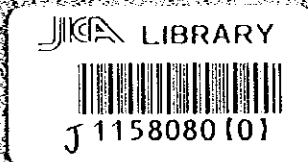


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VOCATIONAL EDUCATION AND TRAINING AUTHORITY  
GOVERNMENT OF THE UNITED REPUBLIC OF TANZANIA

**BASIC DESIGN STUDY REPORT**  
**ON**  
**THE PROJECT FOR THE SUPPLY OF**  
**TRAINING EQUIPMENT TO MTWARA REGIONAL**  
**VOCATIONAL TRAINING AND SERVICE CENTRE**  
**IN**  
**THE UNITED REPUBLIC OF TANZANIA**



March 2000

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**  
**INTEM CONSULTING, INC. (INTEM)**

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BASIC DESIGN STUDY REPORT ON THE PROJECT FOR THE SUPPLY OF TRAINING EQUIPMENT TO MTWARA REGIONAL

MARCH 2000

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**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

**INTEM CONSULTING, INC. (INTEM)**



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## PREFACE

In response to a request from the Government of the United Republic of Tanzania, the Government of Japan decided to conduct a basic design study on the Project for the Supply of Training Equipment to Mtwara Regional Vocational Training and Service Centre, and entrusted the study to the Japan International Cooperation Agency (JICA).

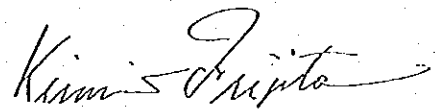
JICA sent to Tanzania a study team from October 2 to October 30, 1999.

The team held discussions with the officials concerned of the Government of Tanzania, and conducted field survey at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Tanzania in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the United Republic of Tanzania for their close cooperation extended to the teams.

March 2000



Kimio Fujita

President

Japan International Cooperation Agency

March 2000

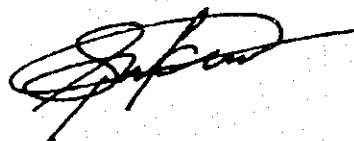
## LETTER OF TRANSMITTAL

We are pleased to submit to you the basic design study report on the Project for the Supply of Training Equipment to Mtwara Regional Vocational Training and Service Centre in the United Republic of Tanzania.

This study was conducted by INTEM Consulting, Inc. under a contract to JICA, during period from 24th September, 1999 to 31st March, 2000. In conducting the study, we have examined the feasibility and rationale of the Project with due consideration to the present situation of Tanzania and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

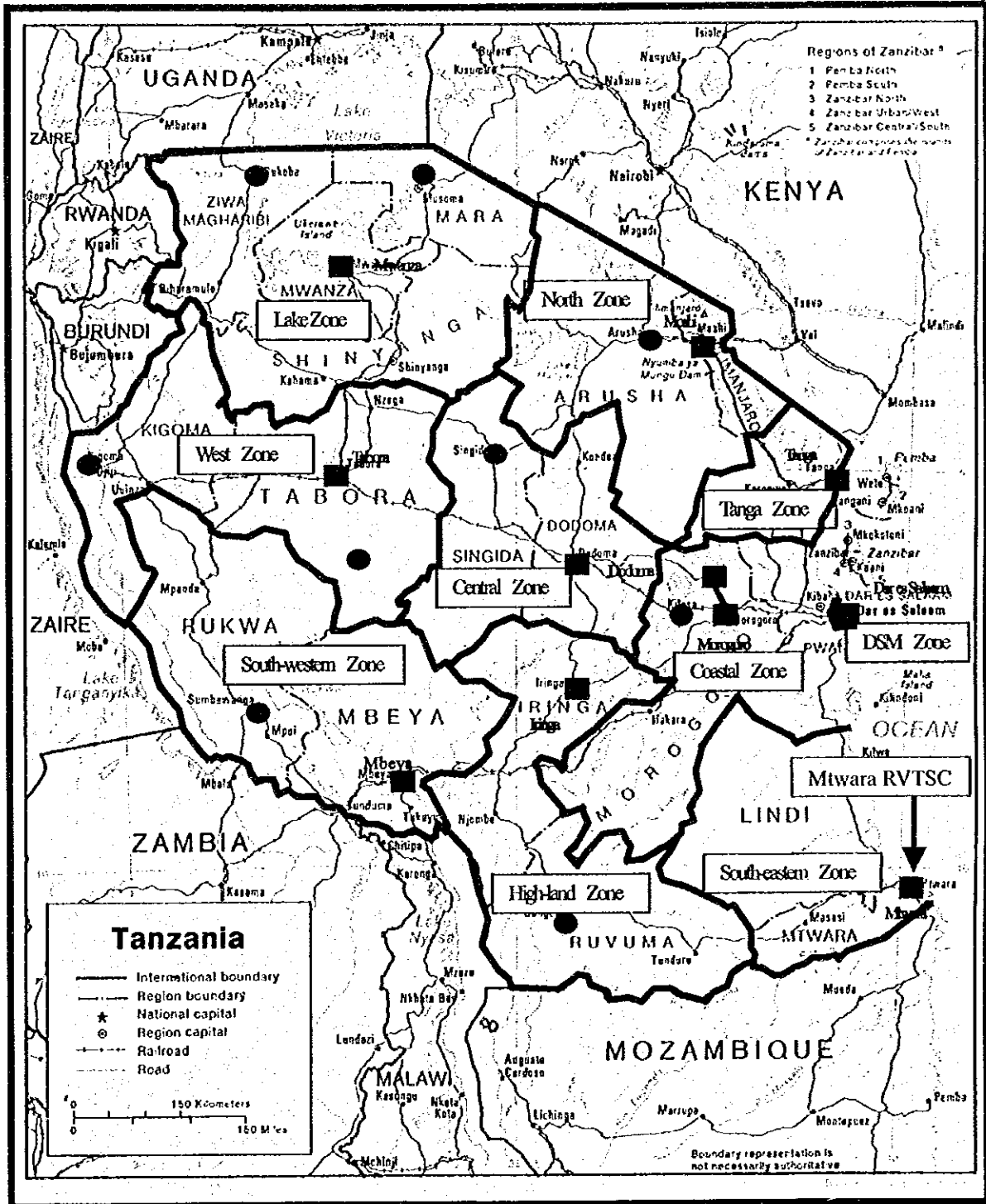
Finally, we hope that this report will contribute to further promotion of the Project

Very truly yours,



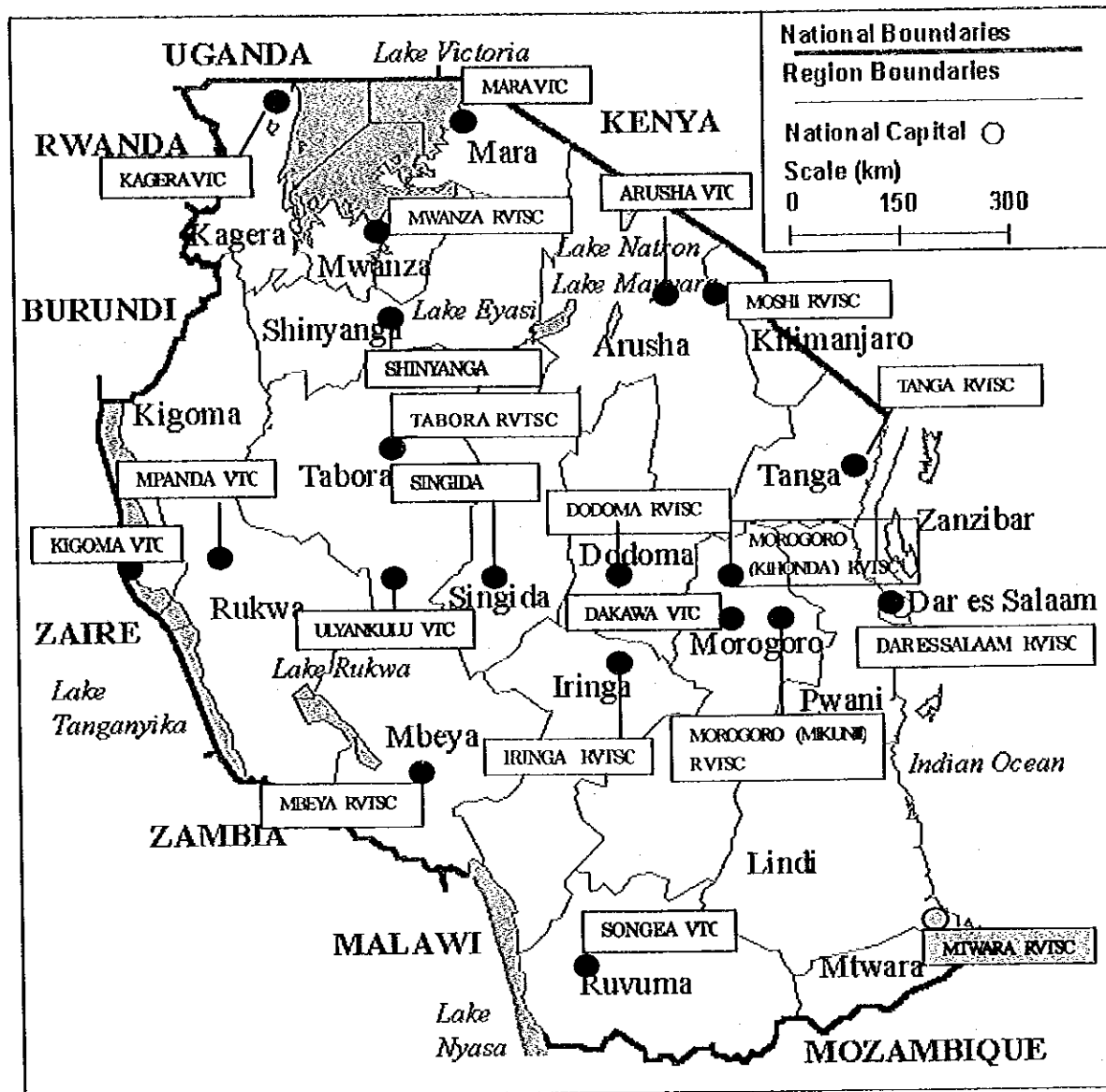
Soich TAKAI  
Project Manager  
Basic design study team on  
the Project for the Supply of Training  
Equipment to Mtwara Regional Vocational  
Training and Service Centre in  
the United Republic of Tanzania  
INTEM Consulting, Inc.

# TANZANIA



- 注) ■ Zone Head Office, Regional Board, RVTSC  
 ● VTC  
 — Zone Boarder

## TRAINING CENTRES UNDER VOCATIONAL EDUCATION AND TRAINING AUTHORITY(VETA)



Region	Training Centre
MARA Region	- Mara VTC
KAGERA Region	- Kagera VTC
MWANZA Region	- Mwanza RVTSC
SYINYANGA Region	- Syinyanga VTC
KIGOMA Region	- Kigoma VTC
TANGA Region	- Tanga RVTSC
ARUSHA Region	- Arusha VTC
KILIMANJARO Region	- Moshi RVTSC
RUKWA Region	- Mpanda VTC
TABORA Region	- Tabora RVTSC - Ulyankulu VTC

Region	Training Centre
SINGIDA Region	- Singida VTC
DODOMA Region	- Dodoma RVTSC
MOROGORO Region	- Morogoro RVTSC(KIHONDA CAMPUS) - Dakawa VTC - Morogoro RVTSC(MIKUNI CAMPUS)
DAR ES SALAAM	- Dar es salaam RVTSC
MBEYA Region	- Mbeya RVTSC
IRINGA Region	- Iringa RVTSC
RUVUMA Region	- Songea VTC
MTWARA Region	- Mtwara RVTSC

Remark:  = RVTSC





## Abbreviation

<b>AfDB</b>	<b>African Development Bank</b>
<b>ASCEE</b>	<b>Advanced Certificate of Secondary Education Examination</b>
<b>CIDA</b>	<b>Canadian International Development Agency</b>
<b>CSEE</b>	<b>Certificate of Secondary Education Examination</b>
<b>DANIDA</b>	<b>Danida International Development Assistance, Ministry of Foreign Affairs, Denmark</b>
<b>DIP</b>	<b>Diploma</b>
<b>ERP</b>	<b>Economic Recovery Programme 1986-89</b>
<b>FTC</b>	<b>Full Teacher Certificate</b>
<b>FTC</b>	<b>Full Technician Certificate</b>
<b>GER</b>	<b>Gross Enrollment Rate</b>
<b>GDP</b>	<b>Gross Domestic Product</b>
<b>GTZ</b>	<b>German Agency for Technical Cooperation</b>
<b>ILO</b>	<b>International Labour Organization</b>
<b>MVTTC</b>	<b>Morogoro Vocational Teacher Training College</b>
<b>NBP</b>	<b>National Employment Policy</b>
<b>NBR</b>	<b>Net Enrollment Rate</b>
<b>NVTD</b>	<b>National Vocational Training Division, Ministry of Labour and Youth</b>
<b>PFP</b>	<b>Policy Frame Paper 1992-94</b>
<b>RPEB</b>	<b>Rolling Plan and Forward Budget 1993-</b>
<b>PPTC</b>	<b>Post-primary Technical College</b>
<b>RVTSC</b>	<b>Regional Vocational Training and Service Centre</b>
<b>SAP</b>	<b>Strategic Action Plan (1996-1999)</b>
<b>SAP II</b>	<b>Strategic Action Plan II (2000-2004)</b>
<b>SIDA</b>	<b>Swedish International Development Agency</b>
<b>SIDO</b>	<b>Small Industrial Development Organization</b>
<b>TANESCO</b>	<b>Tanzanian Electric Supply Company</b>
<b>VTC</b>	<b>Vocational Training Centre</b>
<b>VETA</b>	<b>Vocational Education and Training Authority</b>
<b>VET Levy</b>	<b>Vocational Education and Training Levy</b>
<b>VET Board</b>	<b>Vocational Education and Training Board</b>
<b>UPC</b>	<b>Urban Planning Commission</b>
<b>UWSA Mtwara</b>	<b>Urban Water and Sewerage Authority Mtwara</b>

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## 1. BACKGROUND OF THE PROJECT

### 1.1 Background of the Request

The socialist development economy that lasted for about 20 years since Arusha Declaration in 1967, has been reformed into a free economy through the Economic Recovery Programme in 1986-89, 2nd Economic Recovery Programme in 1982-92, Policy Frame Paper in 1992-94 and Rolling Plan & Forward Budget in 1993.

It is within this economic policy framework that government organization reform proceeded. From 1992 to present, eighty thousands staff which is about 25% of the total governmental staff, have been decreased and the privatization policy, which brought about sale or closure of the public corporations, has been adopted.

Though the Government of Tanzania has launched a policy to promote the private investment, the investment have not increased due to the insufficient investment conditions, low technical level of labours, low level of consumption and so on. Moreover given that the net enrollment ratio in 1998 is estimated at 57% for primary education and less than 10% for secondary education, the human investment condition is forecasted not to be improved in a short time.

The labour problem in Tanzania is particularly serious and the ratio of skilled labour in the industrial field is 11 to 13% according to the ILO data in 1995. The ratio of pupils who do not go to secondary school after graduation from primary school is more than 85% of the total number, thus the increasing number of unemployed youth is becoming critical.

Under this given situation, the Government of Tanzania, which strives to attain the quality improvement of labour force, decided to establish a vocational training centre in each region and province in the 20 year National Development Plan, 1980 to 2000. In addition, the Government set up the Vocational Education and Training Authority (VETA) under the new Vocational Training Law which came into effect in April, 1994 whereby a Strategic Action Plan (SAP) was issued. The SAP, 1996-1999, for vocational training sector appointed VETA as the implementing authority for vocational training in Tanzania.

In the SAP, it was decided that ten (10) central training centres of VETA in each region were to be upgraded to Regional Vocational Training and Service Centres (RVTSC) and to be improved. Mtwara Regional Vocational Training and Service Centre (Mtwara RVTSC), the subject centre in this project, is one of those newly upgraded centres, absorbing

neighboring Lindi vocational training centre .

Mtwara RVTSC was scheduled to initially start with 11 courses which are Carpentry and Joinery, Masonry, Secretary and Computer, Tailoring, Plumbing and Pipe Fitting, Auto Mechanics, Welding and Fabrication, Electrical Installation, Auto Electrician, Wood Carving and Commercial. However , out of the 11 courses, only 5 courses of Carpentry and Joinery, Masonry, Secretary and Computer, Tailoring and Plumbing and Pipe Fitting, have been started since last July, 1999 prior to other courses by purchasing partly needed equipment due to the lack of budget to purchase all the necessary equipment. The Government of Tanzania requested to the Government of Japan in 1996 for Grant Aid program for the supply of necessary equipment for improvement of vocational training function of Mtwara RVTSC to impart basic and specialized skills to youth in Tanzania.

JICA dispatched a Basic Design Study Team to Tanzania from October 2 to October 31, 1999 to formulate the basic design for the project.

## 1.2 Components of the Request

Discussion with VETA on basic design study survey in October, 1999 resulted to the confirmation of objectives and supply of equipment covering 11 formal courses and some short courses for Mtwara RVTSC were mutually concluded as a main component of this project .

<b>[Outline of the Project]</b>	
<b>(1) Overall Goal</b>	: Contributing to the improvement of living standards in southeastern areas of Tanzania through the improvement of labour's skill, the development of local industry and the income generation by the upgrade of value of agricultural and fishery processing products in the region.
<b>(2) Project Goal</b>	: Improving the vocational training function of Mtwara RVTSC by supplying training equipment, and thus imparting basic and specialized skills to youth in Tanzania as well as strengthening the ties between regional community and the local industry.
<b>(3) Output of the Project</b>	: - Upgrading vocational training function and capacity. : - Developing youth in southeastern area in Tanzania into skilled labour. : - Promoting self-entrepreneurship of people in Mtwara area.
<b>(4) Activities of the Project</b>	: Supply of training equipment to Mtwara RVTSC
<b>a) Contents of the Request</b>	: Setting up an appropriate environment for vocational training of formal courses and short courses
<b>b) Undertakings by Tanzanian Side</b>	
<b>(5) Project Site</b>	: Mtwara RVTSC in Mtwara Urban, Mtwara Region
<b>(6) Direct and Indirect Beneficiaries</b>	: <b>Direct Beneficiaries</b> : Trainees, trainers and staff in Mtwara RVTSC : <b>Indirect Beneficiaries</b> : Youth in Tanzania and rural people in southeastern Tanzania

A new equipment list was proposed by VETA at the time of basic design study in Tanzania for the reason that the previous project proposal was prepared three years ago and did not conform with the current situation in Tanzania. The list of equipment did not involve a great deal of change from previous proposal but some items were added and some were deleted. Based on this new equipment list, discussion on the content and quantity of each equipment continued. The request for short courses was added and equipment list necessary for these courses was proposed.

## 2. CONTENTS OF THE PROJECT

### 2.1 Objective of the Project

The objective of the Project is to improve the vocational training function of Mtwara Regional Vocational Training and Service Centre by supplying training equipment, and thus assisting Tanzania in imparting basic and specialized skills to youth, and at the same time, contributing to the improvement of living standards in southeastern areas of Tanzania through the improvement of labour's skill, the development of local industry and the upgrade of value of agricultural and fishery processing products in the region.

### 2.2 Basic Concept of the Project

#### 2.2.1 Policy of the Cooperation

##### (1) Contents of the Project and Basic Concept

As result of discussion with VETA, the contents of the request were concluded as supplying equipment to Mtwara RVTSC covering the 11 formal courses which are the followings:

- |                              |                            |
|------------------------------|----------------------------|
| 1) Carpentry and Joinery     | 7) Welding and Fabrication |
| 2) Masonry                   | 8) Electric Installation   |
| 3) Secretary and Computer    | 9) Auto Electrician        |
| 4) Tailoring                 | 10) Commercial             |
| 5) Plumbing and Pipe Fitting | 11) Wood Carving           |
| 6) Auto Mechanics            |                            |

At the same time, several short courses were requested in addition to the formal courses. There are some courses which can be implemented by using same equipment and facilities for the formal courses. On the other hand, other short courses require different facilities and additional equipment. The number of requested short courses amounted to 147 units.

Short courses Fields	Name of Training Course	No of Unit
①Construction	1.1 Carpentry and Joinery	8 units
	1.2 Masonry	13 units
	1.3 Plumbing and Pipe Fitting	13 units
	1.4 Electric Installation	11 units
②Machinery & Auto	2.1 Auto Mechanics	19 units
	2.2 Auto Electrician	5 units
	2.3 Welding and Painting	4 units
③Business	3.1 Computer	12 units

④Agriculture	4.1	Cultivation technology	10	units
	4.2	Livestock	6	units
	4.3	Agro-processing	5	units
⑤Hotel & Tourist	5.1	Hotel Service	5	units
⑥Fishery	6.1	Making fishing boat	3	units
	6.2	Fishery processing & Food processing	4	units
	6.3	Fishing	4	units
	6.4	Refrigeration & engine	3	units
⑦Road Construction	7.1	Road construction	17	units
⑧Small Scale Mining	8.1	Small scale mining	5	units
Total			147	units

Both sides agreed through discussion with VETA that short courses will be selected after enough viability study, if it is within the limit with no addition of specific and big scale facilities and equipment

It has been confirmed between both sides that the courses which complied with the following criteria would be taken into consideration.

- 1) Course in conformity with labour market needs for formal and informal sector in Tanzania
- 2) Courses in conformity with employment needs for formal and informal sector in Tanzania
- 3) Courses that will contribute to the improvement of the living standards in southeastern area of Tanzania
- 4) Courses in conformity with the fields with high employment records in the past.
- 5) Courses whose labour market needs and employment needs are expected to grow in the near future.
- 6) Courses that will contribute to income generation.
- 7) Courses that will foster and promote entrepreneurial skills.

It was also confirmed that the equipment which complied with following criteria would be included in the Project.

- 1) Each equipment should satisfy the minimal requirements set by the curriculum and by the activities in the centre at present and in the near future.
- 2) Each equipment should not be too sophisticated, and should be highly cost-effective.
- 3) Equipment that needs high skill level compared to the vocational training standard in Tanzania, a lot of trained staff or expensive cost for proper use and maintenance should be eliminated.

- 4) Equipment which needs reconstruction and extension of the building on a large scale for installation should be eliminated.
- 5) Priority should be given to equipment whose maintenance and repair is possible and inexpensive within Tanzania.
- 6) Priority should be given to equipment in conformity with those used in the local market, including informal sector.
- 7) Equipment categorized under the consumption articles should be eliminated.

In addition, it was confirmed that furniture for administration, not directly related to the training, were to be excluded and it was ratified that Tanzanian side will be responsible for operation of equipment and provision of necessary utility for operation.

The laboratory equipment for Chemistry and Physics of common subjects in formal courses, a mini-bus for commuting trainees and a 2 ton diesel truck with water tank and pump for water shortage in dry season are also included in the Project.

## (2) Items to be Noted for Basic Design

The following important points are to be noted for the basic design.

- 1) To consider the technical capability and capacity of maintenance by trainers and also operation budget on the selection of equipment.
- 2) To study equipment necessary for inner production of spare parts taking into account the location of the centre.
- 3) To introduce the dust collector in the courses of Carpentry and Joinery, and Welding and Fabrication from the viewpoint of training environment.
- 4) To make a survey and analysis on selection of short courses, considering effectiveness and needs of the local people.
- 5) To note that it has been confirmed that the arrangement utility such as water and electricity should be undertaken by the Tanzanian side and that in the selection of courses and equipment, the shortage of water in dry season should be taken into consideration.

### 2.2.2 Project Evaluation Based on the Basic Design Study

#### (1) Study and Examination of the Contents of the Request



The courses requested for the Project are 11, specifically Carpentry and Joinery, Masonry, Secretary and Computer, Tailoring, Plumbing and Pipe Fitting, Auto Mechanics, Welding and Fabrication, Electric Installation, Auto Electrician, Commercial and Wood Carving. The addition of short courses were requested to upgrade skills of youth in the southeastern Tanzania and promote the self-entrepreneurship.

The basic design will be based on the new list of equipment requested and submitted by Tanzanian side. The new list is basically composed of equipment necessary for the curriculum and some additional machine tools are added for specific purpose. On the evaluation of these equipment, the necessity and adequacy were carefully examined.

## (2) Study of Requested 11 Courses

The main reason of the selection of 11 courses by VETA was based on the rehabilitation and pavement plan of the road between Dar es Salaam and Mtwara and Mtwara Development Corridor--MDC which lead to the economic recovery. However since the progress of these development plans are unclear, the current employment capacity of each field in the southeastern area in Tanzania was surveyed.

The statistics for each industry and each labour field in Mtwara and Lindi Regions, located at southeastern area in Tanzania, are not available. Therefore the survey's applicable data and information were collected from the raw data available in Mtwara Regional Office and Mtwara Urban Office.

### 1) Motor vehicle field-- Auto mechanics, Auto electrician, Welding and fabrication

In Tanzania, motor vehicle registration for the Dar es Salaam Region is conducted at the custom office located at Dar es Salaam port, while Mtwara Region registration is conducted at Mtwara port.

**Table 2-1 No. of Registration of Vehicle**

Year		1994	1995	1996	1997	1998
Mtwara	No. of Registration	180	220	185	118	190
	Total of Registration	2,979	3,199	3,384	3,502	3,692
Dar es Salaam	No. of Registration	N.A.	N.A.	26,228	44,725	49,387

Source: Dar es Salaam port custom office and Mtwara port custom office

The correct number of motor vehicle in Mtwara Region is not known because the motor vehicles registered at other ports such as Dar es Salaam and others, flow into the area. The number of motor vehicle registered at Lindi port in Lindi Region doesn't seem to be many due to small number of calling of oceangoing vessel.

During the cashew nuts harvest season from October to February, many vehicles travel to southeastern areas in Tanzania from other regions to transport the nuts from rural areas to Mtwara port and Lindi port, so the number of vehicles will temporarily and dramatically increase. Moreover, the inflow of vehicles is generally big because Mtwara is the foothold of transportation in southern Tanzania and neighboring countries and the number of arriving and leaving buses for long distance is sizable.

The number of vehicle repair garages and shops are not available for all of the Mtwara Region. Only 25 sites in the formal and informal sectors of the Mtwara Urban have registered at medium and small sized enterprise section of Mtwara Urban Office.

The statistics of number of labours in charge of this field is also not available. However, it is estimated that about 100 people have secured employment in the field. The existence of bad road conditions, a multitude of second hand vehicle, and the introduction of safety inspection has resulted a high frequency of repairs compared to that of other countries. In the future, the number of new vehicles registered will also increase.

There are three vocational training facilities in Mtwara and Lindi Regions consisting of Ndanda vocational training centre owned and operated by catholic church and two technical secondary schools located at Mtwara Urban and Lindi Urban respectively. Many of graduates from secondary school go to higher education such as Technical Teacher Training Colleges in Mtwara and Lindi Regions and universities and colleges in Dar es Salaam, while few graduates will be repairmen of vehicles in Mtwara and Lindi Regions. The maximum number of graduates from Ndanda vocational training centre for each field is 8 persons every year. Therefore, Mtwara RVTSC will become the biggest centre for vocational training institution in Mtwara and Lindi Regions and the number of graduates per year will amount to 32 graduates in Auto mechanics and Auto electrician courses.

Many graduates will depend their initial capital on the loan from the supporting organizations of small-scale enterprises such as Small Industrial Development Organization (SIDO) which is encouraging and strengthening the support for group entrepreneurship.

The number of groups of graduates participating in vehicle repair field after year

2002 will be a few and they will be absorbed in the labour market for several years, provided the present market volume will be maintained.

The needs for human resources in auto repair field will be greatly enhanced if the planned Mtwara Development Corridor is realized.

**\*Mtwara Development Corridor--MDC**

MDC is a development plan to connect to Lindi, Ruvma, Iringa, Mbeya and neighboring countries such as Malawi, Zambia and Mozambique by road from Mtwara as key point with natural and good port, to develop the natural resources, tourist resources and industries and finally to attain socio-economic improvement in South area of Africa.

Four countries of Tanzania, Zambia, Malawi and Mozambique formulated Southern Africa Development Community (SADC) to realize the project and are active in establishment of Transportation and Communication Committee, create plans and hold the briefing sessions for investment.

The main investment items are road construction, port construction and construction of industrial complex.

**2) Construction field (Carpentry and Joinery, Masonry, Plumbing and Pipe Fitting, Electric Installation, and Welding and Fabrication)**

Statistics of construction of houses and buildings in southeastern area of Tanzania and all Mtwara Region are not available. According to the Urban Planning Committee of Mtwara Urban, though there is a registration system existing in the area, past records for construction is not available due to lack of final confirmation of construction. The rehabilitation and construction of houses in rural area can't be verified.

The number of construction in Mtwara Urban based from Regional Land Development Office of Regional Office is as follows:

**Table 2-2 No. of Registration of House and Building in Mtwara Urban**

Year	1994	1995	1996	1997	1998	Total
Number of Registration	31	52	80	141	121	425

Source: Regional Land Development Office, Mtwara Regional Office

According to Mtwara Regional Town Planning Office, the estimated number of houses and buildings in Mtwara Urban, considering the number and increase of population, is as follows:

**Table 2-3 Estimated No of Construction of House & Building in Mtwara Urban**

Year	1994	1995	1996	1997	1998	Total
Local Investment	307	319	331	345	358	1,660
Investment from Outside	15	16	17	17	18	83
Total	322	335	348	362	376	1,743

Source: Mtwara Regional Town Planning Office

In the rural area, most of the houses are built with walls made of mud and roof made of palm leaves with no electricity. The construction is done by native people and their families, hence the constructed houses remain unregistered in the Regional Office. Therefore, it is very difficult to count the number of building in the rural area and seldom connect to employment demand.

Several construction companies are registered in Mtwara Urban, but actual number of companies including informal sector is not available. According to the Mtwara and Lindi Regional Office, the human resources are insufficient in the fields of carpentry and joinery, masonry, electric installation, plumbing and pipefitting, and welding and fabrication and it is expected that Mtwara RVTSC should be one to provide.

The sales amount in the construction field in main land of Tanzania increased by 5.45% from 1996 to 1997 and GDP ratio increased by 8.3% in 1995, 8.4% in 1996 and 8.6% in 1997.

The number of construction in Dar es Salaam Region has been increasing steadily as follows:

**Table 2-4 No. of Construction in Dar es Salaam**

Year	1995	1996	1997	1998
No of Construction	844	862	955	1,022

Source: Dar es Salaam Region

The building construction field is an active field of formal sector. Main territory of construction field in informal sector, which occupies 60% of employment in informal sector, is limited to rehabilitation and repair of small houses. The number of labours in informal sector in the construction field is 32,000 people in 1995 (Data of 1995 in the Dar es Salaam Informal Sector Survey), and is the second largest in scale, following Commercial & Restaurant and Manufacturing. Many of them are self-employed.

Data of employment capacity of informal sector in Dar es Salaam Region is not available, but the employment demand is expected to be increasing.

### 3) Wood Carving

In southern Tanzania, the carving made of ebony have been handed down for generations in Makonde family of Bantu tribe. It is used for ceremony and up to

this day the Makonde carving spread and popular over the Tanzania.

In Mtwara Urban, 10 wood carving workshops are established according to the Medium and Small Enterprise Section in Mtwara Urban. Makonde carving are currently produced and can be purchased in the town and airport, and are important foreign currency earning souvenir items. Nowadays, these carvings are seldom made of ebony and those made of ebony by Makonde family are sold at a high price.

#### 4) Tailoring

According to the Medium and Small Enterprise Section in Mtwara Urban, there are 25 tailoring sites mainly composed of informal sector. The tailoring is popular among women and considered as an important industry for self-employment even in rural areas. The foot operated sewing machine made in China is approximately sold at US\$60.00. This proves that the initial cost for self-employment is low and rapid expansion is expected in the future.

Several training centres are conducted by mission churches in Mtwara and Lindi Regions and hold seminar for self-employment. A loan for group by SIDO is also available.

Many of products have problem in quality due to low sewing skill. However it is expected that high quality production will be possible through the provision of training in Mtwara RVTSC.

#### 5) Secretary and Computer

The labour markets, for graduates of Secretary and Computer courses in formal sector are employee for public organizations of Regional Offices in Mtwara and Lindi, provinces and village office, private enterprises, NGO and projects. In informal sector, 7 sites in Secretary and Computer field are confirmed based on Medium and Small Enterprise Section in Mtwara Urban.

Main job for this in informal sector is writing letters and making forms, etc. Self-entrepreneurship will be possible, if the initial investment cost is available, because computers are not commonly used in Mtwara due to high cost problem.

#### 6) Commercial

The labour market for Commercial course in informal sector is a duplicate of Secretary and Computer courses. There are numerous shops in Mtwara Urban.

The shops are about 500 according to Medium and Small Enterprise Section in Mtwara Urban.

The job in this field is of a degree of an accountant in local government and private enterprises, of a marketing staff in shops and of a cashier in hotel and restaurant.

#### 7) Welding and Fabrication

According to Medium and Small Enterprise Section in Mtwara Urban, there are 6 sites of welding workshop. The welding and fabrication is a basic need in the fields of auto mechanics and construction of houses and buildings. It is important for the maintenance and repair of vessel calling in and out at port and necessary for the production of window frames and iron grill/fence.

Some graduates from Mtwara RVTSC may go to other Regions to get job, but according to the questionnaire and survey, all trainees in existing five (5) courses intend to work or seek self-entrepreneurship at home areas.

In the survey through questionnaires, families and parents of 32 trainees out of 75 trainees are engaged in agriculture and 43% of trainees comes from rural area. It is expected that self-entrepreneurship of graduates in their home areas will contribute to the development of rural areas.

### (3) Study of Short Courses

Short courses will enable people to participate in vocational training without required qualifications for formal course and will contribute to skill development of rural people and promote self-entrepreneurship. The courses are to be held irregularly in afternoon of weekday. Local enterprises and Technical Secondary School will cooperate on the courses by providing trainers, technicians and teachers.

#### 1) Construction Field

Each training course requested in this field is considered as one of curriculum module units in each formal course of i) carpentry and joinery (8 units), ii) masonry and bricklaying (13 units), iii) plumbing and pipe fitting (13 units), iv) electric installation (11 units). Therefore, the necessary training equipment for these courses are duplicated with one of the formal courses, and training can be done in the same workshops as formal courses and will be taught by the trainers or graduates from the centre.

These short courses will be conducted by Mtwara RVTSC upon local request or

original plan of centre.

## 2) Mechanical and Automotive Field

Training course in this field is also one of curriculum module units in each formal course of 1) auto mechanics (19 units), 2) auto electric (5 units), 3) welding and fabrication (4 units). Consequently, the training equipment and workshop are duplicated and the trainers are available except in Bicycle maintenance and repair which will need some equipment such as bicycle and tools for repair but the trainer and workshop are available in the centre.

Bicycle is very popular in Mtwara area as a means of transportation, so the skill needed for bicycle repair is very helpful for those who seek self-entrepreneurship.

The training demand in Tanzania for the unit of basic and advanced vehicle driving is growing due to the revision of law in 1998.

The unit for gridiron making included in 3) is not a curriculum module unit in formal course but the manufacturing of this kind of product is common in the training of welding and fabrication course. There is no problem in equipment, training place and trainer, and the course is very necessary.

## 3) Office Support field

Several computer-training courses are required in the office support field. The training courses are duplicated with curriculum module units in formal course and the equipment, training space and trainer are available in the centre. The units are separated by details and by items, so the trainee can participate continuously or partly depending on the intended skill.

The demand for this field is not so big in the labour market but it is expected that the computer will spread rapidly in local government and private enterprises. The demand for skilled labour in computer field will expand in the future.

## 4) Agricultural Field

The requested courses are i) cultivation skill (10 units), ii) livestock (6 units) and iii) Agro-processing (5 units) and they are not duplicated with any curriculum module unit in formal courses. So for the implementation of these units in these short courses, the specific equipment and tools and the modification of facilities will be required. Tentative trainers from outside will be needed because Mtwara RVTSC does not have any trainer in these fields.

These are very important courses to improve the existing agricultural skill and add further value to the products through agro-processing as agriculture is the main industry in Mtwara Region.

Many units in these short courses are implemented as formal courses in other training centres and using same curriculum is possible. However, these courses should be trained in formal course and placed in the comprehensive long-term base training field.

#### 5) Hotel and Tourist Field

The required short courses are 5 units in hotel service field.

There are few hotels in Mtwara which provide poor service. The main customers in these areas are Government officials, staff of donors and international organizations, businessmen and few number of visitors through the year. Between November and February, the buyers of cashew nuts crowd together and demand for hotel is temporarily increased.

In this area two hotels are under construction thus employment demand will increase in the near future. Priority in developing human resources in hotel and tourist field is relatively high. However the long-term training and curriculum, which is for more than 1 year, will be effective for developing human resources in this field. The intensive training as formal course will be favourable in this field.

The units in cooking and service are helpful for self-entrepreneurship in small restaurant and the unit in room preparation is good for maid service training.

#### 6) Fishery Field

The requested short courses are making fishing boat (3 units), fishery processing, quality control and distribution (4 units), fishing (4 units) and engine (3 units).

The fishery industry in Mtwara is a typical coastal small scale fishing area. The fishes that are caught and landed at the beach from small fishing boats operated by a few fishermen for trading.

The requested courses of making shipping boat, fishing and engine do not have enough relation with the formal courses and self-entrepreneurship. Moreover, the exclusive equipment, facilities and trainers are much needed.

The fishery-processing course can be exclusively conducted and small-scale facility, equipment and the transition to self-entrepreneurship will be relatively easy.



**6) Road Construction Field**

The requested courses have 17 units of road construction.

The road condition in Mtwara and surrounding area is very poor road pavement and the road rehabilitation should be a big sector in future development plan. The road from Mtwara central area to Mtwara RVTSC is unpaved and without maintenance and during rainy season many vehicles may have trouble. These courses are held in other training centers as civil courses with curriculum.

The road construction should be done by the central Government or local Government and it doesn't have any connection with training fields in Mtwara RVTSC. Many of the required equipment are far from training equipment, therefore the field should be considered as one of the formal courses.

**7) Small Scale Mining Field**

The requested short courses have 4 units of small-scale mining course.

In Mtwara area, active small mines are scattered. Mining is one of the main industries in Tanzania where people are trained in other training centres.

The mining field is helpful for small-scale operation and self-entrepreneurship, though there is no relation with formal courses requested. The exclusive facility with equipment and trainer will be required for training and training at mining site which is away from Mtwara RVTSC, will be necessary.

## **2.3 Basic Design concerning Optimal Draft for the Project**

### **2.3.1 Design Concept**

#### **(1) Policy for Selection of 11 Courses**

The essential factors for the selection of equipment are as follows:

##### **1) Necessity of Equipment**

Equipment whose purpose of utilization is not defined in training curriculum and syllabus of VETA and not used in other vocational training centres, will be eliminated from the Project.

##### **2) Installation of Equipment**

Equipment, that do not have enough assured space in the centre and needs a large-scale facility or big scale basic work for installation, will be eliminated from the Project

##### **3) Operation and Maintenance of Equipment**

Equipment, that needs high technique, specific skill, high cost and special consumables for the operation, and high cost and specific skill for maintenance, will be eliminated from the Project. Equipment that needs exclusive staff for introduction into centre will be also eliminated.

#### **(2) Policy for Equipment Grade**

In the Project , general-purpose equipment widely used in Tanzania will have an advantage in selection as mentioned before. In the specifications written in the requested equipment list, the higher grade equipment, the large capacity equipment and equipment for the limited purpose are to be reconsidered in analysis and evaluation in Japan. The followings are the policy for equipment grade.

- 1) To be a grade for basic skill training.**
- 2) To be a grade for enough durability**
- 3) To be a grade for general-purpose**

### **(3) Policy for Specifications**

The references for the specifications are written in the requested equipment list and these have the same specifications and model in the catalog which Tanzanian side obtained. Based on these references of specifications, the basic specification of equipment for the Project will be adopted.

For main equipment, the suitable model that complies with the adopted basic specifications will be selected from the products in Japan or third countries. Then, collected prices and catalogs of these models will be used for cost estimation of the Project as well as for creating specifications of equipment.

For the tools, after creating standard specifications, the suitable model that complies with the standard specifications will be selected from the catalogs in Japan and third countries.

The specifications of equipment, which have capability to compete among different and suitable models, should be prepared for the fairness at tendering. Suitable models should be selected from the products manufactured by the countries holding a certain level of quality such as Japan, Europe and other developed countries.

### **(4) Policy for Additional Equipment**

Equipment necessary for implementation of the Project in Mtwara RVTSC and for the upgrade of operation and training quality should be studied as additional equipment.

Additional equipment, besides equipment requested at the time of survey in Tanzania, will be listed as equipment essential for training, for facility and utility reinforcement, for safety of training and for environmental and hygienic aspect.

Indispensable and essential factors for additional equipment are as follows:

- 1) Equipment necessary for training in the scope of the Project but not requested by Tanzanian side or incomplete in quantity.
  - General purpose sewing machines, iron etc., for Tailoring course
  - Grinding equipment used for the blades of machine tool in carpentry & masonry, auto mechanics and so on
- 2) Equipment necessary for maintenance, for facilitating making spare parts and accessories, and for repairs within the centre.

- General-purpose lathe machine
  - Equipment for blacksmith's workshop
- 3) Facilities for safe training and healthy environment excluded in construction of Tanzanian side
- Facility to protect wood shavings and dust in Carpentry and Joinery workshop
  - Facility to protect exhaust gas in Welding and Fabrication workshop
- 4) Equipment for getting utility necessary for training in Mtwara RVTSC and not expected to be solved by own's effort
- Transportation equipment for purchasing water to improve the shortage of water

#### (5) Policy for Selection of Short Courses

The policy for selection of short course is as follows:

- Course whose training is needed in southeastern area of Tanzania
- Courses which can be conducted with same equipment in the formal courses to minimize the procurement of additional equipment and the rehabilitation of existing facilities
- Course which meets the industrial condition and contributes to self-entrepreneurship in southeastern area of Tanzania
- Courses to be implemented in Mtwara RVTSC or neighboring place
- Course whose contents of training and curriculum are defined
- Course whose water, electricity and materials for training is available on budget and in the local market.
- Course which don't need equipment in a specific field or in a big scale for exclusive purpose.
- Course which don't need reconstruction and extension of the building on a large scale for installation.
- Course whose maintenance and repair is possible and inexpensive within Tanzania
- Course that don't needs high level skill over the vocational training standard in Tanzania, many trained staff or expensive cost for proper use and maintenance.

#### (6) Policy for Quantity of Equipment

According to VETA, the quantity of each equipment is decided upon training method, but there is no clear definition or standard for the quantity in the request. It was concluded that the quantity for each equipment would be decided by the number of

trainees (16 trainees) and the number of group in one class (1,2,4 and 8 groups)

The policy for quantity of equipment is as follows:

- ① The quantity of equipment should be at the minimum necessity.
- ② The basic design for the quantity of equipment should be 1, 2, 4, 8 and 16 on the assumption that the quantity of equipment should be a minimum necessity.
- ③ In case of common subjects taught together in 2 classes, the number of equipment for individual utilization should be 32.

The quantity related to the training method is as follows:

**Table 2-5 Quantity of Equipment related to the Training Method**

Q'ty	Training Method
1 unit	Equipment for demonstration purpose or exhibition for the whole class
2 units	Equipment used for same training in a particular group after dividing the class in two groups
4 units	Equipment used for same training in a particular group after dividing the class in four groups
8 units	Equipment used by a group of two trainees in a class
16 units	Equipment to be used individually
32 units	Equipment to be used individually while lecturing common subjects when 2 classes are combined tentatively.

Remark: As for equipment necessary for trainer separately, 1 unit besides above quantity should be added in the Project.

#### (7) Policy for Procurement of Equipment

In principle, equipment should be locally procured. Almost all the products excluding wooden furniture and few equipment are imported, although the general-purpose equipment are sold in local market, but wholesaler do not have stocks due to local trade custom and small scale retailers. There are limited number of importers or dealers who can guarantee the quality and performance, and constantly provides necessary quantity.

According to a field survey conducted by interviewing importer and dealers, they only inquire prices to the manufacturers after receiving an inquiry of order regarding numerous equipment of the Project. It takes them a long time to answer an inquiry for variety of equipment because the equipment are expanded over many manufactures and there are several uncertain factors, to be considered seriously such as time of delivery and delivery management.

The Value Added Tax (VAT) in Tanzania is as high as 20% but exemption from VAT is locally available and exemption procedure is ready according to VETA. However in actual trade, the handling of VAT is not stable and it should be considered sufficiently on local procurement.

On analysis and evaluation of equipment procurement and cost estimation, the following policy should be taken into consideration.

- 1) To survey products made in Japan and third countries allowing local procurement to inquire and collect price quotation from manufacturers.
- 2) To compare and evaluate the procurement in Japan and third countries with local procurement after collecting prices from local dealers.
- 3) To collect the prices from the manufacturers of third countries as much as possible.
- 4) To locally procure computer, photocopy machine and typewriter as much as possible.
- 5) To consider the country of origin of products from the point of view of quality of equipment and stable supply of spare parts and consumables.

For the quality of equipment, Japan, Europe and other developed countries are to be regarded to have certain quality level.

### 2.3.2 Basic Plan

#### (1) Formal 11 Courses

Equipment plan is studied and analyzed by each course mentioned below.

- |                                   |                                 |
|-----------------------------------|---------------------------------|
| 1. (CJ) Carpentry and Joinery     | 10. (WC) Wood Carving           |
| 2. (MR) Masonry                   | 11. (CM) Commercial             |
| 3. (ST) Secretary and Computer    | 12. (CH) Chemical Laboratory    |
| 4. (TR) Tailoring                 | 13. (PL) Physics Laboratory     |
| 5. (PP) Plumbing and Pipe Fitting | 14. (MW) Maintenance Workshop   |
| 6. (AM) Auto Mechanics            | 15. (GC) General Classroom      |
| 7. (WF) Welding and Fabrication   | 16. (AV) Audio Visual Equipment |
| 8. (EL) Electrical Installation   | 17. (VB) Vehicle                |
| 9. (AB) Auto Electrician          |                                 |

#### 1) Carpentry and Joinery

Carpentry and Joinery is mainly for wood processing and fabrication. Minimum machine tools necessary for processing of raw material were included and auto machines for factory were excluded. Facilities for absorbing big volume of

wooden shavings and dust generated from planning, grading and cutting were included. The drawing equipment was also included without the request of Tanzanian side.

2) Masonry

The minimum equipment necessary for training were included and the equipment for material processing and wooden framework were added to the Project. The machinery with electric motor were excluded as the workshop had no door at both sides and there is a problem on space for installation.

3) Secretary and Computer

Computer, typewriter and related appliances were included. Laptop computer was excluded for it can be substituted by desktop computers. Facsimile machine was also excluded because training is not needed to be able to use the machine. LCD projector necessary for training was added.

4) Tailoring

Almost all the sewing machines requested are types of machines utilized in factory and they are not proper for the Project under the situation in Tanzania and southeastern area. However, general and multi-purpose home sewing machine and basic industrial sewing machines are substituted. The tool necessary for sewing machines and sewing instrument and worktables are added.

5) Plumbing and Pipe Fitting

Equipment necessary for plumbing and pipefitting were picked up from the request but some items were excluded as their purpose of utilization was not defined. On the other hand, bending machine and screw cutting machine for pipe were added.

6) Auto Mechanics

Auto Mechanics is one of the emphasized fields by Tanzanian side, so various kind of equipment in large quantities were requested and some big scale machine tools for exclusive utilization were also included. Equipment, which has limited purpose of utilization, extremely high operation technique, undefined purpose of utilization and unexpected training effect, were excluded from the Project. Though the training space of Auto Mechanics workshop is relatively wider than those in other courses, several equipment were reconsidered from the point of view of layout plan of equipment because various kind of equipment as well as some

big scale equipment were requested. The quantity of equipment was held at minimum, but enough for training. Some new vehicles were requested for training, but instead some used vehicles were included.

**7) Welding and Fabrication**

The requested equipment were regarded as adequate. Equipment necessary for processing of materials and finishing of products were added. The ventilation facilities with ducts were added to exhaust gas produced from welding. The drawing equipment were also included despite absence of request.

**8) Electric Installation**

The contents of requested equipment were adequate and proper for training in the field of electric installation and repair of electric appliances.

**9) Auto Electrician**

Several equipment in Auto Electrician course duplicate in Auto Mechanics course, but some duplicated items were left for efficient training. The request covers almost all equipment necessary for training and the quantity were held at minimum but enough for training.

**10) Commercial**

No equipment for Commercial course is requested.

**11) Wood Carving**

The main equipment for the training of woodcarving are tools. Some equipment, which are duplicated in carpentry and joinery course and can be used commonly, are requested for material processing. Equipment in the Project were limited to equipment for necessary processing only. The layout plan was designed carefully because there are no existing door at both sides of the workshop.

For related facilities not directly concerned with the 11 courses, equipment for chemical laboratory, physics laboratory, maintenance workshop, general classrooms, audiovisual equipment and vehicles were requested and studied.

**12) Chemistry Laboratory**

In the request, many equipment are in shortage for general experiment in chemistry, so basic instrument necessary for basic chemistry experiment were solely added.



### 13) Physics Laboratory

In the request, experimental equipment for primary and lower secondary education level were included. The lecturing time for common subjects is only 20% of total training time in the centre, so the time for physics experiment is very limited. The Tanzanian side regards physics as very important basic skill in vocational training. Minimum quantity was planned for the Physics course, as much equipment should be used for demonstration. The curriculum in Physics is almost similar to curriculum in primary and secondary schools in Japan and the requested equipment comply with the curriculum.

### 14) Maintenance Workshop

There were no request for equipment of maintenance workshop. It is very important for Mtwara RVTSC to maintain, repair and make spare parts within the centre, so basic equipment within the scope of no duplication with other courses were added.

### 15) General classrooms

The desks, chairs and cabinets necessary for trainees and trainers were selected from the request.

### 16) Audio Visual Equipment

The requested audiovisual equipment were to be used in general classrooms and each lecturing room attached in each workshop. DVD player and CD player, which are not for general purpose, were deleted.

### 17) Vehicles

Some vehicles were included in the request like minibus to commute trainers and purchase training materials and a 2 ton diesel truck to transport water purchased to resolve the shortage of water. Mtwara RVTSC owns 1 unit of 4WD diesel passenger vehicle whose models as well as year manufactured is very old thus fuel consumption is high.

The followings are the purpose of utilization of vehicle in the Project.

#### ① Purpose of Utilization of Vehicle

#### Transportation of trainees

The number of trainees staying in two dormitories is currently 80 composing of 48 boys and 32 girls of 5 courses. The number of new trainees scheduled

for 2000 is 86.

There are 2 sets of bunk bed in each room for four (4) persons. The maximum number of people that can be accommodated by the dormitory is 168 and about 23 can be accommodated for short stay. Almost of all trainees during 2000 can be accepted in the present dormitories. However, 6 formal courses will start from year 2001. Total trainees for formal courses during 2000-2001 will be as follows.

Period	Number of Trainee
Up to June, 2000	168
Up to December, 2000	106
Up to June, 2001	214
Up to December, 2001	196
After January, 2002	196

Source: Mtwara RVTSC

About 25 trainees in the formal course and about 30 trainees in the short courses, including night courses for training for trade testing I and II during weekday, will go to centre. The minibus may be proper for commuting trainees.

In terms of using the dormitory, trainees living near the centre will be given lower priority than trainees living far away from the centre.

Operational days are calculated at 200 days per year; 40 weeks of formal course is translated as 200 days per year (40 weeks x 5 days of week days).

#### Vehicle for Purchasing Water

There is no standard of necessary water volume per capita per day such that each Region may set it up independently. The Mtwara Region sets up water volume by rural area and urban area respectively; 25 litres for rural area and 100 litres for urban area. The water supply target per capita per day in Mtwara Urban is 100 litres but actual supplied volume per capita per day is between 50 litres and 70 litres. Thus 50 litres of the minimum volume per capita per day for Mtwara Urban may be appropriate to apply to trainee in the dormitory in Mtwara RVTSC. It is estimated that 15 litres may be enough for other trainees for bucket reservoir (3 litres per one time x 5 times = 15 litres) but doesn't include flushing the toilet.

The minimum water volume used per one day in Mtwara RVTSC is calculated as follows:

Dormitory(toilet, shower and washing)	170 trainees × 50 litres/day	=8.5 ton
Training facility(toilet)	50 trainees × 15 litres/day	=0.75ton
Administration facility(toilet)	20 staff × 15 litres/day	=0.3 ton
Staff houses (3 persons per house)	20 houses × 150 litres/day	=3.0 ton
Other (Cooking and dishing for dormitory trainees)		=1.5 ton
Training (Mainly for short courses)*		=1.0 ton

**Total** **15.05ton**

Remark:\*= Short courses are conducted on Saturday and Sunday, so no need for weekdays.

The daily water intake from water pipe is about 9 ton per day, so the shortage will be approximately 6 tons. The pick up diesel truck with capacity of 2 ton can transport a tank of 2 tons of water per one trip. Thus 3 trips are enough. In case water purchasing is not available on Sunday, the trip should be increased during weekdays.

Consequently, two ton diesel truck with 2 tons water tank is suitable for transporting water during dry season from June to November in Tanzania. Three trips a day are enough to answer the water shortage problem. For inoperative time or season, training materials such as wood for carpentry and joinery course, wires, steel plates, steel bar, welding rods, oxygen gas and acetylene gas for welding and fabrication course etc., can be transported by same truck.

Others

The training programme includes actual training in a factory or an enterprise, so vehicle is required to transport trainees to such destinations.

② Operation Plan of Vehicles

Minibus

**Daily operation for trainees commuting (40 weeks)**

The timetable for the formal course is as follows:

#### Time Table for Formal Courses

07:45 – 08:30	1st hour (Lecturing)
08:30 – 09:15	2nd hour (Lecturing)
09:15 – 10:00	3rd hour (Lecturing or Workshop)
10:00 – 10:45	4th hour (Lecturing or Workshop)
10:45 – 11:15	Break
11:15 – 12:00	5th hour (Workshop)
12:00 – 12:45	6th hour (Workshop)
12:45 – 13:30	7th hour (Workshop)
13:30 – 14:15	8th hour (Workshop)
14:15 – 14:30	Cleaning Workshop

#### Time Table for Short Courses

15:00 – 16:15
16:15 – 17:00
17:00 – 17:45

The speed per hour is set to 30km due to high frequency of driving on unpaved road. The waiting time for each bus stop is also considered into the operation hour.

Mtwara RVTSC( 6:30) – Mtwara Area – Mtwara RVTSC( 7:30)  
Mtwara RVTSC(14:00) – Mtwara Area – Mtwara RVTSC(15:00)  
Mtwara RVTSC(15:30) – Mtwara Area – Mtwara RVTSC(16:30)  
Mtwara RVTSC(18:00) – Mtwara Area – Mtwara RVTSC(19:00)  
Mileage per day: 15km x 4times = 60km, Operation hours per day : 4hours  
Annual mileage : 60km x 200days = 12,000km  
Annual operation hours : 4 hours x 200 days = 800 hours

#### 2ton Diesel Truck

##### Daily operation in dry season for purchasing water

3 trips per day (Mikindani well, 13 km per one way)  
Daily mileage per day (rainy season only) : 26km x 3 = 78km  
Operation hours per day: 3hours(6 months)  
Annual mileage : 78km x 180days = 14,040km  
Annual operation hours : 3 hours x 180 days = 540 hours

##### Purchasing training materials

1 trip per week (Mtwara urban)  
Mileage per week : 7km x 2 = 14km  
Operation hours per week; 1 hour  
Annual mileage : 14km x 40 weeks = 560 km  
Annual operation hours: 1 hour x 40 weeks = 40 hours

The purpose of utilization, annual days of utilization, Annual mileage, annual operation hour and net operation rate by each vehicle are as follows:

Vehicle	Purpose of Utilization	Annual days of Utilization	Annual Mileage	Annual Operation Hour
Minibus	Commuting trainees	200 days	12,000km	800 hours
24 Diesel Truck	Transportation of water Transportation of materials	180 days	14,600km	580 hours

## (2) Short Courses

All units of short courses in conformity with units of formal courses are to be included in the Project because no additional equipment and no rehabilitation of facilities are needed.

The courses of road construction and small-scale mining are excluded due to low justification, necessity of exclusive equipment, space and employment of trainers.

In the courses of agriculture, hotel and tourist and fishery, food processing and cooking are preferred but needs water for training. As for agricultural processing, there is no problem concerning water, since the harvest time is during the rainy season. The training of fish processing and cooking may be done during the dry season.

In the Project, shortage of water will be resolved by purchasing water. As for fish processing, the volume of water consumption may be decreased, if the fish materials will be brought to the centre after cutting and washing at the landing port.

As to materials for food processing, the trainees themselves are the producers of materials so they may bring such materials free of charge or sell them to the centre at very competitive price. The cost for hiring trainers and materials for cooking should be born out of the training fee collected from trainees.

Training for these courses can be made available in the centre through the partial rehabilitation of facilities and provision of additional equipment. The effect to rural area of entrepreneurship is very high and is justified for inclusion in the Project.

The short course for maintenance and repair of bicycles, which is not included in the formal training course in the Project, has a big demand in the southeastern Tanzania and is effective for the development of skill for entrepreneurial skills.

The request for basic and advanced vehicle driving course included driving large sized cars which is still not popular in the training centres under VBTA, in addition to driving ordinary cars ; two units of 4WD wagon and one unit of 7 ton truck are requested as a set.

However, the volume demand for vehicle driving course cannot be defined and this course can not be conducted with same equipment in the formal courses and need equipment in a big scale. The requested vehicles were finally excluded as they do not comply with the policy for selection of short courses agreed by both sides of Tanzania and Japan.

As an alternative plan, Japanese side proposed one unit of 4WD diesel truck to be used both for this short course and for purchasing training materials. However the Tanzanian side regarded these three units of car as a set and was very reluctant to include one of these cars in the project. Therefore, the short course of basic and advanced vehicle driving was deleted from the Project.

The short courses in the Project are as follows:

**Table 2-6 List of Short Courses in the Project**

Field	Training Course	Requested Unit	Period (week)
1 Building Construction	1.1 Carpentry & Joinery	1) Making common domestic door and window frames	2
		2) Making and hanging sliding and swinging doors	1
		3) Making and fitting cupboards and counters	2
		4) Making domestic furniture	1
		5) Spray painting and varnishing	1
		6) Making and fixing partitioning materials	1
		7) Interpretation of basic drawing	1
		8) Entrepreneurship	2
	1.2 Masonry & Bricklaying	1) Building setting out	1
		2) Construction of drainage system	1
		3) Alternative ways of bricks and blocks	1
		4) Laying bricks	1
		5) Shaping and laying stone walls	1
		6) Mixing and compacting concrete	2
		7) Signwriting	1
		8) Basic form work	1
		9) Basic steel fixing	1
		10) Plastering	1
		11) Tiling	1
		12) Painting	2
		13) Entrepreneurship	2
	1.3 Plumbing & Pipe Fitting	1) Cutting folding and rolling sheet metals	1
		2) Fabrication and manufacture of containers	2
		3) Soldering & brazing	1
		4) Pipe cutting, threading and reaming	1
		5) Pipe bending	1
		6) Installation and repairing domestic water supply (hot and cold)	1
		7) Jointing various types of water mains	1
		8) Installation of water mains	1
		9) Installation and repairing valve	1
		10) Basic arc welding	2
		11) Basic gas welding	2
		12) Pump installation and repair	1
		13) Entrepreneurship	2
	1.4 Electric Installation	1) Service and repair batteries	1
		2) Installation concealed conduct wiring	2
		3) Installation surface conduct wiring	2
		4) Installation earth electrode and measuring its resistance	1
		5) Completion tests on a electrical installation	1
		6) Installation of three phase switch gear	2
7) Interpretation electrical wiring		1	
8) Fault finding in electrical circuits and equipment		3	
9) Installation of domestic appliances		4	
10) Entrepreneurship		1	

Field	Training Course	Requested Unit	Period (week)
2 Mechanical & Automotive	2.1 Motor Vehicle Mechanics	1) Repair and maintenance of tyres	2
		2) Installation and adjustment of wheel bearings	1
		3) Repair and maintenance of hydraulic brakes	1
		4) Maintenance and repair of propeller shafts	3
		5) Maintenance of clutch and gear box	2
		6) Maintenance and repair rear 4 axles	12
		7) Maintenance and repair of petrol engine	12
		8) Maintenance and repair of diesel engines	1
		9) Maintenance and repair of cooling system	1
		10) Maintenance and repair of steering systems	1
		11) Vehicle inspection	1
		12) Maintenance and repair of vehicle cargo aids	4
		13) Interpretation of workshop manuals	1
		14) Spare parts identification and ordering	1
		15) Entrepreneurship	2
		16) Panel beating	4
		17) Motor-cycle repair and maintenance	3
		18) Bicycle utilization repair and maintenance	1
		19) Basic and advanced vehicle driving	4
2.2 Auto Electric	1) Vehicle wiring diagram interpretation	1	
	2) Fault finding on vehicle electrical system	1	
	3) Head lamp alignment	1	
	4) Maintenance and repair of major electrical components	2	
	5) Battery service and maintenance	1	
2.3 Welding & Fabrication	1) Basic gas welding	10	
	2) Basic arc welding	10	
	3) Manufacture of grills	5	
	4) Manufacturer of farm and non farm tools and equipment	5	
3 Office Support	3.1 Computer Application	1) Compute basic	2
		2) MS-DOS	2
		3) MS Windows 95	2
		4) MS Windows 98	2
		5) MS Word	2
		6) MS Excel	2
		7) Data bases	2
		8) MS Powerpoint	2
		9) Desktop publishing	2
		10) Internet and E-mail	2
		11) Lotus 1-2-3 for windows	2
		12) Word Perfect for windows	2
4 (Agriculture, Hotel/Tourist & Fishery)	4.1 Food Processing	1) Food processing	2
		2) Cooking	2



### (3) Equipment Plan

The evaluation of requested equipment in formal courses was done according to the criteria of (1) Policy for Selection of 11 Courses in 2.3.1 and the quantity was set up according to the training method as per (5) Policy for Quantity of Equipment in 2.3.1. The short courses were studied according to (4) Policy for Selection of Short Courses in 2.3.1.

The equipment are listed in the following manner.

No.	Code	Name of Course
1.	(CJ)	Carpentry and Joinery
2.	(MR)	Masonry
3.	(ST)	Secretary and Computer
4.	(TR)	Tailoring
5.	(PP)	Plumbing and Pipe Fitting
6.	(AM)	Auto Mechanics
7.	(AB)	Auto Electrician
8.	(WF)	Welding and Fabrication
9.	(EL)	Electrical Installation
10.	(WC)	Wood Carving
11.	(CH)	Chemistry Laboratory
12.	(PL)	Physics Laboratory
13.	(MW)	Maintenance Workshop
14.	(CM)	Commercial
15.	(GC)	General Classroom
16.	(AV)	Audio Visual Equipment
17.	(VE)	Vehicles
18.	(SC)	Short Course (Food Processing)

#### ※ Criteria for quantity of equipment

Quantities of equipment are decided by the following criteria.

- 1G : Equipment for demonstration use
- 2G : Equipment used by 2 groups per class
- 4G : Equipment used by 4 groups per class
- 8G : Equipment used by 8 groups per class
- 16G : Equipment used by individual student
- C : Equipment for common use
- N : No justification for necessity

#### ※ : Additional equipment

The purpose of use and specification of main equipment are as follows.

**Table2 - 7 The Purpose of Use and Specification of Main Equipment**

EQUIPMENT	Qty	USAGE	SPECIFICATION
<b>Carpentry &amp; Joinery</b>			
Router Machine Table	1	Trimming wood surface into several shapes	Capacity:145mm Speed: 16,000rpm
Combination planer	1	Cutting and planning of wood materials	Capacity: 240mm Function: Circular saw, planer
Tennor Machine	1	Tenoning wood	Max. Processing size: 60x300x100mm
Radial Saw	1	Cutting, grooving and tilting angle cutting of wood material	Blade: $\phi$ 350mm Capacity: 100mm
Circular Saw	1	Precise cutting of wood in tilting angle	Blade: $\phi$ 400mm
Lathe machine	1	Cutting curving surface of wood materials	Working length: 1000mm 2 step speed
<b>Masonry</b>			
Concrete Mixing Machine diesel Engine	1	Concrete mixing	Capacity:9cubic feet, Power: 8HP
Theodolite	4	General measuring	25x, 3'
<b>Secretary &amp; Computer</b>			
Computer Set	17	Computer training	450MHz, 12GB
Photocopy Machine	1	Educational material produce	Max:A3, Speed: 16ppm(A4)
Printing Equipment	1	Educational material produce	100ppm(A4), Auto
<b>Tailoring</b>			
Sewing Machine Electric High Speed	2	Straight sewing (Industrial use)	Speed: 5000rpm, Stitch length: 4mm
Button Holing Machine	2	Button holing (Industrial use)	Speed: 3800rpm
<b>Plumbing &amp; Pipe Fitting</b>			
Gas Welder	1	General metals welding	9.0-25Tmm Capacity: 10-30T
Cutting Grinder	1	Pipe cutting	Blade : $\phi$ 400mm
Power Shearing Machine	1	Iron sheet shearing	Capacity: 1.6Tx1000Wmm
<b>Auto Mechanics</b>			
Side Slip Tester	1	Side slip of tire testing	Wheel load: 1500kg Board size: 600x500mm
Brake/Speed Meter Tester	1	Brake and speed meter testing	Wheel load:1500kg Brake force: 20-500kgf
Crankshaft Grinding Machine	1	Grinding of Crankshaft	Grinding size:1600mm (L) x 200mm(W)
Hydraulic Milling and Grinding Machine	1	Grinding of cylinder head surface	Speed: 700-1400rpm
Cylinder Honing Machine	1	Honing of engine cylinder	Speed: 0-18m/min
Vertical Boring machine	1	Grinding of engine cylinder	Boring range: 65-130mm Boring depth: 360mm
<b>Auto Electrician</b>			
Starter Generator Test Bench	1	Non load/load characteristic test, pinion engaging test, etc	0-8000rpm, 0- $\pm$ 15kgf
<b>Welding &amp; Fabrication</b>			
Mig Welder	2	Nonmetals welding	4KVA, 130A
Tig Welder	2	Nonmetals welding	5KW, 130A
AC Arc Welder	8	General metals welding	25kVA(15kw), 300A
DC Arc Welder	2	General metals welding	14kw, 35A
Gas Welder Set	8	General metals welding	set
<b>Electric Installation</b>			

Sectioned Electric Motors	1	Education for motor	DC,3-phase
Arc Welder for Windings	8	Welding for winding	0.2-3.5mm
<b>Wood Carving</b>			
Wood Finishing Machine	1	Processing wood materials	W/ length:800mm,2 step speed
<b>Equipment for Short Course</b>			
Cabinet Solar Dryer	1	Food drying	30 shelves
<b>Vehicles</b>			
Mini Bus	1	Transportation for student	29persons, 4000cc
Truck	1	Transportation for water and materials	2000cc, with 2 ton tank
<b>Maintenance Workshop</b>			
Milling Machine	1	Processing metal materials	50-1,200rpm
Turning Center	1	Processing metal materials	320-1500rpm

The equipment list is attached to Appendix 4.

#### (4) Layout Plan of Equipment

The layout plan of equipment is attached to Appendix 5.

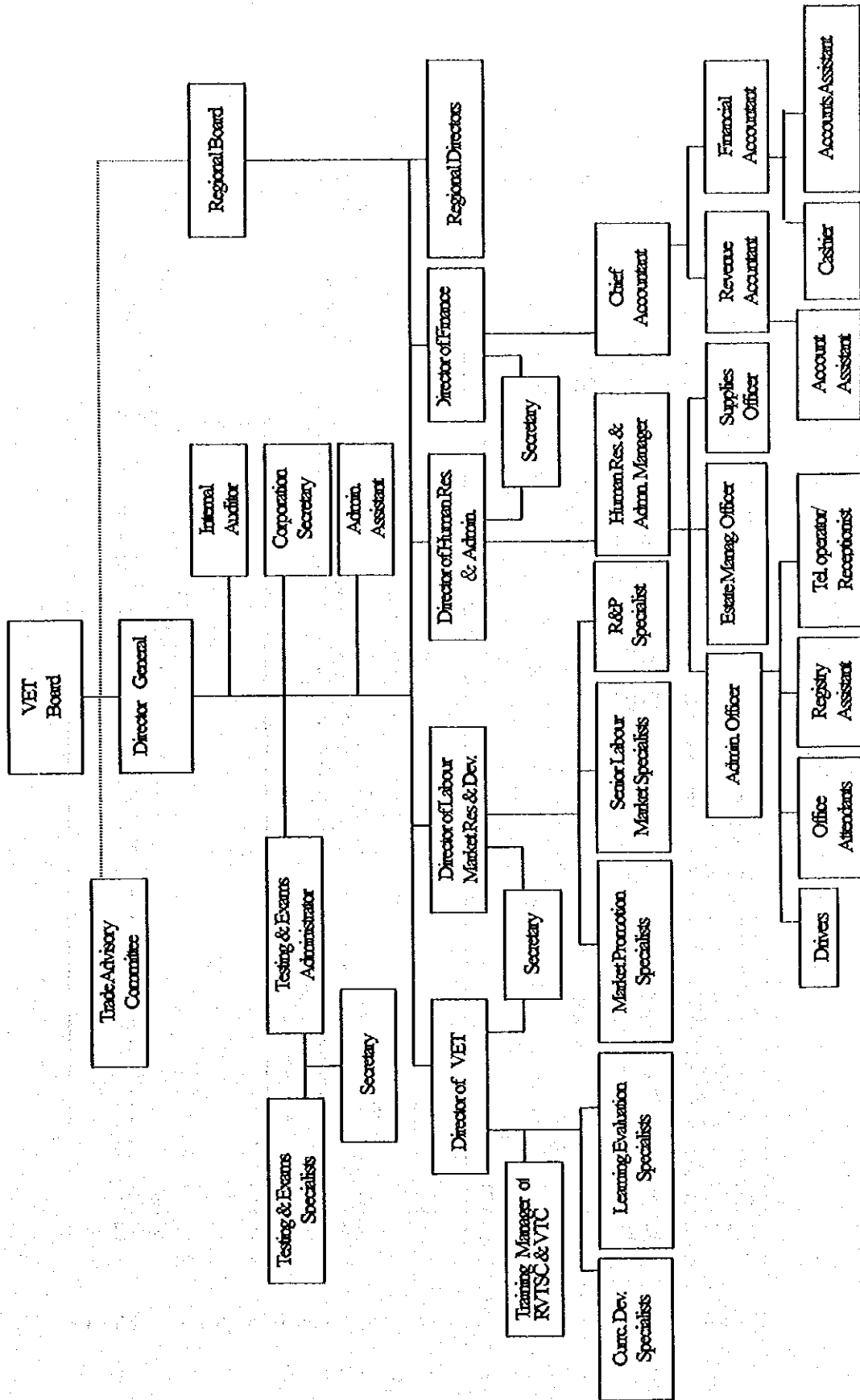
## **2.4 Project Implementation Mechanism**

### **2.4.1 Organization for implementation and management**

#### **(1) Project Implementation**

The agency in charge of the Project as well as implementation agency is Vocational Education and Training Authority (VETA). VETA became independent from the Ministry of Labour and Youth Development and administratively, is not under the control of the Ministry at present. The organization chart in VETA is as follows:

ORGANIZATION CHART OF VETA



## 2.4.2 Finance

The budget plan for year 2000 and 2001 are as follows:

**Table 2-7 Budget of Mtwara RVTSC**      **Unit : 1000 Tshs**

Items	2000	2001
<b>Staff Cost</b>		
Salaries	54,626	93,815
PPF	8,194	14,072
Leave pay	5,463	10,788
Duty Travel	4,000	9,000
Staff Development	3,000	3,800
Others Staff Expenses	2,920	3,200
<b>Staff Cost Sub total</b>	<b>78,203</b>	<b>134,675</b>
<b>Training Material</b>		
Reference books	300	300
Workshop materials	14,400	40,800
Workshop tools	1,500	300
Workshop uniforms	200	360
Safety appliances	220	560
R & M workshop	2,000	2,000
Classroom training	2,700	2,700
Other training cost	20,200	26,000
<b>Training Material Sub total</b>	<b>41,520</b>	<b>73,020</b>
<b>General Operation</b>		
M/Vehicle insurance	960	3,200
M/Vehicle repair	2,008	2,875
M/Vehicle fuel	3,000	3,380
Electricity	14,400	18,000
Water	2,000	2,400
Telephone/fax	2,000	2,000
Building R/M	0	2,000
Computer service	500	500
Photocopy service	500	500
Courier service	500	500
Office stationery	2,500	2,500
Security charge	8,640	8,640
Sanitary	600	1,500
Paper & magazines	370	370
Advertisement	420	420
Printing	480	480
Hospitality	600	600
Budget Expenses	217	300
Bank charge	400	500
<b>General Operation Sub Total</b>	<b>40,095</b>	<b>50,665</b>
<b>Grand Total</b>	<b>159,818</b>	<b>258,360</b>

Source : VBETA

Expected income is as follows. The shortage of income is compensated by VBETA funds.

**Table 2-8 Income of Mtwara RVTSC**

Unit : 1000Tsh

Item	Year 2000	Year 2001
Application & school fee	8,550	22,500
Short courses income	3,500	12,000
Rental houses for trainers	2,500	7,505
Income generating activities	2,400	1,800
Trade test/Nabe	1,375	1,500
Total	18,325	45,305

Source : VETA

#### 2.4.3 Personnel and Technical Level

Five courses, which are Tailoring, Carpentry and Joinery, Electric Installation, Masonry and Secretary and Computer out of eleven courses requested in the Project have started in July, 1999, so other trainers except the five courses mentioned are not employed.

The duty and responsibility of each administrative position are as follows:

**Table 2-9 Duty and Responsibility of Main Staff in RVTSC**

<b>Title</b>	<b>Scope of Duty</b>	<b>Scope of Responsibility</b>
<b>Training Manager</b>	Supervises the administrators and maintain liason with VTC's coordinator, labour market analyst at Regional Office	Whole development & implementation of course, curriculum and training programme, and budget etc.,
<b>Registrar</b>	Report to Training Manager. Maintain close liason with other department heads, supervisors, heads of section and Librarian.	Development and implementation of training programme and trainee administration and welfare
<b>Entrepreneurship Coordinator</b>	Report to Training Manager Maintains close liason with other department heads and vocational trainers.	Enhancing entrepreneurship skills to trainees through a production process, which should ensure sellable products and general surplus funds to support activities of the RVTSC
<b>Human Resources &amp; Administration Manager</b>	Report to Training Manager. Supervises general staff excluding staff related to the training.	Implementing policies relating to personnel management and administration.
<b>Busar</b>	Report to Training Manager. Account in RVTSC.	General accounting activities such as budgeting, examining, analyzing and interpreting accounting records for preparation of financial statements.
<b>Head of Section</b>	Report to Registrar. Supervises trainers in respective main trades sections.	Imparting skills to trainees and also supervising, coordinating the duties in a section of several trades.
<b>Trainer</b>	Report to Head of Section. Maintains liason with other trainees on training matters and supervise trainees in the trade.	Imparting skills to trainees

The necessary qualification of main staff based on above duty and responsibility in RVTSC is as follows:

- (1) **Training Manager** : A Bachelors degree education, or engineering with education or equivalent  
A minimum of 3 years proven post qualification experience in management Position  
Knowledge of business management and marketing essential  
Computer Literacy essential  
Must be creative, hardworking, self motivated with ability to lead, motivate and facilitate team work
  
- (2) **Registrar** : Holder of Diploma in Engineering with a teacher certificate or Diploma in Education or equivalent  
At least 3 years teaching experience  
Knowledge of curriculum and student counseling essential  
Computer literacy desirable  
Must be hardworking, self motivated with ability to lead, motivate and facilitate teamwork



- (3) Entrepreneurship Coordinator**
- : FTC or Diploma in a trade/field relevant to the major production activity of the centre
  - At least 3 years experience in the production and/or business enterprise
  - Knowledge of vocational training and marketing essential
  - Must have business acumen innovative with organization skill
  - Vocational teacher's certificate essential
- (4) Human Resources and Administration Manager**
- : Bachelor's degree in Human Resources management, Public Administration or equivalent
  - At least 3 years experience in as senior position
  - Innovative, flexible and self motivated and able to work independently
- (5) Busar**
- : Minimum, a Bachelor of Commerce degree (Accounting option) or Advanced Diploma in Accountancy or equivalent and registered as Approved Accountant
  - Post qualification experience of at least 3 years
  - Computer literacy essential
  - Should have initiative and be self motivated
- (6) Head of Section**
- : A minimum of Form IV secondary education with Trade Test Grade I and Vocational teaching certificate or equivalent
  - Possession of FTC desirable
  - At least 3 years working experience in the relevant fields
  - Must be proficient in written and spoken English and Kiswahili
  - Must be hardworking, patient, smart, disciplined and must have ability to lead and supervise other
- (7) Trainer**
- : A minimum of IV secondary school education with Trade Test I and vocational teaching certificate or equivalent
  - Possession of FTC desirable
  - At least 3 years working experience in the relevant fields
  - Must be proficient in written and spoken English and Kiswahili
  - Must be hardworking, patient, smart and disciplined
- (8) Librarian**
- : Secondary education with Diploma in Librarianship
  - Library work experience of at least 3 years
  - Should be hardworking, creative and self motivated

The staff and trainers complied with above qualification are assigned in present Mtwara RVTS and above qualification will be adopted for the trainers employed in the future.