**Supreme Council for**
**Vocational Training and Apprenticeship**
**in the Republic of Sudan**

# THE STUDY
# ON
# VOCATIONAL TRAINING
# SYSTEM DEVELOPMENT
# IN
# THE REPUBLIC OF SUDAN

## FINAL REPORT

**MARCH 2010**


**JAPAN INTERNATIONAL COOPERATION AGENCY**

**INTERNATIONAL DEVELOPMENT CENTER OF JAPAN**



| HDD |
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| JR |
| 10-020 |

For currency conversion where necessary, exchange rate in February 2010 is applied:

SDG 1 = JPY 39.472, USD 1 = JPY 90.14

Sudanese currency used until July 2007: SDD

SDG 1 = SDD 100

# Preface

In response to the request from the Government of the Republic of Sudan, the Government of Japan decided to conduct the Study on Vocational Training System Development, and entrusted the Study to the Japan International Cooperation Agency (JICA).

JICA dispatched the Study Team, headed by Mr. Jinichiro YABUTA, to the Republic of Sudan four times from November 2008 to March 2010.

The Study Team consisted of experts of Vocational Training Policy, Curriculum Development, Trainer Training Planning, Training-Business Collaboration/Training Needs, Management of Vocational; Training Center/Labour Market Analysis, and Facility and Equipment Planning.

The Study Team had a series of discussions with the organizations concerned such as the SCVTA etc., and conducted the field surveys. The Study Team conducted further studies also in Japan to complete the Final Report.

I hope that this report will contribute to the development of vocational training system for the country as well as to enhancement of the amity between our two countries.

I wish to express my sincere appreciation to the officials concerned for their cooperation and supports provided throughout the Study.

March 2010

Yoshihisa Ueda
Vice President
Japan International Cooperation Agency

March 2010

Mr. Yoshihisa Ueda
Member of the Board
Japan International Cooperation Agency

Dear Mr. Yoshihisa Ueda,

# Letter of Transmittal

We are pleased to submit to you the final report for the Study on Vocational Training System Development in the Republic of Sudan. The study was undertaken during the period from November 2008 to March 2010.

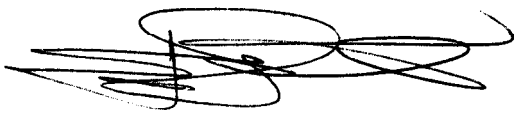
The study has prepared a master plan to improve the current vocational training system, the action plans to strengthen Supreme Council for Vocational Training and Apprenticeship (SCVTA) and other vocational training organizations. In the study process, efforts have been made to strengthen the ability of SCVTA and other vocational training organizations to make and implement plans.

We have analyzed the potentials and problems of the labor market, the vocational training system and SCVTA and identified objectives, strategies programs, action plans and urgent projects, based on the analysis. As a part of the study, we also have undertaken pilot activities such as curriculum development, maintenance of equipment and facilities, and workshops for small-scale industries. Prior to preparing this report, a seminar was held in November 2009 for discussions and a common understanding of these analysis and proposals by those concerned, including the federal minister and the state minister for labor.

We wish to take this opportunity to express our sincere gratitude to your Agency. We also with to express our deep gratitude to SCVTA and other authorities concerned of the Sudanese Government for the close cooperation and assistance extended to us during our study.

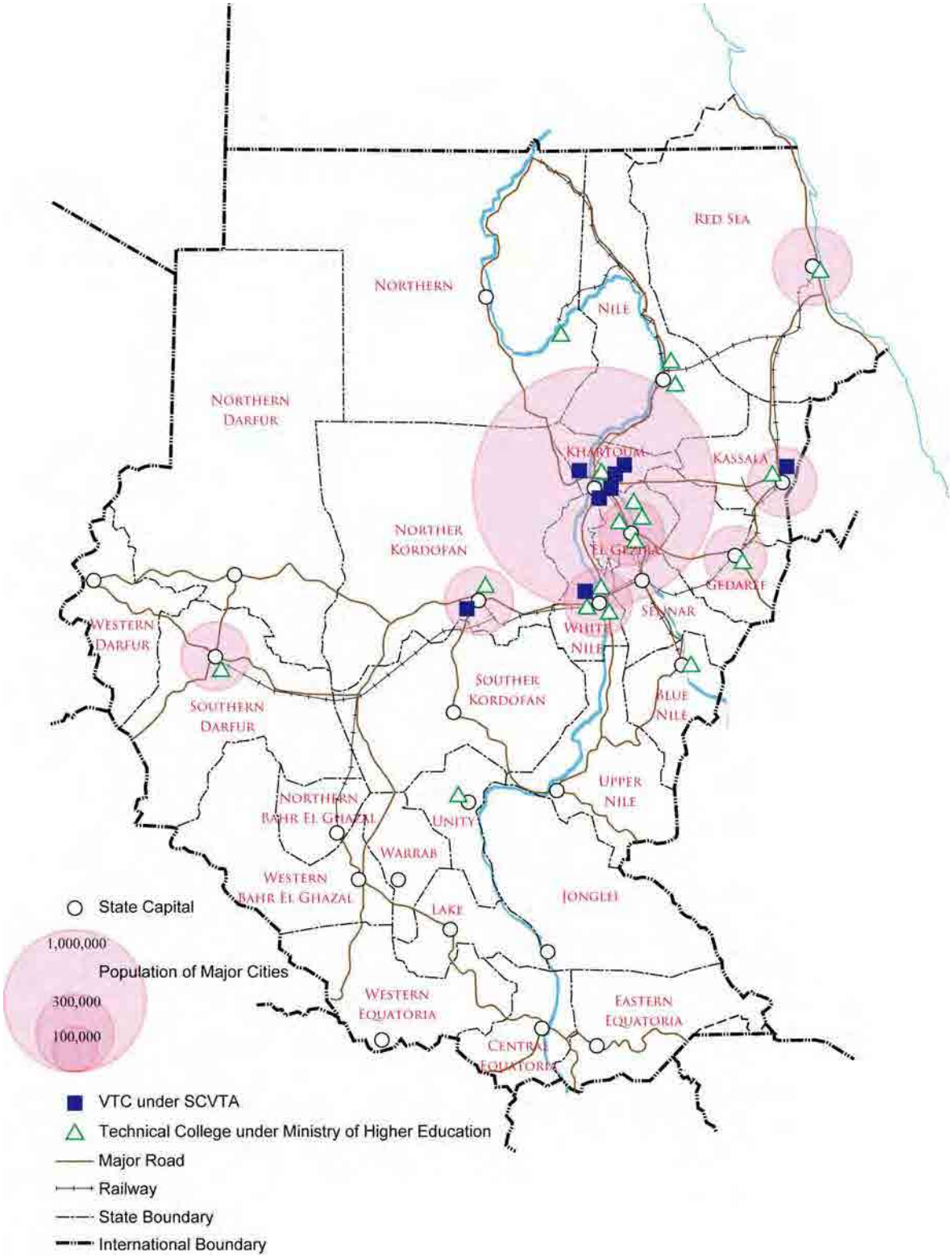
We do hope that this report will contribute to reforms and sustainable development of the vocational training system in Sudan.

Very truly yours,



Jinichiro Yabuta
Study Team Leader

Location of VTCs Targeted in the Study

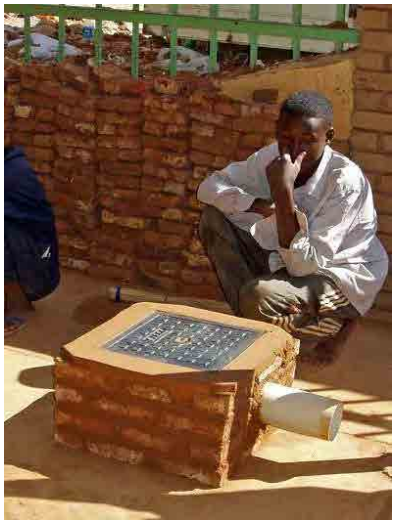


Photos

Vocational Training Centers under SCVTA

Machinery Course in Khartoum 2 VTC

Auto-electricity Course in Khartoum North VTC



Building Course in Omdurman VTC

Equipment for Machinery Training in Khartoum 2 VTC

Equipment for Automobile Course
in Kosti VTC Provided by JICA

Training Workshop in El Obeid VTC

Vocational Training Centers under SCVTA (Continued)

External View of Khartoum 3 VTC

Roof of Khartoum 3 VTC (A/C Section)

Example of Equipment in VTC

Unused Machine (El Obeid VTC)

Unused Machine (El Obeid VTC)

Technical School (Secondary Education)

Training Workshop

Machinery Training Workshop

Computer Training Room (Equipment donated by a Company)

Private Vocational Training Institutes (St. Joseph VTC in Khartoum)

Machinery Training Workshop

CNC Machines for Training

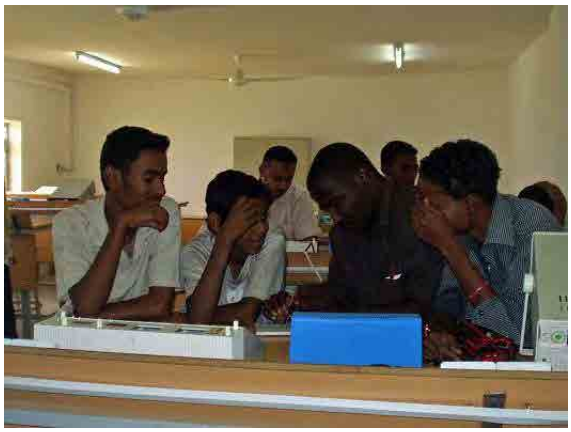
Maintenance Fitting Training

Building Course Training

St. Joseph VTC in El Obeid


Automobile Training Workshop Supported by Italian Company

Technical College in Khartoum (Higher Education)



Mechatronics Training

Equipment for Mechatronics Course

Building Course

Orientation Program for VTC Graduates

Khartoum State VTC

Halfayat Almolouk VTC

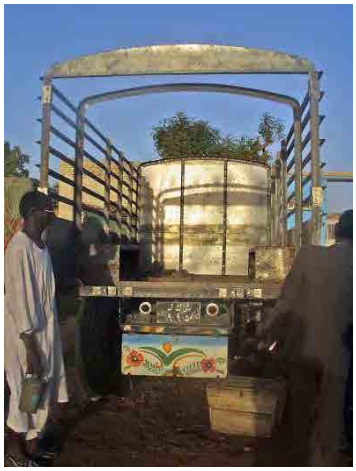
Halfayat Almolouk VTC

Workshop in El Obeid

Manufacturer of Rubber Products

Metal Bending Worker

Welding Worker



Product of Automobile Workshop

Seminar and Workshops Organized under the Study

Interim Report Seminar (8 July2009)

Scene of Seminar

Scene of Seminar

Curriculum Development Workshop (24 June – 3 August 2009)

Scene of Workshop 1

Scene of Workshop 2


Ability Structure

Scene of Curriculum Development Seminar

Equipment Management Workshop (21 July – 23 July 2009)

Visit to St. Joseph VTC

Visit to Technical College

Presentation at Workshop 1

Presentation at Workshop 2

Small Industries Workshop (25 October – 27 October 2009)

Visit to National Center VTC

Visit to Central Foundry

Visit to Medium-Sized Industry

Scene of Group Discussion

Study on Vocational Training System Development in the Republic of Sudan

Final Report

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Abbreviations

| | |
|---|---|
| AOTS | Association for Overseas Technical Scholarship of Japan |
| CBT | Competency Based Training |
| CPA | Comprehensive Peace Agreement |
| CSICU | Chamber of Small Industries and Craft Union |
| CUDBA | Curriculum Development Based on Abilities Structure |
| DDR | Disarmament, Demobilization and Reintegration |
| FDI | Foreign Direct Investment |
| GDP | Gross Domestic Products |
| IDP | Internally Displaced Persons |
| ITTS | Institute of Training of Trainers and Supervisors |
| ILO | International Labor Organization |
| IMF | International Monetary Fund |
| IOM | International Organization of Migration |
| JICA | Japan International Cooperation Agency |
| NCTTE | National Council for Technical and Technological Education |
| OJT | On-the-Job Training |
| OVTA | Overseas Vocational Training Association of Japan |
| SBEF | Sudanese Businessmen and Employers Federation |
| SCVTA | Supreme Council for Vocational Training and Apprenticeship |
| SDD | Sudanese Dinar (Sudanese Currency Until July 2007) |
| SDG | Sudanese Pound (Sudanese Currency after July 2007, SDG 1 = SDD 100) |
| TVET | Technical Vocational Education Training |
| UNDP | United Nations Development Programme |
| UNIDO | United Nations Industrial Development Organization |
| VTC | Vocational Training Center |

Technical Terms

| | |
|---|---|
| ABS | Auto Breaking System |
| CAD | Computer Aided Design |
| CNC | Computer Numerical Control |
| EFI | Electronic Fuel Injection |

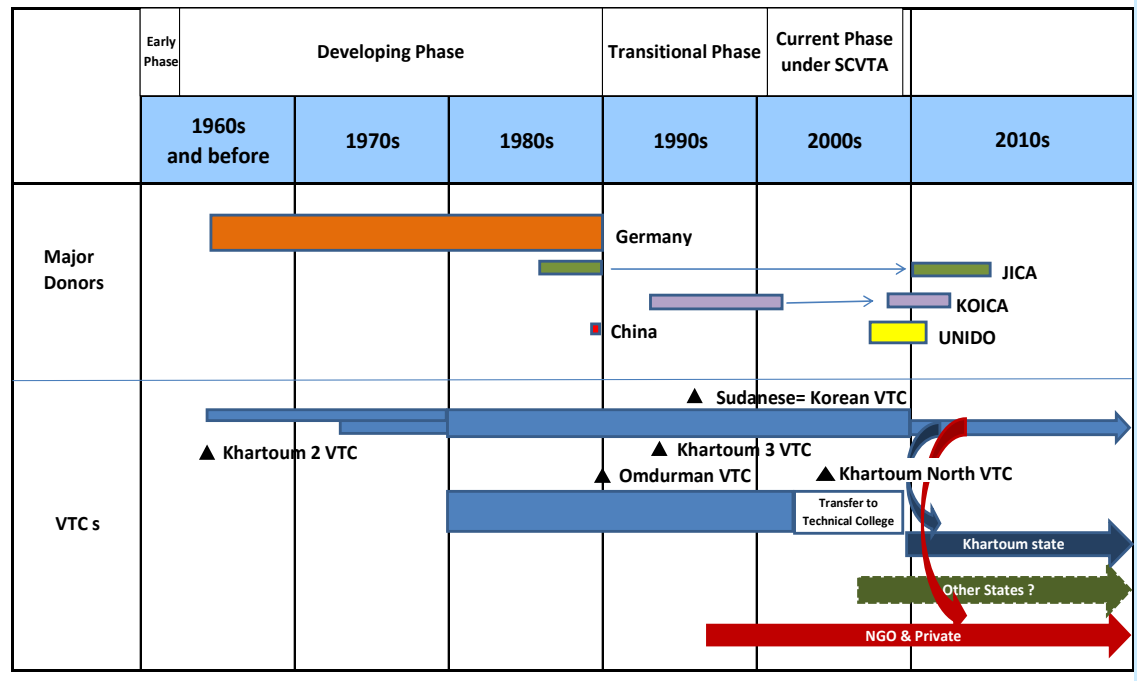
# A Summary

This draft final report proposes a master plan to improve the vocational training system in Sudan. It also identifies the action plans to develop the capacity of the SCVTA and VTCs as well as other relevant organizations. The target year is 2016. Efforts to improve the vocational training system, however, will never finish in the target year. Socio-economic environment will continue to change. This master plan, therefore, is subject to review and revision from time to time by the target year.

## 1 Evolution of Vocational Training System Development

The current vocational development system is a consequence of a trial and error process for half a century. The process can be divided into the following four phases.

Evolution of Vocational Training Development in Sudan




Source: JICA Study Team

### (1) Early Phase: Before 1963

A full-fledged vocational training started upon national independence. Khartoum 1 Vocational Training Center (VTC) was established in 1956.

### (2) Developing Phase: 1964-1989

In 1964, West Germany at the time started to assist vocational training in Sudan. An emphasis was given to apprenticeship training. With German assistance, Khartoum 2 VTC was created. At the same time, about 200 instructors were trained in West Germany. VTCs started operation in states as well. In 1974, the government

amended Vocational Training and Apprenticeship Act and established training standards. The standards have been a base for setting training courses and curricula. “Institute of Training of Trainers and Supervisors” (ITTS) was established in 1987. In those days, about 50 trainers were trained in Japan. The vocational training system was, thus, rapidly developed with supports by a number of donors. In 1989, however, Germany interrupted all the ongoing assistance programs for its stated reason that civil wars were continuing.

(3) Transitional Phase: 1990-2000

The interrupt of the German assistance gave a shock on the vocational training system. However, it kept expand in the early 1990’s. VTCs started in Nyala and El Obeid with technical assistance from International Labor Organization (ILO). Omdurman VTC started with a loan by Chinese government. The government of Republic of Korea assisted the establishment of Sudanese-Korean VTC. It also launched an instructor training project. Meanwhile, Khartoum 3 was established by own effort of the Sudanese government.

Without major donors, however, many VTCs began to suffer from the difficulty in maintaining equipment, instructors and curriculum.

According to the national decentralization policy adopted in1993, Khartoum1 VTC was transferred from the Federal Government to the Khartoum State Government. Many other VTCs were similarly transferred to state governments. However, the state governments found it financially and technically difficult for them to maintain VTCs. State VTCs were mostly transferred back to the Ministry of Higher Education. They restarted as technical colleges. The late 1990s saw new trends in the national economy. Oil export started. Government run enterprises began to be privatized. These trends stimulated the demand for vocational training to expand. It is in this period that private VTCs emerged.

(4) Current Phase under SCVTA: 2001-

In 2001, the Government revised the “Vocational Training and Apprenticeship Act”, in view of the decentralization policy, the favorable economic trend and the privatization policy. Accordingly, the government created “Supreme Council for Vocational Training and Apprenticeship” (SCVTA). It was chaired by Labor Minister and attended by representatives from the relevant line ministries, the private sector and nongovernmental organizations.

Despite that the organizational set-up was reinforced, many VTCs continued to suffer from the difficulty in maintaining equipment, instructors and curriculum. On the other hand, vocational training was faced with new groups to be given training opportunities: the Internally Displaced People (IDP) estimated at 4 million in total and the demobilized soldiers estimated at 90,000. Under the circumstances, Korean Government assisted the vocational training in selected field such as automobile and electricity. EU/UNIDO assisted Khartoum State Government in Competence Based Training (CBT) with a focus on rapidly absorbing IDP in the labor market.

The review above suggests that present vocational training system has been made possible to grow and survive largely with international donors. However, one could little longer expect a long-term and

comprehensive assistance as ever provided by Germany. The ongoing vocational training system needs to be more self-reliant and sustainable. The review also suggests that diversification has been observed in job seekers, employers and training providers. The ongoing vocational training system needs to tailor itself to the diversification. It is, therefore, necessary to reexamine the role of SCVTA in vocational training, from the viewpoint of sustainability and the flexibility to the diversification.

# 2 Development Potentials of Vocational Training System

## 2.1 Steadily Expanding Demand for Skilled Workers

Demand for skilled workers is steadily expanding, as the national economy has been expanding and being diversified. People's life is stabilized and domestic market is expanding thanks to an end of the civil wars. The national economy is expanded and diversified by petroleum export, import of various consumption goods and infrastructure investments.

These have stimulated the demand for maintenance and repair of goods in small as well as large enterprises. This trend has resulted in a growing demand for the skilled workers engaged in not only production but also the maintenance of factories.

Infrastructure investments have been accelerated with oil export revenues. Highway development has expanded the demand for maintenance and repair of transport equipment and distribution facilities. It has also stimulated real estate development and construction activities. Electric power development has expanded the demand for electric appliances. Many factories have been changed from man-operated to machine-operated. All these have contributed to the demand increase for skilled workers.

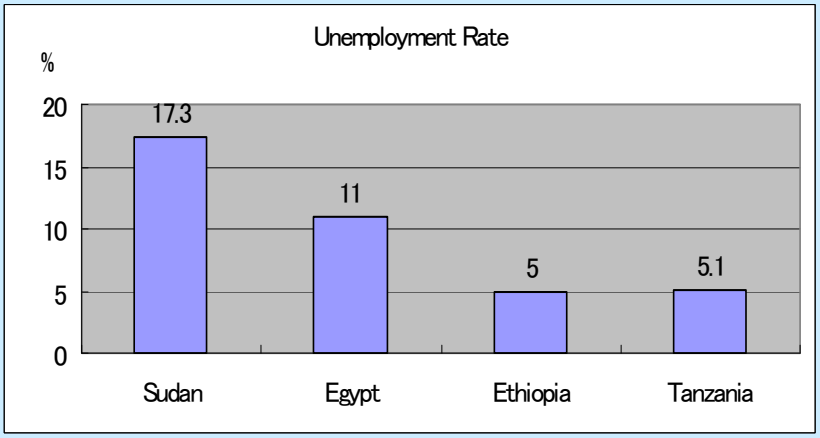
Information and communication tools have spread dramatically and encouraged skilled labor to increase for the maintenance of such tools.

Reorganization of public enterprises is also creating skilled employment opportunities through outsourcing.

## 2.2 Huge Gap in Supply-Demand of Labor

Unemployment rate is estimated at 17% by Ministry of Labor in the "Annual Statistical Report 2006" of Central Statistical Office. There are a huge number of job seekers, including the young people, IDP, women and demobilized soldiers.

Unemployment Rate of Sudan and Neighboring Countries (1996 – 2005)




Source: UNDP, "Human Development Report 2007/2008"

However, a large gap exists between demand and supply of labor. It is partly due to a bias toward general higher education. There is a surplus of managerial, administrative or clerical workers on one hand and a shortage of engineering, technical or skilled workers on the other. The large gap is partly due to the incoming of foreign workers and outgoing of Sudanese workers. Another factor for the gap is the rural-to-urban migrants caused by civil wars and draughts. They have hardly been absorbed in labor market. A major part of them is the IDP of about 2 million living in the surroundings of Khartoum.

## 2.3 Signs of Reorganization in Technical and Vocational Education and Training (TVET)

There is a new trend in TVET policy. Higher technical education receives a strong policy support. "National Council for Technical and Technological Education" (NCTTE) has been created to streamline the ongoing technical education system under the chairmanship of the Federal Vice-President.

Private VTCs are rising in Khartoum. They are more responsive to labor market changes, more efficient and closer to companies, than public VTCs.

At the community level, vocational training is actively carried out by NGOs, including Youth Council and Islamic network. Khartoum State attempts to apply these experiences to the government vocational training with a technical support of UNIDO.

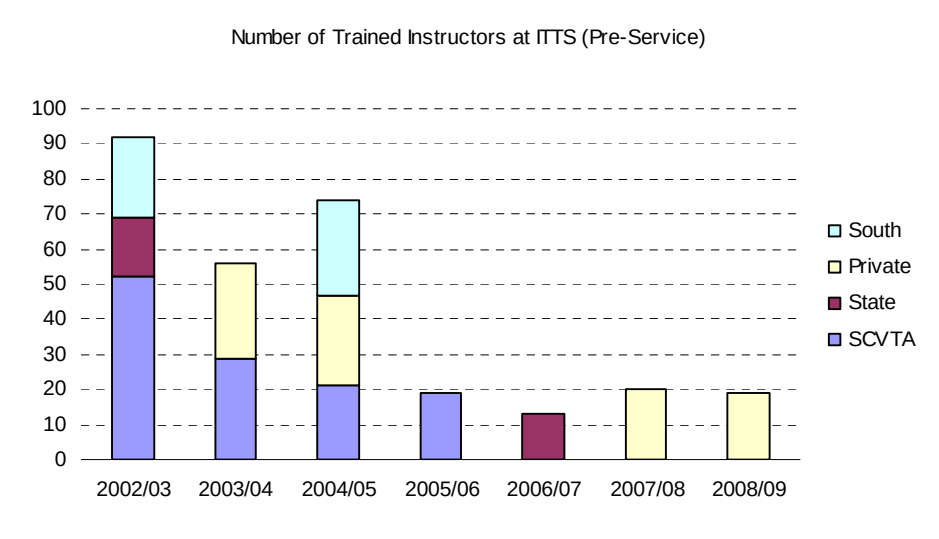
## 2.4 Potential Assets of the SCVTA and VTCs

Under the trend above, the SCVTA and VTCs have rather been lagging. They have, however, accumulated the assets that could intensively and selectively be mobilized.

Their apprenticeship training offers a distinct career path for the young people who do not enter higher education. The number of applicants exceeds enrolment by several times in many courses of the apprenticeship training. The VTCs maintain a bunch of serious and long-experienced instructors. They are important human resource for private VTCs, too. SCVTA controls trade testing and certificate provision,

thereby possibly influencing the whole labor market. ITTS is also strength of SCVTA. It has recently been used for the VTCs other than those under SCVTA.

Recent Pre-service Training Programs in ITTS



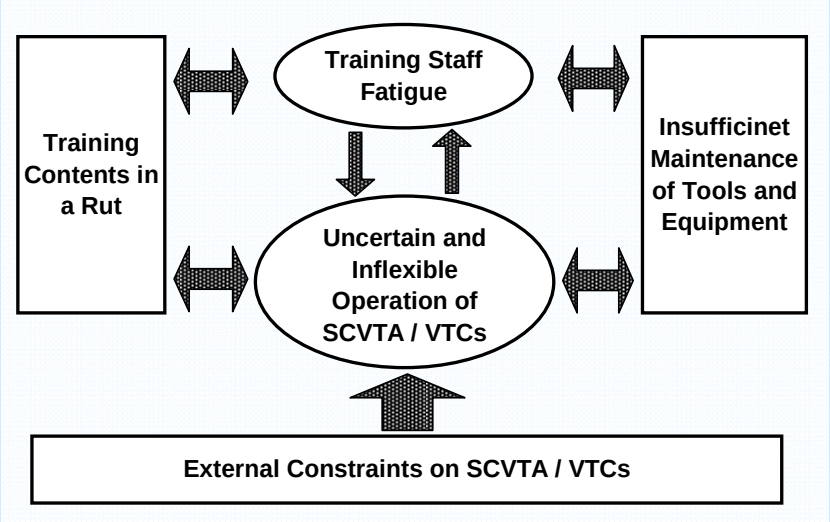

Source: ITTS

The SCVTA and VTCs have maintained linkages with enterprises, NGOs, private VTCs and international organizations, through senior members of its staff. They also have long experience of cooperation with international development partners, including EU, Germany, ILO, India, Japan, Korea, UNDP, UNIDO, USA and the World Bank.

## 3 Issues Facing the SCVTA and VTCs

In spite of these potentials for vocational training, the SCVTA and VTCs have been facing with a number of issues:

Problem Structure




Source: JICA Study Team

### 3.1 Mismatches between the SCVTA and VTCs and the Society

There are mismatches between the SCVTA and VTCs and what the society needs, though it is difficult to measure the mismatches. Many private companies demand more reliable skills and knowledge than those possible to teach with in the existing VTCs.

Meanwhile, the SCVTA and VTCs have not explicitly met with the skill and knowledge required by small industries, despite that they represent more than 90% of a total number of establishments. For example, owners and workers of small industries require not only skills but also business knowledge such as costing and product market, while skilled workers in large industries are simply required to have good skills. It is also important to note that small industries are not easily allowed to send their workers or owners to training courses for a long period of time.

The vocational training for the demobilized soldiers is a pressing need at present. Presently, it can be taken care by the SCVTA and VTCs only to a very limited extent.

### 3.2 Training Contents in a Rut

Apprenticeship training has been undertaken largely based on the training materials and lesson plans prepared by individual instructors. There has been no standard curriculum. Modification on the course-mix is made difficult by the lack of data on the labor demand.

### 3.3 Lack of Positive Thinking among Instructors

The instructors have not been encouraged to think and act positively toward changing circumstances. Instructors of VTCs are not generally better paid than those in the private vocational training schools. In addition, they are promoted, rewarded and qualified not always on a competitive basis.

The aging of instructors is serious. It is partly due to a continuing limit on the recruitment of the government

officials for many years. Rush of retirement of aged staff will cause discontinuities in the training contents, which have been maintained largely by individual efforts of instructors.

There are limited opportunities for them to exchange information and ideas on training, skills and other matters of their common interest. The instructors are not sufficiently provided with the allowance to cover the cost of fees and travel for their self-motivating participation in training. ITTS has attracted a decreasing number of the instructors from VTCs due to the lack of SCVTA's fund to send them to ITTS.

### 3.4 Insufficient Maintenance of Tools and Equipment

Tools and equipment have not sufficiently maintained. As a result, about a half of the ongoing training courses are undertaken without skill practice. A number of equipment is outdated. But this is not the most important problem. What is more important is a deficiency in tools and materials for the trainees. A number of out-of-order equipment has long been left abandoned without repair. Trainees are not sufficiently provided with inexpensive but basic goods such as easy-to-read blackboard, classroom desks and triangle rulers. Some of the buildings are over-aged.

### 3.5 Uncertain and Inflexible Operation of the SCVTA and VTCs

SCVTA and VTCs have not been flexible nor aggressive enough for it to more fully make use of its potential assets. First of all, management policies have not clearly been understood among the staff members. There is concern that the SCVTA and VTCs might loose their unity without such management policies.

Secondly, the SCVTA and VTCs exchange information and ideas with business people and state government officials, but mainly through limited informal channels. The Council is held for authorization only a few times in a year, though it comprises the members from both public and private sectors. Consequently, the SCVTA and VTCs used to prepare training materials without mobilizing external input.

Each VTC has not been in a position to think about what it is going to do. It needs permission from SCVTA even in many routine matters. There are insufficient exchange of information and ideas between VTCs and SCVTA as well as among VTCs, except at the directors' level.

Staff capacity of SCVTA is not enough especially to monitor labor market and training providers. It has not been able to effectively coordinate the activities such as training instructors, revising training contents, communicating with the private sector and monitoring the labor market.

In consequence, the SCVTA and VTCs have been able to do little but to operate themselves. They have hardly been able to afford to contribute to enhancing level of the vocational training nation-wide.

### 3.6 External Constraints on the SCVTA and VTCs

The SCVTA and VTCs suffer not only internal but also external constraints. They are bound by the detailed ceiling of the Ministry of Finance and National Economy (MFNE) on recurrent expenditures and recruitment. Their operation cannot be with long-term perspective due to a monthly disbursement system imposed by MFNE. Since 2009, their own revenues from short-term courses have all been paid to MFNE in return of an

increase in budget allocation. The government hardly accepts an increase in the amount of training fees, though it is about 20% as low as that of private VTCs. Consequently, VTCs enroll more trainees than original quota by 2 to 3 times, resulting in the declining level of training. This is a vicious cycle.

The SCVTA and VTCs have not been able to fully play their role under somewhat inconsistent vocational training policies. Irregular arrangements are sometimes enforced by political considerations. This is partly due to uncertain distinctions between training versus education and between skill versus technical training. Added to this are the limited administrative and financial capabilities of state governments to appropriately carry out human resource development. The inconsistency of vocational training policies may throw some doubts on the use of “public” vocational training, in the light of a rapid growth of private vocational training.

By law, SCVTA is given sole responsibility for vocational training. In reality, however, a number of government agencies carry out de-facto vocational training. Ministry of Public Education has extensively developed secondary technical schools all over the country. However, they have not been very successful in sending their graduates to the labor market. The number of secondary technical schools is too large to sustain technical education.

Ministry of Higher Education launches a massive plan to set up technical colleges in many states with strong political and financial support. The students in technical college are secondary school graduates. They naturally have a larger capacity than the VTC trainees to absorb skills and techniques. Conceptually, technical college is distinct from VTC, but in reality, they overlap at least partly. Technical college is clearly more advantageous than VTC in supplying manpower to large modern factories.

On the other hand, private VTCs are raising themselves. It is under this situation that a clearer division of works needs to be made among different institutions for technical and vocational education and training.

## 4 Framework of Planning

In view of the potentials and issues as analyzed above, a framework of planning is proposed. It comprises:

- Objectives and strategies for a better vocational training system of Sudan, and
- A program to advance the reform of the SCVTA and VTCs.

Objectives:

1. Maximizing employment and income opportunities for the young people.
2. Supplying skilled workers in response to national economic diversification.
3. Strengthening the competitiveness of small industries.

Strategies:

1. Encouraging vocational training by non-governmental and private providers: Public initiative should be taken in the institutional arrangements and pilot activities for training those people whom non-governmental and private providers can hardly afford to take care, e.g. low income people, IDP and demilitarized soldiers.
2. Realizing a simpler division of works among TVET organizations in line with the dualistic and geographical nature of labor market: the SCVTA and VTCs should specialize themselves in fostering the skilled workers who particularly have the ability to adapt to changing working conditions

Division of Work in TVET

| Type of Institution | Dualistic Labor Market | | Major Location of Institution |
|---|---|---|---|
| | Large Industries | Small Industries | |
| Technical College | Technicians | | Khartoum and States |
| VTC | Skilled Workers/Small Entrepreneurs | | Khartoum and Major Regional Cities |
| Technical School | | Artisans | States |

Source: JICA Study Team

3. Advancing the reform of the SCVTA and VTCs in the light of Strategies 1 and 2 above: In long and medium terms, SCVTA shall shift its emphasis from the direct operation of apprenticeship training to the monitoring and support of the training providers by private entities, NGOs and state governments. An issue at this juncture is how to deal with the existing VTCs that have suffered from the difficulty in operation and maintenance. The following alternatives are assumed for this issue:

Alternative 1: Strengthening the Current Set-Up

All the VTCs under SCVTA shall be maintained and improved under the current managerial set-up. In parallel, SCVTA shall strengthen the function to make vocational training policy, monitor training providers and support them. Thus, the SCVTA and VTCs shall recover as a major basis of comprehensive apprenticeship training. This alternative calls for a full financial support of the Government to enable the SCVTA and VTCs to recruit instructors, replenish tools and replace out-of-order equipment. It also calls for financial assistance from time to time by many donors.

Alternative 2: Separating VTCs from SCVTA

All the VTCs under SCVTA shall be separated from SCVTA, and possibly restructured and recovered under the private or state initiative. SCVTA shall be specialized in making vocational training policy, monitoring training providers and supporting them.

This alternative is based on the assumption that training providers will grow fast in the private sector and under state governments, so that staff members of the VTCs will smoothly find jobs in growing training

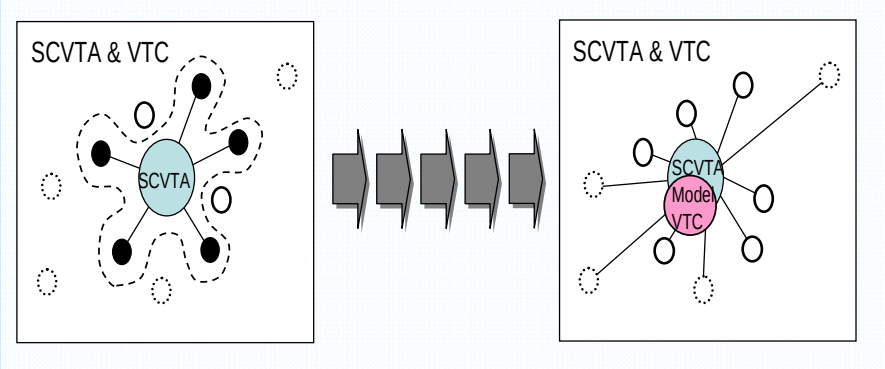
providers.

Alternative 3: Pursuing a Best Mix

Only a few VTCs shall be reinforced as a model of the vocational training of Sudan. Based on the practical experience of these VTCs, SCVTA shall strengthen the function to make vocational training policy, monitor training providers and support them. This alternative assumes a mix of the conditions for the Alternative 1 and the assumption for the Alternative 2.

Alternative 3 is recommended, based on a comparative analysis of the effectiveness and reality of these alternatives.

Reorganizing of Relations between SCVTA and VTC




Source: JICA Study Team

## Program to Advance the Reform of the SCVTA and VTCs

In order to carry out the strategies above, Strategy 3 in particular, a program is necessary to advance the reform of the SCVTA and VTCs. It comprises the following components:

1. Continuous and timely revision of training contents
2. Strengthening of instructors
3. Maintenance of tools and equipment
4. Restructuring of SCVTA-VTCs
5. Expansion of the funds for recurrent expenditures

In implementing the program, an attention should be paid to the following two distinct aspects of the program:

1. Recovering existing VTCs on priority basis
2. Monitoring and supporting training providers

## 5 Action Plans

In accordance with the program to advance the reform of the SCVTA and VTCs, a series of plans have been identified for the actions to be taken by 2013. Either of the following criteria has been applied to identify the action plans:

Criteria 1: Being urgent to restore the managerial capacity to operate VTC of SCVTA under "selection and concentration principle".

Criteria 2: Being significant as pilot activities to enable SCVTA to play a new role of facilitating diversification of vocational training through supervision and support of training providers.

Action Plan, Selection Criteria and Aims

| Action Plan to: | [Criteria 1]<br>Being urgent to restore the managerial capacity to operate VTC of SCVTA under "selection and concentration principle". | [Criteria 2]<br>Being significant as pilot activities to enable SCVTA to play a new role of facilitating diversification of vocational training through supervision and support of training providers. |
|---|---|---|
| Strengthen the Capacity to Develop Curriculum | - Reviewing the ad hoc revision of curriculum at present.<br>- Establishing a sustainable set-up to revise curriculum. | - Assisting the curriculum development by training providers.<br>- Giving advice to providers on their organizational set-up and method for curriculum development. |
| Strengthen the System of Training Instructors | - Developing the capacity of VTC instructors to assist providers, by promoting, for them, follow-up training, the group training by themselves and in-site training. | - Continuing the training of the newly appointed instructors of providers.<br>- Starting a follow-up training for the in-service instructors, both within and outside VTCs.<br>- Enhancing competence level of the instructors nation-wide. |
| Improve the System to Maintain Equipment and Facilities | - Recovering the maintenance of equipment and facilities which is in a crisis situation. | |
| Improve Facilities | - Repairing the VTC facilities which are degraded but still recoverable. | - Developing a facility to integrate model training, policy planning, research, curriculum development and other activities relevant to monitor and support providers.<br>- Realizing efficient land use of VTCs. |
| Establish Training System for Small Industries | | - Supporting self-reliant efforts of small industrial groups to strengthen their competitiveness. |

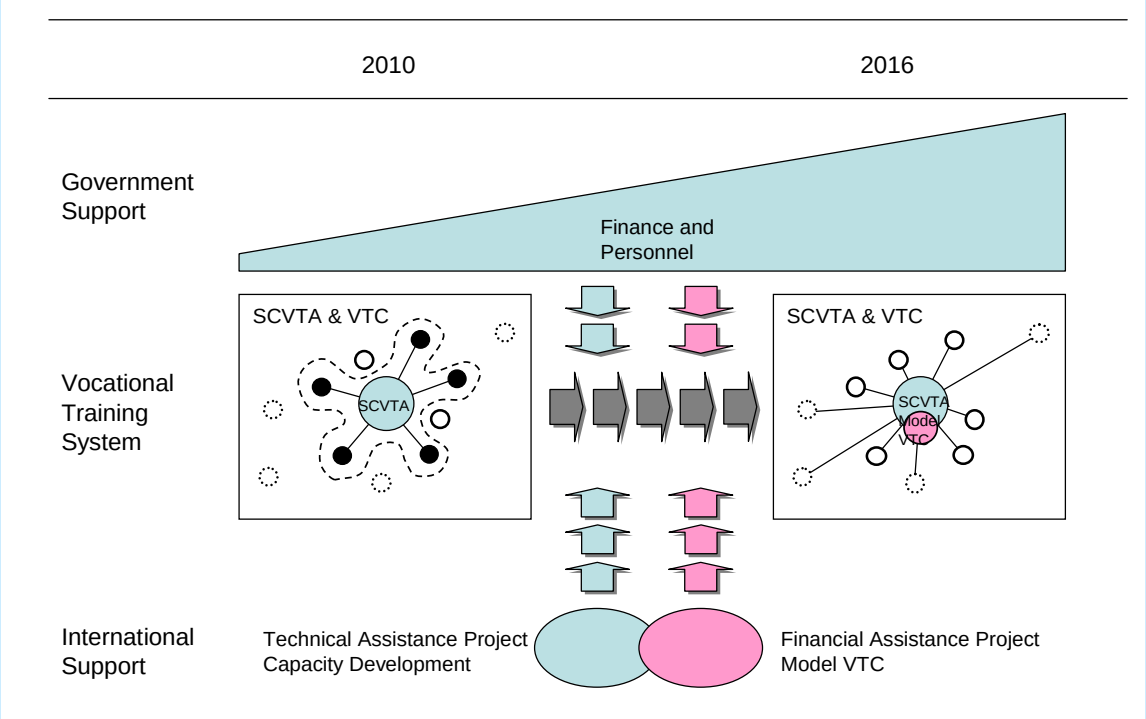
Source: JICA Study Team

## 6 Proposal for an Immediate Project

It is strongly recommended that an immediate project be launched with international assistance, if this study

does not end up with a plan, but leads to action.

Restructuring SCVTA and VTC




Source: JICA Study Team

As a first step, a project for developing the capacity of SCVTA is proposed in line with the action plans. The following is expected outcomes, major tasks and timing of the project:

Outcome 1: A more self-sustaining management of SCVTA and VTCs

- Task 1 Developing the capacity to revise curricula
- Task 2 Strengthening the training of trainers and supervisors
- Task 3 Improving the system to maintain tools, equipment and facilities

Outcome 2: Stronger functions of SCVTA to support training providers through model training courses on the basis of public-private cooperation. In view of pressing need and rising momentum, the model courses are to be undertaken through:

- Task 4 Training for demilitarized soldiers
- Task 5 Training for small enterprises

Timing June 2010 through June 2013

## 7 Important Given Conditions for a Better Vocational Training System

1. Intensive basic education as a basis of effective vocational training
2. Stable recurrent budget for vocational training
3. Stronger capabilities of state governments to manage vocational training and better understanding of state governors on vocational training.
4. Continuous international cooperation and information sharing among donors

## 8 Pilot Activities

As shown below, workshops have been undertaken as a pilot activity to examine significance and feasibility of the action plans.

Overview of Pilot Projects

| Title: | Curriculum Development | Maintenance of Equipment and Facilities | Vocational Training for Small Industries |
|---|---|---|---|
| Period: | 4 June - 3 August 2009 | 21 - 23 July 2009 | 25 - 27 October 2009 |
| Major Contents: | - Introduction to Curriculum Development Method Based on Ability Structure (CUDBAS)<br>- Training exercise of curriculum development for VTC instructors by using CUDBAS<br>- Presentation of the curriculum prepared in the training exercise | - Stakeholder analysis<br>- Problem analysis<br>- Field observation<br>- Proposal preparation | - Presentation and discussion on the problems of small industries<br>- Field observation of a VTC and factories<br>- Focus group discussions |
| Output: | - Curriculum for cooking and hotel maid services prepared jointly by VTC instructors and a hotel manager | - Proposals for maintenance of facilities and equipment prepared by instructors of VTCs under SCVTA, Khartoum State and private | - Common understanding on the problems of small industries<br>- Recognition of useful skills in workshops<br>- Possibilities of collaboration between small industries and VTCs |

Source: JICA Study Team

# Part 1 Current Situation and Issues

# 1. Socio-economic Environment of Vocational Training

## 1.1 Economy

### 1.1.1 Economic Growth

In Sudan, GDP amount has continued increasing since 1999 owing to expansion of oil exploitation, and growth rate of GDP since 2002 has been more than 5%. However, international oil price dropped down from about USD 180 to USD 50 per barrel in 2008. As a result, the governmental finance, about 65% of which comes from oil income, got worse as a case shows that draft budget in fiscal year 2009 got to be less than a half of that in fiscal year 2008. Therefore, it is assumed that medium-term economic prospect is not bright and employment situation deteriorates, as long as oil price stagnates and fluctuates. Hence, it would be important to diversify the non-oil industries.

Table 1.1.1 Trend of GDP Growth (2001-2006)

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|
| Agriculture | 653.6 | 701.7 | 738 | 706.4 | 751.9 | 816.9 |
| Industry | 326.2 | 352.6 | 488.9 | 504 | 543 | 588.6 |
| Service | 452.3 | 470.4 | 390.4 | 590.7 | 655.6 | 676.8 |
| Total GDP | 1,432.1 | 1,524.3 | 1617.3 | 1801.1 | 1950.5 | 2082.3 |
| Growth Rate | 6.4% | 6.5% | 6.1 | 7.2 | 8.3 | 6.8 |

Note: in million SDD
Source: Ministry of Finance and National Economy, “Economic Review 1998”; Bank of Sudan, “Annual Report No. 46, 2006”

The proportion of service sector in GDP in both 1998 and 2006 is high. On the other hand, the proportion of agriculture in 2006 is less than that in 1998, and the proportion of industry in 2006 is higher than that in 1998. In 1998, before starting oil exploitation, the proportion of agriculture in GDP was almost half of the whole GDP (47.8%), which, however, fell down to 38.2%. By contrast, the proportion of industry in GDP which was 15.8% in 1998 increased to 28.3%. This increase might be caused by expansion of oil industry, since the proportion of manufacturing in GDP in 2006 was only 6%.

Table 1.1.2 Comparison of GDP Proportion in 1998 and 2006

| | 1998 | | 2006 | | Growth |
|---|---|---|---|---|---|
| Agriculture | 571.2 | (47.8%) | 816.9 | (38.2%) | 43.0% |
| Industry | 176.4 | (15.8%) | 588.6 | (28.3%) | 233.7% |
| Service | 425.4 | (36.4%) | 767.8 | (32.5%) | 80.5% |
| Total GDP | 1,173.0 | (100.0%) | 2,082.3 | (100.0%) | 77.5% |

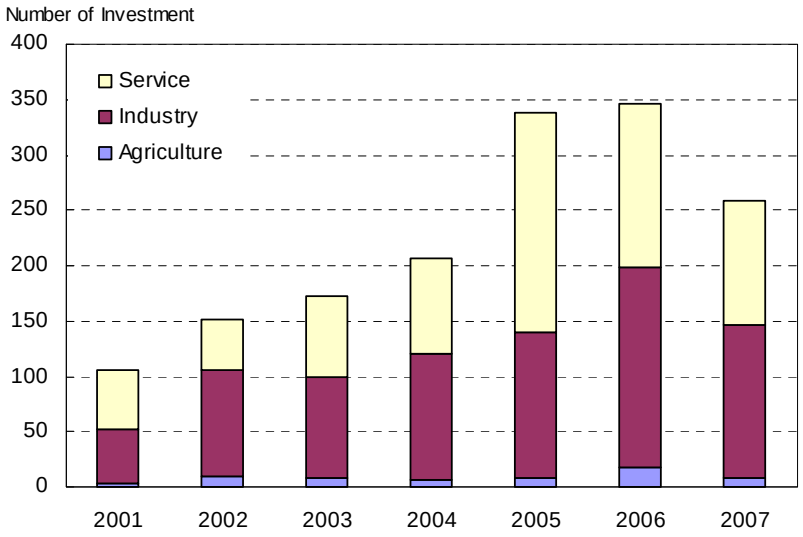
Note: in million SDD
Source: Ministry of Finance and National Economy, “Economic Review 1998”; Bank of Sudan, “Annual Report No. 46, 2006”

### 1.1.2 Investment

FDI to Sudan have rapidly increased. In fact, Sudan is the third largest recipient of FDI in Africa, following Egypt and Nigeria. Most of origins of investment are China, India and Malaysia. Target of investment is oil-related industry. Investment from the Gulf countries has increased to the sector other than oil, such as agriculture and real estates.

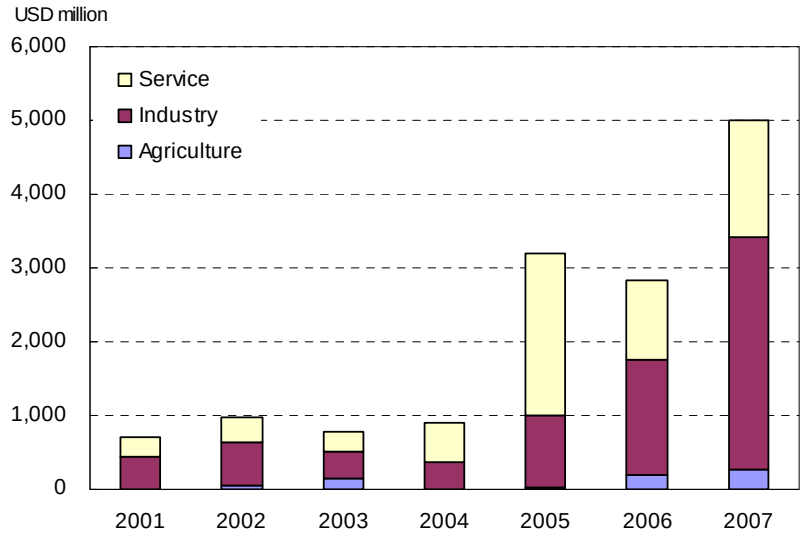
As for the number of investments, agriculture sector did not show any outstanding increase. By contrast, it has rapidly increased in industry and service sectors. Generally, investment amount in all the sectors increased, although the amount varied year to year. Especially after 2005, the investment amount in industry and service sectors showed a remarkable increase.

Figure 1.1.1 Trend of FDI Numbers (2001-2007)




Source: Ministry of Investment

Figure 1.1.2 Trend of FDI Amount (2001-2007)




Source: Ministry of Investment

### 1.1.3 Export and Import

Export in Sudan has continuously increased, and estimated value in 2006 almost tripled the value in 2002. However, it is largely owing to the oil export. During the same period, estimated export value of oil increased by 3.47 times, while that of non-oil increased only by 1.3 times.

Table 1.1.3 Trend of Export Value (2002-2006)

| | 2002 | 2003 | 2004 | 2005 | 2006 (Estimated) |
|---|---|---|---|---|---|
| Export Value | 1,949 | 2,577 | 3,778 | 4,878 | 5,813 |
| Oil Export Value | 1,511 | 2,082 | 3,101 | 4,240 | 5,244 |
| Non-Oil Export Value | 438 | 495 | 677 | 638 | 569 |

Note: FOB price in million USD
Source: IMF, "Sudan 2007: Article IV Consultation and Staff-monitored Program - Staff Report"

According to IMF, Sudanese proportion of export value to GDP is estimated at 17.5% in 2005 and 15.5% in 2006. The proportion of export value to GDP of Sudan is almost the same or lower than neighboring countries with relatively large population being more than 30 million.

Table 1.1.4 Proportion of Export Value to GDP of Sudan and Neighboring Countries (2005)

| | Sudan | Egypt | Ethiopia | Kenya | Tanzania |
|---|---|---|---|---|---|
| Export Value (%) | 17.5% | 30.0% | 16.0% | 27.0% | 17.0% |

Source: UNDP, "Human Development Report 2007/2008"; IMF, "Sudan 2007: Article IV Consultation and Staff-monitored Program - Staff Report"

Oil and petroleum products, Sudanese major exports, represent more than 90% of the total export value, followed by agricultural products including livestock, sesame and cotton. In 1998, before starting oil exploitation, livestock, sesame and cotton were the major exports, while crude oil increased drastically and became major export goods after 2001.

Table 1.1.5 Export Value of Major Export Goods

| | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|
| Oil, Petroleum Products | 1,510.9 | 1,994.2 | 3,100.5 | 4,187.0 | 5,657.1 |
| Livestock | 117.1 | 97.9 | 137.8 | 115.0 | 121.7 |
| Sesame | 74.6 | 74.5 | 178.7 | 119.0 | 167.1 |
| Cotton | 62.2 | 107.9 | 93.8 | 107.0 | 82.3 |
| Total Export | 1,941.1 | 2,542.2 | 3,777.8 | 4,824.3 | 6,257.9 |

Source: Economist, "Economist Intelligence Unit 2002-2006"

Export to China has remarkably increased. In 2006, it represented 75% of the whole export amount. Other than China, export to Japan, another major oil importer, has also increased. Export to Japan occupies 9.2% of the entire export amount. Export to the Middle East countries, such as Saudi Arabia, United Arab Emirates and Egypt, also represents a large portion.

Table 1.1.6 Top 10 of Export Goods

| Goods | Unit | 1998 | | 2006 | |
|---|---|---|---|---|---|
| | | Quantity | Export Value (million USD) | Quantity | Export Value (million USD) |
| Livestock | Head | 1,852,403 | 120.2 | 1,545,197 | 121.7 |
| Sesame | MT | 167,231 | 104.8 | 219,047 | 167.0 |
| Cotton | Veal | 395,5 | 95.5 | 482,492 | 328.4 |
| Gold | kg | - | 43.8 | 6,219,350 | 64.3 |
| Oil | MT | 0 | 0.0 | 502,541 | 356.3 |
| Meat | MT | - | 30.4 | 1,345 | 4.9 |
| Sugar | MT | - | 26.3 | 17,856 | 10.1 |
| Gum Arabic | MT | 22,60 | 23.7 | 20,816 | 50.2 |
| Leather | Value | - | 20.2 | - | 5.0 |
| Crude Oil | Barrel | 0 | 0.0 | 90,085,298 | 5,161.9 |
| Molasses | MT | 0 | 0.0 | 209,409 | 17.6 |

Source: Central Bank of Sudan, "Central Bank of Sudan Annual Reports 1998 & 2006"

Table 1.1.7 Major Export Destinations

| Destinations | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|
| China | 1,002.2 | 1,281.3 | 1,761.9 | 2,527.0 | 3,427.1 | 4,243.9 |
| Japan | 82.6 | 64.3 | 167.7 | 402.2 | 577.5 | 522.6 |
| India | 9.2 | 5.9 | 33.2 | 27.9 | 30.8 | 22.5 |
| Korea | 67.0 | 3.5 | 18.3 | 23.5 | 7.9 | 6.2 |
| Saudi Arabia | 24.2 | 119.3 | 114.8 | 164.2 | 136.4 | 126.4 |
| United Arab Emirates | - | - | 48.2 | 108.5 | 78.7 | 227.4 |
| Egypt | 33.7 | 57.0 | 48.2 | 67.1 | 72.7 | 96.8 |
| European Union | 139.5 | 135.3 | 72.0 | 103.5 | 109.8 | 61.3 |
| (out of UK) | (-) | (-) | (-) | (56.1) | (21.8) | (19.0) |
| Singapore | 137.1 | 62.5 | 16.7 | - | - | - |

Note: in million USD
Source: Central Bank of Sudan, "Central Bank of Sudan Annual Reports 1998 & 2000"

Import value of Sudan has continuously increased. Estimated import value in 2006 was 3.3 times as much as that in 2002. Especially, "Machinery and Transport Equipment" (including automobiles) and "Manufactured Goods" showed remarkable increase, being 4.9 times and 3.0 times, respectively during the period 2002-2006.

Table 1.1.8 Trend of Import Value (2002-2006)

| | 2002 | 2003 | 2004 | 2005 | 2006 (Estimated) |
|---|---|---|---|---|---|
| Food Stuffs | 388 | 370 | 456 | 713 | 656 |
| Petroleum Products | - | 131 | 89 | 283 | 364 |
| Machinery, Transportation Equipment | 771 | 992 | 1,602 | 2,747 | 3,785 |
| Manufactured Goods | 488 | 641 | 877 | 1,433 | 1,444 |
| Import Value | 2,153 | 2,536 | 3,586 | 5,946 | 7,105 |

Note: FOB price in million USD
Source: IMF, "Sudan: Report on the Final Review of the 2003 Staff-Monitored Program and the 2004 Staff-Monitored Program", "Sudan 2005: Midyear Review of the 2005 Staff-Monitoring Program", "Sudan 2007: Article IV Consultation and Staff-monitored Program - Staff Report"

The proportion of import value to GDP of Sudan is 21.3% in 2005 and 19.0% (estimated) in 2006. The proportion is lower than that of neighboring countries with relatively large population (more than 30 million).

Table 1.1.9 Proportion of Import Value to GDP of Sudan and Neighboring Countries (2005)

| | Sudan | Egypt | Ethiopia | Kenya | Tanzania |
|---|---|---|---|---|---|
| Import Value (%) | 21.3% | 33.0% | 39.0% | 35.0% | 26.0% |

Source: UNDP, "Human Development Report 2007/2008", IMF, "Sudan 2007: Article IV Consultation and Staff-monitored Program – Staff Report"

Among imports, major parts are General Machinery, Manufactured Goods and Transportation Machinery. Import amount of petroleum products decreased during the period from 1998 to 2006.

Table 1.1.10 Major Import Goods

| Sector | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|
| General Machinery | 620.8 | 662.0 | 1,080.6 | 1,971.9 | 2,810.6 |
| Manufactured Goods | 555.0 | 699.0 | 996.5 | 1,627.9 | 1,640.8 |
| Transportation Machinery | 255.8 | 372.0 | 739.3 | 1,149.7 | 1,490.6 |
| Wheat, Flowered Wheat | 221.3 | 200.7 | 257.3 | 383,6 | 341.6 |
| Total Import | 2,446.4 | 2,881.9 | 4,075.2 | 6,756.8 | 8,073.5 |

Note: in million USD
Source: Economist, "Economist Intelligence Unit 2002-2006"

Table 1.1.11 Top 10 Import Goods

| Goods | Unit | 1998 | | 2006 | |
|---|---|---|---|---|---|
| | | Quantity | Import Value (million USD) | Quantity | Import Value (million USD) |
| General Machinery | Value | - | 338.2 | - | 2,810.5 |
| Manufactured Goods | Value | - | 592.1 | - | 1,640.8 |
| Transportation Machinery | Value | - | 192.7 | - | 1,490.5 |
| Chemical Products | Value | - | 157.0 | - | 490.5 |
| Wheat, Flowered Wheat | MT | 584,108 | 131.9 | 1382,300 | 341.7 |
| Petroleum Products | MT | 1,701,075 | 255.7 | 1,280,316 | 414.2 |
| Textile | MT | - | 43.3 | - | 295.3 |
| Beverage, Tobacco | MT | 3,374 | 20.1 | 10,634 | 47.7 |
| Dailey Products | MT | 4,822 | 12.5 | 29,905 | 63.0 |
| Tea | MT | 32,280 | 36.3 | 22,315 | 35.2 |
| Coffee | MT | 8,173 | 15.3 | 22,169 | 36.4 |

Source: Central Bank of Sudan, "Annual Reports 1998 & 2006"

Import of automobiles and vehicle parts has significantly increased. This trend shows high demand for automotive industries.

Table 1.1.12 Import of Automobiles and Vehicle Parts

| Sector | 2004 | 2005 | 2006 |
|---|---|---|---|
| Sedan | 134,402 | 164,769 | 255,628 |
| Truck | 217,390 | 342,765 | 438,494 |
| Bus | 17,587 | 6,063 | 23,216 |
| Motorcycle | 4,915 | 8,558 | 10,527 |
| Vehicle Parts | 239,209 | 310,418 | 604,227 |

Note: in thousand USD
Source: Central Statistic Bureau, Statistic Yearbook 2006

Major origins of import are China, Saudi Arabia, India and Japan. Amount has steadily increased in the import from these countries.

Table 1.1.13 Major Import Origins

| Countries of Origin | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|
| China | 169.0 | 196.3 | 229.1 | 529.6 | 1,383.0 | 1,679.4 |
| Japan | 53.4 | 77.2 | 85.0 | 165.1 | 341.8 | 535.8 |
| India | 87.7 | 104.6 | 116.0 | 197.1 | 317.8 | 599.0 |
| Korea | 33.3 | 43.7 | 51.1 | 89.3 | 149.8 | 335.4 |
| Saudi Arabia | 419.0 | 581.8 | 723.9 | 471.5 | 627.5 | 649.3 |
| United Arab Emirates | 122.4 | 173.0 | 180.0 | 239.2 | 394.7 | 444.7 |
| Egypt | 46.8 | 53.8 | 116.4 | 208.8 | 369.5 | 428.2 |
| European Union | 296.0 | 451.1 | 322.4 | 992.0 | 751.8 | 1,096.2 |
| (Out of UK) | (137.9) | (113.0) | (152.6) | (151.3) | (221.9) | (307.8) |
| Australia | 51.8 | 69.0 | 59.2 | 168.9 | 221.1 | 223.1 |

Note: in million USD
Source: Central Bank of Sudan, "Annual Reports 2001-2006"

Sudanese export and import partners are not only China and Japan, but also surrounding countries such as Saudi Arabia, United Arab Emirates and Egypt. Sudan is economically interdependent with these countries.

### 1.1.4 Industrial Structure

In 2006, the proportion of primary and tertiary industries to GDP was high. Primary industry represented about 32.3% and tertiary industry 39.2%. However, both of them are gradually declining. By contrast, the proportion of secondary industry which was 28.5% in 2006 has been increasing along with growing oil export. However, development of mining and manufacturing other than petroleum-related seems to be limited. If oil exploitation declines, the proportion of secondary industry to GDP may decrease.

As Table 1.1.14 indicates, "Food and Beverage" was the largest manufacturing sector in value added amount, value of production, number of establishments and number of employees in 2001. "Food and Beverage" represent about 70% in the number of establishments, followed by "Metalwork other than Machinery and Equipment" (11.7%), "Nonmetallic Mineral Products" (6.4%), and "Wooden Products other than Furniture" (3.4%). In terms of employment, "Food and Beverage" is the largest (56.5%), followed by "Nonmetallic Mineral" (12.3%), "Metal Work other than Machinery and Equipment" (7.2%), and "Textile" (6.3%). The number of employees of "Petroleum Product" represented only 0.5%.

Table 1.1.14 Value Added, Production, Establishments, Employees of Manufacturing (2001)

| Trades | Value Added (in million SDD) | Production (in million SDD) | Establishments | Employees (persons) |
|---|---|---|---|---|
| Food and Beverage | 216,787 | 423,642 | 16,974 | 91,879 |
| Textile | 8,729 | 21,697 | 58 | 10,226 |
| Wooden Products excl. Furniture | 2,107 | 4,104 | 820 | 3,343 |
| Petroleum Products, Nuclear Energy | 37,248 | 128,838 | 3 | 846 |
| Chemistry, Chemical Products | 13,672 | 32,861 | 278 | 6,020 |
| Nonmetallic Mineral | 8,434 | 11.852 | 1,541 | 20,600 |
| Metal Work excl. Machinery and Equipment | 6,351 | 14,482 | 2,812 | 11,706 |
| Automobiles | 10,274 | 27,880 | 28 | 1,770 |
| Furniture | 656 | 1,607 | 521 | 1,923 |
| Total Manufacturing | 335,431 | 765,450 | 24,114 | 162,682 |

Source: Ministry of Industry, "Industry Census 2001"

With respect to the industrial-mix of employment in 1993, primary, secondary and tertiary industries accounted for 60.7%, 9.7% and 29.5% respectively. Regarding gender balance, male was rather dominant in tertiary industry; by contrast, female was dominant in primary industry. Industrial-mix of male employment was 53.5% in primary industry, 12.5% in secondary industry and 34.0% in tertiary industry; that of female employment was 79.7% in primary industry, 2.4% in secondary industry and 18.0% in tertiary industry.

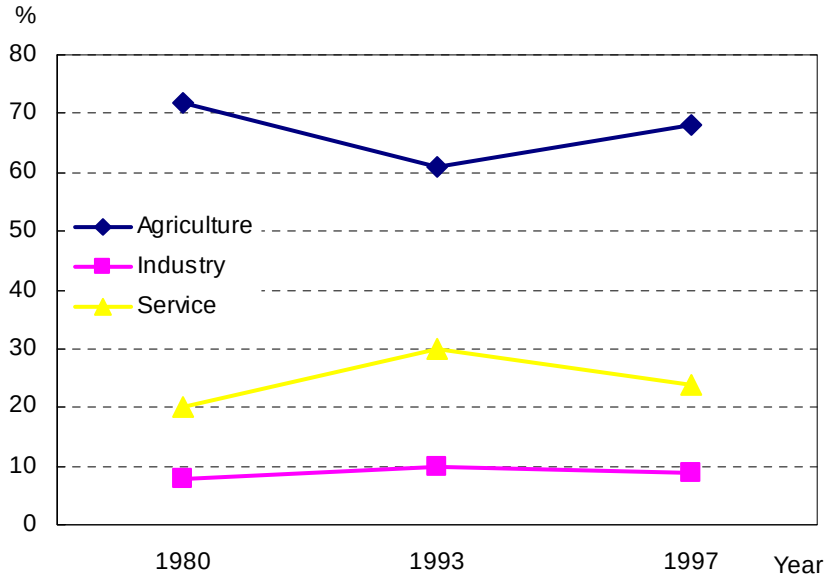
Table 1.1.15 Employment by Industry (1993)

| | Male | Female | Total Employees | |
|---|---|---|---|---|
| Primary Industry: Agro-Forestry | 2,327,789 | 1,316,703 | 3,644,493 | 60.7% |
| Secondary Industry | 545,176 | 39,054 | 584,226 | 9.7% |
| Mining | 3,494 | 293 | 3,786 | 0.1% |
| Manufacturing | 288,660 | 32,107 | 320,763 | 5.3% |
| Electricity, Gas, Water Supply | 41,241 | 2,746 | 43,989 | 0.7% |
| Construction | 211,781 | 3,908 | 215,688 | 3.6% |
| Tertiary Industry | 1,476,141 | 296,605 | 1,771,544 | 29.5% |
| Wholesale, Retail, Restaurant, Hotel | 481,690 | 49,640 | 531,330 | 8.9% |
| Transportation, Telecommunication | 250,695 | 7,362 | 258,056 | 4.3% |
| Monetary, Insurance, Real Estate | 51,519 | 10,886 | 62,404 | 1.0% |
| Community, Social Service | 628,000 | 203,829 | 830,629 | 13.8% |
| Unclassifiable | 1,005 | 40 | 1,046 | 0.0% |
| No Answer | 63,232 | 24,848 | 88,079 | 1.5% |
| All Industries | 4,347,906 | 1,652,362 | 6,000,268 | 100.0% |

Note: Total does not correspond to the sum of male and female; the figures are as the original source shows.
"Unclassifiable" and "No Answer" are categorized in tertiary industry.
Source: Central Statistic Bureau, "Statistic Yearbook 2006

With regard to employment by industry, primary industry absorbed the largest portion at around 60%. Considering its limited magnitude in the industrial-mix of GDP, it was clear that primary industry was labor intensive. Therefore, if agriculture and cattle breeding are mechanized in future, employees of primary industry could further be pushed out to be absorbed in other industries. Then it would be presumed that ex-primary industry employees face the lack of employment opportunities. The number of employees in the petroleum products production is less than 0.5% of the total employment. It is of capital-intensive nature, despite its expansion. Furthermore, foreign labors are much qualified in oil industry; hence, there could be a few opportunities for Sudanese labors to join the oil industry.

Figure 1.1.3 Sudanese Population by Industry (1980, 1993 and 1997)




Source: Central Bureau of Statistics, "Statistic Yearbook 2006"; Fluitman Fred, 1992, "Traditional Apprenticeship in West Africa: Recent Evidence and Policy Option - ILO Discussion Paper No. 34"

### 1.1.5 Population, Labor Force and Employment

In 2006, population of the entire Sudan was 36,297 thousand. As for age structure, those under 14 years old represent 41.25%, those between 15 and 59 represent 54.67%, and those over 60 represent 4.05%. This signifies that Sudanese population is largely dominated by young generation. States in Northern Sudan have somewhat similar age structure. However, those between 15 and 59 represent relatively high and those under 14 and over 60 represent relatively low in Khartoum State. Proportion of labor force in population is larger in Khartoum State that other states.

Table 1.1.16 Population by Age Group (Estimated for 2006)

| State | Age Group 0-14 (%) | Age Group 15-59 (%) | Age Group over 60 (%) |
|---|---|---|---|
| The Whole Sudan | 41.25 | 54.67 | 4.08 |
| Northern Sudan | 39.17 | 55.07 | 5.76 |
| Northern State | 38.66 | 55.25 | 6.09 |
| River Nile State | 39.50 | 54.96 | 5.54 |
| Red Sea State | 35.78 | 58.33 | 5.89 |
| Kassala State | 40.71 | 54.72 | 4.57 |
| El Gadaref State | 41.52 | 54.68 | 3.80 |
| Khartoum State | 36.32 | 59.92 | 3.76 |
| Gazira State | 41.38 | 54.16 | 4.46 |
| Sennar State | 42.62 | 53.32 | 4.06 |
| White Nile State | 43.61 | 52.34 | 4.05 |
| Blue Nile State | 40.27 | 55.86 | 3.87 |
| North Kordofan State | 45.02 | 50.61 | 4.37 |
| South Kordofan State | 44.82 | 50.69 | 4.49 |
| North Darfur State | 43.95 | 51.92 | 4.13 |
| West Darfur State | 42.88 | 53.40 | 3.72 |
| South Darfur State | 43.28 | 53.02 | 3.70 |
| Southern Sudan | 41.35 | 55.16 | 3.49 |
| Upper Nile State | 43.14 | 53.37 | 3.49 |
| Bahar El Gazar State | 42.54 | 54.09 | 3.37 |
| Equatoria State | 40.72 | 55.95 | 3.33 |

Source: Central Bureau of Statistics, “Statistical Yearbook 2006”

Population under 14 years old in 2005 represented about 40.7% in Sudan. In comparison with neighboring countries, the ratio of population under 14 years old is almost the same as those in neighboring countries with population being more than 30 million.

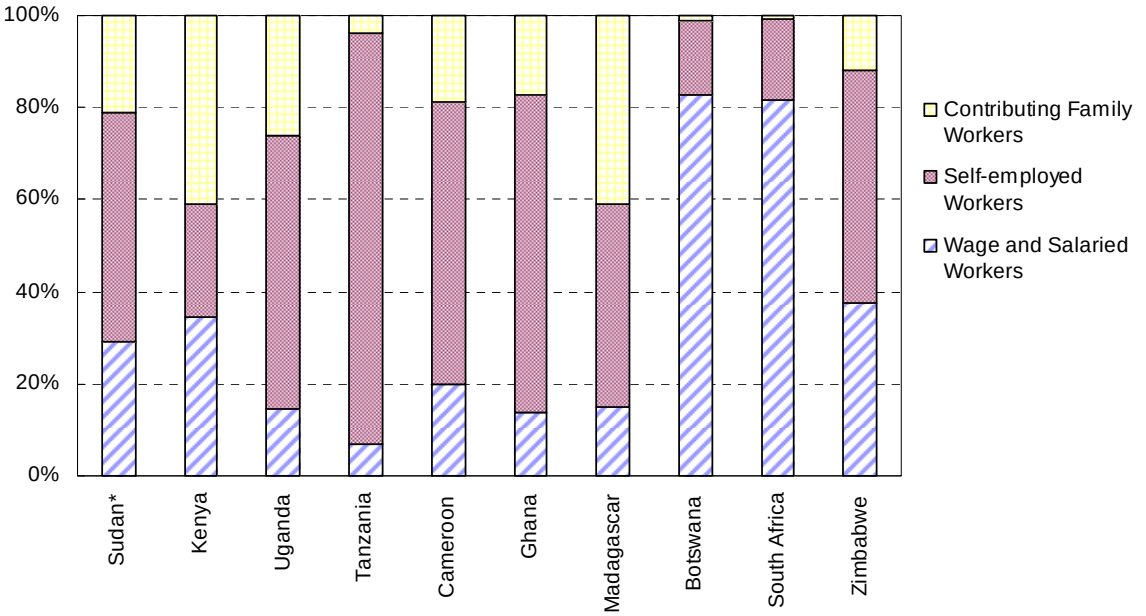
Table 1.1.17 Proportion of the Population under 14 Years Old (2005)

| | Sudan | Egypt | Ethiopia | Kenya | Tanzania |
|---|---|---|---|---|---|
| Age Group 0-14 (%) | 40.7% | 33.3% | 44.5% | 42.6% | 44.4% |

Source: UNDP, “Human Development Report 2007/2008”

As for the type of employment in Sudan, there are many “Self-Employed Workers”, accounting for 49.4% of the total number, followed by “Wage and Salaried Workers” accounting for 28.5% and “Contributing Family Workers” accounting for 20.6%. As Figure 1.1.4 illustrates, some African countries show a higher proportion of “Self-Employed Workers” or “Wage and Salaried Workers”.

Figure 1.1.4 Type of Employment in African Countries (1999-2003)




Note: *Figures of Sudan are based on that of 1993 Census.
Source: Central Bureau of Statistics, Statistic Yearbook 2006; World Bank, African Development Indicator 2006

According to "Statistic Yearbook 2006", the number of estimated labor force in Sudan was 11.5 million of which 9.6 million was employees. The number of the unemployed was 2 million and unemployment rate was 17.3%. The unemployment rate in the Northern Sudan has been rising, as it was 11.3% in 1993, 15.1% in 1996 and 16.3% in 2004. In 1993, the unemployment rate was high, particularly in young generation (19.6% in the age group 15-19, 13.3% in the age group 20-24).

Unemployment rate in Sudan is higher than those in other neighboring countries with population being more than 3 million. Sudanese society would not be stable unless unemployment is reduced.

Table 1.1.18 Unemployment Rate of Sudan and Neighboring Countries (1996-2005)

| | Sudan | Egypt | Ethiopia | Kenya | Tanzania |
|---|---|---|---|---|---|
| Unemployment Rate (%) | 17.3% | 11.0% | 5.0% | - | 5.1% |

Note: Average rate between 1996 and 2005
Source: UNDP, "Human Development Report 2007/2008", Central Bureau of Statistics, "Statistical Yearbook 2006"

## 1.2 Development Policy

### 1.2.1 Economic Policy

Sudan is endowed with various natural resources ranging from vast cultivation areas, water resources, mineral resources represented by crude oil. Supported by crude oil export with 500,000 balers per day, Sudan is now ranked as the third oil producing country in Africa. With these natural resources, the country is accelerating public investment. The issues Sudan needs to address are to accelerate development in other sectors than natural resource-based industries and to create job opportunities for diversifying the source of growth while maintaining growth of oil sector. In the course, Sudan is attempting to reduce poverty.

With the situation that domestic market is not so expanded, the Government stresses the export of non-oil products by means of increased productivity of agricultural and industrial production. To this end, it is necessary to introduce new technology and to develop human resources in order to compete with products of other countries in terms of price and quality. Manufacturing industries are still weak, except for those based on oil and other natural resources. The government is not yet successful in establishing a clear strategy for industrial development toward poverty reduction. Meanwhile, the Ministry of Industry identified food processing, textile and spinning, leather and its products and engineering as priority industries.

Driven by exploitation of rich oil resources, Sudan is expected to continue enjoying economic development. Accordingly, many durable and consumption articles will be brought from outside of Sudan in line with diversification of industry and life style. Maintenance and reparation of imported machines would be important for sustainable economic development. On the other hand, domination of the domestic market by cheap imported products would destroy Sudanese small and medium enterprises. Efforts for stopping this influx will probably be vain, because people tend to buy less expensive products. It is rather necessary to encourage domestic small and medium enterprises to improve their competitiveness in terms of quality and prices through upgraded technical skills and productivity.

### 1.2.2 Policy on Employment and Labor Force

The Government gives high priority to employment and vocational training, since it is important to cope with increased unemployment among younger generation, the outburst of disarmed and demobilized soldiers looking for new jobs resulting from conclusion of CPA, and the increased number of women with the willingness to work.

In this regard, the Government amended “Vocational Training and Apprenticeship Act” in 2001 and created “Supreme Council for Vocational Training and Apprenticeship (SCVTA)” to streamline various social needs, labor market needs and necessary vocational training.

Ministry of Labor, Public Service and Human Resource Development announced The “Five-Year Plan” in January 2008. Descriptions related to the policy and strategy for vocational training are summarized below.

- Goal

Best utilization of human resources for improvement in production, productivity and quality.

- Policy
  - Decreasing poverty and unemployment by providing job opportunities which meet the needs of individuals and community.
  - Creating stable labor-management relations among production and social partners, including employees and employers.
  - Realizing a balance between supply and demand in the labor market.
  - Training manpower to meet changing international needs for skills.
  - Providing intermediate technical and skilled manpower to make use of modern technologies.
  - Encouraging return of the Sudanese who are competent manpower outside of the country.
  - Developing information system for the labor market.

- Provisional beneficiaries

Focusing on civil war affected areas and on graduates.

- Projects for human resource development and vocational training
  - Revising and developing the institutional infrastructure for VTCs and the institutions of the administrative training.
  - Improving and modernizing the training methods and curricula.
  - Establishing 8 new VTCs.
  - Providing a meaningful number of youth, demobilized soldiers and women with vocational training

Manufacturing sector is one of the beneficiaries from strengthened vocational training programs. In this regard, general policies and strategies for the manufacturing sector are announced as follows:

- To increase the growth rate in the manufacturing industry which contributes to the increase of GDP.
- To accelerate export.
- To develop broad band network to connect local and foreign concerned authorities.
- To give first priority to the development of the manufacturing sector in the context of the “economic national program”.
- To develop human resources of the manufacturing sector and implement training to adapt them with new technology.
- To adapt appropriate technology
- To strengthen and develop linkage among different sectors such as agriculture, technology and energy.
- To accelerate the foreign investments which brings new technology and new industry.
- To accelerate human resource development through vocational training.

The followings are the industries to be promoted during the period 2007-2031.

The first five years:

- Relatively competitive industries
- Export oriented industries
- Vertical development projects
- By-products waste manufacturing products
- Rehabilitation and operation of idle capacities
- Information and electronic industries
- Intermediate industries

The second five years:

- Manufacture of consumption goods and assembly
- Machinery
- Feeding engineering and chemical industries

### 1.2.3 National Strategic Plan

The Twenty-Five Year National Strategy (2007-2031) is a long-term development plan in Sudan. The strategy report consists of the following chapters.

1. Introduction
2. Strategy as nation
3. Economic strategy
4. Capacity building and community development strategy
5. Social services strategy

The followings part has implications for vocational training.

(Energy and mineral resources sector)

- Expansion of crude oil production and finding of new reserves
- Self sufficiency and export expansion of in petroleum products
- Development of storage facilities for oil and petroleum products
- Strengthening of the transportation facilities to support production expansion of crude oil and petroleum products
- Development of power transmission lines and renewal energy
- Securing of trained workers

(Manufacturing sector)

- Strengthening of the management capability for greater international competitiveness
- Observation of international standards for quality
- Development and improvement of distribution related infrastructures

(Drinking water supply sector)

- Supply of drinking water for people and livestock with a target set at 150 litters per person in urban area and 50 litters per person in rural area
- Institutional support : Establishment of organizations for the technical training in water treatment and quality analysis

The Five Years National Strategic Plan (2007-2011) was formulated based on the above long-term strategic plan, and it aims at building a stable nation under unity and collaboration among the people while maintaining friendly relation with international society. The basic vision is a country with multi principles, democracy and the equity in income distribution. The vision also stresses that the country be ruled by law so as to be peaceful and safe.

In order to realize the vision, the following policies will be pursued.

- Promotion of sustainable economic development
- Maintenance of peace and stability
- Poverty reduction
- Good governance and rule of law
- Capacity building for public organizations and civil society

Further, for each item, 24 strategic targets are listed in total. Among them, those relevant to vocational training are:

Promotion of Sustainable Economic Development through:

- Enlarged opportunity for human resource development and employment required by the labor market through increased capacity of TVET institutions.
- Improvement in investment climate by infrastructure development.

Poverty Reduction through:

- Implementation of specific projects toward poverty reduction.
- Early implementation of the projects which support IDP.
- Capacity building of State Governments for implementation of the National Strategic Plan.

Good Governance and Rule of Law through:

- Improvement in efficiency, transparency and accountability through reform of public service.
- Reform in administration and finance.
- Improvement in governance through reform of public service.

### 1.2.4 Decentralization Policy

Based on the Constitutional Decree No. 12 issued in 1993, decentralization is in place in Northern Sudan. Consequently, administration closely related to daily life of local residents including basic education and vocational training, health, social welfare, agriculture and industry were essentially transferred to the State Government. Federal Government retains defense, diplomacy, international cooperation, higher education and so forth which commonly cover the whole country.

Regarding vocational training, some responsibilities remain at the national level. State Government is responsible for finance and operation of VTC, while development of curricula, training of trainers and instructors, request for international cooperation, formulation of training standards and trade test are remained under SCVTA responsibility.

Table 1.2.1 Roles of Federal Government and State Governments in Vocational Training

| Federal Government | State Government |
|---|---|
| Curriculum development<br>Training of trainers and instructors<br>Request for international cooperation<br>Training standards<br>Trade test | Finance<br>Management and operation of VTC |

Source: SCVTA

Although decentralization is regarded as an appropriate measure, the State Government is facing financial problem and needs to secure finance and to strengthen capacity for vocational training management. According to the survey made by World Bank[1], State Governments in Northern Sudan are dependent 70%, on average, of their financial source on earmarked subsidy from the Federal Government.

[1] In 2005, World Bank made a survey on ear marked subsidy from Federal Government to 6 Sate Governments in Northern Sudan. The proportion of subsidy varies from 35% for Red Sea State to 90% for North Darfur State.

## 1.3 Growing Industries

### 1.3.1 Agricultural Sector

Cultivable land of Sudan is about 84 million ha, of which about 10 million ha (12%) is regularly cultivated. Farming system in Sudan can be classified into 3 systems according to irrigation; irrigated agriculture, mechanized rain-fed agriculture and traditional rain-fed agriculture. Though irrigated agriculture is important in terms of productivity, traditional rain-fed agriculture is the largest in terms of farming area. The main crops are sorghum, millet, wheat, sesame, peanut, cotton, and gum Arabic. In addition, vegetables and fruits are cultivated in the whole country. Cattle, goats, sheep, camels and other livestock production accounted for 15-20% of GDP and is regarded as an industry more economically important than the crops in Sudan.

The Government of Sudan has formulated "Agricultural Revitalization Plan (2008-2011)" in order to transform agriculture from self-sufficient production to a modern sector enabling to contribute to poverty reduction, economic growth, foreign currency earning and sustainable management of natural resources. The plan includes following strategies.

- To promote export of agricultural and livestock products in order to avoid excessive dependence on oil revenue.
- To improve productivity and efficiency at every step of production and procession.
- To establish food security.
- To contribute to poverty reduction (50% reduction by 2015), creation of job opportunity and income generation.
- To realize balanced growth in all the regions to promote settlement in rural area.
- To develop and preserve natural resources for renewable and sustainable use.

For successful implementation of the plan, key factors are listed below.

- To provide environment enabling to increase production (policy and basic infrastructure).
- To promote capacity building.
- To provide land use plan.
- To enhance support services.
- To develop and modernize farming system (infrastructure, management, technology).
- To balance preservation and development of natural resources.
- To industrialize agriculture (production chain, specialization, differentiation, quality management).
- To enforce quality control and safety standards.
- To establish strategic international partnership.

It is noteworthy that the area requiring skilled workers through vocational training is large, which support future growth of agriculture, i.e., provision of infrastructure, enhancement of supporting services, industrialization of agriculture, quality control, etc.

### 1.3.2 Non-Agricultural Sector

There are few theoretical and empirical studies about the growth potential of Sudanese industries. However, the followings are examples which are often cited to grow in the future.

- Infrastructure industry
  - Road, bridge, railway and dam
  - Electrical power supply
  - Transportation system
  - Construction industry: construction, cement, iron and steel
  - Utilities: water supply, sanitation, waste management

- Oil industry and associated service industries
  - The upstream oil industry
  - Oil products production

- Resource based industries
  - Livestock industry
  - Tannery industry
  - Textile industry
  - Food processing
  - Agricultural machinery
  - Construction and public works

- Industries which grow with economic globalization
  - City development: office building, hotel and apartment

- Urbanization and service economy
  - Penetration of automobile in daily life
  - Diversification of the service economy

The following industries were identified as those with rapid development in recent years according to the needs survey conducted by a Sudanese consultant to the JICA Study Team.

- Oil and gas
- Building construction
- Infrastructure
- Medical and Health care
- Hotel
- Telecommunication and information technology

- Automotive industry
- Food industry
- Electric power

In addition, 50 companies interviewed by the consultant have forecasted the following industries to grow in the near future. They are mostly based on local natural resources.

- Agro-based and livestock-based industries, mainly comprising food industries
- Construction and engineering industries
- Petrochemicals
- Oil industries
- Textile and leather industries

## 1.4 Current Situation of States in Northern Sudan

### 1.4.1 Population, Population Structure and Major Cities

According to the estimated population in 2006, more than 80% of the whole population lives in Northern Sudan. In particular, a quarter of the population concentrates on Khartoum and surrounding states; 16% in Khartoum State and 11% in Gazira State. Other densely populated states in Northern Sudan are South Darfur, North Kordofan, West Darfur and North Darfur.

Table 1.4.1 Population by State (Estimated for 2006)

| State | Population (persons) | Percentage (%) |
|---|---|---|
| The Whole Sudan | 36,297,000 | 100.0% |
| Northern Sudan | 30,767,000 | 84.3% |
| Northern State | 644,000 | 1.8% |
| River Nile State | 1,008,000 | 2.8% |
| Red Sea State | 739,000 | 2.0% |
| Kassala State | 1,708,000 | 4.7% |
| El Gedaref State | 1,784,000 | 4.9% |
| Khartoum State | 5,974,000 | 16.5% |
| Gazira State | 4,014,000 | 11.1% |
| Sennar State | 1,368,000 | 3.8% |
| White Nile State | 1,718,000 | 4.7% |
| Blue Nile State | 759,000 | 2.1% |
| North Kordofan State | 2,392,000 | 6.5% |
| South Kordofan State | 1,684,000 | 4.6% |
| North Darfur State | 1,763,000 | 4.9% |
| West Darfur State | 1,818,000 | 5.0% |
| South Darfur State | 3,394,000 | 9.4% |
| Southern Sudan | 5,530,000 | 15.2% |
| Upper Nile State | 1,530,000 | 4.2% |
| Bahar El Gazar State | 2,670,000 | 7.4% |
| Equatoria State | 1,330,000 | 3.6% |

Source: Central Bureau of Statistics, “Statistical Yearbook 2006”

Major cities with large population in Northern Sudan are shown below. Other than the cities in Khartoum State and surrounding states, cities in the east, such as Port Sudan, Kassala and Gadaref, as well as cities in the middle of Sudan, including El Obeid and Kosti, are relatively densely populated.

Table 1.4.2 Population of Major Cities in Sudan (1993)

| City | State | Population (persons) |
|---|---|---|
| Omdurman | Khartoum State | 1,271,403 |
| Khartoum | Khartoum State | 947,483 |
| Khartoum North | Khartoum State | 700,887 |
| Port Sudan | Red Sea State | 308,195 |
| Kassala | Kassala State | 234,622 |
| El Obeid | North Kordofan State | 229,425 |
| Nyala | South Darfur State | 227,183 |
| Wadi Medani | Gazira State | 211,362 |
| El Gedaref | El Gedaref State | 191,164 |
| Kosti | White Nile State | 173,599 |

Source: 4th National Census, 1993

### 1.4.2 Technical and Vocational Education and Training (TVET) Institutions

Table 1.4.3 shows distribution of TVET institutions in Northern Sudan.

Table 1.4.3 Distribution of TVET Institutions in Northern Sudan

| State | VTC | Technical School | Artisan School | Youth Center | Technical College | Others | Total |
|---|---|---|---|---|---|---|---|
| Northern Sudan | 11 | 21 | 21 | 11 | 17 | 3 | 84 |
| Northern State | 0 | 2 | 2 | 1 | 1 | 0 | 6 |
| River Nile State | 0 | 1 | 2 | 0 | 2 | 0 | 5 |
| Red Sea State | 0 | 1 | 0 | 2 | 1 | 0 | 4 |
| Kassala State | 1 | 1 | 1 | 3 | 1 | 0 | 7 |
| El Gedaref State | 0 | 1 | 4 | 0 | 1 | 0 | 6 |
| Khartoum State | 8 | 5 | 9 | 0 | 1 | 3 | 26 |
| Gazira State | 0 | 2 | 1 | 1 | 4 | 0 | 8 |
| Sennar State | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| White Nile State | 1 | 1 | 2 | 0 | 3 | 0 | 7 |
| Blue Nile State | 0 | 2 | 0 | 0 | 1 | 0 | 3 |
| North Kordofan State | 1 | 2 | 0 | 2 | 1 | 0 | 6 |
| South Kordofan State | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| North Darfur State | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| West Darfur State | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| South Darfur State | 0 | 1 | 0 | 0 | 1 | 0 | 2 |

Note: The table includes only TVET institutions under supervision of SCVTA, Ministry of Ministry of Public Education and Ministry of Higher Education and State Governments.
Source: JICA Study Team

In Northern Sudan, the VTCs under SCVTA, technical schools and artisan schools under Ministry of Ministry of Public Education are concentrated on Khartoum State, while youth training centers under Ministry of Culture, Youth and Sports and technical colleges under Ministry of Higher Education are scattered among states

# 2 Current Situation and Issues of Vocational Training

## 2.1 Whole Picture of Vocational Training

### 2.1.1 Vocational Training and Education System

In the "National Strategy 5-Year Plan (2007-2011)", vocational training is referred in both the economic and socio-cultural sectors. Its objectives are "to develop potential capacity of human resources to meet the needs of the labor market" and "to develop employment policy and to reduce unemployment" respectively.

TVET is defined as "education and training for fostering human resources with required skills in respective labor market" according to the document entitled "Independent Track of Technological Education and Vocational Training" formulated by NCTTE in November 2007.

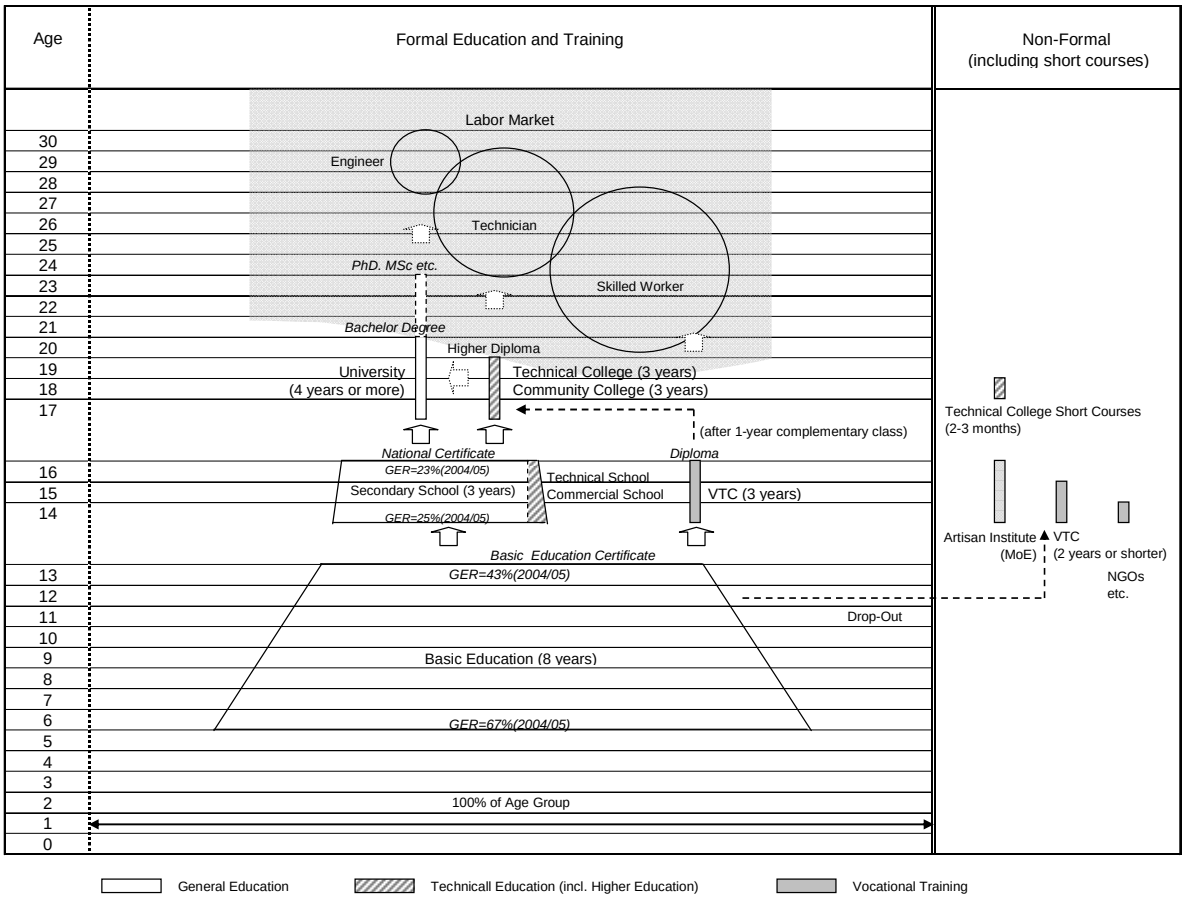
In the Sudanese education and training system, the VTCs which conduct apprenticeship training, secondary schools and technical schools are the institutions for formal secondary education and training. These offer 3-year education or training and follow 8-year basic education. The VTCs are under SCVTA. The secondary schools and technical schools are under Ministry of Ministry of Public Education. Artisan schools under Ministry of Ministry of Public Education, youth training centers under Ministry of Culture, Youth and Sports, and short-term courses in VTCs or NGO are the institutions for non-formal education and training which target those who have not finished 8-year basic education.

Education after completion of secondary education is administrated by Ministry of Higher Education. In addition to 4-year universities, there are 2-year technical colleges. VTCs of Nyala, in South Darfur State, Port Sudan in Red Sea State, Wadi Medani in Gazira State were recently transferred to technical colleges, though 3-year apprenticeship training at the secondary education level is still continued. VTC graduates who wish to do so can proceed to technical colleges or universities, if they complete 6-month supplementary class and pass the official examination.

Figure 2.1.1 illustrates the whole picture of above-mentioned education system and vocational training, taking into account enrolment size. According to UNESCO (2004/05), 67% of school-aged children enter basic education schools, but only 43% of 13-year-old children complete 8-year basic education. The number of those who continue to secondary school drastically decreases to 25%. Since a narrow path to university is given to 3-year apprenticeship training courses, some people may consider VTCs as alternative to secondary schools, of which capacity is extremely limited. However, if one takes into account the labor market is huge, it would be possible to say that VTCs constitute, along with formal secondary and tertiary education institutions, an important element of human resource development system in Sudan.

Apart from these pre-service education and training institutions, there exist some training institutions targeting in-service officials: El Kadaro Training Center under Ministry of National Defense, Agricultural Machinery Training Center in Wadi Medani under Ministry of Agriculture, etc.

Figure 2.1.1 Education and Vocational Training Systems in Sudan




Source: JICA Study Team based on documents of UNESCO and SCVTA

## 2.1.2 Evolution of Vocational Training Development

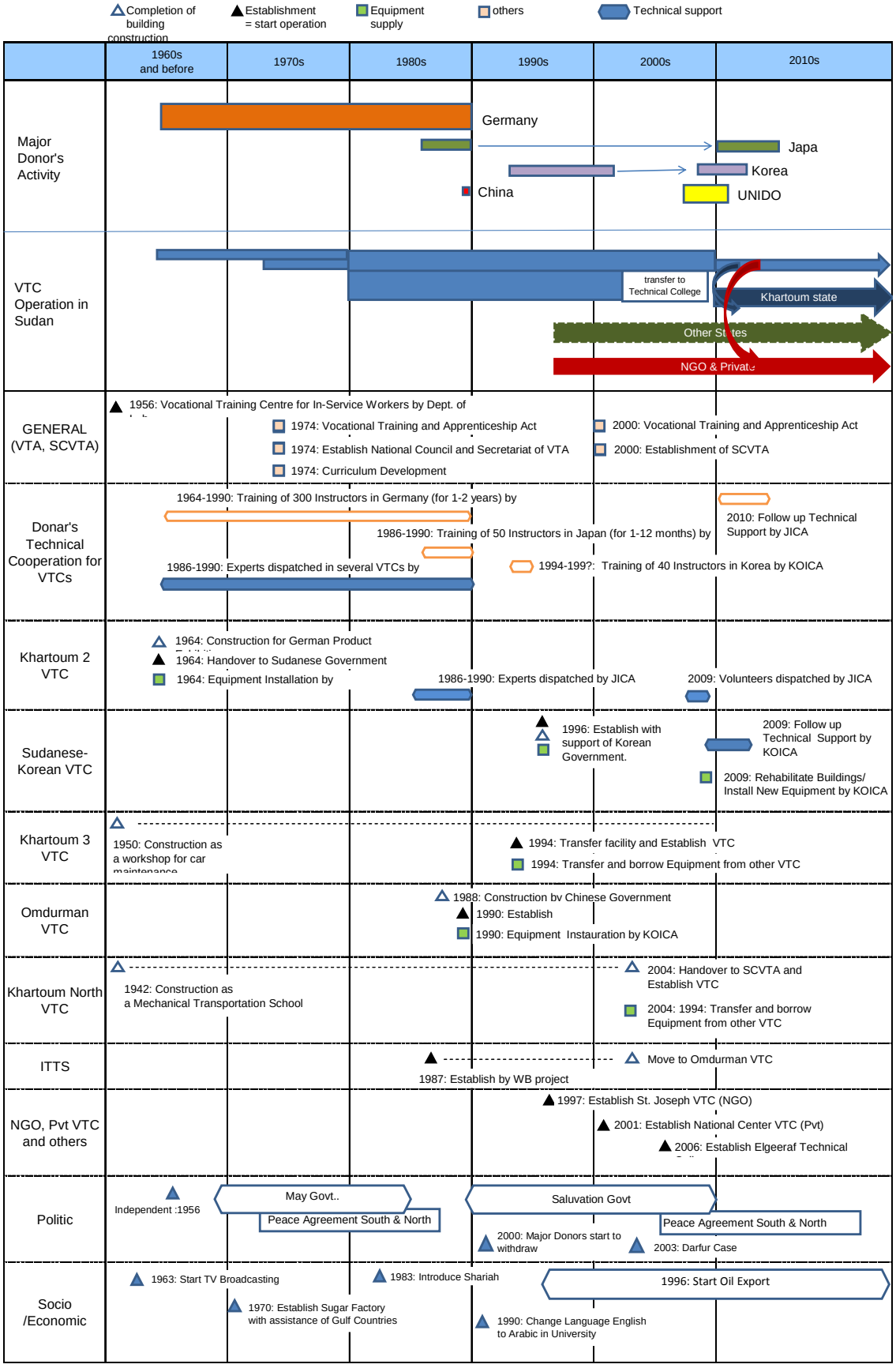
The current vocational training system is a consequence of a trial and error process for half a century. Reviewing the past process could suggest a lot for planning a better vocational training system in future in Sudan. The past process was characterized by, in a word, heavy dependence on donors' assistance.

The process since vocational training started in Sudan can be divided into the following four phases.

1. Early Phase: Before 1963
2. Development Stage Supported by Germany: 1964-1989
3. Transition Phase under the Current Government: 1990-2000
4. Current Phase under SCVTA After 2001

Figure 2.1.2 indicates evolution of vocational training development in Sudan. Major events in each phase are described as follows:

Figure 2.1.2 Evolution of Vocational Training Development in Sudan




Source: JICA Study Team based on hearing from SCVTA

(1) Early Phase: Before 1963

Technical education in Sudan started with a technical school established in 1903 under the colonial rule of the UK. These technical schools have continued to date and are currently under Ministry of Ministry of Public Education. In 1908, the first "Vocational Training and Apprenticeship Act" was established. A few decades later, Khartoum Technical College was established in 1951, which is the predecessor of present technical colleges.

A full-fledged vocational training started upon national independence. Khartoum 1 VTC was established in 1956. At that time, main purpose was to upgrade in-service skilled workers. Then, trade test system was institutionalized.

(2) Development Stage Supported by Germany: 1964-1989

In 1964, West Germany at the time started to assist vocational training in Sudan. An emphasis was given to apprenticeship training. At the same time, with German assistance, Khartoum 2 VTC was created. During the following 2 years, about 200 instructors were trained in Germany.

In 1970s, VTCs started operation in states as well. Wadi Medani and Kosti VTCs opened in 1970 with support of UNDP and ILO. Juba VTC opened in 1975 by a World Bank loan project. In 1981, Port Sudan VTC, currently transferred to technical college, opened. Technical colleges under Ministry of Higher Education started establishment in states since beginning of 1970s.

In 1974, the government amended Vocational Training and Apprenticeship Act and established National Council and Secretariat of Vocational Training Administration (NCSVTA) as an organization in charge of vocational training in the Ministry of Labor. At the time, the training standards were established. They have been a base for setting training courses and curricula.

In 1987, Institute of Training Trainers and Supervisors (ITTS) was established as annex to Wadi Medani VTC. In those days, about 50 trainers were trained in Japan. The vocational training system was, thus, rapidly developed with supports by a number of donors.

In 1989, however, Germany interrupted all the ongoing assistance programs for its stated reason that civil wars were continuing. The interruption still continues to date.

(3) Transition Phase under the Current Government: 1990-2000

The interrupt of the German assistance gave a shock on the vocational training system. However, with appearance of new donors, it kept expand in the early 1990's. VTCs started in Nyala and El Obeid with technical assistance from ILO. Omdurman VTC started with an official loan by China. The government of Republic of Korea launched an instructor training project in 1994. It also assisted the establishment of Sudanese-Korean VTC in 1998. Meanwhile, Khartoum 3 was established by own effort of the Sudanese government in 1994. Without major donors, however, many VTCs began to suffer from the difficulty in maintaining equipment, training of instructors and curriculum renewal.

According to the national decentralization policy adopted in1993. Khartoum1 VTC was transferred from Federal Government to Khartoum State Government. Many other VTCs were similarly transferred to State Governments. However, the State Governments found it financially and technically difficult for them to maintain VTCs. State VTCs were mostly transferred back to Federal Government, Ministry of Higher Education. They restarted as technical colleges. As a result, the number of technical colleges counts for 19 in the whole country at present.

The late 1990s saw new trends in the national economy. Firstly, oil export started. Secondary, government-run enterprises began to be privatized. These trends stimulated the demand for vocational training to expand. It is in this period that private VTCs emerged.

(4) Current Phase under SCVTA: After 2001

In 2001, the government revised the Vocational Training and Apprenticeship Act, in view of the decentralization policy, the favorable economic trend and the privatization policy. Accordingly, the government created Supreme Council for Vocational Training and Apprenticeship (SCVTA). It was chaired by Labor Minister and attended by relevant line ministers and representatives from the private sector and nongovernmental organizations. Despite that the organizational set-up was reinforced, many VTCs continued to suffer from the difficulty in maintaining equipment, instructors and curriculum. In 2005, National Council for Technical and Technological Education (NCTTE) was established in view of coordinating technical and technological education. SCVTA is a member organization of NCTTE.

On the other hand, vocational training was faced with new groups to be given training opportunities: the Internally Displaced People (IDP) estimated at 4 million in total and the demobilized soldiers estimated at 90,000. Under the circumstances, Korean Government assisted the vocational training in selected field such as automobile and electricity. EU/UNIDO assisted Khartoum State Government in Competence Based Training (CBT) with a focus on rapidly absorbing IDP in the labor market.

The review above suggests the two important aspects as described below.

1. Firstly, present vocational training system has been made possible to grow and survive largely with international donors. However, one could little longer expect a long-term and comprehensive assistance as ever provided by Germany. The ongoing vocational training system needs to be more self-reliant and sustainable.
2. The review also suggests that diversification has been observed in job seekers, employers and training providers. The ongoing vocational training system needs to tailor itself to the diversification.

It is, therefore, necessary to reexamine the role of SCVTA in vocational training, from the viewpoint of sustainability and the flexibility to the diversification.

### 2.1.3 Regional Distribution of Vocational Training

In Northern Sudan, large enterprises are concentrated in the capital and its surrounding area in Khartoum State and Gazira State. In this area, relative magnitude of wage workers is large. On the other hand, in the urban areas of other Sates, small and medium enterprises are concentrated. Accordingly, vocational training needs are different in line with the difference in industrial structure between the capital and states.

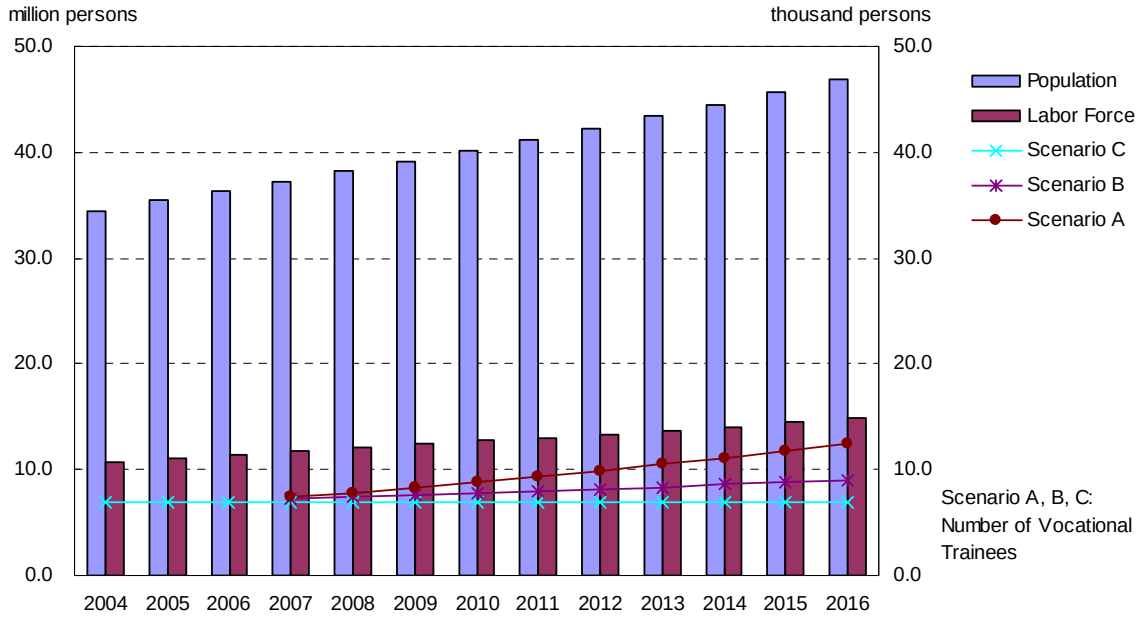
Agglomerations of small and medium enterprises are often found in the urban areas of other states. El Obeid in North Kordofan State and Kosti in White Nile State are typical examples. In case of El Obeid, approximately 500 small workshops are concentrated. Each workshop employs 3 to 10 workers and produces various items; e.g., electric parts, chairs and tables, wooden cabinets, windows, etc. or repairs machines and automobiles. In case of Kosti, many workshops are related to agriculture or livestock. Such small and medium enterprises, including independent workshop owners, need vocational training to upgrade basic skills of their employees. For example, small enterprise union in El Obeid plans to establish own VTC and conduct mobile training in association with existing State VTC.

For supply wise, the VTCs which conduct apprenticeship training are established only in 4 states out of 15 states of Northern Sudan, while 8 VTCs are located in Khartoum State. Thus VTCs are not evenly distributed.

### 2.1.4 Demand Projection for Vocational Training

The population in Sudan is expected to increase in the years ahead. Accordingly, the number of persons who require vocational training is also to increase. The following projection is made for the number of apprenticeship trainees in all the VTCs.

Figure 2.1.3 Demand Projection for Vocational Training (Apprenticeship)




Note: Labor Force includes those above 15 yeas old with will and ability for work (ILO Definition)
Scenario A: Capacity of VTCs will increase at a rate of 6.0% based on the capacity in 2006
Scenario B: Capacity of VTCs will increase at the rate of population increase or 2.58%, 2003-2008
Scenario C: Capacity of VTCs will not change.
Source: JICA Study Team based on "Statistical Yearbook 2006"

Table 2.1.1 Demand Projection for Vocational Training (Apprenticeship)

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|
| Population (million persons) | 39.2 | 40.2 | 41.2 | 42.3 | 43.4 | 44.5 | 45.7 | 46.8 |
| Labor Force (million persons) | 12.4 | 12.7 | 13.1 | 13.4 | 13.7 | 14.1 | 14.5 | 14.8 |
| Vocational Training: Scenario A | 8.3 | 8.8 | 9.4 | 9.9 | 10.5 | 11.2 | 11.8 | 12.5 |
| (thousand persons) Scenario B | 7.6 | 7.8 | 8.0 | 8.2 | 8.4 | 8.6 | 8.8 | 9.0 |
| Scenario C | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |

Note: Unit: in million for Population and Labor Force; in thousand for Vocational Training
Labor Force includes those above 15 yeas old with will and ability for work (ILO Definition)
Scenario A: Capacity of VTCs will increase at a rate of 6.0% based on the capacity in 2006
Scenario B: Capacity of VTCs will increase at the rate of population increase or 2.58%, 2003-2008
Scenario C: Capacity of VTCs will not change.
Source: JICA Study Team based on "Statistical Yearbook 2006"

Above projection was made under the following assumptions.

- The number of apprenticeship entrants in 2006 was 3,000 and total number of apprenticeship trainees was 7,000. The number of entrants counts for only 0.4% of 14–year-old population (approximately 800,000). It is very much smaller than secondary school entrants in 2004/05 (25%). However, this big

difference is considered to reflect the real situation of vocational training.

- Scenario A assumes that appropriate measures are adopted to expand vocational training and the number of trainees increases at a rate of 6.0% which is equivalent to GDP growth rate.
- Scenario B assumes that almost appropriate measures are adopted and the number of trainees increases at a rate of 2.58% which is equivalent to population growth rate. This growth rate means a constant proportion of vocational trainees in population.
- Scenario C assumes that measures to expand vocational training are in failure, and just keep the number of vocational trainees constant. This scenario is to mean that the proportion of trainees to population decreases.

According to above projections, the number of vocational trainees under Scenario A will be 12,500. It will be 9,000 under Scenario B. It is necessary to make a vocational training plan by assuming an increase of 2,000 to 5,000 trainees by the year 2016. The plan needs to cover not only facility and equipment but also the whole part of vocational training; i.e., instructors, training course and curriculum development, etc.

### 2.1.5 Qualification System

In Sudan, qualifications are given according to educational background; i.e., skilled worker, technician and engineer, by which job opportunities are restricted. Relation between qualification and educational background is as follows.

Table 2.1.2 Relation between Qualification and Educational Background

| Qualification | Educational Background |
|---|---|
| Engineer (or Specialist) | Graduated from University (Bachelor degree) |
| Technician | Graduated from Technical College (Diploma degree)<br>Community College (Diploma degree) |
| Skilled Worker | VTC (Diploma degree)<br>Technical School (Certificate) |

Source: SCVTA

The trade test which SCVTA is in charge is only for the skilled workers. It is different from that for engineers and technicians. SCVTA supervises preparation of trade testing, issuing of trade test certificate[2] and revision of certification system. Current system was introduced with instruction and support of ILO. Outline of the current trade test system for skilled workers is as shown below.

- Trade test covers from Grade3 to Grade 5.
- In case failure of testing, it is necessary to wait 6 months for applying the next trade testing.
- With 2 years work experience, it is possible to apply superior level of the trade test. As for Grade 6 and Grade 7, it is required to submit annexed documents from the company to which applicant belongs, in addition to 2 years work experience.
- Trade testing is usually taken place in VTCs. In case VTCs can not organize it, applicants can have test in appropriate industrial institutions by VTC examiner and in the presence of SCVTA supervisor.

[2] According to SCTVA, 1,081 workers obtained Trade Test Certificates in 2008.

- Trade testing standards are 1) the time to perform the work, 2) method and manner of the work, 3) accuracy of the work, 4) finishing of the work, 5) little waste of materials, 6) appropriate use of tools and its maintenance, and 7) safety.

Figure 2.1.4 Qualification System of Skilled Worker

| Post | Trade System (Skilled Worker) |
|---|---|
| Supervisor | Grade 7 |
| Foreman | Grade 6 |
| Skilled Worker | Grade 5 |
| Skilled Worker / VTC Graduate | Grade 4 |
| Skilled Worker / Technical School Graduate | Grade 3 |
| Semi-Skilled Worker | Grade 2 |
| Unskilled Worker | Grade 1 |

Source: SCVTA

Standards of the test need revision in response to development of new technology. As the matter of fact, the Trade Test Committee of SCVTA had any activities for past few years. By regulation, applicant can not have the same trade test for following 6 months, in case failure. However, if applying it again in another VTC even the next day, he can have the test. In addition, many workers run business without trade test certificate. Thus significance of trade test is practically ignored.

### 2.1.6 Recent Movement

(1) CBT

In recent years, Competency-Based Training[3] (CBT) which is one of the curriculum development methods and focuses on acquisition of skills required by the market is becoming the mainstream of vocational training. Since CBT fixes specific ability as the target, depending on the condition of trainees, skills necessary for work can be obtained in a short time. For those who need to find job or who want to start business as soon as possible (e.g., IDP, unemployed young people, poor families), CBT can be an appropriate training method. In addition, curriculum can be easily adapted according to the labor market needs. As the duration of the training can be adjusted depending on the targeted ability, cost efficiency can be expected high.

[3] The training method by using "Modules of Employable Skills (EMS)" developed by ILO is similar to CBT. The method decomposes the skill to be acquired into modules. Trainee follows modules one after another.

Table 2.1.3 Characteristics of CBT and Apprenticeship

| | CBT | Apprenticeship Training |
|---|---|---|
| Advantage | • Skills necessary for starting business or employment can be acquired in a short time.<br>• Availability of flexible training required by the labor market.<br>• High cost efficiency of the training. | • Availability of other subjects than skill training (e.g., English, mathematics, social manner, etc.).<br>• In-plant training enabling trainees to experience practical work and to find job.<br>• Possibility to go to university after complementary course.<br>• Cradle for basic school graduates until 18 years which is employable age. |
| Weakness | • Inefficiency of training unless trainees have basic academic background and conditions. | • Low cost efficiency for some people, because of unnecessary training subjects. |

Source: JICA Study Team base on hearing from SCVTA

In Sudan, Khartoum State Government has prepared vocational training programs based on CBT since 2005 with support of EU and UNIDO. NCTTE studies wider introduction of CBT into vocational training.

(2) Productive Training

Productive Training[4] means selling the products produced by instructors and trainees as a part of training and by using VTC facility and equipment.

Productive Training can reduce the financial problems of VTCs and enhance capability of instructors and trainees in marketing, pricing, consumers' satisfaction improvement, etc. On the other hand, difficulty exists in managing equipment and materials to be used for production, finding selling channels, and distributing profit among concerned parties. Since it is not fair competition, excessive Production Training would take markets of small and medium enterprises.

Table 2.1.4 Advantages and Issues of Productive Training

| Advantages | Issues |
|---|---|
| • Complement to training cost.<br>• Incentive for instructors and trainees through practice based on ordering.<br>• Increased skill and competitiveness of trainees.<br>• Practice for selling and basis for starting business.<br>• Increased sustainability of the training. | • Difficulty in keeping balance between production and training (materials, excessive use of equipment, use of trainees as low wage workers).<br>• Lack of business skill (marketing, pricing, satisfaction of consumers, profit management).<br>• Difficulty in distribution of profit.<br>• Lack of transparency of accounting.<br>• Gap between expectation of consumer and price or quality.<br>• Lack of understanding among decision makers.<br>• Unfair competition with small and medium enterprises. |

Source: JICA Study Team base on hearing from SCVTA

Port Sudan VTC, ever supported by GTZ, introduced Productive Training in 1993 to solve the financial trouble[5]. After Ministry of Finance and National Economy established revolving fund system in 1993, Productive Training was institutionalized and implemented in Omdurman VTC, too.

[4] Productive Training can cover almost all the trades. In Port Sudan VTC and Omdurman VTC, production of spare parts by Machinery Section accounted for approximately half of the total profit.
[5] In 1997, Port Sudan VTC gained annual profit of SDD 97,000,000 (value at the time).

Technical College in Khartoum under Ministry of Higher Education also positively applies Productive Training to generate funds for equipment and bonus for teaching staff.

However, VTCs under SCVTA lack management capacity for planning and production. In 2009, Ministry of Finance and National Economy applied new financial measure to collect income of Productive Training to National Treasury. As a result, Productive Training is currently not practiced in VTCs under SCVTA.

In the regulation related to Productive Training by SCVTA in 2001, it was stipulated that prices are determined by adding 10-20% for profit, and 20% of profit goes to VTC development fund.

Table 2.1.5 Distribution of Benefit from Productive Training

| Beneficiary | Percentage (%) |
|---|---|
| Implementing Section | 40% |
| VTC Administration | 20% |
| VTC Development Fund | 22% |
| SCVTA Instructors | 11% |
| Trainees involved Production | 3% |
| Labors' Union | 2% |
| Extracurricular Activities of Trainees | 2% |

Source: JICA Study Team base on hearing from SCVTA

## 2.2 Function of SCVTA and Its Secretariat

### 2.2.1 Organization

SCVTA was established as an independent organization from Ministry of Labor, Public Services and Human Resource Development, base on "Vocational Training and Apprenticeship Act" amended in 2001. SCVTA is comprised of Council, Secretariat and several Committees. In addition, SCVTA operates directly 5 VTCs in Khartoum.

Functions of SCVTA defined by "Vocational Training and Apprenticeship Act" are as follows:

"Vocational Training and Apprenticeship Act" amended in 2001
Article 6 The Supreme Council has the following functions:
(a) Setting the general vocational training and apprenticeship policies.
(b) Preparing vocational training plans and programs.
(c) Studying the needs for vocational training in different departments.
(d) Appointing specialized committees, with duties and authorities, to assist the council in performing its functions.
(e) Signing contracts and agreements.
(f) Approving the budget proposal and forward it to the concerned authorities for final approval.
(g) Recommending to the Minister the recruitment of the staff of the Supreme council.
(h) Setting the terms of service of the staff in agreeable manner with the Minister of Finance and National Economy.
(i) Being responsible for preparation and approval of:
  1: Training curricula for different groups.
  2: Specifications and standards for different occupations.
  3: Training curricula for training and supervisors or any other group.
(j) Setting the detailed procedures any systems of performing trade test for any group of workers recommended by the Council to be trade tested.
(k) Encouraging research and evaluation works in all aspects of vocational training and apprenticeship.
(l) Issuing national vocational training and apprenticeship certificates and, any certificates to be determined by the council.

SCVTA Council comprises the following 22 members as of 2009.

1. Minister of Labor, Public Services and Human Resource Development (Chairperson)
2. State Minister of Labor, Public Services and Human Resource Development (Vice Chairperson)
3. Under Secretary of Ministry of Labor, Public Services and Human Resource Development
4. Secretary General of SCVTA (Director of Council)
5. Under Secretary of Ministry of Social Welfare
6. Under Secretary of Ministry of Ministry of Public Education
7. Representative of Artisan Organization
8. Khartoum University
9. Secretary General of Engineering Council
10. Representative of Ministry of Finance
11. Secretary General of National Training Council
12. Representative of Women’s Union
13. Representative of Labor Association
14. Representative of Ministry of Industry

15. Representative of Ministry of Higher Education
16. Representative of Labors' Union
17. Coordinator of National Service
18. Representative of Youth Union
19. Legal Advisor of Ministry of Labor, Public Services and Human Resource Development
20. Representative of Ministry of Energy and Mining
21. Under Secretary of Ministry of Transportation
22. National Expert (Nominated academic)

SCVTA Council holds 4 meetings annually to discuss important issues and make decision for them. 32 sessions have been held to date since establishment of SCVTA in 2001.

SCTVA Secretariat is an implementation body of "Vocational Training and Apprenticeship Act" and composed of 4 departments under Secretary General. Since its establishment in 2001, structural reform has not been made. The fifth department, however, Vocational Training Department, is expected to be set up during the year 2009 (as of October 2009, it was not set up yet). Other assistants, Legal Adviser, Executive Manager, Internal Auditor and Registry, are assigned directly under Secretary General. In addition, SCVTA operate directly ITTS and 5 VTCs.

On the other hand, SCVTA is to supervise VTCs under State Government and VTCs operated by the private sector and NGO, provide advices and issue Diplomas and Certificates for these VTCs.

Outlines of each Department are as follows:

(1) Trade Organization and Skill Measurement Guidance Department

It is in charge of training method development, examinations conducted in VTCs, and trade tests.

(2) Technical Affairs Department

It is in charge of formulation of training plan, curricula and training material development and revision, etc.

(3) Planning and Development Department

It is in charge of formulation of activity plan for entire SCVTA, implementation of studies and statistics.

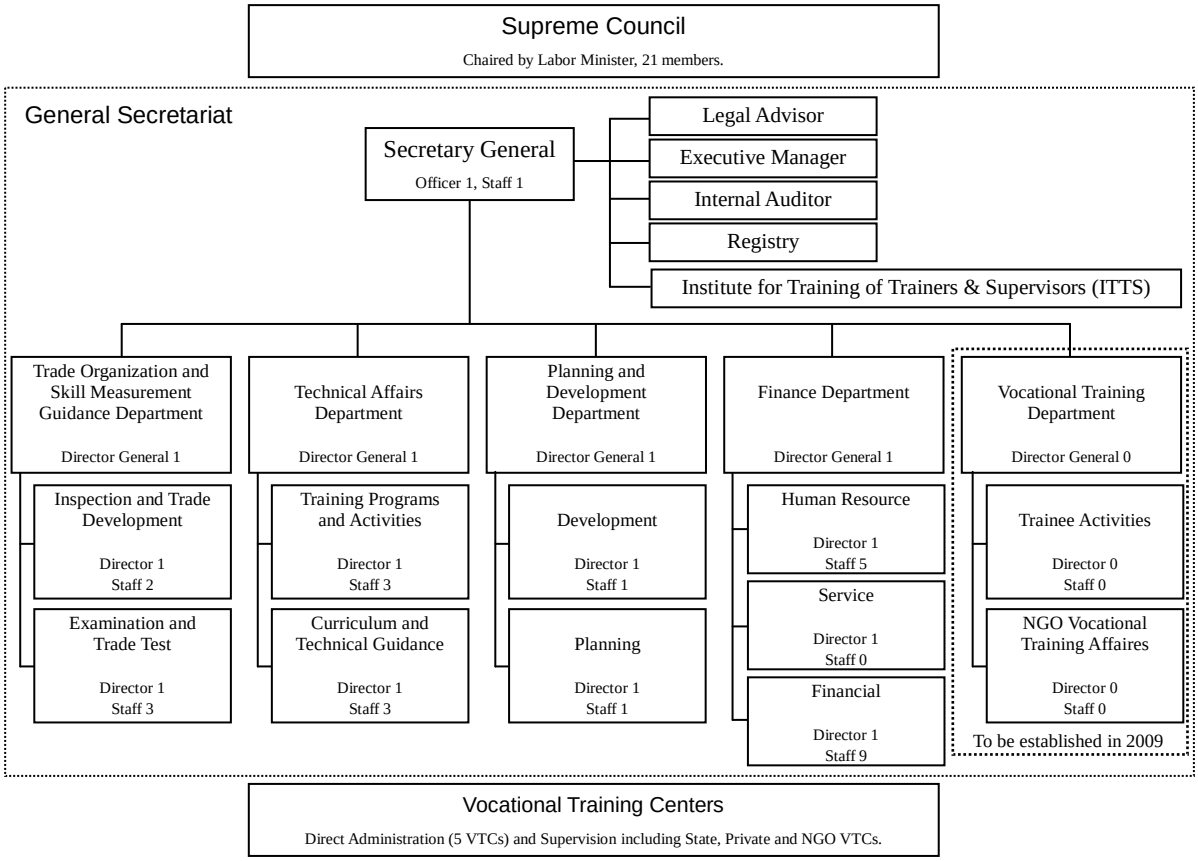
(4) Finance Department

It is in charge of accounting and personnel.

(5) Vocational Training Department

It will be in charge of provision of support for trainees, recruitment of trainees, selection, registration, supervision of vocational services provided by NGO, etc. It has not been set up as of October 2009.

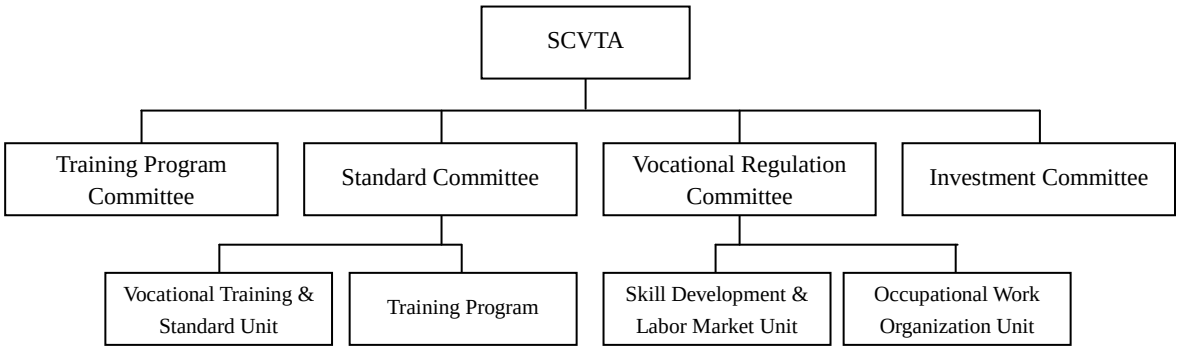
Figure 2.2.5 Organization Chart of SCVTA




Source: JICA Study Team base on hearing from SCVTA

Under SCVTA, four committees are set up corresponding to the function of each department. In recent years, only Training Programs Committee held a few meetings annually. Thus committees are not functioning.

Figure 2.2.6 Committees under SCVTA



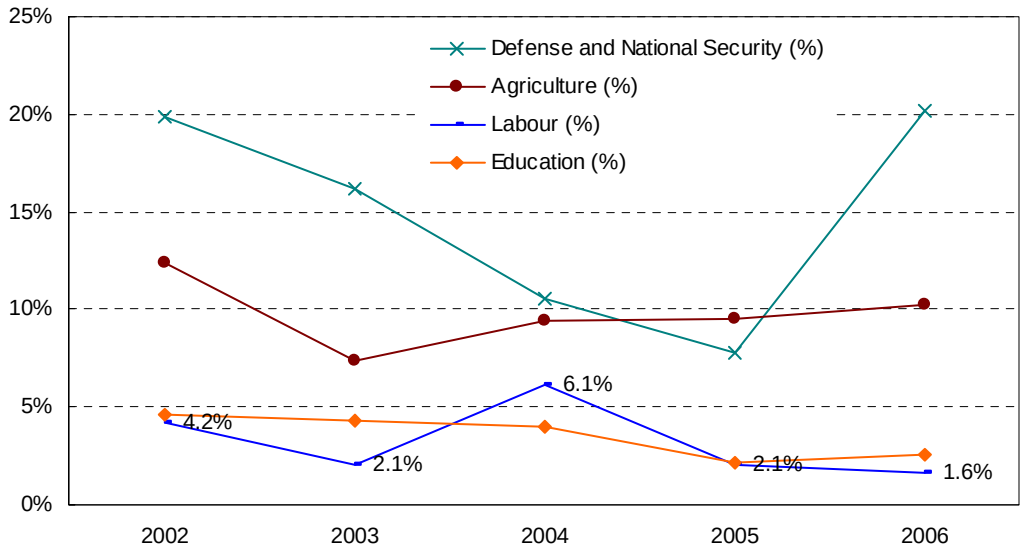

Source: JICA Study Team base on hearing from SCVTA

Furthermore, General Secretariat Council chaired by Secretary General of SCVTA and comprised of Directors General and VTC Directors holds meetings if necessary.

### 2.2.2 Finance

Federal Government is in the deficit finance and State Governments in Northern Sudan are also suffering from financial difficulties. In the Federal Government budget, shares of education and labor affairs are small (2.5% and 1.6% respectively in 2006) and those of agriculture and defense are large (10.2% and 20.2% respectively in 2006).

Figure 2.2.7 Share of Annual Expenditure for Federal Government (2002-2006)




Source: World Bank, Sudan Public Expenditure Review

SCVTA Budget is disbursed directly from the Ministry of Finance and National Economy. The budget comprises 4 items: 1) personnel expense, 2) operating expense, 3) procurement expense and 4) research expense. The budget slightly increased in recent 5 years and reached SDG 4,800,000 in 2009. However, it contains only personnel and operating expenses. Procurement and research expenses have not been disbursed. In 2008, personnel expense counted for more than 80% (SDG 4,146,892) and operating expense was SDG 661,270. the VTCs under SCVTA have difficulty in procuring or replacing training machines and materials.

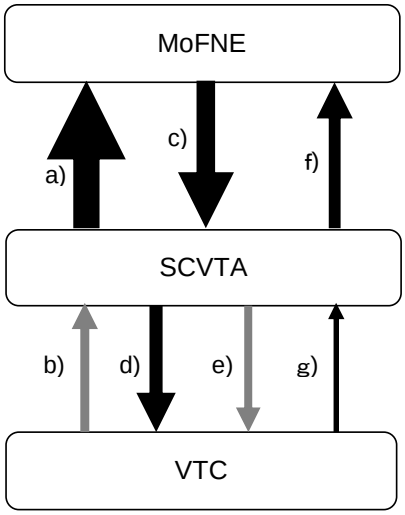
Figure 2.2.8 Trend of Annual Expenditure of SCVTA (2004-2008)


Source: SCVTA

Although the budget of SCVTA has been increasing (6.73% for personnel and 16.38% for operating expenses for 2004-2008), increase of personnel expense was less than that of prices (average inflation rate 8.09% for 2004-2007). Fortunately, salary has always been delivered to date, even with some delay.

Judging from the fact that the Ministry of Higher Education renewed equipment of some former VTCs after transferring them under authority of technical colleges, the financial situation of SCVTA and that of State Governments could not provide appropriate environment for vocational training.

Figure 2.2.9 Financial Flow among MOF-SCVTA-VTC




a) Request of Budget to Ministry of Finance and National Econc
b) Request of Material
c) Disbursement of Personnel, Operating expenses, etc. to SCV
*(Present) Operating expense is disbursed by around 70% of the requested amount in 2009.
d) Disbursement of Personnel expense, etc. to VTC
e) Provision of Operating expense (Training Material) in kind
f) (Previous) 10% of VTC income was transferred to MoFNE..
(Present) Nearly 100% (except from Application Fee and Diploma Examination Fee)is transferred.
g) (Previous) 90% of VTC income was transferred to SCVTA.
(Present) Only Application Fee and Diploma Examination Fee are transferred.

Source: JICA Study Team base on hearing from SCVTA

Each VTC under SCVTA does not have authority to establish and manage budget. Salaries of staff are paid through SCVTA, and operating expense is not given directly to VTC. SCVTA purchases necessary training materials and supplies to VTC upon approval of request from VTC.

### 2.2.3 Personnel

Appointment of SCVTA staff needs to follow the Governmental system. According to "Vocational Training and Apprenticeship Act" amended in 2001, Secretary General is appointed by Council of Ministers with recommendation of Minister of Labor, Public Services and Human Resource Development. Directors General are nominated among Grade 2 holders by Secretary General, and then appointed by Council of Ministers. Directors are appointed among Grade 3 holders by Secretary General. Similarly, Directors of VTC, Assistant Directors and Heads of Section under SCVTA are appointed among Grade 3, Grade 4 and Grade 5 holders respectively[6].

Table 2.2.1 Appointive Power and Grade of SCVTA

| Post | Grade | Appointive Power | Remark |
|---|---|---|---|
| Secretary General | Political Appointment (unrelated to the grade) | Council of Ministers | |
| Director General | Grade 2 | Council of Ministers | |
| Director | Grade 3 | Labor Minister | |
| VTC Director | Grade 3 | Labor Minister | for VTC under SCVTA |
| VTC Assistant Director | Grade 4 | Secretary General | ditto |
| VTC Head of Section | Grade 5 | Secretary General | ditto |

Source: JICA Study Team base on hearing from SCVTA

Instructors are appointed among those graduated from engineering department of universities, technical colleges, VTCs or technical schools. University graduates tend to move to better paid jobs. It is an important issue how to persuade them to stay in VTC.

SCVTA appointed 32 instructors in 2004. However, most of them have already quit due to worse employment conditions. After that, SCVTA suspended new employment of instructors, similar to other Governmental organizations. As a result, SCVTA has currently no plan for recruitment. In case instructors are recruited, National Recruitment Board involves in the same process as other Governmental officials, and SCVTA join the interview.

Government reward and punishment system is defined in the Public Service Regulation enacted in 2007; however, except a few exceptions, it has not applied. Evaluation system based on the annual activity report exists, however, only length of experience aspect is taken and performance aspect is not linked to the evaluation. Government official can complain to superior about his evaluation, and in case the answer is dissatisfactory, he can confer to the Civil Service Bureau of Justice. If one staff is evaluated below the average by different superiors for consecutive 2 years, he can be fired. In turn, he can sue SCVTA. However, in practice, no such low evaluation was given and everyone has been evaluated as excellent[7] irrelevant to performance.

[6] In case qualified instructor is not available in welding or machinery courses, it happens that head of section is appointed among Grade 7 holders.

[7] Evaluation is to be made according to performance (70%), capacity (20%) and length of experience (10%). However, everyone is evaluated as excellent in recent years. Virtually, only length of experience and capacity are used for evaluation criteria.

Age of retirement in Sudan is 60. There is an early retirement concession for the age of 50-year-old or for the length of 25 years. However, since there is no other employment opportunity, this encouragement system has rarely been used. Retirement age of 60 could be extended for 5 years in the past. This rule was amended and abolished in 2007. Instead, service contract system which allows retired staff to continue part-time job for fixed period was introduced.

Special treatment for SCVTA and VTCs under SCVTA staff is the bonus. It is paid 2 times a year. Bonus for *Eid Al Fitr* is equivalent to 1 month of salary, and that for *Eid al adha* is equivalent to 2 months of salary. In addition, SCVTA staff can get allowance for clothes: 3 months' basic salary for married person with child, 2 months' basic salary for married person without child and 1 month's salary for single person. Khartoum State Government plans to apply the same salary system as SCVTA.

Instructors of VTCs under SCVTA could get additional wage for two-shift operation of training. However, this overtime charge is gradually abolished. Instructors of private VTCs are generally more favorably treated and often employment condition is better than VTCs under SCVTA.

Following items are considered to be issues related to personnel system.

- Very few promotions of staff are made due to absence of structural reform since 2001 (many staff stay in the same position for these 5 years).
- Despite overtime resulted from two-shift, instructors can not get additional salary.
- Training and career development opportunities of staff are limited.
- Employment condition of SCVTA and its VTCs is not attractive for capable instructors.

## 2.3 VTC

### 2.3.1 Training Courses

(1) Apprenticeship Training Courses

The VTCs under supervision of SCVTA operate apprenticeship training courses in accordance with "Apprenticeship Training Standards" enacted in 1974. In the standards, 25 training courses are listed. However, the training courses currently conducted are not limited to the 25 courses. Some modifications and additions are observed. The following table compares the training courses which appear in the standards with those in practice.

Table 2.3.1 Training Standards and Training Courses Actually Implemented

| | Courses defined by Training Standards | Courses actually implemented |
|---|---|---|
| 1 | Bench Fitter (Millwright) | |
| 2 | Maintenance Fitter | Maintenance Fitting |
| 3 | Auto-Mechanic General | Automobile<br>Automobile Gasoline<br>Automobile Diesel |
| 4 | Auto-Mechanic Light Vehicle | |
| 5 | Auto-Mechanic Heavy Vehicle | |
| 6 | Welder | Welding |
| 7 | General Electrician | General Electricity |
| 8 | Electrical Fitter | |
| 9 | Installation Electrician | |
| 10 | Auto Electrician | Auto Electricity |
| 11 | Sheet Metal Worker | |
| 12 | Carpenter / Joiner | |
| 13 | Machinist | Machining |
| 14 | Turner | |
| 15 | Diesel Fitter | |
| 16 | Heavy Earth Moving Machinery Mechanic | |
| 17 | Agricultural Machinery Mechanic | |
| 18 | Fitter / Machinist | |
| 19 | Builder / Bricklayer | Building |
| 20 | Carpenter (Cabinet Maker) | Carpentry |
| 21 | Installation Electrician | |
| 22 | Plumber / Pipe Fitter | Plumbing |
| 23 | Painter / Decorator | |
| 24 | Radio and Television Mechanician | Electronics |
| 25 | Refrigeration and Air Conditioning Mechanician | Refrigeration and Air Conditioning |
| | | Technical Drawing |
| | | Computer |
| | | Dress Making |

Note: Courses actually implemented are those in 5 VTCs under SCVTA
Source: SCVTA

As indicated in the table above, 13 training courses are currently conducted in 5 VTCs under SCVTA. Technical Drawing, Computer and Dress Making courses are newly added according to change with the time and technological innovation. It is foreseen that new training courses will be necessary in line with further technological innovation, for example CAD or automation lines.

(2) Short-Term Training Courses

VTCs under SCVTA also conduct short-term training courses for women development, and skill upgrading courses for in-service workers.

Private VTCs offer more flexible training programs depending on the social needs. For most cases, duration of the training differs from a few weeks to several months.

Table 2.3.2 Number of Short-Term Training Participants in VTCs under SCVTA (2008)

| Center<br>Specialization | Omdurman | Khartoum 2 | Sudanese-Korean | Khartoum 3 | Khartoum North | Total |
|---|---|---|---|---|---|---|
| Driving First Grade | 1 | - | - | - | - | 1 |
| Nutrition | 4 | - | 21 | - | 853 | 878 |
| Dress Making | 15 | - | 6 | - | - | 21 |
| Technical Drawing | - | - | - | - | - | 0 |
| Computer | - | - | 83 | - | - | 83 |
| Electronics | - | 30 | - | - | - | 30 |
| Cooling Refrigerating | - | 4 | - | - | - | 4 |
| General Electricity | 99 | 28 | 27 | 12 | - | 166 |
| Carpentry | - | - | - | - | - | - |
| Plumping | 83 | - | - | - | - | 83 |
| Construction | 70 | - | - | - | - | 70 |
| Fitting | 66 | - | - | 8 | 8 | 82 |
| Wielding / Metal Work | 74 | - | - | 8 | - | 82 |
| Machinery | 48 | - | - | - | - | 48 |
| Car Electric | - | - | 22 | - | - | 22 |
| Diesel Mechanic | - | 29 | 40 | - | 12 | 81 |
| Gasoline Mechanic | 64 | 25 | 32 | - | - | 121 |
| Total | 524 | 116 | 231 | 28 | 873 | 1,772 |

Source: SCVTA

Table 2.3.3 Short-Term Training Courses in Mehan International VTC

| | |
|---|---|
| 1. House Management and Cooking | 11. Marketing and Selling Skills |
| 2. Office Management and Secretary Work | 12. Photograph and Reproduction Works |
| 3. Design, Drawing, Decoration, Sawing and Handcraft | 13. Actor/Actress, Musician and Dancer |
| 4. Gardening and Horticultural Administration | 14. Beauty, Make-Up, Physical Treatment |
| 5. Basic Computer and Internet | 15. Cleaning Business and Housekeeping |
| 6. Hotel, Hospitality and Tourism | 16. Arabic Language and Calligraphy |
| 7. Electric Instruments Maintenance and Home Plumbing | 17. English Language and Conversation |
| 8. Nursing and Health Education | 18. Chinese Language and Other Languages |
| 9. Caregiver | 19. Mechanic and Car Driving |
| 10. Kindergarten and Babysitter | 20. (depending on requests) |

Note: Training period is around 2 months for most programs.
Source: Mehan International VTC

However, different from apprenticeship training, these short-term training courses can confer only certificates of respective courses and can not confer Diploma.

(3) Operation of Training Course

The following table indicates all the 13 training courses conducted in 5 VTCs under SCVTA. Since 4 training courses related to automobile have strong relevance each other, they are combined as one group of training courses to form an integrated training structure.

Table 2.3.4 Apprenticeship Training Implemented in 5 VTCs under SCVTA

| | Khartoum 2 | | | | Khartoum 3 | | | | Sudanese-Korean | | | | Omdurman | | | | Khartoum North | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trainees | 1st | 2nd | 3rd | Total | 1st | 2nd | 3rd | Total | 1st | 2nd | 3rd | Total | 1st | 2nd | 3rd | Total | 1st | 2nd | 3rd | Total | |
| Instructors | Instructors | | | | Instructors | | | | Instructors | | | | Instructors | | | | Instructors | | | | |
| Maintenance | 384 | 53 | 47 | 484 | 146 | 28 | 28 | 202 | 184 | 40 | 43 | 267 | 375 | 42 | 40 | 457 | 240 | 25 | 24 | 289 | 1,699 |
| Fitting | | 6 | | | | 3 | | | | 3 | | | | 5 | | | | 1 | | | 18 |
| Auto Mechanic | | | | | | | | | | 104 | 69 | 173 | | | | | | | | | 173 |
| | | | | | | | | | | 7 | | | | | | | | | | | 7 |
| Auto Mechanic | | 47 | 47 | 94 | | | | | | | | | | 40 | 45 | 85 | | 32 | 32 | 64 | 243 |
| Gasoline | | 4 | | | | | | | | | | | | 5 | | | | 4 | | | 13 |
| Auto Mechanic | | 50 | 50 | 100 | | | | | | | | | | | | | | 30 | 30 | 60 | 160 |
| Diesel | | 4 | | | | | | | | | | | | | | | | 4 | | | 8 |
| Auto | | 37 | 32 | 69 | | | | | | | | | | 48 | 48 | 96 | | 39 | 41 | 80 | 245 |
| Electricity | | 1 | | | | | | | | | | | | 2 | | | | 1 | | | 4 |
| Machining | | 37 | 32 | 69 | | 18 | 11 | 29 | | | | | | 45 | 34 | 79 | | 16 | 16 | 32 | 209 |
| | | 2 | | | | 3 | | | | | | | | 4 | | | | 3 | | | 12 |
| Welding | | 42 | 46 | 88 | | 24 | 24 | 48 | | | | | | 30 | 25 | 55 | | 13 | 17 | 30 | 221 |
| | | 2 | | | | 1 | | | | | | | | 2 | | | | 1 | | | 6 |
| General | | 48 | 45 | 93 | | 34 | 41 | 75 | | 97 | 52 | 149 | | 42 | 42 | 84 | | 30 | 38 | 68 | 469 |
| Electricity | | 4 | | | | 3 | | | | 4 | | | | 4 | | | | 3 | | | 18 |
| Refrigeration Air | | 33 | 33 | 66 | | 36 | 39 | 75 | | | | | | | | | | | | | 141 |
| Conditioning | | 1 | | | | 1 | | | | | | | | | | | | | | | 2 |
| Electronics | | 15 | 9 | 24 | | | | | | | | | | | | | | | | | 24 |
| | | 4 | | | | | | | | | | | | | | | | | | | 4 |
| Carpentry | 27 | 24 | 19 | 70 | | | | | | | | | | | | | | | | | 70 |
| | | 2 | | | | | | | | | | | | | | | | | | | 2 |
| Technical | | 18 | 19 | 37 | | | | | | | | | | | | | | | | | 37 |
| Drawing | | 3 | | | | | | | | | | | | | | | | | | | 3 |
| Building | | | | | | | | | | | | | 50 | 50 | 28 | 128 | | | | | 128 |
| | | | | | | | | | | | | | | 6 | | | | | | | 6 |
| Plumbing | | | | | | | | | | | | | 55 | 42 | 40 | 137 | | | | | 137 |
| | | | | | | | | | | | | | | 4 | | | | | | | 4 |
| Computer | | | | | | | | | 27 | 25 | 17 | 69 | | | | | | | | | 69 |
| | | | | | | | | | | 3 | | | | | | | | | | | 3 |
| Dress Making | | | | | | | | | 12 | 14 | 18 | 44 | | | | | | | | | 44 |
| | | | | | | | | | | 5 | | | | | | | | | | | 5 |
| Total Trainees | | | | 1,194 | | | | 429 | | | | 702 | | | | 1,121 | | | | 623 | 4,069 |
| Total Instructors (excluding those who are not in charge of Apprenticeship Training) | | | | | | | | | | | | | | | | | | | | | 115 |

Note: Shadowed cells indicate “Common Basic Training” for 1 year length; trainees are divided into each trade section from the second year.

Source: JICA Study Team based on SCVTA documents and field visits (as of January 2009)

Training standards of SCVTA do not show details of training and allocation of time. Therefore, VTCs must have curriculum to operate the real training. However, written documents including time table are not available. One of the reasons might be complex operation of courses caused by two-shift. Every VTC except Khartou3 operates by two-shift to share the limited training space and tools.

Figure 2.3.1 shows the training flow currently applied by Machining course in Omdurman VTC.

Figure 2.3.1 Training Flow Applied by Machining Course in Omdurman VTC

Yearly training plan for Marching section in Omduruman VTC (Made by JICA study group )

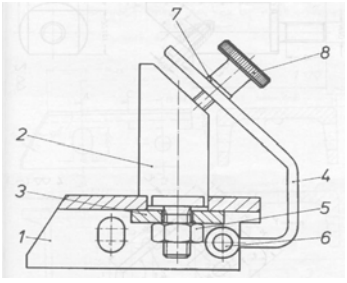
| | | September | October | November | December | January | February | March | April | May | June | July | August |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1st. month | 2nd. month | 3rd. month | 4th. month | 5th. month | 6th. month | 7ht. month | 8th. month | 9th. month | 10th. month | 11th. month | 12th. month |
| Class | Group | 1 2 3 4 5 6 7 8 9 10 11 12 | | | 13 14 15 16 17 18 19 20 21 22 23 24 | | | 25 26 | 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 | | | | 43 --- 52 |
| 1st. | A & B | Basic practice = photo's assignment -measurement -Filling -Marking -Hammering -Chiseling -Pouncing -Drilling -Tap & Dice (thread cutting)  | | | Technical Workshop -Mathematics -drawing etc / Welding | | Welding / Technical Workshop -Mathematics -drawing etc | V A C A T I O N | Contents: Lathe, shaping machine, etc,. | | | | VACATION |
| | C | Technical Workshop -Mathematics -drawing etc | Welding | | Basic practice = photo's assignment -measurement -Filling -Marking -Hammering -Chiseling -Pouncing -Drilling -Tap & Dice (thread cutting)  | | | | Assignment (Example)  | | | | |
| | D | Welding | Technical Workshop -Mathematics -drawing etc | | | | | | | | | | |
| 2nd. | | Contents: Related knowledge and operational practice of lathe machine, Milling machine, Hob machine,Surface/Cylindical Grinder.  | | | | | | V | Contents  | | | | VACATION |
| 3rd. | | in plant training one day / week = training in VTC | | | in plant training one day / week = training in VTC | | | | in plant training one day / week = training in VTC | | | | VACATION |

Source: JICA Study Team based on hearing in Omdurman VTC

All the new trainees except Building and Plumbing courses (375 trainees in 2008) attend common basic training for 6 months. 375 trainees are divided into 4 groups (A, B, C and D) to carry out, group by group, common basic training assignment, industrial mathematics, technical drawing and welding.

Common basic training assignment is to make a metal part shown in Figure 2.3.2 in 3 months. This assignment is composed of processing of 8 pieces and assembling. This assignment enables trainees to acquire many skills: cutting materials by hacksaw, filing, pointing, drilling and screw cutting.

Figure 2.3.2 Common Basic Training Assignment




Source: SCVTA

After the common basic training, trainees sit for examinations both practice and theory. Then, training course for the second year is decided according to trainee's wish and interview by instructor. Members of each course are fixed so that the number of trainees does not fall below 16 which is ILO standard.

In the second year, Machining course trainees mainly conduct practical training of lathe, milling machine,

hobbing machine, planar and cylindrical cutter by producing assignments shown in Figure 2.3.1.

In the third year, in-plant training (refer to Section 2.3.3) is conducted outside of VTC. However, trainees need to attend training in VTC 1 day a week, in accordance with the training standards.

(4) Textbooks and Training Materials

Since 2008, textbooks and training guides for instructors are prepared by SCVTA initiative. Following books are currently available,

1. Trainee textbook for Mathematics
2. Trainee textbook for Technology
3. Trainee textbook for Technical Drawing
4. Instructor Guideline for Technology
5. 1st class trainee book “Carpentry”
6. 1st class trainee book “Technical Drawing”

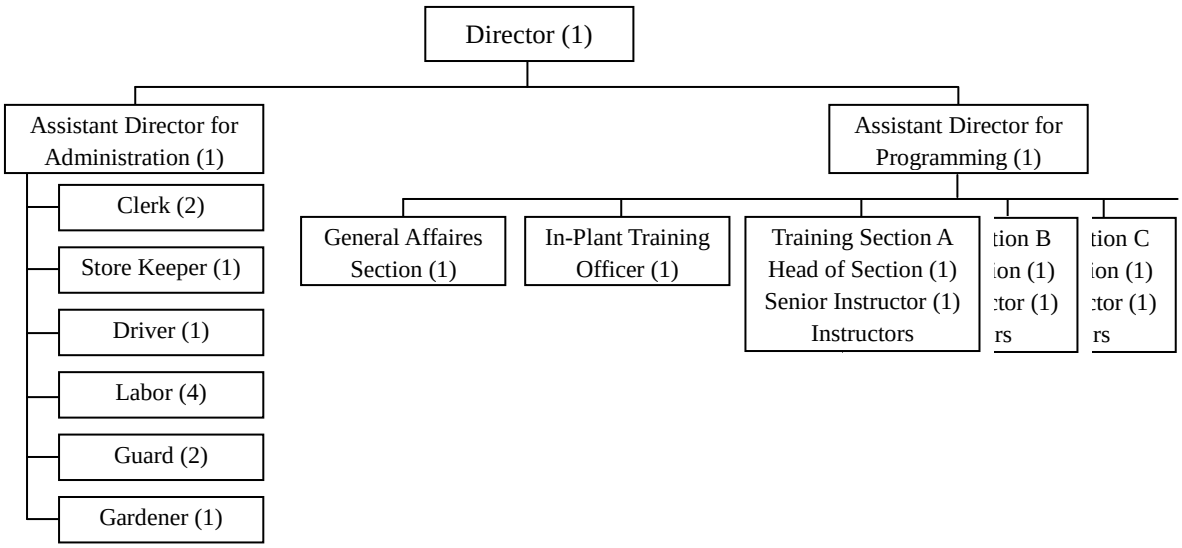
As for the common basic training assignment, a guide of production process and drawings of metal pieces are prepared and sold to trainees.

### 2.3.2 Organization and Management

(1) Organization

Figure 2.3.3 illustrates the common organization chart of VTCs under SCVTA. VTC staff includes 1) VTC Director, 2) Assistant Directors, Head of Sections, Senior Instructors, Instructors and Junior Instructors. Head of Section is one of instructors.

Figure 2.3.3 Common Organization Chart of VTCs under SCVTA




Source: SCVTA

(2) Management

A VTC is managed through the monthly management meeting which is attended by core administrative staff including each Head of Section. Heads of Section place on the agenda evaluation of trainees, issues to be dealt with, etc. Results of meeting are reported to SCVTA if necessary. However, decision is made by SCVTA which has authority to allocate the budget (however, in kind). This is also applied for implementation of short-term training courses.

(3) Personnel

The VTCs under SCVTA submit evaluation of personnel in the form of annual activity report to SCVTA. In this case, Heads of Section can submit remarks and data to their VTC Director for reference. However, since the most important evaluation basis is length of experience and the decision is always made by SCVTA, annual report of VTC Director tends to be a dead letter.

By contrast, since performance of instructor is the most important in private VTCs, evaluation of instructors is more seriously made. Instructors who showed good performance can obtain incentives such as promotion or additional salary. VTCs under SCVTA need to learn from the case of private VTCs.

(4) Training Fee

All the trainees attending VTCs under SCVTA need to pay training fee. It was SDG 150 annually in 2008, but increased to SDG 270 in 2009. Breakdown is: SDG 200 for tuition, SDG 6 for registration, SDG 40 for uniform SDG 3.5 for ID card and SDG 24 for textbooks. For the second year and third year, training fee is SDG 206.

Training fee in private VTCs is higher, since they totally rely on training fees for their operation. For example, the training fee of apprenticeship course in National Center VTC is SDG 1,000 annually.

On the other hand, Mehan International VTC which offers only short-term training courses fixes training fee at SDG 100 monthly.

### 2.3.3 In-Plant Training

The third year of apprenticeship training is allocated for in-plant training. Trainees have OJT in host companies. In-plant training officer is assigned in each VTC to select host companies and coordinate the number of trainees to be dispatched.

Neighboring companies accept in-plant training in case of Khartoum 3 and Khartoum North VTCs. By contrast, since few companies can accept in-plant training in states such as Kosti VTC, some trainees go to companies in Khartoum such as GIAD. As an example, host companies of in-plant training for Sudanese-Korean VTC are listed below.

Table 2.3.5 In-Plant Training Host Companies for Sudanese-Korean VTC

| | Enterprises |
|---|---|
| 1 | GIAD - Industrial concourse |
| 2 | El Yramouk - Industrial concourse |
| 3 | SARIA - Industrial concourse |
| 4 | Fulminate(Fire army) - Industrial concourse |
| 5 | Sudanese's Tractors Company |
| 6 | Khartoum Refinery |
| 7 | Gari Electrical Station " National Electricity Cooperation" |
| 8 | National Electricity cooperation " All Stations" |
| 9 | Dal Cars Group |
| 10 | Siga Millers |
| 11 | Weta Millers |
| 12 | Tiban center for cars maintenances |
| 13 | Cities Water Cooperation |
| 14 | Head of Police " Security police - Re serve - Special Forces - Customs police) |
| 15 | Khartoum Air Port " Air Ports Engineering" |
| 16 | Sudanese's Air Lines |
| 17 | Civil Aviation |
| 18 | Petrol Pipelines |
| 19 | International Factory for Metal |
| 20 | Malizian Factory for Metal |
| 21 | Al Asaad for Metal |
| 22 | Korean/Arabic Company for cars maintenance |
| 23 | Affras Company for Transportation |
| 24 | MCV Company for Transportation |
| 25 | Al Malahi Company for Transportation |
| 26 | Haraz Company for Transportation |
| 27 | Roads and Bridges Company |
| 28 | Ayin International for Trackers and Turnovers |
| 29 | Petro- need for Transportation |
| 30 | Petr onas for Transportation |
| 31 | Petro- transmits for Transportation |
| 32 | Head of Minister's Council |
| 33 | Public Palace |
| 34 | Fuel cooperation |
| 35 | Ministry of finance |
| 36 | General Directorate for National Services " System and Information" |
| 37 | General Director for Public Army force" System and Information" |
| 38 | System of Organize Affairs for Sudanese's out side |
| 39 | Kannar for Communication Company |
| 40 | Khartoum Teaching Hospital |
| 41 | Shikan for Insurance " Supplies - System and information - Workshops" |
| 42 | El Tihad Company for Information Technology |
| 43 | Administrative Development Center |
| 44 | Zina Net |
| 45 | Konkourap Company for Computer |
| 46 | Sudan University for science and Technology |
| 47 | El Nefidy Group " Riba for Transportation" |
| 48 | National Company for Water Tools Industry |
| 49 | El Yagout for Cars Maintenance |
| 50 | Golden Arrow Company "TOYOTA" |
| 51 | DAIHATSU Company " one of Ab El Atef Jameel Companies" |
| 52 | Cloths Factory - Police Supply |

| | Enterprises |
|---|---|
| 53 | Mercedes Company |
| 54 | Hassona Company for Cars |
| 55 | Adco NISSAN |
| 56 | North Nerve for Roads and Bridges Company |
| 57 | Sabintod for Cars Maintenance |
| 58 | Security System and National Spying "Workshops" |
| 59 | Al Mamoon for Roads and Bridges |
| 60 | Al Mamoon for Al moneyman |
| 61 | Kudal for Al moneyman |
| 62 | STS for Technological Services " Assembling and elevators maintenance" |
| 63 | Abarsy Engineering Company |
| 64 | Weather Tracker |
| 65 | Friend ship Palace Hotel |
| 66 | Hilton Hotel |
| 67 | Green Village Hotel |
| 68 | Grand holly Day Vila Hotel |
| 69 | Mirdian Hotel |
| 70 | Khartoum Central Mass back |
| 71 | Paper Currency Printer |
| 72 | SALKA for Transportation |
| 73 | Ministry of Health - Computer center Directorate |
| 74 | Sudan University for Sciences and Technology |
| 75 | Khartoum University "Service" |
| 76 | Ibrahim Malik hospital |
| 77 | Awad Hagaz Company for Maintenance and Electric |
| 78 | Engineering In ports Company |
| 79 | Medical Supplier |
| 80 | Diesel Genitor Company |
| 81 | Arabic Company for Poultry Industry |
| 82 | Suda traf Company |
| 83 | Sudanese's Agricultural Bank |
| 84 | Biayan Technician Mass back |
| 85 | Moawia El Brir Factory |
| 86 | El Mugran Family Park |
| 87 | Mamoon El Brir Factories |
| 88 | King Cola Company |
| 89 | Pepsi Cola company |
| 90 | El Gidan Company |
| 91 | Bitar Engineering company |
| 92 | National Council |
| 93 | Araac Foods Company |
| 94 | Saeed Factory for Foods Stuffs |
| 95 | Ubo Graga center for Cars Maintenance |
| 96 | Soba University Hospital |
| 97 | Coca Cola Company |
| 98 | Nile Petroleum Company GNPOC |
| 99 | Nile Petroleum Company |
| 100 | MTN Communication Company |

Source: Sudanese-Korean VTC

As the table above indicates, a variety of companies accept in-plant training: automobile manufacturers, oil related companies, food processing companies, information and communication companies, hotels, hospitals and public electric company.

A private run National Center VTC conducts in-pant training in the second year and third year of apprenticeship training. VTC aims at increasing the opportunities for finding jobs by experiencing different scale of companies: neighboring workshop in the second year and large factories in the third year.

Although VTCs do not directly support the trainees to find employment, some of them can get job through good relationship they establish with the companies for which they work on OJT basis. By contrast, some host companies do not have any post for VTC trainees, since the companies place such orders to subcontractors. Thus vocational training and employment are not always linked.

### 2.3.4 Characteristics and Situation of VTCs

Characteristics and current situation of VTCs including those under SCVTA, State Government and private sector, which conduct apprenticeship training, are as described below.

Table 2.3.6 General Situation of VTCs

| VTC | Jurisdiction | Est. | No. of Course | Enrolment Capacity | No. of Trainees | No. of Instructors | T/I Ratio |
|---|---|---|---|---|---|---|---|
| Khartoum 1 | State | 1958 | Apt: 7<br>Short: 4 | Apt: 500 | Apt: 1,228<br>Short: - | 32 | 38.4 |
| Khartoum 2 | SCVTA | 1964 | Apt: 11<br>Short: 5 | Apt 320 | Apt: 1,162<br>Short: 90 | 36 | 32.3 |
| Khartoum 3 | SCVTA | 1994 | Apt: 5<br>Short: | Apt: 160 | Apt: 411<br>Short: - | 11 | 37.4 |
| Sudanese-Korean | SCVTA | 1996 | Apt: 5<br>Women: 1<br>Short: 4 | Apt: 320<br>Women: 20 | Apt: 702<br>Women: 30<br>Short: 60 | 25 | 28.1 |
| Omdurman | SCVTA | 1989 | Apt: 8<br>Women: 3<br>Short: 3 | Apt: 256 | Apt: 1,121<br>Short: 48 | 41 | 27.3 |
| Khartoum North | SCVTA | 1958 | Apt: 7<br>Short: | Apt: 320 | Apt: 623<br>Short: 161 | 17 | 36.6 |
| Kosti | State | 1967 | Apt: 8<br>Short: 0 | Apt: - | Apt: 986<br>Short: 0 | 30 | 32.9 |
| El Obeid | State | 1991 | Apt: 8<br>Women: 3<br>Short: 3 | Apt: - | Apt: 286<br>Short: 420 | 25 | 11.4 |
| National Center | Private | 2001 | Apt: 7<br>Short: 8 | Apt: 120 | Apt:282<br>Short: 300 | 22 | 12.8 |
| St. Joseph | Private | 1997 | Apt: 7<br>Short: 0 | Apt:: - | Apt: 360<br>Short: 0 | 24 | 15.0 |
| Total | | | | | Apt: 7,161 | 263 | 27.2 |

Note: Apt: Apprenticeship courses, Women: Women development courses, Short: Short-term training courses
Source: JICA Study Team based on SCVTA document

(1) Khartoum 1 VTC under Khartoum State Government

Apprenticeship Courses:

The apprenticeship comprises seven courses; Automobile-Gasoline, Automobile-Diesel, Automotive Electricity, General Electricity, Welding, Maintenance Fitting and Machinery. VTC operates in two-shift to

accommodate trainees more than twice as many as the original quota.

Short-Term Courses:
3-month training is in operation for 4 courses; Machinery, Automobile-Gasoline, Automotive Electricity and General Electricity.

Management:
VTC budget is divided into four items; 1) personnel expense, 2) operating expense, 3) procurement expense for equipment, and 4) expense for developing training courses. As for b) operating expense, SDG 1,400,000 is allocated to cover the costs of electricity, fuel, telephone, internet, and other consumables in 2009. The item 3) procurement expense for equipment is the budget for purchasing training equipment and models. It is necessary to make application to the State Government every time. The item 4) the expense for developing training course is meant for creation of new training courses and for feasibility study on developing facilities.

The training fee is SDG 200 annually. Uniform and training materials are provided without additional cost. Local private associations support some IDP trainees who have difficulty in paying the training fee.

Issues:
Khartoum 1 VTC, being supported by EU and UNIDO, plans to conduct competency based vocational training with its main target on the IDP and the poor families. It aims at replacing apprenticeship long-term courses with CBT short-term courses to respond to training needs flexibly. It would need continuous support of EU and UNIDO for smooth implementation.

Workshops are not large and crowed with trainees. Although the VTC is operated by the State Government, it also suffers form the financial difficulty including budget allocation and disbursement as the case with VTCs under SCVTA.

(2) Khartoum 2 VTC under SCVTA

Apprenticeship Courses:
11 apprenticeship courses are in operation. The number of its courses overwhelms the other VTCs. Being located in the center of city, the number of trainees exceeds the original quota by more than double. The VTC applies two-shift training except for electronics and carpentry courses.

Short-Term Courses:
During the common basic training period, some specific equipment and workshops are not used for 6 month. Short-term training courses are conducted during this vacant period. In 2008-2009, Sava the Children (NGO) sponsored 5 courses being Automobile-Gasoline, Automobile-Diesel, Air conditioning and Refrigeration, General Electricity and Electronics for 3 months. 90 trainees participated in these courses in total.

Management:
Training fee for short-term courses was SDG 100, of which 10% went to Ministry of Finance and National Economy. 50% of the rest was used for training materials. Remaining fund was shared by instructors who

undertook the training, SCVTA Secretariat, VTC and Labors' Union. However, the system was changed in 2009, so that total amount went to Ministry of Finance and National Economy.

Issues:
VTC has a long history of vocational training since 1960s including dispatched JICA experts. On the other hand, degradation of facility is in progress. In particular, there is no appropriate room to install machines for training of new technology.

Since it is located in a vast land of city center, it would be possible to convert it into a better VTC through redevelopment of the site.

(3) Khartoum 3 VTC under SCVTA

Apprenticeship Courses:
5 courses are in operation; General Electricity, Welding, Maintenance Fitting, Air conditioning and Refrigeration, and Machinery. 411 trainees are currently registered for a capacity of 480, or 160 trainees each in 3 grades.

Neighboring companies, including Mercedes-Benz, Government Mint, iron workshop and artificial leg workshop also accept in-plant training.

Short-Term Courses:
Short-term courses are conducted only when the number of applicants exceeds the quota, within an application period of 1 month. Every year, short-term courses need to start, at latest, by March, so that the courses can close before September when a new training year begins.

Management:
Although VTC is small, trainees participate in practical training actively. This is the only VTC that SCVTA established without any external support.

Issues:
The workshop of this VTC was constructed in 1954, before transferred to SCVTA. Degradation is in progress. In addition, assigned instructors are insufficient: only 3 for each of General Electricity, Maintenance Fitting, Machinery, and only 1 for each of Welding, and Air conditioning and Refrigeration.

(4) Sudanese-Korean VTC under SCVTA

Apprenticeship Courses:
5 courses are in operation. They are Maintenance Fitting, Automobile, General Electricity, Computer and Dress Making. 702 trainees are currently registered for a capacity of 960, or 320 trainees each in 3 grades.

The VTC advertizes recruitment of trainees in newspapers every year, and is well know among basic education schools. As a result, applicants are many. However, trainees come mostly from surrounding areas of Khartoum city.

Short-Term Courses:

30 trainees for Dress Making and 30 trainees for Women Development, including food processing courses, are registered. As there are a lot of food processing industries in the southern Khartoum where the VTC is located, demand for vocational training targeted women is large.

Management:

Thanks to Korean support, VTC management is probably the best among the existing VTCs. In 2009, the rehabilitation of facilities and replacement of equipment were done. All the instructors have already received training in Korea.

Issues:

This VTC is jointly supported by not only the Government of Korea but also Hundai which is a Korean automobile maker. It, thus, focuses on the supply of industrial manpower.

Graduates of Dress Making course have difficulty to find employment, partly because the Korean sewing machines used in VTC are not popular among Sudanese companies.

(5) Omdurman VTC under SCVTA

Apprenticeship Courses:

This VTC was established in 1988 by using a soft loan provided by Chinese Government. 8 courses are in operation; Maintenance Fitting, Machining, Automobile Gasoline, General Electricity, Welding, Construction, Plumbing and Electronics. Currently, 1,121 trainees are registered, which is approximately 50% more than the original quota of 768, or 256 trainees each in 3 grades.

Short-Term Courses:

All the 8 courses of apprenticeship can organize short-term courses. In 2008-2009, 20 trainees for Maintenance Fitting, 18 for Machining and 10 for Electricity attended the short-term training.

In addition, Women Development course including Food Processing, Sewing and Handicraft is annexed to this VTC. In 2008-2009, 16 trainees for Food Processing and 3 for Sewing attended the training.

The VTC also receives trainees from Omdurman Islam University, Al Fashir University and Engineering Department of Sudan University, for the common basic training in Construction and Plumbing courses for 2 weeks.

Management:

As there are many training courses, this VTC is active as a whole. A large agglomeration of workshops exists close to the VTC. It is the largest among similar agglomerations in Khartoum. This VTC conducts in-plant training these workshops.

Issues:

Similarly with other VTCs, serious problems are lack of training equipment and tools due to insufficient

budget, and degraded equipment.

(6) Khartoum North under SCVTA

Apprenticeship Courses:

7 Courses are in operation; Maintenance Fitting, Machining, Automobile Gasoline, Automobile Diesel, Automotive Electricity, Welding and General Electricity. Currently 623 trainees are registered for a capacity of 960, or 320 trainees each in 3 grades.

Short-Term Courses:

Short-term courses are conducted only when it is asked by companies and the number of trainees reaches a quota. Automobile related courses are popular in this VTC. Automobile course for 3 months was conducted in 2008-2009 and 50 trainees for each of morning and afternoon sessions attended. Similarly, 31 trainees for morning session and 30 trainees for afternoon session attended Automobile course for 45 days.

For the 3 month course, 4 full-time instructors are assigned. Instructors of apprenticeship courses take care of the 45 day course in turn.

Management:

VTC was established in 1942 as Mechanical Transportation School covering the whole Sudan. It was annexed to Ministry of Transportation and dealt with driving license as well. It was transferred to Ministry of Labor, Public Services and Human Resources in 2004 and converted into a VTC. With such background, this VTC is specialized in automobile related courses.

With an additional income from its active short-term training activities, maintenance condition of equipment is better than other VTCs.

Issues:

Only 1 instructor for each course is appointed for Maintenance Fitting, Automotive Electricity and Welding. 2 instructors lack in each course. The shortage has been filled by temporary instructors under National Service. They are too young and do not have any experience of instructor.

Although automobile course in this VTC is well known, test driving cars are not enough.

(7) Kosti VTC under White Nile State Government

Apprenticeship Courses:

When VTC was established in 1967, there were only 2 courses of Automotive Electric and Welding. Currently, 8 courses are in operation; Automobile Gasoline, Automobile Diesel, Automotive Electricity, Agricultural Machine, Maintenance Fitting, Welding, General Electricity and Machining. 986 trainees are registered.

Short-Term Courses:

Short-term course is not available.

Management:

In 1986, UNDP extended technical support, and grant aid for equipment and construction of a facility in order to expand the number of training courses from 2 to 8. After that, however, there has been no assistance from donors. Currently, training is conducted in the degraded and crowded workshops.

Many instructors of VTC have experience of training in Japan in 1979. The VTC Director has experience of training in Nagoya, Japan for 7 months. Equipment provided by JICA is still in use.

Issues:

There is little communication between Federal Government and State Government. Information on vocational training plan and data are not commonly shared. It is necessary to assign an officer in the State Government who is in charge of communication and coordination with SCVTA.

Being located in a crossing point to connect itself with north, south, east and west, White Nile State is rich in agriculture and food processing industries. Vocational training related to promotion of agriculture sector is promising.

(8) El Obeid VTC under North Kordofan State Government

Apprenticeship Courses:

VTC was established in 1991 and transferred to the State in 1994. 8 training courses are in operation; Machining, Automobile Gasoline, Automobile Diesel, Construction, Plumbing, General Electricity, Maintenance Fitting and Welding. 286 trainees are registered.

Short-Term Courses:

As a part of Women Development, Dress Making, Cooking and Shoe Making courses are conducted. Machining, General Electricity and Construction courses are operated for in-service workers. VTC receives university students within the State. The number of participants for short-term training courses counts 420 annually.

Management:

Similarly with White Nile State, the VTC was established by support of UNDP. Recruitment of trainees is advertized on television, radio and signboards. Annually 160-170 candidates apply for a capacity of 130.

There is a plan to open Agricultural Machine and Electronics courses.

(9) National Center VTC under private management

Apprenticeship Courses:

Until 2008, there were 6 courses; Air Conditioning and Refrigeration, General Electricity, Welding, Automobile, Automotive Electric and Technical Drawing. In 2009, Construction course was added. For the first year, trainees attend basic course for the first 6 months, and then specialized courses for the following 4 months. For the second year, trainees continue specialized courses for 6 months, and then in-plant training for 4 months. For the third year, trainees again attend specialized courses for 2 months, and finally in-plant

training for 8 months. In-plant training in the second year is conducted in nearby workshops. In the third year, many of trainees go through in-plant training in large companies. Owing to such well organized in-plant training, 100% of graduates can find the job.

Short-Term Courses:
The 2-year courses without Diploma are available for the same trades. Trainees enter every January and June. When one group attends training in the VTC, another group conducts in-plant training outside of the VTC. By this innovative system, this VTC utilizes most efficiently the limited training space and equipment.

Management:
The VTC Director used to be an instructor in a VTC under SCVTA. Most of instructors have rich experience in VTCs or private companies.

The VTC advertizes recruitment of trainees in newspapers or on television. As a result, trainees come from many regions including South, Darfur and East. The capacity of apprenticeship course is 120 yearly, but the number of applicants exceeds more than 300. VTC gives priority on the graduates of secondary schools and those who can pay training fee within a fixed time. This VTC does not apply examination for admission.

Training fee for apprenticeship course is SDG 1,000 annually and that for 2-year course is SDG 800 annually. The VTC does not receive any support from the Government and is totally run by private business basis.

Issues:
Some trainees quit the VTC because of a high training fee.

(10) Saint Joseph VTC under the management of Don Bosco Catholic Mission
Apprenticeship Courses:
7 courses are in operation; Welding, Machining, Printing, General Electricity, Carpentry, Automobile and Construction. This VTC follows SCVTA standards. Trainees attend training in VTC for the first 2 years and conduct in-plant training in the third year. VTC used to apply two-shift. However, due to an excessive work on the instructors, it has been abandoned. Total number of instructors is 24. This means that 3 to 4 instructors are assigned to each course.

The VTC is currently reviewing the contents of training. CNC training has been introduced in Machining course.

Short-Term Courses:
VTC does not conduct short-term courses for private companies or in-service workers.

However, the VTC, in cooperation with NGO, conducts vocational training for juvenile prisoners and the IDPs from Southern Sudan. In the latter case, IOM supports the trainees who have completed the training to return to Southern Sudan.

Management:

The VTC is managed by the headquarters of Don Bosco Catholic Mission in Italy. Training fee is free. All the equipment is maintained in good condition and covered when it is not in use. Every year, an inspection mission from the headquarters of Don Bosco visits the VTC to check the equipment and make decision to abolish, to repair or to replace. Equipment to be replaced is purchased in Italy or locally.

Trainees are admitted by examination, but poor families are given priority. The VTC operates free transportation for trainees between the VTC and the area where IDP live; Jabal Aulia, Mayo, Haj Yousef, etc. In addition, the VTC provide trainees with free breakfast.

Carpentry and Printing workshops receive orders from outside to generate income.

Issues:

Since the salary of instructors is kept low, instructors tend to find jobs in other places such as United Nations. Therefore, VTC often needs to recruit and train instructors. Currently, a majority of instructors are graduates of the VTC itself, but they are still young and less experienced.

(11) Common Issues

Common issues for VTCs under SCVTA and State Governments are the number of trainees which significantly exceeds the original capacity, and degradation of facilities and equipment.

The average number of trainees per instructor is 10-20 for private VTC and 30-40 for public VTC. This means that public VTCs accommodate trainees twice many as those by private VTCs. This fact must affect the quality of training.

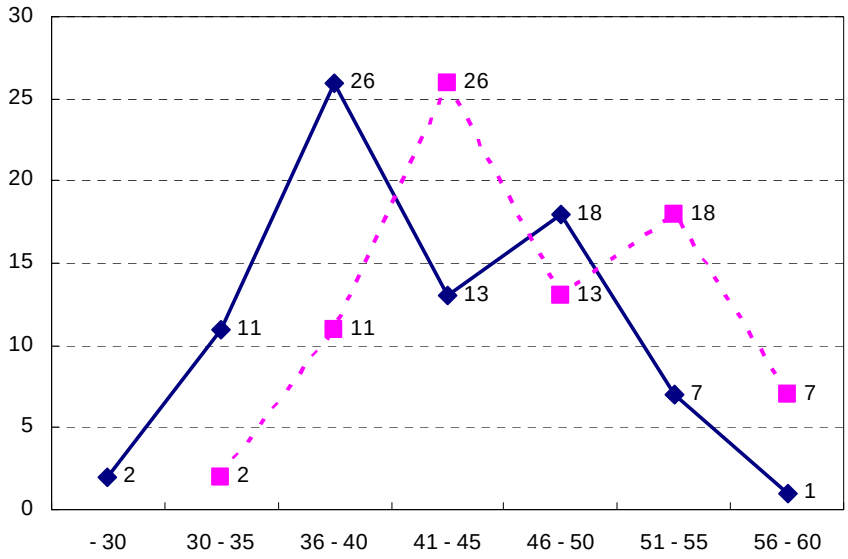
## 2.4 Instructors and Training of Instructors

### 2.4.1 Current Situation of Instructors

(1) Age Structure of Instructors

The following figure shows the age structure of instructors, based on the questionnaire to sample instructors working in the 5 VTCs under SCVTA.

Figure 2.4.1 Age Structure of Instructors



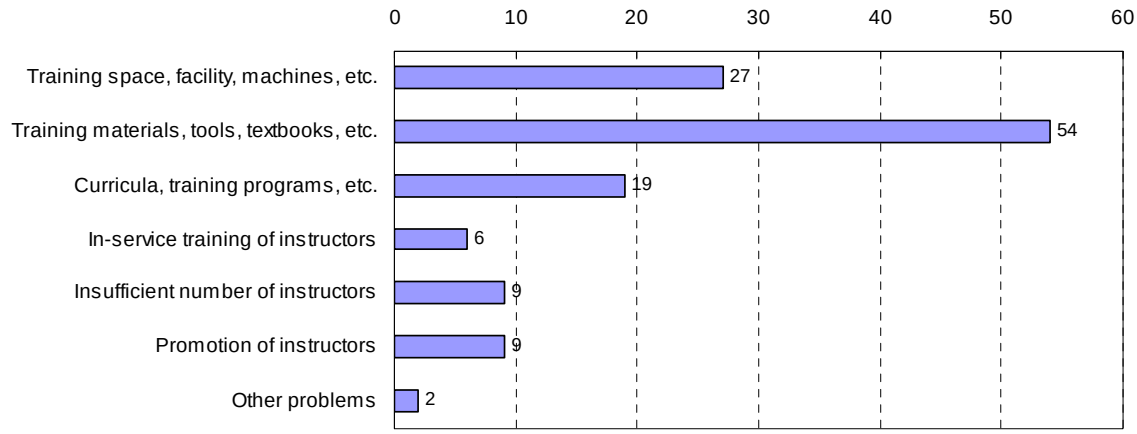

Note: Questionnaire sheets were distributed to 130 instructors of 5 VTCs under SCVTA. Valid answers were obtained from 78 instructors (60%).
Source: JICA Study Team

There are 2 peaks in the age distribution. The largest age group is 36-40 year-old and the second one is 45-50 year-old. If this pattern does not change, more than half of the instructors could be over 50 years old in 10 years. Only 2 instructors are younger than 30 years old. Only 13 instructors are younger than 35 years old accounting for 17% of the total number of instructors. It is absolutely necessary to continuously recruit instructors to continue vocational training in a sustainable manner.

(2) Problems Encountered by the Instructors

Figure 2.4.2 shows results of a questionnaire survey on the problems which instructors are facing. Training facilities, equipment, tools, materials and consumables have represented 65% of problems. In addition, obsolete training programs, lack of instructors and insufficient opportunities for training of instructors have also been pointed out.

Figure 2.4.2 Problems Encountered by Instructors



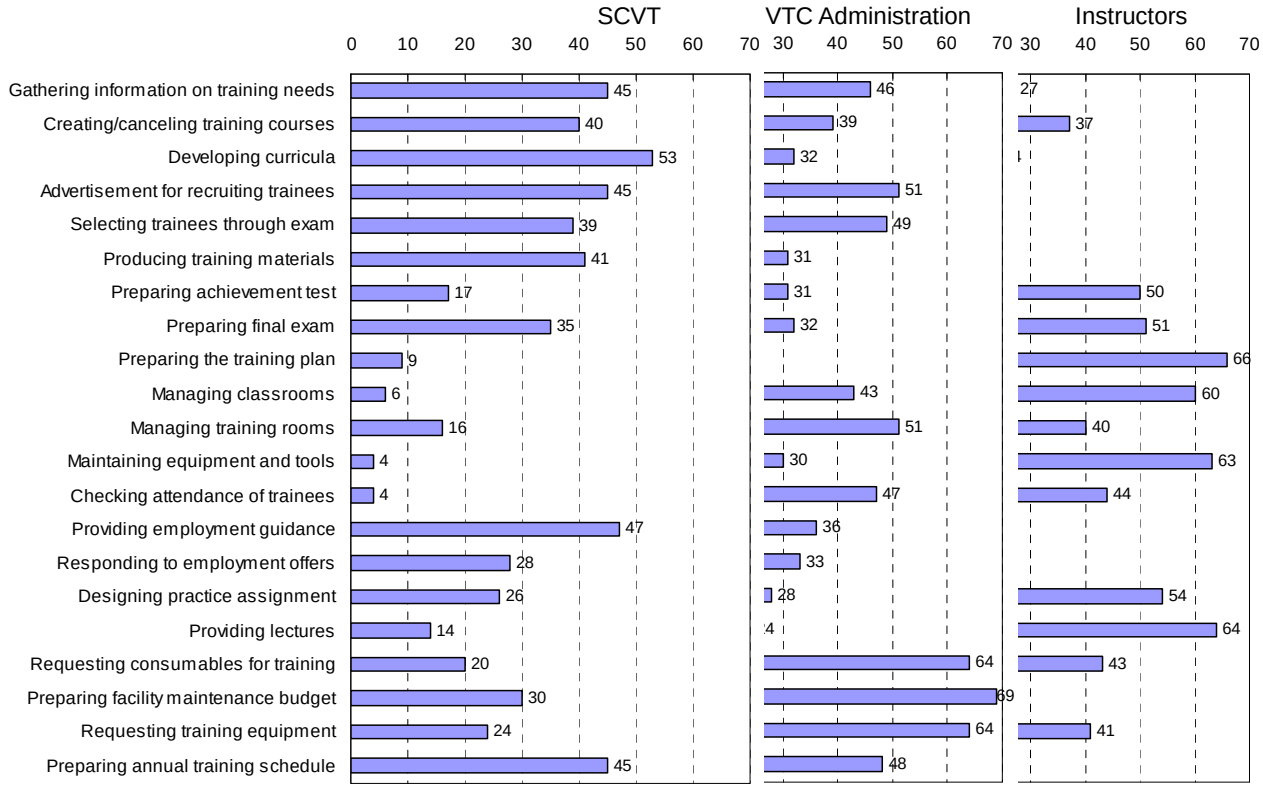

Note: Questionnaire sheets were distributed to 130 instructors of 5 VTCs under SCVTA. Valid answers were obtained from 78 instructors (60%). Multiple answers were allowed.

Source: JICA Study Team

(3) Instructors' Attitude toward Responsibility

Figure 2.4.3 shows instructors' idea about responsible persons for each of 21 items of daily work.

Figure 2.4.3 Instructors' Idea about Responsible Persons




Note: Questionnaire sheets were distributed to 130 instructors of 5 VTCs under SCVTA. Valid answers were obtained from 78 instructors (60%). Multiple answers were allowed.

Source: JICA Study Team

This question allowed instructors to give multiple answers. Many instructors do not think that they are responsible for curriculum development, recruitment of trainees, preparation of training materials, guidance of employment for trainees, response to employment offers, request for necessary training equipment, and formulation of annual training schedule. They think that VTC administration or SCVTA are responsible for these matters.

### 2.4.2 Pre-Service Training of Instructors

In Sudan, there is no full-fledged institution to produce specifically instructors for VTC. It is necessary for those who want to be instructors to attend the instructor pre-service training in ITTS[8] after graduating from engineering or science department of universities, technical colleges, VTCs, or after working experience in the specific fields for a designated period. Then, license of instructor is delivered.

The curriculum of pre-service training originally needed 2-3 months. ITTS developed a shortened program of 3 weeks by extracting key elements. The contents of pre-service training are mainly lectures on the process, preparation and method of vocational training, etc. Lecturers are mostly members of SCVTA staff.

Table 2.4.1 Pre-Service Training Programs in ITTS

| Day | 9:00 – 10:30 | 11:15 – 12: 45 | 13:00 – 14:30 |
|---|---|---|---|
| 1 | Opening, Registration, Orientation | | |
| 2 | Role of Instructors in the Training Operation | Vocational Training: Past and Future | |
| 3 | Education Theory: Basics for Changing Trainees' Behavior | | |
| 4 | Industry's Psychological Science (Market or Competition, etc.) | Analysis of Each Trade (Labor Market Analysis) | |
| 5 | (Continuation) | Fixing of Training Goals | |
| 6 | (Continuation) | Management of Training Situation | |
| 7 | Safety and Hygiene | Communication and its Effect on Training Operation | |
| 8 | Educational Tools (Machines, Equipment, Media, Materials, etc.) | | |
| 9 | Educational Tools (Machines, Equipment, Media, Materials, etc.) | | |
| 10 | Type of Training Methods | | |
| 11 | Evaluation Method of Training | | |
| 12 | Planning of Theoretical Lessons | | |
| 13 | Planning of Practical Lessons | | |
| 14 | Practice of Preparation for Theoretical and Practical Lessons | | |
| 15 | Test and Practice | | |
| 16 | | | |
| 17 | | | |
| 18 | Evaluation and Closing | | |

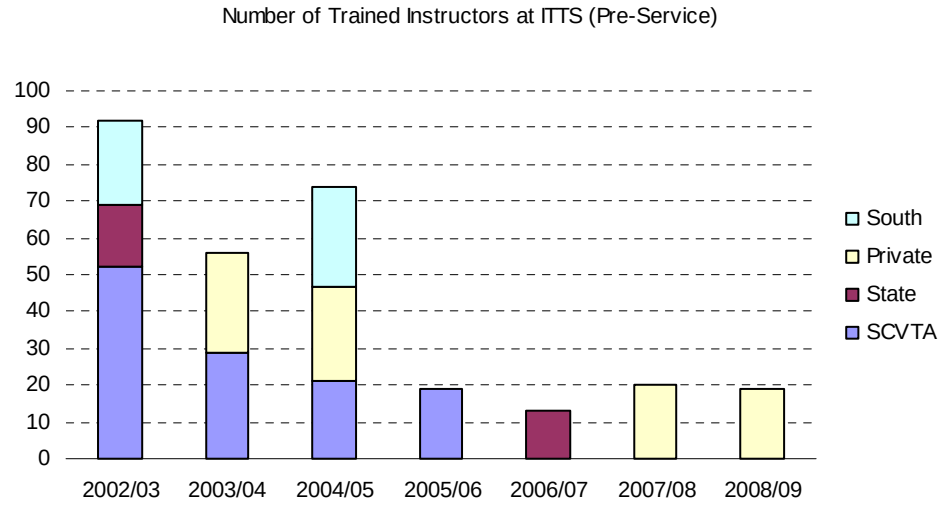
Source: ITTS

Candidate instructors are provided with daily allowance of USD 2 and basic stationeries. Lecturers receive USD 30 per hour. They give lectures for 7 hours per day. Such expense for pre-service training is provided by the responsible organization of respective VTCs such as SCVTA, State Government, etc. Financial constraint is one of the reasons for shortening the pre-service training period.

[8] Institute of Training of Trainers and Supervisors (ITTS) was established in 1987 as an annex to Wadi Medani VTC by the Third Education Project funded by World Bank in order to conduct training of instructors according to ILO standards. In 2001, ITTS was moved to Khartoum and annexed to Omdurman VTC.

The pre-service training is not conducted on a regular basis. It is conducted only when VTCs appoint new instructors. Since VTCs under SCVTA have stopped recruitment of new instructors since 2004, the pre-service training is currently conducted only for private VTCs and State VTCs.

Figure 2.4.4 Recent Pre-Service Training Programs in ITTS




Source: ITTS

In comparison with the pre-service training for the teachers of secondary and technical schools, duration of ITTS is obviously too short for both theories and teaching practices.

Table 2.4.2 Comparison between Pre-Service Training for Teachers and Instructors

| Pre-Service Training for Teachers | Pre-Service Training for Instructors |
|---|---|
| 1. Graduating from secondary schools.<br>2. Three-year schooling in education department of universities and 1 year teaching practice in schools. | 1. Graduating from engineering department of universities, technical colleges, VTCs or rich working experience in the specific fields.<br>2. Three-week pre-service training in ITTS |

Source: Hearing from SCVTA

However, vocational training requires a wider area of specialties than general secondary education. The current system to recruit candidate instructors from diverse institutions and industries must be economically much more efficient and able to respond emerging needs of vocational training.

During the Study, an interview survey to 30 instructors was conducted in April 2009. According to the result, educational background of instructors was as shown in the table below.

Table 2.4.3 Educational Background of Instructors

| VTC Graduates (Diploma) | Secondary School Graduates (with rich work experience) | University or Technical College Graduates | Total |
|---|---|---|---|
| 19 | 4 | 7 | 30 |

Source: Interview Survey to 30 Serving Instructors, JICA Study Team, April 2009

It is understood that educational and technical background of instructors is generally diverse. Instructors in VTCs under SCVTA are generally older than those in other VTCs due to recent suspension of new recruitment. There is a tendency that more university graduates are found among older instructors.

The following table summarizes issues and possible measures for instructor pre-service training.

Table 2.4.4 Issues of Pre-Service Training of Instructors and Possible Measures

| Issues of Pre-Service Training | Possible Measures |
|---|---|
| • Pre-service training in ITTS is only for 3 weeks and too short | ✓ Enhance in-service training (as described below) since it is more important to follow up and encourage the new instructors after allocation.<br>✓ Extend pre-service training period up to 2 months, in future. |
| • Pre-service training in ITTS deals with only methodology. | ✓ Provide complementary technical training depending on the necessity of candidate instructors: e.g., experience of common basic training for university graduates; complementary theory lecture for VTC graduates, etc. |

Source: JICA Study Team

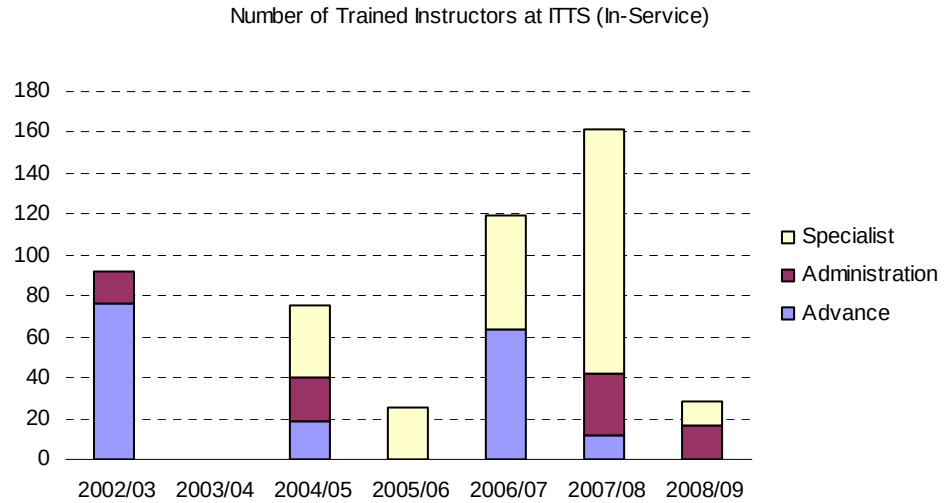
### 2.4.3 In-Service Training of Instructors

The current situation of instructor pre-service training suggests that support would be more important for technical and skill upgrading after allocation of instructors to VTCs.

(1) In-Service Training in and around VTC

However, in practice, in-service training is not often organized in ITTS. Even it is organized, only some instructors of some categories can benefit from the training program. As the following figure shows, the number of beneficiaries of in-service training for each program drastically differs year by year. With this sort of programming, it is not possible to intentionally upgrade the capacity of instructors in every aspect of training method, management and new technology.

Figure 2.4.5 Recent In-Service Training of Instructors in ITTS




Note: Advance: Advanced training method, Administration: for Administrators, Specialist: Technical training
Source: ITTS

According to the interview survey to 30 instructors, the instructors who have long experience often have chance to exchange ideas or skills with other instructors upon examination committee meetings, seminars, workshops, etc. On the other hand, the less experienced instructors who do not have external activities, except those who are voluntary and active, have little opportunities for such technical exchange. This tendency is distinct among the instructors whose experience is less than 5 years. Such instructors must receive the strongest support.

The same interview survey tells that most instructors carry out voluntary activities for skill upgrading; namely, collection of information on advanced technology through website, reading of referential documents and individual learning from more experienced colleagues. In addition, some active instructors organize visits to private companies, visits to workshops and participation in individual training programs. Such voluntary activities are important, and necessary to be integrated into an official in-service training program.

(2) Evaluation of Instructors

The instructors of the VTCs under SCVTA are classified into 3 levels by qualification: junior instructor, instructor and senior instructor, based on the capacity and experience as well as on the VTC Director's evaluation. However, in practice, qualification is determined automatically according to length of experience. According to an interview survey to VTC Directors, they are responsible for reporting evaluation of instructors to SCVTA, but not for making decision. In addition, there is neither objective method of evaluation nor unified form. Promotion of instructors is decided at the SCVTA level mainly based on the length of experience. As a result, VTC Directors tend to make passable reports.

In case of private VTCs, the quality of instructor results in performance of trainees and their employment opportunities, therefore a more serious evaluation is made. For the instructors who produce good results, various incentives are given, including promotion, increased salary, etc. In order to improve the quality of instructor, it is not enough to provide opportunities of in-service training. It is necessary to establish a mechanism for instructors to utilize willingly what they have acquired in the real training sessions.

Table 2.4.5 Issues of In-Service Training of Instructors and Possible Measures

| Issues of In-Service Training | Possible Measures |
|---|---|
| • Continuous training for improving training method is necessary in ITTS. | ✓ Conduct periodically and intentionally, advanced methodology course by targeting instructors of 5th year, 10th year, etc.<br>✓ In the long-term, it would be necessary to establish more sophisticated ITTS; however, it is also necessary to establish decentralized in-service training system to respond needs in VTCs in states. |
| • Voluntary and continuous training for improving capacity of instructor is necessary based in VTC or group of VTCs. | ✓ Create opportunities for instructors' technical exchange.<br>✓ For example, institutionalize periodical Voluntary Study Group of instructors and give qualification to the group leader.<br>✓ Conduct skill competition among instructors and give awards. |
| • Opportunity to learn new technology used in the real industries is necessary. | ✓ Create technical training opportunity in cooperation with local enterprises. |
| • In VTCs under SCVTA, evaluation and incentive system is practically absent. | ✓ Establish objective evaluation method and institutionalize incentives for well performed instructors. |

Source: JICA Study Team

### 2.4.4 Demand Projection of Instructors

Based on the demand projection for vocational training described in Section 2.1.4, the number of necessary instructors is estimated for the period 2009-2016. The number of necessary instructors includes all the instructors in charge of apprenticeship courses in the VTCs under SCVTA, State Governments, private and NGO.

Table 2.4.6 Demand Projection of Instructors

| | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|
| Vocational Training: | Scenario A | 8.3 | 8.8 | 9.4 | 9.9 | 10.5 | 11.2 | 11.8 | 12.5 |
| (thousand persons) | Scenario B | 7.6 | 7.8 | 8.0 | 8.2 | 8.4 | 8.6 | 8.8 | 9.0 |
| | Scenario C | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| Instructors: | Scenario A | 417 | 442 | 468 | 496 | 526 | 558 | 591 | 627 |
| (persons) | Scenario B | 378 | 388 | 398 | 408 | 418 | 429 | 440 | 452 |
| | Scenario C | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 |

Note: This projection does not include clerical staff and administrative staff, excluding Heads of Section.
Calculation was made by assuming that the number of trainees for each instructor is 20.
This projection does not include the instructors to fill up vacancy of retired instructors.
Scenario A: Capacity of VTCs will increase at a rate of 6.0% based on the capacity in 2006
Scenario B: Capacity of VTCs will increase at the rate of population increase or 2.58%, 2003-2008
Scenario C: Capacity of VTCs will not change.

Source: JICA Study Team

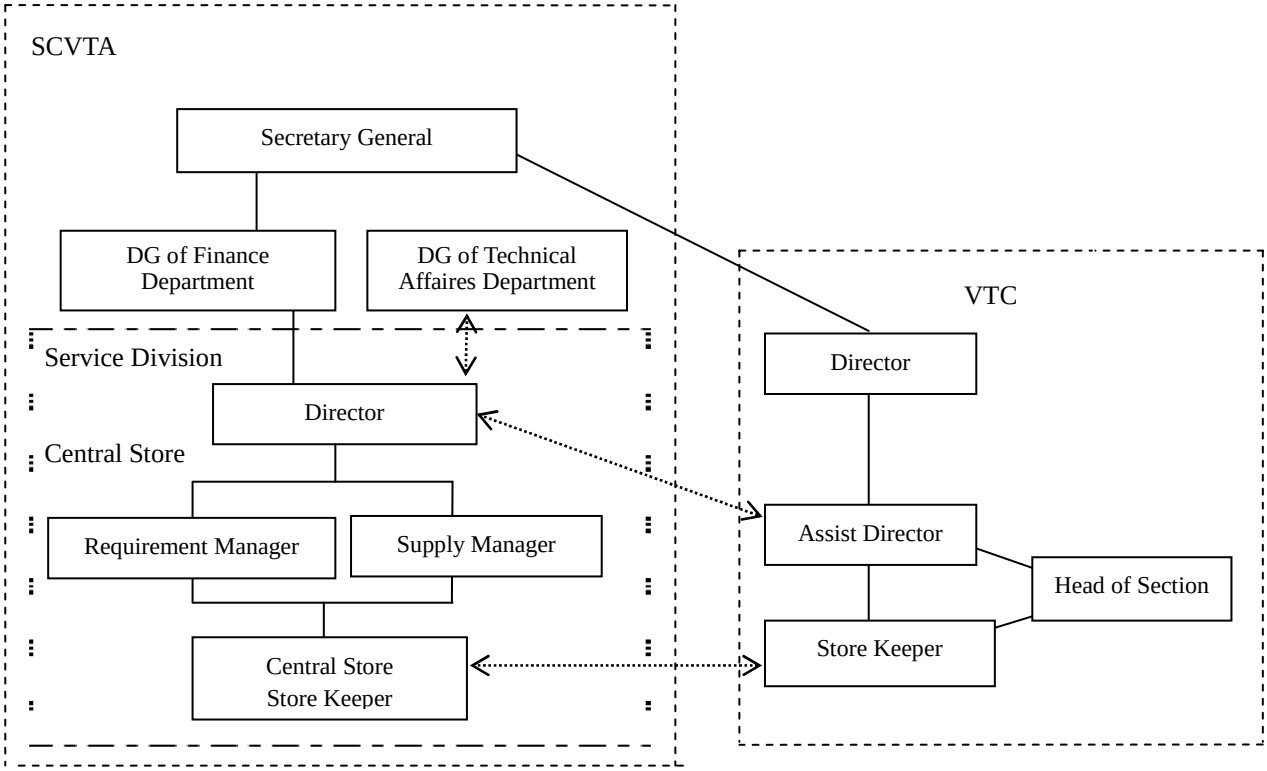
Assuming that the number of instructors is 350 in 2006, under Scenario A, 627 instructors will be necessary in 2016. It is approximately 2 times as many as the current number. In practice, there will be a lot of retired instructors by that time, and it would be necessary to recruit more instructors and train them for the promotion of vocational training in Sudan,

## 2.5 Facility and Equipment Management System

### 2.5.1 Current Situation of Maintenance System

Five staff members of Service Division under Finance Department of SCVTA and store keeper of each VTC are in charge of management of equipment, tools and consumables.

Figure 2.5.1 Organization Chart for Maintenance




Source: SCVTA

(1) Facility Management

The formal system specifies that VTC Director reports defects and approximate cost to SCVTA, then SCVTA requests Ministry of Finance and National Economy. Finally, it is included into the budget. However, due to financial constraints, it has been rarely done. As a result, SCVTA staff is discouraged from facilities and tends to be dependent on donor's support. There is another way to raise funds by conducting the activities to generate income through productive training, short-term training courses, etc. However, with instruction of Ministry of Finance and National Economy, this activity is suspended.

(2) Equipment Management

Head of Section in VTC is responsible for equipment. It depends a lot on attitude and capability of Head of Section whether equipment is appropriately used, timely checked or immediately repaired. It happens that VTC applies reparation cost to SCVTA. However, similarly with the facility management, application process is often stagnated, since it is necessary to get approval from Ministry of Finance and National Economy.

(3) Tool Management

Head of Section is responsible for tools distributed to each section. Tools are distributed to trainees from the cabinet or shelf when the training starts, then they are returned to the original place. Until 20 years ago, when the Government of Germany extended technical support, necessary tools kit was distributed to each trainee, and the trainee was responsible for its management.

Spare tools are kept in Central Store and each VTC store. It is necessary to get approval from SCVTA Secretary General and VTC Director respectively, to use the spare tools. In case necessary tool is not available in VTC Store, VTC Director calls SCVTA. If Central Store has stock, the tool is distributed to VTC by Service Division staff with Secretary General's approval. Many VTCs are suffering from insufficient number of tools. The tool required by every trainee according to curriculum is often used by 5 to 10 trainees. The training program is inefficient due to long waiting time for tools. This situation has been made more serious as VTCs accommodate more trainees than the original capacity.

(4) Consumables Management

Service Division procures consumables for training such as mild steel, cement, sand, etc. every year by a bid based on the list prepared by Technical Affaires Department. Then, consumables are kept temporarily in Central Store and distributed to each VTC before the training starts. After delivery to VTC, Heads of Section are responsible for management and distribution to trainees. It sometimes happens that necessary consumables are not delivered in accordance with the number of trainees or contents of the training due to insufficient budget.

(5) Management of Central Store

SCVTA manage equipment and tools by Store Keeper. Central Store is located inside of Khartoum 2 VTC, using a workshop building. Equipment and tools have to be kept in an appropriate environment. However, the workshop building easily allows penetration of rain leaking and dusts. It is not a recommendable place for keeping equipment and materials. In addition, management of the store is not appropriate, for example expired solvent are left without utilization.

(6) Periodical Check-Up of Equipment and Tools

SCVTA dispatches staff annually to check up the status and number of equipment and tools of each VTC. The number and status are reported to SCVTA. However, necessary cost and measures are not studied.

### 2.5.2 Inventory System

(1) System Used in VTCs under SCVTA

Equipment and tools of SCVTA are registered by using the common form of the Government. Contents of the form include register number, name of equipment, dates of entry and delivery with quantity, and the balance. All the record is handwritten. Computer is not used. Inquiry is made by telephone or on site visit. It is recommended to establish computerized management system to improve efficiency. In addition to ordinary data such as prices, availability of guarantee, spare parts, reparation date and expenditure, cause of trouble, etc., it is also possible to include printing function for voucher, guarantee, operation manual, etc. As the current staff in charge of maintenance does not have enough computer skill and the ability to use English, it is required to undertake necessary training before introducing the system.

(2) System Used in Khartoum State VTCs

Khartoum State VTC has an intention to introduce a computerized system (Linesman Management Information System) to manage facility, equipment and furniture. Computer training and English training are conducted so that the staff can manage equipment, stock of furniture, location and other records.

### 2.5.3 Budget for Facility and Equipment Maintenance

(1) Budget of SCVTA

According to the record of Finance Department of SCVTA, budget for maintenance has not been secured since 2004. Only the budget for purchasing consumables is established. In 2008, the following expenditure was made for purchasing consumables.

Table 2.5.1 Expenditure for Consumables in 2008

| VTC | 1st Grade: Basic training | 2nd Grade: Training | 3rd Grade: Examination | Total |
|---|---|---|---|---|
| Khartoum 2 | 10,930 | 35,098 | 3,579 | 49,607 |
| Khartoum 3 | 3,643 | 11,699 | 1,193 | 16,535 |
| Omdurman | 9,108 | 29,249 | 2,982 | 41,339 |
| Sudanese-Korean | 7,286 | 23,399 | 2,386 | 33,071 |
| Khartoum North | 5,465 | 17,549 | 1,789 | 24,803 |
| Total | 36,432 | 116,994 | 11,929 | 165,355 |

Note: in SDG
Source: SCVTA

(2) Maintenance and Reparation Record of SCVTA

Record of 2 cases is found in SCVTA in regard to maintenance of VTCs. In 2004, Khartoum 2 VTC rehabilitated workshop and purchased equipment with an amount of SDG 150,000, in exchange for a piece of land located in the northeast corner (5,800 sq. m) with Ministry of Energy and Mining. In 2007, Khartoum State provided the equipment and tools of which total amount was SDG 380,000. These were distributed to 5 VTCs.

## 2.6 Diagnosis of VTC Facility and Equipment

### 2.6.1 VTCs under SCVTA

SCVTA operates 5 VTCs indicated in the table below. In addition to VTCs originally built for vocational training purpose, some of them were converted from workshops or exhibition buildings. All VTCs, except for Sudanese-Korean VTC, are under inappropriate condition for satisfactory training due to degradation and mostly non-functioning equipment.

Table 2.6.1 VTCs under SCVTA

| VTC | Construction | Supported by | Land Area sq. m | Floor Area sq. m |
|---|---|---|---|---|
| Khartoum 2 | 1964 | Germany | 28,885 | 6,991 |
| Khartoum 3 | > 1950 | UK | 7,104 | 1,404 |
| Omdurman | 1988 | China | 27,468 | 5,734 |
| Sudanese-Korean | 1996 | Korea | 18,200 | 3,391 |
| Khartoum North | > 1950 | UK | 10,500 | 2,333 |

Source: SCVTA

(1) Khartoum 2 VTC

The training environment of workshop and classrooms is inappropriate due to rain leaking and enclosed heat caused by insulation material separation from external walls. Dusts penetrated from the grills for ventilation affect especially the equipment for automobile courses and electrical appliances. The main building was built in 1963 as an exhibition hall. Therefore, specifications of the main building are different from those to be applied to vocational training facility. Most of equipment installed 30-50 years ago are now degraded, out-of-order and outdated. The same models are difficult to find in the real work place (This issue is common for other VTCs).

(2) Khartoum 3 VTC

In response to a growing demand for vocational training, this VTC was established in 1995 by converting governmental automobile workshop. Buildings are so old that many defects and problems become obvious: rain leaking, cracks on walls and floors, etc. In addition, the size of workshops and classrooms is too small.

(3) Omdurman VTC

This was constructed in 1988 funded by a Chinese official soft loan. It has fewer problems than other VTCs, since it was designed and built, from the beginning, for the vocational training purpose. However, some building elements such as doors, windows and furniture are broken, due to insufficient maintenance of the building. Similarly, most equipment is out of order due to inappropriate maintenance and lack or spare parts. The auditorium can be used for multi-purpose hall, but rarely used and now permanently closed.

(4) Sudanese-Korean VTC

It was constructed in 1996 by grant aid of Korean Government. Both design and construction are appropriate and there is no serious problem. In 2009, building, equipment and furniture were rehabilitated by Korean support. Equipment was installed and operation training was conducted both by Korean experts.

(5) Khartoum North VTC

Although more than 50 years have passed since its construction, there is no critical problem owing to the construction and maintenance which are more appropriate than other VTCs. Another reason for the good maintenance is that the VTC conducts productive training for Automobile and the income is used for maintenance. Part of the income is distributed among instructors. This practice raises their motivation. Productive training and short-term training are efficient measures for securing the fund for maintenance.

### 2.6.2 Private and State VTCs

(1) St. Joseph VTC

This VTC established in 1997 is operated by Don Bosco Catholic mission. Facilities are well maintained. None of windows, ceiling fans, furniture is broken or out of order. All equipment is well maintained and correctly functioning. When a machine is not used, it is always covered to protect it from the dust. Possible factors are as follows:

- Instruction of management is appropriate.
- Sense of ownership is fostered among VTC staff.
- Trainees' attitude is positively developed.
- Equipment troubles are repaired immediately.
- Engineers of Don Bosco visit the VTC annually to repair and supply necessary spare parts.

(2) National Centre VTC

This VTC was established in 2001 by a former instructor in Khartoum 2 VTC. It uses small rented building. Both classrooms and workshops are small. Equipment is mostly secondhand, old and second quality. Nevertheless, it functions very well owing to skillful and earnest instructors. Possible factors are as follows:

- Instructors can get reasonable salary based on capacity and working hours.
- VTC operation allows original ideas of staff.
- Instructors can manage at own discretion.
- All the instructors have sense of ownership for facility management.

(3) New VTCs under Khartoum State Government

Four new VTCs were constructed in 2008 by Khartoum Sate Government with USD 10 million. Construction work has done, however, equipment provided by EU finance and UNIDO assistance has not installed yet. The VTCs are expected to start training during the year 2009, after installation of the equipment and oversea training of core staff.

Doors and windows are airtight to protect equipment from the dust. Similarly, floor finishing uses epoxy resin. Walls are double bricked and roof is insulated to protect from heat. All these reflect Sudanese climate characteristics. Meeting rooms, offices and classrooms and workshops are large enough. Design and construction were done by a Sudanese company.

### 2.6.3 Facility for Training of Instructors

(1) Institute of Training of Trainers and Supervisors (ITTS)

ITTS has been used for training the instructors in charge of apprenticeship courses of all the VTCs. It is annexed to Omdurman VTC. Since ITTS has no laboratory or workshop, it uses workshop of Omdurman VTC or private companies for technical training. ITTS occupies 570 sq. m and is composed of 2 classrooms, lecturer room, library, offices, etc.

(2) Training Facility of Khartoum State

A training facility is under construction in Harfaia in Khartoum Norht with USD 3 million grant aid of Turkey. It will be completed by March 2010. Similarly with the VTC in the same site, the building can protect dust and heat. Its floor area counts for 4,300 sq. m and it is composed of 9 workshops, laboratory, meeting room, classrooms, library and accommodation.

### 2.6.4 Diagnosis of Facility, Equipment and Furniture

A diagnosis has been undertaken to identify issues of facility, equipment and furniture, to estimate the cost for necessary rehabilitation, and to make recommendations. Aiming at a sustainable diagnostic mechanism, SCVTA staff formed a team to carry out a diagnosis with JICA Study Team. A price survey of equipment has been done by JICA Study Team alone.

Target facilities were 3 VTC of Khartoum 2, Omdurman and Khartoum North, ITTS, Central Store and SCVTA Secretariat. Khartoum 3 VTC was excluded because of structural defect, degradation and inappropriately small classrooms and workshops. The diagnostic work was conducted by 7 staff members of SCVTA under instruction of Mr. Mustafa Elradi Ahmad, Director General.

Table 2.6.2 Persons in Charge of Diagnostic Survey

| Part | Name |
|---|---|
| Mechanical Equipment | Mr. Bushra Mohamed |
| | Mr. Moats Hassan Osman |
| | Mr. Awed Mohammed |
| Electrical Equipment | Mr. Siddig Hamdan Somi |
| Equipment for Women Development | Ms. Zubaida Elsadig Fadul |
| Building Equipment, Facility and Furniture | Mr. Abdul Aziz Somi |
| | Mr. El Hadi Gamer |

Source: SCVTA Facility and Equipment Diagnostic Team

(1) Diagnosis of Facility

Common issues and elements to be repaired among the target facilities were as follows:

- Replacement of damaged doors, windows, electric appliances and sanitary equipment caused by rough usage.
- Rehabilitation of damaged roofs, external walls, ceilings, floors and internal walls, and replacement of ceiling fans and air-condition caused by degradation and inappropriate specification.

For Khartoum 2 VTC, it is necessary to make a new roof over the existing roof of workshop to cope with rain

leaking and radiant heat. Rest room for trainees is totally damaged and needs to be rebuild.

(2) Diagnosis of Equipment

Total number of surveyed items in 3 VTCs is 699. Among them, 373 (53%) are out-of-order. Many practical training are unsatisfactory. 320 items (46%) are irreparable and needed to be abolished. 23 items (3%) are reparable in VTC if necessary material is provided. Similarly, 30 items (4%) are reparable but in the private companies.

A diagnosis was carried out in collaboration with Head of Section of VTC and SCVTA Diagnostic Team. Since it is necessary to repair as many items as possible to utilize for vocational training, it is recommended to conduct a more detailed survey with mechanical and electrical experts.

Many items are broken and can not be used for training due to absence of renewal for more than 40 years, obsolete equipment, unavailability of spare parts, lack of skill of instructors, and inexistence of maintenance system including periodical check up. In Khartoum 2 VTC, many detective items are found in electric and electronic sections so that the number of surveyed items increased tremendously.

Table 2.6.3 Diagnosis of Equipment

| | Khartoum 2 | Omdurman | Khartoum North | Total | |
|---|---|---|---|---|---|
| Functioning Equipment | 231 | 78 | 17 | 326 | 47% |
| Irreparable Equipment | 207 | 73 | 40 | 320 | 46% |
| Equipment Repairable in VTC | 14 | 8 | 1 | 23 | 3% |
| Equipment Repairable outside VTC | 28 | 2 | 0 | 30 | 4% |
| Total Equipment | 480 | 161 | 58 | 699 | 100% |

Source: SCVTA Facility and Equipment Diagnostic Team

(3) Diagnosis of Furniture

SCVTA Secretariat and VTC administrators are supplied with new furniture and have little problems. However, desks and chairs for instructors and trainees are mostly damaged. The causes are: inappropriate specifications, low quality and rough usage, etc.

Relatively more pieces of furniture have been damaged in VTCs under SCVTA than private VTCs. It is supposed that the trainees have ownership in private VTCs because they make furniture by themselves. The VTCs under SCVTA seem to lack the appropriate instructions on maintenance to trainees.

Box 2.6.1 Opinion of SCVTA Staff

I use the desk and chair for 20 years, which are still strong and do not have any defects. These were made by trainees in Khartoum 2 VTC. By contrast, new furniture is generally imported one made of particle board so that it is easily broken. If instructors have the same skill as 20 years ago, trainees would be able to make and repair furniture. The level of skill has been fallen off now. SCVTA should take initiative for revival.

# 3 Labor Market and Vocational Training Needs

## 3.1 Profile of Manufacturing Establishments in Sudan

Most of VTC graduates are supposed to work in manufacturing. Based on the result of Industry Survey conducted by Ministry of Industry in 2005, profile of manufacturing establishments is as shown below.

(1) Major Indicators

- In production value, "Food and Beverage" ranks first followed by "Coke and Petroleum Products". These two industries represent 72% of the total production value. "Vehicle-Trailer" is important, though it represents only 3%.
- In terms of number of establishments, "Food and Beverage" ranks first with a larger proportion than in production value. A total of "Metal Products", "Non-Ferrous Metal Products", "Food and Beverage" accounts for 88% of the total number of manufacturing establishments.
- In terms of number of workers, "Food and Beverage", "Non-Ferrous Metal Products", "Metal Products", "Textile" and "Chemical Products" together represent around 86% of the total.

Table 3.1.1 Profile of Manufacturing Establishments

| Industry | Production (million SDD) | (%) | No. of Establishments | (%) | No. of Labors | (%) |
|---|---|---|---|---|---|---|
| Food and Beverage | 423,637 | 55.3% | 16,974 | 70.4% | 74,058 | 56.3% |
| Tobacco | 38,527 | 5.0% | 33 | 0.1% | 1,209 | 0.9% |
| Textile | 21,696 | 2.8% | 58 | 0.2% | 6,982 | 5.3% |
| Clothes and Apparels | 1,140 | 0.1% | 180 | 1.0% | 613 | 0.5% |
| Leather Products | 12,576 | 1.6% | 461 | 1.9% | 2,870 | 2.2% |
| Wood Products | 4,103 | 0.5% | 820 | 3.4% | 2,300 | 1.8% |
| Paper and Its Products | 5,844 | 0.8% | 9 | 0.0% | 634 | 0.5% |
| Printing and Publishing | 7,210 | 0.9% | 88 | 0.4% | 1,927 | 1.5% |
| Coke and Petroleum Products | 128,838 | 16.8% | 3 | 0.0% | 845 | 0.6% |
| Chemical Products | 32,851 | 4.3% | 278 | 1.2% | 5,636 | 4.3% |
| Rubber and Plastic Products | 11,196 | 1.5% | 62 | 0.3% | 2,661 | 2.0% |
| Non-Ferrous Metal Products | 11,846 | 1.5% | 1,541 | 6.4% | 18,633 | 14.2% |
| Basic Metal | 11,822 | 1.5% | 139 | 0.6% | 973 | 0.7% |
| Metal Products | 14,482 | 1.9% | 2,812 | 11.7% | 7,530 | 5.7% |
| Machinery and Equipment | 6,354 | 0.8% | 15 | 0.1% | 461 | 0.4% |
| Office Machine and Computer | 251 | 0.0% | 2 | 0.0% | 25 | 0.0% |
| Electrical Machinery | 2,898 | 0.4% | 12 | 0.0% | 945 | 0.7% |
| Radio, TV, Communication Machinery | 582 | 0.1% | 51 | 0.2% | 140 | 0.1% |
| Medical Equipment | 21 | 0.0% | 2 | 0.0% | 102 | 0.1% |
| Vehicle and Trailers | 27,881 | 3.6% | 28 | 0.1% | 1,744 | 1.3% |
| Other Transport Equipment | 59 | 0.0% | 25 | 0.1% | 50 | 0.0% |
| Others | 1,607 | 0.1% | 521 | 1.5% | 1,168 | 0.7% |
| Total Manufacturing | 765,429 | 100.0% | 24,114 | 100.0% | 131,506 | 100.0% |

Source: Ministry of Industry, Tables of the Final Results of the Comprehensive Industrial Survey 2005

(2) Location of Establishments

Establishments are located mainly in Khartoum, South Darfur, Gazira, White Nile, El Gedaref, Sennar and West Darfur.

Table 3.1.2 Geographical Distribution of Manufacturing Establishments

| Industry | Major Locations |
|---|---|
| All Manufacturing | Khartoum, South Darfur, Gazira, White Nile, El Gedaref, Sennar, West Darfur |
| Food and Beverage | Gazira, Khartoum, White Nile, El Gadaref, |
| Tobacco | South Darfur, South Kordofan, North Kordofa, North Darfur |
| Textiles | North Darfur |
| Apples and Cloths | Khartoum |
| Leather Products | Khartoum |
| Wood Products | Upper Nile, Bahar El Gazar |
| Publishing and Printing | South Darfur |
| Coke and Petroleum Products | Khartoum, Gazira, Red Sea |
| Rubber and Plastic Products | Khartoum |
| General Machinery | Khartoum, South Darfur, Sennar, North Kordofan, Blue Nile |
| Electrical Machinery | Khartoum, South Darfur, Gazira, White Nile, El Gedaref |

Source: Ministry of Industry, Tables of the Final Results of the Comprehensive Industrial Survey 2005

(3) Employment Size of Establishments

The table below shows employment size distribution of number of manufacturing establishments.

Table 3.1.3 Employment Size Distribution of Manufacturing Establishments

| Industry | Number of Establishments | Employment Size (persons) | | | | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100- |
| Edible and Animal Oil | 1,544 | 1,375 | 80 | 55 | 20 | 14 |
| Dairy products | 179 | 176 | - | 1 | 1 | 1 |
| Grain Mill Products | 10,707 | 10,674 | 11 | 11 | 6 | 5 |
| Bakery | 4,240 | 4,147 | 58 | 6 | 6 | 23 |
| Sugar | 5 | - | - | - | - | 5 |
| Confectionery | 175 | 80 | 49 | 23 | 12 | 11 |
| Macaroni and Noodle | 27 | - | 19 | 2 | 2 | 4 |
| Soft Drinks | 51 | 1 | 21 | 9 | 2 | 18 |
| Tobacco | 33 | 28 | 2 | - | 1 | 2 |
| Textile (Fiber and Yarn) | 18 | - | 5 | 6 | 1 | 6 |
| Textile Products | 203 | 185 | 7 | 14 | 5 | 8 |
| Leather Products | 11 | - | 6 | - | - | 5 |
| Footwear | 396 | 364 | 21 | 5 | - | 6 |
| Sawmilling of Wood | 83 | 80 | - | 1 | 1 | 1 |
| Carpentry and Joinery | 326 | 319 | 3 | 1 | - | 3 |
| Wood Products | 400 | 383 | 11 | 4 | - | 2 |
| Printing and Publishing | 88 | 24 | 32 | 16 | 3 | 13 |
| Paint | 133 | 125 | 1 | 4 | 1 | 2 |
| Soap and Detergent | 119 | 71 | 17 | 11 | 10 | 10 |
| Plastic Products | 59 | - | 22 | 18 | 12 | 7 |
| Ceramic Products | 1,412 | 815 | 432 | 97 | 21 | 47 |
| Cement and Its Products | 64 | - | 37 | 4 | 2 | 21 |
| Concrete Products | 65 | 63 | 1 | 1 | - | - |
| Iron and Steel Products | 117 | 112 | 1 | 1 | - | 3 |
| Metal Manufactured Products | 2,447 | 2,406 | 25 | 4 | - | 11 |
| TV and Radio | 51 | 50 | - | - | 1 | - |
| Transport Machinery | 53 | 50 | 1 | - | - | 2 |
| Furniture | 359 | 347 | 7 | 2 | 1 | 2 |
| Jeweler | 162 | 162 | - | - | - | - |
| Total Manufacturing | 24,114 | 22,460 | 916 | 332 | 139 | 267 |

Source: Ministry of Industry, Tables of the Final Results of the Comprehensive Industrial Survey 2005

- 93% of establishments are categorized as small establishments with less than 10 workers.
- Middle and large sized establishments represent relatively large part in such industries as “Macaroni and Noodles”, “Soft Drinks”, “Confectionery”, “Plastic Products”, “Ceramic Products” and “Cement”. This may be because the production process of these industries is comparatively automated to enable a large production volume.

(4) Quality Control in Middle and Large Establishments

Table 3.1.4 Quality Control in Medium and Large Establishments

| Industry | with QC system | Local system | International system |
|---|---|---|---|
| Food and Beverage | 351 | 317 | 34 |
| Textile Products | 33 | 27 | 6 |
| Leather Products | 7 | 5 | 2 |
| Footwear | 12 | 10 | 2 |
| Wood Products | 12 | 9 | 3 |
| Paper and Its Products | 7 | 7 | 0 |
| Printing and Publishing | 35 | 34 | 1 |
| Soap, Detergent and Cosmetics | 40 | 36 | 4 |
| Plastic Products | 36 | 32 | 4 |
| Cement Products and Ceramic Products | 389 | 383 | 6 |
| Iron, Steel and Non-Ferrous Products | 6 | 5 | 1 |
| Metal Products | 46 | 39 | 7 |
| Machineries | 5 | 4 | 1 |
| Furniture | 7 | 7 | 0 |
| Total Manufacturing | 1,040 | 942 | 98 |

Source: Ministry of Industry, Tables of the Final Results of the Comprehensive Industrial Survey 2005

- Awareness of QC is high in consumer products. However, establishments developing international QC system counts for only 10%.

(5) Cost Structure of Middle and Large Establishments

The average cost structure of middle and large companies in Sudan is shown as below.

| | | |
|---|---|---|
| - Total Output | 100% | |
| - Total Cost | 61% | |
| - Raw material and service cost | 55% | (Electricity 18%) |
| - Wage and salaries | 6% | |
| - Value added | 39% | |

The cost for maintenance and repair represents substantial portion of “Raw material cost and service cost”. This implies that the needs of maintenance and repair are large for the vocational training.

## 3.2 Review of Previous Studies

A labor market survey and an establishment survey conducted in 2007 and 2008 by Ministry of Labor, Public Service and Human Resources Development provide us with useful information on the labor market and vocational training needs.

### 3.2.1 Labor Market Survey

The survey studies type of labor force needed in labor market. The analysis covers 151 categories in seven sectors. A summary is given as follows.

Table 3.2.1 Labor Needs for Technical and Technological Sector (2008～2011)

| Sector | Categories | Labor Needs |
|---|---|---|
| Administrative jobs in production and service sectors: | 24 | 158 |
| Engineering jobs in the various economic sectors: | 21 | 305 |
| Specialist jobs in the health service sector: | 9 | 51 |
| Teaching and administration jobs in the education sector: | 24 | 134 |
| Technical and technological jobs in various sector: | 27 | 354 |
| Skilled and somewhat-skilled labor jobs in various sectors: | 31 | 977 |
| Secretarial and accounting jobs: | 15 | 284 |

Source: Ministry of Labor, Public Service and Human Resource Development, JobMarket Survey 2007

(1) Administrative Labor in Production and Service Sectors

Workers are requested to be equipped with:

- High qualifications, experiences, knowledge and leadership
- Computer skill
- Communication capacity with English

Industrial categories with large labor needs in the next 5 years are business manager, administrative manager, customer service manager employee affairs manager, real estate manager and mass media specialist. These needs are especially expanding in food and beverage industries. A large need for real estate manager reflects recent construction boom.

(2) Engineering Labor in Various Economic Sectors

Total number of categories with needs is 21 sectors. Highly needed areas are electrical engineer, electronic system engineer, mechanical engineer, civil engineer planning engineer and aviation engineer. However, the needs are diversified and this is a distinct characteristic.

(3) Specialists in the Health Service Sector

By its specific job area, there are only 9 categories. Among them, needs for nursing specialist, internal medicine specialist and general practitioners are strong. Technological development in medical areas is their background. The biggest problem is that the human resources in these areas concentrate on Khartoum.

(4) Teaching and Administration Labor in the Education Sector

Number of needs is large with 24 categories. Among them, mathematics teacher in primary school, head

master, foreign language teacher in primary school and military teacher in secondary school are needed.

(5) Technical and Technological Labor in Various Sectors

The needs are large with 27 categories. Among them, travel agent, pathology technician, heavy machinery technician, electrical technician and furniture designer come in the top ranking. While industries in these categories demand specific technique, the ranking reflects size of the market. Increase in heavy machinery technician is due to increase in import of heavy machinery and equipment.

(6) Skilled and Semi-Skilled Labor in Various Sectors

Total number of categories is the largest with 31and the needs is the biggest. Metal and plate forming and welding is the biggest. The second large industrial category is ready-made suit tailor. Needs for drivers are also substantial. Further, chemical mixing machine operators are needs. Since Sudanese workers in these areas are not so many, foreign workers fill the gap

(7) Secretarial and Accounting Labor

The needs count 15 and not so much. However, workers in this category are needed by every work place. Therefore, main areas are general accountant, humanitarian organization volunteers and filing bookkeeper. Increase in financial service underlies the increase in accounting service.

Based on the above study results, human resources needs are summarized as follows:

- Computer skill and foreign language are becoming important to large project and private companies.
- Specialist for business and management.
- Private companies need specialists; they are not enough to be able to do something.
- Since competition is becoming fierce in business society, such technique as sales and marketing is becoming important.
- Reflecting the changes in economy such as construction boom, needs are changing. In construction industry, needs are shifting from traditional one to modernized high tall building construction service.
- Needs for management skill are increasing. This reflects changes in management style from traditional one to advanced and international one.
- Needs for engineering are still strong and their sorts are expanding, however, some of them are fashionable such as electrification projects.
- Most of needs for specialists are recognized in Khartoum these specialists can hardly be recruited in rural areas. Foreign workers are utilized in these rural areas.
- On the other hand, labor needs for traditional or rural industries are still observed. Interior design, furniture manufacturing and printing are some examples. It means that high-tech does not always tell the whole story. These needs are not met.
- The best example of changes in needs by changes in industrial structure is seen in the evolution of financial service. Reflecting the development of financial sector, related needs are expanding in Sudan.
- Labor needs are strong in those industries which survive in the long run, Vocational training satisfying

these needs are profitable.

The above survey reviews foreign labor in Sudan, too. When Sudanese can satisfy companies' needs, they will not bring foreign workers. The survey shows what needs can not be met by Sudanese and what kind of human resources is necessary to replace foreign labor. The survey covers six sectors as is shown below.

(1) Administrative and Specialist Jobs (23 Categories)

The overwhelming category is administrative manager and supervisor comes next. Number of labor is 585. Of this, administrative manager and supervisor represent 36% and 32% respectively.

(2) Engineering Jobs (14 Categories)

Number of labor is 2,147 and major areas are petroleum engineer with 1,203 and electrical engineer with 631. Both of the categories hold 85% of the total. However, it is noted that mechanical engineer, civil engineer and architect are not a small number.

(3) Health Sector (8 Categories)

Number of foreign workers is 43, which is not so large. Among them, nursery and nutrition specialist assistant are to be noted.

(4) Education Jobs (3 Categories)

Number of foreign workers is 54 in total. Headmaster counts for 43. Most of them come from Asian countries.

(5) Technical jobs (28 Categories)

Number of categories is large with 28 and the total number of workers is also large with 2,886. By area, the following four categories hold around 74%. They are petroleum technician with 1,266 (44%), pre-fabricated structure installation technician 378 (13%), mechanical engineering technician 263 (9%) and electrical technician 237 (8%).

(6) Workers and operators in various sectors (40 Categories)

Both categories and foreign workers are large. Total number of workers is 3,217. Many needs are observed ranging from welding with 1,730 (54%), tailor with 235 (7%), sanitary workers with 225 (7%), heavy machine and truck driver 176 (5%) to machinery install with 170 (5%). These five categories represent 78%.

Top 10 categories identified in the Job Market Survey are listed in the following table.

Table 3.2.2 Top 10 Categories by Job Market Survey

| | Categories | Type | Characteristics | Needs |
|---|---|---|---|---|
| 1 | Metal Welding & Forming | Skilled | Application area is wide | 360 |
| 2 | Ready-Made Suits Tailor | Skilled | Special area | 135 |
| 3 | General Accountant | Secretarial,-Accounting | Application area is wide | 101 |
| 4 | Driver | Skilled | Qualification is needed<br>Training needs are large | 84 |
| 5 | Travel Sales Agent | Technical-Technological | Needs for training is not clear | 80 |
| 6 | Electric Engineer | Engineering | Application area is wide | 65 |
| 7 | Humanitarian Organization Volunteer | Secretarial,-Accounting | Needs for training is unclear | 61 |
| 8 | Pathology Technician | Technical-Technological | Special technique | 59 |
| 9 | Chemical Mixing Machine Operator | Technical-Technological | Special technique | 50 |
| 10 | Mechanical Engineer | Engineering | Application area is wide | 44 |

Source: Ministry of Labor, Public Service and Human Resource Development, Job Market Survey 2007

The above table tells about where vocational trainings are required, as follows:

- Technology or technique can not be obtained by individual efforts. Teaching and training in special organizations are necessary.
- Qualification is needed. In order to get the qualification, it is better to have a training in some authorized organizations.
- Application area is wide.

On the other hand, followings are the top ten areas where dependence on foreign labor is large.

Table 3.2.3 Top 10 Categories Occupied by Foreign Labors

| | Categories | Type | Characteristics | Needs |
|---|---|---|---|---|
| 1 | Welding | Skilled Worker | Application area is wide | 1,730 |
| 2 | Petrochemical Technician | Skilled Worker | Specialized in petroleum | 1,266 |
| 3 | Petroleum Engineer | Engineer | Specialized in petroleum | 1,203 |
| 4 | Electric Engineer | Engineer | Application area is wide | 631 |
| 5 | Pre-Fabrication Technician | Skilled Worker | Specialized in construction | 378 |
| 6 | Mechanical Engineering Technician | Skilled Worker | Application area is wide | 263 |
| 7 | Electric Technician | Skilled Worker r | Application area is wide | 237 |
| 8 | Tailor | Other | Special talent | 235 |
| 9 | Sanitary Worker | Worker | Special talent | 225 |
| 10 | Construction Technician | Skilled Worker | Application area is wide | 220 |

Source: Ministry of Labor, Public Service and Human Resource Development, Job Market Survey 2007

### 3.2.2 Establishment Survey

(1) Characteristics of Companies Surveyed

Data showing characteristics of Sudanese establishments are few. Only available data are those compiled by Ministry of Labor. The data cover 2,520 companies located in Khartoum State. The profile is shown below. It covers not only manufacturing but also service industries. Among them, manufacturing, wholesale and retail, hotel-restaurant and education represent 85% of establishments.

- The establishments surveyed are those with more than 5 employees. It means that most of the establishments in the informal sector is not included.
- Many companies are young. 65% of total establishments were established after 2000.
- The number of establishments owned by VTC graduates is only 54, or 2% of the total. They are manufacturing, wholesale-retail, repair of vehicles, real estate and education.
- Every sector encounters recruitment problems. Especially, manufacturing, hotel and restaurant feel the problems seriously.
- Preference toward foreign worker is strong in hotel and restaurant. It is even strong in manufacturing. 40% of establishments employ foreign workers in these categories.
- Proportion of establishments having training facility is small except in the categories of mining, electricity, waters and finance. They represent only 22 % of manufacturing establishments.
- Establishments receiving benefits from VTC are 50% of total establishment. The percentage is large in construction and manufacturing. On the other hand, none of hotel and restaurants feels benefits.
- Establishments feel relatively weak satisfaction towards their training services. Only 37% of establishment feels satisfaction. Especially, the satisfaction is limited in hotel, restaurant and finance intermediation.
- The level of satisfaction with training programs is low. 39% of the establishments are satisfied with training program. Dissatisfaction is strong in hotel, restaurant and construction.
- Half of the establishments are aware the importance of ISO, but only 12% of them have acquired ISO.

Table 3.2.4 Characteristics of All Industry

| Main Activity | No. of Establishments | Share (%) | Est. established after 2000 (%) | Number of Est. with VTC Graduates | Est. with recruitment problem (%) | Est. preferring Foreign worker (%) | Est. feeling necessity of training (%) | Est. having training facility (%) | Est. receiving benefits of VTC (%) | Level of satisfaction with TVET outcome | | | Level of satisfaction with TVET program | | | Awareness of importance ISO (%) | ISO acquired (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Satisfied | Dissatisfied | Unknown | Satisfied | Dissatisfied | Unknown | | |
| Agriculture | 22 | 0.9 | 45 | - | 100 | - | 50 | 0 | 0 | - | 75 | 25 | - | 75 | 25 | 50 | - |
| Mining, Electricity, Water | 43 | 1.7 | 56 | 1 | 50 | 17 | 44 | 57 | 80 | 61 | 11 | 28 | 61 | - | 39 | 89 | 38 |
| Manufacturing | 805 | 32.0 | 64 | 25 | 81 | 38 | 52 | 22 | 67 | 44 | 29 | 27 | 44 | 24 | 32 | 84 | 20 |
| Construction | 39 | 16.0 | 56 | 1 | 50 | 28 | 56 | 33 | 83 | 45 | 33 | 22 | 45 | 33 | 22 | 72 | 23 |
| Wholesale, Retail, Repair Vehicle, Real Estate | 582 | 23.2 | 64 | 11 | 67 | 17 | 44 | 42 | 64 | 35 | 24 | 41 | 39 | 15 | 46 | 63 | 12 |
| Hotel, Restaurant | 305 | 12.1 | 72 | 5 | 100 | 43 | 36 | 50 | 0 | 21 | 64 | 15 | 28 | 36 | 36 | 64 | - |
| Transport, Storage, Communication | 133 | 5.3 | 71 | - | 78 | 13 | 46 | 11 | 64 | 39 | 24 | 37 | 54 | 9 | 37 | 65 | - |
| Financial Institution | 37 | 15.0 | 46 | 1 | 0 | - | 71 | 75 | 50 | 29 | 14 | 57 | 29 | 29 | 42 | 86 | - |
| Education | 339 | 13.5 | 73 | 10 | 100 | 9 | 44 | 43 | 20 | 35 | 35 | 30 | 30 | 26 | 44 | 61 | - |
| Health, Social Work | 80 | 3.2 | 56 | - | 100 | 18 | 46 | 0 | 0 | 55 | 16 | 27 | 55 | 18 | 27 | 91 | 20 |
| Other Community & Social Activity | 130 | 4.8 | 53 | - | 33 | 6 | 65 | 35 | 67 | 38 | 27 | 35 | 32 | 21 | 47 | 68 | 13 |
| Others | 5 | 0.2 | 60 | - | 100 | - | 100 | 0 | 100 | 67 | - | 33 | 67 | - | 33 | - | - |
| Total | 2,520 | 100.0 | 65 | 54 | 80 | 25 | 50 | 31 | 50 | 37 | 32 | 31 | 39 | 23 | 38 | 71 | 12 |

Source: Ministry of Labor, Public Service and Human Resource Development, Establishment Survey 2008

The above survey covers vocational training as well as the industrial sectors which need vocational training are education, food and beverage industry and activities of membership organizations. Training needs have been identified for training outside of factory such as computer, management and accountant. The outline of survey result is as follows.

Table 3.2.5 Training Field

| Whole Industry | Computer (45) | Administrative Science (35) | Mechanical field (33) | Administrative affairs (21) | Accounting (18) | Total (362) |
|---|---|---|---|---|---|---|
| Education | Teaching method, class room management (12) | Education technology (7) | Computer (5) | Accounting (4) | Teaching method, cooperative training (4) | (50) |
| Food and Beverage | Mechanical field (9) | Installation of factory machines (4) | Accounting (3) | Administration (3) | Machine operation (3) | (37) |
| Membership organization | Administration science (7) | Computer (4) | Management and presentation (3) | Administration (3) | | (33) |
| Agriculture-hunting-related services | Machine (5) | Accounting (4) | Administrative science (3) | | | (20) |
| Exploitation of crude oil | Leadership skill (3) | Administrative science (3) | Machine operation (3) | | | (18) |
| Chemicals | Maintenance (4) | Mechanical field (2) | | | | (16) |
| Financial institution | Computer (10) | Customer service (2) | | | | (14) |

Note: 1) Figure in parenthesis is number of organization who feels necessity of training..
2) In this table, only sectors which suggested many training areas are selected.
Source: Ministry of Labor, Public Service and Human Resource Development, Establishment Survey 2008

The following table shows how establishments evaluate outputs provided by TVET. Among 801 respondents, 359 of them or 45% are satisfied, while 303 of them or 38% feel unsatisfactory. In Food and Beverage, relative magnitude of respondents of “satisfactory”, “unsatisfactory” and “unknown” are 55%, 35% and 10% respectively. Similarly, for Education, the respondents are 53%, 33% and 14% respectively. For Retail, the respondents are 42%, 35% and 23% respectively. For Hotel and Restaurant, the respondents are 52%, 35% and 23% respectively. Even though the magnitude of satisfactory respondents exceeds unsatisfactory respondents, the magnitude of unsatisfactory is substantially large especially in Automobile Repair.

Table 3.2.6 Satisfaction with Outputs Provided by TVET

| Trade | Satisfactory | | Unsatisfactory | | Don’t know | | Total | |
|---|---|---|---|---|---|---|---|---|
| Food and Beverage | 74 | 55% | 47 | 35% | 13 | 10% | 134 | 100% |
| Education | 41 | 53% | 26 | 33% | 11 | 14% | 78 | 100% |
| Retail | 22 | 42% | 18 | 35% | 12 | 23% | 52 | 100% |
| Hotel and Restaurant | 27 | 52% | 18 | 35% | 7 | 13% | 52 | 100% |
| Rubber and Plastic Products | 19 | 41% | 17 | 37% | 10 | 22% | 46 | 100% |
| Agriculture, Hunting,, Services | 19 | 43% | 15 | 34% | 10 | 23% | 44 | 100% |
| Basic Metal | 10 | 36% | 14 | 50% | 4 | 14% | 28 | 100% |
| Automobile Repair | 6 | 25% | 17 | 71% | 1 | 4% | 24 | 100% |
| Wholesale | 10 | 42% | 7 | 29% | 7 | 29% | 24 | 100% |
| Health | 13 | 54% | 8 | 33% | 3 | 13% | 24 | 100% |
| Membership Organizations | 8 | 33% | 9 | 38% | 7 | 29% | 24 | 100% |
| Whole industry | 359 | 45% | 303 | 38% | 139 | 17% | 801 | 100% |

Source: Ministry of Labor, Public Service and Human Resource Development, Establishment Survey 2008

Furthermore, the areas which establishments feel unsatisfactory are the following; inadequate theoretical knowledge, insufficient experience, insufficient new technologies and lack of proficiency in languages.

Table 3.2.7 Major Shortcomings in Outputs of TVET Graduates

| Trade | Knowledge | Experience | New Tech. | Language | Others |
|---|---|---|---|---|---|
| Food and Beverage | 36 | 28 | 12 | 9 | 3 |
| Education | 30 | 14 | 8 | 11 | 3 |
| Hotel and Restaurants | 27 | 19 | 5 | 5 | - |
| Retail | 13 | 31 | 3 | 2 | 2 |
| Rubber and Plastic Products | 10 | 9 | 4 | 2 | 1 |
| Wholesale | 7 | 15 | 1 | 2 | 3 |
| Agriculture, Hunting,, Services | 5 | 8 | 5 | 5 | 2 |
| Automobile Repair | 7 | 7 | 2 | 3 | - |
| Whole industry | 191 | 229 | 83 | 77 | 23 |

Source: Ministry of Labor, Public Service and Human Resource Development, Establishment Survey 2008

### 3.2.3 Survey by UNIDO

UNIDO conducted a surveyed on labor market in Khartoum State in 2007. Though it dealt with labor needs by sector, it tells indirectly where vocational training is required. Outline of the survey result is as follows.

Table 3.2.8 Labor Needs Surveyed by UNIDO

| Sector and Trade | Outline |
|---|---|
| Oil Industry | Needs will increase by double from the current 400-500within five years. |
| Food Processing | Needs for technicians in packaging and hygiene. |
| Construction | Operation for heavy machine, welding and maintenance of machines and equipment. Foreign labor is an important source. |
| Automobile Repair | The background is rapid increase in number of car owner. |
| Leather Products | Processing technician. |
| Printing, Packaging | Size of the industry is not so large but its growth potential is large. |
| Textile and apparel | One of Sudanese industries. Design and manufacturing technology. |
| Chemical Products | Being agricultural country, needs are large from pesticide and soap to perfume. |
| Welding, Metal Forming | Demand is large. Designing capability is important. |
| Electricity | Needs are much, but Sudanese engineers standard is low. |
| Plumbing | Needs are expanding due to growth in construction sector.<br>Wide range of knowledge and experience is needed. |
| Air Conditioning | Demand is large. Higher technology and technique are requested. |
| Electric Appliance Repair | Demand is large. |
| Cutting technique | Users are many from machinery to automobile industry. Skilled technicians are required. |
| Wood Processing | Needs in Southern Sudan are large. High quality wood is available |

Source: UNIDO, 2007

Two areas were identified as important sectors for training. One is the industries which need technologies and techniques such as welding, metal forming, electrical appliances maintenance, automobile repair and maintenance and plumbing. The other is specialized industries such as processing of leather products, printing and packaging, design of clothes and wood processing. The survey result suggests two types of VTCs. The VTC of one type deals with specialized technology or techniques, and that of the other type deals with various industries based on the similar or related technology.

## 3.3 Employment Status of VTC Graduates

### 3.3.1 Sample Survey by SCVTA

(1) Outline of the Survey

Most VTC in Sudan do not trace the trainees after graduation. Only available data is for 61 trainees traced by SCVTA in 2003. Outline of the result is shown in the following table.

Table 3.3.1 Summary of Sample Survey on VTC Graduates by SCVTA

| Graduate Year | No. of Samples | Current Job | | Job Experience with Training Area | | Matching between Current Job and Training Area | |
|---|---|---|---|---|---|---|---|
| | | Have | Don't have | Have | Don't have | Yes | No |
| 1983 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| 1985 | 3 | 2 | 1 | 2 | 1 | 3 | 0 |
| 1989 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| 1990 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| 1991 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 1994 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 1995 | 3 | 3 | 0 | 3 | 0 | 3 | 0 |
| 1996 | 4 | 3 | 1 | 3 | 1 | 4 | 0 |
| 1997 | 3 | 2 | 1 | 2 | 0 | 3 | 0 |
| 1998 | 2 | 2 | 0 | 1 | 1 | 2 | 0 |
| 1999 | 6 | 3 | 3 | 0 | 6 | 2 | 4 |
| 2000 | 8 | 2 | 6 | 2 | 6 | 2 | 6 |
| 2001 | 15 | 9 | 6 | 5 | 10 | 7 | 8 |
| 2002 | 10 | 5 | 5 | 6 | 4 | 4 | 6 |
| 2003 | 2 | 0 | 2 | 0 | 2 | 0 | 2 |
| Total | 61 | 34 | 27 | 26 | 35 | 32 | 29 |

Source: Planning Department of SCVTA, 2003

- 44% of graduates is unemployed or only occasionally employed as of 2003.
- In spite of vocational training, 57% of graduates have job experiences in the areas other than those in which they are trained.
- Only 52% of graduates feel that they work in the areas they have been trained.

With respect to training curriculum, 52 graduates or 85% respond affirmatively that the curriculum is good. However, some of them do not forget to point out the necessity of improvement as follows:

- To increase time for theory.
- Practice is not always effective.
- To increase time for practice.
- To add English language as a basic curriculum.
- Old not cope with advanced technology.
- Practice is good but theory is not good.

(2) Necessity of Improvement in Sample Survey

The result contains useful information. However, the number of samples is too small. It is recommended to

structure a system under which SCVTA can collect periodically graduates' opinions.

### 3.3.2 Study by El Obeid VTC

The study was conducted by Mrs. Nafisa Adam Bashir, a member of the staff in El Obeid VTC. 100 graduates of the VTC were selected as samples. 2% of them are aged between 15-20 years old, 30% are 21-25 year old, 59% are 26-30 years old and 9% are above 31 years old. With respect to the educational level, 84% of them have apprenticeship Diplomas and 16% of them completed their education in university. Main findings are as follows:

- 77% of them earn income by working as technical labor, while 3% earn as technical teacher.
- 71% of them work in private companies, while the rest 29% works in public sector.
- VTC graduates work mainly in electricity, mechanical field, fitting maintenance, welding and power machine. Relative proportions of those in these fields are 27%, 12%, 11% and 12%. Respectively.
- 86.9% of the respondents have gained both skills and knowledge from the courses in El Obeid VTC. 10.1% of them use the skills which they have gained and 3% of them use the knowledge which they have learned.
- 83.8% of the respondents have mentioned that the skills and knowledge they have gained from VTC El Obeid are enough to meet local labor market demand. 16.2% of them have mentioned that they do need more skills and knowledge for competition in the labor markets.
- According to new design and innovation; 69.7% of the VTC graduates are looking for further training to cope with changing demand.
- The appropriate labor market demand involve in metal design (28.8%), electronics (20.3%), advanced knowledge (16.9%), new mechanical technology (15.3%), welding and metal sheets (11.9%), both electronics and advanced knowledge (3.4%), and women activities (3.4%).

The information below was collected from 100 employers of VTC graduates and 79 other employers.

- Employers of the VTC graduates have mentioned that 65.8% of their working performance is good, 31.2% of them are fair performance and 2.5% are unsatisfied
- The employers have evaluated the VTC graduates products or output as follows: 67.1% of the graduates have good output, 30.4% of them have fair output, and 2.5% have unsatisfied output.
- The employers have felt that the VTC graduates need further training in innovation. 48.6% of them felt that the training is necessary in their specialization, 28.4% of them in the practical field, 10.8% of them in control system and 10.8% of them in safety.

To sum up, both graduates and employers assess that vocational training brings favorable effects, while they do not forget to add necessity of further training in advanced technologies.

## 3.4 Foreign Labors

Many foreign labors have come into Sudan since a decade ago, in response to oil exploitation, implementation of big projects such as Merowe Dam, and increase in foreign investment. They make up for the lack of highly skillful and knowledgeable Sudanese labors. According to a statistics of Ministry of Labor in 2008, the number of foreign labor has reached 3,100.

As the following table indicates, more than half of the foreign labors have technical abilities or skills. Their origins are predominantly Asian countries, including China, Bangladesh and the Philippines.

Table 3.4.1 Foreign Labors in Sudan

| | Professional | Sales and Services | Clerical and Accounting | Craftsman | Technician | Mechanician and Operator | Manager | Unskilled Worker | Total |
|---|---|---|---|---|---|---|---|---|---|
| Australia | 6 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 8 |
| Asia | 852 | 2 | 3 | 548 | 1,047 | 24 | 184 | 66 | 2,726 |
| Africa | 34 | 1 | 1 | 8 | 6 | 2 | 11 | 24 | 87 |
| Americas | 20 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 23 |
| Arab Countries | 45 | 0 | 1 | 3 | 25 | 2 | 47 | 2 | 125 |
| Europe | 104 | 0 | 1 | 0 | 10 | 0 | 16 | 0 | 131 |
| Total | 1,061 | 3 | 6 | 559 | 1,089 | 28 | 162 | 92 | 3,100 |

Source: Ministry of Labor, Public Service and Human Resource Development, 2008

There has been no regulation to control immigration of foreign labors in Sudan. It has positively accepted foreign labors. Although foreign labors are not inexpensive for Sudanese companies, many of them appreciate working attitudes and behaviors of the foreign workers more than those of Sudanese workers. However, the Sudanese government adopts a policy to shift foreign labors to Sudanese labors in 3 years in order to change current situations. Some companies have already got started the technical transfer from foreign labors to Sudanese labors.

Box 3.4.1 Perspectives of Sudanese Companies to Foreign Labors

Case 1: Comments of Manager of a Steel Bar Manufacturer in Khartoum
The steel bar manufacturing company hires Bangladesh labors, because wage is low and Sudan has a short history of manufacturing steel bar and experienced labors are necessary to manufacture good quality products. From private companies' view, "profit" should be prioritized to any other matters; therefore, the company does not hire the Sudanese workers, who are less preferable to foreign workers in that sense.

Case 2: Comments by a Hotel Manager in Khartoum
It costs very much to hire foreign labors, because the employer is forced to provide them with their accommodation besides salary. Despite such a high cost, the hotel employs foreign labors, since they are responsible for jobs and they do not excuse themselves when they made a mistake. They work hard once workplace is settled because they have few other choice but working in the hotel. Therefore, important positions are charged by foreign labors. By contrast, Sudanese labors come to work late. When they make a mistake, they say nothing but excuse. They cannot be charged of important tasks.
Nevertheless, 60% of employees are Sudanese, and they are in charge of guard, waiter of restaurant, IT engineer, and technician of electricity and plumbing.

## 3.5 Corporation's Opinions on Vocational Training Needs

### 3.5.1 Vocational Training Needs Survey

The JICA Study Team conducted a needs survey of vocational training in the50 sample companies listed in Table 3.5.1. Characteristics of the sample companies are as follows:

- Total number of employees in 50 companies is 25,171 persons or 530 persons per company. Number of skilled workers in total is 5,651 or around 22% of the total number of the employees.
- 50 companies recruit 200-400 skilled workers in total from VTCs.
- Areas for which 50 companies needs skilled workers are mainly electricity, machining, welding, quality inspection, facility management, PC operation, vehicle driving and car maintenance.
- The numbers of skilled and unskilled workers are almost the same, though in some companies, the data are not available. However, the number largely differs by type of industry.
- Management people rely mainly on advertisement and personal contact when they recruit workers. Only 4% of them on VTC and technical school.

While expectation by industries is high, existing VTC are too weak to respond to such expectation. The following is major opinions of employers:

- Training in VTC is not practical.
- The outdated equipment does not cope with the pace of accelerated development.
- There is a mismatch between the training provided by VTC and the skills required.
- Hotel is a growing industry that has been neglected by vocational training planners.
- VTC curriculum should be developed to fit new needs.
- VTC is not responding to the labor market
- VTC has to supply skilled workers, but it is not in a position to do so
- Vocational training should change profile to cope with changing society and industries in Sudan.
- VTC should develop curriculum, physical and human resources.
- Steel industry requires training on new technologies.
- Training apprentices are too young to absorb a scope with the training imparted.
- TVET should be further developed and VTC shall not be looked at as a resort for dropouts.
- There is an increasing need for training in electronics and electrical works.
- The process of industrial development that Sudan is witnessing makes it imperative for TVET to train on new technologies.
- Training on new technologies is very much in demand. Existing VTC are far short in responding to such needs.
- Curriculum should have a balance between theoretical and practical subjects.
- Curricula are outdated and the quality of VTC trainees is not to our expectations.
- Civic education should also be introduced.

- The academic standard of those who attend VTC is generally low.
- Technicians are to be trained as experts of machines.
- The existing VTC do not respond to the needs of small scale industries.
- VTC do not provide the quality of manpower we need.
- Our knowledge of VTC is very vague.
- Relations between employer and VTC must be strengthened for the benefit of the two parties.

Table 3.5.1 Characteristics of 50 Surveyed Companies

| No. | Sector | Employees | Skilled Workers | VTC Graduates | | | Required Skill | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2006 | 2007 | 2008 | CAD | Automobile Repair | Carpentry | Drawing | Electrician | Facility Maintenance | Machine Operation | PC Operation | Plumbing | Quality Control | Driving | Welding | Others |
| 1 | Drinking water | 912 | 64 | 26 | 18 | 20 | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 2 | Road construction | 200 | 70 | 4 | 5 | 9 | | ✓ | | | | ✓ | ✓ | | | | ✓ | ✓ | |
| 3 | Aluminum window | 83 | 20 | 10 | 16 | 18 | ✓ | | | | ✓ | | | | | | | ✓ | |
| 4 | Hotel, tourism | 127 | 60 | 2 | 2 | 3 | | | | | | | | | | | | | |
| 5 | Sales petroleum products | 90 | 10 | 0 | 0 | 0 | | | | | | | | ✓ | | | | | |
| 6 | Water supply | 2800 | 1400 | 0 | 110 | 0 | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 7 | TV, air condition | 817 | 400 | 0 | 5 | 4 | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| 8 | Food, sweet | 105 | 20 | 5 | 4 | 4 | | ✓ | | | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| 9 | Food | 830 | 368 | 21 | 15 | 0 | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | | | ✓ | |
| 10 | Iron and steel | 239 | 100 | 4 | 0 | 0 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 11 | Mobile telephone | 779 | - | 0 | 15 | 0 | | | | | ✓ | ✓ | | ✓ | ✓ | | | ✓ | |
| 12 | Production of matches | 127 | 70 | 3 | 2 | 4 | | | | | | ✓ | | | | | | | |
| 13 | Clothes | 80 | 26 | 2 | 0 | 2 | | | | | | | ✓ | | | ✓ | | | |
| 14 | Soft dink, food | 544 | 293 | 35 | 20 | 17 | | ✓ | | | ✓ | | ✓ | | | ✓ | ✓ | | ✓ |
| 15 | Soft drink | 2922 | 1285 | 10 | 5 | 5 | | | | | | | | | | | | | |
| 16 | Metal furniture | 47 | 6 | 0 | 0 | 0 | | | | | ✓ | | | | | ✓ | | ✓ | |
| 17 | Refrigerator, air condition | 318 | 188 | 6 | 4 | 0 | ✓ | | | | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| 18 | Clothes | 86 | 50 | 0 | 4 | 8 | | | | | ✓ | | ✓ | | | ✓ | ✓ | ✓ | |
| 19 | Painting materials | 135 | 40 | 6 | 6 | 6 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 20 | Cement products | 35 | 7 | 2 | 2 | 2 | | | | | ✓ | | ✓ | ✓ | | | | | |
| 21 | Construction, building | 122 | 57 | 1 | 1 | 2 | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| 22 | Road transportation | 425 | 288 | 10 | 10 | 15 | | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| 23 | Food (bread) | 60 | 6 | 1 | 0 | 1 | | ✓ | ✓ | | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | |
| 24 | Soap | 565 | 42 | 1 | 2 | 0 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 25 | Steel pipe | 234 | 19 | 2 | 3 | 6 | | | | | ✓ | ✓ | ✓ | | | | | ✓ | |
| 26 | Soft drink | 550 | 3 | 0 | 0 | 2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 27 | Electrical panel | 26 | 9 | 0 | 0 | 0 | ✓ | | | | ✓ | | ✓ | | | ✓ | | ✓ | |
| 28 | Carton box | 98 | 19 | 0 | 0 | 0 | | | | | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | |
| 29 | Maintenance workshop | 55 | 20 | 4 | 6 | 8 | | ✓ | | | ✓ | ✓ | | ✓ | | | | | |
| 30 | Medical products | 390 | 70 | 5 | 60 | 3 | | | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ |
| 31 | Petroleum fueling service | 260 | 40 | 1 | 3 | 0 | | ✓ | | | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| 32 | Road materials | 391 | 12 | 4 | 1 | 7 | | ✓ | | | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| 33 | Soap | 141 | 16 | 3 | 0 | 0 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 34 | Food | 128 | 6 | 0 | 0 | 0 | | | | | ✓ | | ✓ | | | | | | |
| 35 | Plastic furniture | 95 | 48 | 35 | 20 | 17 | | | ✓ | | ✓ | | ✓ | | | | | | |
| 36 | Food | 53 | 9 | 0 | 3 | 2 | | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ | |
| 37 | Hotel | 156 | 40 | 0 | 0 | 0 | | ✓ | | | ✓ | ✓ | ✓ | | | ✓ | | ✓ | |
| 38 | Plastic products | 200 | 0 | 5 | 16 | 0 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| 39 | Plastic dishes and plates | 54 | 10 | 6 | 4 | 4 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 40 | Poultry, meat, dairy | 305 | 89 | 11 | 9 | 29 | | ✓ | ✓ | | ✓ | | ✓ | ✓ | | | ✓ | | |
| 41 | Home use ceramics | 60 | 19 | 3 | 2 | 0 | | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 42 | Government office | 6 | 0 | 0 | 0 | 0 | | | | | ✓ | | | | | | ✓ | | |
| 43 | Cookies, biscuits | 105 | 60 | 0 | 0 | 0 | | | | | ✓ | | ✓ | ✓ | | ✓ | ✓ | | |
| 44 | Telecommunication | 335 | 60 | 0 | 0 | 0 | | | | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | | |
| 45 | Hotel | 30 | 12 | 0 | 0 | 0 | | | | | | | | ✓ | | ✓ | | | |
| 46 | Electric power supply | 7000 | - | 0 | 0 | 0 | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 47 | Sweets | 151 | 8 | 0 | 0 | 0 | | | | | ✓ | | | | | | | | |
| 48 | Milk, dairy | 440 | 200 | 15 | 9 | 5 | ✓ | ✓ | | | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 49 | Gas cookers, heaters | 40 | 12 | 0 | 0 | 0 | | | | | ✓ | | ✓ | ✓ | | | | ✓ | |
| 50 | Food | 1420 | 0 | 0 | 0 | 0 | | ✓ | | | ✓ | ✓ | ✓ | | | | | ✓ | |
| | Total / Frequency | 25171 | 5651 | 243 | 382 | 203 | 11 | 21 | 10 | 7 | 42 | 29 | 37 | 29 | 17 | 31 | 26 | 31 | 2 |

Source: JICA Study Team, Vocational Training Needs Survey 2009

Table 3.5.1 Characteristics of 50 Surveyed Companies (Continued)

| No. | Employees | (Manager) | (Clark) | (Supervisor) | (Skilled Worker) | (Unskilled) | VTC Graduates | | | Means of Recruitment (%) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 2006 | 2007 | 2008 | Labor Office | Advertize | VTC | Personal Contact | Others | Total |
| 1 | 912 | 41 | 439 | 40 | 64 | 93 | 26 | 18 | 20 | 40% | 30% | 0% | 30% | 0% | 100% |
| 2 | 200 | 16 | 7 | 7 | 70 | 100 | 4 | 5 | 9 | 0% | 0% | 0% | 100% | 0% | 100% |
| 3 | 83 | 14 | 0 | 2 | 20 | 42 | 10 | 16 | 18 | 0% | 100% | 0% | 0% | 0% | 100% |
| 4 | 127 | 20 | 15 | 10 | 60 | 13 | 2 | 2 | 3 | 0% | 10% | 10% | 50% | 30% | 100% |
| 5 | 90 | 8 | 2 | - | 10 | 65 | 0 | 0 | 0 | 0% | 60% | 0% | 0% | 40% | 100% |
| 6 | 2800 | 40 | 200 | 500 | 1400 | 65 | 0 | 110 | 0 | 40% | 60% | 0% | 0% | 0% | 100% |
| 7 | 817 | 15 | 25 | 24 | 400 | 325 | 0 | 5 | 4 | 0% | 60% | 0% | 40% | 0% | 100% |
| 8 | 105 | 6 | 9 | 5 | 20 | 62 | 5 | 4 | 4 | 0% | 45% | 10% | 45% | 0% | 100% |
| 9 | 830 | 49 | 262 | 50 | 368 | 124 | 21 | 15 | 0 | 0% | 100% | 0% | 0% | 0% | 100% |
| 10 | 239 | 10 | 4 | 5 | 100 | 70 | 4 | 0 | 0 | 65% | 18% | 2% | 15% | 0% | 100% |
| 11 | 779 | - | - | - | - | - | 0 | 15 | 0 | 0% | 70% | 10% | 20% | 0% | 100% |
| 12 | 127 | 4 | 5 | 10 | 70 | 38 | 3 | 2 | 4 | 15% | 12% | 13% | 8% | 52% | 100% |
| 13 | 80 | 5 | 2 | 7 | 26 | 40 | 2 | 0 | 2 | 32% | 0% | 13% | 0% | 55% | 100% |
| 14 | 544 | 11 | 3 | 17 | 293 | 220 | 35 | 20 | 17 | 50% | 45% | 0% | 0% | 5% | 100% |
| 15 | 2922 | 150 | 0 | 40 | 1285 | 1447 | 10 | 5 | 5 | 100% | 0% | 0% | 0% | 0% | 100% |
| 16 | 47 | 5 | 2 | 4 | 6 | 30 | 0 | 0 | 0 | 0% | 0% | 0% | 100% | 0% | 100% |
| 17 | 318 | 7 | 2 | 13 | 188 | 108 | 6 | 4 | 0 | 30% | 25% | 0% | 20% | 25% | 100% |
| 18 | 86 | 9 | 3 | 5 | 50 | 19 | 0 | 4 | 8 | 0% | 30% | 15% | 20% | 30% | 100% |
| 19 | 135 | 14 | 5 | 5 | 40 | 169 | 6 | 6 | 6 | 0% | 0% | 0% | 0% | 100% | 100% |
| 20 | 35 | 7 | 3 | 3 | 7 | 15 | 2 | 2 | 2 | 0% | 0% | 30% | 0% | 70% | 100% |
| 21 | 122 | 8 | 6 | 3 | 57 | 48 | 1 | 1 | 2 | 40% | 60% | 0% | 0% | 0% | 100% |
| 22 | 425 | 20 | 12 | 5 | 288 | 150 | 10 | 10 | 15 | 10% | 10% | 0% | 0% | 80% | 100% |
| 23 | 60 | 28 | 0 | 2 | 6 | 24 | 1 | 0 | 1 | 0% | 0% | 0% | 100% | 0% | 100% |
| 24 | 565 | 3 | 2 | 8 | 42 | 510 | 1 | 2 | 0 | 0% | 0% | 20% | 0% | 80% | 100% |
| 25 | 234 | 5 | 15 | 6 | 19 | 60 | 2 | 3 | 6 | 60% | 40% | 0% | 0% | 0% | 100% |
| 26 | 550 | - | - | - | 3 | - | 0 | 0 | 2 | 0% | 5% | 0% | 90% | 5% | 100% |
| 27 | 26 | 4 | 0 | 3 | 9 | 10 | 0 | 0 | 0 | 0% | 0% | 25% | 75% | 0% | 100% |
| 28 | 98 | 5 | 10 | 4 | 19 | 60 | 0 | 0 | 0 | 0% | 10% | 0% | 0% | 90% | 100% |
| 29 | 55 | 6 | 8 | 7 | 20 | 14 | 4 | 6 | 8 | 0% | 0% | 0% | 90% | 10% | 100% |
| 30 | 390 | 35 | 65 | 15 | 70 | 205 | 5 | 60 | 3 | 0% | 100% | 0% | 0% | 0% | 100% |
| 31 | 260 | 30 | 60 | 19 | 40 | 111 | 1 | 3 | 0 | 0% | 30% | 0% | 35% | 35% | 100% |
| 32 | 391 | 14 | 9 | 4 | 12 | 253 | 4 | 1 | 7 | 0% | 30% | 0% | 35% | 35% | 100% |
| 33 | 141 | 5 | 3 | 5 | 16 | 112 | 3 | 0 | 0 | 0% | 20% | 15% | 65% | 0% | 100% |
| 34 | 128 | 4 | 4 | 8 | 6 | 106 | 0 | 0 | 0 | 0% | 0% | 0% | 0% | 100% | 100% |
| 35 | 95 | 27 | 0 | 6 | 48 | 14 | 35 | 20 | 17 | 0% | 35% | 0% | 50% | 15% | 100% |
| 36 | 53 | 4 | 5 | 5 | 9 | 30 | 0 | 3 | 2 | 0% | 30% | 5% | 35% | 30% | 100% |
| 37 | 156 | 15 | 38 | 14 | 40 | 49 | 0 | 0 | 0 | 0% | 100% | 0% | 0% | 0% | 100% |
| 38 | 200 | 7 | 36 | 30 | 0 | 127 | 5 | 16 | 0 | 0% | 40% | 15% | 35% | 10% | 100% |
| 39 | 54 | 4 | 14 | 4 | 10 | 22 | 6 | 4 | 4 | 0% | 100% | 0% | 0% | 0% | 100% |
| 40 | 305 | 47 | 9 | 47 | 89 | 113 | 11 | 9 | 29 | 50% | 0% | 0% | 0% | 50% | 100% |
| 41 | 60 | 4 | 3 | 4 | 19 | 30 | 3 | 2 | 0 | 100% | 0% | 0% | 0% | 0% | 100% |
| 42 | 6 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0% | 30% | 0% | 0% | 70% | 100% |
| 43 | 105 | 7 | 3 | 3 | 60 | 32 | 0 | 0 | 0 | 0% | 60% | 0% | 0% | 40% | 100% |
| 44 | 335 | 215 | - | 39 | 60 | 11 | 0 | 0 | 0 | 30% | 20% | 0% | 50% | 0% | 100% |
| 45 | 30 | 6 | 2 | 1 | 12 | 9 | 0 | 0 | 0 | 100% | 0% | 0% | 0% | 0% | 100% |
| 46 | 7000 | - | - | - | - | - | 0 | 0 | 0 | 0% | 0% | 0% | 50% | 50% | 100% |
| 47 | 151 | 5 | 1 | 3 | 8 | 134 | 0 | 0 | 0 | 10% | 80% | 0% | 5% | 5% | 100% |
| 48 | 440 | 20 | 10 | 15 | 200 | 195 | 15 | 9 | 5 | 10% | 80% | 0% | 5% | 5% | 100% |
| 49 | 40 | 10 | 2 | 1 | 12 | 15 | 0 | 0 | 0 | 70% | 0% | 0% | 0% | 30% | 100% |
| 50 | 1420 | 25 | 45 | 38 | - | - | 0 | 0 | 0 | 0% | 50% | 10% | 10% | 30% | 100% |
| | 25171 | 999 | 1351 | 1046 | 5651 | 5581 | 243 | 382 | 203 | 17% | 31% | 4% | 24% | 24% | 100% |

Source: JICA Study Team, Vocational Training Needs Survey 2009

### 3.5.2 Vocational Training Needs Revealed through Interview

Interviews to managers of both targeted and non-targeted companies by Vocational Training Needs Survey were made by JICA Study Team. The interview result indicated in the following table includes the training needs to be fulfilled by not only VTC but also technical colleges or corporate in-service training.

Table 3.5.2 Training Needs Recognized by Company Managers

| No. | Trade | Needs | Remarks | Employment of VTC Graduates |
|---|---|---|---|---|
| 1 | Food | Management in general<br>- Project management<br>- Procurement<br>- Supply chain<br>Training of entrepreneur | Opening of academy course by the corporation is scheduled.<br>Opening of cooking school. | - |
| 2 | Hotel | Technician<br>(repair and maintenance) | Needs for hotel management, reception and chef. | - |
| 3 | Water supply | Technician (electricity, mechanic, transportation management, civil engineering, maintenance) | Language, PC skill | 50<br>(including other TVET institutions) |
| 4 | Home electric appliance | Technician<br>(electric, mechanic, air conditioning, maintenance) | Advanced technology | 80 |
| 5 | Electric panel | None | Currently employ 3 graduates from VTC (electric, welding, powdered coating).<br>Their performance is not good. | 3 |
| 6 | Hotel | Facility maintenance | Diversified needs (multiplied TV channels, internet, etc.). | 3 |
| 7 | Cement products | Electrical work, machinery<br>Driving heavy vehicle and maintenance | One of growing industries. | 3 |
| 8 | Power supply | Machinery, maintenance | Core machinery maintained by own staff.<br>Others by outsourcing staff. | - |
| 9 | Textile | Machine operation<br>Machinery and equipment maintenance | Project management and communication skill are necessary even for workers. | 200<br>(currently suspended) |
| 10 | Soft drink | Program logic control<br>General electric, electro mechanics, welding (argon), machinery maintenance | Necessity of training for keeping factory clean and well ordered. | 17 |
| 11 | Government office | Training for small industries (e.g., food processing)<br>- Hygiene<br>- Packaging<br>- Conservation, refrigeration<br>- bar code system<br>- quality control<br>- Recycling | SCVTA should pay attention to small scale industries comprising 93% of the total companies. | - |
| 12 | Oil company | Machine maintenance, driver and cleaning on production site | Recruit through agency.<br>Different treatment from the company's employees. | 500 |

Table 3.5.2 Training Needs Recognized by Company Managers (Continued)

| No. | Trade | Needs | Remarks | Employment of VTC Graduates |
|---|---|---|---|---|
| 13 | Oil refinery (State company) | Maintenance of refinery | The number of maintenance staff is minimized by getting assistance from state owned refinery and provision of enough spare parts. | 10 |
| 14 | Water supply | Plumbing and maintenance<br>System design for water supply in urban area | Demand is increased in accordance with water development and expansion of supply network. | 93 |
| 15 | Investment bank | Financial theory and operation<br>Former training is done by specialized institution; latter is done by in-service training. | Potential industry in Sudan is livestock.<br>Training can enable the industry to enhance productivity and eradicate diseases | - |
| 16 | Hotel | Maintenance for air condition and electric wiring | In-service training is made for reception and customer services. | 18 |
| 17 | Steel bar manufacturing | Welding | VTC graduates are employed but only from Bangladesh.<br>It would be possible to consider recruitment, if some VTC trains welding skill necessary for producing steel bars. | 18 |
| 18 | Automobile repair | Machinery, electric machinery | It is necessary to catch up frequent model changes of cars.<br>Curricula don't require to be changed totally. Instead, training of instructors is necessary.<br>It is necessary to teach English as all manuals are written in English. | 15 |
| 19 | Paint production | Maintenance of mixing machines for paint materials and paint containers | Further automation is required due to increased demand. As a consequence, more frequent maintenance is needed. | 7 |
| 20 | Medical products | Maintenance of manufacturing machinery<br>Program logic control | Careful check is necessary to avoid cross contamination. | 20 |
| 21 | Meat products | Skill for de-boning<br>Strict temperature control for food products | Existing VTC can't respond.<br>New program is expected. | - |
| 22 | Textile | Maintenance of machinery<br>Electro-mechanics | Training course for electro-mechanics is necessary | 2 |
| 23 | Constructor Association | Not only construction technology, but also legal system and accounting | The association proposes establishment of Construction School, since required area is too large. | Few (specific training is necessary) |
| 24 | Construction | Electricity, mechanic, welding, air conditioning, plumbing, brick work | The company never employed VTC graduates. 12% of employees among subcontractors are from VTC.<br>Demand is increasing owing to infrastructure development. | - |

Source: JICA Study Team

## 3.6 Opinions of Industry Groups and Existing VTC

### 3.6.1 Industry Groups

Vocational training needs expressed by industry groups are described below.

(1) Sudanese Businessmen and Employers Federation (SBEF)

Reflecting a variety of member companies, the federation considers that the demand is large for skilled workers across the industrial sectors. The demand is large in machinery and equipment.

(2) Chamber of Small Industries and Craft Union (CSICU)

The chamber includes wide range of trades in response to varying characteristics of members. It considers that demand is large for skilled workers in automotive machinery and electricity, general electricity, clothes and apparels, cold storage and refrigeration, foundry and machinery equipment.

(3) Sudanese Alumni for Association for Overseas Technical Scholarship (AOTS)

AOTS recognizes large needs for skilled workers in welding and metal forming or foundry.

### 3.6.2 VTC

VTC is supposed to identify vocational training needs as a basis of its activities. However, it is not sure that VTC under SCVTA set up the training courses based on the result of needs survey.

Table 3.6.1 Vocational Training Needs Identified by Industry Groups and Existing VTC

| Organization | Needs (Management Training) | Needs (Skill Training) |
|---|---|---|
| AOTS | - Management | Welding, sugar, forging, metal forming |
| Khartoum 1 VTC | - Mathematics, Computer, English | Machinery, electricity, electronics, construction, hotel, food processing, carpet production, clothes, beauty salon, leather products |
| SBEF | - English, Computer | Machinery maintenance |
| Ministry of Industry | | - Textile (clothes, spinning, weaving)<br>- Food processing (canning, sugar)<br>- Leather products |
| Petroleum Training Center | - Management, Finance, IT | Oil industry in general |
| Saria Industrial Complex | | Textile, plastic, mechanic |
| GIAD | | Welding, gas welding, painting (international qualification) |
| Petroleum Technical Center | | Welding, electricity, machinery, petroleum products |
| Chamber of Small Industries and Craft Union (CSICU) | | Trades with strong needs:<br>Automotive machinery, automotive electricity, general electricity, apparels, cold storage and refrigeration, foundry, mechanical parts, machinery maintenance |

Source: JICA Study Team

## 3.7 Opinions of VTC Graduates

### 3.7.1 Discussion among VTC Graduates

A meeting was held to figure out how VTC graduates evaluated the training program they had experienced. Target VTC graduates were selected among the companies which JICA Study Team had visited for vocational training needs survey in March-April 2009. 20 VTC graduates participated in the meeting.

Discussion was held by focusing the following topics.

- The training course from which they graduated
- Current job and position
- Usefulness of vocational training in comparison with the current job and position
- Appropriateness of training course in comparison with technological innovation
- Evaluation on time allocation for theoretical and practical lessons
- Proposition for improvement of vocational training program
- New training courses to be developed

Opinions raised by participants were as follows:

- I benefited from VTC although the training I received has no relevance to the current job.
- I dare to comment that practical training had a lot of problems.
- I feel that VTC at that time was good and effective.
- I am happy with the training I received. My VTC was private one and better than others.
- To my knowledge the curriculum of VTC is outdated.
- To be frank, I have never benefited from training in VTC.
- Training for marketable skills should be introduced in VTC.
- The training received in VTC was useful though not very much developed.
- There is a gap between the training received in VTC and the reality.
- The curriculum put much emphasis on in-plant training.
- It is possible to become a leader in the production site, if one makes appropriate efforts.
- Vocational training in the past was efficient and effective.
- Vocational training could realize my desire to acquire practical science.
- VTC did not follow the change in labor market.
- VTC is suffering from unbalanced provision; excellent instructors and outdated machines.
- All inputs including instructors, equipment, materials are degraded.
- Enterprise owners are concerned with only whether one can respond to an immediate need rather than what skills he has.

### 3.7.2 Evaluation of Graduates on VTC

Some participants stated that the vocational training system was appropriate, but degraded since long time ago. Most participants regard the current situation of VTC to be inappropriate. Problems raised in the discussion are as follows:

- Lack of equipment, materials and human resources
- Lack of capable instructors
- Obsolete curricula
- Outdated machines and equipment
- Lack of fund and poor facilities
- Low standard of salary, poor management and absence of enthusiasm among instructors
- Mismatch between the human resources offered by VTC and those requested by the labor market

Measures suggested in the meeting were as follows:

- Provision of appropriate equipment, materials and VTC staff
- Training of VTC instructors within and outside the country
- Replacement of obsolete equipment by new one
- Enhancement of practical training
- Curriculum reform in order to cope with new technology

In addition, VTC graduates suggested a need to develop new training courses and to enhance existing courses, in order to meet the market changes. Examples are indicated below.

- Skills for preparation and understanding of technical drawing
- English
- IT
- Safety on machinery operation
- Operation skill for heavy machines and trucks necessary for infrastructure development
- Enhanced training on construction sector: installation of aluminum doors and windows
- Improved productivity and efficiency through reduction of rubbish and defects
- Communication skills to be leaders

Meanwhile, some VTC graduates complained about unfair treatment in the company, although they play important roles. Low salary of SDG 300-400 for 30-40 years old was indicated as an example.

# 4 Small Enterprises and Vocational Training

In Sudan, small enterprises of which the number of employees is less than 10, count for 93% of the entire formal manufacturing enterprises. However, vocational training in Sudan has paid little attention on their training needs, since it has focused on apprenticeship training for basic education graduates.

In this chapter, an analysis was made to identify characteristics of small enterprises and their vocational training needs, according to the following classification.

1. Small enterprises in the formal sector
2. Micro enterprises including those in the informal sector
3. Entrepreneurs: ordinary and women entrepreneurs

## 4.1 Characteristics of Small Enterprises and Training Needs

(1) Definition

Ministry of Industry classifies the enterprises of which the number of employees is less than 10 as small enterprises. In fact, those with 10-24 employees have similar nature with those defined by Ministry of industry as small enterprises. These are reflected to as “small enterprises” in this chapter.

(2) Characteristics of Business

Small enterprises include both manufacturing and services. However, data for service industry is not available. The following indicates the characteristics of the small enterprises for manufacturing sector.

- Food industry accounts for 71%, followed by metal forming with 10% and ceramic with 5%.
- Among food industry, wheat based enterprises such as bakery account for 89%.

(3) General Features of Management

The small enterprises, different from the large or medium ones, usually do not apply specialization of employees. In large and medium enterprises, specialized staff is assigned, for example, employees in charge of marketing, production, management of profit, etc. On the other hand, every employee in small enterprises tends to be required to perform several roles. He or she generally needs to acquire business sense, in addition to specific skills.

One typical example is restaurant business. Some demarcation of tasks is usually seen. Food is prepared by cooker. Customers are welcomed by waiter and waitress. Business is run by the manager. However, even cooker needs to look at the evaluation of cooked food by the customers. He also needs to consider how he can get good and inexpensive stuff for food, how he can minimize loss of food processing, and how he can save the energy for cooking. In this sense, the cooker is a manager as well.

(4) Management Style of Small Enterprises

Business focusing on domestic market:

Because of a small size of operations, the market is mainly domestic. Though competing with imported goods in Sudan, they do not need to face fierce competition outside of Sudan.

Progress of Mechanization and Automation in the Production:
Even in small enterprises, machineries are widely introduced and automation is introduced in production lines. As a result, proper maintenance and repair of these machineries became more important.

Absence of Total Quality Management:
While automation is in place, total management of production line has not been developed yet. For example, even production line is equipped with automation, preparation process such as mixture of ingredients, and packaging process are still operated manually. Another example is that hygienic control is generally missing in the food industry. The materials, half-finished products and final products are directly exposed to the outside at every step of production, which may endangers contamination. In addition, hygienic control for manual work has not been established.

Lack of Awareness toward Safety:
As machines are in place, safety management for operation becomes a critical issue. However, small enterprises are not prepared yet for it.

(5) Areas of Training for Small Enterprises

In addition to the conventional skill training, managerial training would be required.

Managerial Skill:

- How to explore sales channels
- How to estimate the cost and make pricing
- How to reduce the waste in the production line
- How to get financing
- How to analyze feasibility of business
- How to develop bookkeeping

Box 4.1.1 Training of Painting Business

| |
|---|
| Painting is a typical small business of which success is much depends on worker's skill. Painting work differs according to the material to be painted. Determination of paining work affects the const. Selection of color is another important concern of clients. It is required knowledge and sense to choose appropriate color depending on the type of building or room.<br>Even small enterprises, it is necessary to pay tax. So, small enterprises need to know how to keep books and calculate tax. In this way, accounting knowledge is necessary in addition to the paining skill. If such training program is provided as one package, it would be good for small enterprises.<br>In addition, in case small enterprises, even non-sales staff has occasions to communicate directly with clients. Communication is also considered to be an important skill. |

International Competitiveness:

- Total Quality Management

(Case for Food Processing)

- Hygiene Control
- Food Safety

Box 4.1.2 Case of Biscuit Manufacturer

| |
|---|
| "A" company produces biscuits distributed to the local market. The production process is mostly automated. Raw ingredients are mixed by a worker manually and filled into the machine, afterward biscuits are made automatically.<br>Production process is composed of 3 stages. At every stage, 1 woman is assigned as an inspector. They check the products visually. When they find defects, they take out them from the production lines. The proper products go to the packaging area where many women pack them into boxes. Most of process is done by women in this enterprise.<br>The defect rate in the production is very high and more than 10%. However, defects are returned to the raw ingredient stage and recycled. Therefore, the total loss in raw ingredients may not be high. |

(Case of Leather Products)

- Basic knowledge and skill for tannery
- Operation of computerized and automated machines
- Basic knowledge of designing
- Management and operation of factory or workshop

## 4.2 Characteristics of Micro Enterprises and Training Needs

(1) Definition

In Sudan, there is no strict definition. Taking into consideration the number of employees, this category may include informal sector. However, characteristics of business are more important than the scale of business.

(2) Characteristics of Business

Most of the micro enterprises run business in small workshops without even office space. The number of employees is also only a few. Some owners have a long experience of more than 20 years. They are confident of their capability in skill and business management. Employees learn skill and management knowhow from the owner in the form of traditional apprenticeship. Many of them will be independent and start own workshop after a few years.

Generally, they have almost fixed customers and do not need to make efforts for expanding the market. However, since the income level of the customers is usually low, requirements from them are not serious, either. Therefore, their business tends to be simple repetition of the similar orders. There is little incentive to get upgraded skills and services.

(3) Areas of Training for Micro Enterprises

In general, micro enterprises do not feel necessity to have formal vocational training. However, in some cases, they need to learn new technology. For example, automobile repair workers now need to adapt themselves to the changes caused by computerized automobiles.

While, workers belonging to Shoe Makers Association are in need of acquiring skills for finishing, better design, operation of new model machines in order to compete with imported shoes.

## 4.3 Characteristics of Entrepreneurs and Training Needs

(1) Definition

In this sub-chapter, entrepreneurs are grouped into 2: the first group consists of ordinary entrepreneurs including employment support for IDP and DDR; the second group treats women entrepreneurs for independence.

(2) Characteristics of the Business

For the first group including employment support for IDP and DDR, considerable options for business are foreseen depending on the individual social background or life planning after the training. Therefore, vocational training needs to offer options as many and as flexible as possible. It is obvious that 3-year apprenticeship training provided by SCVTA can not respond such needs. It is necessary to develop new short-term training programs.

Although this is same for women entrepreneurs desiring independence, there are some popular options for them. They are cooking and food processing, clothes and sewing, nursing, beauty saloon, etc.

Similar to small enterprises and micro enterprises, vocational training for entrepreneurs needs to include basic knowledge about business skills in addition to vocational skills.

(3) Areas of Training for General Entrepreneurs

- Welding and sheet metal
- Automobile maintenance and repair
- Agriculture machine repair
- Construction and plumbing
- General electric
- Electric appliance repair
- Food processing

(4) Areas of Training for Women Entrepreneurs

- Cooking and food processing
- Clothes and sewing
- Nursing

- Beauty saloon
- Home electric appliance repair

# Part 2 Master Plan

## 5 Framework of Planning

In view of the potentials and issues as analyzed above, a framework of planning is proposed. It comprises objectives and strategies described below.

(1) Objectives

1. Maximizing employment and income opportunities for the young people.
2. Supplying skilled workers in response to national economic diversification.
3. Strengthening the competitiveness of small industries.

(2) Strategies

1. Encouraging vocational training by non-governmental and private providers: Public initiative should be taken in the institutional arrangements and pilot activities for training those people who non-governmental and private providers can hardly afford to take care, e.g. low income people, IDP and demilitarized soldiers.
2. Realizing a simpler division of works among TVET organizations in line with the dualistic and geographical nature of labor market: the SCVTA and VTCs should specialize themselves in fostering the skilled workers who particularly have the ability to adapt to changing working conditions. For example, following demarcation could be the basis.

| Type of Institution | Dualistic Labor Market | | Major Location of Institution |
|---|---|---|---|
| | Large Industries | Small Industries | |
| Technical College | Technicians | | Khartoum and States |
| VTC | Skilled Workers/Small Entrepreneurs | | Khartoum and Major Regional Cities |
| Technical School | | Artisans | States |

3. Advancing the reform of the SCVTA and VTCs in the light of Strategies 1 and 2 above: In long and medium terms, SCVTA shall shift its emphasis from the direct operation of apprenticeship training to the monitoring and support of the training providers by private entities, NGOs and State Governments. An issue at this juncture is how to deal with the existing VTCs that have suffered from the difficulty in operation and maintenance. We would like to assume the following alternatives for this issue:

Alternative 1: Strengthening the Current Set-Up

All the VTCs under SCVTA shall be maintained and improved under the current the managerial set-up. In parallel, SCVTA shall strengthen the function to make vocational training policy, monitor training providers and support them.

Alternative 2: Separating VTCs from SCVTA

All the VTCs under SCVTA shall be separated from SCVTA, and possibly restructured and recovered under the private or state initiative. SCVTA shall be specialized in making vocational training policy, monitoring training providers and supporting them.

Alternative 3: Pursuing a Best Mix

Only a few VTCs shall be reinforced as a model of the vocational training of Sudan. Based on the practical experience of these VTCs, SCVTA shall strengthen the function to make vocational training policy, monitor training providers and support them.

Expected results and major conditions required for the above alternatives are as follows.

| Alternative | Expected Results in the Whole Vocational Training System | Required Conditions |
|---|---|---|
| 1. Strengthening the Current Set-Up | - SCVTA and VTCs shall recover as a major basis of comprehensive apprenticeship training. On this basis, support function for external provides is gradually enhanced. | - Full financial support of the Government to enable the SCVTA and VTCs to recruit instructors, replenish tools and replace out-of-order equipment.<br>- Financial assistance from time to time by many donors. |
| 2. Separating VTCs from SCVTA | - SCVTA focuses on formulation of vocational training policy and provision of support to providers. | - Fast growth of training providers in the private sector and under State Governments.<br>- Reshuffle of existing VTC staff.<br>- Close and frequent communication between SCVTA and VTCs in the private sector and under State Governments.. |
| 3. Pursuing a Best Mix | - SCVTA focuses on formulation of vocational training policy and provision of support to providers. For quality based model VTCs are operated. | - Fast growth of training providers in the private sector and under State Governments.<br>- Reshuffle of existing VTC staff.<br>- Close and frequent communication between SCVTA and VTCs in the private sector and under State Governments.<br>- Financial support of the Government for recurrent cost of model VTCs.<br>- Concentration of donor support to model VTCs. |

We recommend the Alternative 3, based on a comparative analysis of the effectiveness and reality of these alternatives.

(3) Reform Program for SCVTA and VTCs

In order to carry out the strategies above, Strategy 3 in particular, a program is necessary to advance the reform of the SCVTA and VTCs. It comprises the following 5 components:

1. Continuous and timely revision of training contents
    - Training standards

- Curriculum and training materials
- Model training: demilitarized soldiers, small industries, women, etc.

2. Strengthening of instructors
   - Pre-service instructor training
   - In-service instructor facilitation
   - Personnel evaluation
3. Maintenance of tools and equipment
4. Restructuring of SCVTA-VTCs
   - Functions
   - Facilities
5. Expansion of the funds for recurrent expenditures

Contents of training, instructors, and equipment and tools are 3 pillars of vocational training. The reform program is to be conducted in line with 3 components corresponding to these pillars. Management system between SCVTA and its VTCs must be the most critical issue that can not be overlooked, when the reform program is implemented. In particular, relation between SCVTA Secretariat and its VTCs becomes more important from viewpoints of total efficiency of SCVTA, and roles of SCVTA and its VTCs in relation to changing vocational training system. Accordingly, the fourth component is to be included. Finally, it is the budget, especially recurrent budget, which ensures sustainability and growth. Some issues depend on the policy of Ministry of Finance and National Economy; however, there is a large room that SCVTA can improve by own efforts. The fifth component pursues this possibility. As described previously, strategies for improving vocational training system comprise:

1. “Acceleration of initiative by private sector and NGO in vocational training”, and
2. “Clarification of roles of SCVTA and its VTCs in vocational training system”.

In implementing the program, an attention should be paid to the following two distinct aspects of the program:

1. Recovering existing VTCs on priority basis
2. Monitoring and supporting training providers

By taking into account both the aspects, new activities ought to be disseminated in all parts of Sudan, based on strengths fostered through vocational training since half a century.

(4) Components of Reform Program for SCVTA and VTCs

| Component | | Recovering Existing VTCs on Priority Basis | Monitoring and Supporting Training Providers |
|---|---|---|---|
| Revision of Training Contents | Training Standards | - Reviewing training standards of 35 years ago.<br>- Make consistency between training standards and training courses widely conducted by private and State VTCs. | - Disseminating revised training standards and related information (trade testing, employment by trade, etc.) to external providers. |
| | Curriculum and Training Materials | - Establishing a sustainable set-up for developing apprenticeship curriculum with participation of industry people and instructors. | - Giving advices on curriculum development and coordination.<br>- Enhancing instructor's capacity for supporting external providers. |
| | Model training DDR, SME, Women, etc. | - Planning, conducting and evaluating model courses in collaboration with private sector, NGO, private VTCs.<br>- Utilizing instructors especially for specific groups in urgent needs: DDR, small industries, women, IDP, etc. | |
| Strengthening of Instructors | Pre-service training | - Enhancing management and to expand training capacity of ITTS. | |
| | In-service instructor facilitation | - Regularizing advanced training method and administrator training for instructors of all VTCs by aiming at upgrading the whole vocational training system.<br>- Encouraging technical exchanges and voluntary study group of instructors.<br>- Coordinating with other TVET institutions for technical training of instructors.<br>- Diversifying roles of instructors including support of external providers. | |
| | Personnel evaluation | - Establishing an evaluation system in line with SCVTA policy.<br>- Reflecting the result of evaluation into promotion, etc.<br>- Evaluating voluntary study, external activities, etc. for encouraging instructors. | |
| Maintenance of tools and equipment | | - Supplementing tools in shortage.<br>- Rehabilitating training environment.<br>- Monitoring usage of equipment to establish rules: abolish or replace.<br>- Organizing maintenance team.<br>- Improving awareness of staff. | - Studying leasing system of training space and equipment for external providers (established management system is required in advance). |
| Restructuring of SCVTA-VTC | Functions | - Giving authority to VTC directors in view of activation and efficiency (for alternation of training contents, voluntary study group activities, management of tools and equipment, income generation activities, etc.)<br>- Increasing communication between SCVTA and VTCs. | - Concentrating SCVTA functions necessary for improving management, support of external providers (for planning, labor market survey, instructors' utilization, permission and monitoring of providers, communication with State Governments, coordination, etc.) |
| | Facilities | - Rehabilitating gradually the facility.<br>- Studying drastic measures for degraded buildings. | - Integrating functions of Secretariat.<br>- Developing gradually the facility necessary for new activities (planning new model course, supporting curriculum development, etc.)<br>- Selecting target VTCs by taking into account availability of finance, location, possibility of reconstruction. |
| Expansion of the Funds for Recurrent Expenditure | | - Securing budget for instructors and equipment.<br>- Increasing gradually training fee.<br>- Generating income (short-term training, productive training, sales)<br>- Leasing VTC land. | - Securing budget for research, official trip, external activities of SCVTA. |

# 6 Action Plan

## 6.1 Significance of Action Plan

Action Plan is a plan of the activities which can effectively be taken within limited period of time. The target period is 2010-2013.

The action plan includes activities which meet the following two criteria. Thus activities should basically be carried out within the current institutional and financial framework of SCVTA.

Criteria 1: Being urgent to restore the managerial capacity to operate VTC of SCVTA under “selection and concentration principle”.

Criteria 2: Being significant as pilot activities to enable SCVTA to play a new role of facilitating diversification of vocational training through supervision and support of training providers.

The following are proposed as action plans to meet either or both of the two criteria above.

1. Institutional development of curriculum development
2. Strengthening of instructor training
3. Renovation of facilities
4. Improvement of management system of facility and equipment
5. Institutional development of training for small industries

For each of the proposed action plan above, current situation, issues, aims, the activities to be carried out by 2013 and important given conditions are described in the following sections.

## 6.2 Institutional Development of Curriculum Development

### (1) Current Situation and Issues

Based on common understandings of SCVTA, the term of curriculum is defined as follows:

1. Apprenticeship Training Standards is not a part of curriculum.
2. Documents, which indicate training contents, training duration and training order, such as annual training progress, syllabus and textbook for trainees, are called as curriculum.

Focusing on training standards and curriculum, current situations and challenges of apprenticeship training are described below.

Apprenticeship Training Standards:

"Trade Organization and Skill Measurement Guidance Department" manages the "Apprenticeship Training Standards". The department relies on the training standards as the basis of admitting and issuing a apprenticeship Diploma. On the other hand, "Technical Affairs Division" is actually in charge of development and revision of curriculum. This department also follows the training standards. Revision of the "Apprenticeship Training Standards" requires revision of "Vocational Training and Apprenticeship Act" (enacted in May 1974). Eventually the standards have not been revised.

While the training standards have not been revised, needs of the labor market have changed, and then the standards are not appropriate in some cases. Until now, SCVTA has changed and tried to integrate curriculum to respond to the needs without revising the training standards. Establishment of new training course does not require revision of the act but only approval of the supreme council.

However, SCVTA Council has not approved the application of the revision of the act, partly because the council has a lot of agenda and is held only 3 to 4 times a year. For example, Sudanese-Korean VTC operates new training courses which do not appear on the training standards, including Computer and Dress Making, without a formal approval. Sudanese-Korean VTC applied for the registration of the new courses on the training standards as a normal procedure, but SCVTA Council has not yet approved the new courses.

In other than these courses, maintenance and operation workers are demanded in manufacturing because production systems are getting electronically controlled. If overseas enterprises come to Sudan, the demand would accelerate more and more. Mechatronics course, which combines machinery mechanism, processing technology and control technology, is being conducted in many countries. However, Sudan is expected to face some difficulties since Sudan has no experience of revising the training standards.

Curriculum Development:

The curriculum which was developed before 2001 does not exist at present. Except the curriculum which has been introduced in Sudanese-Korean VTC with a support from the Korean Government, the department in charge of curriculum development does not keep records of corrections and references.

In fact, it was around 2004 when SCVTA formally began curriculum development by itself. It was because an integrated curriculum got necessary due to the introduction of standardized final examinations of all VTCs in 2005. For the standardized final examinations, Training Progress was prepared for the apprenticeship course and distributed to VTCs. Unfortunately, SCVTA does not keep the Training Progress, although some VTCs do.

In the Annual Training Progress, the training period is divided into 40 weeks according to the training standards. However, it is not a curriculum. It is necessary to work out the syllabus which specifies training activities on daily basis in order to undertake more effective training.

At present, syllabus has gradually been developed. However, there are only a few staff members who can develop curriculum and syllabus.

Textbooks have been developed since 2008. The following have actually been used:

1. Trainee Textbook for Mathematics
2. Trainee Textbook for Technology
3. Trainee Textbook for Technical Drawing
4. Instructor Guideline for Technology
5. 1st Class Trainee book “Carpentry”
6. 1st Class Trainee book “Technical Drawing”

The following textbooks are under preparation:

1. 1st Class Trainee Book “Automobile”
2. Instructor Guideline for “Automobile”
3. 1st Class Trainee Book “Electric”
4. Instructor Guideline for “Electric”

Textbook utilizes many materials used in workshops. They have been developed by instructors. However, quality is not high enough since practitioners in the private sector did not join in the process curriculum development.

Current Situations of Apprenticeship Course:
Common issues of the 4 VTCs under SCVTA, except Sudanese-Korean VTC, are the followings: outdated training equipment, insufficient tools and low quality of instructor. With respect to instructor, most of the instructors are close to retirement age.

Trend of New Training Method:
Khartoum state is preparing for a new training, including Competency Based Training (CBT), with a support from EU and UNIDO. There are some differences from conventional apprenticeship training.

Modules of Employable Skills (MES) developed by ILO and System-Unit Training (SUT) developed in Japan are similar with the method in CBT. Common feature of the three training is that an occupation is divided into employable units as one module of training. Since a training goal of each module is clear, CBT is expected for more effectiveness of the training and there are some other merits as follows:

1. It is possible to recruit trainees module by module, because training modules are employable units. Therefore, the training enables many people to have an opportunity of training which focuses on a specific skill for a short term.
2. It is possible to add some supplementary training for insufficient skills, taking trainees' skill, technique, knowledge and attitude into account. Hence training could be streamlined.
3. It is possible to clearly certify skill, technique, knowledge and attitude which are instructed in training.
4. It is possible to modify the training in accordance with skill and technology development, by changing modules.
5. It is easy for instructor to plan a teaching schedule, because CBT makes clear assigned training hours.

On the other hand, CBT also has some weaknesses as follows:

1. For 14-year-old trainees who have just completed the basic education, it cannot be expected that module options of CBT, which is a good feature to follow personal experiences and wishes, have less effectiveness. Major targets of SUT in Japan are those who want to change jobs. SUT aims at a large training effect by combining modules in response to the previous experiences of trainees.
2. It is necessary to prepare teaching materials, including equipment, tools and textbook, in order to respond to a wide variety of employment needs for a short term; therefore, current cost is also necessary for purchasing training equipment and maintenance.

Necessity of Apprenticeship Training:
Regardless of training duration, a major characteristic of vocational training is that "instructors show trainees proper operations, let trainees repeatedly follow them and enable trainees to do them".

For instance, the apprenticeship course has the basic training for the first six months. The target of trainees are all of the trainees of machinery, welding, electricity, automotive, carpentry and building. Trainees learn about basic skills of filing, hack sawing, drilling, measurement, welding through practical training, and technical drawing, mathematics and technology through lecture. A purpose of the basic training is to encourage the trainees to effectively learn about special techniques, skills and knowledge. Through the three year training from the basic training to in-plant training, trainees can do a lot of things.

A medium enterprise needs single-skilled workers who mainly deal with routine work and multi-skilled workers who are required for several skills. In a case of small enterprise, one worker is hopefully capable of doing many skills.

In a life of craftsman, he will be a senior skilled worker, even though he was a single-skilled worker at first. As a senior skilled worker, many techniques and skills that he learned in apprenticeship course of VTC could be helpful. It is desirable for enterprises to employ workers who completed different training programs, such as apprenticeship training and CBT. It means that such recruitment meets employment needs of enterprises. Apprenticeship training has a strong point to respond to enterprises' needs.

(2) Aims and Activities to Be Carried Out by 2013

Toward the Revision of the Vocational Training Standards:

In SCVTA, there is no filing system for curriculum revising and development. There are many missing documents. Under this situation, information cannot be shared, and time and labor could be wasted for problem solving. The following are proposed for a proper filing system:

1. To establish filing and document management system.
2. To collect and store scattered documents for their continued and common use.
3. To create more flexible training standards.

Curriculum Development:

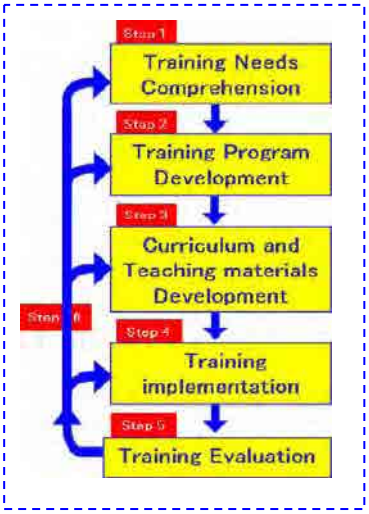
SCVTA needs to review and acknowledge curricula of all trades. SCVTA should be a facilitator for training providers to prepare curriculum by themselves. The following actions are necessary:

1. To establish a textbook and curriculum development system through workshop to be participated by VTC senior instructors, representatives of enterprises and experts.
2. To establish a system of collecting and using books, information and references for curriculum development.
3. To establish a system of textbook production ranging from editing to publication.

Quality Improvement of Curriculum Development:

A concept of training management cycle as shown in Figure 6.2.1 is useful for curriculum development as well.

Figure 6.2.1 Concept of Training Management Cycle




Source JICA Study Team

- First step is to grasp national needs, regional needs, company needs and personal needs.
- Second step is to design course program to meet training needs: for example, who is trainee, training duration, etc.
- Third step is to produce curriculum and teaching materials for programs.
- Fourth step is to implement practical training and lecture.
- Fifth step is to clarify factors of training effects, considering results of a practical test and a writing test. For instance, clarifying causes, such as teach method, teaching duration and teaching material, is to be clarified, if many trainees could not understand. Results of the survey on requests from VTC graduates and employers of VTC graduates are important opinions in evaluation.
- Sixth step is to improve training based on the results of the step 5. This step contains activities, such as curriculum review, study on teaching method and review of teaching material.

(3) Important Given Conditions

SCVTA is expected to instruct 5 VTCs under SCVTA, VTCs under the State Governments, private VTCs and VTCs run by NGO about curriculum implementation, instructor deployment and facilities for equipment and material. Then, SCVTA is also expected to establish curriculum development system. In order to achieve them, it is a precondition that SCVTA prepares draft for new vocational training standards and the SCVTA Council approves them.

Solving this precondition, following conditions are also necessary:

1. Training courses to be abolished, which any VTCs do not have, those to be unified with the other courses, for example plumbing and building, and those to be newly set up such as mechatronics are to be clarified.
2. Training needs survey is to be undertaken.

## 6.3 Strengthening of Instructor Training

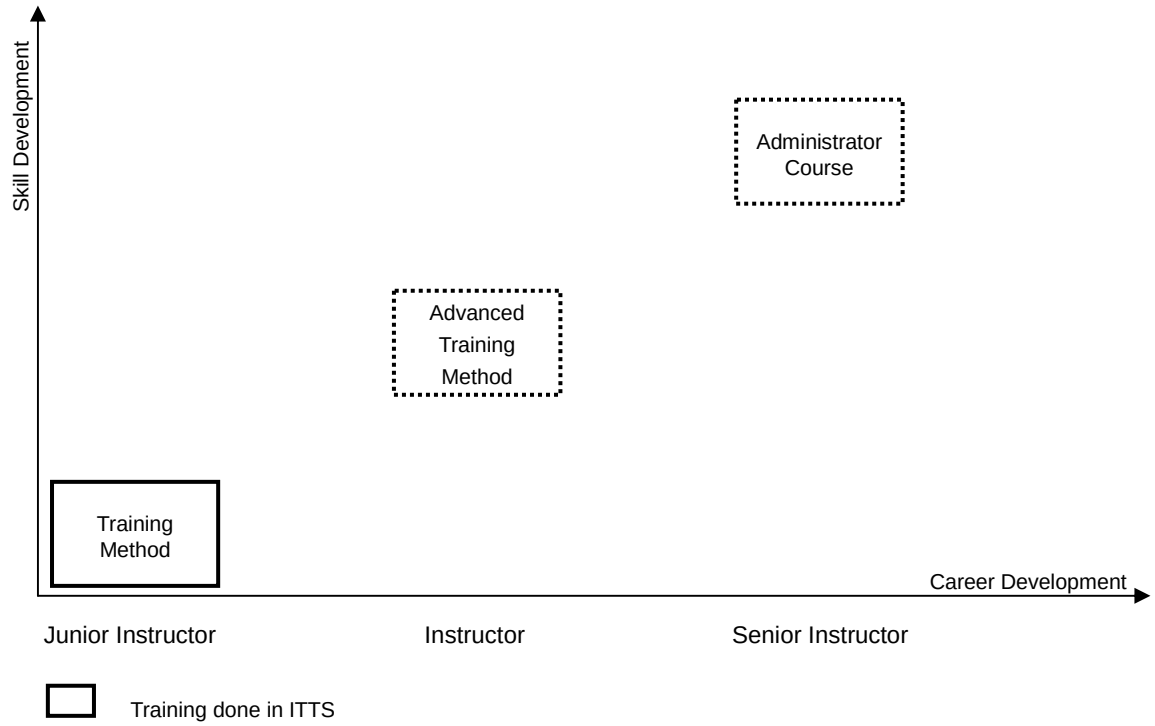
### (1) Current Situation

At present, the following instructor training programs are irregularly conducted mainly in ITTS.

1. Pre-service instructor training (training of basic training method for newly recruited instructors).
2. Advanced training method training (advanced method for middle career instructors).
3. VTC administrator training (training for VTC administrators).
4. Specialist training (training of advanced technologies utilizing external workshops).

Training opportunities of instructors, including training above, are limited. As a result, in-service instructors brush up their skills by information collection through website and documents related to technologies and learning from well experienced instructors.

Figure 6.3.1 Current Situation of Instructor Training




Source JICA Study Team

### (2) Issues and Aims

Issues of instructor training based in ITTS are as follows:

- Although the training period is as short as 3 weeks, all the newly appointed instructors receive basic training method training. However, training opportunities are extremely limited for other instructors. In addition, there is no follow-up for basic training method training. In case newly appointed instructor encounters difficulties, only a few colleagues around him can advise. It is necessary to establish clear disciplines for instructor training, then to conduct the training continuously.

- Trades of vocational training are diverse. When CBT is introduced into vocational training, the number of the trade for which need training will increase. Even though ITTS is expanded, it would be difficult to respond the variety of trades increasing day by day. Such technical training ought to be conducted in collaboration with existing universities, technical colleges, enterprises, research institutions, etc. For this purpose, it would be necessary to tap existing external resources by making use of a cross-cutting nature of SCVTA Council.

It is desirable to institutionalize the technical improvement at VTC level, which currently is dependent on individual initiative, in a most sustainable and economical manner.

- Voluntary Study Groups are to be formed by trade no matter jurisdiction of VTC, and then monthly session is organized. Neighboring VTCs organize jointly. It is desirable that each group consists of 20-30 instructors from a viewpoint of active technical exchanges.
- Annual activity plan is to be prepared voluntarily by each group, but in line with SCVTA guidance. Activities can include model training to improve junior instructor's capacity, visit to enterprises or factories, seminar or workshop by inviting manufacturers, etc.
- It is recommend to create incentive measures: e.g., giving credits to the instructors who act as leaders of session, then nominating those who have obtained a lot of credits as TOT lecturer. Credits can be considered as one of honorary qualifications which increase instructors' motivation.

(3) Activities to Be Carried Out by 2013

Improved instructors' skill can obviously improve quality of vocational training. However, strengthening of regular in-service training in ITTS is not enough. It is necessary to establish a sustainable in-service training system which complements the training in ITTS, by encouraging and institutionalizing the voluntary skill-up activities that positive instructors currently carry out individually.

The former focuses on training method based in ITTS and initiated by SCVTA, while the latter is a more flexible system initiated by instructors, under SCVTA supervision, to contribute to both training method and technical upgrading. Combination of the two systems makes continuous and effective in-service training system enabling all the instructors to participate in the in-service training.

Instructor Training in ITTS:

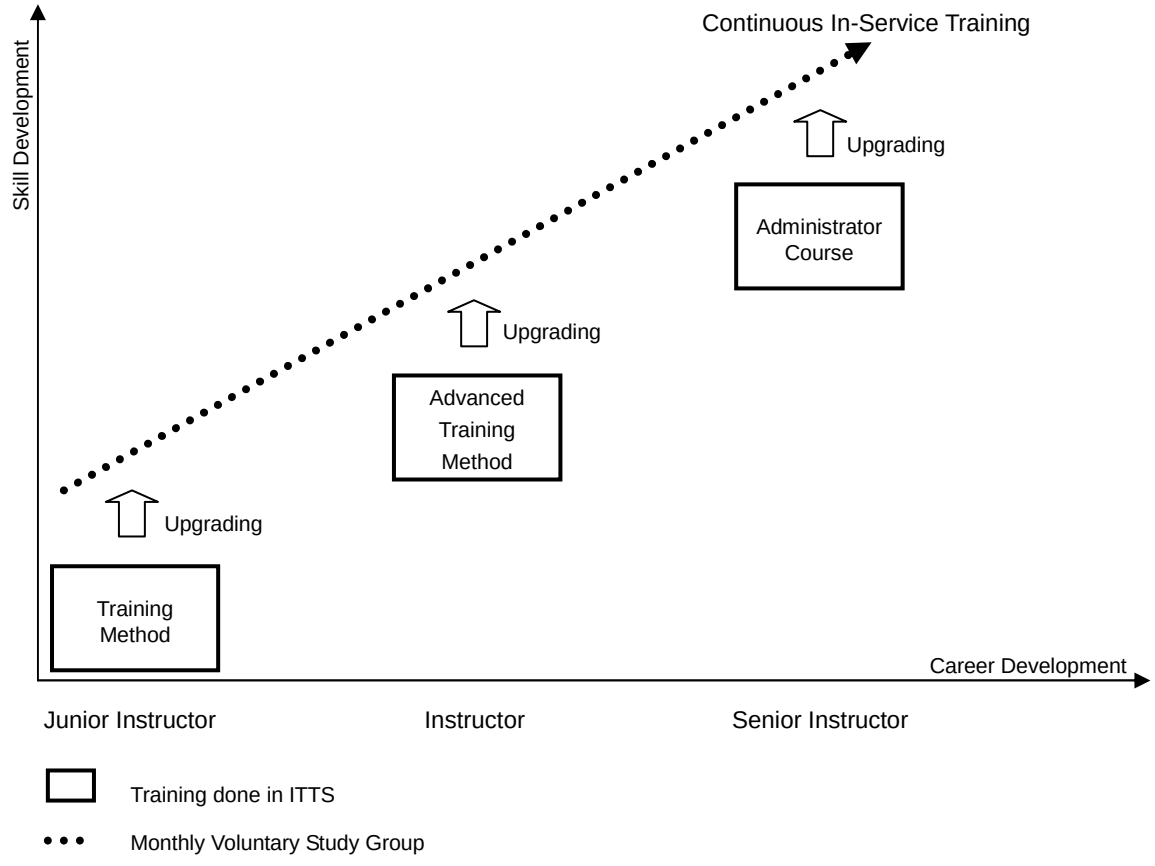
- To make compulsory advance training method training (curriculum development, monitoring, guidance of junior instructors, etc.) for 5-year-experience instructors.
- Similarly, to make compulsory administration training for 10-15-year-experience instructors.

Establishment of Voluntary Study Group at VTC level:

- To prepare the operation manual and the financial framework which summarize technical guidelines of Voluntary Study Group, and then to discuss the contents with VTC instructors.

- To establish Voluntary Study Group according to trade or trade group based on the agreed technical guidelines and financial framework by instructors.
- To prepare annual activity plan by each Voluntary Study Group, and then to submit to SCVTA. Even voluntary the group is, it is necessary to conduct activities in accordance with the technical guidelines so that the group can get financial and logistical support of SCVTA.
- To run monthly sessions of Voluntary Study Group (model training, visit to enterprises and factories, seminar on new technology by inviting manufactures) in accordance with annual activity plan. Instructors need not only to improve own skills but also to take care junior instructors, linked to in-service training programs in ITTS. SCVTA organizes events to encourage Voluntary Study Group activities; e.g., organization of skill competition for instructors, etc.
- To record the result of each session of Voluntary Study Group and to report it to SCVTA. Instructors who play a leading role can get credits. This crediting system would be honorary but common for all the VTCs no matter of jurisdiction. This system could increase motivation of instructors.
- To monitor by SCVTA implementation of Voluntary Study Group based on the submitted record. Then, to extend necessary support and improvement. Finally, to reflect lessons from the monitoring and improvement process in the vocational training policy.

Figure 6.3.2 Strengthened Instructor Training through Periodical In-Service Training




Source JICA Study Team

(4) Important Given Conditions

It is necessary for SCVTA to reach an agreement with instructors about technical guidelines and financial framework for institutionalizing Voluntary Study Group at VTC level. The technical guidelines serve as an operation manual which includes purpose of Voluntary Study Group, responsibility, samples of appropriate activities and inacceptable activities, and incentives given to the Voluntary Study Group members. Financial framework is to determine the cost sharing between SCVTA and Voluntary Study Group members. It is desirable that instructors, who are beneficiaries of the program, share the cost for participating in the training and SCVTA share the costs for training room and materials.

In case of VTCs in isolated states, it is assumed that Voluntary Study Group could not be active as there is no neighboring VTC. In such case, it would be important to organize the study group in a way to flexibly mobilize external actors such as workshop owners and independent skilled workers.

## 6.4 Improvement of Facility Management

(1) Current Situation and Issues

One of the reasons why proper training can not be conducted lies in the management of facility, equipment and furniture. Under the Study, a workshop was held to examine this issue. Major points identified by participants including those of SCVTA, VTCs, Central Store, ITTS, private sector and NGO are as follows:

- Government has no capacity to support vocational training.
- Decision is made by central administration.
- SCVTA is not flexible in purchasing and financial procedures.
- Lack of cooperation and coordination between SCVTA and VTC.
- Maintenance section dose not exist.
- No awareness of maintenance and its measures.
- Lack of budget for maintenance.
- Absence of reporting system for damages.
- Lack of instructor's knowledge and experience about maintenance.
- Absence of monitoring system.
- Trainees are too young to care right uses of equipment.
- Lack of spare parts.
- Machines and equipment are too old.
- Buildings are too old.
- Building is bad as working environment.
- Training tools are cheap quality.
- Insufficient capacity of machines.
- Absence of depreciation system or replacement system.
- Store does not match the standard specifications.
- Most of workshops were not built for training purposes like Khartoum2 VTC.
- Absence of inventory.
- Environment factors such as humidity and salty lead to damage of roofs.
- Tools are missing.

According to the issues identified above, it would be necessary to strengthen the management for maintenance of facility and equipment.

(2) Aims and Activities to Be Carried Out by 2013

Management Improvement:

- To visit all VTCs, ITTS and Central Store once a month to monitor activities on site, to activate instructors and to encourage motivated staff.
- To prepare monthly activity plan by VTCs and ITTS, and to submit implementation report to

SCVTA.

- To organize meetings to exchange ideas on reforms of SCVTA and VTCs between SCVTA staff and the representatives of two age groups (20-35 and 36-45) of instructors.
- To put classification stickers on the books of ITTS library, to register the books and to open the library to trainees and visitors.
- To remove disordered equipment and unusable tools.
- To clean training rooms and equipment by fixing a cleaning day once a month and to clean all the facilities by all the staff of SCVTA.
- To produce protective materials, such as covering cloths, and distribute them to VTCs.
- To hold workshops and identify obstacles, to discuss issues and measures with participation of state government, private sector and NGO. Topics are:
    - Insufficient instructors' skill, measures…
    - Inappropriate attitude of trainees, measures…
    - What SCVTA and VTC staff can improve?
- To check facility, equipment and tools during the vacation and to prepare rehabilitation plan.

Introduction of a Computerized Inventory:

- To prepare digital data of existing facility, equipment and tools.
- To record name, delivery and renewal date, location of installation and number, supplier, reparation records and cost, history of in and out, and stock of spare parts.
- To manage the data by officers in charge of maintenance, supply and store.

Formation of Monitoring Team:

- To prepare inspection manual for monitoring.
- To form a monitoring team to check VTC facility, equipment and furniture, etc.
- To identify the current situation in accordance with the inspection manual, and to take actions for improving facility and equipment.

(4) Important Given Conditions

- Training in English and computer skill is to be conducted for Monitoring Team members.
- Monitoring Team members are to be appropriately assigned.
- Computers are to be delivered to Monitoring Team members

## 6.5 Renovation of Facilities

### (1) Current Situation and Issues

One of the reasons why proper training can not be conducted lies in the conditions of facility, equipment and furniture. Diagnosis of facility, equipment and furniture under this Study revealed that a half of the equipment in VTCs does not function and many practical training sessions are conducted without practice.

### (2) Aims

Based on the results of diagnosis, rehabilitation plans are to be formulated in order to recover proper functions of equipment for training. Target facilities are those of Khartoum 2 VTC, Omdurman VTC and Khartoum North VTC, Central Store, ITTS and SCVTA Secretariat.

### (3) Activities to Be Carried Out by 2013

Actions include rehabilitation of facilities and equipment, and replacement of damaged furniture. According to the estimation, the rehabilitation requires a total cost of USD 6,276,497 during a period 2010-2012. It will be carried out possible with technical support by facility and equipment experts dispatched by donor in collaboration with the SCVTA staff.

Table 6.5.1 Outlines of Rehabilitation Plan

| Plan | Cost | Period | Implementation |
|---|---|---|---|
| Rehabilitation | USD 4,466,497 | 2010-2012 | SCVTA |
| Total | USD 4,466,497 | | |

Source JICA Study Team

Table 6.5.2 Rehabilitation Cost Estimates for Facility, Equipment and Furniture

| | Facility | Furniture | Equipment | Total (USD) |
|---|---|---|---|---|
| Khartoum 2 VTC | 468,273 | 22,365 | 1,535,839 | 2,026,477 |
| Omdurman VTC | 10,350 | 17,355 | 1,394,974 | 1,422,679 |
| Khartoum North VTC | 28,104 | 15,065 | 966,560 | 1,009,729 |
| SCVTA Secretariat | 6,054 | 1,559 | 0 | 7,613 |
| Total (USD) | 512,780 | 56,344 | 3,897,373 | 4,466,497 |

Source JICA Study Team

Rehabilitation of Facility:

Contents and estimated cost of rehabilitation for each facility are indicated in Table 6.5.3 to Table 6.5.6. Direct cost (materials including transportation cost) and indirect cost are estimated. Major rehabilitation works include replacement of doors, windows and grill, masonry and plaster works, and installation of sanitary and air conditioning equipment. Khartoum 2 VTC and Central Storage require the additional roofing over the existing roof to prevent rain leaking and radiant heat, and the reconstruction of rest rooms for trainees.

## Table 6.5.3 Rehabilitation Plan and Estimated Cost for Khartoum 2 VTC and Central Store

Rehabilitation for Khartoum - 2 VTC
Prepared by :Elhadi Gamer & Abdalaziz Elhussain Acknowledged: Mustafa El Radi Ahmed
Date : 4.8.2009

| S/ No | Description | Short Specification | Unit | Qty | Direct cost (Material) | | Indirect Cost | | Total (US$) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Unit cost | Amount | Unit cost | Amount | |
| Khartoum - 2 VTC | | | | | | | | | |
| 1 | Replace stainless sheets for wall and roof | Remove material (stainless sheet) from existing work shop to destroyed wall and roof by wind | ㎡ | 120 | 0.00 | 0.00 | 6.25 | 750.00 | 750.00 |
| 2 | Cover by CI sheet for all workshop and Central store for protect rain water (area is find in DRW in building number 4,5,6,7, 8,10,11,12, 13, to see building DWGs) | CI sheet with steel structure frame | ㎡ | 6,480 | 41.70 | 270,216.00 | 20.80 | 134,784.00 | 405,000.00 |
| 3 | Glass fitting (code K2, E1 , M5) | Transparent glass 6mm thickness | ㎡ | 19 | 12.50 | 237.50 | 2.10 | 39.90 | 277.40 |
| 4 | Replace ceiling board for 6 classroom | Light gypsum board with wooden frame | ㎡ | 218 | 20.80 | 4,534.40 | 2.10 | 457.80 | 4,992.20 |
| 5 | Wall painting | Internal painting for wall, water proof paint | ㎡ | 390 | 6.25 | 2,437.50 | 2.10 | 819.00 | 3,256.50 |
| 6 | Brick partition (code M1 and etc) | Brick wall with cement mortar with paint | ㎡ | 30 | 16.70 | 501.00 | 8.30 | 249.00 | 750.00 |
| 7 | Replace tiles (Code O1, W1) | 40×40 cement sand tiles | ㎡ | 23.25 | 14.60 | 339.45 | 2.10 | 48.83 | 388.28 |
| 8 | Windows (code M3) | Metal window with hardware | ㎡ | 3.6 | 12.50 | 45.00 | 8.30 | 29.88 | 74.88 |
| 9 | Doors (code M2, M3) | Alum. doors with hardware | ㎡ | 5.04 | 125.00 | 630.00 | 16.70 | 84.17 | 714.17 |
| 10 | Install ceiling fans (code C1, C2, C3, M2, K3, CP, M3) | Ceiling fans | unit | 26 | 67.50 | 1,755.00 | 8.30 | 215.80 | 1,970.80 |
| 11 | New construction two toilet | Load bearing brick wall & concrete roof, 10 cabins for staff and 10 cabin for students | cabin unit | 20 | 1,250.00 | 25,000.00 | 833.30 | 16,666.00 | 41,666.00 |
| | | TOTAL | | | | 305,695.85 | | 154,144.37 | 459,840.22 |
| Central Store | | | | | | | | | |
| 1 | Partition wall (code S-3) | Brick wall with cement mortar with paint | ㎡ | 22 | 16.70 | 367.40 | 8.30 | 182.60 | 550.00 |
| 2 | Door (code S-4 , S 5) | Alum. doors with hardware 1.2m×2.1m | ㎡ | 5.04 | 125.00 | 630.00 | 16.70 | 84.17 | 714.17 |
| 3 | Separate small store (code S-5) | Brick wall with cement mortar with paint | ㎡ | 52.5 | 16.70 | 876.75 | 8.30 | 435.75 | 1,312.50 |
| 4 | Partition wall (code S-6) | Brick wall with cement mortar with paint | ㎡ | 8 | 16.70 | 133.60 | 8.30 | 66.40 | 200.00 |
| 5 | Door lock/ office (code S-7) | Stainless lock | unit | 1 | 8.30 | 8.30 | 2.10 | 2.10 | 10.40 |
| 6 | Office (store) (code S-8) | Light gypsum board with wooden frame | ㎡ | 42 | 20.80 | 873.60 | 2.10 | 88.20 | 961.80 |
| 7 | Office & Store (code S-9, S-12) | Metal window with hardware | ㎡ | 9.4 | 12.50 | 117.50 | 8.30 | 78.02 | 195.52 |
| 8 | Gate (entrance ) (code S11) | Repair 3.5m(H) 2.5m(w)Stainless sheet gate | ㎡ | 8.75 | 0.00 | 0.00 | 6.25 | 54.69 | 54.69 |
| 9 | Office (manager) (code S12) | Light gypsum board with wooden frame | ㎡ | 20 | 20.80 | 416.00 | 2.10 | 42.00 | 458.00 |
| 10 | Wall paint (code S-13) | Internal painting for wall, water proof paint | ㎡ | 400 | 6.25 | 2,500.00 | 2.10 | 840.00 | 3,340.00 |
| 11 | Water cooler (code S-9) | New unit 220V/50 KH | unit | 1 | 625.00 | 625.00 | 10.40 | 10.40 | 635.40 |
| | | TOTAL | | | | 6,548.15 | | 1,884.33 | 8,432.48 |
| | | **G. TOTAL (Khartoum-2 + Central Store)** | | | | **312,244.00** | | **156,028.70** | **468,272.70** |

Source SCVTA

## Table 6.5.4 Rehabilitation Plan and Estimated Cost for Omdurman VTC and ITTS

Rehabilitation for Friendship VTC
Prepared by :Elhadi Gamer & Abdalaziz Elhussain Acknowledged: Mustafa El Radi Ahmed
Date : 4.8.2009

| S/ No | Description | Short Specification | Unit | Qty | Direct cost (Material) | | Indirect Cost | | Total (US$) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Unit cost | Amount | Unit cost | Amount | |
| 1 | Grill (code A1) | Metal grill | ㎡ | 1.8 | 20.80 | 37.44 | 12.50 | 22.50 | 59.94 |
| 2 | Door lock (code A1 , A2 , A3 , A4 , A5 , A6 , A7 , A8 , A9) | Stainless lock | unit | 8 | 10.40 | 83.20 | 4.20 | 33.60 | 116.80 |
| 3 | Office / replace tile (code A3) | 40×40 cement sand tiles | ㎡ | 42 | 14.60 | 613.20 | 2.10 | 88.20 | 701.40 |
| 4 | Office/replace glass (code A5 , A6, A7, A8, A9, W1, W4, W5, W6, W9) | Transparent glass 6mm thickness | ㎡ | 26 | 12.50 | 325.00 | 2.10 | 54.60 | 379.60 |
| 5 | Replace ceiling lamps (code A6, A9, A10, W1, W2, W4, W5, W6, W7, | 4 feet fluorescent lamp | pc | 222 | 8.10 | 1,798.20 | 1.20 | 266.40 | 2,064.60 |
| 6 | Replace New Fan (code A9, A10, W4, W7, W8, W9) | Ceiling fan | unit | 16 | 67.50 | 1,080.00 | 8.30 | 132.80 | 1,212.80 |
| 7 | Water Cooler (code A10, W6, W8, W2, S1) | 220v, 50KH, water cooler | unit | 7 | 625.00 | 4,375.00 | 20.80 | 145.60 | 4,520.60 |
| 8 | Shelves for store | Steel shelves | unit | 4 | 83.30 | 333.20 | 8.30 | 33.20 | 366.40 |
| 9 | IITS, Fan | Ceiling fans | unit | 8 | 67.50 | 540.00 | 8.30 | 66.40 | 606.40 |
| 10 | IITs, Lump | Fluorescent lamps 8 feet | pc | 24 | 8.10 | 194.40 | 1.20 | 28.80 | 223.20 |
| 11 | IITs, Lock | Stainless rock | unit | 1 | 10.40 | 10.40 | 4.20 | 4.20 | 14.60 |
| 12 | IITs, Wash basin | | unit | 2 | 29.20 | 58.40 | 12.50 | 25.00 | 83.40 |
| | | **TOTAL** | | | | **9,448.440** | | **901.300** | **10,349.74** |

Source SCVTA

## Table 6.5.5 Rehabilitation Plan and Estimated Cost for Khartoum North VTC

Rehabilitation for Khartoum North VTC
Prepared by :Elhadi Gamer & Abdalaziz Elhussain Acknowledged: Mustafa El Radi Ahmed
Date : 4.8.2009

| S/ No | Description | Short Specification | Unit | Qty | Direct cost (Material) | | Indirect Cost | | Total (US$) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Unit cost | Amount | Unit cost | Amount | |
| 1 | Office / replace ceiling board (code A1 , A5) | Light gypsum board with wooden frame | ㎡ | 48 | 20.80 | 998.40 | 2.10 | 100.80 | 1,099.20 |
| 2 | Office / replace tile (code A1 , A2) | 40×40 cement sand tiles | ㎡ | 82 | 14.60 | 1,189.90 | 2.10 | 171.15 | 1,361.05 |
| 3 | Office/replace glass (code A1, A2, C1, C2, C3, W1) | Transparent glass 6mm thickness | ㎡ | 30 | 12.50 | 375.00 | 2.10 | 63.00 | 438.00 |
| 4 | Office /wall painting (code A1) | Internal painting for wall, water proof paint | ㎡ | 42 | 6.25 | 262.50 | 2.10 | 88.20 | 350.70 |
| 5 | Office/new door (code A1) | Alum. doors with hardware 1.2m×2.1m | ㎡ | 2.52 | 125.00 | 315.00 | 16.70 | 42.08 | 357.08 |
| 6 | Office, wash hand, basin (code A1 , A2) | | unit | 2 | 29.20 | 58.40 | 12.50 | 25.00 | 83.40 |
| 7 | New windows grill (code A4, A5, A6, A7, C1, C2, C3 , C4) | Steel grill | ㎡ | 3 | 20.80 | 52.00 | 10.40 | 26.00 | 78.00 |
| 8 | Office / new door rock (code A4 , A5 , A7, A8, C1, C3, C4) | Alum. doors with hardware 1.2m×2.1m | ㎡ | 17.64 | 125.00 | 2,205.00 | 16.70 | 294.59 | 2,499.59 |
| 9 | Office/ ceiling fan (code A4, C1, C2, C4) | Ceiling fan | unit | 20 | 67.50 | 1,350.00 | 8.30 | 166.00 | 1,516.00 |
| 10 | Work shops/ louver with glass (code W1, W4) | Glass panels - high level opening | ㎡ | 80 | 20.80 | 1,664.00 | 12.50 | 1,000.00 | 2,664.00 |
| 11 | Work shops lamps (code W1 , W2 , W3, W4 , W5) | Fluorescent lamps 8 feet | pc | 28 | 8.30 | 232.40 | 1.20 | 33.60 | 266.00 |
| 12 | Workshops painting (code W1, W2, W3, W4, W5) | Internal painting for wall, water proof paint | ㎡ | 2,000 | 4.20 | 8,400.00 | 2.10 | 4,200.00 | 12,600.00 |
| 13 | Workshops/door painting (code W1, W2, W3, W4, W5) | Painting for door, oil paint | ㎡ | 325 | 4.20 | 1,365.00 | 2.10 | 682.50 | 2,047.50 |
| 14 | Office / water cooler (code A1, A3, A4, A5) | Water cooler 220V,50KH | unit | 4 | 625.00 | 2,500.00 | 10.40 | 41.60 | 2,541.60 |
| 15 | Workshop wall (code W5) | Internal painting for wall, water proof paint | ㎡ | 32 | 4.20 | 134.40 | 2.10 | 67.20 | 201.60 |
| | | **TOTAL** | | | | **21,102.00** | | **7,001.72** | **28,103.72** |

Source SCVTA

Table 6.5.6 Rehabilitation Plan and Estimated Cost for Secretariat Building

Rehabilitation for SCVTA
Prepared by :Elhadi Gamer & Abdalaziz Elhussain Acknowledged: Mustafa El Radi Ahmed
Date : 4.8.2009

| S/ No | Description | Short Specification | Unit | Qty | Direct cost (Material) | | Indirect Cost | | Total (US$) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Unit cost | Amount | Unit cost | Amount | |
| 1 | Office & Meeting room (code A1---- A8, A11) | Metal grill | ㎡ | 34 | 20.80 | 707.20 | 10.40 | 353.60 | 1,060.80 |
| 2 | Office (code A1---- A8) | Alum. doors with hardware 1.2m ×2.1m | ㎡ | 23.76 | 125.00 | 2,970.00 | 16.70 | 396.79 | 3,366.79 |
| 3 | Office (code A10, A11, A12, A13) | Alum. doors with hardware 1.2m ×2.1m | ㎡ | 11 | 125.00 | 1435.00 | 16.70 | 191.72 | 1,626.72 |
| | | **TOTAL** | | | | **5,112.20** | | **942.11** | **6,054.31** |

Source SCVTA

Rehabilitation of Equipment:

Based on the results of diagnosis, rehabilitation will cover replacement of damaged or degraded equipment, the renewal of equipment to conduct training in accordance with updated curriculum, and the replacement of outdated models with new ones. Note that repairable 53 items (7%) of equipment are excluded from the cost estimation. As shown in Table 6.5.7, the total number of rehabilitated equipment is 450 and the cost is estimated at USD 3,897,373.

Table 6.5.7 Equipment Rehabilitation Plan and Estimated Cost

| **VTC** | **Khartoum-2** | | | **Friendship** | | | **Khartoum North** | | |
|---|---|---|---|---|---|---|---|---|---|
| **Course/Amount** | **Code** | **Items** | **Amount (US$)** | **Code** | **Items** | **Amount (US$)** | **Code** | **Items** | **Amount (US$)** |
| Maintenance Fitting | Kh2-1 | 20 | 353,610 | FR-1 | 18 | 253,860 | KN-1 | 20 | 304,860 |
| Mechanical Auto Gasoline | Kh2-2 | 7 | 42,750 | FR-2 | 18 | 64,500 | KN-2 | 21 | 85,688 |
| Mechanical Auto Diesel | Kh2-3 | 8 | 28,875 | FR-3 | 21 | 92,813 | KN-3 | 16 | 73,125 |
| Mechanical Auto electricity | Kh2-4 | 6 | 25,238 | FR-4 | 12 | 22,380 | KN-4 | 7 | 7,043 |
| Mechanical | Kh2-5 | 13 | 618,000 | FR-5 | 13 | 595,500 | KN-5 | 11 | 249,750 |
| Welding | Kh2-6 | 8 | 102,750 | FR-6 | 8 | 102,750 | KN-6 | 9 | 125,250 |
| General Electrical | Kh2-7 | 42 | 217,145 | FR-7 | 39 | 186,920 | KN-7 | 40 | 120,845 |
| Refrigeration & Air-conditioning | Kh2-8 | 21 | 33,053 | - | - | - | - | - | - |
| Electronics | Kh2-9 | N.A | N.A | - | - | - | - | - | - |
| Carpenter | Kh2-10 | 21 | 97,169 | - | - | - | - | - | - |
| Technical Drawing | Kh2-11 | 6 | 17,250 | - | - | - | - | - | - |
| Building | - | - | - | FR-8 | 19 | 35,864 | - | - | - |
| Plumbing | - | - | - | FR-9 | 5 | 8,400 | - | - | - |
| Women's Development | - | - | - | FR-10 | 21 | 31,988 | - | - | - |
| Total | | 152 | 1,535,839 | | 174 | 1,394,974 | | 124 | 966,560 |
| | | | | | | | **TOTAL** | **450** | **3,897,373** |

Source SCVTA

Rehabilitation of Furniture:

Estimation of the number of pieces of furniture has been made by applying the percentage of damaged furniture in each VTC instead of undertaking a diagnosis piece by piece basis. Rehabilitation cost has been

estimated based on the number of pieces of furniture to be rehabilitated and unit price. As shown in Table 6.5.8, a total cost has been estimated at USD 56,344.

Table 6.5.8 Furniture Rehabilitation Plan and Estimated Cost

| | | Unit Cost (US$) | Khartoum-2 | | Friendship | | Khartoum North | | SCVTA HQ | | Total (US$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Required Qty | Amount | Required unit | Amount | Required unit | Amount | Required unit | Amount | |
| Office | Table | 125 | 8 | 1,000 | 9 | 1,125 | 5 | 625 | 2 | 250 | 3,000 |
| | Chair | 63 | 20 | 1,260 | 15 | 945 | 25 | 1,575 | 3 | 189 | 3,969 |
| | Cabinet | 80 | 11 | 880 | 16 | 1,280 | 15 | 1,200 | 14 | 1,120 | 4,480 |
| | Meeting table/chair | 1,200 | 3 | 3,600 | 0 | 0 | 1 | 1,200 | 0 | 0 | 4,800 |
| Workshop | Table | 80 | 8 | 640 | 9 | 720 | 10 | 800 | 0 | 0 | 2,160 |
| | Chair | 35 | 16 | 560 | 20 | 700 | 20 | 700 | 0 | 0 | 1,960 |
| | Cabinet | 80 | 5 | 400 | 6 | 480 | 6 | 480 | 0 | 0 | 1,360 |
| Classroom | Teacher's table | 80 | 7 | 560 | 4 | 320 | 7 | 560 | 0 | 0 | 1,440 |
| | Teacher's chair | 35 | 7 | 245 | 5 | 175 | 7 | 245 | 0 | 0 | 665 |
| | Student Table/chair | 35 | 172 | 6,020 | 126 | 4,410 | 108 | 3,780 | 0 | 0 | 14,210 |
| Steel locker for students | | 6 | 1,200 | 7,200 | 1,200 | 7,200 | 650 | 3,900 | 0 | 0 | 18,300 |
| TOTAL | | | **1,457** | **22,365** | **1,410** | **17,355** | **854** | **15,065** | **19** | **1,559** | **56,344** |

Source SCVTA

Planning, cost estimation and rehabilitation work will be carried out by mobilizing SCVTA and VTC staff. This implementation method aims at enhancing the ownership for voluntary maintenance among SCVTA and VTC staff as well as providing them with incentives. However, large scale rehabilitation works are to be contracted out to private enterprises. Division of works in rehabilitation is indicated in the following table.

Table 6.5.9 Division of Works in Rehabilitation

| | To be rehabilitated by SCVTA staff | To be rehabilitated by private enterprises |
|---|---|---|
| Facilities | Detailed design, cost estimation and preparation | Design for difficult works, confirmation of cost |
| | Preparation of drawings and documents | |
| | Implementation of minor rehabilitation works (with participation of trainees) | Roof work and reconstruction of rest room for trainees in Khartoum 2 VTC |
| Equipment | Preparation of drawings and documents | |
| | Detailed planning, determination of specifications | |
| | Preparation of specifications | Confirmation of specifications and prices |
| | Preparation of tender documents and bidding | Procurement and installation of equipment |
| Furniture | Preparation of drawings and specifications | |
| | Cost estimation | |
| | Procurement of materials, production | |

Source JICA Study Team

(4) Important Given Conditions

Preconditions for implementation of action plan are as follows:

- Budget from the Sudanese Government is secured or assistance is committed by donor.
- SCVTA staff is assigned for respective works.
- Training of VTC staff is conducted.
- Supporting staff is employed for the work that SCVTA and VTC staff alone can not complete.

## 6.6 Institutional Arrangement for Small Industry Training

(1) Current Situation and Issues

Small industries with less not more than 10 employees occupy 93% of all the enterprises in Sudan. The small industries are facing the two trends as the economy stabilizes and develops after CPA: one is a positive trend in which small industries benefit from increased orders of products and repair services from large companies, and the other is a negative trend in which small industries are suffering from a fierce competition due to an influx of low quality but cheap imports.

Technical and productive improvement is indispensable to cope with these trends; however, the small industries have totally relied on the skills cultivated through long experience. Different from large companies, small industries usually are not provided with a system for in-service training, introduction of new technologies or basic skill improvement necessary for more efficient production. Without any measures, many small industries could be forced to close workshops because of a competition with a huge inflow of cheap products.

On the other hand, experienced VTC instructors who took training in Germany or Japan are about to go into retirement. New graduates from universities or VTCs start working as instructors without any practical experience. Without any measures, majority of instructors could be those who do not know the real situation or needs of industries. It is an urgent issue to link VTC instructors to actual production sites.

(2) Aims

Mobile training is effective in those points below.

On small industry side:

- Able to take training under accustomed environment.
- Able to apply trained skills and knowledge immediately.
- Able to save time for training participation.

On VTC instructor side:

- Able to know about actual production sites.
- Able to identify accurate needs of production sites and skilled workers.

(3) Activities to Be Carried Out by 2013

It is necessary to start mobile training for small industries based on a framework to be agreed between CSICU and SCVTA

- To ensure basic items of the framework between SCVTA and CSICU. These items need to be confirmed by SCVTA Council, too.
- CSICU: to choose trade and contents of the training, recruit trainees and prepare an appropriate training place in accordance with the agreed framework. Training contents should not be limited in

skill training, but also lecture or seminar on business skills to make use of obtained technical kills.

- SCVTA: to select appropriate instructors in accordance with training trade and contents, then prepare training plan by analyzing acute training needs through a visit to training place and interview to candidate trainees.
- CSICU and SCVTA: to prepare training place, necessary training materials and tools in accordance with the agreed framework.
- To implement mobile training.
- SCVTA: to conduct monitoring to verify training effects at proper timing; e.g., one week later and one month later, by instructors in charge of training. If required, to counsel trainees.
- To report the result of mobile training to SCVTA and CSICU and keep the report in the division in charge as a reference for the next training.

(4) Important Given Conditions

CSICU and small industries are under the supervision of Ministry of Industry which is a member of SCVTA Council. Therefore, this mobile training targeting for small industries and CSICU is expected to be smoothly conducted. However, before conducting the mobile training, the framework agreed upon between CSICU and SCVTA needs to be confirmed by SCVTA Council.

# 7 Proposal for an Immediate Project

It is strongly recommended that an immediate project be launched with international assistance, if this study does not end up with a plan, but leads to action. As a first step, a project for developing the capacity of SCVTA is proposed in line with the action plans. The following is expected outcomes, major tasks and timing of the project:

(1) Objective

Development of the capacity of SCVTA in line with the action plans

(2) Expected Outcomes and Tasks

Outcome 1: A more self-sustaining management of SCVTA and VTCs

| | |
|---|---|
| Task 1 | Developing the capacity to revise curricula |
| Task 2 | Strengthening the training of instructors |
| Task 3 | Improving the system to maintain tools, equipment and facilities |

Output 2 Stronger functions of SCVTA to support training providers through model training courses on the basis of public-private cooperation. In view of pressing need and rising momentum, the model courses are to be undertaken through:

| | |
|---|---|
| Task 4 | Training for demilitarized soldiers |
| Task 5 | Training for small enterprises |

(3) Period June 2010 – June 2013

# 8 Pilot Activity

## 8.1 Curriculum Development Workshop

(1) Purpose of Pilot Activity

It is necessary to reflect the scope and the level of the techniques and skills that are actually required by companies in the development and review of the curriculum. In order to achieve it, it is effective to develop curriculum, involving experienced workers and managers who are actually working in the field as well as experts.

This pilot activity is to introduce the curriculum development system that reflects the practical needs of the training sites, which SCVTA has not taken until now, together with the staff of the Curriculum and Technical Guidance Department and Technical Affairs Department in SCVTA on a trial basis and to verify the outputs.

(2) Actions and Method of Implementation

One of the activities is a lecture to the staff of Curriculum and Technical Guidance on the flow of the curriculum development using the CUDBAS (Curriculum Development Based on Abilities Structure) method, which was developed in Japan, and a guidance to enable the staff to develop the actual curriculum on their own.

The CUDBAS method is developed as the curriculum development method in PROTS (PROgressive Training System for Instructors) which was developed about 20 years ago by Overseas Vocational Training Association (OVTA) of Japan. PROTS is aimed at enabling instructors who regularly provide the training and instruction to improve the training. It has a simple structure. Today, in Japan, CUDBAS is utilized more and more in the development of the technical ladder (the training program based on position and rank) that a number of hospitals now started to adopt or in the development of the employee training program of the companies. The main feature of this method is that it helps the experienced workers in training sites to develop their own training program in a short period of time. It is of great significance that their own curriculum development is introduced by Sudanese, and by workers in training sites and experts.

As for the course developed in the pilot activity, hotel services were selected as a target since it is simple and easy to understand for people who learn CUDBAS for the first time. Mr. Ismail Elazhari Elshaikh, Director General of Technical Affairs, SCVTA, also requested that he would like to use it for reference since it was scheduled to be taken into Sudanese-Korean VTC as a training subject. Hence, the training course for a cook in a hotel restaurant and a waiter/waitress in a restaurant were planned as the exercise through exercises by experienced workers in the trade and the experts.

Although the CUDBAS method is also effective for the development of the long-term training curriculum, the workshop covers only the development for the shot-term one and the development of the long-term course is shown in the attached document.

(3) Implementation of the Pilot Activity

- Schedule: 24 June to 3 August, 2009
- Location: Curriculum and Technical Guidance Office in Khartoum 2 VTC
- Members: Seven members of SCVTA staff and eight managers in charge of human resources development.

1) Mr. Abdle Alaziz Abdle Alsakhi : Director of Curriculum and Technical Guidance
2) Mr. Abdel Wali Mohamad : Assistant Director of Curriculum and Technical Guidance
3) Mr. Osman Saad Hassan : Assistant Director of Training program
4) Mrs. Seham Hussain Ibrahim: Program officer of Curriculum and Technical Guidance
5) Mrs. Ikhlas Ali Sala : Program officer of Curriculum and Technical Guidance
6) Mrs. Amel M.Eisa : Head of Food Processing Department in Korean Sudanese VTC
7) Mrs. Ghada Abd Elghfar: Instructor of Food Processing Department in Korean Sudanese VTC
8) Mrs. Shama Abu Anja : Training Manager of Hotel Palace

(4) Results of Pilot Activity

1. In the exercise, a training curriculum of a cook working in a hotel's restaurant was developed by the CUDBAS method.
2. The development of the curriculum for "the waitress development course", together with four people from actual hotel workers, including two waiters, one cook and one human resources development manager who is an experienced waitress, was completed only by the workshop members.
3. Evaluation obtained in the presentation session:

   The SCVTA members made a presentation on the outputs of the pilot activity in "Hotel Service & Food Making Curriculum Development Seminar" on 3 August, 2009 in the SCVTA conference room. Nineteen people including the Secretary General (SG) of SCVTA, the Directors of each VTC, staff of JICA Sudan Office and JICA Study Team attended the seminar. The followings are comments from professor of Sudan University and Secretary General of SCVTA. Especially, Dr. Amna from Sudan University has expressed a keen interest in the pilot activity since the interview before the workshop. Her high evaluation gave workshop members a great confidence.

   1) Dr. Amna Nabag of Sudan University in charge of curriculum development mentioned that it was a good opportunity to know this new method which was clear, easy, effective and workable for developing any kind of curriculum, and she would revise all her curricula ever made.

   2) Secretary General expressed gratitude for all the JICA experts, SCVTA staff and hotels staff. He also mentioned that he would present these two curricula to the participants for the workshop on Vocational Training to be held by Khartoum State on 11-13 August.
4. Implementation of the curriculum development utilizing the CUDBAS method:

   Mr. Abdel Wali and other members of the pilot activity held the workshop for the development of a new course integrating building and plumbing between 11 and 15 October, 2009.

   Unfortunately, despite no participants of experienced workers in the private sector or experts of the

trades, the following four members of SCVTA staff who have long experience in both fields participated in the workshop:

1) Mr. Mubark Abdallah Malik: Senior Instructor of Friendship VTC (Plumbing)
2) Mr. Niyazi Khalil Mohmed: Assistant director of KR2 VTC (Plumbing)
3) Mr. Elhadi Gamer: Director of Planning, SCVTA HQ (Building)
4) Mr. Abdel Elaziz Elhusan: Director of Examination and Trade Test, SCVTA (Building)

First, required skills were enlisted using the CUDBAS method in accordance with Mr. Abdel Wali's instructions. Then, subjects were determined from the created list and finally weekly training schedules were developed. Mr. Abdel Wali commented that the CUDBAS method was simple, and that is easy to handle and useful to develop a curriculum in a short period, so that it would be possible to develop curriculums of the new course for the first year and the second year trainees just for five days.

(5) Procedures and Methods of Curriculum Development

The outline of the curriculum development process and how to step the work are explained below.

Step 1: Summarize the Training Needs Survey: Creating the Form-01

1. Based on the needs for human resources development, which was identified in the nation's industrial human resources development plan and the labor market survey, to make a hypothesis for the establishment of training courses.

   Example of Hypothesis: In Sudan, constructions of hotel have rapidly increased, expecting foreign investments on oil and agricultural resources development. While expanding the labor market is regarded as a social issue as a population growth of the youth, it is expected that the hotel employee development course can contribute to promotion of employment of many youth.

2. Form-01 is prepared to fill out necessary information to verify the hypothesis, and measures to collect information, findings of information collection. The form also has a space for a recommendation on the required training course, which is assumed based on the above findings.

Summary of the Training Needs Survey **Form – 01**
Make a hypothesis on trends in training needs.
Target :

| Survey Item | Method & Action | Findings |
|---|---|---|
| | | |
| | | |
| | | |
| Recommendation of training course | | |
| | | |

3. The results of the survey are an important role to reflect the needs for the skill level and training content, which employers expect a job seeker, to the curriculum. That aims at reflecting voices from training sites to the curriculum.
4. The results of the survey can be also a guidance of instruction that gives the "voices on training sites and actual situations" for instructors and trainees.
5. It is noted that the Step 1 is not required for the existing training curriculum review. Instead of that, it

would be rather effective to feedback the opinions and requests from VTC graduates and their employers regarding training contents and the curriculum.

Step 2: Create the Training Course Planning Sheet: Form-02

1. The establishment of training facilities and training courses is the work to determine the names of specific training courses based on the above mentioned training needs as well as details including "what kind of people are the target?", “how long is training period appropriate?” and “how many is the maximum enrollment capacity per course?”.

**Training Course Planing Sheet** *Form – 02*

| | |
|---|---|
| Name of training course | |
| Training objectives | |
| Number of trainees | |
| Entry requirement | |
| Training location | |
| Duration | |
| Main training method | |

2. The method of the step is filling out Form-02 through discussion of experts. It is essential that this step clarifies the training goal, which the participants of the course should achieve upon the completion of the program, the profile of a desirable worker.
3. Although it is the second step, it is also important to create the Form in a flexible manner focusing on the creation and the improvement, with a willing to reflect results of the job analysis, which is the next step.
4. Another role of this Form-02 is to make great contribution to the job analysis as the next step.

Step 3: Create the “Structure Map of Required Abilities and Qualifications” by using the Job Analysis Method: Form-03

1. Create the “structure map of required abilities and qualifications (the ability chart)” for the abilities (skills, knowledge and attitude) in the profile of a desirable worker as training goal through the job analysis method. Those abilities are determined in Step 2.
2. Both of CUDBAS that are adopted in this pilot activity and DACUM methods can be used for curriculum development. If the specific profile of a desirable worker is already drawn in Step 2, the structure map can be created in a shorter period (approximate three hours) through the CUDBAS method. Through DACUM, on the other hand, the work in Step 2 to draw the profile of a desirable worker is carried out through the discussion of an expert group, and it usually takes four days to complete the creation of the structure map. Both methods are conducted by an expert group of the relevant occupation consisting of experienced engineers working for companies, employers,

academics and experienced trainers or instructors, and there are common features of filling cards and discussing (brainstorming). Especially, CUDBAS has a concept of "developing a curriculum to develop desirable workers who are sought in workplaces". As demonstrated in the pilot activity, the curriculum development through the CUDBAS method is simple, so that SCVTA staff managed to complete the structure map of "a waiter of a hotel restaurant" in just about half a day with the cooperation of experienced workers and managers in the hotel industry. In addition, the main feature of CUDBAS is that procedures to create the "subjects formation table", "training time allocation table", and "periodic training planning table" are established. This is why SCVTA members completed these tables of the above mentioned waiter development program for just about 2 days.

**CUDBAS CHART** **Form - 03**

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Date : 30th June 2009 Name : Abdelaziz, Addel Wali, Osman Saad, Seham Hussein, Amel Moh. Eisa, Ghada. A. Ahamed, Ekhlass Salla
Object : Foods Maker

| Duty | Ability | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 Managing hygiene & safety | 1–1 A Can sterilization | 1–2 A Know kind of soap | 1–3 A Know the important of appearance | 1–4 B can do the first aid | 1–5 C Can use the extinguisher | 1–6 | 1–7 | 1–8 | 1–9 | 1–10 |
| 2 Tide kitchen | 2–1 A Can arrange the lay out of the equipment | 2–2 A can arrange dishes in a useful way in the caubard | 2–3 A Can arrange tools and materials in suitable place | 2–4 A Can wash dishes | 2–5 A Can Sweep by wipe | 2–6 A Can clean the floor by broom | 2–7 A Can mope | 2–8 A Can scraping by Brush | 2–9 A Can dust the shelf | 2–10 |
| 3 Handling tools | 3–1 A Can use Knife | 3–2 B Know Kind & how to use different types of dishes | 3–3 B Can use cutting plate | 3–4 B Know types of food pots | 3–5 B Know types of spoon | 3–6 B Can use wooden roller | 3–7 B Know types of trays | 3–8 C Know types of filter screen | 3–9 | 3–10 |
| 4 Handling equipment | 4–1 A Can adjust the oven temp. | 4–2 A Can use gas cooker | 4–3 B Can use mixture machine | 4–4 B Can use blender | 4–5 B Can use different types of milling machine | 4–6 C Can use boiler | 4–7 | 4–8 | 4–9 | 4–10 |
| 5 Selection of food materials | 5–1 A Know percentage of salt in food | 5–2 A Know kind of spices | 5–3 A Know Kind of oils | 5–4 A Know type of floar | 5–5 A Know type of fruit | 5–6 A Know type of vegetable | 5–7 A Can distinguish between fruit | 5–8 A Can distinguish freshness of vegetable | 5–9 A Know types of Cheese | 5–10 A Know Distinguish the freshness of meat |
| | 5–11 A Know Kind of fish | 5–12 A Know the good eggs | 5–13 A Know food components | 5–14 A Know vitamin Division | 5–15 A Know reason of mal nutrition | 5–16 A Know child Nutrition | 5–17 | 5–18 | 5–19 | 5–20 |
| 6 Preparation material | 6–1 A Can wash material | 6–2 A Can sortiong | 6–3 A can peel | 6–4 A can slice | 6–5 A can blerd | 6–6 A can mix | 6–7 A can saw bone | 6–8 B can drain material | 6–9 B can drying material | 6–10 |
| 7 Processing | 7–1 A can decorate food | 7–2 A can boil | 7–3 A can heat | 7–4 A Can mince meat | 7–5 A Can grill | 7–6 A Can stir | 7–7 A Can hash | 7–8 A Can cool | 7–9 A can Freeze | 7–10 A Can Steam |
| | 7–11 A can distill | 7–12 A Can fry | 7–13 A Can roast | 7–14 A Can Bake | 7–15 | 7–16 | 7–17 | 7–18 | 7–19 | 7–20 |

Step 4: Create the Subjects Formation Table: Form-04

1. Create the subjects formation table based on the abilities chart completed in Step 3.
2. When creating the subjects formation table, sort the ability items in the chart into groups from points that is "easier to teach at the same time" or "more effective and easier to learn at the same time", for instance. By combining with other cards that belong to other job, consider "whether it is easy to teach, easy to understand" when allocating
3. Put a subject name that describes the specific content in each column of the table. It is expected that putting an easy-to-remember and easy-to-understand name arouses interest of trainees and the relevant parties, and it makes the name memorable.

Form – 04

| | Subject Title / Duty | Let's shine together | We can quick service | My tools | We are ready to cook | We serve "Safety and Healthy foods" | My Skills | Let's challenge high skill cooking | In case of emerzency |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Managing hygiene & safety | 1-1A<br>!-2 A<br>1-3 A | | | | | | | 1-4 B<br>1-5 C |
| 2 | Tide kitchen | 2-4 A<br>2-5 A<br>2-6 A<br>2-7 A<br>2-8 A<br>2-9 A | 2-1A<br>2-2 A<br>2-3 A | | | | | | |

Step 5: Create the List of Subject and Training Items: Form-05

1. The formation of the subjects is completed in Step 4. Here, enlist teaching contents of each subject as the training goal.
2. This list will allow easily forming the curriculum by each subject in the step after the next.

*List of Subject for "FOOD MAKER's Curriculum"*

Form – 05

| Subject Title | Awareness<br>Let's shine together | Brightness<br>We can give a quick service | Tools<br>My tools | Equipment<br>We are ready to cook | Quantity & Quality<br>We serve "Safety and Healthy foods" | Preparation<br>My Skills | Procedure<br>Let's challenge high skill cooking | Precaution<br>In case of emerzency |
|---|---|---|---|---|---|---|---|---|
| Ideal Time | | | | | | | | |
| Goal to be achieved /detailed item | 1～1 A<br>Can sterilization | 2～1 A<br>Can arrange the lay out of the equipment | 3～3 B<br>Know Kind & how to use different types of dishes | 1～2 A<br>Can use gas cooker | 5～13 A<br>Know food components | 3～1 A<br>Can use Knife | 3～6 B<br>Can use wooden roller | 1－5 C<br>Can use the extinguisher |
| | 1～2 A<br>Know kind of soap | 2～2 A<br>Can arrange dishes in a useful way in the caubard | 3～4 B<br>Know types of food pots | 4～1 A<br>Can adjust the oven temp. | 5～14 A<br>Know vitamin Division | 3～3 B<br>Can use cutting plate | 6～7 A<br>can saw bone | 1－4 B<br>can do the first aid |
| | 1～3 A<br>Know the important of appearance | 2～3 A<br>Can arrange tools and materials in suitable place | 3～5 B<br>Know types of spoon | 4～3 B<br>Can use mixture machine | 5～16 A<br>Know child Nutrition | 6～1 A<br>Can wash material | 7～4 A<br>Can mince meat | |
| | 2～4 A<br>Can wash dishes | 2～4 A<br>Can wash dishes | 3～7 B<br>Know types of trays | 4～4 B<br>Can use blender | 5～15 A<br>Know reason of mal nutrition | 6～2 A<br>Can sortiong | 7～7 A<br>Can hash | |

Step 6: Create the Curriculum Table for Each Subject: Form-06

1. Form-04 and Form-05 sort teaching contents by subjects and training contents are visually enlisted. However, they are not focusing on details of how to teach.
2. Here, the detail including “the order of teaching”, “how to teach”, and “when to teach" is determined. In addition, the teaching method and contents that exploit the characteristic of “skills, knowledge and attitude” are discussed.
3. Form-06 is created for all subjects that are determined in the subjects formation table (Form-04).

**Subject's Curriculum** — *Form – 06*

| | | | | |
|---|---|---|---|---|
| Name course | Art of Cooking | Code | | |
| Subject Title | Let's shine together | Total training Time | 350 | |
| Objectives Goal to be achieved | The end of this subject, trainees be able to acquired the following abilities.<br>✓Understand meaning of ″Ownership″ = The thing is valued.<br>✓Understand meaning of ″Customer satisfaction″ and this reason<br>✓Can keep good attitude for doing basic each lesson | | | |
| | Detailed item | Contents of Lesson / Session | | Time(minits) |
| 1 | 1-3 A Know the important of appearance | Uniform address for professional trainees ware of cloning<br>Cutting hair, nails, | | 30 |
| 2 | 1-1 A Can sterilization | Definition of sterilization<br>Type of sterilization<br>Sterilization method or ways. | | 30 |
| 3 | 1-2 A Know kind of soap | Knowledge and ways of using each kind of soap and sterilization<br>Advantage of sterilization and soap | | 30 |

Step 7: Create the Training Time Allocation Table (Training Plan): Form-07

1. The curriculum for each subject is completed in form-06, but it is not yet determined which subject is to be taught first. The enrollment ceremony and other events are expected other than the training subjects in the actual training plan, so make sure to consider such events when allocating the training time.
2. It would be easier to allocate the time by using Form-07 while checking the total training hours of a day (4.5 hours for VTC of SCVTA) for the vertical total, and the time calculated in Form-06 for the horizontal total.
3. It is desirable that the table is created by a person with sufficient experience in teaching who knows “the subjects that it is better to be taught intensively” and “the subjects that it is more effective to be taught step by step everyday” while considering “not to concentrate on the same subjects so that the trainees do not get bored with”.

**TRAINING TIME ALLOCATION TABLE** — *Form – 07*

| Subject Title | Instructor | Training schedule and duration | | | | | | | | | | | | | | | | | | | | Total | Ideal Time |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 | Day 10 | Day 11 | Day 12 | Day 13 | Day 14 | Day 15 | Day 16 | Day 17 | Day 18 | Day 19 | Day 20 | | |
| Ceremony orientation, Opening, Closing | All | 3 | | | | | | | | | | | | | | | | | | | 3 | 6 | 8 |
| Introduction of Hotel's work/function/rules | Sharma | 1.5 | 1.5 | 1.5 | | | | | | | | | | | | | | | | | 1.5 | 6 | 8 |
| My tools | Ghada | | 1.5 | 1.5 | 1.5 | | | | | | | | | | | | | | | | | 4.5 | 6 |
| My Skills | Sharma | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | | | 4.5 | 4.5 | 4.5 | | | | | | | | | | 21 | 20 |
| Let's shine together | Amel | | | | 1.5 | 1.5 | 1.5 | | | | | | | | | | | | | | | 4.5 | 6 |
| We are ready to cook | Ghada | | | | | | 1.5 | | | | | | | | | | | | | | | 1.5 | 4 |
| We serve "Safety and Healthy foods" | Amel | | | | | 1.5 | | | | | | | | | 1.5 | 1.5 | 1.5 | | | | | 6 | 8 |
| We can quick service | Ghada | | | | | | | | | | | | | | | | 1.5 | | | | | 1.5 | 2 |
| Let's challenge high skill cooking | Amel | | | | | | | | | | | | | | | 1.5 | 1.5 | | | | | 3 | 4 |
| Assingment | Sharma | | | | | | | 4.5 | 4.5 | | | | 4.5 | 4.5 | 3 | 1.5 | | 4.5 | 4.5 | 4.5 | | 36 | 42 |
| Total | | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 90 | 108 |

Step8: Create the Training Schedule: Form-08

1. While the training subjects and the time schedule are planned and shown in Form-07, the daily schedule of the training is shown in Form-08.
2. It can be utilized as the schedule to be presented to trainees.
3. The quality of the training should increase dramatically when instructors develop and improve the Lessen Plan and Job Sheet for each lesson time in accordance with this schedule.

**TRAINING SCHEDULE** — *Form – 08*

| WEEK/DAY | | 7:30 – 7:45 | 7:45 – 8:00 | From 8:00 to 9:30 (90minits) | 9:30 – 10:15 | From 10:15 to11:45 (90minits) | From 11:45 to 13:15 (90minits) | 13:15 – 13:30 |
|---|---|---|---|---|---|---|---|---|
| WEEK 1 | Sunday | Morning ceremony | Cleaning/prepaer | Opening Ceremony | breakfast | Orientation | Introduction of Hotel's work/function/rules | Creaning |
| | Monday | | | Introduction of Hotel's work/function/rules | | My tools | My Skills | |
| | Tuesday | | | Introduction of Hotel's work/function/rules | | My tools | My Skills | |
| | Wednesday | | | My tools | | My Skills | Let's shine together | |
| | Thursday | | | My Skills | | Let's shine together | We serve "Safety and Healthy foods" | |
| | Sunday | | | My Skills | | Let's shine together | We are ready to cook | |

(6) How to Implement the Curriculum Development for Long-Term Training Courses: Form-09 & 10

In the previous sections, the curriculum development for the relatively short-term training courses was explained. In this section, how to improve and develop a long-term (two- or three-year) training is shown.

Basically, long-term training courses can be developed in a similar procedures and means as those for the curriculum development of short-term courses.

1. Features of the Long-Term Training and Recommendation

   The long-term course that is currently implemented differs from the short-term one significantly in that the training is more extensive, including Ministry of Public Education subjects before the primary subjects, special subjects, basic practices and special practices.

   The Ministry of Public Education subjects are strongly related to the basic education level in Sudan. For example, in order for the basic education graduates to learn the special subjects that are prepared

in the electric technology course or the machining course, it is necessary to teach them until their mathematics or science knowledge level can reach the level required in such special subjects.

In addition, the long-term course focuses on the development of the human resources who have more applicative and practical skills through the teaching of the special subjects and basic and special practices.

In order to emphasize such features, it is essential to enhance the education of the basic subjects including mathematics, science, Arabic and English for the job training that can respond to the advances in technical innovations.

2. Basic Concept of the Improvement and Development of the Long-Term Training Curriculum

The improvement of the long-term training curriculum is enabled by focusing on the composition of each subject in the existing course. Review whether the content and level of the training item in each subject meet the level that is required by employers, clarify the level to be achieved and re-form the curriculum for each subject by using the CUDBAS method.

When developing a curriculum for a totally-new job training course, develop the curriculum for each subject in which the current situation and needs in Sudan are reflected, by utilizing the curriculums that were developed in neighboring countries or in Japan. The same applies to the revision of the curriculum. The introduction of new equipment (new technology) in Sudanese=Korean VTC from South Korean government requires changes in the curriculum. It is necessary to form the subjects by utilizing features and advantages of the curriculum which is used in South Korea and the existing curriculum.

3. Creating the Curriculum for Each Subject

By focusing on the subjects (including mathematics, drawing, measurement technique and processing method) of the existing curriculum, the level of each subject to be achieved should be again clarified through discussions and interviews with the group of experts of the relevant occupation, such as experienced engineers who are working for companies, employers, academics and experienced trainers or instructors. When once the level to be achieved is clarified, the “structure map of required abilities and qualities” (the abilities chart) and the curriculum for each subject should be created with CUDBAS method by the same group of experts. The work would be easier if the training time for each subject is determined by reference to the existing curriculum.

4. Allocating Time to the Training Subjects

After the curriculum for each subject is completed, Form-09, the list of them, is created.

The development of Form-09 is based on the semester system, dividing three year course into six semesters. Name of Subject, Credit Hours and A remarks column are put in the table rows. The table columns contain Ministry of Public Education Subject such as mathematics and science, Primary Subject such as safety and health and materials, Basic Practice for the special subjects such as

measurement and drawing, One's Special Subject such as quality management, One's Special Practice such as experiment and advanced technology, and Entrepreneur Practice as needed. With the training subjects entered in this table according to the time to be implemented, the contents of the three-year training can be presented visually.

5. Developing the Training Plan

For a long-term training course, it is necessary the teaching plan (sequence) for the sections that consist of multiple subjects including Primary Subject, One's Special Subject, Basic Practice and One's Special Practice. Develop the plan using Form-10 to decide when to teach each subject.

When deciding the teaching schedule, put the most basic subjects at an earlier stage of the first year, and put more difficult subjects at a later stage. In addition to the difficulty level, it is required to consider the learning effectiveness as well when allocating the subjects.

*Form* – 09

Table of Registration Subjects and Credit hours

| | Name of Subject | Credit hours | A remarks column |
|---|---|---|---|
| A general education subject | | | |
| Primary subject of study | | | |
| Basic practice | | | |
| One's special subject | | | |
| One's special practice | | | |
| Entrepreneur practice | | | |

*Form* – 10

Three years training course's curriculum organization table

| | 1st year | | 2nd year | | 3rd year | |
|---|---|---|---|---|---|---|
| | I semester | II semester | III semester | IV semester | V semester | VI semester |
| A general education subject | | | | | | |
| | The subject which other training courses study in common such as English, Arabic and others. | | | | | |
| Primary subject of study | | | | | | |
| | The subject which should be studied as the foundation of this training course attendance like mathematics | | | | | |
| Basic practice | | | | | | |
| One's special subject | | | | | | |
| One's special practice | | | | | | |
| Entrepreneur practice | | | | | | |

## 8.2 Facility and Equipment Management Workshop

(1) Purpose of the Workshop

Many instructors indicate that proper vocational training can not be conducted because of obsolete and degraded facilities and equipment in addition to inappropriate management. SCVTA and VTC staff also recognizes problems in operation and management of facilities, equipment and tools.

In order to identify the real cause of problems, its backgrounds and possible countermeasures, a workshop was organize by inviting instructors of various VTCs including private and NGO owned. Participants discussed actively and the result is to be integrated into the Master Plan.

(2) Contents and Method

A 3-day workshop was planned between 21 July and 23 July 2009. On the first day, Stakeholder Analysis which clarifies various parties related to the problem and their demarcation of roles, and Problem Analysis which identify core problem, causes and measures were carried out. On the second day, participants visited relatively better managed VTC and technical college for referential purpose. On the third day, Objective Analysis to formulate an action plan based on the outputs of previous 2 days was conducted.

In order for SCVTA and VTC to collaborate management of facility and equipment, the workshop was prepared and managed by SCVTA staff: Ms ZubidaEl Sadig Fadul and Mrs. Seham Hussien Ibrahim.

(3) Implementation of the Workshop

- Date: 21 July 2009 to 23 July 2009
- Venue: SCVTA Conference Room, St. Joseph VTC, Grief Sharg Technical Collage
- Member: 4 participants from SCVTA, 2 participants from Central Store, 20 participants from VTCs (28 participants in total)
    - Maragani Ismaeel, SCVTA-ITTS
    - Mudather Abass Ab.Kareem, SCVTA-ITTS
    - El Hadi GamerEl Shafia, SCVTA
    - Omer Mustafa Idriss, SCVTA
    - El Tayeeb Mohamed El Hassan, SCVTA
    - Niazy Khalil, Khartoum 2 VTC
    - Ali Hassan Osman, Khartoum 3 VTC
    - Kamal Eldin Ab/Rahman, Khartoum North VTC
    - Ibrahim Mudawi, Omdurman VTC
    - Abdel Hamid Zeedan, Sudanese-Korean VTC
    - Al Seed Mustafa, SCVTA
    - Najum Eldin Saad, SCVTA-Central Store
    - Babikir Almin, SCVTA-Central Store
    - Aida Ali Abdel Wahid, Omdurman VTC

- Howida Hussein, Sudanese-Korean VTC
- Abdel Fatah Osman, Khartoum 2 VTC
- Ahmed Jafer, Khartoum 3 VTC
- Awad Mohamed Ahmed, Khartoum North VTC
- Nasir Ojar Kume, St. Joseph VTC
- Jophan Aoiaro, St. Joseph VTC
- Hassan Ibrahim Mohamed, National Center VTC
- Fasial Ali Yagoup, National Center VTC
- Mahdi Gasim, Ikhbary VTC
- Al Toum Hassan, Ikhbary VTC
- Kawther Al Assad, Mehan International VTC
- Khider Widaa, Khartoum 1 VTC
- Mahadi Bashir, Khartoum 1 VTC
- Majdi Yousief, Elkadaro VTC

(4) Outputs of the Workshop

Day 1:

- The result of the first session: Stakeholders Analysis was as shown below.

Table 8.2.1 Stakeholder Analysis of Facility and Equipment management Workshop

| Beneficiaries | Implementers | Decision Makers |
|---|---|---|
| All Sudanese Peoples | Ministry of Finance | Government |
| Government | Ministry of Labor | Ministry of Finance |
| Public and Private Sectors | Donors | Ministry of Labor |
| Business Owners | Domestic & Foreigner Experts | Ministry of Industry |
| Labor Market | All employees in Vocational training | Ministry of Commercial |
| Women and Youth Unions | Secretary General | Secretary General |
| Artisans | SCVTA | SCVTA |
| Central Administration | Central Administration | |
| Parents | Heads of sections | |
| Students and Trainees | Instructors | |

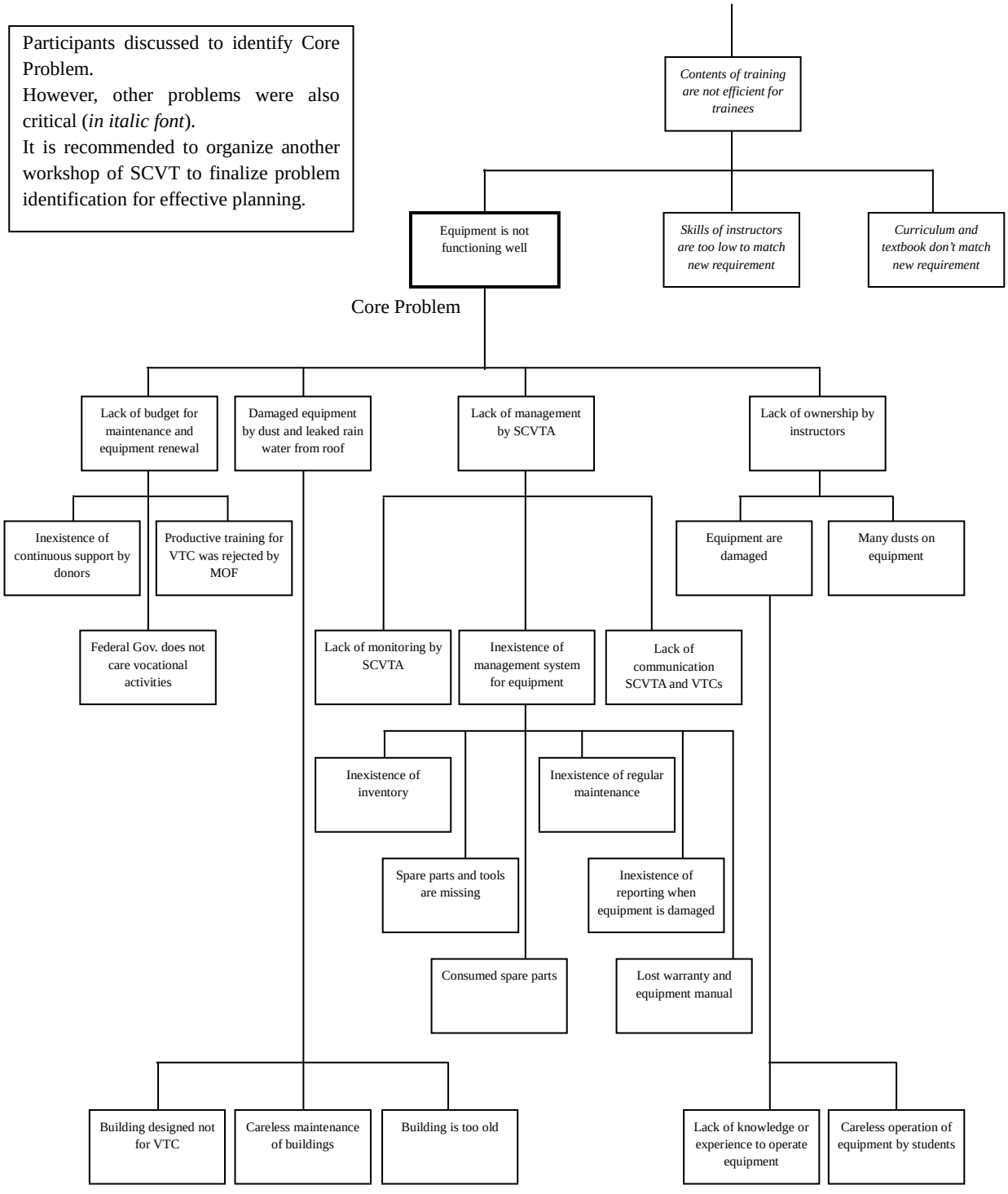
- In the second session, Problem Analysis was made by dividing the participants into 4 groups. Each group tried to identify problems and core problem by using cards.

Identified problems were as shown below.

- Government has no capacity to support vocational training.
- Decision is made by central administration.
- SCVTA is not flexible in purchasing and financial procedures.
- Lack of cooperation and coordination between SCVTA and VTC.
- Maintenance section dose not exist.
- No awareness of maintenance and its measures.
- Lack of budget for maintenance.
- Inexistence of reporting system for damages.
- Lack of instructor's knowledge and experience about maintenance.
- Inexistence of monitoring system.
- Trainees are too young to care right uses of equipment.
- Lack of spare parts.
- Machines and equipment are too old.
- Buildings are too old.
- Building is bad as working environment.
- Training tools are cheap quality.
- Insufficient capacity of machines.
- Inexistence of neither depreciation system nor replacement system.
- Store does not match the standard specifications.
- Most of workshops were not built for training purposes like Khartoum2 VTC.
- Inexistence of inventory.
- Environment factors such as humidity and salty lead to damage of roofs.
- Tools are missing.

Figure 8.2.1 in the following page illustrates the result of Problem Analysis (Problem Tree).

Figure 8.2.1 Problem Analysis of Facility and Equipment Management Workshop




Source: JICA Study Team

Day 2:

- On the second day, workshop members visited St. Joseph VTC of which management of equipment and tools is relatively good, and Grief Sharg Technical Collage located in Khartoum North.
- Participants' comments in St. Joseph VTC were as follows:
  - All the stockholders cooperate. Consequently, director knows all information of VTC including numbers of trainees.
  - All requests go directly and quickly from instructor to director. By contrast, financial procedure of SCVTA and its VTC is very difficult even for asking for necessary consumables.
  - Instructors are so efficient that they can maintain machines by themselves as all the requested parts are available.
  - There is cooperation among sections which leads to keep equipment in good condition and enables quick performance.
  - The system of preventive maintenance with much care and utilization of retired staff is practical, as they have rich experience in maintenance.
  - There is no store, so equipment and tools are distributed directly to the head of section.
  - The maintenance budget is available.
  - The instructions for safety and use of tools are available in all places.
  - In the electric section, they have boards for practice ready to connect lines or other parts in organized way.

- Participants' comments in Grief Sharg Technical Collage were as follows:
  - The collage belongs to Ministry of Higher Education and is for technical education.
  - The Government allocates monthly personnel expense SDG 30,000, and SDG 10,000 for running cost.
  - The college has personal fund for investment derived from productive training. 10% of sales go to Administration and 90% go to section and implementers.
  - Work environment meet its demand. The program is very developed by close cooperation.
  - The sections are microelectronics, architecture, machinery, car electricity, computer, electronic, building, industrial arms and legs, etc.
  - Evening classes (printing, welding. hotels and tourism, etc.) are also available.
  - Curriculum is prepared by curriculum committee.
  - Networking and internet services are available.
  - Lecturers and instructors are well trained.
  - Maintenance of inside the workshop is responsibility of Instructors.
  - Cleanness was observed.

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Day 3:

- On the third day, workshop members carried out Objective Analysis based on the result of the first day and the result of the second day, which was site visit, taken into account. Thre result of Objective Analysis would be the basis for facility and equipment management plan.
- Finally, recommendations for action plan at each level of VTC, SCVTA, Feneral Government and donor. The result is shown below.

(VTC Level)

- Training environment improvement (lighting, ventilation and cleaning) by participation of trainees.
- Improved punctuality by applying internal standard.
- Acceleration of administration reform of VTC by transferring authority together with responsibility to accomplish tasks and obligation of daily monitoring.
- Preparation of budget plan and its submission to SCVTA.
- Assignment of responsibilities.
- Reform of father's council to strength the relation between VTC and trainee's family.

(SCVTA Level)

- Restructuration of SCVTA (organizational structure).
- Study of recommendations by VTC.
- Utilization of Sudanese experts.
- Construction of stores which enable to keep all different types of equipment, tools, materials, instruments and devices.
- Regular monitoring of all VTC.
- Provision of training materials.
- Assignment of maintenance expert.
- Provision of maintenance materials.
- Promotion and training of instructors.
- Depreciation and replacement of equipment and buildings.
- Provision of job opportunities for VTC trainees in the Government institutions.
- Application of both preventive maintenance and regular maintenance.

(Federal Government Level)

- Formulation of rules and regulation to organize works.
- Relaxing of custom clearance for machines and equipment for VTC purpose.
- Request for assistance from friendly countries.
- Allocation of budget for vocational training.
- Approval for productive training (income generation).

- Provision of internal support for maintenance.

- Construction of VTC buildings of international standard.
- Overseas training of staff.
- More intensive monitoring of vocational training and its outcomes.
- Acceleration of supervision programs by experts.

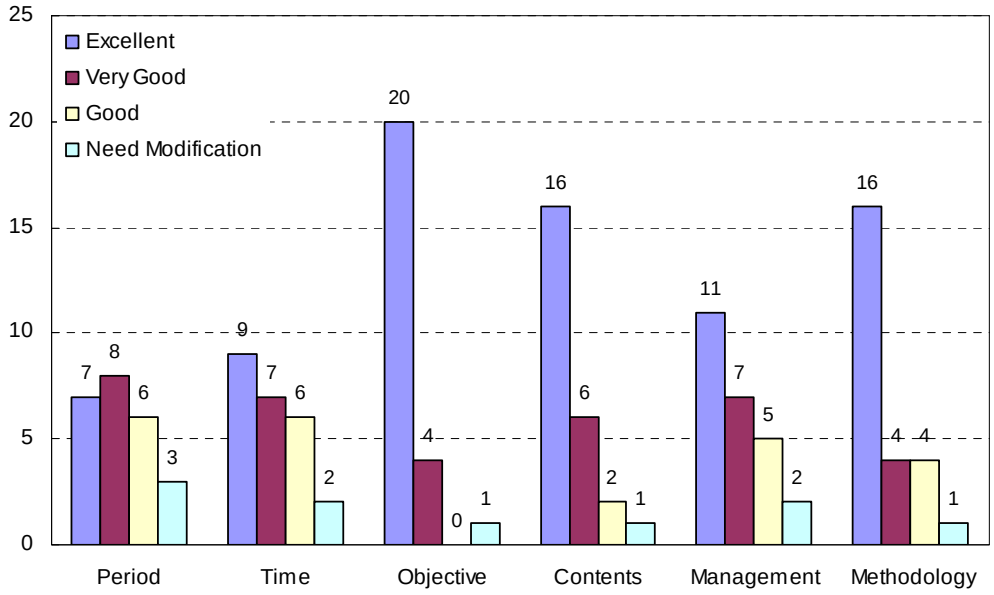
(Donor Level)

- Assistance for implementation of the projects proposed by SCVTA with provision of monitoring.
- Development of the existing VTC with regard to machines, equipment, and devices to meet the labor market needs.
- Conclusion of agreements between governments and friendly countries.

As a summary of workshop, it was reconfirmed that the relationship between SCVTA and each VTC, and relationship among VTCs irrelevant to jurisdiction have to be strengthened. It was proposed that every VTC related persons would visit VTCs each other to seek better solutions.

After the workshop, questionnaire survey was made to hear participants' opinions on workshop. The results are shown in below.

Figure 8.2.2 Evaluation of Facility and Equipment Management Workshop




Source: JICA Study Team

Generally, participants were satisfied with the workshop. In particular, objective, contents and methodology were highly evaluated. It is understood that the workshop met the concern of SCVTA and VTC related staff. On the other hand, period and time were given low points. It is highly recommended that SCVTA continue organizing workshops by improving such defects.

## 8.3 Small Industry Workshop

(1) Purpose of the Workshop

It is said that vocational training provided by VTCs is not enough to reflect training needs of small industries, a majority of Sudanese industries. Thus a workshop, whose title was “workshop for Promoting Relationship between Small Industries and Vocational Training Centers”, was held in order to seek for possibilities of the short term training for the small industries and to promote communications between the small industries and VTCs.

(2) Contents and Method

The workshop was implemented as three day program for member of Chamber of Small Industries and Craft Union of Sudan (CSICU), SCVTA staff and VTC instructor.

1. On the first day, sharing current situations and challenges of small industries through presentation by a representative of CSICU, SCVTA staff and JICA Study Team member.
2. On the second day, understanding actual situations of training center and workplace through study visit to a private VTC, which actively collaborates with enterprises, and two foundries as examples of large and medium industries.
3. On the third day, deepening understanding of future roles of VTC and VTC instructor for small industry training through small group discussion on specific topics.

(3) Implementation of the Workshop

- Date: 25 October 2009 to 27 October 2009
- Venue: SCVTA Conference Room, National VTC, Khartoum Central Foundry and KAIAL Engineering Foundry
- Member: 9 participants from CSICU, 2 participants from the Industry, 5 participants from SCVTA staff, and 3 participants from VTC instructor
  - Abdualla Osman Umer, Head of CSICU
  - El Sadig Osman El Nus, General Secretary, CSICU
  - Nasreldin Umer Alyas, Under Secretary for Training, CSICU
  - Mustafa El Sadig Abudalla, Deputy Under Secretary for Training, CSICU
  - Osma Musa Mohammed, Executive Director, CSICU
  - Mohammed Ibrahim Ismael, Sennar State Representative, CSICU
  - Ahmed El Naorani Ahmen, El Gazeira State Representative, CSICU
  - Mohamed Al Gali Khalil, member, CSICU
  - Tawfig Zin Alabdeen Awad, Khartoum Central Foundry
  - Abdulaziz Mohamed Ali, KAIAL Engineering Foundry
  - Ali Gasim Alla Saeed, Training Department, CSICU
  - Ibrahim Khalid Ibrahim, DG of Planning and Development, SCVTA

- Mustafa El Radi Ahmed, DG of Trade Organization and Skill Measurement, SCVTA
- El Hadi Gamer El Shafees, Director of Planning, SCVTA
- Omer Mustafa Idriss, Director of Training Courses, SCVTA
- Mohammed Ab Wahab Mansor, Trade & Testing Measurement Department, SCVTA
- Salah Hassan Balal, Instructor, Sudanese-Korean VTC
- Mohamed Ibn Owf, Instructor, Sudanese-Korean VTC
- Mutassim Hassan, Instructor, Omdurman VTC

(4) Outputs of the Workshop

- Challenges of the small industries, such as finance and training needs, realities of market needs and successful cases of Sudanese small industries were shared by participants through presentations on the first day. And then the successful cases of Sudanese industries made participants deepen their understanding on factors for success of small industries.
- Importance of implementing training at VTCs which corresponds to enterprises' needs and importance of collaboration with private companies for training revision and trainees' employment promotion were recognized by the participants through the study visit on the second day. It was ensured that in foundries basic skills, which VTCs instruct, can play an important role in creating models and finishing of products. And it was found that Mobile Training is important because it is difficult for employees of small industries to join long-term training due to lack of human resources in small workshops.
- Participants were split into three groups and each group discussed three topics: "How can small Industries improve skills?", "What can VTC offer?" and "How can VTC instructors contribute to trainings?". As results of discussion, following points were drawn.

How can small industries improve skills?

- Utilization of existing VTCs for trainings of small industries.
- Training for small workshop owners on not only technical skills but also labor management, business management, sales and marketing.
- Establishment of training centers with cutting-edge technologies in populated areas, such as Khartoum state, Gezira state and South Darfur state.
- Direct support from JICA, not through the government, to training for engineer and technician.
- Provision of proper equipments and tools for small industries' development by JICA.
- Building direct relationship between JICA and small industries.

What can VTC offer?

- Contribution to training (Identification of training needs, Identification of training type, Design of training program, Identification of training methods, Training evaluation and Training program development).

- Organizing trade certificate and trade test.
- Preparation and implementation of feasibility study on training.
- Publication of periodicals.
- Establishment of “Information Center” to share information of VTC and small industries.

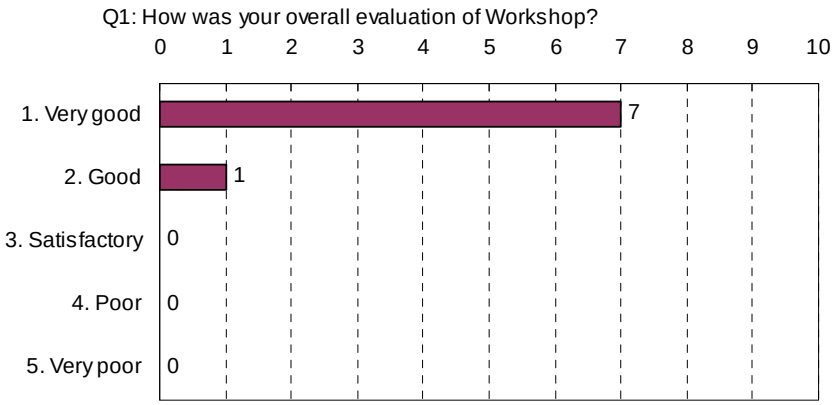
How can VTC instructors contribute to trainings?

- Training of all trades for small industry owners by providing the latest machinery from Japan.
- Training for small industry owners on technology, business management and quality control.
- Development of VTC and artisan school, and expansion of training subjects.
- Expansion of overseas training for instructors and artisans.
- Making training period shorter (1 week to 3 weeks).
- Issuance of valuable certificates to trainees.
- Instructors’ site visit to workplace of related trades.
- Reducing training cost.
- Training for the disabled and those who have special needs.
- Preparation of questionnaire survey to artisans and small industry owners to know about their training needs.

Finally, JICA Study Team summarized the entire program and pointed out that effectiveness of Mobile Training because of small industries’ difficulty in sparing a long time for training, and then proposed an implementation process of the training. And then the JICA Study Team suggested importance of collaboration of small industries, VTC and the government in that VTCs provide training to meet labor market needs.

After the workshop the JICA Study Team conducted a questionnaire survey to participants from CSICU on the workshop (the target was 8 participants from CSICU). Results of the survey showed that in general CSICU participants gave a good evaluation.

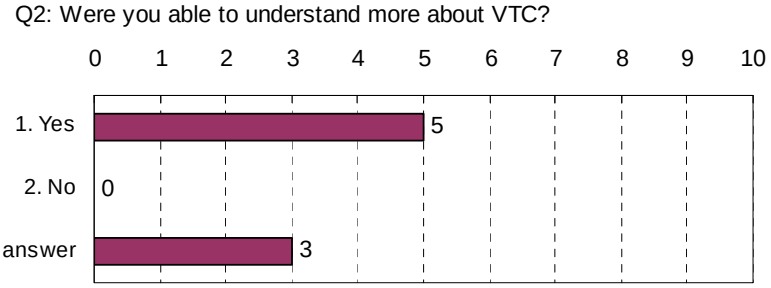
Figure 8.3.1 Evaluation of Small Industries Workshop




Source: JICA Study Team

Responses to a question on relationship between CSICU and VTC, it was clear that answers of workshop participants were constructive opinions: “CSICU can improve VTC training”, “CSICU wants to accept VTC graduates”, “CSICU can contribute to in-plant training”, “VTC training program can improve quality of the union member” and “CSICU and VTC must establish complementary relationship”

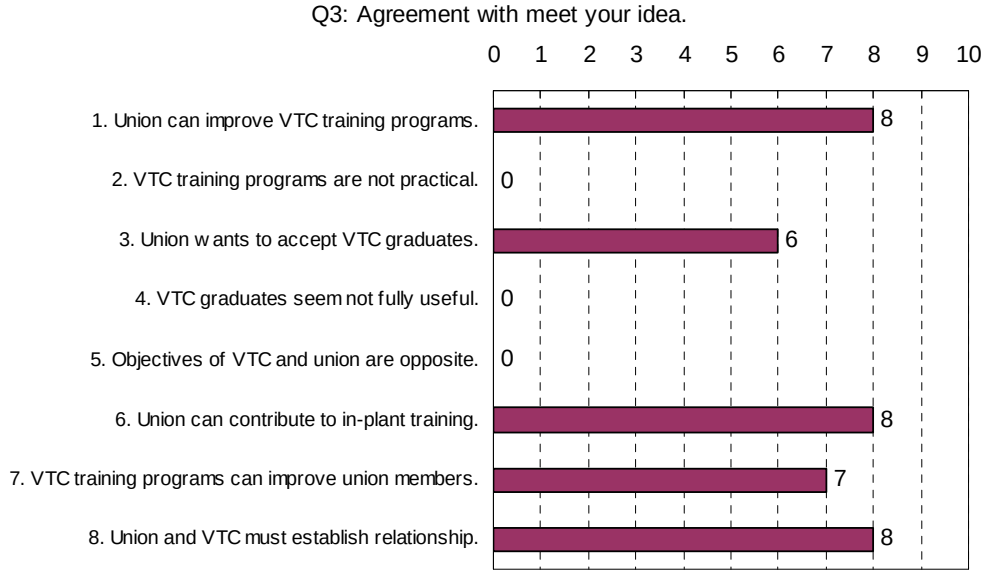
Figure 8.3.2 Understanding of VTS Activities




Source: JICA Study Team

Responses to a question on relationship between CSICU and VTC, it was clear that answers of workshop participants were constructive opinions: “CSICU can improve VTC training”, “CSICU wants to accept VTC graduates”, “CSICU can contribute to in-plant training”, “VTC training program can improve quality of the union member” and “CSICU and VTC must establish complementary relationship”.

Figure 8.3.3 Recognition of VTC by CSICU Members




Source: JICA Study Team

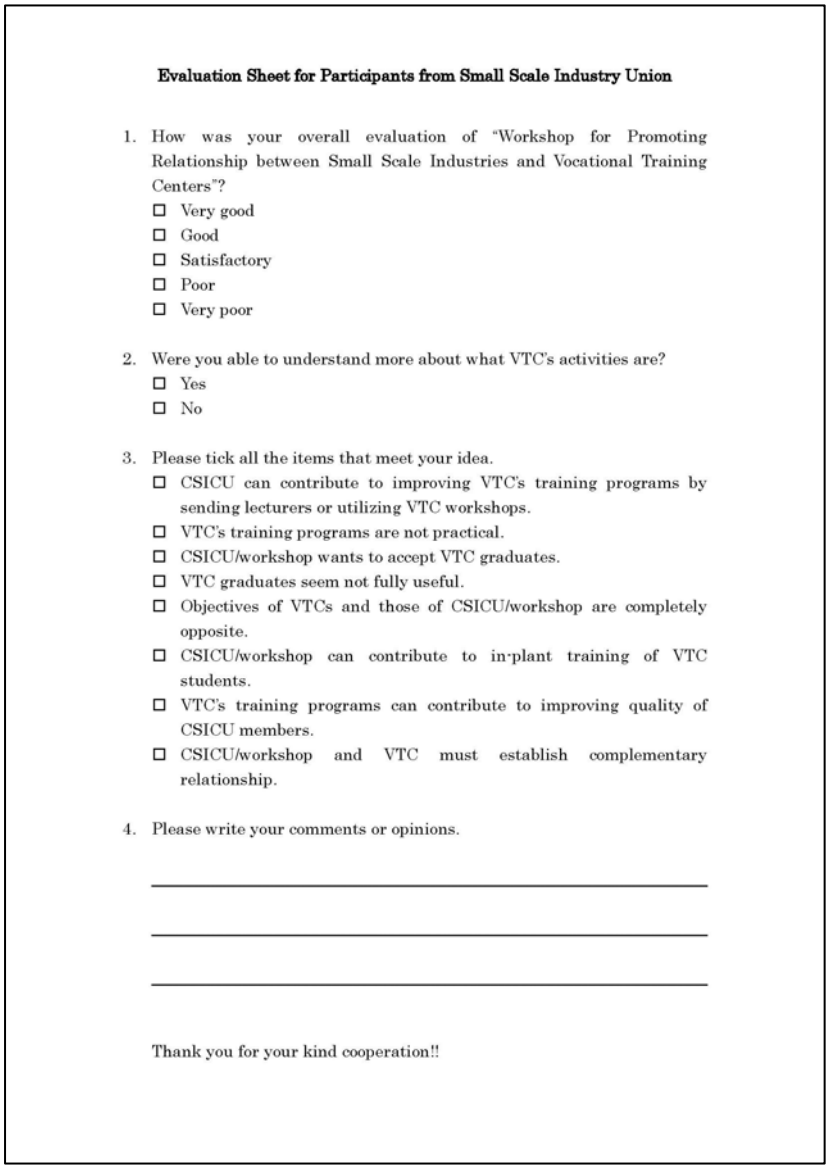
There were many comments related to strengthening relationship between VTC and small industries: “It was a good opportunity to improve performance”, “Information center should be established”, “Expect VTC to train and upgrade CSICU”, “It is important to build relationship among VTC, CSICU and workshop owners, to organize meetings and workshops to address development of small industries and overcoming challenges”

Table 8.3.1 Comments on Small Industries Workshop

| |
|---|
| - It was a good opportunity to improve performance. Wish to continue (such a workshop). |
| - Need to enhance relationship between small industries and Sudanese Businessmen and Employers Federation (SBEF). |
| - Establish Information Center. |
| - Establish co-joint committee for trade certificate. |
| - Establish organizations to train small industries. |
| - VTC graduates are core. All trades depend on them. |
| - Continuous training and streamlining processes up to final products are necessary. |
| - Expect VTC to train and upgrade CSICU. |
| - Need to improve tools and curriculum. |
| - It is important to build relationship among VTC, CSICU and workshop owners, to organize meetings and workshops to address development of small industries and overcoming challenges. |
| - Plumbing and automotive maintenance should be added to training subjects. |
| - Mobile Training is important. |

Source: JICA Study Team

Figure 8.3.4 Questionnaire used in Small Industries Workshop



**Evaluation Sheet for Participants from Small Scale Industry Union**

1. How was your overall evaluation of "Workshop for Promoting Relationship between Small Scale Industries and Vocational Training Centers"?
   - ☐ Very good
   - ☐ Good
   - ☐ Satisfactory
   - ☐ Poor
   - ☐ Very poor

2. Were you able to understand more about what VTC's activities are?
   - ☐ Yes
   - ☐ No

3. Please tick all the items that meet your idea.
   - ☐ CSICU can contribute to improving VTC's training programs by sending lecturers or utilizing VTC workshops.
   - ☐ VTC's training programs are not practical.
   - ☐ CSICU/workshop wants to accept VTC graduates.
   - ☐ VTC graduates seem not fully useful.
   - ☐ Objectives of VTCs and those of CSICU/workshop are completely opposite.
   - ☐ CSICU/workshop can contribute to in-plant training of VTC students.
   - ☐ VTC's training programs can contribute to improving quality of CSICU members.
   - ☐ CSICU/workshop and VTC must establish complementary relationship.

4. Please write your comments or opinions.

   _____

   _____

   _____

Thank you for your kind cooperation!!

Note: In practice, Arabic translation was used.
Source: JICA Study Team