsible for ensuring that the existing training programmes are aligned with market needs, determining training standards and specifications, and coordinating training by industry. In the case

of VET, the Trade Advisory Committee has been responsible for aligning the existing training programmes with market needs, determining training standards and specifications, and coordinating training by industry. On the other hand, for TET, NACTE, through its Subject Boards and Standards Setting Committee, standardises training programmes based on occupational standards.

Thus, quality assurance was fragmented: both VETA and NACTE had the authority to accredit programmes, and therefore, some TVET institutions could or had to apply for accreditation from both organisations. As a result, VETA and NACTE could not close programmes that did not comply with the system.

Thus, the institutional mandates of VETA and NACTE are mixed, and for a long time, VETA faced a conflict of interest in being both a regulator and a training provider (World Bank, 2015). In this regard, as explained in the section on 2.2.3(2) Industrial Human Resource Development System, the reorganisation of TVET institutions has transferred the regulatory function of VETA to NACTE[31].

2.2.5 Human resources development in different industrial sectors

NACTE has conducted a skills gap survey of the six sectors prioritised by NSDS and FYDP II as critical sectors for Tanzania's economic development and compiled a report (Mapping Skills Gap and Skills Needs for Technician Graduates in the Selected Economic Sectors for Industrial Growth in Tanzania, 2020). Based on this report, this section describes the status of human resource development in the following sectors: agriculture, agribusiness and food-processing; transport and logistics; tourism and services; energy; construction; and ICT. The report does not provide quantitative data on the number of workers needed in each industry. However, based on the results of questionnaires from companies and employees, the report confirms ① the consistency between the jobs that companies need and the training that employees have received, and ② the relationship between the jobs that employees are involved in and the skills that employees themselves have acquired through their training.

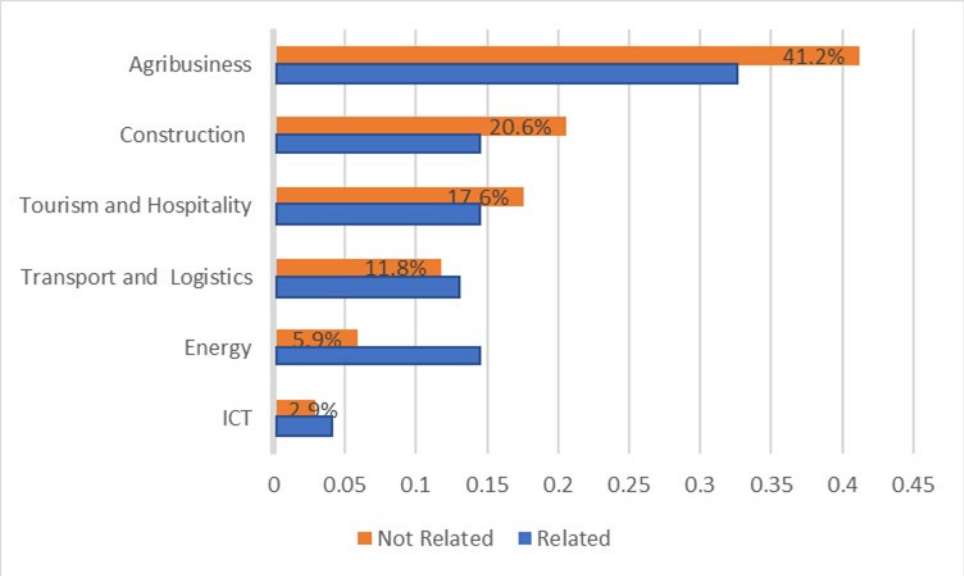
(1) Consistency between the work required by the company and the training received by the employees

Table11 below summarises the results of the report's ① analysis of the relationship between the skills that employers seek in their employees and the education that employees have received.

[31] According to a NACTE press release dated 22 February 2022, by section 129 of the Fourth Congress Act in 2021, the name of NACTE was changed to National Council for Vocational Education and Training (NACTVET). This change had added to the Council's responsibility for reform and quality control of vocational training that was previously underway under the Authority of Vocational Education and Training (VETA).

It shows that for agribusiness, construction and tourism/hospitality, 41.2%, 20.6%, and 17.6 % of employees received education unrelated to the skills sought, respectively. On the other hand, the ICT, transport and logistics and energy sectors show a relatively high percentage of employees in jobs related to their education area.

The report notes that agribusiness provides the most significant workers of all six industrial sectors surveyed. Around half of the graduates from level 4 to 6 study in a scientific discipline related to agribusiness. The analysis also shows that the supply of human resources in the construction sector has not kept pace with the significant growth in the industry.



Source: NACTE

Figure 10 Education mismatch (%)

In other words, there is a lack of training in TVET institutions to meet the demands of the workplace. For example, there is a lack of activity in the skills of 'sales and marketing, 'software management' and 'digital and e-marketing', which are considered essential or in high demand in the ICT sector. Similarly, TVET institutions do not provide training in professional skills such as "accounting software management" and "customer relations" and the soft skills required to perform a job in a company organisation.

The results of the NACTE survey show that over 60% of employees lack almost all soft skills. This lack of soft skills is a significant challenge for companies and people of all skill levels. In particular, the soft skills identified as a challenge by employers include 'report writing', 'customer relations', 'innovation', 'teamwork', 'computer literacy', 'communication skills', 'problem-solving and handling skills' and 'IT skills'[32]. These skills gaps are attributed to a "theoretical bias (39%)"

[32] Mapping Skills Gap and Skills Needs for Technician Graduates in the Selected Economic Sectors for Industrial Growth in Tanzania,2020, NACTE

and "outdated training content (26%)"[33]. From the perspective of the TVET providers, the number of schools and graduates in the fields of Energy and Mining, Tourism and Hospitality, and Transport and Logistics is deficient. This mismatch may be partly due to the lack of institutions that train people with expertise in these fields.

Table 16 Number of TET institutions and summary of technical education graduates from 2014 / 2015 to 2018 / 2019 (persons)

Sectors	Number of TET institutions	Cumulative number (2014/15-2018/19)			Percentage of incremental headcount (%)
		Man	Women	Total	
Agribusiness	41	21,095	14,108	35,203	37
ICT	43	20,017	5,459	25,476	27
Construction	14	15,314	3,192	18,506	19
Energy and Mining	9	4,496	1,010	5,505	6
Tourism and Hospitality	10	3,386	1,829	5,214	5
Transport and Logistics	7	3,601	2,267	5,867	6
Total	124	67,909	27,865	95,771	100

Source: NACTE, Mapping Skills Gap and Skills Needs for Technician Graduates in the Selected Economic Sectors for Industrial Growth in Tanzania,2020

2.3 Training curriculum content and education system at TVET institution

2.3.1 Outline of TVET institution (number of schools, number of students, etc.)

(1) Number of TVET institutions

According to NACTE, the total number of TVET institutions as of January 2022 is 1,282, of which 438 are NACTE-accredited TET institutions and 844 are VETA-accredited VET institutions.[34]

Among the VET institutions under VETA, 43 are directly managed by VETA, 238 are managed by Faith-Based-Organisation, 69 are governmental (established by the relevant ministry), 372 are private, and NGOs control about 100.[35] At the end of 2019, five universities were registered as Colleges of Science and Technology by TCU.

(2) Number of trainees enrolled

The number of applicants for admission to the VET institutions is over 10,000 every year, and in some years, more than 20,000 applications are submitted. However, only around 20% of them are accepted for enrolment. Even if applicants meet the admission criteria, VET institutions are obliged to limit the

[33] Ditto.
[34] This is the latest data obtained from the interview with NACTE, but the details are unknown.
[35] According to the "TVET Indicators Report" (MEST, 2021), the total number of TVET institutions in the text and the TVET type breakdown table is 822 schools, but the total of the breakdown table is inconsistent with 830.

number of enrolments due to limited space, equipment and teaching staff, and budgetary constraints.[36] Table 17 below shows the number of applicants and the number and rate of admissions to VET institutions from 2013 to 2018.

Table 17 Number of Applicants and Selected VET Students, 2013 - 2018

	Number of Applicants	Number selected	Percentage selected (%)
2013	23,339	4,639	20
2014	21,512	1,958	9
2015	16,546	3,584	22
2016	11,354	4,351	38
2017	18,254	4,287	23
2018	14,644	6,337	43
Total	105,649	25,156	24

Source: Performance Audit Report on Access to Quality Vocational Education and Training (2020)

According to MoEST, in the 2019/20 academic year, TVET institutions recorded 20,833 graduates, of which 7,026 (male: 4,825, female: 2,201) were from public institutions and 13,807 (male: 10,226, female: 3,581) were from private and other institutions. It can be inferred from the ratio of male to female graduates that enrolments in TVET institutions, both public and private, are predominantly male. A questionnaire survey of 56 TVET institutions (53 VET institutions, 1 TET institution and 2 TVET institutions), conducted as part of this survey, revealed similar results. For this survey, a questionnaire (the "TVET Questionnaire") was sent to 56 TVET institutions in the Dar es Salaam, Northern (Arusha, Kilimanjaro, etc.), Central (Dodoma, Singida, etc.) and Lake (Kagera, Mara, etc.) zones to ascertain the current status of TVET institutions. The breakdown of the survey respondents is provided below (see Appendix 7 for “List of TVET institutions” to which questionnaires were sent for the survey).

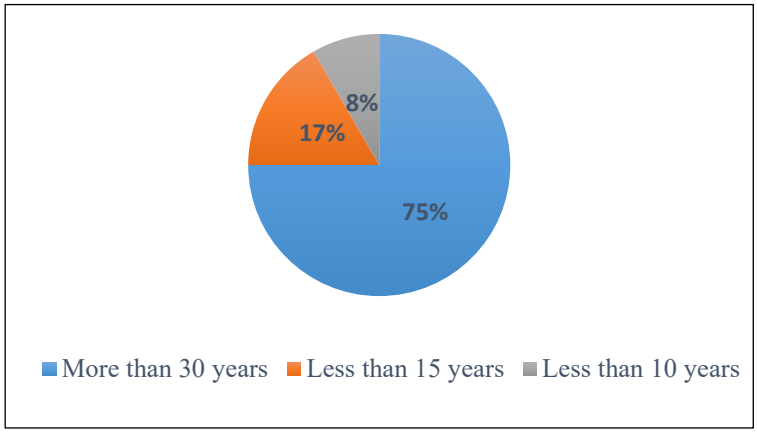
[36] Labour Market Profile Tanzania & Zanzibar 2021/2022 (Danish Trade Union Development Agency)

Table 18 Breakdown of TVET questionnaire respondents

	DSM	Northern	Central	Lake	Total
VETA	2	3	4	3	12
Central government[37]	1	1	1	4	7
FBO	2	5	4	3	14
Private	3	4	4	6	17
NGO	1	1	-	-	2
Others	-	-	-	4	4
Total	10	14	13	20	**56**

Source: Survey team

The characteristics of the VETA Centres involved in this TVET survey were large-scale comprehensive institutions (8 out of 12) with a long history of more than 30 years of establishment with a high number of trainees between 300 and 600 or more. Moreover, the large-scale centres offer courses in various trades, and four trades, namely mechanical, electrical, civil engineering and construction, and automotive - are offered in all centres. No centres included in this questionnaire survey had provided transport. Those offering specific courses, such as ICT, were relatively new, having been established less than 15 years ago, and tended to have few students (100-150).

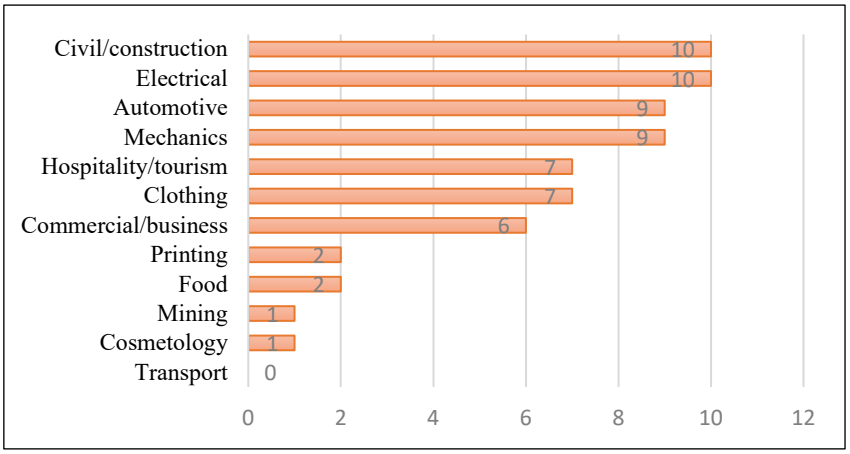


Source: TVET Questionnaire (Survey team)

Figure 11 Number of years since the establishment of VETA Centres

On the contrary, looking at TVET institutions as a whole, the number of trades offered by each institute is limited. Still, overall, the results appeared to be similar to those observed in the cases extracted from VETA centres. There were no significant regional differences in trades offered. One possible reason for this may be related to the fact that the questionnaire was sent mainly to TVET institutions that have three trades covered by this survey.

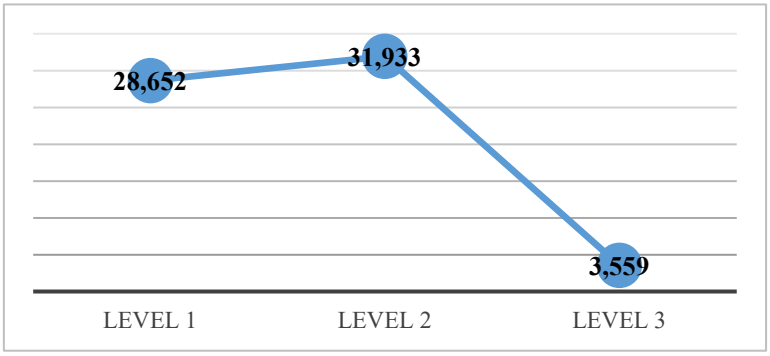
[37] The direct affiliate of Central government (the ministry) listed in Dar es Salaam is the National Institute of Transport (NIT), a NACTE-accredited TET institution.



Source: TVET Questionnaire (Survey team)

Figure 12 Trade offered at VETA centres (number)

Regarding the number of NVA level 1 to 3 trainees enrolled in long courses offered by VET institutions, the highest number of trainees was registered at Level 2 with 31,933, followed by Level 1 with 28,652, the lowest at Level 3 with 3,559.[38] It should also be noted that very few trainees progress to Level 3.



Source: VETA (2018)

Figure 13 Number of trainees by NVA level at VET institutions

2.3.2 Curriculum contents

There are more than 100 curricula related to 13 trades which VETA is currently in the process of revising, including Agriculture and Food Processing, Electrical, Automotive, Mechanical, Civil and Construction, Transport, Mining, Hospitality, Tourism and Travel Agency, Commercial and Business Support Services, Clothing and Textile, Printing, Cosmetology and Visual Arts. While the guidelines for the preparation of quality management plans for VETA-accredited institutions state that curricula should

[38] VETA National VET Data Handbook Statistics Report December 2019

be changed every five years to take account of labour market trends, the Performance Audit Report on Access to Quality Vocational Education and Training (2020) (hereafter referred to as the "Audit Report") revealed that as of March 2020, when the audit was conducted, there were delays in the reviews of more than 80% of the VETA curricula in 13 trades that were due in May 2018. The Audit Report suggested that the delay may have been caused as VETA has not yet fully established an effective quality control mechanism to follow up the process of reviewing the curriculum.[39]

In developing and revising the curriculum, VETA's Regional Offices take the lead in collecting information on industry demand for human resources and skills from nearby companies, and VETA headquarters compiles the data from each office that conducted the Labour Market Survey. Private sector organisations such as the Confederation of Tanzania Industries (CTI) cooperated in this Labour Market Survey. In response to MoEST's request, TPSF has also established the Sector Skills Council (SSC) and conducted the "Analysis of the Bottlenecks for Employers and Training Institutions in Supporting Enterprise-Based Training in Selected Sectors"[40] to improve the skills gap between industrial human resource who enterprises require and trainees of TVET institutions.

TVET institutions have revised more than 100 curricula between 2020 and 2021.[41] However, reviews of the content in TVET-related external reports note "the curriculum used by TVET institutions in Tanzanian is rather outdated and contains teaching content that is no longer used in companies". The ratio of theory to practical training in implementing the curriculum is 4:6. Still, there are views on allocating more time for practical training so that trainees learning at TVET institutions can perform better on-site, as confirmed during this survey. VETA teachers have also expressed the necessity to develop a curriculum that allows trainees from diverse backgrounds to learn without difficulty and acquire skills that are fully compatible with new technologies.[42] On the other hand, as previously mentioned, VETA is currently revising the curriculum for the 2013 edition. In the new curriculum, which is expected to be introduced this year, the content will have been updated to correspond to the skills required by the industry, based on an analysis of the results of the labour market survey.

2.3.3 Status of equipment and facility

UNESCO's TVET Strategy (2016-2022) signifies that providing high-quality facilities and equipment is fundamental to delivering a high-quality TVET education. Nevertheless, the Audit Report (2020) notes that the facilities of VETA institutions are inadequate and not sufficiently modernised to promote

[39] As mentioned above, the management structure of TVET institutions was updated in 2021, and when we interviewed VETA in December of that year, it appeared that a system for curriculum revision had also been established.
[40] According to the TPSF, the SSC activities were completed by the end of 2021, but the analysis (survey) is still in draft form and therefore not yet available. The survey was conducted for selected TVET (TET and VET) institutions and was supported by the World Bank.
[41] TVET Indicators Report (MoEST, 2021)
[42] Youth Transition from School to Work in Tanzania (REPOA, 2020)

teaching and learning, and only 57% of teaching tools and equipment were usable at the VETA institutions the audit visited. In addition, the plan to build vocational centres in 25 districts, as specified in VETA's Corporate Plan IV (2012/13-2016/17), has so far been implemented in only three sections, and only eight out of the 25 workshops that were to be modernised have been completed. While a lack of funding has caused delays in upgrading facilities, the challenge of a shortage of equipment and facilities for training has become more acute over the years. Table 19 below summarises the need for training equipment and facilities in VETA centres as reported in the Audit Report.

Table 19 Equipment status of VETA centres

	Number of Required equipment/machines	Number of Available equipment/machines	Shortage (unit)	Shortage (%)
Mwanza RVTC	1,520	371	1,149	76
Mtwara RVTC	1,089	305	774	71
Kihonda RVTC	1,189	458	731	61
Arusha VTC	378	167	211	56
Dakawa VTC	52	25	27	52
Tabora RVTC	1,111	566	545	49
Kipawa ICT	1,948	1,018	930	48
Shinyanga VTC	673	546	127	19

Source: National Audit Office

In the TVET institutions' questionnaire, the lack of facilities (76.7%) and funding (76.7%) was also cited as challenges in running TVET institutions. In the questionnaire for companies also carried out in this survey, old fashioned equipment (64.4%) was the most common reason for not using the TVET services.

2.3.4 Collaboration with industry

Partnerships between industry and TVET agencies, especially VET agencies, are in most cases not well established. This has led to limited opportunities for trainees in VET institutions to learn skills at NVA level 3 and above. Another problem reported concerning the lack of cooperation with industry is that teachers at VET institutions miss opportunities to acquire the knowledge and skills required in the industry. Recognising the importance of collaborating with companies, VET institutions have engaged in increasing the employability of trainees by reducing skills mismatches through the implementation of the Dual Apprenticeship Training System (DATS)[43] and Field Attachments (FA). Yet, it is impossible to provide all trainees with FA opportunities due to VET institutions' weak coordination functions and

[43] A system that simultaneously promotes academic and vocational education originating in Germany. For more information, see 2.6.2(2) below.

the lack of space for companies to receive trainees. Moreover, even when the company accepts the trainee, in many cases, the trainee has to cover necessary costs such as travel between the school or home and the company, making it challenging to proceed with FA smoothly.[44] Thus, the current FA is structured to place a heavy burden on trainees. As a result of not participating in the compulsory FA, several trainees fail to progress or graduate.

On the contrary, there is a high-level public-private platform, the so-called Tanzania National Business Council (TNBC), co-chaired by the Tanzania and TPSF. The Council comprises 50 members,[45] drawn from both the Public and Private sectors, with equal representation: 25 are public members, and 25 are selected private sector representatives. The government representatives are Ministers of the URT and senior government officials, while Private Sector representatives are appointed to the Council through TPSF. According to the TPSF, TNBC is aware that there is a gap between the skills produced by TVET institutions and the skills expected by companies, and thus measures such as joint curriculum development are in place.

The information on partnerships with companies at each TVET institution obtained from the TVET questionnaire suggested that the primary partnerships practised at TVET institutions were FA and in-service training. Besides these forms, holding seminars and using facilities and equipment were indicated as alliance forms. Still, for most TVET institutions, the number of partners they are in contact with was less than 10 (63.3%), which implies that the promotion of private-sector cooperation was somewhat limited. As a challenge for private sector cooperation, inadequate information on cooperating companies and not knowing of contacts was listed apart from a lack of funding. Another challenge identified in interviews with the private sector was that the methods of collaboration with the private sector and the means of mitigating the skills gap are restricted to curriculum development support. Even if the curriculum is revised to reflect the needs of the labour market, upgrading facilities and equipment and teachers' skills and knowledge and developing effective teaching methods and relevant materials must proceed simultaneously to ensure that vocation education reflects the skills needed by the market.

In addition, concerning new technologies (e.g. hybrid and electric vehicles), the private sector may not have accumulated sufficient knowledge and know-how to cope with such technologies. For example, it has been mentioned that car maintenance workshops in town cannot handle the maintenance of hybrid vehicles. Thus, these vehicles are brought to TOYOTA Tanzania, which has the know-how. Therefore, a demand for technical updates for those working on-site is still envisaged; VETA institutions offering in-service training cannot respond to these market needs. This would signal that information from the labour market surveys conducted by VETA headquarters in conjunction with regional offices to develop

[44] Youth Transition From School to Work in Tanzania (REPOA, 2020)

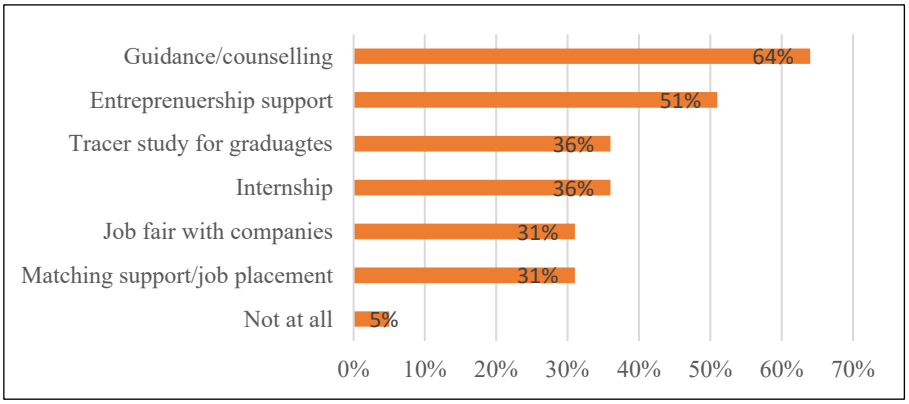
[45] Source is TNBC website https://www.tnbc.go.tz/pages/tnbc-meetings. According to information from TPSF, 20 government representatives (all ministers and prime ministers, vice president, director of the Legal Affairs Bureau) and 20 private representatives (6 TPSF directors and 14 industrial cluster heads).

curricula is not being used strategically for anything other than curriculum development for longer courses.

2.3.5 Employment support system

On the VETA tracer survey (2019) report, interviews with 104 graduates showed that 92.3% of graduates had fixed-term (non-permanent) employment status, and only 2.9% of graduates had permanent employment.[46] Graduates of VET institutions take an average of one to two years to find their first job, which means that they have to spend a long time searching for a job after graduation. It was highlighted that many VET institutions do not provide organisational employment support for trainees adequately. There is a need to provide career counselling and job fair opportunities.[47] This situation leads to acknowledging that the information mentioned above of VETA's labour market surveys is also not being used effectively to support employment. A VETA tracer study also informed that individual contact (46%) and enterprise training opportunities (22%) were the two most frequently used methods by VET graduates when seeking employment. Job advertisements (17%) and personal contacts (10%) were also utilised for jobs; FA enhances practical skills and plays a vital role for trainees in terms of employment: notably, individual contacts with companies through teachers and creating opportunities for FA to work effectively for employment support. Through the TVET questionnaire implemented under this survey, the most common response on employment support was guidance/counselling (64%), followed by entrepreneurship support (51%). While some TVET institutions offer multiple forms of support, such as internships (FA), organising job fairs and job placement, three (3) institutions (5%) provide no support at all.

[46] Basic Information Collection/Analysis in Vocational Education Training (VET) System in Tanzania, Analytical Report (JICA, 2021)
[47] Basic Information Collection/Analysis in Vocational Education Training (VET) System in Tanzania, Analytical Report (JICA, 2021)



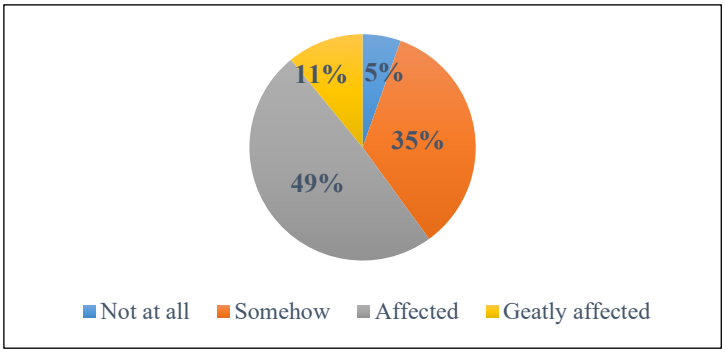
Source: TVET Questionnaire (Survey team)

Figure 14 Type of employment support offered (56 responses)

Regarding employment support, CTI pointed out poor communication skills and a lack of the proper mindset in a job search that emphasised the need for soft skills. VET institutions do not seem to understand soft skills that can be effectively used in employment and entrepreneurship. VETA graduates also wanted "programmes to foster a mindset where trainees have a purpose and are actively motivated to participate in the labour market.

2.3.6 Impact of the spread of COVID-19

Through the TVET Questionnaire, the impact of the spread of COVID-19 on FA and graduate employment was assessed, and nearly half of TVET institutions responded as having been affected. Although only three (3) institutions (5%) were marked as "not affected at all", only six schools (11%) were labelled as "greatly affected", suggesting that its negative impact was minimal. It was necessary to adopt infection control measures in the operation of TVET institutions; nevertheless, the effect on FA and other activities may have been relatively insignificant as the government maintains a policy of not implementing lockdowns that are likely to stagnate the economy.



Source: TVET Questionnaire (Survey team)

Figure 15 Impact of Covid-19 on FA and job search (56 responses)

2.4 Competences Required from Industries and Those of Human Resources Developed by TVET Institutions

2.4.1 Competences Required from Industries

(1) Results of Questionnaire Survey

The Survey Team conducted a questionnaire survey targeted at 90 companies operating in Tanzania[48]. Collected information was sorted into three sectors: Electrical Installation, Motor Vehicle Mechanics, and Food Production. Competencies with high demand were analysed for both management-level employees and non-management employees. Top answers and their implications are summarised as follows.

1) Electrical Installation: 28 Companies

Competence required for management-level employees：

Business Development: 13 Companies (46.4%)

Strategic Planning: 11 Companies (39.2%)

HRM & Organizational Behaviour: 7 Companies (25%)

Competence required for non-management employees：

Job Specific Vocational/Technical Skill: 26 Companies (92.8%)

Team Building: 9 Companies (32.1%)

Marketing: 7 Companies (25%)

(1) Motor Vehicle Mechanics: 17 Companies

Competence required for management-level employees：

Business Development: 8 Companies (47.0%)

Strategic Planning: 7 Companies (41.1%)

Job Specific Vocational/Technical Skill: 7 Companies (41.1%)

Competence required for non-management employees：

Job Specific Vocational/Technical Skill: 13 Companies (76.4%)

Team Building: 7 Companies (41.1%)

Kaizen Basic: 5 Companies (29.4%)

3) Food Production: 44 Companies

[48] Target companies include 28 companies in Electrical Installations, 17 companies in Motor Vehicle Mechanics, 44 companies in Food Production and 1 company with no answer.

Competence required for management-level employees：

Business Development: 28 Companies (63.6%)

Strategic Planning: 22 Companies (50.0%)

Marketing: 13 Companies (29.5%)

Competence required for non-management employees：

Job Specific Vocational/Technical Skill: 42 Companies (95.4%)

Team Building: 19 Companies (43.1%)

Kaizen Basic: 17 Companies (38.6%)

It was found that all three sectors required management-level employees to be equipped with "Business Development" and "Strategic Planning". What is remarkable about Motor Vehicle Mechanics is that it needed management-level employees to master "Job Specific Vocational/Technical Skill" at a high rate. This trend does not fit the other two sectors. This implies that this sector puts much more importance on technical skills for all employees.

On the other hand, all three sectors required non-management employees to be equipped with "Job Specific Vocational/Technical Skill" and "Team Building". This is proof that non-management employees are expected to work with other workers collaboratively in all situations. In addition, not a few companies required them to be equipped with basic Kaizen and this trend is particularly pronounced in Motor Vehicle Mechanics.

(2) Interview Results through Field Survey

In addition to the above questionnaire survey, the Survey Team conducted interviews with local companies to clarify competencies highly demanded from them. Most companies recognised TVET trainees as human resources who meet the minimum knowledge and skills required from industries; however, they also commented that they need to be re-educated after employment due to a shortage of competencies and experience necessary to be effective workers immediately. From this perspective, most companies shared their views, saying that those workers who can grow their skills are highly appreciated as employees.

Also, it was found out that many local companies highly appreciate soft skills, just as the questionnaire survey concluded. Tanzanian companies tend to prioritise business manners and working disciplines. In contrast, Japanese companies showed high demands for basic Kaizen such as 5S and problem-solving, and Tanzanian companies also demanded soft skills.

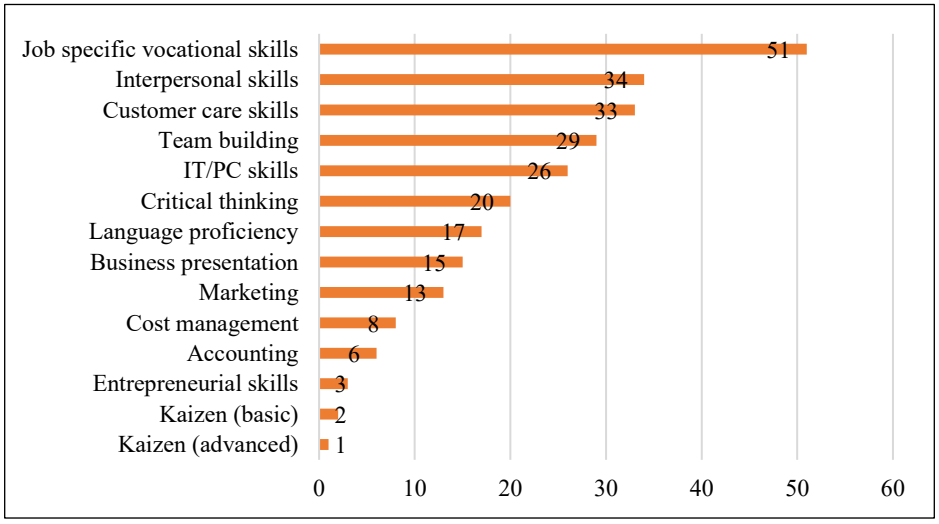
Furthermore, the survey clarified that workers who can manage their assigned task by themselves,

have one specific technical skill and a set of relevant knowledge and skills, and have a good growth mindset are highly demanded from industries. Taking these competencies into consideration as a whole, it can be said that the competence with high demand falls into the category of level 3 of the VETA qualification that defines "competencies to undertake a broad range of complex occupational tasks and duties, of which some are non-routine, in a variety of contexts with considerable responsibility and autonomy, and provide guidance and supervision where required[49]". In short, it is confirmed that competence of more than level 3 of VETA is required from the formal labour market.

2.4.2 Human resources capacity produced by TVET institutions

(1) Technical expertise

Concerning the TVET questionnaire for the types of skills acquired by trainees on graduation (below Figure 16), 91% (51 out of 56) of TVET institutions indicated that their graduates are likely to have obtained job-specific vocational skills. Furthermore, many companies interviewed (10) evaluated TVET graduates as having a minimum level of knowledge and skills. In 2021, a JICA feasibility survey [50]conducted a questionnaire on the usefulness of the curriculum and acquired skills among VETA graduates in the automotive sector. About two-thirds of all responses were marked as "satisfactory", and one third observed "a little difficult" graduates assessed curricula as "generally satisfactory". The evaluation of the curriculum by graduates shows that VETA provides the minimum knowledge and skills necessary to carry out tasks in the workplace.



Source: TVET Questionnaire (Survey team)

Figure 16 Types of skills and competence possessed by graduates at the end of training (56 responses) (numbers)

[49] Youth Transition From School to Work in Tanzania (REPOA, 2020)

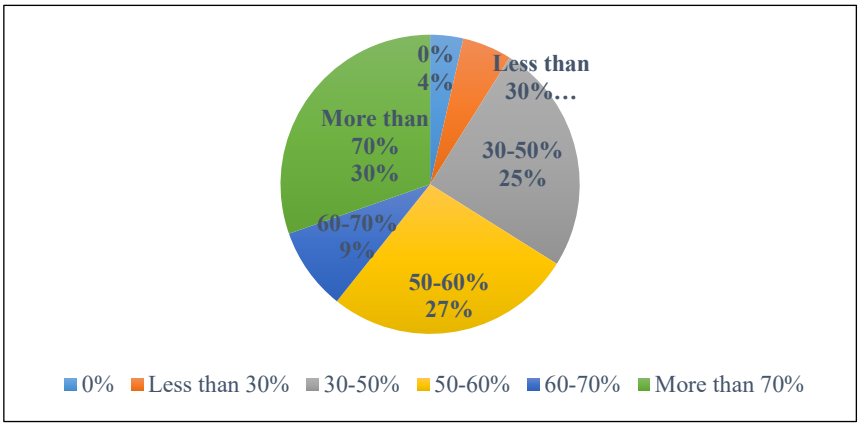
[50]" Model Formulation Survey with the Private Sector for Fostering Car Mechanic and Car Maintenance Factory Network through Car Maintenance in Professional Practice in Tanzania" (JICA, 2021)

(2) Non-technical competence

Figure 16 above demonstrates that graduates of TVET institutions possess not only the necessary vocational skills but also the soft skills such as interpersonal skills (34 out of 56,61%), customer relations (33 out of 56,59%), team building (29 out of 56,52%) and critical thinking (20 out of 56,36%). In some TVET institutions, trainees upon graduation also reported having business skills such as IT/PC skills (26 cases, 46%) and language skills (17 points, 30%), which means that more than half of the graduates have acquired valuable skills other than their job-specific vocational skills. However, only a few graduates seem to have obtained these business skills, as some foreign companies find it challenging for graduates to communicate in English and type on a computer.

(3) Gaps between human resources profile industry requires and graduates of TVET institutions possess

The results of the TVET questionnaire and those of the company questionnaire carried out almost simultaneously to understand the type of skills companies expect for their employees were substantially similar. In other words, the skills offered by TVET institutions and the types of skills required by companies are comparable. However, a gap was found in terms of the level of skills assumed by both parties. The findings from interviews suggest that while employers value graduates' basic knowledge and vocational skills, they do not regard them as industry-ready recruits since in-house training is a must for recruits. One of the reasons respondents answered that "skills gaps will be filled through in-house training after joining the company" was that it is often challenging to deal with the situation at the workplace using only one vocational expertise. Thus, staff should have the ability to apply skills and multiple relevant knowledge and skills. In addition, as shown in Figure 17 below, there are a certain number of institutions where the proportion of hands-on training at TVET institutions ranges from 0% to 50%. Thus, it is possible to envisage some cases in which graduates possess little or no vocational skills. If the trainees' mastery of the skills is low, they may not be able to find a job, and it is assumed that the graduates who are not employed have not reached the minimum skill level expected by companies. Given the company evaluations and employment rates of graduates, it is likely that, at least for the sectors covered in this survey, the two-year foundation course offered by TVET institutions is not sufficient to provide the necessary skills for the workplace.



Source: TVET Questionnaire (Survey team)

Figure 17 Ratio of hands-on training in the course (56 responses)

Besides vocational skills, there were similarities in terms of soft skills and business skills between the skills of graduates and the skills required by employers. A divergence of perceptions became evident in that the TVET institutions emphasise customer service, while companies cited kaizen. Regarding kaizen, VETA has not adopted it at this stage. However, interests in doing so were expressed at a certain level, and only three of the other TVET institutions (5%) have already adopted it. This difference can be attributed to a lack of kaizen among VET institutions; VET institutions tend to focus on customer relations skills, which are beneficial for graduates when they start their businesses. However, knowledge of kaizen is also helpful in entrepreneurship, and there is a need to raise awareness among VET institutions by creating opportunities to disseminate this philosophy to non-VETA institutions.

Companies had conflicting views on the level of skills of VETA graduates. In interviews with Tanzanian private sector organisations such as CTI and TPSF, some local companies and Japanese companies doing business in Tanzania, VETA graduates' technical and soft skills were notably rated low. In contrast, some local companies highly evaluated their interpersonal skills and work attitudes.

There is a considerable gap between the level of expertise and soft skills acquired by the people produced by VET institutions and the level expected by the private sector. In interviews with VETA centres and the private sector, both sides acknowledged the skills gap. While VETA has started to fill the gap by conducting labour market surveys and co-developing curricula with industry, it has not yet visualised the holes lies. Mitigation measures have not been sufficiently enforced.

2.4.3 Comparison with TVET Survey conducted by the JICA Tanzania Office (Newly Added Points to be Confirmed)

In the “Basic Information Collection/Analysis in Vocational Education Training (VET) System in Tanzania, Analytical Report”, published by the JICA Tanzania Office in 2021, it was reported that TVET

graduates generated mismatch due to their insufficient knowledge and skills obtained in school, which were likely to be negatively influenced by existing challenges of the TVET sector including shortage of collaboration with the private sector, out-of-date curriculum and facility/equipment, lack of materials, limited spaces for training, need of teachers and the necessity of opportunities for teachers to upgrade their knowledge and skills. The report featured soft skills as a critical skill highly demanded from companies alongside technical/vocational skills, focusing on interpersonal and customer care skills[51]. This report defines soft skills as the "ability to communicate and interact with other people, both individually and in groups in the workplace".

However, the Survey Team concluded that the soft skills demanded from industries are not limited to communication skills and cooperativeness, including leadership and problem-solving skills. In an online interview with the Survey Team, a Japanese company based in Tanzania stressed the importance of equipping their employees with soft skills and providing soft skill training such as "conflict management" and "problem-solving" using their original training modules. Similarly, a questionnaire survey targeted at companies confirmed the high demands for "critical thinking" being second only to "teambuilding".

Furthermore, as mentioned earlier, the field survey clarified that competence falling into level 3 of VET qualification is highly demanded from industries. This level 3 competence is thought to include 1) one specific technical skill and a set of relevant knowledge and skills, 2) competence to manage the assigned task alone, 3) competence to fulfil their vocations as a team, including managing ability to supervise others, 4) knowledge and execution capability on working disciplines required for a business site, and 5) knowledge and skills on basic Kaizen. It is also important to point out the fact that TVET trainees have not sufficiently understood "the meaning of work", "the way of thinking that is useful after entering the labour market", and" growth mindset to activate self-motivation".

To sum up, it is essential to equip TVET trainees with a broader range of knowledge and skills associated with specialised skills, a variety of soft skills and business minds to make maximum use of technical knowledge and skills obtained in TVET institutions. Therefore, the Survey Team tries to elucidate a new approach in industrial human resource development by shedding light on the value of "competencies to increase the market value". TVET trainees could enter the labour market as industrial human resources with high potential. This is unique to this Survey, totally different from the point of analysis of the TVET Survey conducted by the JICA Tanzania Office.

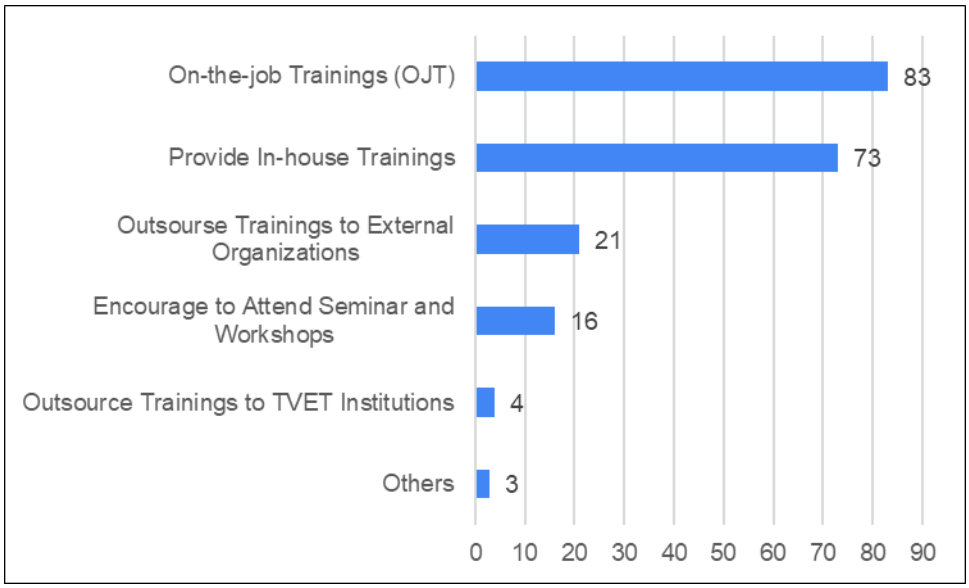
2.5 Human Resource Development Activities by Industries in Tanzania

2.5.1 Activities by Companies

Survey Team investigated how companies train their employees through a questionnaire survey

[51] It stresses the importance of soft skills showing evidence that companies to be questioned replied that they need technical/vocational skills (100%), followed by interpersonal skills (76.9%) and customer care skills (69.2%).

targeting 90 companies and got responses from all companies (multiple answers allowed). Figure 18 overviews response results.

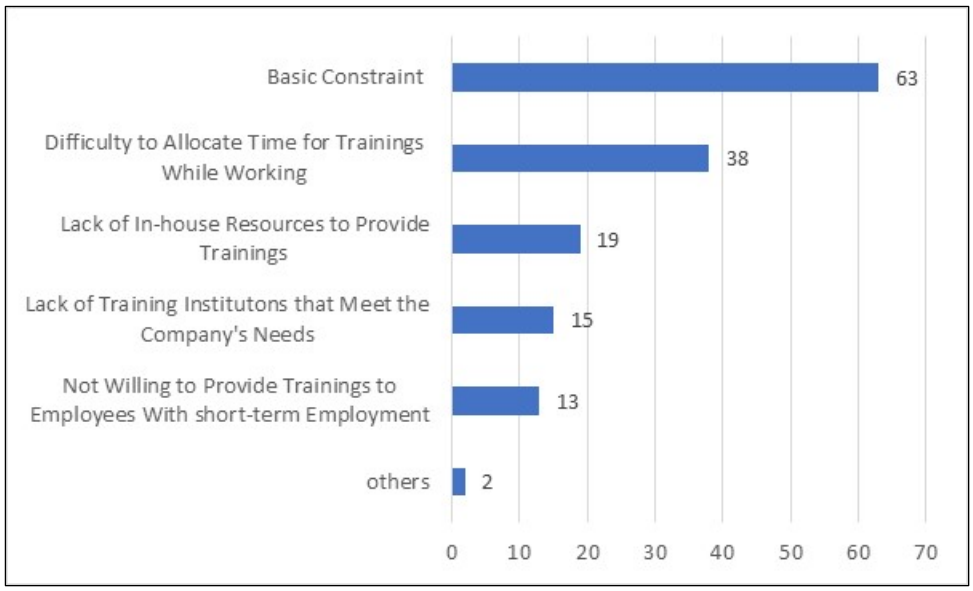


Source: Questionnaire Results (Survey Team)

Figure 18 Response Results on Employee's Development by Companies (Number of Response)

It was found that 83 out of 90 companies (92.2%) trained up their employees through OJT, and 73 companies (81.1%) provided in-house training. In short, most companies develop their employees in one of two ways, OJT or in-house training. On the other hand, only 21 companies (23.3%) responded that they outsourced training to external organisations. This result shows that medium/or large companies, which are thought to be financially comfortable enough to outlay money for training expenditure, have not used external services to provide training to their employees. In addition, even fewer companies (4 companies, 4.4%) responded that have training provided by TVET institutions. It can be assumed that companies rarely use training services offered by TVET institutions in Tanzania.

Furthermore, the Survey Team investigated the challenges companies face in developing their employees through a questionnaire survey and got responses from all companies (multiple answers allowed). Figure 19 overviews response results.



Source: Questionnaire Results (Survey Team)

Figure 19 Response Results on Challenges in Developing Employees (Number of Response)

It was found that 63 out of 90 companies (70.0%) responded to "budgetary constraints" as the first challenge. Also, 38 out of 90 companies (42.2%) indicated the difficulty to allocate time for training while working, and this was the second most common answer. As mentioned earlier, this result can explain most companies provide in-house training. In short, it is believed that many companies chose not to outsource training to external institutions due to budgetary constraints and difficulty of schedule coordination between training and working.

2.5.2 Case Study

This survey conducted on-site interviews with companies in Tanzania that employ VETA graduates to find out about their internal development activities for human resources. In-house training of the following three (3) companies has been taken as a reference case study - (1) the largest employer of VETA graduates, The Tanzania Electric Supply Company Limited (TANESCO), (2) a Tanzanian company, Superdoll Trailer Manufacturing Co., Ltd., and (3) The local distributor of Japanese company products (Tanzanian company)., Toyota Tanzania Ltd., All of these companies provide opportunities for FA (field Attachment) to VETA trainees, and (2) and (3) also contributed to the company questionnaire implemented under this survey.

(1) TANESCO

Location: Dar es Salaam

Industrial sector: Electrical (Power supply)

Overview:

It is a public utility company under the Ministry of Energy (MoE), the monopoly integrated electricity supplier for electrical generation, transmission and distribution.

Full-time employees are approximately 7,240, including 2,400 artisans, 908 technicians, and 568 engineers. Most artisans are VETA graduates. There are always around 3,000 fixed-term employees based on projects, of which 70% are artisans. In 2011, with the support of JICA, two "TANESCO Training Schools" (hereinafter referred to as "TANESCO School") were established in Dar es Salaam as internal training facilities, and practical training is provided at the school in the Masaki area, which has well-maintained equipment and facilities.

Training content:

- The training for new employees (Artisan): a mandatory 3-month training course for all new employees to the artisanal level. The school in the Masaki area has modern equipment and facilities, allowing employees to acquire skills in a realistic environment.
- The training for new employees (Technician): introductory training is available for technicians with an assistant engineer role.
- The skill development training: Training courses are essentially short courses, many of which are aimed at technicians and engineers. The implementation plan for 2022 is as follows: hot-line work skills, low-cost design skills, power system management skills, skills in earthing technique, switchgear maintenance skills, maintenance skills for transmission networks, power losses management skills, economic power dispatch skills, maintenance skills gap, underground HV&MV cable skills, general construction and maintenance skills.

Key features: Establish schools as the in-house training system and organisation of implementation structure with the support of JICA. The company exchanged the Memorandum of Understanding (MOU) with VETA and has a well-established partnership with VETA, including the dispatch of VETA teachers.

(2) Superdoll Trailer Manufacturing Co., Ltd.

Location: Dar es Salaam

Industrial sector: Automotive (Manufacturing trailers and maintenance)

Overview: Established in 1992. The company is the largest manufacturer of trailers in the Eastern, Central and Southern African regions and provides after-sales service. It is also a distributor of the world's most famous automotive products. There are around 300 employees, including 24 managers. In-house training is outsourced to an external agency if necessary; in some cases, general managers and senior staff provide training. Some

years ago, the company used VETA for internal training, but in-house training has generally been conducted internally after establishing the training department.

Training content:

- Training for all employees: Fire and First Aid, Behavior Change, Technical Training from Suppliers of Raw Materials, Kaizen Training[52] (Kaizen basic of 5S, 7 Mudas (wastes), QC activities, etc.). Concerning Kaizen, the company places importance not only on the technical side but also on changing employees' mindsets. The Kaizen training is carried out once a week.
- Individual training: The training department will provide additional training for employees whose behaviour change or performance is unsatisfactory.

Key features: The internalisation of training. The transition from using external training institutions (VETA) to setting up training departments within the company.

(3) Toyota Tanzania Ltd.

Location: Dar es Salaam

Industrial sector: Automotive (Sales and maintenance)

Overview: TOYOTA Tanzania has been in business for over 50 years with 200 employees and is headquartered in Dar es Salaam. 20 staff each are allocated at the three branches in Mbeya, Arusha and Tanga. In addition, each district has a dealer under contract with a local company. There are 48 technical staff (including artisans who graduated from VETA) and seven engineers; the company had a primary school graduates training system to raise technically qualified staff for an extended period. Still, technical staff without technical training are not recruited. The training department is divided into the technical division and the marketing division. TOYOTA Tanzania has developed a unique training system, and the various technical training programmes for employees and dealers are provided at headquarter in Dar es Salaam.

Training content:

- Technical training (for managers): Training for technical upgrade including Training of Trainers (ToT), new models, hybrid cars and others, held at Toyota Academy (Toyota's directly managed training institutions) in Japan, South Africa and Kenya are available.
- Technical training (for Mechanics): Mainly focused on improving skills in maintenance techniques. Managers who participated in courses at Toyota academy organise

[52] The company introduced Kaizen with support from JICA's Kaizen Project.

training using materials from the systems, and opportunities for E-learning and OJT training by senior staff are provided.

- Technical training (pre-employment): Three trainees participated in VETA's dual apprenticeship programme. After completion, the trainees were employed as full-time staff of TOYOTA Tanzania or maintenance staff at the dealers.

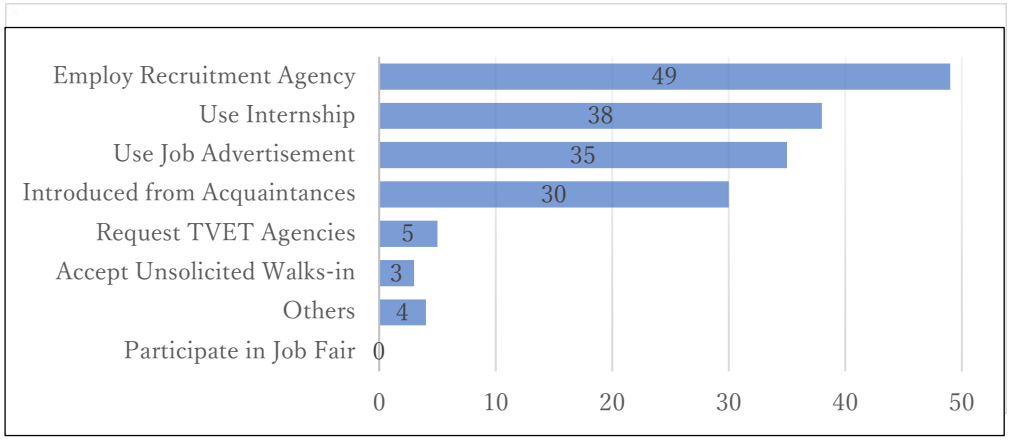
Key features: Creation of opportunities for technical updates through an established in-house training system and utilisation of external training schemes (e.g., VETA Dar es Salaam RVTSC's dual apprenticeship system [49]). The trainers include a graduate of VETA.

2.6 Case study of a partnership between industry and TVET organisations in Tanzania

2.6.1 Development of partnership

The team analysed how the partnership between industry and TVETs is going from the questionnaire survey results made by the survey team.

(1) Method of employment (Among 90 enterprises, 86 replied)



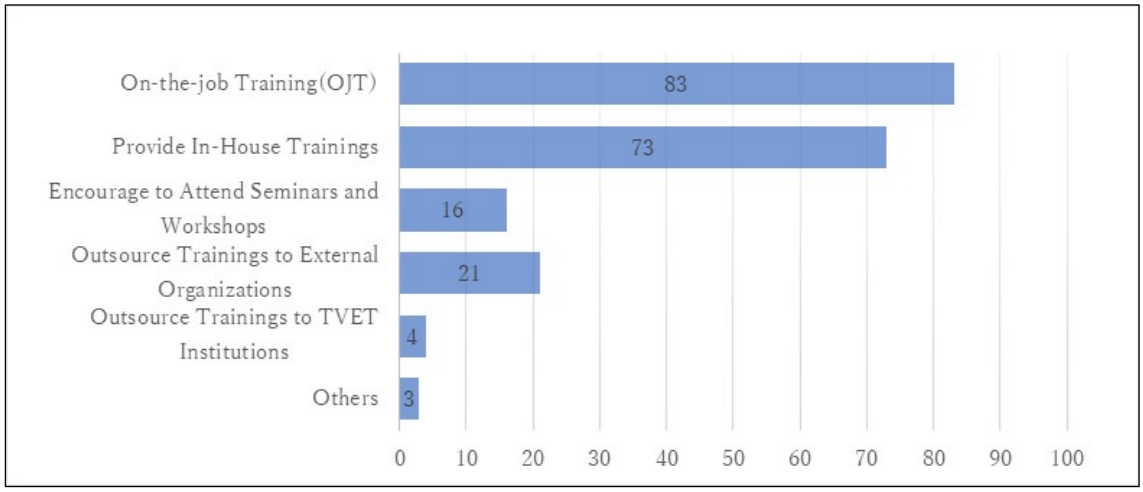
Source: Questionnaire Survey by the research team

Figure 20 Survey result of employment methods (%)

The most common method of hiring employees was "Employ Recruitment Agency" at 49 companies (57%). This was followed by "Use internship" (38 companies, 44.2%) and "Use job advertisement" (35 companies, 40.7%), with only five companies (5.8%) who replied “Use TVET Agencies” to hire employees.

It is noteworthy that almost half of the companies use internship programs. By industry, electrical equipment (14 out of 28 companies, 50%), automobile maintenance (8 out of 17 companies, 47%), and food processing (16 out of 44 companies, 36.3%) are using internships. Almost half of the electrical equipment and automobile maintenance companies employ interns, indicating that the internship system is widespread in the industry world.

(2) How companies train their employees (replied by all the 90 enterprises)



Source: Company questionnaire (Created by Survey Team)

Figure 21 Survey result of training methods (Number of Response)

As for the training methods used by companies to train their employees, 83 companies (92.2%) answered that they train their employees through on-the-job training. This was followed by 73 companies (81.1%) that use in-house training. The overwhelming majority of companies utilise internal resources to train their employees, with only four companies (4.4%) outsourcing activity to TVET institutions.

(3) Use of TVET institutions' services by companies (Replied by all the 90 enterprises)

As for the use of TVET institutions, 64 companies (71.1%) have never used TVET institutions' services, and less than 30% (26 companies, 28.9%) have used them, according to the questionnaire results. The breakdown by industry of the 26 companies which have used their service is as follows: electrical equipment (2 out of 28 companies, 7.1%), automobile maintenance (7 out of 17 companies, 41.1%), and food processing (17 out of 44 companies, 38.6%), indicating that the use of the service by companies in the electrical equipment field is shallow.

The breakdown by company size shows that small companies (17 out of 65, 26.1%), medium companies (5 out of 11, 45.4%), and large companies (4 out of 7, 57.1%) use the TVET institutions' services. The use of TVET by medium and large companies is relatively high. There was no use of TVET institutions by micro-enterprises (0 out of 7).

Looking at the results by region, in descending order of usage rate, Arusha (7 out of 9 companies, 77.7%), Kilimanjaro (7 out of 19 companies, 36.8%), Dodoma (2 out of 8 companies, 25%), and Dar

es Salaam (9 out of 49 companies, 18.3%). The survey team conducted a field survey of these companies. The group visited the Arusha Technical College (ATC) in Arusha, where they found the versatility of its programs and the excellence in the quality of its facilities. ATC is one educational institution that plays a central role in developing industrial human resources in Arusha and Tanzania.

The survey team also visited VET Arusha Vocational Training Centre (VTC). One of the few VET centres with an Agricultural Mechanics department found partnerships with ten private companies. 75% of the students have the opportunity of corporate training. These facts verify that collaboration between TVET institutions and the private sector is well established in Arusha. This fact seems to be reflected in the results of the survey.

(4) Experience of joint development of curriculum between companies and TVET institutions (replied by all the 90 companies)

According to the questionnaire results, 74 companies (82.2%) answered that they never had a co-developed curriculum with TVET institutions. Only 16 companies (17.8%) responded that they co-developed a curriculum with a TVET institution. On the other hand, we interviewed CTI, a private industry association. We received the following response “Although we are not directly involved in the development of VETA's curriculum, we share the information on required skills and human resources by the industry with VETA.” However, at the same time, they also pointed out there is a need for VETA to update their facilities because the obsolete facilities they own would hinder the training required by the companies.

(5) Results of training conducted by companies in collaboration with TVET organisations using their facilities (replied by all the 90 companies)

82 companies (91.1%) answered that they had no experience of collaboration with, TVET and only 8 companies (8.9%) responded that they had experienced. However, as in 3) above, Arusha was the most prominent (3 out of 8 companies: 37.5%) in terms of the regional breakdown of companies with collaborative training experience with TVET.

Judging from the results, it is considered that the case of cooperation between industry and TVET institutions in Tanzania is still limited. We will examine and analyse the reason from the results of other questions and the content of the interviews with companies and TVET institutions in this field survey.

Judging from the results of other items of the questionnaire, 83 companies (92.2%) answered “Yes” to the question "Whether or not your company is interested in collaborative curriculum development with TVET institutions (answered by all the 90 companies)". Furthermore, when asked "What are the benefits

of using the services of TVET institutions (answered by all the 90 companies)", 68 companies (75.6%) answered, "expect skilled TVET institution students to be future employee candidates". 52 companies (57.8%) answered “Yes" to the question "whether or not you have experience of accepting TVET students as internships (answered by all the 90 companies)". From the results, it can be inferred that some companies are interested in the curriculum and employment of human resources of TVET institutions.

On the other hand, when asked “why they accepted TVET students as interns (57 out of 90 companies answered),” the most common answer was "to contribute to society" (52 companies, 91.2%), followed by "to meet the needs of TVET institutions" (44 companies, 77.2%), which was higher than "to look for future employee candidates" (34 companies, 59.6%). The reality is that companies have high expectations for the human resources produced by TVET institutions, but these expectations do not necessarily translate into actual employment. On the other hand, it was also confirmed that VETA headquarters is trying to establish real relationships with companies by signing MOUs with as many companies as possible to provide FAs and internships with their students.

2.6.2 Specific Examples

(1) Dual Apprenticeship Training System (DATS)

The Dual Apprenticeship Training System (DATS) is one of the systems introduced by VETA that promotes cooperation with TVET institutions. DATS is a vocational training course that combines OJT at companies and training at VET institutions. Trainees go back and forth between workplaces and training institutions to acquire the skills and knowledge required in their field of specialisation and workplace. This method aims to train young people to become skilled workers quickly and make them more accessible to the local labour market[53].

VETA received technical assistance from the German Chamber of Skilled Craft (HWK: Handwerkskammer)[54] (from 2011 to 2018) for the introduction of DATS, and in May 2013, pilot training was introduced at Automobile and electrical installation (16 people each) as Dar es Salaam RVTSC, followed by Hospitality at VETA Moshi in (16 people). From January 2018, the capacity for each grade has been expanded to 25, and training is continuing. VETA has set up committees with the Tanzania Employers Association and other representatives of industries to ensure the quality of training at DATS.

1） Mechanism of DATS

[53]https://hwkdualsystem.co.tz/

[54]The project was financed by the Federal Ministry for Economic Cooperation and Development (BMZ) within the framework of the “Vocational Education and Training Partnership Programme (BBP)” programme

At DATS, we use a block release system, meaning three blocks of training (1 block) over one year are repeated between training facilities and companies. The system also places a strong emphasis on workplace activities to ensure that skills are acquired through repetition. Table 20 below shows the annual training schedule for DATS. While VETA's long-term training usually requires[55] a minimum of 8 weeks of FA at each level 2 and 3, DATS has a much more extended field training period of 34 weeks.

During the off-the-job training (OFF-JT) period, trainees learn practical skills from teachers at VET institutions. On the other hand, during the on-the-job-training (OJT) period, trainees work as an employee in the company with which they have signed an apprenticeship contract and have acquired the skills necessary to work there.

Table 20 Training schedule based on the block release system

1st block		2nd block		3rd block		Total	Period
VETA	Industry	VETA	Industry	VETA	Industry	54 weeks/Year	3 Year
OFF-JT	OJT	OFF-JT	OJT	OFF-JT	OJT		
7 Weeks	12 Weeks	7 Weeks	10 weeks	6 weeks	12 Weeks		

Source: VETA's HP[56](Created by Survey Team)

2） Contracts with VETA, companies, and trainees

Before starting the training, an MOU will be signed between the company and the VET institution. Then, the company recruits the trainee according to the recruitment guidelines provided by VETA under the MOU. The selected trainees will sign an ‘Apprenticeship Contract’ with the company. The apprenticeship contract is intended to equip trainees with the knowledge and skills to enter the labour market without previous employment experience. Table 21 below shows the roles of stakeholders involved in implementing DATS.

[55] Field Attachment Guidelines for VET Programmes, 2019, VETA
[56]https://www.veta.go.tz/dual-apprenticeship

Table 21 Roles of stakeholders involved in the implementation of DATS

VETA	・ Practical, off-the-job training for trainees at VET institutions ・ Coordination and monitoring of DATS implementation ・ Provision of training materials/machinery
Employers	・ Providing a working and learning environment ・ Provision of a working environment to practice and integrate the skills acquired in the training centre ・ Appointment of a supervisor/mentor ・ Monitoring of training in the company ・ Support in developing a wide range of business skills through work experience in different departments in the company ・ Support for trainees through payment of allowances ・ Assistance with transport, hygiene and food costs during the training period
HWK	・ Technical support from l experts from Germany ・ Financial support

Source: VETA's HP[57](Created by Survey Team)

The courses currently being offered by DATS are Automotive Maintenance, Electrical Installation at VETA Dar es Salaam, Hospitality and Tourism at VETA Moshi, which started in 2013, and Agricultural Machinery at VETA Manila, which was added in 2017. It is estimated that by the end of June 2019, about 100 companies have registered, and 200 trainees have completed the DATS. Table 22 below lists the companies in the automotive and electrical sectors that participated in DATS in 2020 and signed apprenticeship contracts with VETA trainees. Companies in the Hospitality and Agricultural Machinery sectors are omitted as they are not included in the survey.

Table 22 Companies participated in DATS in 2020

Automotive field	Electrical field
Police-Kilwa Road	Lake Cement
CFAO	Bati Service Ltd
Scania Ltd	Derm Electrics (T)
Plasco	Plasco (T) Ltd
Lake Company	Power Electronics
D / motor	Tanzania Breweries Co.
TATA (T) LTD	Ltd
Evolution	Nazneen Company
	Dsmrvtsc

Source: VETA's HP[58](Created by Survey Team)

[57]https://www.veta.go.tz/dual-apprenticeship
[58]https://www.veta.go.tz/dual-apprenticeship

The benefits of implementing DATS include eliminating the mismatch between training and the labour market, providing skilled labour, eliminating youth unemployment, acquiring the soft skills needed for the job, and increasing the productivity of enterprises. Another benefit is the expansion of enrolment in VETA institutions, as new trainees can be accepted while trainees participating in DATS are doing on-the-job training in companies.

DATS was first trialled in 2013 and continues to be a VETA programme but is still limited to the four sectors. According to the interviews during the fieldwork, DATS is an excellent approach, but it isn't easy to sustain and expand due to the high cost to the companies. Another problem is that the trainee's sign 'apprenticeship contracts' and not formal employment contracts with the companies, so employment after the training is not guaranteed.

As will be described in Chapter 6, the verification of the Training Model in this survey involved a total of 8 trainees of Year 2 and Year 3 trainees of the DATS course at VETA Dar es Salaam RVTSC. All of the trainees had on-the-job training, but only one responded that they had a promise of employment. Furthermore, in the verification of the training model, there was no significant difference in the results of the practical tests between the DATS trainees and the regular long-term course trainees. Therefore, it is difficult to determine to what extent DATS training is more effective than conventional training in acquiring specialist and soft skills. It should also be noted that it will take a long time for DATS to be rolled out at the national VETA level, including the process of encouraging companies.

(2) Kaizen Guidance for Companies by the College of Business Education (CBE)

CBE was established in 1965, just after independence, to provide commercial education to the people who did not have the knowledge and experience to earn a living. It has campuses in Dar es Salaam, Dodoma, Mwanza and Mbeya. It is currently a higher education institution registered at NACTE and is affiliated with the University of Eastern Finland (UEF).

The educational programs cover eight subjects: Management, Accounting, Human Resources, IT, Marketing, Logistics, Industrial Legal Metrology, and Archives Management, including a two-or-three-year Diploma and a three-year Bachelor's Degree program. It also covers a Postgraduate Diploma course for top students and a Doctors Programme in cooperation with the UEF. The number of students in CBE is in all about 6,700 people.

The CBE also provides short-term training and consulting services for working adults. In addition, under the umbrella of the CBE, the Entrepreneurship Centre offers a small number of students with entrepreneurial aspirations the opportunity to learn about business planning, finance, and management for growth and receive mentoring services, feedback, and advice from experienced entrepreneurs.

CBE, together with the Ministry of Investment, Industry and Trade (MIIT) and its affiliate Small Industries Development Organization (SIDO), has been training Kaizen trainers development activities as a CP of the JICA-supported "Project on Strengthening Manufacturing Enterprises through Quality and Productivity Improvement (Kaizen) in the United Republic of Tanzania." Through this project, the CBE has established itself as an organisation that trains Kaizen trainers. In this way, the CBE, as a TVET organisation, is working together with local companies to improve the quality and productivity of the Tanzanian sector through the promotion and dissemination of Kaizen.

3. Challenges of Industrial Human Resources Development in Tanzania

Challenges associated with industrial human resources development for Government, TVET institutions and Industry are summarised from the perspective of ①Policy/Institution, ②Skills/Competences in Table 23 below.

Table 23 Challenges for Government, TVET Institutions and Industry

		Government	TVET Institutions	Industry
① Policy/Institution	Qualification System	National qualification is not consolidated by industry sector	Connections between VET (Level 1-3) and TET (Level 4-10) are not fully established.	・Qualifications required for specific service and job positions are not clarified. ・Employment conditions do not include required qualifications ・In-house system to support qualification acquisition is undeveloped
	Policy	・Long-term vision on industrial human resource development is unclear ・Sector-wise human The resource plan is not prepared		Opportunities to give advice and commitments to prepare policy and plan on industrial human resource development is limited.
	Institution	No consistent and comprehensive institutional design is prepared		Few in-service pieces of training for skill upgrading are introduced.
② Skills/Competencies	Skill Gap/ Response to New Technologies	・Necessary facility and equipment are not identified based on training needs, which makes adequate budget preparation difficult ・Government faces constant budget constraints on updating their	・Teacher's skill as well as facility and equipment are not sufficient ・Teacher's skill in equipment use and maintenance is not sufficient ・There are few curriculum updates ・Insufficient collaboration with	・Companies are inactive to develop training programs in partnership with TVET institutions ・Companies have insufficient ability to accept Field Attachment

		Government	TVET Institutions	Industry
		facility and equipment	companies limits the capacity to grasp knowledge and skills highly demanded from industries	
	Soft Skills Development	Government is not aware of skills highly demanded from companies and soft skills that TVET institutions can offer in a precise manner and fails to build them into policies on human resource development	・TVET institutions are not aware of soft skills highly demanded from companies ・TVET institutions lack of understanding on importance of soft skills ・TVET institutions provide few supports to nurture mindsets of trainees	Companies fail to build necessary soft skills into in-service training.
	Job Placement Promotion	・Law that protects SMEs and incentive measures are not enacted ・Public job placement system is not established ・Financial system to support young entrepreneurs is not sufficiently established	・Opportunities for employment information and job marching are limited ・Entrepreneurship education is not adequately developed and provided ・Organizational job placement support system is not consolidated	・Less job posts for MSMEs are provided ・Access to human resource information is limited ・Companies cannot use staffing service agencies due to their expensive fees

Source: Survey Team

The survey Team picked up priority issues from Table 23 based on the field survey analysis results and illustrated them.

1） Promotion to Level 3 from Level 2

Organisational change in the TVET sector in 2021 relegated VETA's supervisory function over VETA-affiliated TVET institutions to NACTE. This change requires formulating consistent institutional arrangements by adjusting different qualification systems between VET (Level 1-3)

and TET (Level 4-10). In Tanzania, a technician is much more in demand than an engineer and an artisan, and it is the occupation most highly demanded from the market. Therefore, the government regards the increase in the number of technicians who meet the definition of level 4 to 10 in the NACTE qualification system as an essential strategy for industrial human resource development.

In line with the organisational change of the TVET sector, it is essential to facilitate the transition from level 3 of VET to level 4 of TET. However, VET cannot secure a sufficient number of trainees who move up to level 3, and therefore, this issue needs to be prioritised to be addressed before everything else. In VET, it is a general trend that many trainees advance to level 2 while those who wish to move up to level 3 represent small numbers, and the promotion rate to level 3 from level 2 is relatively low, as you can see in Figure 13 in Chapter 2.

Many VET trainees think it normal to leave school at level 2, and the number of level 2 trainees is the largest of all levels. Trainees who study at specific courses such as automotive and electricity that can receive high employment demand from particular companies after graduation tend to promote to level 3. There are a variety of factors that hinder the promotion to level 3. Such factors include 1) shortage of qualified teachers who are capable of teaching at level 3, 2) shortage of training equipment that is required to be used at level 3, 3) difficulty to secure companies that accept FA, which is mandatory to advance to level 3, and 4) trainees inability to bear expenses for FA, failing to earn credits.

Therefore, the first step is to take measures to get rid of factors hindering the promotion to level 3 from level 2 to accelerate the development of potential technicians. This would contribute to expanding the pool of level 3 human resources.

2） Coordination System for FA

Not all trainees of public TVET institutions in Tanzania can access companies that can accept them in the form of FA due to schedule conflicts among target trainees wishing to receive FA. TVET institutions have not yet introduced a FA coordination system to secure a separate slot for each trainee. Besides, the existing FA system places a significant burden on trainees requiring them to identify the company to accept them for FA and bear necessary expenses to conduct it by themselves. More than a few trainees cannot proceed to the next level or leave school with graduation certificates due to failure of FA implementation, which is a mandatory requirement for promotion or graduation.

3） Catching up with Market Needs

In VETA, the Regional Office takes the initiative of conducting a market survey for target industries and reflects market needs to their curriculums. However, updating the curriculum takes a long time based on analysis results and is shared with VTCs nationwide. On the other hand, technology changes in the market are so rapid and frequent that VETA cannot catch up with them quickly. In addition, TVET institutions cannot identify various soft skills that trainees need to acquire to function as industrial human resources in the market. Therefore, they fail to build them into their curriculum.

4） Provision of Job Placement Service

Most public TVET institutions do not provide trainees with job placement services such as company orientations and job fairs in an organised manner. They have been using company information and networks obtained through market surveys only for the sake of curriculum development but not using them for FA and job placement supports. They do not even provide trainees with opportunities to learn knowledge and mindsets applicable when entering the labour market. Therefore, trainees must start working after graduation with an immature business mindset, failing to materialise their potential market value. They also expose themselves to the risk of not efficiently developing themselves as industrial human resources.

4. Good Practice and Lessons from Similar Projects in Other Countries in JICA

In this chapter, we analyse good practices by extracting the sovereign and non-sovereign projects that are considered representative of similar projects of JICA.

As for sovereign projects, we selected seven good examples of projects from Africa and other countries that address challenges in private sector development and education and human resource development (Table 24). Many examples of partnerships with non-sovereign projects (private-sector alliances).

For non-sovereign projects, we selected three projects for dissemination, demonstration, and business development from the perspective of cooperation with sovereign projects (technical cooperation projects) (Table 25).

Lessons learned from these 10 projects are summarised below from the perspective of "Hands-on skills," "Soft Skills," and "Employment Support," the three elements considered necessary for the development of marketable industrial human resources.

Table 24 Summary of similar projects in other countries (sovereign projects)

	Scheme	Project name [Proposed company name]	Target country	Period of cooperation
1	Technical cooperation	The Project for Strengthening the Capacity of Tumba College of Technology	Rwanda	July 2007 – July 2012 January 2013 – August 2018
2	Technical cooperation	Project on Strengthening Manufacturing Enterprises through Quality and Productivity Improvement (Kaizen) in the United Republic of Tanzania, Phase 1 and Phase 2	Tanzania	March 2013 to March 2016 July 2017 to March 2022
3	Technical cooperation	TVET-Leading Institution's Expansion of Human Resources and Skilled Workforce Development for Industrial Sector in Uganda	Uganda	March 2015 – March 2021
4	Technical cooperation	Project on Capacity Development for Kaizen Implementation for Quality and Productivity Improvement and Competitiveness.	Ethiopia	November 2011 – November 2014 June 2015 – June 2020

	Scheme	Project name [Proposed company name]	Target country	Period of cooperation
5	Technical cooperation	The ICT Innovation Ecosystem Strengthening Project	Rwanda	November 2017 – Ongoing
6	Technical cooperation	The Project for Skills Development and Market Diversification (PSDMD) of Garment Industry of Pakistan	Pakistan	June 2016 – Ongoing
7	Technical cooperation	The Project for Skill's Development of ICT Engineers Targeting Japanese Market	Bangladesh	May 2017 – ongoing

Source: Created by Survey Team from JICA's website

Table 25 Summary of similar projects in other countries (non-sovereign projects)

No.	Scheme	Project name [Proposed company name]	target country	period of cooperation
8	Verification Survey with Private Sector for dissemination & Business Development (SDGs-type)	SDGs Business Verification Survey for the establishment of the sustainable supply chain of qualified cacao (Meiji Co., Ltd., Tokyo)	Madagascar	July 2019 – Present
9	Verification Survey with Private Sector for dissemination & Business Development (SME support)	SDGs Business Verification Survey with the Private Sector for Lightning Protection Solution on Key Infrastructure of ICT Industry in Rwanda (Otowa Electric Industry Co., Ltd., Amagasaki, Hyogo)	Rwanda	September 2019 – May 2023
10	Verification Survey with Private Sector for dissemination & Business Development (SME support)	Feasibility Survey for the use of e-learning system compatible with poor communication environment, for the courses of the Information Technology Engineering Examination (IEEE). (Kyouiku Jouhou Service, Miyazaki)	Bangladesh	February 2017 – January 2020

Source: Created by Survey Team from JICA's website

4.1 Sovereign operations

1. Rwanda: The Project for Strengthening the Capacity of Tumba College of Technology [59]	
Overview	Although Rwanda's technical education institutions have established Diploma level courses for mid-career engineers, there existed no school corresponding to this stipulation. The Tumba College of Technology was established in 2007 as the corresponding school with Diploma courses. The project addressed several issues, including planning a development plan and curriculum for the whole school, training of teachers, establishment of a sustainable school management system and employment support system for students. Phase 2 of the project focused on strengthening the abilities of teachers and the school's management and established a research and development production unit to enhance the regime further. This work aims to improve the quality of the Rwandan TVET sector by providing promising practices to the Rwandan government that could serve as models for other TVET institutions.
Activities that can be compared and verified	・ Establishment of a continuous capacity building system to provide practical technical education ・ Establishment of school management improvement mechanism ・ To implement industry-academia-community collaboration throughout the college organisation, the position of the research and development project unit was made clear to strengthen the team.

	Good Practice	Lesson
Hands-On Skills	・ Relevant companies and institutions participated in the industry collaboration conference, and the curriculum reflected the skills in high demand in the industry. ・ Through participation in research and development project unit activities, staff members have acquired the latest and appropriate practical know-how and improved their skills, realising self-sustained management of the school.	・ The curriculum revision was focused on human resource development in line with industry needs. ・ It isn't straightforward for teachers to participate in school management activities outside the school while holding classes. So, it is essential to create a system in which teachers feel the benefits of participation and get more motivated.

[59] Refer to the ODA visualization site https://www.jica.go.jp/project/rwanda/0613816/index.html

Employment Support	・ Provision of employment experience opportunities for students and expansion of employment opportunities for graduates. ・ Business Incubation Centre was established, and, at the same time, a career support system was implemented.	・ To encourage the Business Incubation Centre to achieve the expected results, it is desirable to assign a person to charge each student and prepare the respective manual.

2. Tanzania: Project on Strengthening Manufacturing Enterprises through Quality and Productivity Improvement (Kaizen) in the United Republic of Tanzania, Phase 1 and Phase 2 [60]	
Overview	Despite the aim to develop the manufacturing industry to reduce the poverty rate, most manufacturing enterprises are small enterprises, and they had problems in management ability, product quality and productivity. The Ministry of Investment, Industry and Trade (MIIT) provides companies with the technology, management guidance, and facilities necessary for business operations but the quality and quantity are insufficient. The aim is to support institutional, organisational structure and capacity building of the staff Kaizen dissemination and expand the Kaizen dissemination system continuously and widely in the country.
Activities that can be compared and verified	・ Hosting of Kaizen Seminars for Management ・ Training of trainers ・ Providing pilot training and consulting services to leading companies

	Good practice	Lesson
Soft Skill	・ Kaizen seminars are held for management to promote Kaizen in companies. ・ Reproduction of local trainers by local Tanzanian trainers.	・ To introduce Kaizen to a wide range of industries and improve industrial competitiveness, large and medium-sized companies must introduce Kaizen. ・ To implement Kaizen activities on a company-wide basis, it is essential to make the middle managers understand Kaizen and put it into practice.

3. Uganda: TVET-Leading Institution’s Expansion of Human Resources and Skilled Workforce Development for Industrial Sector in Uganda [71][61]	
Overview	Since 1997, Japan's grant aid and technical cooperation have strengthened the Nakawa Vocational Training Institute (NVTI). In this cooperation, NVTI

[60] Refer to the ODA visualization site https://www.jica.go.jp/oda/project/1101614/index.html.
[61] https://www.jica.go.jp/oda/project/1400475/index.html

	supported the strengthening of human resource development functions to meet the needs of industry and the development of a business environment enabling entry of Japanese companies to Uganda through the establishment of diploma courses in automotive and electrical engineering under the leadership of the private sector, and short-term training courses for company employees in the mechatronics field.
Activities that can be compared and verified	・ Development of human resources which meet industry needs (Automotive, Electrical and Mechatronics) ・ Establishment of courses for company employees ・ Strengthening of Employment Support Activities

	Good Practice	Lesson
Hands-On Skills:	・ NVTI and private companies set up PPP committee, conduct interviews with private companies, identify skills and technologies which companies highly need, and jointly develop the curriculum for a new diploma course originating locally. A consistent cooperative relationship was established, including technical improvement training for teachers by private companies and accepting practical business training for students. ・ The short course of mechatronics was offered as a paid course and a one-off course with a term of 3 days to 2 weeks provided in response to the demand by companies to facilitate their employees' participation. ・ By concluding MOUs between schools and companies, schools will encourage companies to cooperate.	・ In the curriculum development led by the private sector, it is possible to conduct training at the company's level by having the company participate in the course contents and the development and certification of assessment standards. ・ Training teachers (ToT) places a heavy burden on the host companies that would accept its implementation and on the training sites if the teachers cannot assign substitute teachers during their ToT period. ・ A short course on the latest and highly needed technology may be expected as an income activity for schools, while sales efforts to acquire qualitative customers are required.
Employment	・ Person in charge of the private	・ To better understand the professional

	Good Practice	Lesson
support: Support for holding seminars	partnership was assigned, and a teacher in charge was assigned to each department. ・ Employment seminars were held for students starting their internships at companies. Lectures by company employment managers were also held on how to prepare for employment and what type of human resources are required by companies. ・ In collaboration with private-sector job-matching services, we supported graduates in finding jobs.	and soft skills required in the workplace, it is necessary to conduct follow-up surveys periodically after graduation to collect new information at industry sites. ・ Employment support should be handled efficiently in cooperation with partners to whom we can outsource the activities, such as the private sector and NGOs.

4. Ethiopia: Project on Capacity Development for Kaizen Implementation for Quality and Productivity Improvement and Competitiveness. [70]	
Overview	Ethiopia's private sector is lagging, and its low quality and productivity were barriers to exports and domestic sales and inflow of foreign investment. In response to the challenge of strengthening competitiveness by improving quality and productivity to contribute to the revitalisation of the private sector, the project supported the institutional design, organisational structure, and capacity building of the staff of relevant organisations to disseminate Kaizen as a philosophy and method for improving quality and productivity in Japan. The Ethiopia Kaizen Institute (EKI) was established in the first phase. In Phase II, through the Kaizen dissemination system centred on EKI, support was provided for developing industrial human resources capable of implementing Kaizen activities in the private and public sectors. This will improve quality and productivity in priority industries and strengthen industrial competitiveness.
Activities that can be compared and verified	Organisational structures for promoting and disseminating quality and productivity improvement (Kaizen) with EKI as a core organisation were established.

	Good Practice	Lesson
Soft Skill	・ Based on consultations with relevant institutions and organisations, EKI developed short- and long-term plans for	・In order to prevent the turnover of trained consultants from becoming a hindrance to the project, it is necessary to improve the compensation for the

	Kaizen dissemination and a framework for organisational systems, including necessary budgets, staffing, business plans, and service composition. ・ EKI prepared and used Kaizen's training curriculum and manual for TVET teacher supervisors. ・ To promote Kaizen, EKI conducted necessary public relations activities, including seminars, and surveyed current and future policies like the award system for enlightenment activities.	consultants and provide incentives for such issues as Master's Degrees through cooperation of higher educational institutions.

5. Rwanda: The ICT Innovation Ecosystem Strengthening Project [62]	
Overview	In the 2000s, Rwanda promoted itself as an "information and communications technology (ICT) -oriented country." By improving its business environment through deregulation and other measures, the country has attracted domestic and foreign investors and achieved post-war reconstruction and high economic growth. Rwanda is expected to share its experience solving development issues through ICT with other countries. This cooperation aims to strengthen the "ICT Innovation Ecosystem," which will serve as an environmental foundation for launching new businesses realising the effective and efficient connection of various domestic and international stakeholders such as relevant Ministries, Agencies, Chambers of Commerce and Industry, newly started ICT companies, investors, and educational institutions.
Activities that can be compared and verified	・ Creative use of ICT centred on private enterprise activities ・ Formulation of a policy framework to promote entrepreneurship and innovation in the ICT sector ・ Strengthening relationships between Rwandan and Japanese ICT companies ・ Dissemination of creative ICT use cases in Japan and overseas

	Good Practice	Lesson
Soft Skill	・ Develop ICT technology and soft skills such as legal affairs, accounting, start-up,	・ While it is easy to start a new business, it is rather challenging to keep it going. Support for accounting and

[62] See the ODA visualization sites https://www.jica.go.jp/oda/project/1700493/index.html, https://www.jica.go.jp/topics/2018/20181112_01.html, https://www.jica.go.jp/partner/kusanone/country/ku57pq00001mk5d6-att/rwa_02_t.pdf, https://www.jica.go.jp/partner/kusanone/country/ku57pq00001mk5d6-att/rwa_01_t.pdf, and https: // openjicareport.jica.go.jp/pdf/1000042308 .pdf.

	market research methods, and solution provision.	management and other matching events are required.

6. Pakistan: The Project for Skills Development and Market Diversification (PSDMD) of Garment Industry of Pakistan [63]	
Overview	Pakistan's textile industry is the largest sector in the country's manufacturing industry, with many companies in each industry ranging from raw cotton production to finished clothing. However, towels, which are major exports, are still low in technology and added value and are greatly affected by fluctuations in international market prices. There is a need to increase the added value of products. In addition, there is a high demand for the female workforce in the sector, but their skills are not well developed. This cooperation will support the development of human resources needed to expand the apparel industry's market and contribute to the development of human resources to enhance the productivity of high-value-added textile products.
Activities that can be compared and verified	・ Training plan tailored to the needs of the apparel industry at each training organisation ・ Strengthening the operational capacity of each training institution ・ Strengthening Public-Private Partnerships to expand the apparel market and increase the employment of women

	Good Practice	Lesson
Hands-On Skills	・ Training on techniques and teaching methods was provided to the training instructors.	・ For the development of human resources, it is essential that training plans are formulated to meet the needs of the apparel industry. That member company are satisfied with the guidance given by training institutions.
Employment Support	・ To promote the employment of trainees, the results of the project and the skills of trainees were presented and demonstrated to industry and the market through the events like fashion shows. ・ Employment Guidance for women were held.	・ It is essential that each training institution hold events like fashion shows and others through income-generating activities by TVETs. ・ In new schools, a reasonable amount of time is required to develop an academic affairs system to respond to industry-university collaboration activities.

7. Bangladesh: The Project for Skill's Development of ICT Engineers Targeting the Japanese Market [64]

63 Refer to the ODA visualization site https://www.jica.go.jp/oda/project/1500340/index.html.
64 Quoted from the ODA visualization site https://www.jica.go.jp/oda/project/1600344/index.html

Overview	The ICT sector market in Bangladesh has grown approximately three times since 2009, and there is an urgent need to develop human resources. Japan is considered an important market after Europe and the United States, but its market development is insufficient compared with Europe and the United States. This project has helped improve the country's ICT human resource development capacity and public-private partnership system, creating a model for the ICT human resource development program with the Japanese market in mind. It has also contributed to improving the capacity of the Bangladesh Computer Council, which is responsible for ICT human resource development related projects, including the Information Technology Engineers Examination.
Activities that can be compared and verified	・ The public-private partnership system was improved to support the development of ICT human resources with the Japanese market in mind, ・ A model of an ICT human resource development program by private companies with the Japanese market in mind has been developed, and the capacity of the Bangladesh Computer Council to implement related support projects has been improved. ・ A basic plan for disseminating and operating the Information Technology Engineers Examination was prepared, and the implementation system was improved.

	Good Practice	Lesson
Hands-On Skills	・ The establishment of the guidance system for repetitive learning led to the enthusiastic examination guidance of the Information Technology Engineers Examination Master Trainer.	・ It is essential for the Bangladesh Computer Council to secure sufficient funds to maintain and utilise trained trainers.
Employment Support	・ The increase in qualified people has led to increased business transactions among Japanese companies.	・ In Japanese ICT companies, Japanese-speaking foreign IT engineers are in demand. So, human resources who can serve as bridge engineers are highly valued.

4.2 Non-sovereign Operations

Below is a summary of each project and the key elements' good practices and lessons learned.

8. Madagascar: SDGs Business Verification Survey to establish the sustainable supply chain of qualified cacao (Meiji Co., Ltd.) [65]	
Overview	To ensure a stable supply of high-quality cacao beans, Meiji Co., Ltd. (Meiji) has developed a project called "Meiji Cacao Support" in eight countries by changing purchasing method of cacao beans from indirect purchase through trading companies to direct ones involving all aspects of cacao cultivation, fermentation and transportation. Meiji selected Madagascar as the ninth country to carry out the project and utilised the Private Partnership Project of JICA. In the country, the quality of cacao beans varied widely due to producers' lack of knowledge and equipment, and the production per unit area was low and unstable. To produce high-quality cacao beans, Meiji is considering providing instruction on cultivation and fermentation techniques, providing materials for production. A business model in which cocoa beans are fermented and dried using their unique method, purchased from producers at a fair price, processed into a product that reflects most of their unique characteristics, finally sold in Japan.
Activities that can be compared and verified	・ Creation of an environment where companies can buy cacao at reasonable prices ・ Implementing technology transfer appropriate for the company by utilising the company's know-how

	Good Practice	Lesson
Hands-On Skills	・ Guidance by Meiji on cultivation techniques and post-harvest primary processing improved cacao bean quality which had been low due to farmers' lack of knowledge and facilities. Issues of low cacao bean yields and limited market access are far fewer now.	・ Rich experience and excellent knowledge (Technical guidance and supply chain know-how) in the product development technology, which brings out the features of the cacao beans of the proposed company to the maximum are the absolute conditions.
Soft Skill	・ Meiji gave training to farmers to improve productivity and give soft skills (solve problem, and response skills), through the organization of small farmers and establishment of a	・ It is essential to thoroughly investigate whether the proposer company's financial resources and business policies match the relevant country and take the initiative to implement the proposal.

[65] See JICAHP: https://www.jica.go.jp/publication/mundi/202008/202008_05.html, https://www2.jica.go.jp/ja/priv_sme_partner/document/1049/Fo182019_summary.pdf.

	food value chain. This change made good environment for private companies to purchase cacao at reasonable prices.	

9. Rwanda: SDGs Business Verification Survey with the Private Sector for Lightning Protection Solution on Key Infrastructure of ICT Industry in Rwanda (Otowa Electric Industry Co., Ltd., Amagasaki, Hyogo Prefecture) [66]	
Overview	Central Africa is a region prone to lightning, and every year it suffers human damage, including many deaths and severe damage to infrastructures such as telecommunications and ICT equipment. For Rwanda, which has positioned the ICT industry as the core of its growth strategy, lightning protection measures for its telecommunications infrastructure are urgent. However, Rwanda is poor in securing safety in its lightning protection measures and has a shortage of experts with sufficient knowledge of lightning protection technologies. The proposer company, Otowa Electric Industry Co., Ltd. (Otowa), is a comprehensive manufacturer of lightning damage countermeasures. Its main features are the manufacturing and sales of arresters for guided lightning countermeasures and consulting on lightning countermeasures. In 2015, through the African Business Education (ABE) Initiative, Rwanda's challenges were identified through the acceptance of Rwandan interns, and the possibility of developing the African market was examined.
Activities that can be compared and verified	・ Obtaining permits and preparing manuals to measure and verify the effectiveness of the introduction of anti-lightning measures ・ Technical training for capacity building of lightning damage control technology

	Good Practice	Lesson
Hands-on skill	・ Proposer company provided technical training to local agencies run by ABE Initiative returnees to strengthen their capacity in lightning protection technologies.	・ Reliability with local partners is critical because the local agency had sufficient information sharing and relationships even before starting the project.

[66] https://www.jica.go.jp/kansai/topics/2017/171011_01.html,
Quoted from https://www.jica.go.jp/publication/pamph/ku57pq00002iqnxw-att/abe_initiative.pdf

Soft Skill	・ The investigation started with the consciousness of the problem by an intern student dispatched in the ABE initiative. We obtained the necessary authorisation to introduce lightning protection measures to the pilot site. We examined the policies and regulations required for lightning protection measures based on the demonstration results (Problem-solving and response skills).	・ This case is an example of small and medium-sized enterprises learning about issues in a country by accepting an overseas intern (Gift of communication). ・ Since the know-how to properly manage arresters has not yet penetrated the world, it is essential to have a partner like a proposer company with such core and innovative knowledge.

10. Bangladesh: Feasibility Survey for the use of e-learning system compatible with poor communication environment, for the Information Technology Engineering Examination (IEEE). (Kyouiku Jouhou Service, Miyazaki) [67]	
Overview	Bangladesh provided its e-learning system (Think Board [68]), which can be used even in a weak communication environment. It introduced the "Seminar on Information Technology Engineers Examination (ITEE)" for ITEE examinees and university students. The purpose of this seminar was to enable efficient learning, verify the effectiveness of the workshop conference on ITEE and ThinkBoard, examine the dissemination method, and contribute to ICT human resource development in the future.
Activities that can be compared and verified	・ The effectiveness of the "ITEE countermeasure course" with ThinkBoard was confirmed. ・ The operation environment of the ITEE countermeasure course was demonstrated in the Bangladesh Computer Council and pilot universities. ・ The measures and plans for the popularisation of ThinkBoard were proposed.

	Good Practice	Lesson
Hands-On Skills	・ The proposer company held several presentations on the e-learning system at the pilot universities. ・ Training was provided to e-learning system managers in charge of local operations management by the proposed	・ As this was the first attempt, there were some issues with the basic procedure, but they were addressed by checking manuals and other materials together. ・ When holding a dissemination seminar, it is essential to reach out to the universities concerned and ICT enterprises and understand various

[67] https://www.jica.go.jp/kansai/topics/2017/171011_01.html, https://www.jica.go.jp/publication/pamph/ku57pq00002iqnxw-att/abe_initiative.pdf
[68] Name of e-learning platform (Product Name)

	company, and guidance was provided to those involved in pilot universities. ・ The proposer company started to hold seminars to promote e-learning systems.	parties.
Employment Support	・ Companies in Miyazaki Prefecture have employed human resources developed in Bangladesh after studying the Japanese language at Miyazaki University.	・ Partnerships with Japanese universities effectively contribute to the tutoring Japanese-speaking bridge engineers demanded by Japanese ICT enterprises, which was a plan in the technical cooperation “ICT human resource development project targeting the Japanese market ”.

4.3 Lesson Analysis for Similar Projects

Based on similar projects mentioned above, the lessons learned and project activities examples (Project numbers in Table 26 and 27) are summarized in the table below.

Table 26 Analysis of Similar Projects (sovereign and non-sovereign) by Activities

Items	Lessons learned	Examples of Project Activities	Examples of Applicable Projects
Hands-on skill			
Enterprise / field training	・ It isn't easy for teachers to participate in school management activities outside the school while holding classes. So, it is essential to create a system in which teachers feel the benefits of participation and become more motivated. ・ It is essential to have students, producers, and other stakeholders experience the skills and knowledge required at factories and production sites through on-the-job training and customised training by the cooperation of private companies. ・ In the case of the product development technology that brings out the unique characteristics of cocoa beans by the proposer, it is suggested that abundant experience and superior knowledge are the absolute requirements.	① School staff can acquire the latest and appropriate practical know-how, improve their skills and abilities, and manage the school independently. ③ Implementation of OJT in automobiles, extensive vehicle maintenance, electricity, instrumentation, etc. ⑥ ToT is conducted on technology and teaching methods for training instructors. ⑧ With the guidance of cacao cultivation technology and primary processing technology, the yield and quality of cacao beans improved, and market access improved.	① Rwanda: The Project for Strengthening the Capacity of Tumba College of Technology. ③ Uganda: TVET-Leading Institution's Expansion of Human Resources and Skilled Workforce Development for Industrial Sector. ⑥ Pakistan: The Project for Skills Development and Market Diversification (PSDMD) of the Garment Industry of Pakistan. ⑧ Madagascar: SDGs Business Verification Survey to establish the sustainable supply chain of qualified cacao (Meiji Co., Ltd.)

Items	Lessons learned	Examples of Project Activities	Examples of Applicable Projects
Soft skill			
	・ To widely introduce kaizen in the industrial world and improve industrial competitiveness, a well-made design is needed to let the large and medium-sized companies present kaizen. ・ To implement company-wide Kaizen activities in a company, the understanding and practice of middle management are necessary. ・ To prevent the departure of trained Kaizen consultants from becoming a hindrance to the project, it is necessary to avoid and incentivise the retention of experienced Kaizen consultants by improving their treatment. ・ Not only starting a business but also continuing it requires ingenuity. ・ Expansion into the African market was realised when SMEs accepted overseas interns (e.g. ABE Initiative personnel) for the first time. ・ Small-Scale farmers need to strengthen their	② Conduct Kaizen seminars for management. ④ Based on consultations with relevant institutions and organisations, short-term and long-term plans are formulated to create a framework for organisational systems, including the necessary budget, staffing, and service composition. ⑤ Development of legal, accounting, startup, market research methods, and solutions provision. ⑨ The investigation started from the problem consciousness of lightning countermeasures of an ABE initiative dispatch student. ⑧ Utilize supply chain know-how in production, processing and sales.	② Tanzania: Project on Strengthening Manufacturing Enterprises through Quality and Productivity Improvement (Kaizen) in the United Republic of Tanzania, Phase 1 and Phase 2 ④ Ethiopia: Project on Capacity Development for Kaizen Implementation for Quality and Productivity Improvement and Competitiveness. ⑤ Rwanda: The ICT Innovation Ecosystem Strengthening Project. ⑥ Pakistan: The Project for Skills Development and Market Diversification (PSDMD) of Garment Industry of Pakistan ⑦ Bangladesh: The Project for Skill's Development of ICT Engineers Targeting Japanese Market ⑧ Madagascar: SDGs Business Verification Survey to establish the sustainable supply chain of qualified

Items	Lessons learned	Examples of Project Activities	Examples of Applicable Projects
	organisational and food-value chain problem-solving skills		cacao (Meiji Co., Ltd.) ⑨ Rwanda: SDGs Business Verification Survey with the Private Sector for Lightning Protection Solution on Key Infrastructure of ICT Industry in Rwanda (Otowa Electric Industry Co., Ltd., Amagasaki, Hyogo Prefecture)
Curriculum	・ In constructing curriculum contents, it is necessary to reflect the needs of high demand in the industry.	① Participation of relevant companies and organs in meetings for cooperation with industry. ② Through interviews with private companies, we identified technologies and skills that companies highly need ③ MOU was concluded between schools and companies to make it easier for schools to approach companies.	①Rwanda: The Project for Strengthening the Capacity of Tumba College of Technology. ③ Uganda: TVET-Leading Institution's Expansion of Human Resources and Skilled Workforce Development for Industrial Sector in Uganda.
Employment Support			
Public-Private partnership	・ It is essential that each training institution hold revenue creation activities such as fashion shows. New schools establish an academic affairs system to respond to industry-university collaboration actions. ・ There is a demand for bridge engineers who	⑥ A public-private task force was established to expand the market for apparel products and increase women's employment. The results of factory management training were developed through survey projects, fashion shows were held in cooperation with companies,	⑥ Pakistan: The Project for Skills Development and Market Diversification (PSDMD) of Garment Industry of Pakistan ⑩ Bangladesh: Feasibility Survey for the e-learning learning system compatible

Items	Lessons learned	Examples of Project Activities	Examples of Applicable Projects
	can understand the Japanese language in Japanese ICT companies' sites and in situations where teaching materials written in Japanese are used.	and guidance on the job was provided. ⑩, After studying Japanese at Miyazaki University, a Bangladesh-educated person got a job at a company in Miyazaki Prefecture.	with a poor communication environment, for the Information Technology Engineering Examination (IEEE) courses.
Training Institution	・ Support the establishment of a Business Incubation Centre and assign staff.	① The career support system at the Business Incubation Centre was implemented as planned.	①Rwanda: The Project for Strengthening the Capacity of Tumba College of Technology.

Source: Created by Survey Team

5. Support status of other cooperation agencies

5.1 Trends of donor support

Bilateral donor cooperation on technical and vocational training in Tanzania is focused on improving vocational skills for employment and promoting entrepreneurship; those cooperation projects are supported by the German International Cooperation Agency(GIZ: Deutsche Gesellschaft fur Internationale Zusammenarbeit), United States Agency for International Development (USAID: United States Agency for International Development), and Swiss Development Cooperation Agency (SDC: Swiss Agency for Development and Cooperation). The World Bank supports institutional reforms related to technical and vocational training by implementing multiple projects concerning cooperation by multilateral aid agencies. Bilateral and multilateral donor support is mainly provided through PMO-LYEP and MoEST to VETA, NACTE and TVET agencies. International NGOs have implemented projects with TVET agencies as their primary counterparts. Meantime, China has supported the construction of the VETA Kagera (2019/20) and has cooperated with the World Bank through its projects.

The most relevant project to this survey is a public-private partnership project called " Employment and Skills for Development in Africa (E4D)" implemented by GIZ. Its counterpart is PMO-LYEP, and besides GIZ, the European Union (EU), Norwegian Agency for Development Cooperation (NORAD), Korean International Cooperation Agency (KOICA), and many other international cooperation partners are participating. According to the interview by the survey, VETA Dodoma RVTC and GIZ with KOICA is currently in discussions on possible future cooperation as a part of E4D. The project titled "Skills for Employment Tanzania (SET)" is carried out by SDC through Swisscontact, a long-term cooperative project in the same field that extends until 2030. Therefore, when planning cooperation projects in the areas related to technical and vocational training, skill development, and employment promotion, GIZ, SDC / Swisscontact, and the World Bank are necessary to avoid duplications and consider possible cooperation.

5.2 Support programme by the donor (mapping)

Based on interviews with government and educational institutions and cooperation agencies in Tanzania and information on related websites, cooperation in the technical and vocational training fields (including employment promotion) supported by significant cooperation agencies is summarised.

Table 27 Information on cooperation in the technical and vocational training fields (including employment promotion) supported by major cooperation agencies

Cooperation agency	Counterpart (C/P)	Project name/support subjects
Bilateral Agencies		
GIZ/ EU/NORAD/K OICA/Sasol Limited	PMO-LYEP	**Employment and Skills for Development in Africa (E4D)** (2015-2023) Development and implementation of public-private cooperation projects to promote engagement. Target countries: Tanzania, Ghana, Kenya, Mozambique, South Africa and Uganda.
GIZ	EAC IUCEA[69]	**Digital Skills for an Innovative East African Industry (dSkills@EA)** (2021-2024) Improving youth digital skills related to employment and innovation: Practical master's degree programs in collaboration with industry, short-term courses and training in the demand-driven digital field, entrepreneurship support, etc.
SDC/ Swisscontact	VETA TPSF MVTTC	**Skills for Employment Tanzania (SET)** (2019-2030) Strengthening vocational skills development capacity for employment promotion and promoting labour market-led capacity development opportunities for youth (aged 15-24).
USAID	Iringa, Mbeya, Zanzibar Local Government	**Feed the Future Tanzania Advancing Youth** (2017-2022) Supporting youth (aged 15-35) entrepreneurship by fostering specialised technical skills and leadership skills, improving the ability to be employed (employability), and promoting a healthy lifestyle.
Multilateral Agencies		
World Banks	MoEST	**Education and Skills for Productive Jobs (ESPJ) Project** (2016-2022) Strengthening the institutional capacity of skills development systems and promoting labour market-led skill development opportunities in specific economic sectors
	MoEST	**East Africa Skills for Transformation and Regional Integration Project (EASTRIP)** (2018-2024) (Regional Project) Improving access to TVET institutions and quality of programmes and supporting regional integration in East Africa. Under the umbrella of this project, Postgraduate study in China is available for teachers from TVET institutions offered by the Chinese government.
	MoEST	Higher Education for Economic Transformation Project (2021-2026)

[69] IUCEA:Inter-University Council for East Africa

Cooperation agency	Counterpart (C/P)	Project name/support subjects
		Strengthening the learning environment and labour market alignment of priority programs at beneficiary higher education institutions and improving the management of the higher education system
ILO/NORAD	PMO-LYEP	**Global Programme on Skills and Lifelong Learning (GPSL3)** (2021-2022) Overcoming the challenges of accessing decent jobs by upskilling and increasing opportunities to meet the skills requirements of the labour market
UN Women[70]	President's Office, Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC)、Ministry of Agriculture	**Women's Economic Empowerment (WEE)** A review of policies on trade, employment, energy and the mining industry that contribute to women's empowerment. Linking women-owned SMEs and farmers with the value chain by supporting regulatory frameworks, business development services, and entrepreneurial skills. Under the umbrella of WEE, “Realizing Gender Equality through Empowering Women and Adolescent Girls” (Joint program with UNFPA/KOICA) is set. Support for women's and girls’ agricultural production and entrepreneurship.

Source: Created by Survey Team

[70] UN Women: United Nations Entity for Gender Equality and the Empowerment of Women

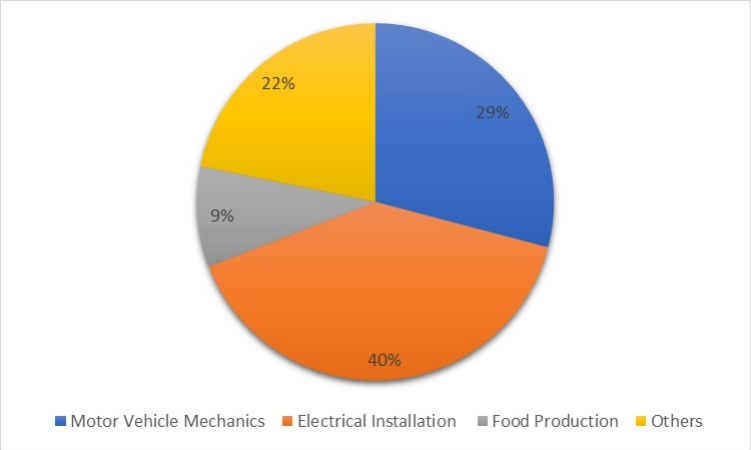
6. Verification of a training model involving TVET institutions and the private sector

6.1 Procedure for the identification of target institutions and companies

(1) Identification of TVET institution

As a result of the questionnaire survey, 54 out of 56 TVET institutions answered, “Interested in participating in Verification activities of Training Model in collaboration with a private company", which was close to 100%. The interesting sectors are electrical equipment 40%, automobile maintenance 29%, food processing 9%, and other 22% (IT, agriculture, welding, and other 12 fields). It was also confirmed that all three sectors this survey focused on were highly interested in these institutions.

Figure 22 Areas of interest in the training model (%)



Source: TVET survey results (created by Survey Team)

Based on the questionnaire survey results, the survey team visited the VETA vocational training in Dar es Salaam, Arusha, Moshi, Dodoma and Mwanza, the regions that are the target areas for this survey. The survey team conducted interviews and inspections in each region. As a result, all VET institutions showed a high level of interest in the automotive and electrical installation sectors, however considering the location of the partner companies, VETA Dar es Salaam RVTSC was selected as the TVET institution to work with during the verification of the Training Model.

(2) Identification of company

According to the questionnaire results for companies, more than 90% of the companies

answered that they are interested in participating in the curriculum improvement activities of TVET Institutions and that they can provide their facilities and companies. On the other hand, only a few companies had experience conducting training collaborating with TVET Institutions. This indicates that although companies are interested in collaborating with TVET institutions, the number of companies cooperating with TVET institutions is limited.

On the other hand, as the purpose of this survey was to build a training model with a view to JICA's private-sector collaboration business, we have conducted it online concerning the questionnaire survey results. In onsite interviews with Japanese companies that have established offices in Tanzania, the team negotiated the possibility of cooperation in developing and executing the Training Model for Verification. The table below summarises the results of the discussions regarding the possibility of collaboration with each company.

Table 28 Results of consultations on the possibility of cooperation with Japanese companies in the verification of training models

Company name	Interest In cooperation	Business	Location	Areas of cooperation	Relationship with VETA	Possibility of cooperation
Saint Parts Tanzania Co., Ltd.	Yes	Used car parts sales/maintenance	Dar es Salaam	Cars	MOU signed with VETA HQ	Maintenance guidance for hybrid vehicles
RETRUS Tanzania Ltd.	Yes	Used car sales	Mwanza	Cars	None in particular	Maintenance of used trucks
FMG Ltd.	Yes	Used car sales	Dar es Salaam	Cars	None in particular	Lectures on employment-related topics
WASSHA. Inc	Yes	Lantern subscriptions	Dar es Salaam	Electricity	None in particular	Lectures on employment-related topics
Baridi Baridi Tanzania Ltd.	Yes	Air conditioning subscription	Dar es Salaam	Electricity	Adopted from VETA Dar es Salaam RVTSC	Interested, but not sure about specifics

Source: Created by Survey Team

(3) Identified stakeholders for verification exercise for training model)

Given the time constraints of the survey, it was decided to select companies to work with from among Japanese companies that have already established a relationship with VETA.

In particular, Saint. Parts has been conducting a "Fostering Car Mechanic and Car Maintenance Factory Network through Car Maintenance in Professional Practice in Tanzania" (2018) (SDGs Business Model Formulation Survey with the Private Sector) and has already made site visits to VETA Dodoma, Dar es Salaam and Mwanza. The company has also signed MOUs with NIT and VETA to implement its proposed business. It has signed an MOU with VETA headquarters to collaborate on training mechanics in applied maintenance techniques. It promises to jointly develop curricula that provide practical training to VETA teachers and trainees. Therefore, Saint. Parts, which is already planning practical training utilising its technology at a TVET institution participating in VETA, was selected as the most promising candidate. On the other hand, the TVET institution, Dar es Salaam RVTSC, which is currently promoting a training plan for auto mechanics with St. Parts, was selected as a candidate, and negotiations were held with the VETA headquarters and consent was obtained.

6.2 How to implement the training model

6.2.1Concept of training model

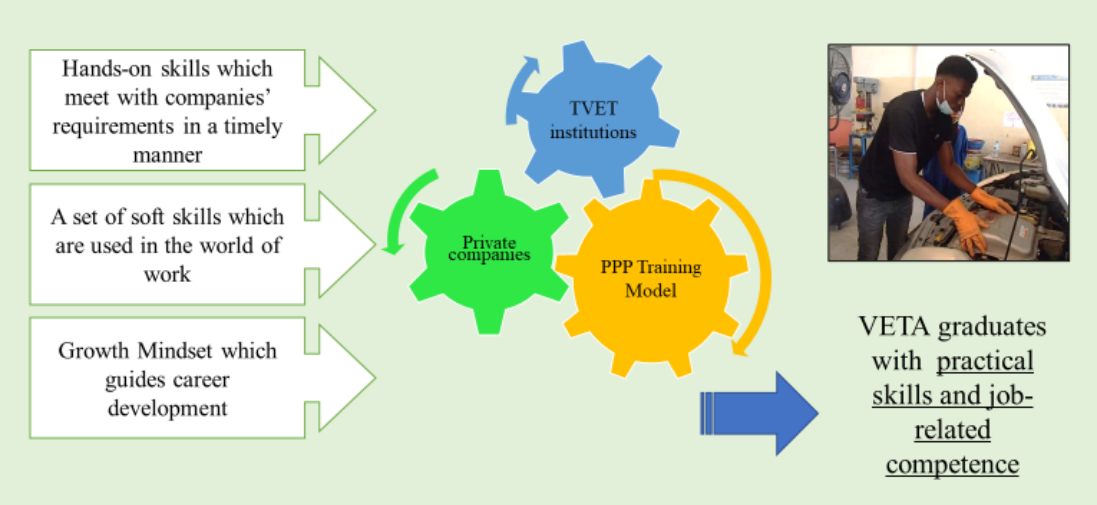
Based on the results of the bottleneck survey, the survey has identified several bottlenecks that cause TVET institutions to have a skill mismatch with the market. Furthermore, the survey team selected three high-priority bottlenecks, examined countermeasures against them, and incorporated them into the Training Model.

Table 29 Bottlenecks in TVET institutions, measures taken, and training models used to address them

Bottlenecks	Countermeasures	Response in the training model
TVET institutions cannot catch up with the recent skills companies require due to the rapid change of technology in industries.	TVET institutions should co-organize training with companies to provide skills efficiently required from industries.	• Practical skills training under the direct supervision of companies • Technology for the maintenance and management of hybrid vehicles (HV)
TVET institutions have not yet identified a set of soft skills that enable trainees to work as companies expected. .	TVET institutions should customise soft skills which are used in companies.	• Basic Kaizen and 5S • Problem-solving based on QC stories
TVET institutions have not yet prepared pa programmes to develop trainees with a growth mindset whereby trainees can be self-motivated to work.	TVET institutions should introduce a programme for growth mindset development in collaboration with the private sector.	• Fostering a growth mindset through lectures by practitioners from the private sector

Source: Created by Survey Team

The Figure below 23 organises the basic concepts of the above training model.

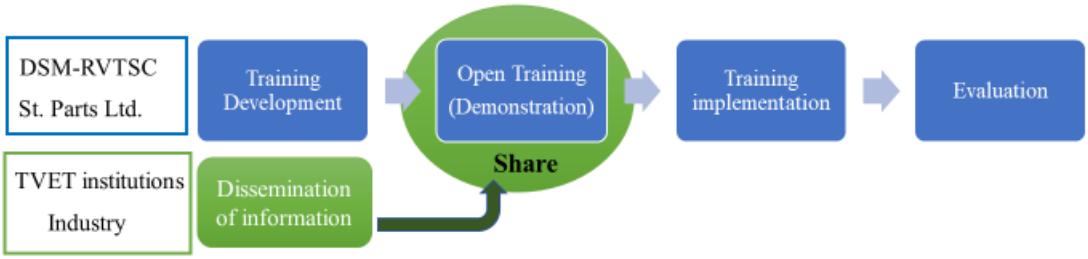


Source: Created by Survey Team

Figure 23 Basic concept of the training model

6.2.2 Schedule for the implementation of the training model

To validate the training model, the survey team organised a 'Training Development Workshop' with VETA Dar es Salaam RVTSC and Saint Parts Ltd. to discuss the training content to ensure that both parties are confident with the proposed Training Model. In addition, to disseminate this training model to other TVET Institutions, the industry, and the public, a one day "Open Training" was organised in advance. The following Figure 24 shows how the verification of the training model was carried out.



Source: Created by Survey Team

Figure 24 How to proceed with training model verification

The outline of 'Training development workshop' and 'Open training (Demonstration)' is summarised below. In each workshop and PPP training, the survey team validated the training model in collaboration with Saint Parts Co Ltd. and VETA Dar es Salaam RVTSC.

(1) Training Development Workshop

VETA Dar es Salaam RVTSC and Saint Parts Co Ltd. had the opportunity to exchange their view on the content of the proposed training model, share their intentions and plan for implementation arrangements.

Table 30 Training and development overview

Date	January 31, 2022 (Monday) 9: 00-13: 00
Location	VETA Dar es Salaam RVTSC Board Room
Participants	VETA Dar es Salaam RVTSC, Saint Parts Co., Ltd, VETA Headquarters (acted by the principal of VETA Dar es Salaam RVTSC), Survey Team
Activities	・ Sharing of survey summary and results ・ Design of the training model ・ Preparation of training schedules, agree on implementation procedures and task allocation

Source: Created by Survey Team

(2) Open Training: Training Model Demonstration

A part of the training model was made available to the TVET institutions and companies concerned, and the concept and content of the training were widely disseminated.

Table 31 Summary of Open Training

Date	Thursday, February 3, 2022, 9: 00-13: 00
Location	VETA Dar es Salaam RVTSC (Classroom, Automobile workshop)
Participants	VETA Dar es Salaam RVTSC, Saint Parts Co., Ltd, VETA Head Office, VETA Headquarters, Arusha Institute of Technology, VETA Moshi, Dodoma and Arusha, Baridi Baridi, JICA Tanzania Office, Survey Team
Activities	・ Sharing the results of the survey ・ Introduction to the training model ・ Open training -1: Maintenance of Hybrid Vehicles (introduction) - Saint Parts Co., Ltd -2: 5S and Basic Kaizen - CBE -3: Insertion to the world of work: Panel discussion- Saint Parts Co., Ltd

Source: Created by Survey Team

6.2.3 Verification of Training Model

(1) Outline of training model

Course Title: Training for marketable car mechanics

Objective: to test the effectiveness of the contents of the training model: "technology in line with company needs", "soft skills" and "Insertion to the world of work".[71]

Schedule: February 7-11, 2022 (5 days)[72]

Collaborators:

- Private companies: Saint Parts Co., Ltd., WASSHA. Inc (dispatch of lecturers)
- TKU/MIIT: CBE, SIDO Moshi Branch Office
- Vocational Training Institute: VETA Dar es Salaam RVTSC
- Courses: Dual Motor Vehicle Mechanics (MVM)[73], Truck Mechanics (TM)[74]
- Trainees: Second-year grade and Third-year (total 16 trainees, four trainees of top performers in each course and year)

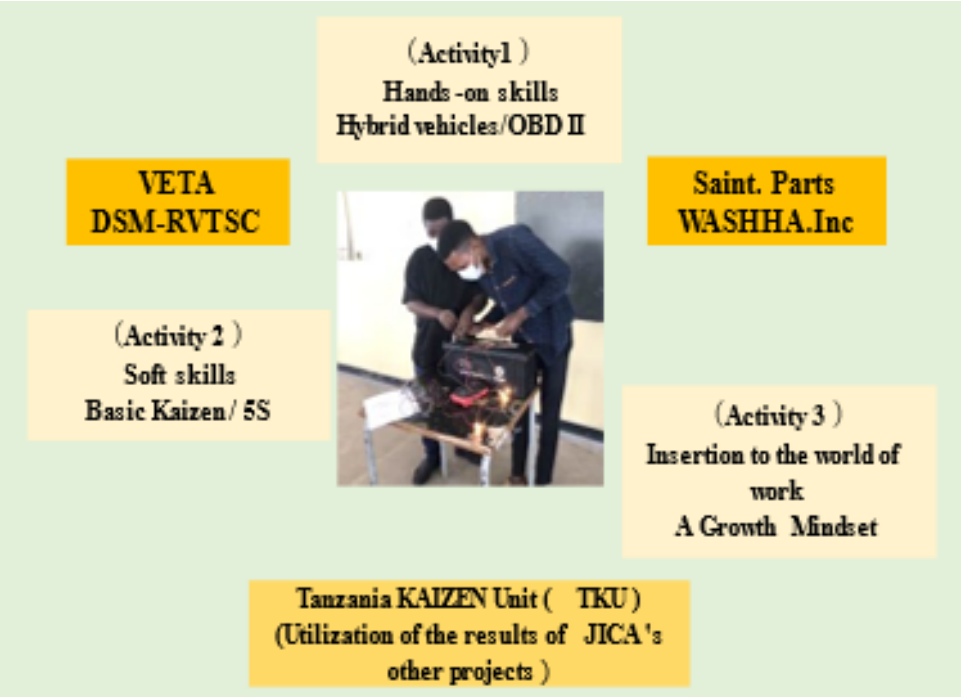
[71] See page of slides5 in Annex 2"Evaluation of PPP-Training Model by survey team_0214rev".
[72] See Annex 3"PPP-traninge_programme_Feb07-11_Final" and next page 2().
[73] The MVM is a 3year-long programme, alternating between practical work in the company where you are employed and training in a training centre.
[74] TM is a 1year-long training course, where trainees who have completed each level can progress to higher levels.

Table 32　Summary of public training

Private companies ・lecturers	Saint Parts Co., Ltd, WASSHA.Inc,
VETA Dar es Salaam RVTSC ・Trainees	16 trainees - MVM: Year 2 (1 female out of 4), Year 3 (1 female out of 4), - TM: Level 2 (4), Level 3 (4) 6 Teachers (1 of whom is from VETA Dodoma RVTSC) -MVM teachers (2), TM teachers (2), Female teacher from the electrical department (1), one teacher from the automotive department at Dodoma
・Management	Principal, Head of Department, etc.

Source: Created by Survey Team

Saint Parts Co., Ltd, and WASSHA.Inc, two Japanese private companies with offices in Tanzania, sent lecturers respectively to conduct training on "skills that meet the needs of companies (hands-on skills training)" and " Insertion to the world of work: (lectures on knowledge and mindset for working in companies)". For the 5S /Kaizen, which was conducted as a soft skills training, the CBE and SIDO Moshi branch office cooperated in sending an Advanced Kaizen Trainer (AKT) through the TKU of MIIT, the counterpart of the JICA project on "Strengthening Manufacturing Enterprises through Quality and Productivity (Kaizen) ". The trainees consisted of 16 top performers from each 4 of the Second-year　grades and Third-year of the 2 two automotive courses offered by VETA Dar es Salaam RVTSC, namely Dual Motor Vehicle Mechanics (MVM), DATS programme and Truck Mechanics (TM). Figure 25 below shows an overview of the above training model.



Source: Created by Survey Team

Figure 25 Overview of the training model

(2) Schedule

Day	Time	Activities	Topic	Venue	Presenter
Day1 2022/2/7 Monday	08:30-09:00 09:00-10:30 10:30-11:00	・Opening ceremony /Orientation ・5S activities by TKU Advanced Kaizen trainer (Break 9:40-09:50) 【Long Break】	Opening/Briefing Soft skills	Classroom	CBE
	11:00-13:30	・Basic knowledge of electricity for car mechanics (Electrical circuit) （Theory & Hands-on） (Break11:40-11:50/12:35-12:45)	Hand-on skills Automotive Mechanics	Classroom	Saint Parts Co., Ltd.
Day2 2022/2/8 Tuesday	08:30-09:00 09:00-10:30 10:30-11:00 11:00-13:00	・Review of the previous day ・ Basic knowledge of hybrid car (Theory) (Break 9:50-10:00) 【Long Break】 ・ Basic understanding of hybrid vehicles (Hands-on)	Hand-on skills Automotive Mechanics	Classroom Classroom	Saint Parts Co., Ltd.
Day3 2022/2/9 Wednesday	08:30-09:00 09:00-10:30 10:30-11:00 11:00-13:00	・Review of the previous day ・Diagnosis with OBD (Theory) ・Inspection and repair of the hybrid car (Hands-on) (Break 9:50-10:00) 【Long Break】 ・Inspection and repair of hybrid car /Diagnosis with OBD (Hands-on) (Break 11:50-12:00)	Hand-on skills Automotive Mechanics	Classroom Workshop	Saint Parts Co., Ltd.
Day4 2022/2/10 Thursday	08:30-09:00 09:00-11:00 11:00-11:30	・Review of the previous day ・Assessment: Practical/Theory (Mr Yanagisawa, Dr Mariam) 【Long Break】	Assessment	Classroom Workshop Computer lab	Saint Parts Co., Ltd. CBE
	11:30-12:30	・Be ready yourself for work	Insertion to work:	Classroom	WASSHA Inc.
Verification Day5 2022/2/11 Friday	08:00-08:30 08:30-10:30 10:30-11:00 11:00-13:30	Review of the previous day ・Introduction to Basic Kaizen (Theory) 【Long Break】 ・Introduction to Kaizen (Practice)- exercise on QC story	Soft skills	Classroom	SIDO
Evaluation 2022/2/14 Monday	10:00-12:00 12:30-13:00	・Joint evaluation workshop." ・Closing Ceremony	Programme evaluation Closing / Certification	Classroom	VETA, NACTE, JICA

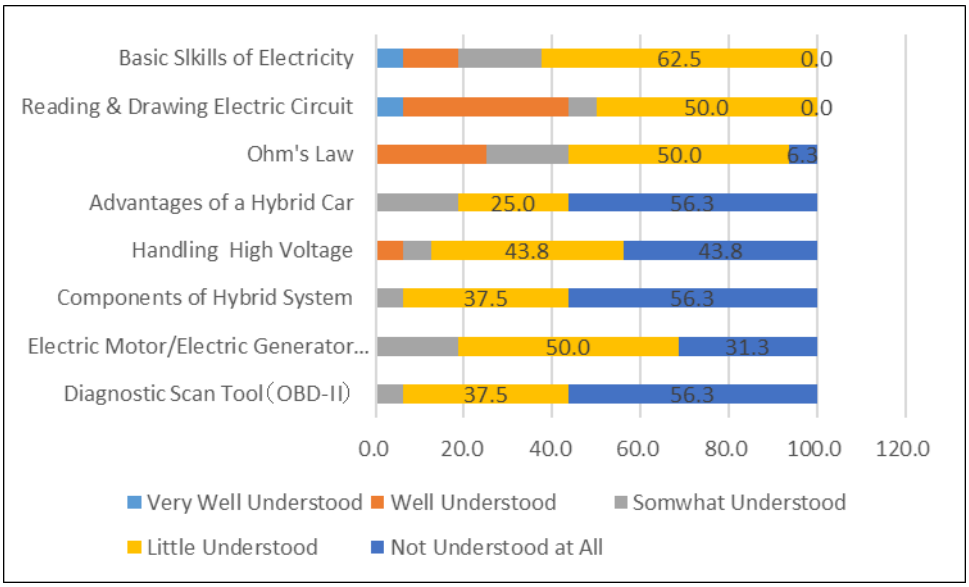
6.3 Verification results of the training model

As mentioned above, the training model included technical training in the maintenance and management of hybrid vehicles (HV) as "technology that meets the company's needs". In addition to this, exercises on 5S, basic kaizen and problem analysis based on QC stories were conducted as "soft skills", and lectures by practitioners working in the private sector were given as "introduction to work". The3 effectiveness of these training was measured using the following evaluation methods: 1) self-assessment/quiz (pre/post), 2) paper test, and 3) questionnaire. The evaluation results are summarised below.

6.3.1 Technology adapted to the needs of the company (knowledge and skills related to HV)

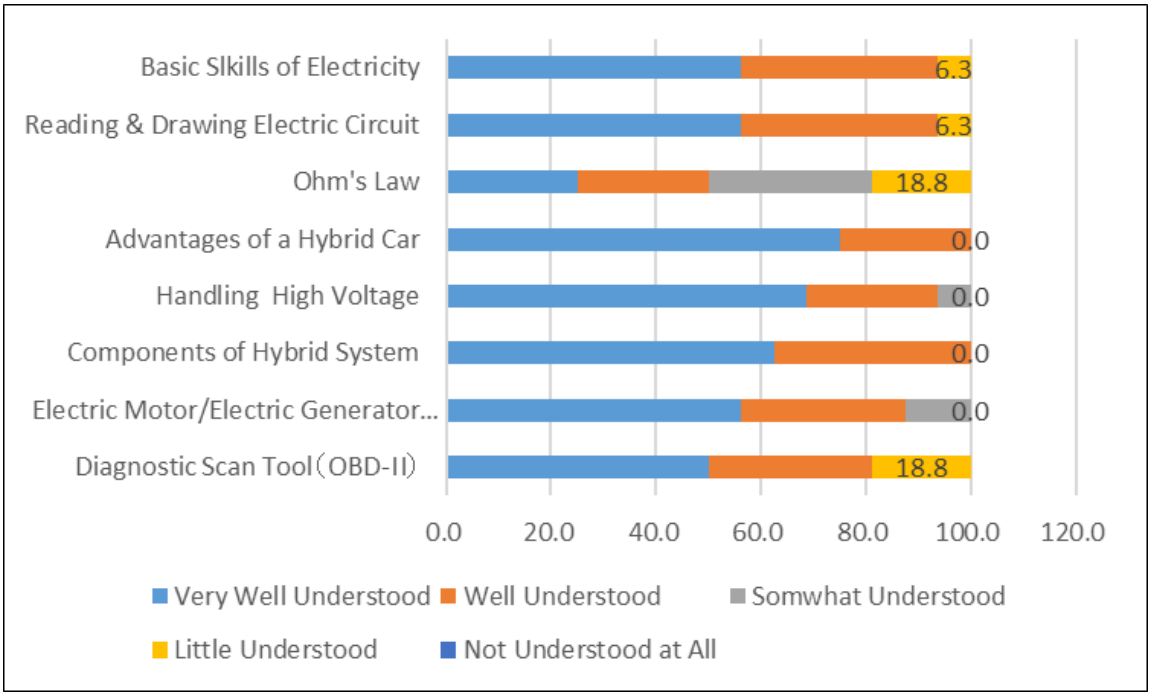
(1) Technical training on HV maintenance and management (1): Self-assessment (pre/post)

Before and after the technical training, a self-assessment was carried out to check the participating trainees' understanding of HV. Before the training, 50~90% of the trainees answered: "hardly understood" or "not at all understood" for all three assessment items. However, after the training, almost all the trainees answered "understood very well" or "understood" for all the assessment items, with very few answering "hardly understood" or "not at all understood". However, at the end of the training, almost all the trainees answered "very well" or "understood" for all the assessment items, and very few answered "hardly understood" or "not at all".



Source: Created by Survey Team

Figure. 26 Self-evaluation of technical training for maintenance and management of HV (before training) (%)



Source: Created by Survey Team

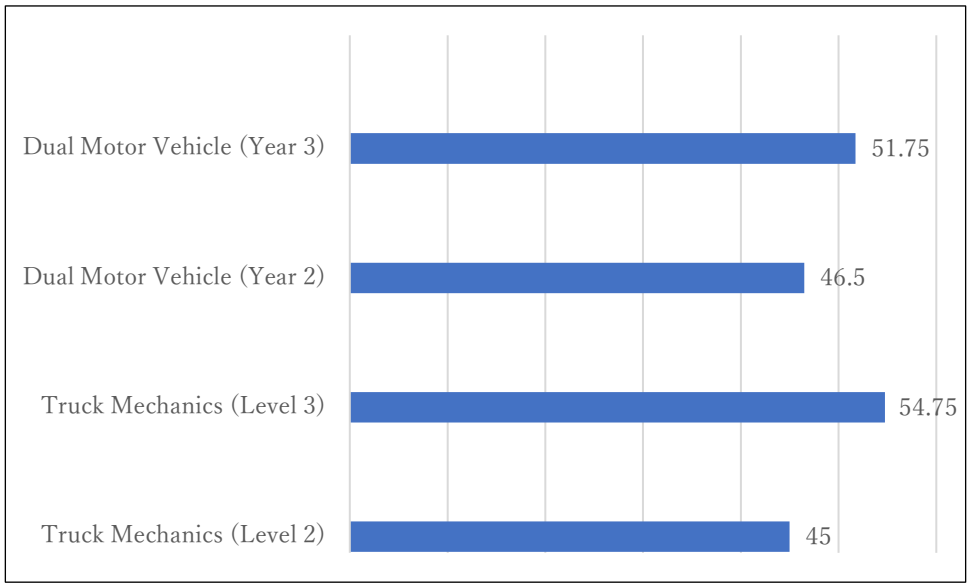
Figure. 27 Self-evaluation of technical training for maintenance and management of HV (after training)(%)

(2) Technical training for the maintenance and management of HV-② HV knowledge and practical skills test

After three days of training on HV, the 16 trainees were divided into four groups according to the course and year and tested on their knowledge and practical HV maintenance and management skills. The tests were of the following five types: basic understanding of HV (10 questions, each 1point), basic knowledge of electric circuits (5 points), a basic understanding of electric circuits (application) (5 points), practical skills in checking the safety of HV (conducted in groups, each 35 points) and practical skills in making electric circuits (tested in groups, each 5 points). Figure 28 below shows the average score for each group.

1） Overall average score by group

In both the MVM and TM courses, the average 45score was slightly higher in the third-year trainees than in the second-year.



Source: Created by Survey Team

Figure. 28 Overall average score (points) of the knowledge and practical skills tests for the maintenance and management of HV by group

2） Average score by group

Table 33 below shows a breakdown of the average scores by group, showing no significant difference between the groups in both the HV and electrical circuits tests. The fact that TMs do not score lower in practical skills than MVMs, who have more experience in enterprise training, indicates that this training model is accessible to all trainees, regardless of whether they have had enterprise training or not.

Table 33 Mean itemised scores (points) for HV knowledge and practical tests.

	Basics of HV (On a Scale of 1 -10)	Theory of Electricity (Basic) (On a Scale of 1 -5)	Theory of Electricity (Advanced) (On a Scale of 1 -5)	Hands-on Practice (HV) (On a Scale on Which 35 is Perfection)	Hands-on Practice (Electric Circuit) (On a Scale of 1 -5)	Total (Average) (On a Scale on Which 60 is Perfection)
Truck Mechanics (Level 2)	8.5	4	3	26	3	45
Truck Mechanics (Level 3)	9.25	5	5	32	3.5	54.75
Dual Motor Vehicle (Year 2)	8.75	4	3.25	27	3	46.5
Dual Motor Vehicle (Year 3)	7.75	4.5	4	32	3.5	51.75

Source: Created by Survey Team

3） Questions relating to basic knowledge of HV (total 10 questions)

As shown in Table 34 below, the percentage of correct answers to the questions on basic knowledge of 10 HV was high for the knowledge taught in the Verification class (Day-2), such as question 3, "Voltage of hybrid battery", question 6," How to identify high voltage wiring", question 7, "Role of inverter" and question 9, "Role of service plug". On the other hand, the percentage of correct answers to questions with complex concepts, such as question 10, "Characteristics of regenerative braking (operating system)", was low, indicating a lack of understanding.

Table 34 Percentage of correct answers to quizzes on basic HV knowledge (%)

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
○	×	○	○	×	○	○	×	○	○
○	○	○	×	○	○	○	×	○	○
○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	×
○	○	○	○	○	○	○	○	○	×
○	○	○	○	○	○	○	○	○	○
○	×	○	×	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○
○	×	○	○	○	○	○	○	○	×
○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○
○	×	○	×	○	○	○	○	○	×
○	×	○	○	○	○	○	○	○	×
○	×	○	○	○	○	×	○	○	×
○	×	○	○	○	○	○	○	○	×
○	×	○	×	○	○	○	○	○	○
100%	50%	100%	75%	94%	100%	94%	88%	100%	56%

Source: Created by Survey Team

Table 35　Questions relating to basic knowledge of HV

Q1	Meaning of Hybrid
Q2	Type of Hybrid System used for Prius
Q3	The voltage of Hybrid Battery
Q4	Function of MG1
Q5	Function of MG2
Q6	How to Identify Wirings with High Voltage
Q7	Function of Inverter
Q8	How to Operate AC Compressor
Q9	The function of Service Plug

Source: Created by Survey Team

4） Theory of electricity (basic and applied) (1 question each)

The scores for Electric Circuits (Basics) were generally high, as the trainees had already carried out experiments in the Verification class (Day-1), but the scores for Electric Circuits (Applications) were low. Table 36 below shows the basic and applied electric circuits (highlighted lower scores). Although trainees acquire basic knowledge, they cannot use this knowledge to deal with different problems[75].

[75] The purpose of the instructor in charge of the training to include electrical circuits at the beginning was to check the learned knowledge of the electrical field before the training on HV vehicles. The instructor explained that the reason for the high score for questions about what they had learned in class, but the low score for applied questions, was that the trainees who participated in the verification training had the good memory to remember what they had learned but had limited opportunities to practise what they had learned in practical exercises, etc., so they were unable to use the knowledge and skills they had learnt. T ". The ability to apply knowledge is thought to be acquired by repeatedly confirming knowledge through practice, but the habit has not been acquired in normal training.

Table 36 Scores for Electric Circuits (Basic and Applied)

	Electrical Circuit (Basic)	Electrical Circuit (Advanced)
TM 2	5	3
	5	5
	3	2
	5	2
TM 3	5	5
	5	5
	5	5
	5	5
MVM 2	3	3
	5	4
	5	4
	5	2
MVM 3	5	5
	3	1
	5	5
	5	5

Source: Created by Survey Team

HV practical test (test per group)

HV's practical test was based on the subject of "safety checks", which had been dealt with in the verification lessons (Day 2 and Day 3). The practical test was carried out in groups and was scored according to the seven assessment items in Table 37 below. The results showed that most trainees understood the HV safety checks and could carry them out appropriately. The Third-year trainees gave more detailed explanations than the Second-year trainees due to their advanced car maintenance knowledge, which resulted in a higher score.

Table 37　Evaluation items and checkpoints for HV practical tests

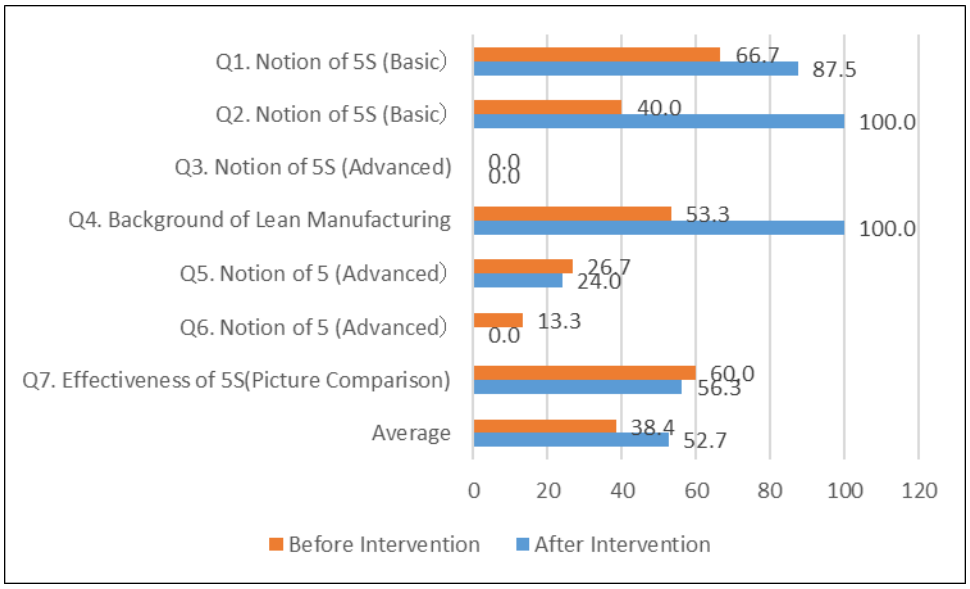
Assessment items	Checkpoint
1. Check of Safety Harness	Wearing of Rubber Gloves and its Reasons, Preparation before Wearing
2. Removal of Attached Items such as Accessories	Removal of Wearing Metals and its Reasons
3. Check of Service Plug	Detach of Plug and its Storage
4. Stand-by for 10 Minutes	Reason for Stand-by for 10 Minutes before Starting
5. Check of Tools	Use of Special Tools, Alternative Treatments, Insulation Treatment
6. Check of Inverter	Removal of Inverter Cover, Explanation of Safety Switch (Interlock)
7. 0V Confirmation	0V Confirmation by Multimeter

Source: Created by Survey Team

6.3.2 Soft skills (5S, basic kaizen, problem-solving based on QC stories)

(1) 5S and basic kaizen theory (quiz)

A quiz (7 questions) was conducted before and after the Verification class on 5S and basic level kaizen to measure the basic knowledge on 5S and basic kaizen. Comparing the results before and after the course, the percentage of correct answers of the trainees increased from 38.4% to 52.7%. The rate of correct answers was higher for questions that required knowledge (i.e., whether they knew or not) (e.g., question2, "5S concept") but lower for questions that required thinking skills.



Source: Created by Survey Team

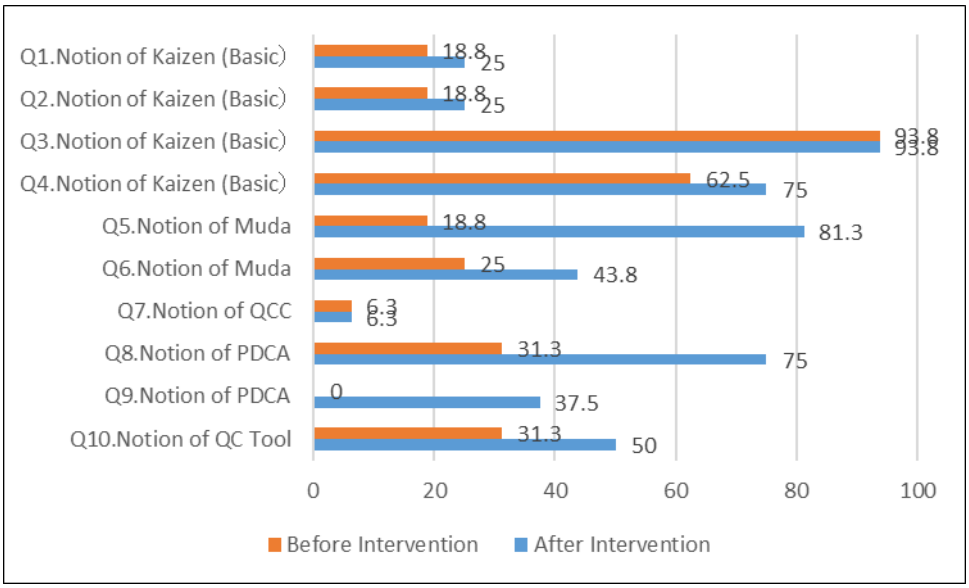
Figure 29　Percentage of correct answers to the quiz on 5S and basic kaizen (%)

(2) 5S Activity (practical)

The trainees were divided into two groups, one for each course, and on the first day of the Verification1, they inspected the training room of each class and selected five pilot areas for the application of 5S activity. The trainees then use three afternoons for 5S. As a result, each group was able to properly practice the knowledge of 5S acquired in the Verification class, and the effectiveness of 5S was confirmed[76].

(3) Theory and practise on basic kaizen and QC stories

A quiz (all 10 questions) on basic kaizen and QC stories was administered before and after the verification class to measure the change in trainees' understanding. As with the HV and 5S quizzes, the percentage of correct answers to the knowledge questions was high, while the rate of correct answers to the knowledge application questions was low.



Source: Created by Survey Team

Figure 30 Percentage of correct answers to quizzes on basic kaizen and QC stories (%)

In addition to the quiz, the trainees were given group work practice. They were evaluated by the lecturer's observation on the following three assessment items: level of understanding, the status of the application, and quality of presentation. In each of the three evaluation items, the results were generally good, with the trainees receiving a rating of medium or higher on the 4 scales. In addition, there was little difference in scores between MVM trainees and TM trainees; the former group had more experienced OJT at companies while the latter had less experience. The results indicated that analysing problems using QC stories could be acquired even without work experience.

[76] For more information, see page 22~26 in 2the Appendix.

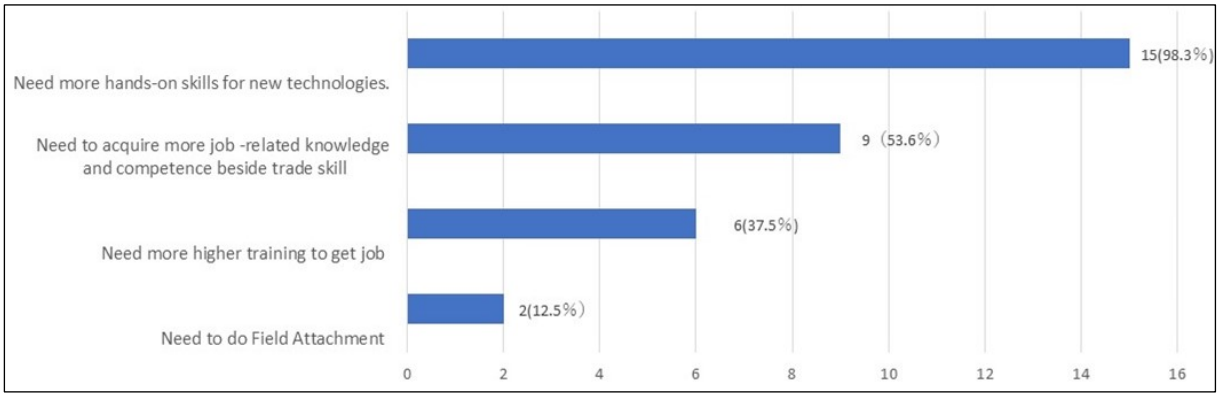
Table 38 Evaluation of group work on basic kaizen and problem solving based on QC stories

	Point of Reference	Group 1 TM (Level 2)	Group 2 TM (Level 3)	Group 3 MVM (Year 2)	Group 4 MVM (Year 3)
Understanding	Not understood at all (0)				
	Partially understood but misunderstood some parts (1)				
	Fairly understood but needs more accuracy (2)	✓	✓		✓
	Properly understood (3)			✓	
Application	Not applied at all (0)				
	Partially applied but needs much more improvements (1)				
	Faily applied but needs more improvements (2)	✓		✓	✓
	Properly applied (3)		✓		
Presentation	Poorly organized with little persuativeness (0)				
	Partically organized but needs much more persuasiveness (1)				
	Fairly organized but needs more persuasiveness (2)	✓		✓	✓
	Properly organized full of persuasiveness (3)		✓		
	Total	6	8	7	6

Source: Created by Survey Team

6.3.3 Insertion to the world of work (lecture by practitioners)

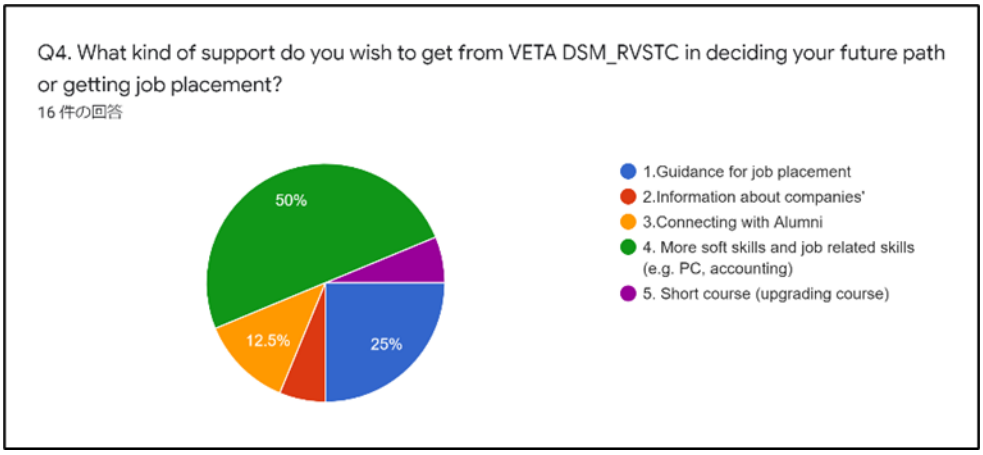
A hardware engineer and an in-house trainer from WASSHA were invited as presenters to talk about the knowledge and mindset required by companies. Afterwards, a questionnaire was used to check the feedback from the trainees, all of whom said that the course had given them valuable information to enter the labour market. Other responses such as "I need practical skills related to new technologies" (93.8%), "I need to acquire job-related knowledge and competencies other than my professional skills" (56.3%) and "I need a higher level of training to get a job" (37.5%) were notable for their motivation to work and their mindset development.



Source: Created by Survey Team

Figure 31 Information required before entering the labour market

When asked about the support they would like from a TVET institution for further survey or employment, 50% of trainees said "more soft skills and job-related skills", and 25% said "employment support".



Source: Created by Survey Team

Figure 32 Support required from TVET institutions

6.3.4 Feedback from companies on the training model

Feedback on the training model was obtained from the participating companies. This is summarised in Table 39 below in the following sections. For Baridi Baridi, the comments are based on the individual respondents' participation in public training and the verification classes.

Table 39 Feedback from companies (1): on training in practical skills

WASSHA	Baridi Baridi	Saint Parts
It is a practical approach to share with trainees what companies are doing in the market. This Training Model will help TVET institutions to keep up with the frequent technological changes in an efficient manner. We are convinced that training based on practical work will be the key to the future of TVET.	Training in the use of the main components of HV differed from known conventional vehicles. New knowledge and advantages of hybrids, such as electronic equipment and power cable features, can be acquired.	Basic knowledge is the foundation on which competencies can be built. The participants in this training had sufficient prior knowledge, but practical experience is needed to use and apply this knowledge.

Source: Created by Survey Team

Table 40 Feedback from companies 2: Soft skills training

WASSHA	Baridi Baridi	Saint Parts
Soft skills are essential for trainees to work smoothly in the workplace. Skilled workers can create maximum value only if they combine technical and soft skills. WASSHA provides soft skills training based on a skills gap analysis, narrowing the topic and the target audience for the activity. It is essential to identify the level and type of soft skills required in the target industry and develop training content for bridging the gap with trainees' capabilities.	Kaizen activities are expected to improve time management and service quality. The problem-solving process based on QC stories can develop a culture of quality improvement within the company to meet customer satisfaction and expectations. By implementing these problem-solving processes and 5S, companies can achieve many quality improvements (e.g., "no accidents").	To carry out instructed tasks efficiently and accurately, workers need to anticipate and visualise their jobs and plan the workflow for carrying them out. 5S and Basic Kaizen can be a practical approach for trainees to enhance the visualisation of such tasks.

Source: Created by Survey Team

Table 41 Feedback from companies (3): Support for introduction to work

WASSHA	Baridi Baridi	Saint Parts
It is valuable to access company information and work experience while still at school. It allows trainees to look at their future careers, work backwards, and identify what they need to prepare before entering the market. This helps trainees to be self-motivated and prepared for work. It is essential to limit the amount of information about its presentation to a few topics.	Through this visit, I have become aware of the causes of inefficient work and how to solve them. I am convinced that this training will be helpful for myself and other colleagues in their work.	Trainees must know enough about the world of work they are about to enter from when they are at school. This will raise their awareness of developing vocational and soft skills to meet their demands.

Source: Created by Survey Team

6.3.5 Verification results

The results of the verification of the training model are summarised below.

(1) Training in practical skills

・ To keep up with the latest technology used in the industry, the introduction of training in direct collaboration with the private sector is considered adequate and efficient.

・ To acquire practical skills that can function in the industry, it is deemed sufficient to establish a learning cycle in which knowledge and practice are combined as one training package and in which knowledge is output as practice.

(2) Training in soft skills

・ Basic level kaizen (including 5S and QC stories) can be expected to act as an accelerator to improve the efficiency of knowledge and skill acquisition. Therefore, it would be practical to implement activities that incorporate basic level kaizen at the training site.

・ More emphasis on the soft skills needed on the job (e.g., communication, problem-solving) would help trainees be competitive in the labour market.

(3) Support for insertion to the world of work

・ For VET institutions to secure employment opportunities for their trainees, they need to establish an organised support system and activate activities to support trainees at the beginning of work. This should create a mindset in which trainees are willing to enter the labour market. This support could also effectively promote career development by encouraging trainees to progress to higher levels of education or start their businesses.

7. Possible Supports for Industrial Human Resource Development in Tanzania

7.1 Steps and Direction in Considering Possible Supports

As mentioned in the previous chapter, the training model that Survey Team proposed was effective to a certain level in TVET in Tanzania. Therefore, the Team could offer possible supports with a particular focus on partial or all components of the training model, including 1) technology and skills in response to the needs of companies, 2) Soft Skills (e.g., Kaizen), 3) Insertion to the world of work, and complementary supports that makes the training model operate effectively. To examine these possible supports, the Survey Team had discussions based on the Verification results of the training model at first. Then, the Team shared several possible ideas with the JICA Tanzania office and narrowed down possible elaboration ideas reflecting their feedback as the next step. As a result, the Team came to propose the following three possible supports; 1) Support for Japanese SME's Overseas Business Development, 2) Technical Cooperation Project, and 3) ODA Grants, together with an action plan which covers everything from formulation to implementation for each support.

7.2 Preliminary Ideas for Possible Supports

The abovementioned three possible supports (ideas) are overviewed as follow.

(1) Idea to Support for Japanese SME's Overseas Business Development

Project Title: Verification Survey with Private Sector for Disseminating Japanese Technologies on Development of Advanced Auto Mechanics Dealing with Eco-friendly Vehicles in Tanzania (Tentative)

Proponent: Saint Parts Co., Ltd

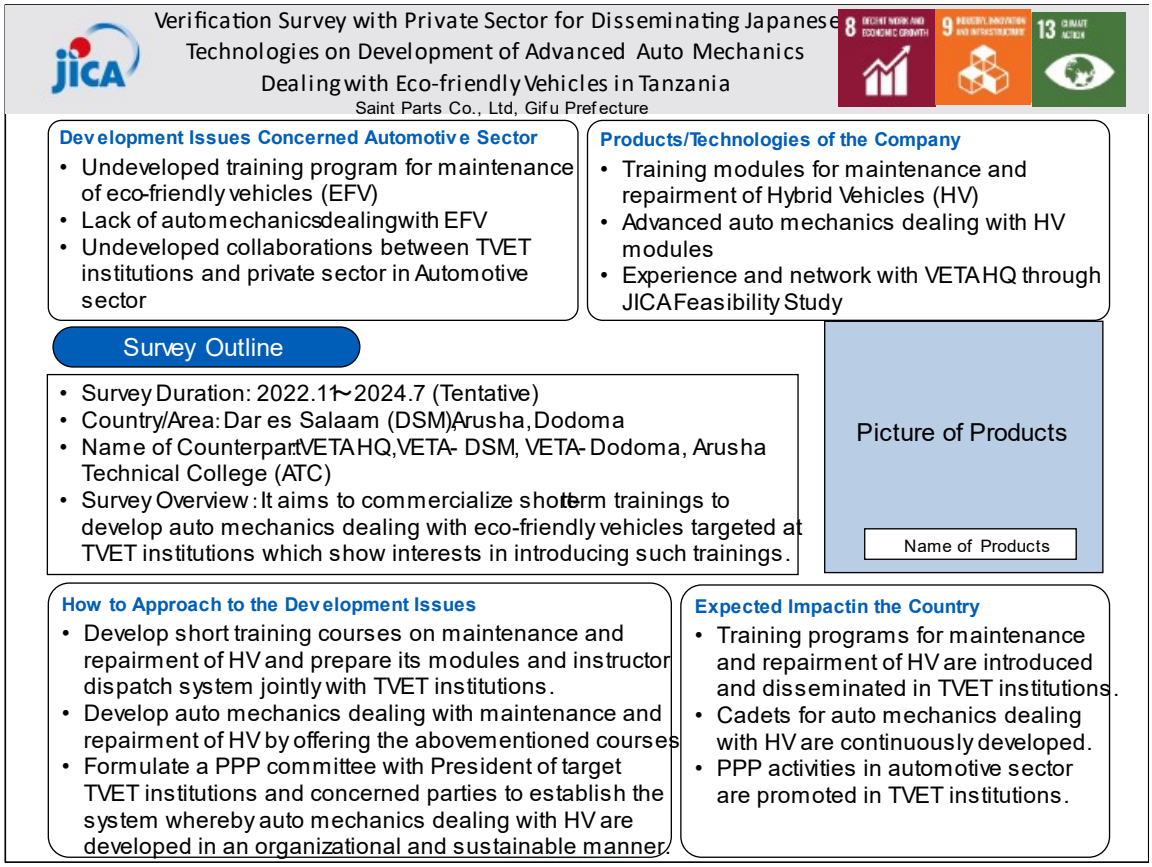
Implementation Period: November 2022 - (1 year and 6 months)

Target Area: Dar es Salaam, Arusha and Dodoma

Counterpart: VETA HQ, VETA-Dar es Salaam, VETA-Dodoma and Arusha Technical College (ATC) and so on

Summary: Saint Parts Co., Ltd, a proponent, develops a training package for maintenance and repair of eco-friendly vehicles and verifies the possibility of commercialising training business targeted at TVET institutions that show interest in opening short training courses for such vehicles. Saint Parts Co., Ltd 1) develops training modules for auto mechanics development dealing with eco-friendly vehicles, 2) dispatches training instructors and 3) conducts training sessions. Possible accounts include VETA-Dar es Salaam, VETA-Dodoma and Arusha Technical College (ATC), all of which participated in pilot activities to verify the effects of the training model, and Saint Parts Co., Ltd plans to expand the possible client base regardless of public and private institutions. Saint Parts Co., Ltd has discussed

with VETA-Dar es Salaam about 1) marketing method and price, 2) necessary expenditures such as materials, travel and personnel expenses, and 3) staff formation to operate the training service.



Source：Created by Survey Team

Figure 33 Summary of Support for Japanese SMEs Overseas Business Development

(2) Idea for Technical Cooperation Project

Project Title: Project for Marketable Industrial Human Resource Development in Tanzania (Tentative)

Implementation Period: November 2023 - October 2028 (5 Years)

Target Area: Dar es Salaam, Arusha, Moshi, Dodoma and Mwanza

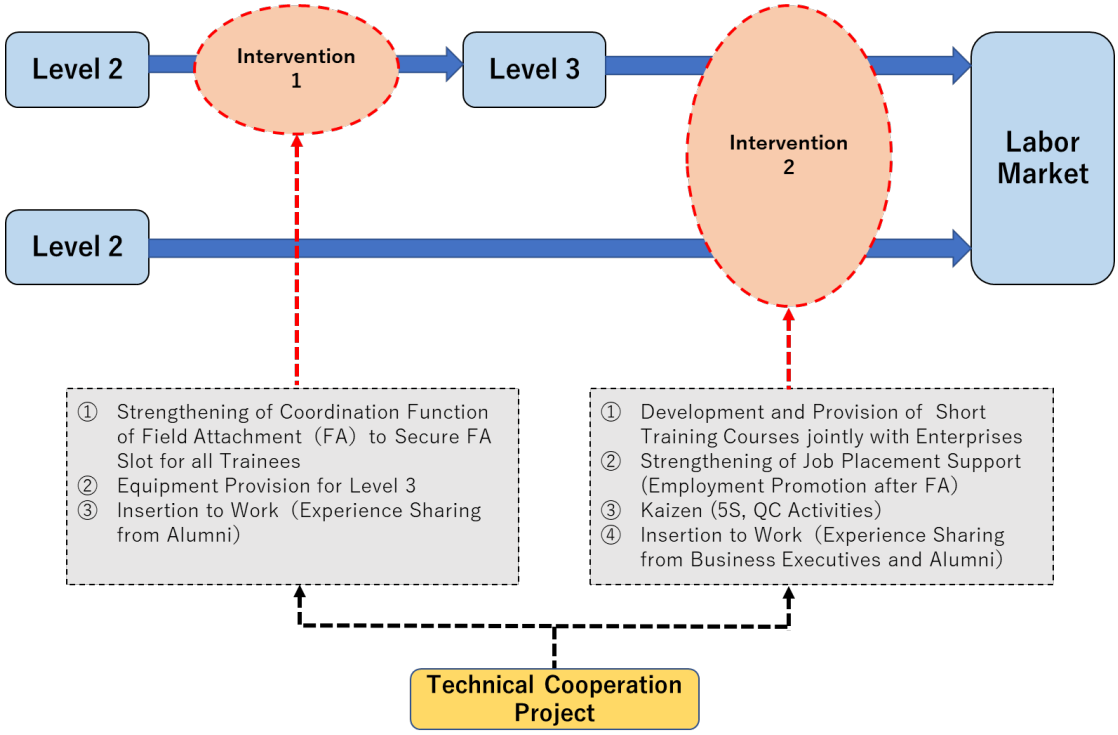
Counterparts: MoEST, NACTE, VETA HQ and VTCs

Beneficiaries: Principals of VETA VTCs, Teachers of Automotive/Electronics Courses, Trainees of Existing Long Courses/Newly Established Short Courses, Participant Companies

Summary: Survey Team Proposes a Technical Cooperation Project (TCP) to enable VETA to develop marketable industrial human resources efficiently and sustainably in collaboration with the abovementioned Support for Japanese SMEs Overseas Business Development, making maximum use of outputs and assets of the “Project on Strengthening Manufacturing Enterprises through Quality and Productivity”, which is to be completed in March 2022.

VETA plans to accelerate the development of trainees who have specialised knowledge and skills

in response to level 3, which is highly demanded from companies, however; they face challenges as follows; 1) a coordination system for Field Attachment (FA) has yet to be developed, and therefore not all trainees who are required to complete it as mandatory can be provided opportunities for it, 2) promotion rate to move up to level 3 is low due to equipment shortage[77]. VETA trainees have been forced to enter the labour market with less market value due to insufficient knowledge and mindsets required to work in the market, having been provided limited opportunities to learn technical and soft skills highly demanded from companies while in school. This applies to all trainees regardless of their attained level. Considering this situation, Survey Team proposes a TCP aimed at 1) increasing the promotion rate among the trainees who wish to move up to level 3 and 2) increasing the market value of all trainees. Figure 34 indicates the scope of interventions by TCP.



Source: Created by Survey Team

Figure 34 Scope of Interventions by Proposed TCP

In concrete terms, TCP strengthens a FA coordination system targeted at the automotive and electricity course to mobilise cooperation from companies to increase trainee promotion up to level 3. It also intends to improve the market value of trainees by 1) developing and offering short training courses jointly with companies, 2) strengthening soft skills, and 3) developing a business mind, all of which are primary components of the training model that was verified through the survey. Tables 42

[77] It is not mandatory for all trainees to move up to level 3, and therefore, many of them leave school and enter the labour market immediately after they finish level 2. According to interviews in the field survey, there are relatively many trainees who wish to promote to level 3 in the automotive and electricity regular courses whose trainees are likely to be employed after completion of level 3.

and 43 illustrate the support contents of TCP and a summary of PDM (tentative).

Table 42 Support Contents of TCP (Tentative)

	Strengthening FA Coordination	Development and Provision of Short Training Courses	Strengthening Soft Skills (Kaizen etc,.)	Development of Business Mind
Sector 1 : Automotive Maintenance **Partners :** Saint Parts, Retrus Tanzania, FMG, Toyota Tanzania (Mainly Japanese Companies)	• Introduce FA Coordination System with the initiative of Regional Office • Formulate a Committee with VTC officers such as Industrial Liaison Officer, Labor Market Survey Officer and representatives of private sector • Maximize the number of trainees receiving FA by securing companies, adjusting schedule and slots among target VTCs • VTCs provide job placement support after FA	• Develop and Provide short training courses jointly with private sector so that trainees can be equipped with knowledge and skills necessary to work in the market • Such examples include the training program for maintenance and repairment of HV provided by Saint Parts Co,. Ltd, which is supposed to be introduced through JICA Support for Japanese SMEs Overseas Business Development	• Provide basic Kaizen highly demanded from private sector such as 5S and problem-solving by customizing them to suit trainees' capacity • Dispatch AKT/KT from TKU to develop VETA teachers into Kaizen trainers • VETA continuously practices and disseminates Kaizen by making maximum use of existing Kaizen trainers developed through Kaizen Project	• Develop a business-oriented mindset to activate a self-motivation to enter the labor market by clarifying the meaning of work and the way of thinking that promotes the adaptation to working environment • Hold lecture sessions and networking events with the participation of business executives including Japanese companies and VETA alumni
Sector 2 : Electricity Installation **Partners :** TANESCO, Mining Companies, Baridi Baridi etc,.				

Source: Created by Survey Team

Table 43 Summary of PDM (Tentative)

	Narrative	Indicators
Overall Goal	Training model for marketable human resources is practiced in TVET institutions which are excluded from the Project and its effect is confirmed.	•Training model for human resources introduced through the Project is practiced more than XX TVET institutions which are excluded from the Project. •XX% of TVET institutions where the training model was practiced confirms its effect.
Project Purpose	Marketable human resources are developed in target TVET institutions.	•Number of trainees who are employed by enterprises of target sector is increased by XX%. •XX% of trainees who are employed by enterprises receive high commendation from Employer and/or immediate supervisors (more than 3.5 out of 5 grade) •XX% of trainees who opened up their own business stay in the same business more than XX years.
Output 1	Coordination function for a Field Attachment (FA) is strengthened.	•A committee for FA coordination is established and it holds coordination meetings on a regular basis. •More than XX% of target trainees get opportunity for FA. •Promotion rate of trainees who are planning to move up to NVA Level 3 is increased by XX%. •Graduation rate of trainees who are planning to leave school at NVA Level 2 is increased by XX%.
Output 2	Short Courses offering highly demanded skills from target sectors open and are conducted in a continuous manner.	•More than XX short courses offering highly demanded skills from industries open with the aid of enterprises of target sectors •More than XX% of opened short courses are offered in a continuous manner.
Output 3	Soft skills of trainees is strengthened.	•More than XX Kaizen Trainers are developed in target TVET institutions. • Trainees of target trades conduct Kaizen such as 5S and basic Problem Solving in a continuous manner under the guidance of Kaizen Trainers.
Output 4	Job placement support is provided for trainees.	•Lecture sessions and networking events are held more than XX times a year with participation of individuals of business society and alumni of TVET institutions. • Company orientations are organized XX times a year under the auspices of TVET institutions.

Source: Created by Survey Team

Considering TCP's characteristics, which are based on a partnership between TVET institutions and companies, the specialities of assigned experts are summarised as follows.

- Team Leader/Industry-TVET Institution Partnership Promotion
- Field Attachment Planning
- Job Placement Support Planning
- Kaizen Promotion Planning
- Coordinator/Monitoring and Evaluation

TCP targets the automotive and electricity sectors. Networking with companies has progressed;

however, the industry with high demand for trainee employment, such as Port Logistics, can be included as the third target sector.

(3) Idea for Grant Aid Project

・ Project title: Tanzania Private Sector Partnerships for Strengthening Marketable Human Resource Development through Vocational Training Institution Facility and Equipment Expansion Plan (tentative).

・ Target area: Dar es Salaam and regional cities where pilot VETA institutions are located.

・ Implementation period: 2025/4 - 2026/10 (1.5 years)

・ Plan Summary: This plan aims to contribute to the development of marketable industrial human resources by strengthening the training capacity of the target pilot VETA centres through the provision of the necessary equipment at the RVTSC and pilot centre RVTSC schools for short-term training courses for trainees and company employees to enable them to acquire new technologies, and by improving the efficiency of training course delivery through strengthening the network links necessary to provide information services for job placement assistance, etc.

1） Outline of facilities and equipment

① Procurement and installation of equipment required for practical training activities at the pilot institutions (including replacing older equipment) for target departments such as automotive maintenance, automotive electrical, electrical equipment, etc.

-Gasoline engine training equipment, vehicle fuel injection training equipment, vehicle electrical component training equipment, etc.

-Fault diagnostic equipment (OBDII).

-Tools for the maintenance of environmentally friendly vehicles (e.g. Hybrid Vehicle), etc.

-3-phase motor control training equipment, power distribution equipment, training equipment, etc.

② Improving the efficiency of the implementation of training courses at pilot institutions (strengthening internet network links within the centres)

・Projects covered: information services related to employment support, online soft skills learning, etc., and management information systems.

2） Total project cost: to be determined.

3） Background of Request: TVETDP（2013/2014-2017/2018) proposes increasing enrolments and teachers in TVET institutions. Specifically, it plans to increase enrolment from 233,795 (2012/2013) to 1,413,916 (2017/2018) and the number of teachers from 7,600 (2012/2013) to

129,545 (2017/2018), and the government plans to increase the number of enrolments by over six times and double the number of teachers. On the other hand, the reality is that the number of students admitted to TVET institutions is only 20-40% of the approximately 20,000 applicants due to a lack of necessary facilities. For example, according to interviews from VETA Dodoma, in 2022, 29 students were admitted to the automobile maintenance course against 129 applicants, and 28 students were admitted to the electrical system against 110 applicants. Also, at VETA Mwanza last year, only about 200 people were accepted out of 1,200 applicants, with a low admission rate of about 10 per cent.

At the same time, there is a significant shortage of skilled workers and a limited number of technicians who can cope with the latest technologies needed by the industry. To achieve the aforementioned national targets, the facilities and equipment of TVET institutions must be expanded to accommodate more trainees and incumbents who need to improve their skills. VETA-based schools, including the Dar es Salaam RVTSC, which is the leading vocational training institution in the country, can provide higher quality training compared to other vocational training institutions, and their graduates have received a certain level of recognition from local companies. The equipment and content of the curriculum have not been updated to keep up with the current status of technological advancement and diversity of skills required, and the needs of the market are not being met. In particular, the training of personnel related to environmentally-friendly vehicle maintenance, electrical equipment and factory automation in the automotive sector has not been addressed, which was confirmed through company interviews in this servery.

In addition, as there is insufficient employment support for trainees, nearly 80% of trainees remain in non-regular employment or are unemployed after completing training. This plan aims to strengthen the capacity of pilot institutions, including the Dar es Salaam RVTSC, to provide training services that meet the needs of enterprises by upgrading training equipment and providing various information services by strengthening internet links and creating an environment where online services are available. By effectively and efficiently introducing human resources skilled in the latest technology and are valued by the market demands into the labour market, this plan is positioned to contribute to the realisation of TDVISON 2025 through the promotion of FYDPIII implementation.

In particular, when considering the technical cooperation mentioned in 2) above, if candidate VETA institutions face low enrolment rates due to lack of facilities, providing necessary facilities and equipment through grant aid cooperation is considered an effective measure to ensure efficient implementation of the project. Therefore, it is proposed that an

additional survey be conducted in the future to narrow down the candidate pilot schools and that the content and amount of the grant aid be examined in detail after obtaining information on each school's enrolment rate and lists of existing equipment.

8. Recommendations for support in the field of industrial human resources development in Tanzania

When this survey started in September 2021, Tanzania had just begun the Third Five Year National Development Plan (FYDPIII), the achievement phase of TDV2025. The FYDPIII is a phase of achieving the TDV2025 goal of becoming a middle-income country, and its driving force is human resource development, especially labour force development through technological development. Therefore, the country's industrial human resource development sector has responded to this goal by updating the TVET development plan, organisational reform of NACTE and VETA, and curriculum revision.

The purpose of this survey, JICA's support measures and action plans for industrial human resources development in Tanzania were described in the previous chapter. Still, this chapter will provide recommendations from more of a bird's eye view.

Creating a system to guide young people into the labour market

It is essential to train more people in industrial human resources to support Tanzania's economic development. As part of this, the government is currently trying to increase the number of trainees enrolled in TVET institutions. However, only about 20% of VETA graduates are informal employment, and the rest of the majority are in casual jobs or unemployment. VETA graduates are human resources who can play an active role as skilled workers. In addition to providing training, the role of TVET Institutions should include the provision of a range of services to promote employment, including links to public and private employment services and structures to guide young people into the labour market. This support is needed for job seekers and trainees who want to start their own business. Young people who want to get a job or start their own business should receive guidance and employment support throughout their training to develop a growth mindset that will prepare them for the world of work and have a clear pathway to follow when they graduate. Employment support programmes at school are commonplace in Japan, but they are still not well exercised in developing countries. By sharing the know-how related to school-level employment support activities carried out in Japan with Tanzania, we believe it will improve the youth employment rate in that country.

To improve the labour force, which is the aim of the FYDPIII, it is paramount to ensure that these measures are used to provide valuable human resources with opportunities to work in the labour market.

Collaboration with companies is crucial for responding rapidly to 'technology that meets industry needs.

To fill the mismatch between the needs of industry and the programmes offered by TVET institutions, efforts have been made to develop curricula in collaboration between companies and TVET institutions. However, the curriculum development and revision for long-term training courses is time-consuming, costly, and often short of competent staff. It takes time for a newly developed curriculum to be adapted and implemented. If TVET institutions are to be able to train people to meet the technological needs of the private sector, they must be able to keep up with the pace of business and provide training quickly.

The partnership described here is not a one-way benefit for TVET in terms of Corporate Social Responsibility (CSR) but work as business partners. It means building a system to efficiently respond to market needs, such as TVET Institutions, to outsource training programs' development and operation management to private companies. The labour market is looking for a timely training opportunity to catch up on the new technologies that emerge one after another.

TVET Institutions need to take the perspective of a training service provider and be willing to utilise the know-how and skills of the private sector to provide training that meets market needs promptly.

Enabling TVET institutions to be self-reliant

In Tanzania and many countries in Africa, TVET institutions are financed by a small subsidy from the government and tuition fees from trainees. In some African countries, governments encourage TVET Institutions to develop income generation projects to secure their financial resources. Still, TVET Institutions are not fully effective in many cases due to inadequate staffing and equipment and facilities.

This is slightly outside the scope of this survey. Still, it is essential to mention that unless TVET institutions can ensure financial sustainability or self-sustainability, their activities will almost certainly stagnate once external support ends. As long as this vicious circle continues, donors will be reluctant to step forward to provide support to TVET Institutions. When cooperating with TVET Institution as counterparts, it is essential to incorporate support content (technology transfer and results) that can be used as a source of income even after the cooperation ends to provide operational improvement support with a particular focus on

financial soundness. For example, by drawing good practice from Japan's long-term support to the Nakawa Vocational Training Institutions in Uganda, the proposed support measure has included establishing instructor upgrading courses and new level training courses along with the National Vocational Qualification framework. These training courses are part of a government-approved programme for teachers, funded annually by the government. In addition, JICA also supported the establishment of fee-based, short-term courses (mechatronics) for companies. In the case of the Senegal-Japan Vocational Training Centre, it operates night training and training for workers. It is working to secure its financial resources, as well as helping to improve its operations by supporting the introduction of a management information system. In both cases, TVET institutions with Japanese support actively commercialised the project.

Efforts to secure such sources of independent income are required. It also supports TVET institutions to ensure their financial resources through technical cooperation projects and private-sector partnerships that are essential through such activities, a high spill-over effect of the results of Japanese cooperation (both in terms of human and material capacities) can be expected, as well as for providing society's services.

However, bearing in mind that examples from other countries may not always work, it is desirable to carefully analyse and consider the current situation in Tanzania and the environment in which the target TVET institutions are located and to feel a mechanism that contributes to the self-sustainability and development of vocational training institutions.

Towards supporting industrial human resource development from a medium to long term perspective

The ratio of engineers, technicians and artisans in Tanzania is 1:0.9:7, which is far from the ideal mix ratio of 1:5:25 of human resources for promoting industrialization. For Tanzania to enhance further automation, it will be necessary to train more technicians in the future. For those trained at VETA to become technicians, there should be a career path to participate in higher levels of training (Levels 4-6). In addition, it is essential to establish a route for skilled workers who have graduated from VETA and entered the labour market to participate in technician-level training to advance their careers, thereby efficiently developing technicians who can cope with advanced technology.

This survey focused on the Tanzanian industrial human resource development sector, particularly the skilled workers produced by VETA who work as artisans. However, it was impossible to collect information on industrial human resources at the technician or engineer level due to time constraints. As support in the field of industrial human resource development should be provided over a long period (10 to 15 years), it would be desirable to take the opportunity to conduct a sectoral survey to understand the overall picture of industrial human resource development in the country and the challenges it faces.

Based on these survey results, it is expected that more effective and efficient support measures can be foreseen by clarifying the exit strategy for support in the industrial human resources field in Tanzania.

Information Collection Survey on
Industrial Human Resource Development in Tanzania

-Verification Exercise for PPP-Training Model-

Training Model Development Workshop

Monday, January 31st, 2022
Venue: DES-RVTSC

Table of Contents

1. Members of Survey Team

Name	Position
Saeri Muto	Leader/Industrial Human Resource Development Policy
Ryosuke Sakumasu	Sub Leader/Needs Analysis on Industrial Human Resources
Yuko Tanaka	Human Resource Development Planning
Masaya Uesaki	Public Private Partnership Promotion 1
Kurumi Nonaka	Public Private Partnership Promotion 2/ Business Coordinator

2. Background of the Survey

- Government of Tanzania puts emphasis on the importance of industrialization promotion by means of economic change and human resource development as stipulated in the national policies (Vision 2025, FYDP II&III).
- Tanzania achieved the improvement of economic growth showing 6 to 7 % growth rate on average in the past 10 years.
- However, it shows high unemployment rate of 9.7% (2018) and this trend is remarkable among the young people.

2. Background of the Survey (cont'd)

- VETA Tracer Survey indicated that 75% of VETA graduates got employed/self-employed but 30% of them entries into the informal-sector. It implies that human recourses developed by VETA do not meet the needs of industrial arena.
- FYDP II addresses the issue of low efficient workers who lacks both technical skills and soft skills and suggests the human resource development in exact accord with the needs of industry.

2. Background of the Survey (cont'd)

- Based upon this perspective, JICA projected the survey during the period from Sep 2021 to Feb 2022 to investigate the bottlenecks that hinder the human resource development in Tanzania with special focus on Electrical Installation, Automotive Mechanics and Food Processing industries.
- Based on the survey results, JICA Survey Team formulates a new training model which possibly mitigates the keen bottlenecks identified through the survey and implements it as a pilot basis to verify its effectiveness (Jan to Feb 2022).

3. Purposes and Methods of the Survey

Purposes:

- Clarify bottlenecks that hinder human resource development in Electronic Installation, Automotive Mechanics and Food Processing industries though the analysis on gap lay between industrial needs on human resource skills and training contents provided by TVET Institutions.
- Design and verify the training model which could mitigate the bottlenecks identified by the survey.
- Examine the possibilities of JICA support programs in the area of industrial human resource development based on the results of training verification.

3. Purposes and Methods of the Survey (cont'd)

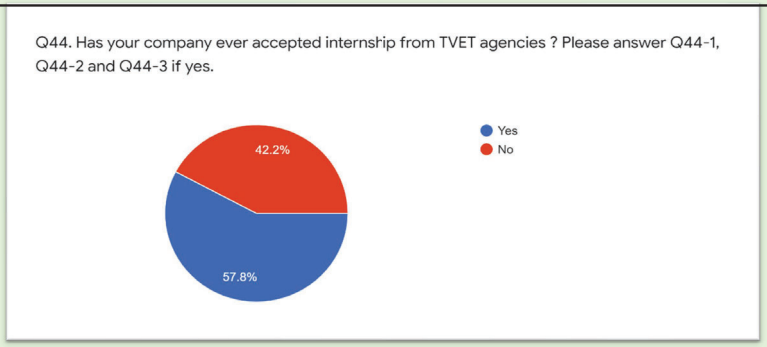
Methods:

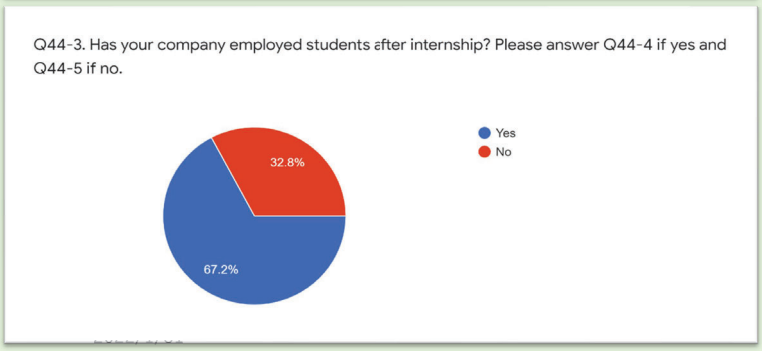
- Literature Reviews
- Questionnaire Survey (Online Survey targeted 90 Companies and 56 TVET Institutions)
- Online Interviews (Public Organizations, TVET Institutions, Companies…)
- Field Survey (face to face Interviews in Tanzania)

4. Survey Results 1: Questionnaires
(1) Main Findings from Companies

- Implementation Period : October-December, 2021
- Sample : 90 companies
  - -Electronic Installation：28
  - -Automotive Mechanics ：17
  - -Food Processing ：44
- Response Rate: 70.3% (90 out of 128 companies)

4. (1) Main Findings from Companies (cont'd)

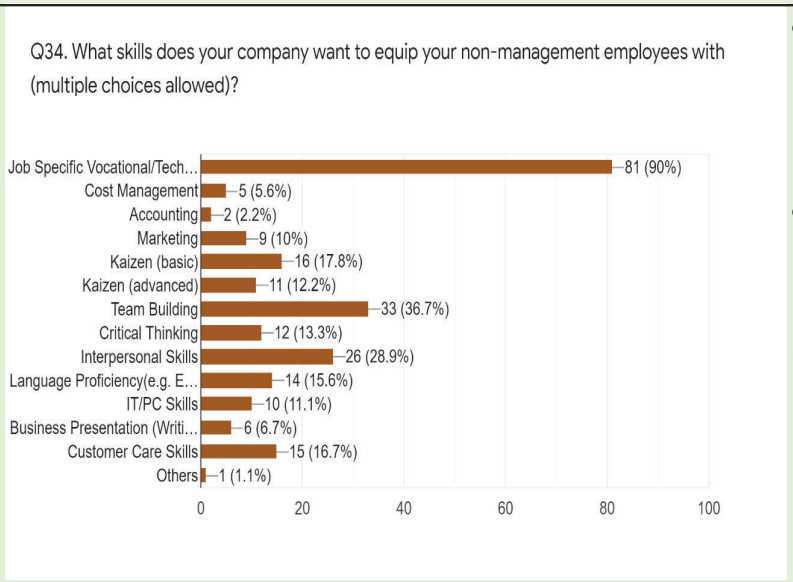




- More than 90% companies interested in accepting field attachments from TVET institutions.

✓Yet 57.8% companies have accepted field attachments from TVET institutions, but less than 2/3 of them employed students after field attachments.

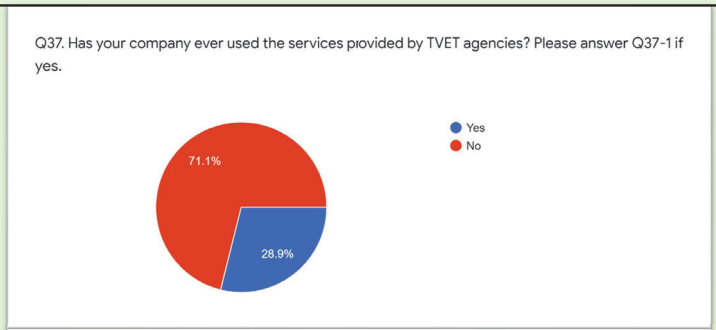
4. (1) Main Findings from Companies (cont'd)

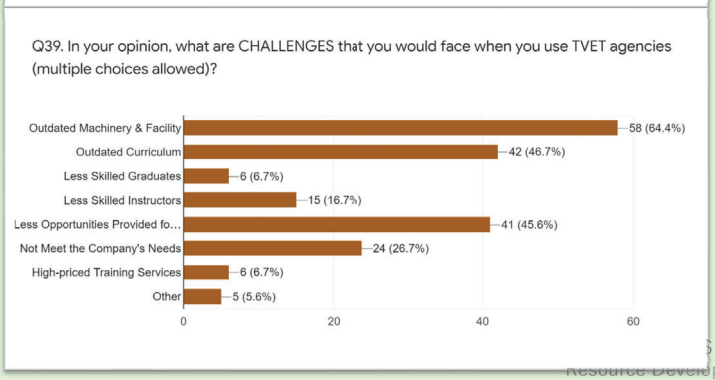


- Top 3 demanded skills for managers; business development (53.3%), strategic planning (44.4%), marketing (26.7%).
- Only for Automobile industry requires manager with Vocational Technical skills (41.1%).

✓Most demanded skill for employees; Vocational Technical skills (90%), followed by Team Building (36.7%), Interpersonal skills (28.9%) and KAIZEN (17.8%).

4. (1) Main Findings from Companies (cont'd)





✓More than 70 % of companies responded they have never used service from TVET institutions.

- Many companies expected skilled graduates from TVET institutions for potential employees (75.6%).

✓Top 3 reasons for not using TVET institutions; Outdated Machinery and facility (64.4%), Outdated Curriculum (46.7%), less opportunities for Hands On Training (45.6%).

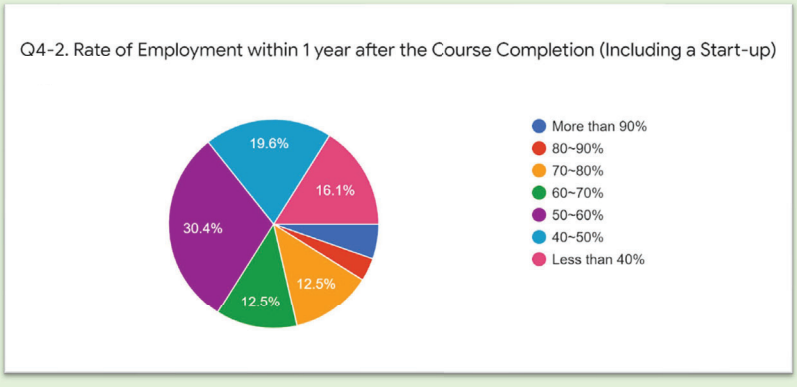
- Most demanded human recourses for company's expansion is technicians/artisans.

4. Survey Results 1: Questionnaires (2) Main Findings from TVET

- Implementation Period : November-December, 2021
- Sample: 56 TVET Institutions (see table below for details)
- Response Rate : 60.8% (56 out of 92 TVET institutions)

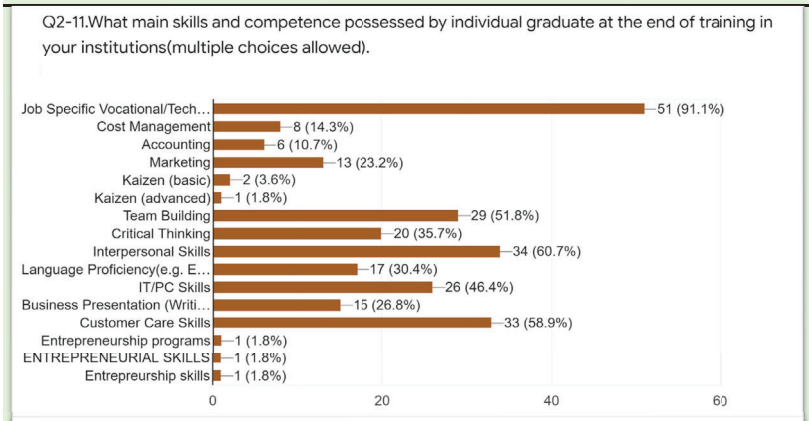
Category/Zone	DSM	Northern	Central	Lake	Total
VETA	2	3	4	3	12
Central Government	1	1	1	4	7
Faith Based Organization(FBO)	2	5	4	3	14
Private	3	4	4	6	17
NGO	1	1	-	-	2
Company	-	-	-	1	1
Co-Owned	-	-	-	3	3
Total	9	14	13	20	**56**

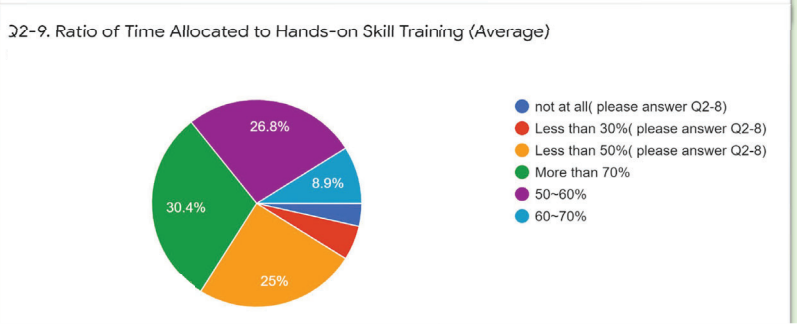
4. (2) Main Findings from TVET



- 2/3 of TVET institutions responded more than 50% of graduates get employed/self-employed.

4. (2) Main Findings from TVET (cont'd)



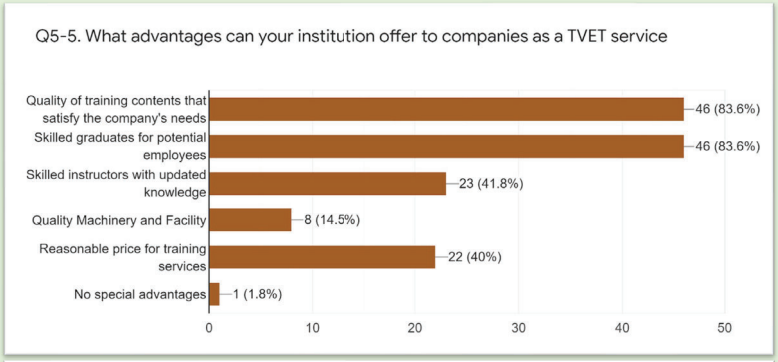


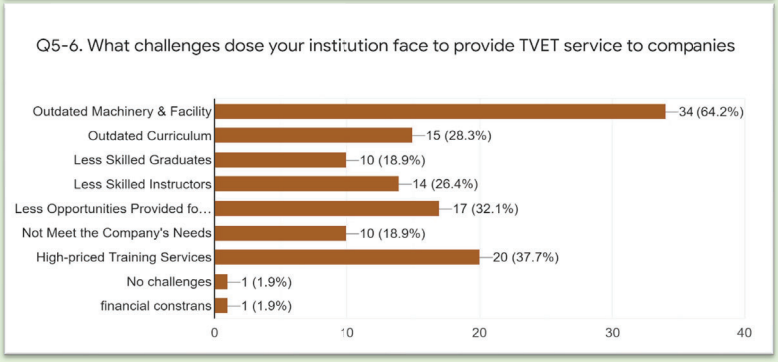
- Top 3 skills for graduates; Vocational/Technical skills (91.1%), Interpersonal skills (60.7%), Customer Care skills (58.9%) .

Only 3.6% mentioned KIZEN Basic.

- 2/3 of TVET institutions allocated more than 50% for Hands-on Trainings.

4. (2) Main Findings from TVET (cont'd)

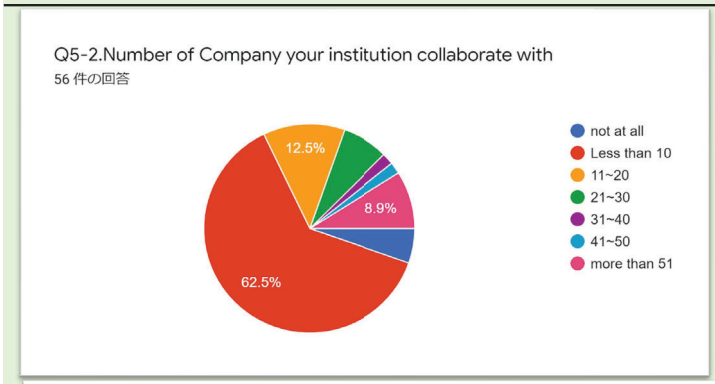


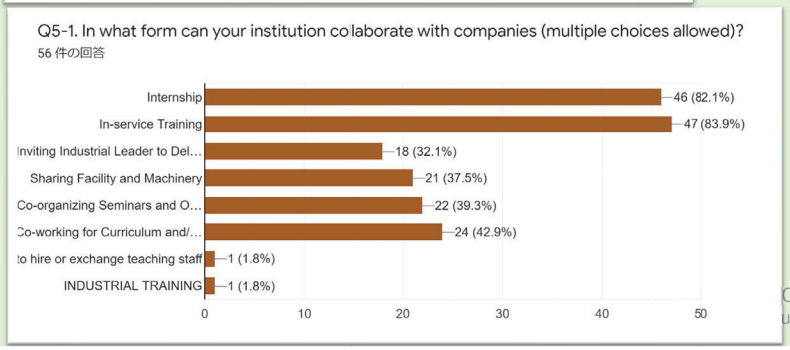


- More than 80 % of TVET institutions regard the quality training and skilled graduates as their advantages.

- However, the challenges they face are Outdated Machine (64.2%), High Priced Training (37.7%), less opportunities of Hands-on Training (32.1%).

4. (2) Main Findings from TVET (cont'd)

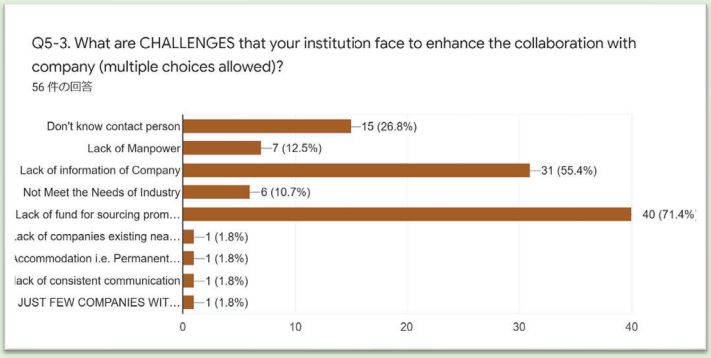


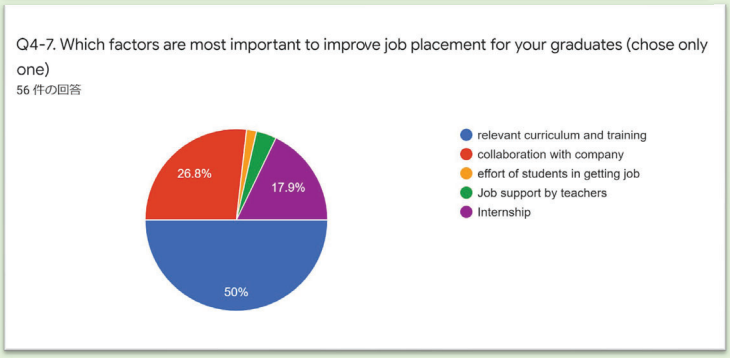


✓2/3 of TVET institutions collaborate with 10 companies or less.

- Most popular type of collaboration with companies are In-service Training (83.9%) and Field Attachments (82.1%).

4. (2) Main Findings from TVET (cont'd)





✓Top 3 reasons for hindering collaborations; Lack of Fund (71.4%), Lack of Companies' information (55.4%), and Not Knowing Contact Persons (26.8%).

- Top 3 important factors to job placement; Relevant curriculum and training (50%), Collaborate with companies (26.8%), Field Attachments (17.9%).

5. Survey Result 2: Field Survey

- Implementation Period: January-February, 2022
- Regions Covered :Dar es Salaam, Dodoma, Arusha, Kilimanjaro, Mwanza and Zanzibar
- Interviews Conducted: 37 (up to now)

  -Companies : 10

  -TVET Institutions : 14

  -Public Organizations / Associations: 13

5. (1) Main Findings from Companies

- Most of companies regard TVET graduates as workers with minimum level of knowledge and skills.
- Some company are satisfied with attitude of students while others have opposite observation.
- Most of companies had to develop skills of graduates after employment by themselves.
- Companies put emphasis on soft skills development in attitude, time management, compliances, ethics, critical thinking, responsibility, and 5S/KAIZEN

5. (1) Main Findings from Companies (cont'd)

- Companies expected Graduates
  - should have more practical skills to meet with the company requirements
  - have a wider range of skill set
  - to carry out task autonomously
  - to have skills with new arising technologies
  - to equip with soft skills
  - should have Growth Business Mindset

Meeting at Confederation of Tanzania Industries
18/01/2022

5. (2) Main Findings from TVET

- Some TVET institutions started to introduce new training courses to respond local market needs.
- Training equipment are outdated and not updated.
- Insufficient training equipment and facilities.
- Lack of maintenance of equipment and machine.
- Limited opportunity for teachers to participate hands-on trainings.

VETA Headquarters, Dodoma
19/01/2022

5. (2) Main Findings from TVET (cont'd)

Dodoma RVTSC
20/01/2022

- Lack of coordination for field attachments among private sector and TVET institutions. Some students fail to get opportunities for filed attachments.
- Limited support for field attachments. Students have to look for companies which accept their field attachments.
- TVET institutions conducted market surveys on a regular basis to update curriculum, however these information is not strategically utilized for job placement.
- Graduates have limited access to funding and necessary information for establishing business under the Entrepreneurship program.

6. Bottlenecks Identified/ Countermeasures

- Skills offered in TVET institutions are not sufficiently responding to what companies requires. Bottlenecks identified through the survey are as follows.

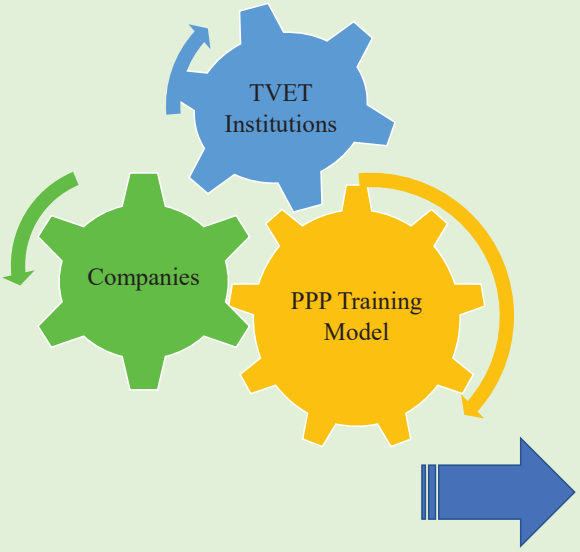
Bottle Neck Identified	Countermeasures
TVET institutions cannot catch up with recent skills companies require due to the rapid change of technology in industries.	TVET institutions should co-organize trainings with companies to provide skills required from industries in an efficient manner.
TVET institutions have not yet identified a set of soft skills that enable students to work as companies expected.	TVET institutions should customize soft skills which are used in companies.
TVET institutions have not yet prepared programme to develop students with growth mindset whereby students can be self-motivated to work.	TVET institutions should introduce programme for growth mindset development in collaborate with private sector.

7. Concept of PPP-training model

Hands-on skills which meet with companies' requirements in a timely manner

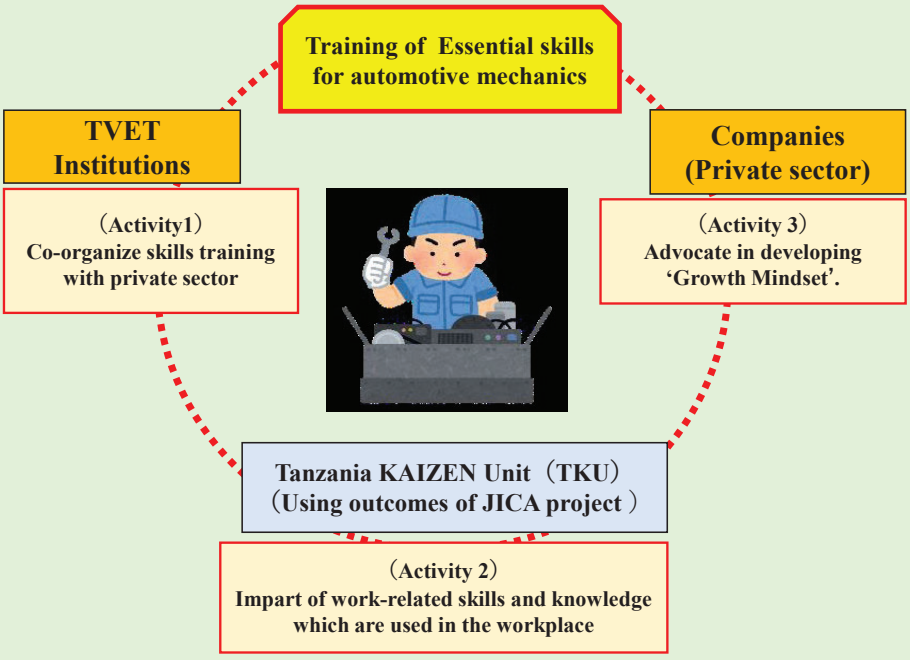
A set of soft skills which are used in the world of work

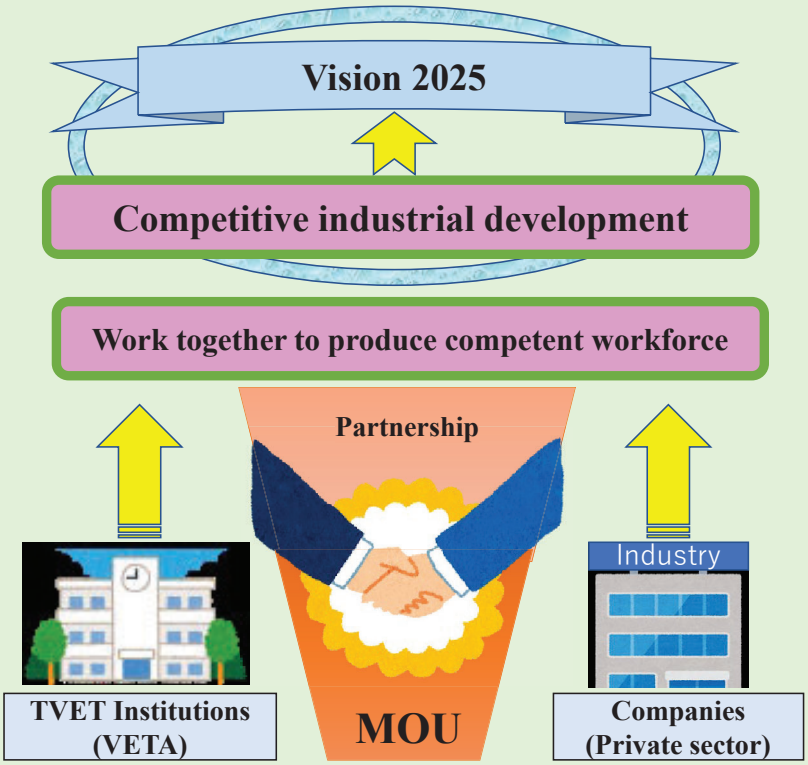
Growth Mindset which guides career development



VETA graduates with practical skills and job-related competence

'Ready to Work' training for the automobile industry





Asante sana!
Hebu tufanye kazi pamoja!

Information Collection Survey on
Industrial Human Resource Development in Tanzania

-Verification Exercise for PPP-Training Model-

Evaluation for PPP Training Model

February 14th , 2022

Venue: DSM-RVTSC

Table of Contents

1. Overview of PPP-Training Model

1.1 Bottlenecks of Human Resource Development in Tanzania

- Skills offered in TVET institutions are not sufficiently responding to what companies requires. Bottlenecks identified through the survey and Proposition of countermeasures are as follows.

Bottle Neck Identified	Countermeasures
TVET institutions cannot catch up with recent skills companies require due to the rapid change of technology in industries.	TVET institutions should co-organize trainings with companies to provide skills required from industries in an efficient manner.
TVET institutions have not yet identified a set of soft skills that enable students to work as companies expected.	TVET institutions should customize soft skills which are used in companies.
TVET institutions have not yet prepared programme to develop students with growth mindset whereby students can be self-motivated to work.	TVET institutions should introduce programme for growth mindset development in collaborate with private sector.

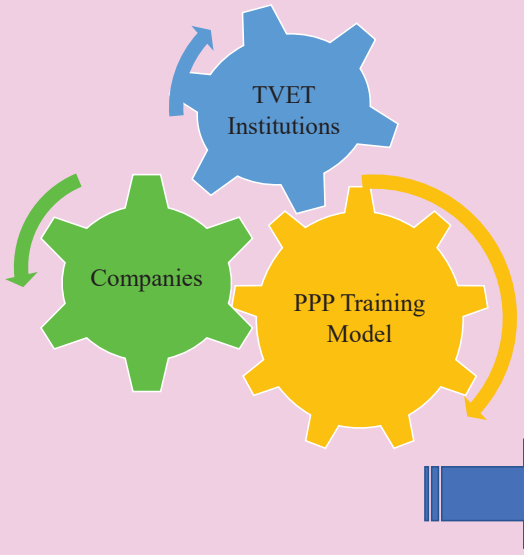
1. Overview of PPP-Training Model

1.2 Concept of training model based on the countermeasures ①

Hands-on skills which meet with companies' requirements in a timely manner

A set of soft skills which are used in the world of work

Growth Mindset which guides career development



VETA graduates with <u>practical skills and job-related competence</u>

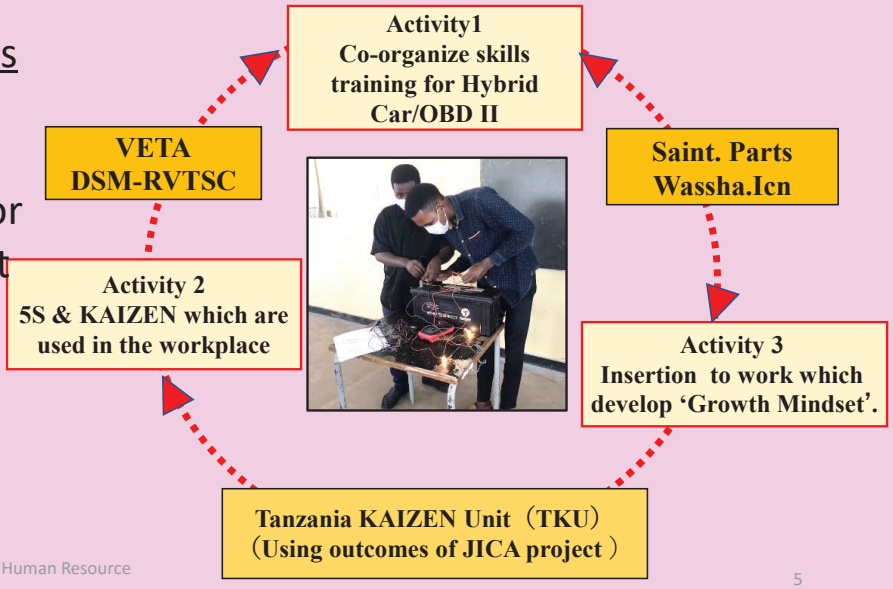
1. Overview of PPP-Training Model

1.2 Concept of training model based on the countermeasures ②

・Title: <u>Training of Essential skills for automotive mechanics</u>

・Objective: To verify the effectiveness of PPP training for

- ✓ Hands-on skills which meet with companies' requirements
- ✓ Soft skills
- ✓ Insertion to work



1. Overview of PPP-Training Model

1.3 Training Plan: Feb 7 to 11, 2022 (5 days) at VETA DSM-RVTSC

Day	Time	Activities	Topic	Venue	Presenter
Day1 2022/2/7 Monday	08:30-09:00 09:00-10:30 10:30-11:00	・Opening ceremony /Orientation ・5S activities by TKU Advanced Kaizen trainer (Break 9:40-09:50) 【Long Break】	Opening/Briefing Soft skills	Classroom	MIIT-TKU
	11:00-13:30	・Basic knowledge of electricity for car mechanics (Electrical circuit) （Theory＆Hands-on） (Break11:40-11:50/12:35-12:45)	Hand-on skills Automotive Mechanics	Classroom	Saint Parts Co.Ltd.
Day2 2022/2/8 Tuesday	08:30-09:00 09:00-10:30 10:30-11:00 11:00-13:00	・Review of previous day ・ Basic knowledge of hybrid car (Theory) (Break 9:50-10:00) 【Long Break】 ・ Basic knowledge of hybrid car (Hands-on)	Hand-on skills Automotive Mechanics	Classroom Class room	Saint Parts Co.Ltd.
Day3 2022/2/9 Wednesday	08:30-09:00 09:00-10:30 10:30-11:00 11:00-13:00	・Review of previous day ・Diagnosis with OBD (Theory) ・Inspection and repair of hybrid car (Hands-on) (Break 9:50-10:00) 【Long Break】 ・Inspection and repair of hybrid car /Diagnosis with OBD (Hands-on) (Break 11:50-12:00)	Hand-on skills Automotive Mechanics	Class room Workshop	Saint Parts Co.Ltd.
Day4 2022/2/10 Thursday	08:30-09:00 09:00-11:00 11:00-11:30	・Review of previous day ・Assessment: Practical/Theory (Mr. Yanagisawa, Dr. Mariam) 【Long Break】	Assessment	Classroom Workshop	Saint Parts Co.Ltd. MIIT-TKU
	11:30-12:30	・Be ready yourself for work	Insertion to work:	Classroom	WASSHA Inc.
Verification Day5 2022/2/11 Friday	08:00-08:30 08:30-10:30 10:30-11:00 11:00-13:30	Review of previous day ・Introduction to Basic Kaizen (Theory) 【Long Break】 ・Introduction to Kaizen (Practice)- exercise on QC story	Soft skills	Classroom	MIIT-TKU
Evaluation 2022/2/14 Monday	10:00-12:00 12:30-13:00	・Joint evaluation workshop" "Experience report/presentation Closing Ceremony	Programme evaluation Closing/ Certification	Classroom	VETA、NACTE、JICA

1. Overview of PPP-Training Model

1.4 Training Participants

Course	Year	Participants (No of female)		Total
DUAL MOTOR VEHICLE MECHANICS (MVM)	Year 2	4	(1)	8
	Year 3	4	(1)	
TRUCK MECHANICS (TM)	Level 2	4	(0)	8
	Level 3	4	(1)	
Grand Total		16	(2)	16

・Selection criteria: 4 students with best achievement in grade are selected from two different year (2nd year and 3rd year students) of each MVM and Truck Mechanics.

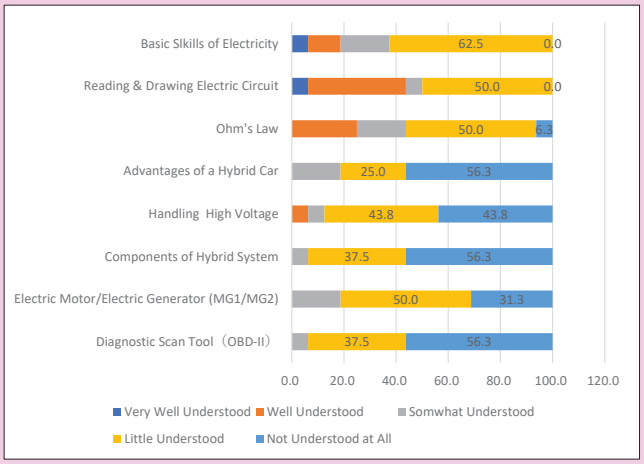
Note: MVM course is 3 years training course.

2.Results of PPP-Training Model

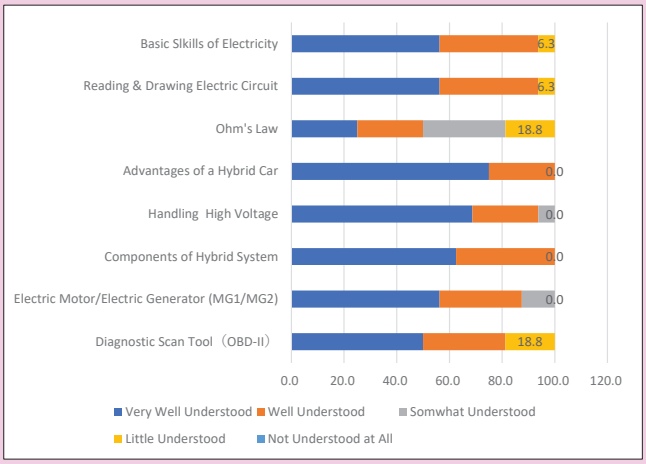
2.Results of PPP-Training Model

2.1 Hands-on Training on HV: Self Evaluation by Students

Before Intervention

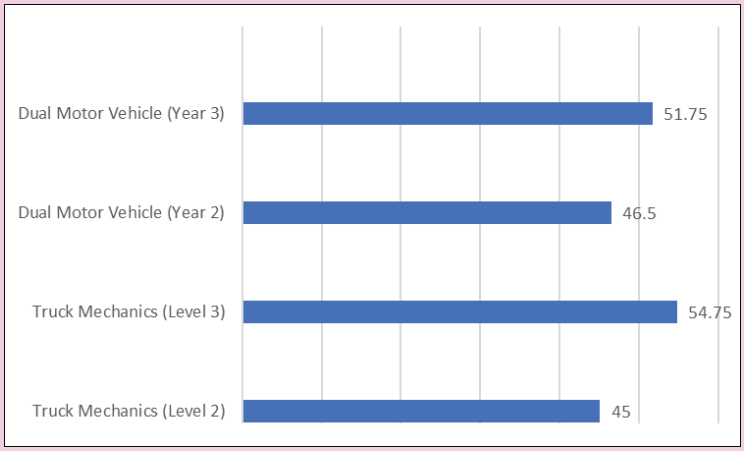


After Intervention



2.Results of PPP-Training Model

2.2 Hands-on Training on HV: Examination Result ①
(Total Score (Average per Group))



- All Groups Got more than 75% in Accuracy Rate(More than 45 out of 60)
- Level 3 Students Showed Slightly Higher Scores than Level 2 Students.

2.Results of PPP-Training Model

2.2 Hands-on Training on HV: Examination Result ② (Details)

	Basics of HV (On a Scale of 1 -10)	Theory of Electricity (Basic) (On a Scale of 1 -5)	Theory of Electricity (Advanced) (On a Scale of 1 -5)	Hands-on Practice (HV) (On a Scale on Which 35 is Perfection)	Hands-on Practice (Electric Circuit) (On a Scale of 1 -5)	Total (Average) (On a Scale on Which 60 is Perfection)
Truck Mechanics (Level 2)	8.5	4	3	26	3	45
Truck Mechanics (Level 3)	9.25	5	5	32	3.5	54.75
Dual Motor Vehicle (Year 2)	8.75	4	3.25	27	3	46.5
Dual Motor Vehicle (Year 3)	7.75	4.5	4	32	3.5	51.75

Phots: Hands-on Training on Electric Circuit

2.Results of PPP-Training Model

2.2 Hands-on Training on HV: Examination Result ③ (Basics of HV)

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
TM 2	○	×	○	○	×	○	○	×	○	○
	○	○	○	×	○	○	○	×	○	○
	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	×
TM 3	○	○	○	○	○	○	○	○	○	×
	○	○	○	○	○	○	○	○	○	○
	○	×	○	×	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○
MVM 2	○	×	○	○	○	○	○	○	○	×
	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○
	○	×	○	×	○	○	○	○	○	×
MVM 3	○	×	○	○	○	○	○	○	○	×
	○	×	○	○	○	○	×	○	○	×
	○	×	○	○	○	○	○	○	○	×
	○	×	○	×	○	○	○	○	○	○
Accuracy Rate	100%	50%	100%	75%	94%	100%	94%	88%	100%	56%

Q1	Meaning of Hybrid
Q2	Type of Hybrid System used for Prius
Q3	Boltage of Hybrid Battery
Q4	Function of MG1
Q5	Function of MG2
Q6	How to Identify Wirings with High Voltage
Q7	Function of Inverter
Q8	How to Operate AC Compressor
Q9	Function of Service Plug
Q10	Characteristics of Regenerative Brake

- Students Got High Scores on the Same Questions as Taught in the Classroom and Workshop (Q3,6,7 and 9)
- Students are Not Good at Understanding Complex Concept such as System Operation (Q10)

2.Results of PPP-Training Model

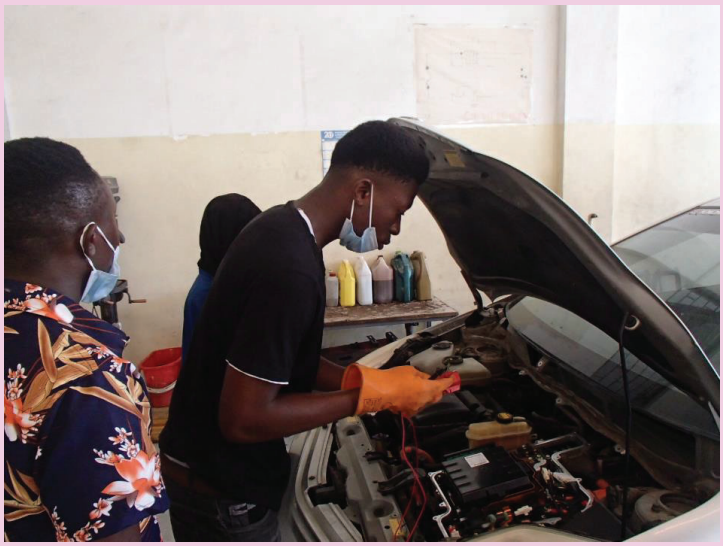
2.2 Hands-on Training on HV: Examination Result ④ (Theory of Electricity (Basic, Advanced))

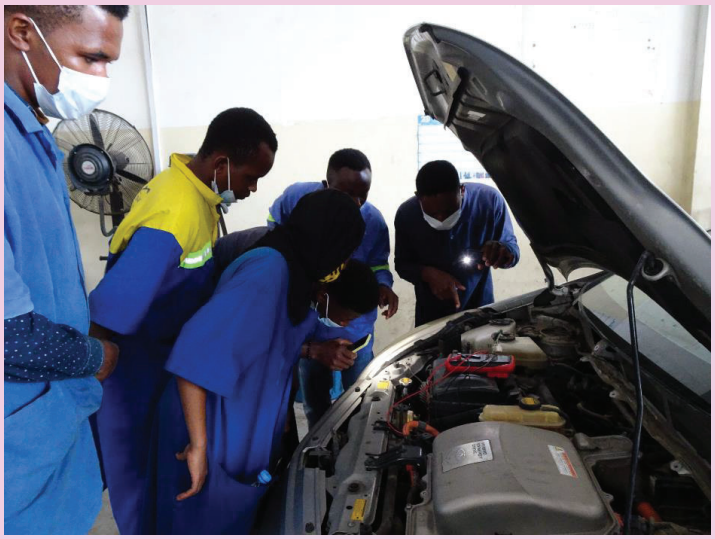
	Electrical Circuit (Basic)	Electrical Circuit (Advanced)
TM 2	5	3
	5	5
	3	2
	5	2
TM 3	5	5
	5	5
	5	5
	5	5
MVM 2	3	3
	5	4
	5	4
	5	2
MVM 3	5	5
	3	1
	5	5
	5	5

- Students Got High Scores on Electrical Circuit (Basic) Because It was Already Practiced in the Class.
- However, Students Showed Relatively Low Scores on Electrical Circuit (Advanced) Because It Required to Apply Theories Learned in the Class.

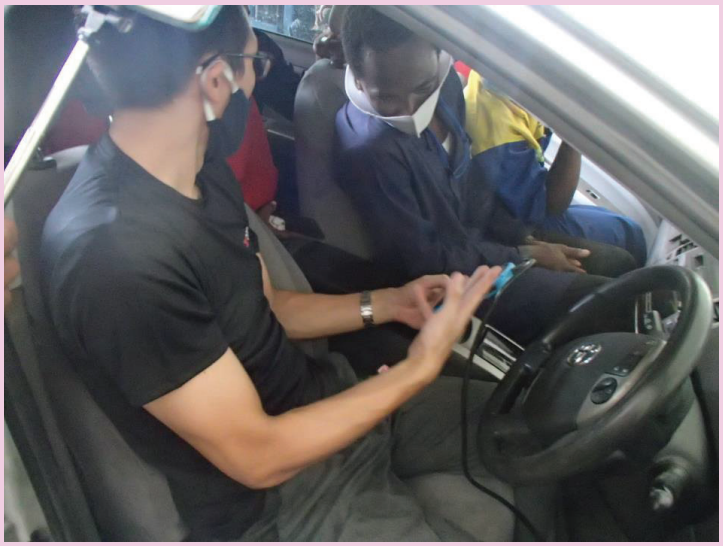
→ Knowledge Application is a Big Challenge !!

Phots: Hands-on Training on HV





Phots: Hands-on Training on HV



2.Results of PPP-Training Model

2.2 Hands-on Training on HV: Examination Result ⑤ (Hands-on Practice (HV))

Check Points	1. Check of Safety Harness	Wearing of Rubber Globes and its Reasons, Preparation before Wearing
	2. Removal of Attached Items such as Accessories	Removal of Wearing Metals and its Reasons
	3. Check of Service Plug	Detach of Plug and its Storage
	4. Stand-by for 10 Minutes	Reason for Stand-by for 10 Minutes before Starting
	5. Check of Tools	Use of Special Tools, Alternative Treatments,Insulation Treatment
	6. Check of Inverter	Removal of Inverter Cover, Explanation of Safety Switch (Interlock)
	7. 0V Confirmation	0V Cofirmation by Multimeter

- All Groups well understood the Safety Procedures and Can Apply it on the Ground.
- Level 3 Students explained better than Level 2 Students because of Their Superiority on Knowledge of Auto Mechanics.
- Exam was Exactly the Same as What They Practiced during the Class. Not Sure that They Show the Same Level of Performance if They are Questioned Differently (Knowledge Application is important)

2.Results of PPP-Training Model

2.2 Hands-on Training on HV: Examination Result ⑥ (Hands-on Practice (Electric Circuit))

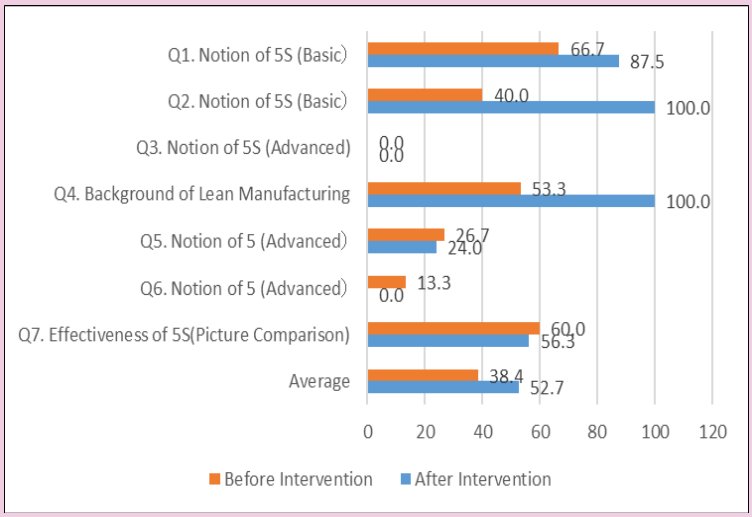
Truck Mechanics (Level 2)	5
	5
	1
	1
Truck Mechanics (Level 3)	5
	1
	3
	5
Dual Motor Vehicle (Year 2)	1
	5
	5
	1
Dual Motor Vehicle (Year 3)	2
	2
	5
	5

- Each Group Showed the Same Trend.
- Half Students Got High Scores while Other Half Low Scores.
- Level of Understanding on Electrical Circuit Largely Depended on Individual, Regardless of Grade nor Trade.

Phots: Hands-on Training on Electric Circuit

2.Results of PPP-Training Model

2.3 Soft Skills Training: 5S Theory



- Students Improved Accuracy Rate After Intervention from 38.4% to 52.7%.
- Students Got High Scores on Questions to Ask Whether They Know or not Such as Q2 and 4.
- However, They Got Relatively Low Scores on Questions to Require Application of Knowledge Such as Q3,5 and 6

Phots: 5S Theory

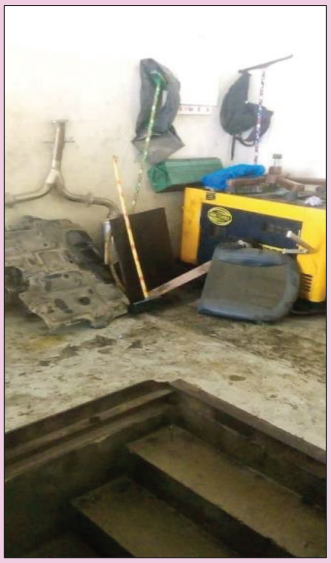
2.Results of PPP-Training Model

2.4 Soft Skills Training: 5S Practice ①

Before it was difficult for mechanics to pass through or even use the space for electrical cable. But after kaizen every item has put in its place, arranged proportional to its area, now students can use space for temporary tool storage during the maintenance.

2.Results of PPP-Training Model

2.4 Soft Skills Training: 5S Practice ②



Before floor was tidy with grease and congested with unnecessary item, thus make unsafe working condition. After kaizen student realize its only one machine required in that area.

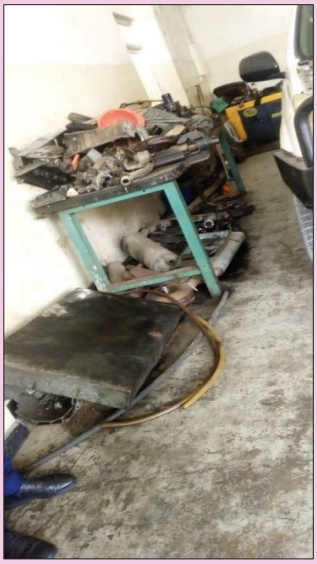
2.Results of PPP-Training Model

2.4 Soft Skills Training: 5S Practice ③

After kaizen everything on its place and neat, this improvement has minimize tool break, tool lost ,near miss and accident risks.

2.Results of PPP-Training Model

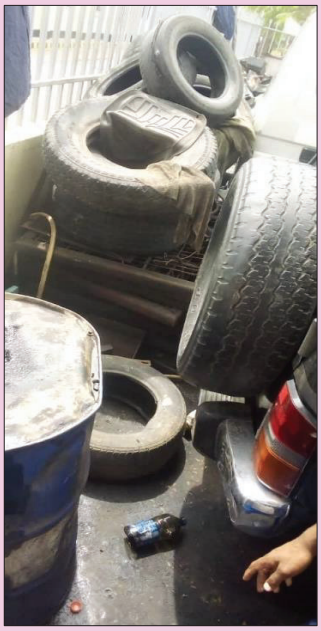
2.4 Soft Skills Training: 5S Practice ④



Before its look not easy to find working tools or spare parts but with kaizen skill things are organized and easy to use.

2.Results of PPP-Training Model

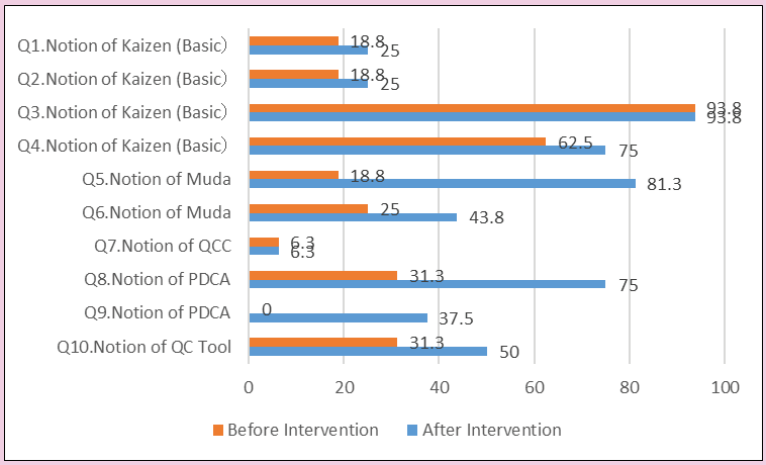
2.4 Soft Skills Training: 5S Practice ⑤



After Kaizen space has been created and students visualize area for new oil storage.

2.Results of PPP-Training Model

2.5 Soft Skills Training: Basic Kaizen and QC Story ①



- Students Improved the Accuracy Rate After Intervention.
- Students Got High Scores on Questions which Ask Whether They Know or Not Such as Q3 and 4.

Phots: Basic Kaizen and QC Story

2.Results of PPP-Training Model

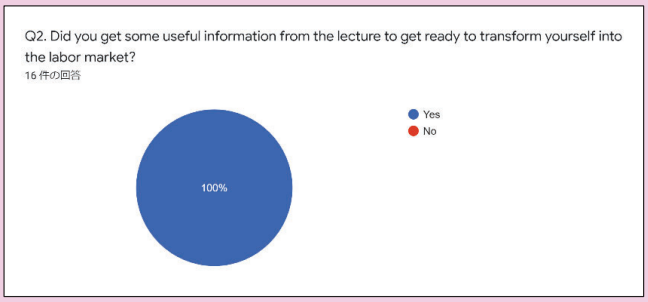
2.5 Soft Skills Training: Basic Kaizen and QC Story ②

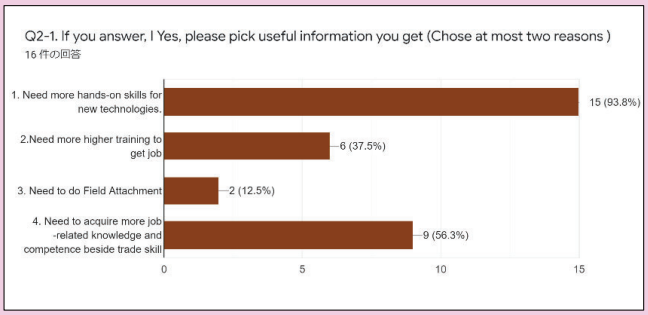
	Point of Reference	Group 1 TM (Level 2)	Group 2 TM (Level 3)	Group 3 MVM (Year 2)	Group 4 MVM (Year 3)
Understanding	Not understood at all (0)				
	Partially understood but misunderstood some parts (1)				
	Fairly understood but needs more accuracy (2)	✓	✓		✓
	Properly understood (3)			✓	
Application	Not applied at all (0)				
	Partially applied but needs much more improvements (1)				
	Faily applied but needs more improvements (2)	✓		✓	✓
	Properly applied (3)		✓		
Presentation	Poorly organized with little persuativeness (0)				
	Partically organized but needs much more persuasiveness (1)				
	Fairly organized but needs more persuasiveness (2)	✓		✓	✓
	Properly organized full of persuasiveness (3)		✓		
	Total	6	8	7	6

- Students Showed Relatively High Performance by Attaining More Than 66.7% for Case Study Exercise.
- The Fact that There is Not Difference Between TM and MVM Indicates QC Exercise Needs No Working Experiences.

2.Results of PPP-Training Model

2.6 Insertion to work :Feedback from lecture





- All students answered that they got useful information from the lecture.

Hand-on skills

Almost all students chose ‘Need more hands-on skills for new technologies (93.8%)

Soft-skills

More than half of students chose ‘Need to acquire more job related knowledge and competence besides trade skills (56.3%)

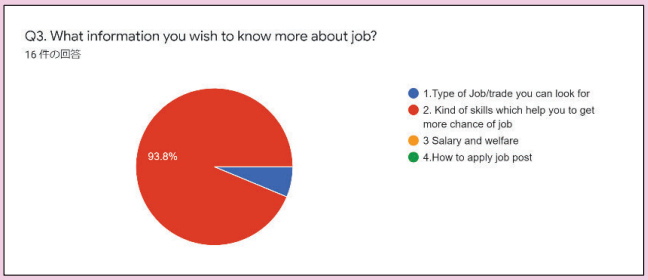
Incretion to work

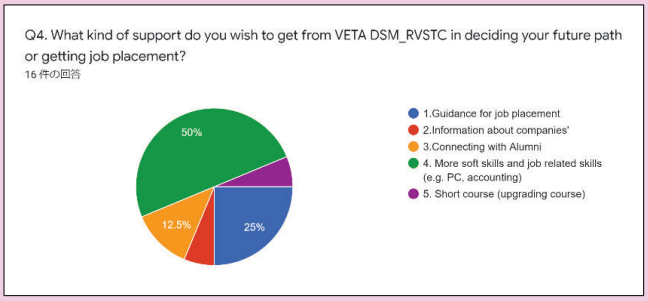
37.5% of students chose ‘Need more higher training to get job’

Phots: Incretion to work

2.Results of PPP-Training Model

2.6 Incretion to work: Support required





- Almost all students wish to know about ‘skills for get more chance of job’ (93.8%)
- Half of students wish to get support in gaining of ‘more soft skills and job related skills (50%)
- Quarter of students wish to get guidance for job placement (25%).

3.Feedback on PPP-Training Model

3.1 From Students: General

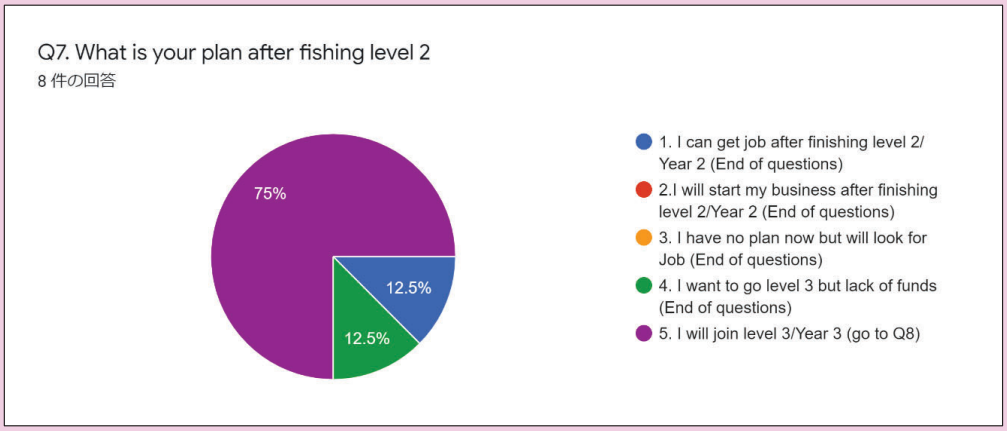
・Almost all students chose ‘fully understand’ the lectures during the training, but one mentioned ‘not at all’, due to not having prior knowledge.

・All students answered as ‘fully understand’ of Hands-on practice during training.

・**As a conclusion, most of students answered that the training fullfills their satisfaction (‘satisfied’ 31.3%, ‘very much satisfied’ 62.5%)**

3.Feedback on PPP-Training Model

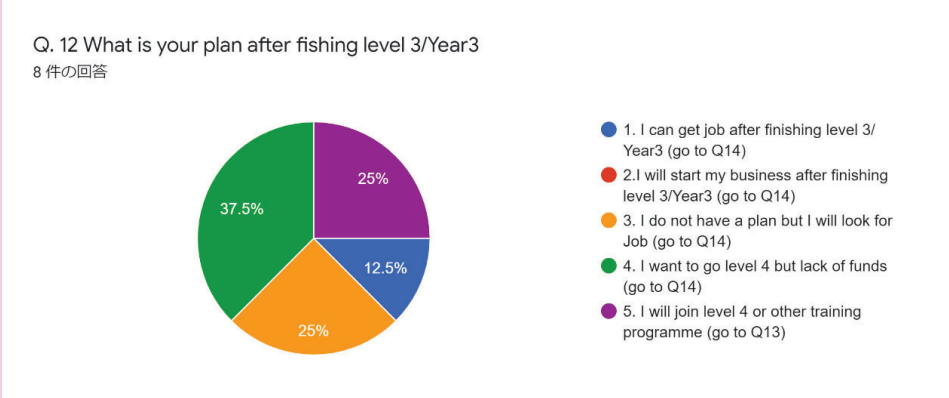
3.1 From Students: Future plan (Year 2/Level 2)



・6 among 8 students answered that they will join Year 3/Level 3 (75%) . Another one answered that he wants to continue training but lacks of Funds.

3.Feedback on PPP-Training Model

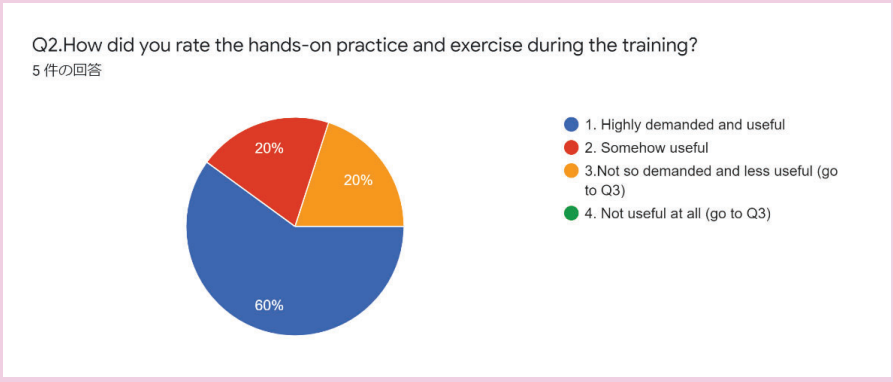
3.1 From Students: Future plan (Year 3/Leve 3)



- Demand for continue of training is high: 5 among 8 students expressed interest for further training (more than 75%), however; 3 of them face lack of funds (37.5%) while 2 are planning to join (25%).

3.Feedback on PPP-Training Model

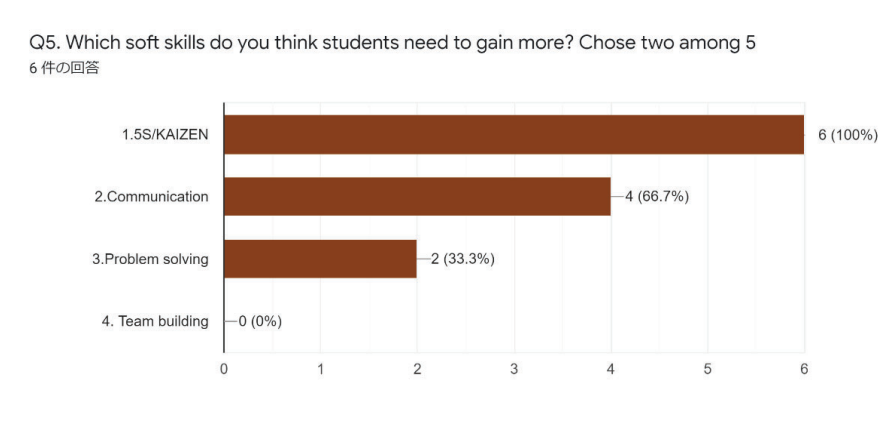
3.2 From Teachers: Hands-on practice and Exercise



- 3 among 5 teachers (60%) replied that Hands-on exercise offered during training was highly demanded.

3.Feedback on PPP-Training Model

3.2 From Teachers: Soft skills



- 5S/KAIZEN is the most needed Soft skills for students: Teachers think that students need to gain more about 5S/KAZEN, followed by Communication and Problem Solving.

3.Feedback on PPP-Training Model

3.3 Feedback from Companies: WASSHA:

Hands-on Skill Training

It is Quite an Effective Approach to Provide Skills Trainings to Students by Sharing What Companies Are Actually Practicing in the Market. This PPP Approach Helps TVET Institutions Catch Up with Frequent Technology Changes in an Efficient Manner. A Reality-base will be, We believe, a Key to TVET from the Time Ahead.

Soft Skills Training

In Order for Students to Work in the Market in Smooth and Harmonized Manner, Soft Skills are Very Important. Skilled Workers Can Only Make Maximum Values in a Workplace If They Combine Technical Skills with Soft Skills. In This Line, WASSHA Empathize with the Concept of Training Model Provided by JICA Survey Team. WASSHA Has Been Providing Soft Skills Trainings Based on Skill Gap Analysis, Whereby Topics and Target Workers Are Determined. It is Important to Develop Training Contents by Identifying the Level and Types of Soft Skills Required from Target Industries and Bridging Gaps with Students' Capacity.

Insertion to Work

It is Definitely of Value that Students Access to Company Information and Experiences of Senior Fellows While They Are in School. They Can Open Their Eyes to Labor Market and Future Career. Also, They Can Start the Backward Calculation to Clarify What They Should Prepare Before Entering the Market. It Equips Students with Self-motivation and Frame of Mind for Work. It May be More Effective If You Specify the Topic and Limit the Volume of Information When Delivering Discourses by Private Companies, So That Students Can Absorb Valued Information Effortlessly.

3.Feedback on PPP-Training Model

3.3 Feedback from Companies: Saint Parts:

Hands-on Skill Training

Basic knowledge is the foundation for building competence. Generally, participants had a sufficient prior knowledge but not enough experience for transform these knowledge into application.

Soft Skills Training

In the work place, workers must foresee and visualize their task which allow them to plan work flow to accomplish their work. 5S and Basic KAIZEN can be uses as effective accompaniment for students to strengthening it.

Insertion to Work

It is important for students to know ample enough of world of work where they are intending to join. This also allows them to raise their awareness for developing vocational skills and soft skills to respond demand of market.

4.Conclusion

・Hands-on Skill Training:

-PPP based Training should be introduced To catch up with latest technologies used in industry.

- Theory must be verified through Hands-on Skill training to build competence.

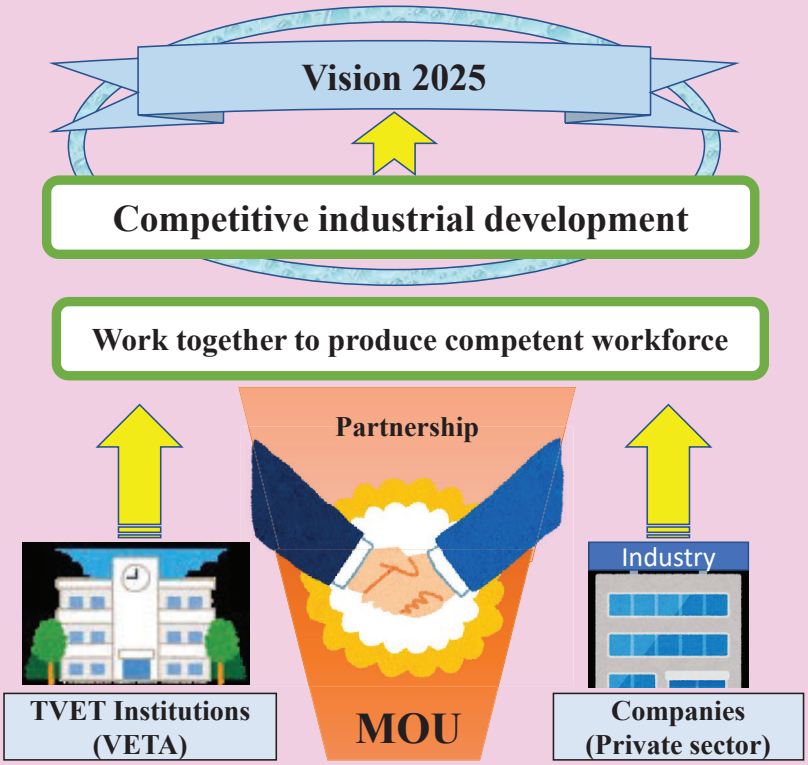
・Soft Skills Training

-5S/Basic KAIZEN can work as an accelerator to improve the efficiency in acquiring skills and knowledge, therefore, more application of 5S/Basic KAIZEN has to be required in training site.

-More emphasis need to be given on soft skills and work related skills (eg. Communication, Problem Solving) so the students to gain competitive advantage to get job.

・Insertion to Work

-Provide institutional support for FA and Job placement need to be activated which allow students to develop growth mindset to drive themselves into the world of work. This support is also important for students to plan carrier development such as progressing further training and starting own business.



Asante sana!

Hebu tufanye kazi pamoja!