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Executive Summary

This Institutional Master Plan for Technical Training Institute - Samthang (TTIS) is developed as a strategy to implement the TVET blue print which is expected to bring paradigm shift in skilling Bhutan. It is also aimed at improving workforce productivity and facilitates development of right skills to meet the current socio-economic plans and aspirations of the country.

The long term goal of technical education in Bhutan is to provide citizens with appropriate knowledge, skills and attitude require to work actively in the development of the country and to integrate Bhutan into the global community through ensuring equitable access to and quality of education for all. In order to achieve the long term goal the Government of Bhutan has been working to ensure the access to and quality of technical education for all and to develop work and job market relevant education so that educational graduate can easily get job in the job market. In this context, the Ministry of Labour and Human Resources has considered the provision of right skills for right job as essential to achieve the goals of Ministry. Considering the above focus and aim, the TTI Samthang has prepared this Master Plan on incorporating the existing capacity, competencies and gaps of the instructors, faculty requirement in short, medium and long term, and introduction of new courses and management capacity of staffs over the period. This plan also outlines the increase intake of trainees over the period in its endeavor to absorb 20% of students at higher secondary level and also to decrease unemployment issues amongst youth.

This Plan will guide for the activities and programs on the planning and development of institute for next five years from 2018 - 2023. It also embarked on an ambitious process of planning for its future development through analysis of its assets and assessment of its potential and aims to establish itself among country's premier technical institutions.

VISION

Towards Quality skilled work force

MISSION

A socially responsible institute that provide skills to meet the need of the public, private, community and individuals in the country through quality education and training of recognized program.

OBJECTIVES

1. To formulate medium term plan for the institute

2. To involve the faculty in development of this plan
3. To take ownership of the plan and held accountability by the institute
4. To instill participatory approach in planning of the institute development
5. To achieve, improve and strengthen vision, mission and goals of institute
6. To establish primer institute in automobile and heavy earth moving equipment
7. To enhance quality delivery of the lessons, services and other programs

Brief history of the institute

The Institute was inaugurated by the then Minister of Health, Lyonpo Sangay Ngedup on 26th June 2003. It was established to cater to the training of Automobile Mechanic, Heavy Vehicle Driver and Light vehicle Driver. The mechanic course was bifurcated from the Royal Technical Institute – Rinchen Ding, currently College of Science and Technology under the Royal University of Bhutan and driving course was a transfer of National Driving Training Institute – Phuentsholing. It was then known as Vocational Training Institute – Samthang.

The Institute so far has trained:

- 482 Mechanics (02 years training)
- 470 heavy vehicle Drivers (06 months training)
- 453 Light vehicle Drivers (06 months training)
- 2618 In-service Drivers (Short term training of 01 month duration)
- 15 Monks (Short term training)
- 66 Heavy Earth Mover
- 9 NC3 Graduates

Total: 4113

skilled personnel

The institute is ideally located 4 km away from Khuruthang town towards Wangduephodrang after crossing the Khuru Kuenphen Zam and 5 kms away from Bajo town following the Shengana road. The institute campus can be directly viewed from Mitsina and is blessed with the historical Talo Dzong and Chhimi Lhakhang which lies directly opposite to the Institute. Beside the modern development, the winter migration of the ducks can be encountered starting the late October till the early April every year. The Institute today is headed by Mr. Sangay Tshewang supported by well experienced 25 national staffs. It provides boarding facilities to the trainees along with a stipend of Nu. 1500 /month. Currently the all courses are provisionally accredited by Department of Standard. The institute is rated grade “B” by the Department.

Birds’ eye view of TTI- Samthang

Organizational structure/Organogram

Part- I

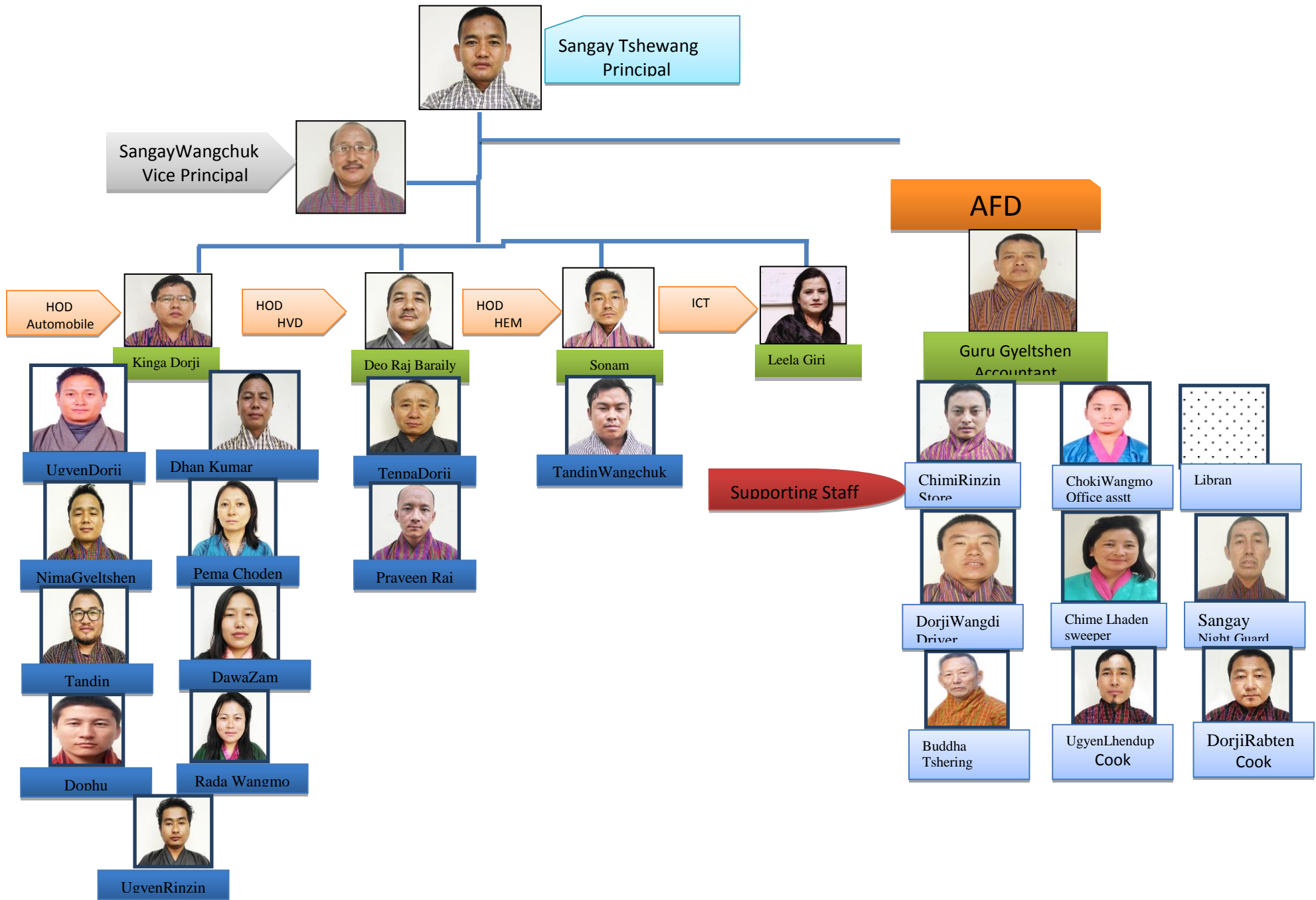


Table 1: Existing staff profile

Sl. #	Name	Date of Birth as per Service Book	EMP ID	Qualification	Training Attended
1	Sangay Tshewang	12/04/75	2002074 23	M.Ed in management	English Workshop
					Post Graduate Diploma in English
					Civic Education and Voter Information Module
					School Based Disaster Preparedness for safer school
					Environment science orientation workshop
					Gender responsiveness in the class room
					The teachers hand book on school based disaster risk management
					School Based disaster Preparedness for safer school
					Driglam Namzha Training
					Valuable Contribution to the success of the implementation of Math cloud
					Role of TVET in social and economic development
2	Sangay Wangchuk	01/12/65	8601021	Diploma (Germany) (UK) general subjects	Diploma in other general Subjects Engineering
					Diploma in other general Subjects Engineering
					Certificate in Curriculum Design and Instructional Material Development
					Certificate in public administration
					Certificate in Management of Technical Education and Vocational Training Program
					Certificate in Test item Development
					Management of Technical Education & Vocational Training Programs & Institutions
					Certificate in Facilitators Training on Test Item Development
					Certificate in General Management
					Training on Assessors and Test Item Development Facilitators
					Management of TVET Programs and Institutions
					Assessors' capacity & Resources Development Workshop
					Certificate in short term course
					Accreditation and certificate of TVET Institutions
					Assessors' capacity & Resources Development Workshop
					Development of Competency Based Curriculum and Implementation of Competency Based Training
Advance course in development of Competency based curriculum and implementation of competency based training					
Institutional Management					
					Training course for Managers of Technical vocational institutes

					Champion Leaders Development Program for TVET Skill for Poverty Alleviation
					Technical and vocational education and training programme for Principals and instructors
					Driglam Namzha Training
					Training in Vocational Management
3	Leela Giri	02/07/86	200807034	Diploma IT	developing competency based training to improve TVET sector in Bhutan
					Instructional Methodology and pedagogy
					Advance course in development of competency based curriculum and competency based instructional materials
					Module in introduction to counseling
					Developing generic skills for employment mobility
					Capacity building of TVET instructors
					Google Apps Deployment
4	Dilli Ram Siwakoti	13/9/1985	20120700713	RIM (Diploma)	
5	Chimi Rinzin	16/2/1982	201006018	CI.XII	Store and Library Management
					IMS System
					Certificate course in spoken English and web development
					Dzongkha Unicode
6	Choki Wangmo	16/08/1982	200508028	CI.X, CMI	- Dzongkha Unicode
					- Management & Computer Application
					- Advance Computing Skill
					- Dzongkha Linux
					Dzongkha Unicode
					Advance Productivity Management
					SMS System
					Adobe flash
					Dzongkha Unicode
					Driglam Namzha Training

Table 2: Automobile Department

Sl. #	Name	Date of Birth as per Service Book	EMP ID	Qualification	Training Attended
1	Ugyen Dorji	03/07/72	9104063	Masters of Education	-Automotive instructor Training
					- Application of Computer + Communication
					- Advance Certificate on curriculum design & Instructional material development
					- Special Training for automotive technology
					- Seminar on management of Vocational Training Institute
					- Operation and maintenance of construction Machinery
					Master of Education
					Institutional management
					Total Quality Management for TVET system
					Institutional Visit
					Assessor Training
					Technical and Vocational education and training Leaders in Education Programme
					Training of Trainer- Refrigeration and Air Condition servicing
					Basic and Advance Course in Commercial Vehicle Technologies
2	Dhan Kr. Gurung	19/3/1975	9901161	Dip in Technical Instruction Automobile	- Intensive driver instructor course
					- ToT- Skill
					- ToT-Knowledge
					- ToT-Visualization
					- ToT- Evaluation
					- Assessors Training
					- Maintenance of Maruti range and familiarization tools & Equipment
					- Driving training in Trainers Training
					Electronic fuel injection system
					Technical Instruction on automobile Engineering
					Gender training of Trainer in Basic Analysis & Mainstreaming in HRD
					Training on developing generic skill for employment mobility
					Basic and Advance Course in Commercial Vehicle Technologies
					3

					- ToT-Knowledge
					- ToT-Visualization
					- ToT- Evaluation
					- Training cum Attachment in Automobile
					developing competency based training to improve TVET sector in Bhutan
					Electronic fuel injection system
					Gender training of Trainer in Basic Analysis & Mainstreaming in HRD
					Basic and Advance Course in Commercial Vehicle Technologies
4	Kinga Dorji	28/05/1979	200307085	Diploma (M)	- ToT- Skill
					- ToT-Knowledge
					- ToT-Visualization
					- ToT- Evaluation
					- Training cum Attachment in Automobile
					- ICT Training on web application
					- Auto repair on basic (MPFI)
					Development of Competency based curriculum and implementation of competency based training
					Advance course in development of Competency based curriculum and implementation of competency based training
					Good servicing and air conditioning application practices, leak prevention and introduction to alternative refrigerant for refrigerator
					Training of Trainer- Refrigeration and Air Condition servicing
					Basic and Advance Course in Commercial Vehicle Technologies
					DACUM Facilitators Training Stage I
					ToT Engine overhauling
5	Nima Gyeltshen	20/10/1983	200507006	Dip in Technical Instruction Automobile	- ToT- Skill
					- ToT-Knowledge
					- ToT-Visualization
					- ToT- Evaluation
					- Instructional Materials development
					Maintenance of Refrigeration air Conditioning system and equipment
					Technical Instruction on automobile Engineering
					Assessor Training
					Training of Trainer- Refrigeration and Air Condition servicing
					Basic and Advance Course in Commercial Vehicle Technologies
					Training of Trainer- Refrigeration and Air Condition servicing
6	Tandin	02/02/80	200507008	Dip in Technical	- ToT- Skill
					- ToT-Knowledge

				Instruction Automobile	- ToT-Visualization - ToT- Evaluation - Instructional Materials development Technical Instruction Automobile Basic and Advance Course in Commercial Vehicle Technologies Driglam Namzha Training
7	Pema Choden	11/12/85	200807222	Diploma (M)	ToT- Module I ToT- Module II Basic Auto Cad Maintenance of Refrigeration air Conditioning system and equipment Automotive Technology Basic and Advance Course in Commercial Vehicle Technologies
8	Dawa Zam	31/05/1992	20140704478	Diploma (M)	ToT S ToT K CEFE entrepreneurship development training of Trainer
9	Rada Wangmo	17/11/1990	20140704481	Diploma (M)	ToT S ToT K CEFE entrepreneurship development training of Trainer Advance Course on CEFE ToT
10	Ugyen Rinzin		2017059387	Diploma (M)	Probation Period

Table 3: Heavy Vehicle Driving Department

Sl. #	Name	Date of Birth as per Service Book	EMP ID	Qualification	Training Attended
1	Deoraj Baraily	15/6/1962	8502030	KTS Cert.- Auto	- Repair, Service and maintenance of Tata Diesel Vehicle
					- Driver instructor course
					- Maintenance & Repair
					- (ToT) Training of Instructor (Skill)
					- (ToT) Training of Instructor (Knowledge)
					- ToT) Training of Instructor (Visual)
					- ToT) Training of Instructor (Evaluation)
					Basic Auto Cad
					Electronic fuel injection system
					Training of Assessment Resources Developers and Assessors
					Workshop on Hydraulics
					Basic and Advance Course in Commercial Vehicle Technologies
2	Tenpa Dorji	01/05/72	9901104	Dip in Technical Instruction Automobile	- Transfer of Knowledge
					- Intensive driver instructor course
					- ToT- Skill
					- ToT-Knowledge
					- ToT-Visualization
					- ToT- Evaluation
					- Assessors Training
					- Driving training in Trainers Training
					Diploma in Technical instruction
					Assessor Training
					Basic and Advance Course in Commercial Vehicle Technologies
					Driglam Namzha Training
3	Praveen Rai	16/9/1989	20160106910	Cert in Automobile	

Table 4: Heavy Earth Moving Department

Sl. #	Name	Date of Birth as per Service Book	EMP ID	Qualification	Training Attended
1	Sonam	01/01/80	200507007	Dip in Technical Instruction Automobile	- ToT- Skill
					- ToT-Knowledge
					- ToT-Visualization
					- ToT- Evaluation
					- Driving training in Trainers Training
					Technical Instruction Automobile
					Gender training of Trainer in Basic Analysis & Mainstreaming in HRD
					Driglam Namzha Training
					Training of Trainer- Refrigeration and Air Condition servicing
					ToT- Sustainable Consumption and Production
TVET pathways to sustainable development					
2	Tandin Wangchuk	03/05/93	20160106909	Cert in Automobile	Send to attachment

PART - II

HUMAN RESOURCE REQUIREMENT

Formal National Certificate level courses in Automobile Mechanic, Heavy Vehicle Driving and Heavy Earth Moving Machine have been offered in Technical Training Institute- Samthang since its inception. Over the past decades or so the courses offered here have been undergone series of diversification and change. The duration of the courses ranges from six months to two years. Besides, the institute also offer advance and basic maintenance courses to in-service drivers. Currently, the institute caters the training to 145 regular candidates and 100 in-service drivers. The institute has shortage of 7 instructors considering the standard of trainees to instructor ratio of 1: 12 for automobile and 1:6 for driving and HEMS.

Table 5: Technical Faculty Requirement

Sl.No	Trade	Courses	Existing	Requirement	Total
1	Automobile	Mechanic in Heavy Vehicle	0	5	5
2		Auto electrical (NC3)	0	2	2
3		Auto electrical (NC2)	2	2	4
4		Auto-mechanic NC2	7	4	11
5	Driving	Truck Trailer	0	2	2
6		Heavy Vehicle Driving	3	3	6
7	HEM	Mechanic in HEM	0	4	4
8		Earth Moving operator	2	3	5
Total			14	25	39

Generic Faculty Requirement

According to TVET Blue print (DHR, 2016), besides technical skills, different studies undertaken in Bhutan clearly spell out the importance of soft-skills in finding employment. According to the National workforce plan, employers have indicated the TVET graduates lack interpersonal and communication skills, as well as creativity and innovation skills. In order to enhance the employability of the TVET graduates, it is crucial to have generic faculty in the institute to equip trainees with communication skills, develop interpersonal skills and other skills such as life skills and innovation skills.

Presently, those soft skills subject have not given the priority in this institute due to shortage of technical faculty and all the instructors are over burden with administrative jobs such as warden, matron, cultural in-charges and other secretarial jobs. Although, there had been curriculum develop for Maths, Dzongkha and English long time back it could not be implemented as the recruitment of these teachers were not approved by the RCSC. Thus, this master plan projects the requirement of generic faculty as follows:

Table 6: Generic Faculty requirement

Sl.No	Category	Position	Existing	Required	Qualification	Short term	Medium term	Long term
						2018-2020	2020-2022	2022-2023
1	Dzongkha	Teacher	0	1	B.Ed/PGDE			
2	English	Teacher	0	1	English B.Ed/PGDE			
3	Applied Mathematics	Teacher	0	1	B.Ed (Sec)			
7	Career & counseling	Counselor	0	1	Degree in relevant field			

Management and support staff requirement

The success of the institute lies on the dynamism of the management and supporting staff. They are like two feet of the travelers. They play a very pivotal role in any organization through the managerial functions such as planning, organizing, leading, monitoring and execution of the planned activities timely. This master plan paves the way towards broad and holistic approach in incorporating both qualitative and quantitative strategies of staff development and its composition over five years down the line.

The following table illustrates the requirement of support staff in next five years plan.

Table 7: Support staff requirement

Sl.No	Category	Existing	Required	Qualification	Short term	Medium term	Long term
					2018-2020	2020-2022	2022-2023
1	Library Assistant	0	1	Class XII Pass			
2	Store In-charge	0	1	Class XII Pass with NC3 Automobile Certificate			
3	Multi Technician	0	1	NC2/NC3			
4	Caretaker	0	1				
5	Adm officer	0	1	Degree			
6	Cook	3	2				

PART III

Capacity Development

The TVET system faces significant quality issue and is perceived negatively by employers and trainees. A number of factors contribute towards this situation, ranging from the poor quality of TVET trainers and unresponsive curriculum, to the way in which TVET is delivered and how TVET providers are managed (DTE, 2016). Bhutan lacks a cohort of competent trainers. Around 50% of the country's trainers have a diploma level qualification or below. This means that providers cannot effectively deliver TVET programmes, especially at the certificate and national diploma levels. The situation is compounded by the fact that half of the country's trainers have received no formal instructor training. The TVET blue print suggested that at the heart of the reforms should be the creation of competent cohort of trainers. This will be key to quality enhancement and delivery of improved standards.

Similarly, professional development of the trainer is seen as one of the most plausible strategies to improve quality delivery. The TTI, Samthang delivers NC2 and NC3 courses in Automobile, Heavy Vehicle Driving and Heavy Earth Moving Operator. However, most of our instructors are diploma holders with few certificates. With the expansion of TVET system over the past decades, more innovative forms of delivery will be required to ensure international standards are achieved and maintained. In order to meet the demand of the employers and the 21st century expectation, skills, knowledge and attitude of the trainers must be updated with up-gradation of qualification through capacity building programs such as industrial attachment, short and long term courses and through RPL.

The details of additional skills requirement in each trade with cost estimates and probable source of funding is shown in the table.

Table 8: Additional technical skills requirement to deliver NC3 programs

Sl.No	Additional Training/Skils	ST	MT	LT	Trade	Modality	Estimate cost (M)	Duration	Source of Fund
1	Training on Electric car				Automobile	Training Abroad	2	4 weeks	Donor/RGoB
2	Training on Hybrid car				Automobile	Training Abroad	2	4 weeks	Donor/RGoB
3	Training EFI (Electronic fuel injection system)				Automobile	Training Abroad	2.2	4 weeks	Donor/RGoB
4	Training on ABS (Anti lock braking system)				Automobile	Training Abroad	2	4 weeks	Donor/RGoB
6	Training on automatic transmission				Automobile	Training Abroad	2	4 weeks	Donor/RGoB

7	Training on Earth moving (mechatronic system)				HEM	Training Abroad	2	4 weeks	Donor/RGoB
8	Training on hydraulic & Pneumatic system				HEM	Training Abroad	2	4 weeks	Donor/RGoB
9	Training on under carriage				HEM	Training Abroad	2	4 weeks	Donor/RGoB
10	Training on SRS (Supplement Restraint system) Air bag				Automobile	Training Abroad	2	4 weeks	Donor/RGoB
11	Training on power window, sun roof, power mirror and power seats system				Automobile	Training Abroad	2	4 weeks	Donor/RGoB
14	Training on common rail direct injection system				Automobile	Training Abroad	2	4 weeks	Donor/RGoB
15	Training on engine overhauling				Automobile	Training Abroad	2	4 weeks	Donor/RGoB
16	Training on power steering system				Automobile	Training Abroad	2	4 weeks	Donor/RGoB
17	Air suspension system				Automobile	Training Abroad	2	4 weeks	Donor/RGoB
Total cost in million							28.2		

Note:

1. ST = short Term (2018-2020) for 4 weeks maximum
2. MT = Medium Term (2020-2022) for 6 months maximum
3. LT = Long Term (2022- 2023) more than a year

Additional Generic Technical Skills Training required for existing faculty

The details of additional skills requirement in each trade with cost estimates and probable source of funding is shown in the table below:

Table 9: Generic Technical Skills training required for existing faculty

Sl.No	Additional Training/Skills	ST	MT	LT	Modality	Estimate cost (M)	Duration	Source of Fund
1	Curriculum Development				In-country	0.65	2 weeks	RGoB/Donor
2	Instructional materials development				In-country	1	2 weeks	RGoB/Donor
3	Instructional Methodology				In-country	1	2 weeks	RGoB/Donor
4	OHS				In-country	0.5	2 weeks	RGoB/Donor
5	Lesson Plan Development				In-country	0.5	2 weeks	RGoB/Donor
6	Team Teaching				In-country	1.4	2 weeks	RGoB/Donor
7	Communication skills				In-country	0.075	2 weeks	RGoB/Donor
8	Personal grooming				In-country	0.075	2 weeks	RGoB/Donor
9	Training on Action research				In-country	0.065	2 weeks	RGoB/Donor
10	VET management training				In-country	1	4 weeks	Donor/RGoB
11	Training on HR development				In-country	1	4 weeks	Donor/RGoB
12	Training on counseling				In-country	1	4 weeks	Donor/RGoB
13	Financing and Accounting Management				In-country	0.02	2 weeks	Donor/RGoB
14	Store management				In-country	0.02	2 weeks	Donor/RGoB
15	Front office management				In-country	0.02	2 weeks	Donor/RGoB
16	Networking/linux				In-country	0.02	4 weeks	Donor/RGoB
17	Training on first Aid				In-country	0.06	2 Weeks	Donor/RGoB
18	Training on Human values				In-country	1	2 weeks	Donor/RGoB
19	Training on disaster Management				In-country	1	2 weeks	Donor/RGoB
20	Training on food Health & sanitation				In-country	0.02	2 weeks	Donor/RGoB
21	Library Management				In-country	0.02	2 Weeks	Donor/RGoB
22	Refresher course in plumbing				In-country	0.02	2 Weeks	Donor/RGoB
						10.465		

PART IV:

EXPANSION PLAN AND HR REQUIREMENT

According to TVET Blue Print 2016, Bhutan could face significant social and economic challenges with the large number of young people entering labour market. It is expected around 200,000 young people will be entering the job market over the next 10 years and a high proportion will require skills or skill upgrading in order to find gainful employment, including self-employment opportunity. Besides, despite existing situation of unemployment and under employment, Bhutan imports fairly large number of skilled foreign workers, primarily engaged in the construction and production sectors. The Bhutan Education Blue print with its new education pathway expects the formal TVET systems to absorb at least 20% of the students at the higher secondary level by 2024. It's the vision of the TTI-Samthang "To become of the Centre of Excellence in Heavy Vehicle Driving and Heavy Earth Moving."

Therefore, in order to exist in the market system the master plan of TTI-samthang intends to implement the provision of TVET Blueprint through its expansion plan spread over 5 years commencing 2018. It includes increase in enrolment over the period with additional infrastructures and instructors required to cope with the increasing enrolment in every plan period. It also includes long term courses (Diploma) and short courses to be introduced in the institute during the plan period.

The following tables detailed the expansion plan in each year of the master plan:

Table 10: Expansion plan with new courses (Short Term 2018-2023)

Sl.No	Trade	2016	2017	2018	2019	2020	2021	2022	2023
1	Auto-Mechanic NC2	42	42	42	42	156	156	156	156
2	Auto-Electrical NC2	12	12	12	12	12	12	12	12
3	Auto-Mechanic NC3	10	24	24	24	30	30	30	30
4	HVD	42	42	42	42	72	72	72	72
5	HEM Operator	24	24	24	24	24	24	24	24
6	Mechanic in Heavy Vehicle					24	24	24	24
7	Auto electrical (NC3)					12	12	12	12
8	Hybrid technology					24	24	24	24
9	Electric technology					24	24	24	24

10	Truck Trailer					24	24	24	24
11	Mechanic in HEM					30	30	30	30
	Total	130	144	144	144	432	432	432	432

PART V

TOOLS, EQUIPMENT AND TRAINING MATERIALS

Tools, equipments and training materials form the salient feature in the TVET system. Although the institute might be having well defined curriculum, very professional trainers and best selected trainees but if tools, equipments and the training materials are not enough or not there at all then the quality of TVET system remain a big issue. Thus, the right tools and equipments with fairly sufficient to all the trainees with proper utilization is the remedy for quality issues. With the incremental increase of the intake capacity in the institute and with plan for expansion to introduce additional and higher-level courses, it is impractical to deliver quality training with proper tools and materials. The TVET Blue print pillar II (Improve Quality) can be only achieved through comprehensive and a well-equipped workshop in the institute with relevant and adequate tools and equipment's.

Table 11: List of tools and equipment required for Automobile Division

Sl#	Name of tools/Equipment	Specification	Rate	Qty	Total
1.	Common Rail LR tester	Brand: Auto Ditex	Nu. 8710.00	2 nos.	Nu.17420.00
2.	Clarke CBAT1 12V Automotive Battery/Alternator Tester 010911105	Product Code 010911105	Nu. 314.23	2nos.	Nu.628.46
3.	Laser 4 Way Battery Post & Terminal Cleaner 040815391	Product Code 040815391	Nu.870.33	2nos.	Nu.1740.66
4.	Laser 4504 Alternator Tool Kit 040814504	Product Code 040814504	Nu.6108.39	1no.	Nu.6108.39
5.	Laser 5562 Automotive Relay Tester 010915562	Product Code 010915562	Nu.4904.4	3nos.	Nu.14713.20
6.	Gunson 77109 - Automotive Electronic Stethoscope 010917109	Product Code 010917109	Nu.1425.09	3nos.	Nu.4275.00

7.	Clarke CDBT1 12V Digital Battery Tester	Product Code 010910115	Nu.2366.44	3nos.	Nu.7099.32
8.	Clarke PRO215 Wire Stripper, Cutter & Crimper 040910215	Product Code 040910215	Nu.877.03	12nos.	Nu.10524.36
9.	3 Piece Soft Grip Mini Wire Brush Set 040212005	Product Code 040212005	Nu.110.00	12nos.	Nu.1320
10	Laser 4554 110 Piece Tap and Die Set - Metric 040814554	Product Code 040814554	Nu.21107.01	1no.	Nu.21107.01
11	Laser 3539 13 Piece Punch and Chisel	Product Code 040215539	Nu.4527.19	1no.	Nu.4527.19

	Set				
12	Clarke CHT712 Oil Pressure Test Kit	Product Code 040810712	Nu.29980.16	2nos.	Nu.59960.32
13	Clarke CHT437 Gasket Scraper Set 040211437	Product Code 040211437	Nu.4283.98	1set	Nu.4283.98
14	Clarke CHT697 10 Piece Bearing Race & Seal Driver Set	Product Code 040810697	Nu.4372.42	2sets	Nu.8744.84
15	Clarke CHT253 Mechanical Bearing Separator.	Product Code 040210253	Nu.9807.46	6sets	Nu.58844.76
16	Laser Diesel Engine Compression Master Test Kit 040216511	Product Code 040216511	Nu.26852.93	2nos.	53705.86
17	Laser 5205 - Glow Plug Removal Set	Product Code 040815205	Nu.12800.35	2sets	Nu.25600.7

	040815205				
18	Laser Glow Plug Socket Set 3pc 040224122	Product Code 040224122	Nu.1412.36	1set	Nu.1412.36
19	Irwin 7pce Screw & Bolt Extractor Set 040219431	Product Code 040219431	Nu.2072.31	1set	Nu.2072.31
20	Laser 6219 Damaged Nut and Screw Remover 040816219	Product Code 040816219	Nu.5534.42	1 set	Nu.5534.42
21	Clarke CHT695 Oil Filter Cap Wrench Set	Product Code 040810695	Nu.5904.71	1set	Nu.5904.71

	040810695				
22	Clarke CHT701 12 Piece Oil Drain Plug Key Set 040810701	Product Code 040810701	Nu.1059.27	1set	Nu.1059.27
23	Kerosene blow lamp		Nu.2647.17	2nos.	Nu.5294.34
24	16 Piece File & Needle-File Set 040210168	Product Code 040210168	Nu.2107.15	2sets	Nu.4214.3
25	Wheel Balancing Machine		Nu.80399.33	1no.	Nu.80399.33
26	HCV Wheel Aligner with 4 Measuring Heads	Item Code: PWL-2003T	Nu. 234500.00	1no.	Nu.234500.00
27	Tyre Inflator 0 - 16 Bar		Nu.1078.7	5nos.	Nu.5293.5
28	PCL Hand Held Digital Tyre Inflator, DTI08	TSIN: T006035256 Model: DTI081	Nu.4754.32	5nos.	Nu.23771.6

29	<u>Car Tyre Puncher Kit</u>		Nu.450.00	6nos.	Nu.2700.00
30	Fox Hunter Cooling System Radiator Pressure Tester Leak Detector Kits Set 14PCS	Brand: KMS	Nu.6631.66	2sets	Nu.13263.32
31	Brake Fluid Tester	<u>Brand: Neiko</u> <u>Part no: 40518A</u>	Nu.549.4	3nos.	Nu.1648.2
32	Digital Motor Engine Truck Oil Quality Detector Tester Gas Diesel Fluid Analyzer		Nu.2484.36	2nos.	Nu.4968.72
33	VW Audi Newer Engines Cylinder Liner Puller Set OEM Tool VAS251631		Nu.57619.33	2sets	Nu.115238.66
34	Piston Ring Compressor Remover Installer Cleaner Cleaning Service 9pc		Nu.3797.56	2sets	Nu.7595.12
35	Dial Indicator Gauge with		Nu.5613.93	6nos.	Nu.33683.58

	Magnetic Base				
36	Hydraulic Trolley Jack	2 Tons	Nu.3148.33	6nos.	Nu.18889.98
37	Hydraulic Trolley Jack	5 Tons	Nu.39438.21	6nos.	Nu.236629.26
38	Hybrid car	Engine-48V lithium ion battery Maximum Power- 25bhp @ 3750rpm Maximum Torque- 53Nm @ 3400rpm Transmission- Automatic	Nu.800000.00	1no.	Nu.800000.00
39	Two post car lift		Nu. 162000.00	2nos.	Nu.324000.00
40	Four post car lift		Nu.398250.00	2nos.	Nu. 796500.00
Total					Nu. 3,025,176.05

Heavy Vehicle Driving Department Equipment for 12th Five Year Plan

Table: 12 Equipment required for HVD

Sl no	Particulars	Qty	Rate	Estimate Total Amount
1.	6 Wheeler Truck	3units	1350000/-	40,50,000=00
2.	Tata Trailer Truck	1unit	30,00000	30,00000=00
3.	Grease gun	2 nos.	10,000x2	20,000=00
4.	Hydraulic bottle jack with lever	3 nos.	3x7000	21,000=00
5.	10-Wheeler truck	1 unit	20,00000/ -	20,000000=00
6.	Socket (heavy duty)	3 sets	3x15,000	45,000=00
7.	Pipe wrench	3 nos	3x10,000	30,000=00
Total				Nu. 27,166,000

Table 13: Heavy Earth Moving Equipment estimate for equipment

SI no	Particulars	Qty	Rate	Estimate Total Amount
1	Excavator	1 Unit	67,00000	6,700,000
2	Wheel loader	1 Unit	43,50000	4,350,000
3	Backhoe Loader	1 Unit	28,00000	2,800,000
4	Rock breaker	1 no	13,0000	13,00000
5	Fork lift truck	1 unit	23,00000	23,00000
6	Trailer Truck	1 Unit	30,00000	30,00000
7	Hydraulic hose crimping machine	1 Unit	1,80000	1,80000
8	Grease gun	3 nos.	10,000x3	30,000
9	Hydraulic bottle jack with lever	4 nos.	4x7000	28,000

10	Floor hydraulic jack	4 nos.	4x10,000	40,000
11	Ring Spanner (Heavy duty)	4 sets	4x10,000	40,000
12	Open end Spanner (Heavy duty)	4 sets	4x9000	36,000
13	Socket (heavy duty)	3 sets	3x15,000	45,000
14	Hydraulic pressure tester	1 Unit	1x15,000	15,000
15	Battery Charger	1 no	1x12,000	12,000
16	Pipe wrench	3 nos	3x10,000	30,000
17	Align key	3 sets	3x500	1500
Total				Nu. 20,907,500.00

PART VI

ADDITIONAL INFRASTRUCTURE REQUIREMENT

Expansion of the TVET sector cannot take place without the expansion of the infrastructures. The 20% of the higher secondary students cannot be absorbed in the TVET institute without the expansion and improvement of the existing infrastructure facilities. In order to respond to the large numbers of youth coming onto the labour market and ensure that 40% of youth can be enrolled in the TVET system, the current capacity from 1500 to 3900 need to be drastically improved which will incur huge investment to the government. The nature and the extent of this expansion will be determined by new occupational areas that must be developed in response to identified new demands – especially in higher skill areas and enrolment plans for new courses. This expansion will cover workshops, classrooms, equipment, hostels and campus beautification.

The current academic office facilities, classrooms, and workshop lack the capacity to accommodate maximum intake. Therefore, construction of new facilities like hostels for both girls and boys, new workshop with classroom, ADM and MPH facilities has become very crucial.

Table 14: Additional Infrastructure required

Sl.No	Type	Existing	Required	Estimate cost	Short Term	Medium Term	Long Term	Remarks
					2018-2020	2020 – 2022	2022-2023	
1	Hostel	4	3	82.26				Currently, trainees are housed in a room with 22 bunk beds
2	Class rooms/workshop/laboratory	1	4	66.84				The institute has only one classroom with 40 trainees capacity
3	Library/ICT	0	1	33.24				Currently, one room in girl hostel is used as library

4	MPH	0	1	27				To be included on the third floor of the workshop with classroom
5	Staff quarter	2	2	30				Three storied building with 6 units
6	River protection wall	0	1	33				350 mtrs
7	Street lamp	0	1	0.5				The institute does not have standard lighting facilities.
8	Concrete wall fencing	1	1	50				Need to replace with the proposed one as current barbed fencing need maintenance
9	Black topping of internal road/parking	0	1	15				It is very dusty during winter and muddy during summer makes classroom dirty.
10	Improvement of existing football ground	1		0.10				
11	New reservoir Tank	1	1	0.5				
Total				338.44				

PART VII

FACULTY DEVELOPMENT PLAN

Bhutanese TVET system lacks cohort of competent trainers. Around 50% of the country's trainers have diploma level qualification or below. This indicates that the training providers cannot effectively deliver TVET programmes, especially at the higher certificate and national diploma levels. A significant proportion of trainers are also on short-term contracts and this act as a disincentive for managers to support training. Under these circumstances, it is easy to see why people are not attracted into the profession. Therefore, more emphasis must be given to training and development of teaching faculty on upgrading their pedagogy, technical and industrial skills. Where Bhutan does not have the expertise or capacity to deliver higher-level diploma or degree programmes, linkages must be formed with the overseas provider.

Table 15: Long Term

SI No	Field of Study	No	Cost Estimate	Location	Timeline			Source of fund
					2018-2020	2020-2022	2022-2023	
1	Diploma in Automobile	2	3.98	India	1	1	0	No committed fund
2	Advance Diploma in Automobile	2	1.78	India	1	1	0	
3	Master in TVET Management	2	2.48	SEA	1	1	0	
4	Degree in Automobile	5	12.5	India	2	2	1	
5	B.Tech in automobile engineering (Degree)	3	3.98	India	1	1	1	
		14	24.72		7	5	2	

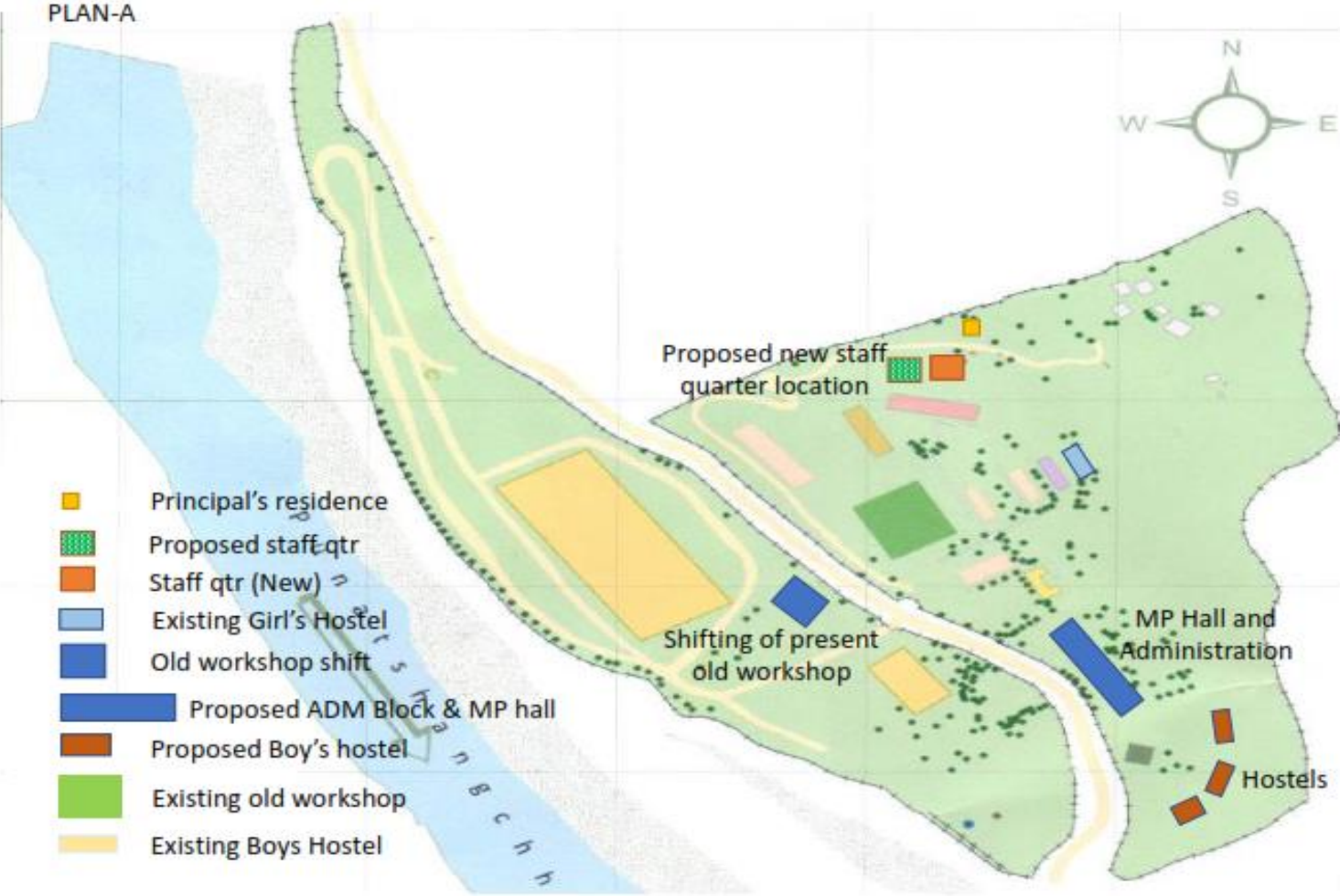
PART VIII

Table 16: KEY COST PROJECTION

Sl.No	Activity	Estimate cost in million	Remarks
1	Capacity Development		
	1.1 Additional Technical skills to deliver NCIII	43.18	Skills enhancement
	1.2 Generic Technical skills	9.65	
	1.3 Introduction of new short course	4	
2	Tools, Equipment and Training Materials		
	2.1 Automobile	3,025,176.05	
	2.2 Heavy Vehicle Driving Department	27,166,000	
	2.3 Heavy Earth Moving Department	20,907,500.00	
3	Additional Infrastructures	229.42	
4	Faculty Development		Qualification up gradation
	4.1 Long term	20.74	
	4.2 Medium term	10	
	4.3 Short Term	10	
	Total	51,099,003.04	

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PLAN- A



PLAN-B

PLAN-B



Conclusion

The institutional master plan serves as a road map to harmonize delivery and expansion of the institute which is responsive to the changing economic requirement as well as the demand driven and industry led to endure availability of quality skilled work force. These initiatives will provide an enabling environment and good support system to ensure the effectiveness of technical training institute Samthang and expected returns are better employment opportunities for graduates and increased productivity of automobile, HVD and HEM industries.

For successful implementation of the plan, both the donor partner and RGoB need their commitment to support the plan through adequate funding assistance.