

**Terms of reference (ToR) for the  
Consultancy Assignment to Provide Capacity Building  
Training on Machine Maintenance for TVET Trainers for the  
implementation of Cooperative Training**



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## **General information**

### **a. About GIZ-Sustainable Training & Education Program/STEP**

STEP 2018 – 2021 is a follow-up phase of STEP 2015 – 2018 and builds on its achievements in establishing effective systems to improve quality of Technical and Vocational Education and Training (TVET) and higher education (HE). The project addresses capacity development in the institutional set-up established during the first project's phase to empower TVET and HE sub-sectors in Ethiopia to fulfil their mandate and create tangible employment opportunities for their graduates.

The programme takes up labour market needs and creates solutions to be piloted at selected vocational and higher education institutions in the regions. Successful pilots are to be scaled-up across the country to improve quality and relevance of vocational training and higher education, prepare skilled graduates for their jobs, promote (self-) employment, and support Ethiopia's sustainable economic growth.

STEP contributes to selected sectors by fostering dialogue within the sector, bridging the gaps between supply and demand, improving effectiveness and demand orientation of skills development. To achieve this, different education and training solutions are developed and piloted. This includes cooperative training, Machine Maintenance, short-term employability and soft skills training, digital literacy training and entrepreneurship education.

The main objective of STEP is to increase (self-) employment of TVET and HE graduates in selected regions in the industrial growth sectors. To achieve this, STEP clusters its activities under four action fields 1) Skills development; 2) Matching supply and demand; 3) Institutional capacity development; 4) Education policy support.

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## **b. Assignment Background**

Machine Maintenance is one of the capacity building measures of Sustainable & Training & Education Program for partner TVET Colleges. The training will fill the gaps of TVET trainers on Machine Maintenance and it enhance trainees access to machineries. So far, the machine inspection has been conducted in Oromia, Amhara, SNNP, Tigray Regions and Addis Ababa City Administration by respective regional machine maintenance team members.

However, the feedback collected during machine inspection from all regions by our colleagues confirmed that all the team members have a skill gap in maintaining & operating mainly CNC machines & Pneumatic and hydraulic systems in TVET Colleges and consider this problem as a great challenge for the sector .

Therefore, to solve this challenge providing skill gap training on Machine Maintenance for Regional Machine Maintenance Team members of Oromia, Amhara, SNNP, Tigray Regions and Addis Ababa City Administration is very crucial.

## **c. Problem Statement**

Low skill of TVET trainers on machinery maintenance is identified as one of the key areas that most TVET colleges need to improve in Ethiopia. It has been reported that many training machineries were kept idle because of trainers skill gaps to maintain as well as absence of standardized procedure of maintenance that can be applicable throughout the colleges. To minimize this challenge Tigray, Amhara, Oromia, SNNP and Addis Ababa City Administration TVET bureau were prepared machine maintenance procedure and workshop management manual in cooperation with STEP. However, the skill gap of TVET trainers on machine maintenance is remains unsolved problem.

Therefore, to solve this challenge filling the skill gap of TVET trainers and Regional TVET Bureau experts on machine maintenance through training is vital.

#### **d. Objective of the Training**

The main objective of the training is to capacitate partner colleges' trainers and experts from Oromia, Amhara, SNNP, Tigray Regions and Addis Ababa City Administration TVET Bureau on machine maintenance and to have the required operational and maintenance skill that will enable TVET Colleges to deliver quality skill training effectively and sustainably.

Specifically the machine maintenance skill training aims to enable TVET trainers and Regional TVET Bureau Experts operate computerized machinery and use effectively and efficiently, to build the capacity of Regional machine maintenance team on Machine Maintenance and to enable TVET trainers & Colleges improve the culture of machine maintenances.

- e. GIZ shall hire the contractor for the anticipated contract term, from **August 15, 2021** to **October 30, 2021**.

Certain milestones, as laid out in the table below, are to be achieved by certain dates during the contract term.

	<b>Milestone</b>	<b>Timeframe</b>
1.	Preparation of general training facilitation manual on failure modes, troubleshooting techniques and maintenance of conventional machines in TVET Colleges	August 20 - September 20, 2021
2.	Provide capacity Building Training on Machine Maintenance for Regional Machine Maintenance Team Members in Adama, Jima, Hawasa, Addis Ababa Tegera, Bahir Dar & Mekele Polytechnic Colleges	Until October 25, 2021
3.	Conduct Maintenance of already identified machines by machine maintenance team	Until October 25, 2021
4.	Prepare & submit complete reports of the training & maintenance for all the colleges separately	Until October 30, 2021

The consultancy service is anticipated from August 15, 2021 until October 30, 2021 for a total of 60 working days (3 experts \* 60 days for each = 180 total expert days). Where 10 days allocated for the preparation of General training facilitation manual on failure modes, troubleshooting techniques and maintenance of conventional machines in

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TVET Colleges and 50 days allocated for providing training in 6 partner TVET colleges in Oromia, Amhara, SNNP, Tigray and Addis Ababa City Administration, namely Adama, Jima, Hawasa, Bahir Dar, Addis Ababa Tegberaied and Mekele Polytechnic Colleges.

f. The contractor/consultant shall provide the following work/service:

1. develop general training facilitation manual
2. Provide high quality practical training on operation and maintenance of CNC , Leath and Milling machines, Pnumetic, hydrolic systems and Programable Logic Control/PLC for Regional Machine Maitenance teams in Adama, Jima, Hawasa, Bahirdar, Mekele, Addis Abeba Tegberaied Polytechnic Colleges for 10 days each on sophisticated and other common convetional machines as mentioned below.

- |  |  |
|--|--|
| • <i>Bench drilling machine,</i>                         | • <i>Lock stitch sewing machine,</i>             |
| • <i>Power Shear Machine,</i>                            | • <i>Typical Industrial sewing machine,</i>      |
| • <i>Power Hacksaw Machine,</i>                          | • <i>Button attachment machine,</i>              |
| • <i>Hydraulic Press machine,</i>                        | • <i>Electrical Oven Four plate,</i>             |
| • <i>AC Arc Welding machine,</i>                         | • <i>Refrigerator,</i>                           |
| • <i>Pedestal drill machine,</i>                         | • <i>Egg Mixer,</i>                              |
| • <i>Floor type drill machine,</i>                       | • <i>Universal Cylindrical grinding machine,</i> |
| • <i>Surface Grinding Machine,</i>                       | • <i>Universal tool &amp; grinding machine,</i>  |
| • <i>bench grinder machine,</i>                          | • <i>fluor drilling machine,</i>                 |
| • <i>MIG and TIG Welding,</i>                            | • <i>winding wire cutter,</i>                    |
| • <i>compressor Machine,</i>                             | • <i>electric pneumatic trainer,</i>             |
| • <i>Wood lathe Machine,</i>                             | • <i>SIEMENS loGPLC,</i>                         |
| • <i>Circular saw machine,</i>                           | • <i>pneumatic trainer boad ,</i>                |
| • <i>Cold Press Machine,</i>                             | • <i>pneumatic compressor,</i>                   |
| • <i>Thicknesser machine,</i>                            | • <i>motor eener to machine (AC DC),</i>         |
| • <i>Radial arm saw machine,</i>                         | • <i>auto transformer,</i>                       |
| • <i>circular and band saw blade sharpening machine,</i> | • <i>Hydraulic press,</i>                        |
| • <i>Spindel sander machine ,</i>                        | • <i>hydraulic crane,</i>                        |
| • <i>Belt sande machine,</i>                             | • <i>air compressor,</i>                         |
| • <i>Jointer machine,</i>                                | • <i>bench type drilling machine, b</i>          |
| • <i>wood sharper machine,</i>                           | • <i>ench drilling machine,</i>                  |
| • <i>band saw machine ,</i>                              |  |
| • <i>thicknesser jointer,</i>                            |  |
| • <i>blade sharpenning machine,</i>                      |  |

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- floor grinding machin,
- floor drilling machin,
- battery changer 6V,12V,24V

3. Maintain different machineries during the training
4. Compile and submit full reports of the training

## **Tender requirements**

### **1. Qualifications of proposed staff**

#### **1.1 Expert 1:**

##### **1.1.1 General qualifications**

**Education:** university qualification (first degree/master's) in Mechanical Engineering or Manufacturing Technology or Industrial Engineering and related professions.

**Professional experience:** 5 and above years' experience in industry

##### **1.1.2 Experience in the region/knowledge of the country**

- More than 5 years experience in Industry
- Residing in Ethiopia during the full period of the consultancy assignment
- More than 3 years of consultancy experiences related to machine maintenance
- Practical skill in Machine maintenance verified by legal certificate/letter
- Track records in similar consultancy assignments
- TVET/HE diploma relevant to Machine Maintenance as educational background
- Strong reporting skills
- Strong interpersonal, communication and presentation skills
- Female applicants are encouraged

### 1.1.3 Language skills: business fluency in English and Amharic

## 1.2 Expert 2:

### 1.2.1 General qualifications

**Education:** university qualification (first degree/master's) in Electrical Engineering or Industrial Engineering and related professions.

**Professional experience:** 5 and above years' experience in industry

### 1.2.2 Experience in the region/knowledge of the country

- More than 5 years experience in Industry
- Residing in Ethiopia during the full period of the consultancy assignment
- More than 3 years of consultancy experiences related to machine maintenance
- Practical skill in Machine maintenance verified by legal certificate/letter
- Track records in similar consultancy assignments
- TVET/HE diploma relevant to Machine Maintenance as educational background
- Strong reporting skills
- Strong interpersonal, communication and presentation skills
- Female applicants are encouraged

## 1.3. Expert 3.

### 1.3.1 General qualifications

**Education:** university qualification (first degree/master's) in Machining, Industrial Engineering and related professions.

**Professional experience:** 5 and above years' experience in industry

### 1.3.2 Experience in the region/knowledge of the country

- More than 5 years experience in Industry
- Residing in Ethiopia during the full period of the consultancy assignment
- More than 3 years of consultancy experiences related to machine maintenance
- Practical skill in Machine maintenance verified by legal certificate/letter
- Track records in similar consultancy assignments

- TVET/HE diploma in Machining as educational background
- Strong reporting skills

### ***1.2.3 Language skills: business fluency in Amharic and English***

## ***2. Appropriateness of proposed concept***

Please specify between one and five objective criteria which are to be used for an objective evaluation of the concept within the 'Assessment grid for the technical evaluation of tenders' and enter these in the second section of the grid. (2.1 – 2.5.).

## ***3. Specification of inputs***

<b>Fee days</b>	<b>Number of experts</b>	<b>Number of days per expert</b>	<b>Comments</b>
Providing Capacity building Training on Machine Maintenance & maintain Machines with malfunctions.	3	60	
Transportation	3	12	