PERFORMANCE AUDIT REPORT ON THE MANAGEMENT OF HUMAN CAPITAL DEVELOPMENT IN OIL AND NATURAL GAS INDUSTRY IN TANZANIA
Vision
To be a centre of excellence in public sector auditing

Mission
To provide efficient audit services, in order to enhance accountability and value for money in the collection and usage of public resources

Core Values
In providing quality service, NAO shall be guided by the following Core Values:

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To be an impartial entity, which offers services to our clients in an unbiased manner

We aim to have our own resources in order to maintain our independence and fair status

Excellence
We are striving to produce high quality audit services based on best practices

Integrity
To be a corrupt free organization that will observe and maintain high standards of ethical behaviour and the rule of law

Peoples’ Focus
We focus on our stakeholders needs by building a culture of good customer care, and having a competent and motivated workforce

Innovation
To be a creative organization that constantly promotes a culture of developing and accepting new ideas from inside and outside the organization

Best Resource Utilization
To be an organization that values and uses public resources entrusted to us in an efficient, economic and effective manner
oil and natural gas are initiated and conducted by those institutions in the country.

8. Prepare monitoring and evaluation plan (M&E) which will provides guidelines on how to monitor, evaluate and report performance on the implementation of the human capital development activities and ensure that those M&E plans are followed;

9. Develop a monitoring and evaluation system to track the progress of MEM in implementing Human Capital Development activities for natural gas sub-sector in the country; and

10. Develop performance indicators to monitor the status and effectiveness of Human Capital Development activities for natural gas sub-sector in the country.
This report has been prepared by Mr. Bhourat Kombo - Team Leader, Ms. Asimuna Kipingu, Mr. Victor Mapigano and Ms. Sheila Mbwambo - Team Members under the supervision and guidance of Mr. George C. Haule - Assistant Auditor General and Ms. Wendy W. Massoy - Deputy Auditor General.

I would like to thank my staff for their devotion and commitment in the preparation of this report. My thanks should also be extended to the audited entities for their fruitful interaction with my office.

Prof. Mussa Juma Assad  
Controller and Auditor General  
United Republic of Tanzania  
March, 2016
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ABBREVIATIONS AND ACRONYMS

AG      Attorney General
AGC     Attorney General Chamber
CAG     Controller and Auditor General
DPs     Development Partners
ERB     Engineers Registration Board
ESCBP   Energy Sector Capacity Building Project
ESRF    Economic and Social Research Foundation
EVT     Education Vocational Training
EWURA   Energy, Water, Utility Regulatory Authority
GDP     Gross Domestic Product
GN      Government Notice
HCD     Human Capital Development
HCDP    Human Capital Development Programme in Oil and Natural Gas Subsector
HQ      Head Quarter
HSE     Health Safety and Environment
INTOSAs International Organisation of Supreme Audit Institutions
IOCs    International Oil Companies
IPMA    International Personnel Management Association
ISSAs   International Standards of Supreme Audit Institutions
LGA     Local Government Authority
LNG     Liquefied Natural Gas
M&E     Monitoring and Evaluation
MEM     Ministry of Energy and Minerals
MoEVT   Ministry of Education and Vocational Training
MoF     Ministry of Finance
MPSA    Model Production Sharing Agreement
MoF     Ministry of Finance
MoLE    Ministry of Labour and Employment
MRI     Mineral Resources Institute
NEMC    National Environment Management Council
NAOT    National Audit Office of Tanzania
NBAA    National Board of Accountants and Auditors
NGO     Non-Government Organisation
NORAD   Norwegian Agency for Development Cooperation
OPRAS   Open Performance Review and Appraisal System
OSHA    Occupational Safety and Health Authority
PDO     Project Development Objective
PO-PSM  President’s Office - Public Service Management
PPP     Public Private Partnerships
PSA     Production Sharing Agreement
<table>
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<th>Full Form</th>
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<tr>
<td>PSTP</td>
<td>Public Services Training Policy</td>
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<tr>
<td>PSPBT</td>
<td>Professional Standards and Practices Board for Teaching</td>
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<td>PSMEP</td>
<td>Public Service Management and Employment Policy</td>
</tr>
<tr>
<td>REPOA</td>
<td>Research for Poverty Alleviation</td>
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<tr>
<td>TCF</td>
<td>Trillion Cubic Feet</td>
</tr>
<tr>
<td>TCU</td>
<td>Tanzania Commission for Universities</td>
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<td>TPDC</td>
<td>Tanzania Petroleum Development Corporations</td>
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<td>TNA</td>
<td>Training Needs Assessment</td>
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<td>TRA</td>
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<td>UDOM</td>
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<td>UDSM</td>
<td>University of Dar es Salaam</td>
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<tr>
<td>VETA</td>
<td>Vocational Education and Training Authority</td>
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<td>3Es</td>
<td>Economy, Efficiency and Effectiveness</td>
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MESSAGE FROM THE CONTROLLER AND AUDITOR GENERAL

I believe the recent discovery of natural gas resources has the potential to ensure economic growth and improve the standard of living for the people. The oil and natural gas industry offers direct and indirect employment opportunities. This benefits the Tanzanian employees directly by lifting them out of poverty and the local economies indirectly by the employees’ increased spending. Also the Tanzanian government benefits with increased tax incomes enabling government to further develop the (economic) infrastructure and social service delivery.

However, we will only realize this potential if we have the labour force needed to meet future demands. This involves planning ahead and putting in place recruitment and training programs to make sure we have enough of the right people at the right time, with the right skills, in both the private and public sectors. This is called “human capital development” and this is a crucial responsibility of the government.

The challenge is to translate guiding policies of a Human Capital Development strategy in oil and natural gas industry into a clear and coherent framework of rules, along with competent institutions that can design, administer and enforce them. The government should build this framework in response to the specific and changing context of the extractive sector, and operate in a manner appropriate to the country’s economic and institutional context.

I carried out a performance audit about the government’s ability to ensure appropriate human capital development. I have a number of observations to share with you.

First, my overall observation is that the government, in particular the Ministry of Energy and Minerals (MEM), lacks adequate plans and strategies for human capital development in oil and natural gas industry. The plans and strategies that it has developed indicate that MEM does not know what quantity and quality of the personnel are needed in government institutions and industry in general in the short, medium and long term. Further, MEM in collaboration with the Ministry of Education, Science and Vocational Training are required to enhance their effectiveness in training Tanzanians for engaging in oil and natural gas industry.
In my view, the government must address two overarching issues. One is that the government needs to establish a comprehensive Human Capital Development strategy and guiding policies that covers all the necessary processes of identifying quality and quantity of skills required and when they are needed (as this varies among the different stages), along with a comprehensive framework of rules and institutions directed by this strategy. The other is that the government must establish strong accountability among the key players to ensure that this strategy and associated policies are effectively implemented.

Second, there is currently no proper and effective coordination among key stakeholders, within government and with industry. Within the government coordination among entities responsible for Minerals and Energy, Environment, Labour, Education, Law, Finance, Planning and beyond is of paramount importance. Given the intrinsically linked and overlapping responsibilities, inter-ministerial coordination is necessary. Strategic direction may best come straight from the executive office; alternatively, an overarching body representing each ministry may be useful in coordination and implementation of Human Capital Development Strategy within the government to oversee issues regarding oil and natural gas management in the country.

Third, there are no monitoring and evaluation mechanisms in relation to human capital development in oil and natural gas sector. This led MEM not to achieve set targets on existing HCD plans and strategies.

In conclusion, if these matters are not addressed, the objectives of the government through the National Natural Gas Policy (2013) as well as the expectations of Tanzanians might not be achieved and realized in the near future. I believe that natural resources will benefit the country tremendously if the government manages to maximize local employment opportunities. Therefore, training and educating sufficient Tanzanians with the right skills at the right time is key and requires a thorough approach. I believe that addressing the issues raised above fully will help our country to benefit the current and future generations from the exploitation of its natural resources as much as possible.
EXECUTIVE SUMMARY

Management of Human Capital Development (HCD) in the oil and natural gas industry is crucial for ensuring effective and efficient management of the natural gas. Participation of the Tanzanians in natural gas activities is important for the industry’s stability, integration into local economies and poverty reduction. Among others, the Ministry of Energy and Minerals has been mandated to develop policies related to management of natural gas and oversee its implementation. Through the National Natural Gas Policy (2013) MEM in collaboration with other stakeholders is required to ensure that the Government and Tanzanians have sufficient capacity to participate effectively in the oil and natural gas value chain.

Following public outcry and results of the various researches, it is argued that quantity and quality of human capital in Tanzania is not sufficient to the extent that may expose the national’s opportunity to fully capitalize its natural resources. This triggered the National Audit Office of Tanzania (NAOT) to carry out audit at the Ministry of Energy and Minerals on management of human capital development in oil and natural gas industry in Tanzania.

The main objective of this audit was to examine whether MEM has put in place effective mechanisms for ensuring availability and sustainability of human capital for engaging in the natural gas industry in Tanzania.

The audit covered a period of four financial years that is from 2011/12 up to 2014/15.

NAOT used two main methods for data collection in undertaking this audit which are interviews and documentary reviews carried out at MEM-HQ, MoEVT-HQ and TPDC-HQ.

Main Audit Findings

Set-up human capital development strategies and plans
The set human capital development plans and strategies are not adequate and sustainable. This is due to the fact that they do not reflect actual needs of the government and industry as a whole in engaging in the exploration and development of oil and natural gas industry in the country. The skills gap analysis conducted by MEM did not address some crucial professions required in the oil and natural
gas value chain. This was also caused by weak coordination among stakeholders in the development of the plans and strategies.

**Implementation of the human capital development’ strategies and plans**

The audit noted that the set plans and strategies for human capital development in natural gas sub-sector were not adequately implemented as planned. This is because of lack of coordination between MEM and key stakeholders, lack of HCD progress assessment and prioritization. Consequently, the Ministry of Energy and Minerals failed to meet the HCD implementation targets as they attained only 13 percent of the set goals for the long-term capacity building programs. This means that more than 80 percent of those who were supposed to receive various long-term capacity building interventions did not get that opportunity.

**Monitoring, evaluation and performance reporting mechanisms of HCD activities**

The audit team noted that mechanisms for monitoring, evaluating and performance reporting on the implementation of human capital development strategies and plans are not effective. This is due to lack of monitoring, evaluation and performance reporting plans for human capital development in oil and natural gas industry. The Ministry gave priority to other activities such as finalizing the preparation of gas utilization master plan. Consequently, there were no performance reports for implementation of the HCD plans and strategies.

**General Audit Conclusion**

General conclusion of the audit is that the Ministry of Energy and Minerals has HCD plans and strategies which are not effective for ensuring availability and sustainability of the human capital for engaging in the natural gas industry in Tanzania. This resulted into failure by the Ministry to achieve its target of ensuring that Tanzanians are well trained to engage in the natural gas sub-sector by either being employed in the International Oil Companies (IOCs) and government institutions or engaging in other activities related to natural gas value chain.

This was mainly caused by inadequate human capital development plans, inadequate implementations of the set plans and strategies, weak coordination among government institutions with the responsibility of ensuring that there is good and well trained workforce in the country. Lastly, it is due to insufficient monitoring,
evaluating and performance reporting on the implementation of human capital development strategies and plans.

**Audit Recommendations**

The following are the recommendations to the Ministry of Energy and Minerals.

The Ministry should:

1. Carry-out intensive skills gap analysis in collaboration with key stakeholders which would reflect real needs of Human Capital in government institutions and the industry as a whole;

2. Prepare a specific and comprehensive Human Capital Development Plans and Strategies which would address all disciplines at each level of oil and natural gas value chain and ensure that they are followed and the results of their implementations are regularly communicated to the stakeholders.

3. Have clear sources of funds for smooth implementation of human capital development plans and strategies.

4. Carry out assessment and evaluation on the progress of the implementation of set human capital development strategies and plans.

5. Make priority of the skills which require immediate intervention during implementation of HCD plans and strategies in order to ensure strategic participation in the oil and natural gas value chain.

6. Develop a coordination system/mechanism that will ensure adequate coordination between MEM and stakeholders in the HCD by involving them in identifying needs, skills gap, developing intervention plans and strategies, implementing those strategies and provide them with performance reports regarding HCD activities in the natural gas sub-sector;

7. Coordinate with Higher Learning Institutions through the Ministry of Education and Vocational Training to ensure that various training programs on highly needed professions and certifications including Health Safety and Environment (HSE) in
oil and natural gas are initiated and conducted by those institutions in the country.

8. Prepare monitoring and evaluation plan (M&E) which will provides guidelines on how to monitor, evaluate and report performance on the implementation of the human capital development activities and ensure that those M&E plans are followed;

9. Develop a monitoring and evaluation system to track the progress of MEM in implementing Human Capital Development activities for natural gas sub-sector in the country; and

10. Develop performance indicators to monitor the status and effectiveness of Human Capital Development activities for natural gas sub-sector in the country.
CHAPTER ONE

INTRODUCTION

1.1 Background

In Tanzania the exploration of oil and gas started in 1952. The success of exploration activities for the first time was obtained 22 years later when the natural gas discovery was made in 1974 at Songo Songo, Lindi Region. Later on in 1983 another discovery was made at Mnazi Bay in Mtwara Region. Since then intensive exploration activities were going on and by June, 2015 the discovery of natural gas was estimated to be 55.08 Trillion Cubic Feet (TCF).\(^1\)

According to Dr. Egbogah (2013), the focus of Africa’s national planners and policy makers must transform from physical infrastructure to human capital development as this is the underlying bedrock of increasing Africa’s economy and likewise Africa’s oil and gas production. Human capital development plays the pivotal role in growing oil and gas industry in Africa.

Human capital development refers to the process that relates to training, education and other professional initiatives in order to increase the levels of knowledge, skills, abilities, values and social assets of an employee.

Insufficient capacity of human capital in Tanzania may jeopardize the nation’s opportunity to fully capitalize its natural resources. Human resource is certainly the most important factor of production because it is capable of transforming all the other factors for the betterment of human life and human welfare.

Therefore, following this huge discovery of natural gas and the need for Human Capital in extracting the natural gas, the Government of Tanzania has two main objectives regarding Human Capital Development in the natural gas sub-sector in the country.

The first objective is to ensure that there is a human capital to work in the IOCs and industry as a whole. This will help IOCs operating or

\(^1\) Speech of the Minister responsible for Energy and Minerals to the Parliament delivered in June, 2015
waiting to operate in the country in doing their jobs and provide employment opportunities to Tanzanians.

The second objective is to ensure that there is human capital within the government institutions that can allow the government to improve its role as the promoter of Tanzania’s public interest and being a countervailing power to the IOCs. This will allow the government to discharge its roles of oversight and regulation of the entire natural gas sub-sector in the country.

Given the significant discoveries of natural gas in Tanzania, there is apparent demand of Tanzanian citizens participation at all levels of natural gas value chain. Participation of the Tanzanians in natural gas activities is important for the industry’s stability, integration into local economies and poverty reduction.

1.2 Motivation

The audit was motivated by unpreparedness status of the Tanzania government in relation to human capital development to participate in oil and natural gas industry despite of the known huge discovery of natural gas in the country. The following are the indications of the problem;

In recent years, Tanzania discovered huge amount of natural gas which requires effective and efficient management to ensure benefits to the entire Tanzanian society, for present and future generations. However, according to the government through the National Natural Gas Policy (2013), Tanzania is facing a number of challenges that call for availability of human resource with the requisite skills, attitude, discipline and knowledge of the natural gas industry.

According to Dr. Haji Semboja, a senior academic at the University of Dar es Salaam had this to say, “There are a growing number of complex primary and secondary constraints and risks affecting the performance of oil and petroleum exploration which call for high skilled personnel to handle them”. Further, increasing investments in human capital in the fast growing oil and gas sector will help the country reap maximum benefits from the sector\(^2\).

\(^2\) Daily News, 16\(^{th}\) April 2013
Similarly, the report titled “Plans and Progress by VETA to Prepare Tanzanians to Engage in the Natural Gas Value Chain Process” pointed-out that Tanzania stands to benefit a lot from exploring its natural gas reserves which have been estimated to be worth more than 15 times the national Gross Domestic Product (GDP). However, the lack of national capacity for managing a gas industry of such magnitude might prevent the country from reaping the anticipated benefits of a gas industry driven economy.

Additionally, it was noted that Tanzania is not yet prepared to host the natural gas economy. This fundamental state of unpreparedness calls for the gas industry to be developed de novo, with emphasis on developing requisite skills and knowledge to enable greater local inclusiveness. This is according to ESRF Discussion Paper No. 51.

Furthermore, the NORAD report (2013) on Mapping and analysis of the needs for Petroleum Related Education in Tanzania demonstrates that there is a skills gap at the professional and technical levels in Tanzania. For example, at professional level petroleum engineers, petroleum geologists and petroleum chemists are lacking whereas at technical level insulators (incl. Cryogenic and operators), boilermaker and scaffolders are also lacking. In addition, educated workers with basic skills, awareness and knowledge on HSE related matters are few in the country.

Despite the fact that, the government of Tanzania has identified gaps in human capital for engaging in natural gas value chain and developed plans for HCD in oil and natural gas industry still there is a concern on the management of HCD which has to be addressed.

Therefore, the National Audit Office of Tanzania decided to conduct a performance audit on the management of human capital development for engaging in natural gas industry with the view of addressing the concerns observed.

1.3 Audit design

1.3.1 Main objective of the audit

The main objective of this audit was to examine whether the Ministry of Energy and Minerals (MEM) has put in place effective mechanisms

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3 Kibendera (2013)
4 It is Latin word which means ‘‘from the beginning’’
for ensuring availability and sustainability of human capital for engaging in the oil and natural gas industry in Tanzania.

**Specific objectives of the audit**

The following were the specific objectives of the audit addressing critical issues on human capital development (HCD) in oil and natural gas industry:

a) assessing whether human capital development plans and strategies are comprehensive for strategic participation in oil and natural gas value chain.

b) determining how the set plans and strategies for human capital development have been implemented; and

c) assessing the effectiveness of the mechanisms for monitoring, evaluation and performance reporting on the implementation of human capital development strategies and plans.

**1.3.2 Scope of the audit**

The audit covered the Ministry of Energy and Minerals in Tanzania as the main audited entity. This is because of the dual roles of the Ministry among others has to ensure there is a human capital to work in the IOCs and industry as a whole and the government institutions.

Similarly, the audit covered Tanzania Petroleum Development Corporation (TPDC) and the Ministry of Education Vocational and Training (MoEVT) who have vital roles to play in the development of human capital for engaging in natural gas sub-sector. Therefore, data and information were collected from the Ministry of Energy and Minerals, Tanzania Petroleum Development Corporation, Ministry of Education and Vocational Training, Vocational Education Training Authority (VETA), Economic and Social Research Foundation (ESRF), selected Higher Learning Institutions and Subject Matter Experts on natural gas in the country.

The audit examined the management of human capital development in the natural gas sub-sector in Tanzania. Specifically, the following three main issues were the focus of this audit;

- availability and adequacy of set plans and strategies for HCD,
- implementation of set plans and strategies, and
- effectiveness of the mechanisms for monitoring, evaluation and programme reporting on the implementation of the set plans and strategies for HCD.
The selection of the four areas mentioned above was based on the fact that they are important for ensuring that there is sustainable HCD for engaging in the oil and natural gas industry in Tanzania.

The audit focused on development of human capital in skilled and semi-skilled, short- and long-term capacity building interventions at both professional\(^5\) and technical\(^6\) levels in the natural gas value chain.

The audit covered a period of four financial years that is from 2011/12 up to 2014/15.

This audit aimed at drawing conclusions and issue recommendations regarding HCD for engaging in natural gas value chain in the whole country.

1.3.3 Audit questions

The audit work was designed using three audit questions that were mainly focusing on the set up of plans and strategies, implementation, coordination, monitoring and evaluation on activities regarding HCD in the country.

**Question 1:** Are human capital development plans and strategies comprehensive for strategic participation in oil and natural gas value chain?

This audit question aimed to determine whether MEM has set-up human capital development plans and strategies. Also to assess the extent to which skills gap were identified and considered in those plans, and strategies. Further to determine the involvement of key stakeholders and usage of their inputs in developing human capital development plans and strategies.

**Question 2:** Are human capital development plans and strategies well implemented?

This audit question aimed to determine whether the human capital development plans and strategies are adequately implemented, how various key stakeholders are implementing these strategies and plans and the extent to which the set targets and objectives have been achieved accordingly.

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\(^5\) This refers to degrees, Masters and Phd

\(^6\) This refers to diploma and certificates
Question 3: Are the monitoring and evaluation mechanisms on the implementation of human capital development working effectively?

This question aimed to determine whether MEM has set mechanisms for monitoring, evaluation and performance reporting, the extent to which performance indicators align with the objectives of the human capital development plans, how effectively monitoring, evaluation and performance reporting mechanisms are conducted and the actions or measures taken to address critical issues identified during the monitoring, evaluation and performance reporting on the activities regarding human capital development for natural gas industry in the country.

1.3.4 Assessment criteria

The audit questions were assessed by criteria derived from various sources including National Natural Gas Policy (2013), International Personnel Management Guidelines (2002), Public Service Training Policy (2013), Human Capital Development Programme in Oil and Natural Gas Sub-sector objectives and targets and energy sector capacity building project objectives and targets (2012).

MEM is responsible for the following criterion used to assess the three audit questions:

<table>
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<tr>
<th>Audit Question</th>
<th>Source of the criterion</th>
<th>Criterion</th>
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<tbody>
<tr>
<td>Set up of Human Capital Development Plans and Strategies</td>
<td>IPMA</td>
<td>Development of Strategies tailored to address gap and human capital conditions in critical skills and competences.</td>
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<td></td>
<td></td>
<td>Involvement of top management, employees and other stakeholders in developing, communicating and implementing the strategic workforce.</td>
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<tr>
<td>Principle III of Human Capital Development Programme in Oil and Natural Gas Sub-sector</td>
<td>Multi-stakeholder process where different players should be involved in different interventions</td>
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<tr>
<td>Public Services</td>
<td>Ensuring training programmes</td>
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<th>Audit Question</th>
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<th>Criterion</th>
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<tr>
<td>Training Policy, 2013</td>
<td>respond to the needs of different levels of public servants and contribute to the succession needs.</td>
<td></td>
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<tr>
<td>Principle II of Human Capital Development Programme in Oil and Natural Gas Sub-sector</td>
<td>Designing Programme to meet current skill gap.</td>
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| Principle II governing MEM Human Capital Development Programme in Oil and Natural Gas Sub-sector | **Short-term plan:**  
• Ministry set target to train 50 Tanzanians for Masters and PhD degree levels in oil and gas fields by 2016.  
• Ministry identified gap of 329 personnel through staff requirement assessment to be filled during the implementation of the programme.  
• Ministry set a target to train 76 staff in short courses.  
| Staff of gas sub-sector management institutions should be trained to manage, regulate and monitor gas sector |
| ESCBP Project Appraisal Document | **Medium term plan:**  
• Ministry set a target to train 300 trainers at higher learning institutions by 2016. |
<p>| ESCBP Project Appraisal Document | Steering Committee meeting shall be held monthly in the first year of implementation and thereafter quarterly. |
| National Natural Gas Policy, 2013 | Developed Plan for Natural Gas Policy Monitoring and Evaluation through a consultative process as part of the policy implementation strategy, and outline milestones and key performance indicators. |</p>
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<tr>
<td>plans and strategies</td>
<td>Principle IV of Human Capital Development Programme in Oil and Natural Gas Sub-sector</td>
<td>Setting monitoring mechanism to measure the achievement of the programme</td>
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<tr>
<td>ESCBP Project Appraisal Document</td>
<td>Steering Committee meeting shall be held monthly in the first year of implementation and thereafter quarterly.</td>
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<tr>
<td>ESCBP Project Appraisal Document</td>
<td>Quarterly Progress Report submitted to the World Bank within 45 days of each quarter.</td>
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1.3.5 Methods and implementation of the audit

In order to answer the audit questions, two main methods of data collection were used which are document reviews and interviews.

To ensure that data collected give comprehensive picture of the situation on the management of human capital in the oil and natural gas industry, data were collected from MEM, TPDC, ESRF, Learning Institutions and MoEVT. The selection of these organisations was based on the fact that they are playing important roles on human capital development in the sector.

During the course of audit, various key documents were reviewed in order to assess the performance on the set strategies and plans relating to human capital development in oil and gas industry in Tanzania. Appendix 2 shows list of documents reviewed during the audit.

Interviews were conducted in order to collect primary data and to clarify or confirm information from the documents reviewed and allow officers to provide explanations on how things are done regarding human capital development in oil and natural gas industry. A number of interviews were conducted with officials of MEM, TPDC and MoEVT to gain insights on management of human capital development in oil and gas sub-sector. Furthermore, the audit team had discussions with ESRF researchers on HCD in natural gas sub-sector.
The audit team also conducted interviews with various experts on the subject matter for the purpose of understanding technical issues relating to the system of human capital development in gas sub-sector in the country. Appendix 3 shows list of interviewees from different organisation visited.

The team used tables, figures and analytical reviews to analyse data obtained from MEM, TPDC, MoEVT, ESRF, research papers and subject matter expert for the purpose of understanding the system of management of human capital development for engaging in oil and natural gas industry in Tanzania. Appendix 4 provides audit questions, sub-questions and audit criteria used during the audit.

1.4 Standards used for the audit

The audit was done in accordance with the International Standards for Supreme Audit Institutions (ISSAIs) issued by the International Organization of Supreme Audit Institutions (INTOSAI).

These standards require that the audit is planned and performed in order to obtain sufficient and appropriate evidence to provide a reasonable basis for the findings, conclusions and recommendations based on the audit objectives.

1.5 Data validation

The Ministry of Energy and Minerals, which is directly concerned with this report, was given the opportunity to go through the draft report and comment on the figures and information being presented. They confirmed on the accuracy of the figures used and information being presented in the audit report.

Furthermore, the information was crosschecked and discussed with experts on the management of human capital development in extractive industries to ensure validation of the information obtained.

1.6 Structure of the audit report

The remaining part of the audit report covers the following:

- chapter two describes the system and process of Management of Human Capital Development for natural gas sub-sector in Tanzania, where responsibilities of different key actors in Capital Development are described,
• chapters three and four provide an account of the findings on the Management of Human Capital Development for natural gas sub-sector in Tanzania for government institutions and industry-wide respectively,
• chapter five provides conclusions for the audit, and
• chapter six outlines recommendations which can be implemented in order to improve the current situation.
CHAPTER TWO

SYSTEM FOR THE MANAGEMENT OF HUMAN CAPITAL DEVELOPMENT IN OIL AND NATURAL GAS INDUSTRY

2.1 Introduction

The main focus of this chapter is to provide a description of the system for managing HCD in oil and natural gas industry in Tanzania. Further the chapter describes the policies and legislations which provide the policy and legal framework for governing HCD in the country. The chapter also underlines the roles and responsibilities of key actors in the HCD process in the oil and natural gas industry. Finally the chapter covers the processes followed in HDC and indicates the trend of HCD in Tanzania.

2.2 Objectives of Human Capital Development

The aims of Human Capital Development are to ensure that the government and Tanzanians have sufficient capacity to participate effectively in the natural gas value chain. There are various programs and projects implemented by MEM including: Energy Sector Capacity Building Project and Human Capital Development Programme with the aim to train Tanzanians in oil and gas fields so that the country can maximize benefits accruing through exploration and production of natural gas in the country.

2.3 Policies and legislations governing HCD in the oil and natural gas industry

Generally, Human Capital Development is guided by various policies and legislations. There is no comprehensive legislation to guide the management and coordination of human capital development in oil and natural gas industry. To a certain extent the development of Human Capital in natural gas sub-sector is being managed by the National Natural Gas Policy of Tanzania, 2013.

Nevertheless, training function in the Public Service is the responsibility of employers. The Employer is responsible for undertaking Training Needs Assessment (TNA); preparing Training Plan; allocate funds for training; implementing the Training Plan; monitor and evaluate Institution’s Training Plan (Public Service Management and Employment Policy, 2008).
2.3.1 Policy framework for HCD

Human capital development is governed by various policies. The following table shows such policies with their focus and objectives;

<table>
<thead>
<tr>
<th>Name of the Policy</th>
<th>Policy Focus and Objectives</th>
</tr>
</thead>
</table>
| National Natural Gas Policy of Tanzania, 2013                | • Provides guidance for sustainable development and utilization of natural gas resource and maximization of benefits.  
• Ensures the government and Tanzanians have sufficient capacity to participate effectively in the natural gas value chain                                                                                                                                                                                                                                                                                                                                                      |
| Public Service Management and Employment Policy, 2008        | • Provides for the main actors for HCD; namely all ministries, independent departments, local government authorities, regional secretariats and other government agencies.  
• Enables some government ministries, departments and bodies to undertake cross-cutting training functions within their mandates and implementation guidelines issued from time to time.                                                                                                                                                                                                                                                                                                          |
| Training Policy for Tanzania Public Service, 2013            | • Ensures that training in the public service is systematically coordinated and managed.  
• Strengthens management and coordination of training function in the public service.  
• Ensures appreciation of the importance of training by employers in public service.  
• Addresses the needs and enhances attitudinal change of different levels of public servants in the training programmes.  
• Improves functional relationship between public service, DPs and training providers.                                                                                                                                                                                                                                                                                                                                                               |
| Local Content Policy of Tanzania for Oil and Gas Industry, 2014 | • Aims at:  
  ▪ Devising local content implementation strategies for the development of competitive, capable and sustainable local labour.  
  ▪ Generating and promoting adequate supply of local workforce with necessary knowledge and skills.  
• Provides the guiding principles for maximum engagement of local content and local participation in the development of oil and gas industry to ensure optimal benefits to Tanzanians.                                                                                                                                                                                                                                                                                                                                                                                                 |
<table>
<thead>
<tr>
<th>Name of the Policy</th>
<th>Policy Focus and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>The National Education Policy</td>
<td>The audit team should also consider inclusion of this policy in the highlight of the policy framework. Since the Education Act has been included in the legal framework, so it should be the case for the National Education Policy.</td>
</tr>
</tbody>
</table>

### 2.3.2 Legislations for HCD

As it is the case with the policy framework, there is neither specifically enacted law nor regulations on the Human Capital Development in oil and natural gas industry in the country. However, there are legislations which deal with the human capital development in the public service which are:

<table>
<thead>
<tr>
<th>Name of Legislation</th>
<th>Focus of Legislation for HCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Service Act No.8, 2002 and Public Service Regulations of 2003</td>
<td>• Govern training in public service.</td>
</tr>
<tr>
<td>Public Service Standing Order, 2009</td>
<td>• Provides for retention of staffs who have been trained by the government.</td>
</tr>
<tr>
<td></td>
<td>• Requires an employee trained by the government to sign a bond requiring him/her to serve for the government for a period not less than three years before moving to another employer.</td>
</tr>
<tr>
<td></td>
<td>• Mandates MoEVT to provide, regulate and supervise the provision of education in Tanzania.</td>
</tr>
</tbody>
</table>

### 2.4 Government effort to ensure availability of trained personnel in the industry

The government through MEM and MoEVT as well as learning institutions has various initiatives that ensure skilled personnel are available in the country to participate in the oil and natural gas value chain. The following are some of initiates that have been undertaken by the government;
Human Capital Development Programme in Oil and Natural Gas Sub-sector

MEM has developed Human Capital Development Programme in Oil and Natural Gas Sub-sector (HCDP-2012). The objective of this programme is to train Tanzanians in oil and gas fields so that the country can maximize benefits accruing through exploration and production of natural gas by ensuring that the industry is managed prudently. The programme consists of three stages for the short, medium and long term. Each stage is worked out in separate plans:

**Short term plan**; the plan involves implementation of Capacity Building Marshal Plan (2012-2016). It entails affording 50 Tanzanians training opportunities for degree and masters levels in the Oil and Gas fields by 2016. Also the plan identified areas which require immediate intervention including petroleum geosciences, petroleum geophysics, petroleum geochemistry, petroleum engineering, energy economics, and modeling, accounting and auditing, licensing and contracting and revenue management and environmental management.

**Medium term plan**; the plan involves empowering training institutions to deliver the required oil and gas skills locally. It involves upgrading curricula by training institutions. It includes training of trainers both locally and internationally and upgrading of their curricula.

**Long term plan**; the plan involves establishing Oil and Gas Center of Excellence. Its mission would be to train Tanzanians to qualify as graduates, professionals, and technicians, in the field of engineering, geology, sciences, economics, law in the oil and gas industry in Tanzania. The center will also be responsible for carrying out research activities in the oil and gas field.

**Energy Sector Capacity Building Project**

The Ministry of Energy and Minerals also has Energy Sector Capacity Building Project (ESCBP). It is a five year project starting from March, 2013 to June, 2018. The project is financed through loan from the World Bank.

The project development objective (PDO) is to strengthen the capacity of the Government of Tanzania:

(i) in its natural gas sub-sector; and
(ii) public private partnerships (PPP) for the power generation sector.
Among activities of the project is to build capacity for individuals in the area of oil and natural gas industry.

**Oil and gas programs offered by Higher Learning Institutions**

The government through its higher learning institutions, notably the University of Dar es Salaam (UDSM) and University of Dodoma (UDOM) has come up with the initiative to offer several programmes related to oil and natural gas fields. On its side, the University of Dar es Salaam started to offer these programmes in 2015/2016. The table below shows the programmes offered at UDSM and UDOM.

<table>
<thead>
<tr>
<th>INSTITUTION</th>
<th>PROGRAMME</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Dar es Salaam</td>
<td>Bachelor of Petroleum Engineering</td>
</tr>
<tr>
<td></td>
<td>Bachelor of Petroleum Geology</td>
</tr>
<tr>
<td></td>
<td>Bachelor of Petroleum Chemistry</td>
</tr>
<tr>
<td></td>
<td>Master of Finance and Accounting in oil and gas</td>
</tr>
<tr>
<td>University of Dodoma</td>
<td>Bachelor of Petroleum Engineering</td>
</tr>
</tbody>
</table>

*Source: UDSM & UDOM*

2.5 Financing of the HCD program and project

The Ministry of Energy and Minerals is responsible for the implementation of Human Capital Development Programme in Oil and Gas industry, and is the implementing agent for ESCBP. The aim is to build the capacity of Tanzanians to participate in oil and natural gas industry. Nevertheless, the Ministry requires fund to implement the set plans and strategies. Table 2.4 shows the sources of fund for the implementation of HCD plans.
Table 2.4: Source of fund of the HCD programme and project

<table>
<thead>
<tr>
<th>PROGRAMMES PROJECT</th>
<th>SOURCE OF FUND</th>
<th>AMOUNT (Million USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Capital Development Plan</td>
<td>• Government of Tanzania</td>
<td>20.10</td>
</tr>
<tr>
<td></td>
<td>• Development partners</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Multinational corporation</td>
<td></td>
</tr>
<tr>
<td>Energy Sector Capacity Building Project</td>
<td>• Loan from world Bank</td>
<td>2.85</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>22.95</td>
</tr>
</tbody>
</table>

Source: HCDP & ESCBP

2.6 Staffing level at MEM

At MEM all activities related to human capital development in oil and natural gas industry are done by human resources section and gas section. However there is no clear number of staffs specifically responsible for human capital development in the sector.

2.7 Main actors in the Human Capital Development in Oil and Natural Gas Industry

In developing Human Capital in the oil and natural gas industry, together with the above mentioned actors, the main actors are the Ministry of Energy and Minerals, Ministry of Education and Vocational Trainings (MoEVT), Tanzania Petroleum and Development Corporation (TPDC), International Oil Companies (IOCs) and Training Providers such as VETA, Mineral Resource Institute (MRI) and Higher Learning Institutions. Others are National Environmental Management Council (NEMC), Occupational Health and Safety Authority (OSHA), Attorney General Chamber (AGC), Tanzania Revenue Authority (TRA) and the Ministry of Finance (MoF).

Roles and responsibilities of the main actors in the human capital development in natural gas sub-sector in the country are mainly divided into four categories, namely: planning, implementation, coordination and monitoring, evaluation and performance reporting responsibilities. Table 2.5 shows the roles and responsibilities of the Ministry of Energy and Minerals in Human Capital Development; table 2.6 shows roles and responsibilities of Regulatory and Oversight Institutions in Human Capital Development and table 2.7 shows roles and responsibilities of MoEVT in Human Capital Development.

7 This amount budgeted for training activities only
Table 2.5: MEM’s main responsibilities in Human capital development in oil and gas industry

<table>
<thead>
<tr>
<th>Actor</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM</td>
<td>Planning responsibilities</td>
</tr>
<tr>
<td></td>
<td>• Conducting Training Needs Assessment in order to identify skills gap in natural gas sub-sector;</td>
</tr>
<tr>
<td></td>
<td>• Planning and budgeting for training;</td>
</tr>
<tr>
<td></td>
<td>• Mobilize and allocate resources to the training plans and programmes; and</td>
</tr>
<tr>
<td></td>
<td>• to develop plans and programmes for the development of the sub-sectors in order to ensure efficient, cost effective, reliable and quality services.</td>
</tr>
<tr>
<td></td>
<td>Implementation responsibilities</td>
</tr>
<tr>
<td></td>
<td>• Implementation of HCD plans and strategies in natural gas sub-sector; and</td>
</tr>
<tr>
<td></td>
<td>• Carry-out or cause to be carried out research on petroleum and gas and provide advice on appropriate technologies and methods necessary for proper functioning of the petroleum industry;</td>
</tr>
<tr>
<td></td>
<td>Coordination responsibilities</td>
</tr>
<tr>
<td></td>
<td>• Support on human capacity building activities to ensure that MEM and related ministries staff are better equipped to execute their responsibilities to manage and set policy frameworks for participatory economic, environmental and social sustainability (including gender dimensions) of the gas sub-sector.</td>
</tr>
<tr>
<td></td>
<td>Monitoring, Evaluation and Performance Reporting Responsibilities</td>
</tr>
<tr>
<td></td>
<td>• Monitoring and evaluation of the Planned and Implemented activities on Human Capital Development.</td>
</tr>
<tr>
<td>Actor</td>
<td>Responsibilities</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>TPDC</td>
<td><strong>Planning responsibilities</strong>&lt;br&gt;• Conduct Training Needs Assessment for the industry&lt;br&gt;• Planning and budgeting for training</td>
</tr>
<tr>
<td></td>
<td><strong>Implementation responsibilities</strong>&lt;br&gt;• Implementation of HCD plans and strategies</td>
</tr>
<tr>
<td></td>
<td><strong>Coordination responsibilities</strong>&lt;br&gt;• Coordinating with MEM to ensure that TPDC’s HCD and skills gaps and needs are addressed</td>
</tr>
<tr>
<td></td>
<td><strong>Monitoring, Evaluation and Performance Reporting Responsibilities</strong>&lt;br&gt;• Monitoring and Evaluation of the planned and implemented activities on Human Capital development</td>
</tr>
<tr>
<td>Other Actors (NEMC, OSHA, AG, MoF)</td>
<td><strong>Planning responsibilities</strong>&lt;br&gt;• Conduct Training Needs Assessment.&lt;br&gt;• Submit Training Needs to MEM</td>
</tr>
<tr>
<td></td>
<td><strong>Implementation responsibilities</strong>&lt;br&gt;• To cooperate with MEM in implementing HCD plan by providing information of the beneficiaries.</td>
</tr>
<tr>
<td></td>
<td><strong>Coordination responsibilities</strong>&lt;br&gt;• Participating in meeting and forum prepared by MEM relating to human capital development in oil and gas subsector</td>
</tr>
<tr>
<td></td>
<td><strong>Monitoring, Evaluation and Performance Reporting Responsibilities</strong>&lt;br&gt;• To cooperate with MEM in monitoring and evaluation of HCD activities.</td>
</tr>
</tbody>
</table>
Table 2.7: Key actors and their main responsibilities in Human capital development in oil and gas industry - Ministry of Education and Training Institutions

<table>
<thead>
<tr>
<th>Actor</th>
<th>Responsibilities</th>
</tr>
</thead>
</table>
| MoEVT through Tanzania Commission for Universities (TCU) | **Planning responsibilities**  
- Involves in approving curriculums in education institutions.  
**Implementation responsibilities**  
- Enhancing quality of designed courses regarding natural gas through approving and frequency inspection the progress of implementation.  
**Coordination responsibilities**  
- Cooperating with MEM in discussion and meeting regarding HCD strategies and plan  
**Monitoring, Evaluation and Performance Reporting Responsibilities**  
- Formulation, Monitoring and evaluation of the implementation of the policies, teachers’ trainings, registration of schools, inspection of education services and infrastructures, library services and education press services. |
| TRAINING PROVIDERS (VETA, MRI, and Universities) | **Planning responsibilities**  
- Developing and implementing high quality training programmes and diversify their training related activities to cater for the increasing skills requirements in the Public Service.  
- Making sure that they are ready for enrolment of student regarding natural gas courses  
**Implementation responsibilities**  
- Develop and implement high quality training programmes and diversify their training related activities to cater for the increasing skills requirements; and  
- Provision of demand driven training services that will lead to development of local skilled workforce for the natural Gas subsector particularly in technician level.  
**Coordination responsibilities**  
- Coordinates with MEM on implementation of area related to capacity building in oil and natural gas sub-sector  
**Monitoring, Evaluation and Performance Reporting Responsibilities**  
- Cooperating with MEM in monitoring and evaluation of the courses they provide through monitoring and evaluation at their institution level. |
2.8 The Processes of Human Capital Development in Tanzania

The process for Human Capital Development involves education system and training.

**Education**

Crocker in his research conducted in Canada on Human Capital and Education (2006) concluded that, Education is the key element of Human Capital Development because it is viewed as a primary means of developing knowledge and skills and because level of education is a way of quantifying the quality of labor.

Education at all levels - schools, technical Institutes, universities and companies - needs meaningfully to enable ongoing achievement of excellence, and to encourage curiosity, flexibility and creativity. Measures to improve employability of educational and training outcomes are critical for the realization of highly skilled human capital. Vocational and technical education plays a big role in the building of skills of workforce.

In Tanzania it is the Ministry of Education and Vocational Training having the mandate of supervision and management of the provision of Education. Being so mandated, the MoEVT is responsible for inter alia formulation, monitoring and Evaluation of the implementation of the policies, registration of school and inspection of Education services.

**Training**

Training presents a prime opportunity to expand the knowledge base of employees in an organization. Accordingly, public service organizations have the responsibility of managing the training function systematically and professionally. Training function in the Public Service is the responsibility of employers. The Employer is responsible for undertaking Training Needs Assessment (TNA); preparing Training Plan; allocate funds for training; implementing the Training Plan; monitor and evaluate Institution’s Training Plan.

The Public Service Management and Employment Policy (PSMEP) of 1999 (revised in 2008) states that “all Public Service organizations shall develop a training programme, based on the skills requirements as identified in their human resource plans. The programme shall be funded from their budget allocation, and shall aim to meet both the organization’s capacity requirements and individual employees’ personal and career development goals, within the resources available”. 
Process of Training in Tanzania

According to the Public Service Training Policy (2013) the following steps and procedures are to be followed:

(i) Training Needs Assessment (TNA)

At this step MEM and its stakeholders are required to establish a required competence profile for each through an evaluation of the Natural gas sub sector and the general responsibilities of the unit. This can be compared with the actual competence in the extractive industry which has been assessed through a combination interviews with the management and staff and the use of competence mapping forms and the resulting gaps identified. Training need of each staff member shall be assessed against their job description, and in more immediate terms, the goals and plans of activities to be implemented during the following year. Thus, logically speaking, under the present human Capital management system of the public service in Tanzania, TNA has to be implemented at the time of ‘goal setting’ under the OPRAS system.

Under the OPRAS, the supervisor and the staff have to jointly agree on the goals, the necessary actions as well as required resources to achieve those goals at the beginning of each financial year. If some of the actions appear challenging to implement within the existing knowledge and skills of the staff member at the time of the goal-setting, they become his/her “training needs”. In other words TNA shall be conducted in conjunction with OPRAS goal-setting.

(ii) Planning and Budgeting for Training

In this stage, the organization sets objectives, identify existing resources and implementation capabilities to achieve the objectives over the specific period of time. The purpose of planning is to facilitate implementation in an orderly manner to achieve the set objective, to enable assessment of the resources available in order to overcome obstacles as well as to facilitate identification of the community needs.

On the other hand, in budgeting for the training, the organization will have to allocate scarce resources to planned training activities. Budgeting facilitates the implementation of the planned training activities.
(iii) Implementation

In implementation, the Ministry mobilizes and allocates resources for training in the subsector. In addition to that, the ministry will have to solicit different development partners to support capacity building in the subsector.

(iv) Monitoring and Evaluation of Planned and Implemented activities on Human Capital Development

Monitoring will be used as a continuous feedback system involving the overseeing of periodic review of each activity at every level of implementation of the plans. Monitoring system for plans and implementation of the human Capital Development will focus on meeting the information needs of different key training stakeholders. The system will ensure that there are performance indicators and targets to indicate progress of the implementation of the HCD plans. Nevertheless, the system will indicate a framework that ensures timely collection, analysis and sharing of training information.

On the other hand, Evaluation of the plans and implementation of the HCD shall be undertaken to justify the returns on investment and achievements of the desired objectives. This will measure relevance, efficiency and effectiveness of training function in the natural gas sub-sector and identify challenges occurring and provides possible solutions. Also, the Evaluation System will be designed to define purpose, types and frequencies of evaluation. Similarly, it will set systems for sharing evaluation findings with stakeholders with the aim of improving the implementation of the HCD plans. Figure 2.1 shows human capital development process in oil and natural gas industry.
2.9 Trend of HCD in the oil and natural gas industry in Tanzania

The rapid growth of natural gas exploitation invites the pertinent question as to whether the economy of Tanzania is prepared in terms of the human capacities needed to enable and facilitate the development of a globally competitive oil and natural gas industry with its necessary services and linked downstream industries.

The trend for Human Capital Development in natural gas sub-sector in the country can be seen through two main aspects. These include: first, the trend of required and available semi-skilled and skilled staff in the natural gas sub-sector in the country. Second, the trend of required and available skilled staff in the government institutions which are responsible for regulating and overseeing natural gas sub-sector in the country.

However MEM has no data showing the trends of human capital for engaging in the oil and natural gas industry in both perspectives.
CHAPTER THREE

HUMAN CAPITAL DEVELOPMENT FOR GOVERNMENT INSTITUTIONS

3.1 Introduction

This chapter presents findings of the audit which addresses the audit objectives outlined in chapter one. In particular the chapter presents findings relating to human capital development for the government institutions.

The findings cover three main focus areas;
1. Set-up human capital development strategies and plans,
2. Implementation of set plans and strategies for human capital development, and
3. Monitoring, evaluation and performance reporting on implementation of set plans and strategies for human capital development.

For effective management of oil and natural gas resources which can ensure maximum benefits for the country, the government through MEM has responsibility to make sure that skilled personnel with required qualities are available in the government institutions which have roles to play in the oil and natural gas value chain. Therefore, the following are findings noted during this audit:

3.2 Setting-up of human capital development strategies and plans

3.2.1 The extent to which skills gap were identified

According to International Personnel Management Association guidelines (IPMA), agencies should develop strategies tailored to address gaps and human capital conditions in critical skills and competencies that need attention.

The review of MEM Human Capital Development Programme in Oil and Natural Gas Sub-sector (2012) showed that, MEM conducted the skills gap analysis in which several skills were identified\(^8\) where by a total

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\(^8\) Petroleum Engineers; Reservoirs Engineers; Production Engineers; Civil Engineers; Utility Engineers; Gas Engineers; Natural Gas Technologists; Mechanical Engineers; Process/chemical Engineers; Petroleum Geochemists; Petroleum Geologists; Statisticians and Database Management; Oil and Gas Economists; Oil and Gas Accounting; Oil and Gas Auditing; Oil and Gas Contract Negotiations; and Environmental Officers.
gap for bachelor and master level was 329 personnel, for short courses 76 personnel and trainers 300 personnel. However the identified gap did not address some crucial professions required in the natural gas value chain. For example, operational engineers (plant operation engineer), insulators (incl. cryogenic and operators), boilermaker and scaffolders as some of the critical professions required in the natural gas value chain were not identified in the Capacity Building Marshal Plan (2012-2016).

Further, the gap identified did not indicate clearly which skills and of what quantity are needed at each level of oil and natural gas value chain. Also it does not state clearly whether the gap reflects the needs of the government institutions and that of the industry as a whole. Furthermore the skills gap identified did not show clearly the needs of each government institutions. This led to failure to set priorities and to conduct monitoring and evaluation of the set plans.

Moreover, the skill gap identified is not realistic in the sense that the gap was derived from miscalculated needs and lack of involvement of key stakeholders such as TPDC, MoEVT and IOCs. For instance, Table 3.1 shows the extracts from the capacity building marshal plan (2012-2016) which indicated mis-calculated staff requirements.

<table>
<thead>
<tr>
<th>PROFESSIONAL/FIELD</th>
<th>ACTUAL</th>
<th>REQUIREMENT</th>
<th>MISCALCULATED DEFICIT</th>
<th>% OF DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Engineer</td>
<td>5</td>
<td>10</td>
<td>40</td>
<td>700</td>
</tr>
<tr>
<td>Process/chemical Engineer</td>
<td>2</td>
<td>10</td>
<td>25</td>
<td>213</td>
</tr>
<tr>
<td>Petroleum Geologist</td>
<td>22</td>
<td>15</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>Petroleum Geochemist</td>
<td>0</td>
<td>10</td>
<td>5</td>
<td>(50)</td>
</tr>
<tr>
<td>Statisticians and Database Management</td>
<td>4</td>
<td>20</td>
<td>15</td>
<td>(6)</td>
</tr>
</tbody>
</table>

Source: Human Capital Development Programme in Oil and Natural Gas Sub-sector (2012)

From Table 3.1, it was observed that there is a huge miscalculation of the required number of various professions. For example, there were 5 mechanical engineers where the requirement was 10, of which the deficit was supposed to be 5 but MEM stated the deficit to be 40 which
is over-stated by 700 percent. The same situation was observed as well in process/chemical engineer. On the other hand, there were no petroleum geo-chemist and that the identified requirement is 10, of which the deficit was supposed to be 10 but MEM stated the deficit to be 5 which is understated by 50 percent. The same situation was observed in statisticians and data base management.

Analysis to establish the reasons behind this huge overstating and understating of the number of staff required in each field indicated that the prepared Capacity Building Marshal Plan for the period of 2012 to 2016 had a number of errors which was later on admitted by MEM. However, the said document has been used by MEM since 2012 to date without addressing those errors due to lack of review of their plans and strategies.

3.2.2 Involvement of key stakeholders and usage of their inputs in developing HCD plans and strategies

According to International Personnel Management Association Guidelines (IPMA), agencies should involve top management, employees, and other stakeholders in developing, communicating and implementing the strategic workforce plan. Similarly, principle (iii) of human capital development programme in oil and natural gas sub-sector states that, the programme is multi-stakeholder process where different players should be involved in different interventions.

Through the interviews held with the management of MEM, TPDC, and MoEVT it was noted that the needs of key stakeholders like TPDC, MoEVT, NEMC and VETA were not taken into account in the development of Capacity Building Marshal Plan (2012-2016). For instance, the interviewed officials from TPDC and MoEVT declared that they were not engaged either by providing their needs or discussing issues relating HCD during the preparation of Capacity Building Marshal Plan (2012-2016). This is a challenge resulting from lack of effective coordination mechanisms for HCD in the oil and natural gas industry.

Furthermore, the review of Capacity Building Marshal Plan (2012-2016) indicated that there were no reservoir engineers when the plan was developed but at that time there were four reservoir engineers at TPDC. This entails that MEM prepared marshal plan which contradicts with the actual situation and needs at that time and that is mainly due the failure to involve key stakeholders when developing workforce plan. The main reason for non-involvement of the key stakeholders
was caused by lack of coordination between MEM and the stakeholders as there was neither coordinating unit nor person for coordinating HCD activities.

Consequently, it was noted that the Human Capital Development plans and strategies developed by MEM and which are under implementation do not reflect the actual needs of the industry in general.

3.2.3 Consideration of identified skills gap in developed HCD strategies and plans

According to Public Services Training Policy (2013), the government through MEM is required to ensure that training programmes respond to the needs of different levels of public servants and contribute to the succession needs. On the other hand principle (ii) of the Human Capital Development Programme in Oil and Natural Gas Sub-sector states that the programme is designed to meet current skills gap in the oil and gas industry.

The review of Human Capital Development Programme in Oil and Natural Gas Sub-sector (2012) revealed that although MEM considered to use skills gap identified in developing the programme together with the implementation of the ESCBP the identified skills gap were not realistic as did not reflect the real needs in the various government institutions.

Consequently, the views from the interviews with officials from MEM, TPDC, and MoEVT suggested that there is a risk of not achieving the objectives of HCDP and ESCBP. Weak identification of those skills gap, the implementation of program and projects for bridging that skills gap is wrongly diverted and the government is running into a risk of lacking relevant skills to oversee, enforce and monitor the natural gas sub-sector in the country.

3.3 Implementation of the human capital development strategies and plans

3.3.1 Implementation status

It is a policy statement of the National Natural Gas Policy, 2013 to develop capabilities of the Tanzanians to participate strategically in the natural gas value chain through inter alia skills development, transfer of technology and applied research.
However, during the interviews held with the managements of MEM, MoEVT and TPDC together with the review of MEM’s and TPDC’s Training Programmes as well as VETA graduates statistics as noted in table 3.2 and in table 3.3, it was observed that the implementation of the HCD plans in MEM, TPDC, MoEVT, NEMC and VETA is lagging behind as to date.

**Delays in the implementation of Training Programs in terms of number of staff**

Table 3.2 provides the details on the extent to which the Training programs implemented by different government institutions are lagging behind.

**Table 3.2: Delays in the implementation of Training Programs from 2012/13 to 2015/16**

<table>
<thead>
<tr>
<th>Government Institution</th>
<th>Number of Officials to be trained (Set Target)</th>
<th>Actual Number of Officials trained (Achievement)</th>
<th>Present Gap</th>
<th>%age achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM⁹</td>
<td>24</td>
<td>11</td>
<td>13</td>
<td>46</td>
</tr>
<tr>
<td>TPDC¹⁰</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>MoEVT¹¹</td>
<td>300</td>
<td>0</td>
<td>300</td>
<td>0</td>
</tr>
</tbody>
</table>

*Source: Training Programs and Training Program Reports (MEM & TPDC) and HCDP*

Table 3.2 shows that MEM delayed implementation of training programs by 54 percent as at 2015. On the other hand TPDC delayed in implementation of training programme by 50 percent. However TPDC official failed to provide data for the year 2014/15 in order to show the trend clearly. For the case of MoEVT nothing has been done in relation to training of 300 trainers.

The main reason for varying performance among those institutions is the inadequate allocation of funds which in turn was due to the fact that MEM did not have clear sources of funds. While MEM as the central coordinator of the program was able to allocate some funds for implementing activities under their management but it was not the case for other implementing institutions like MoEVT.

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⁹ Training programme for the period 2012/13-2014/15
¹⁰ This information covers only financial year 2013/2014. TPDC did not provide data relating to other financial years due to weak documentation system.
¹¹ These include Trainers from various Higher Learning Institutions and VETA
Delays in the implementation of Training Programs in terms of required skills

Table 3.3 provides details on the extent to which the Training programs implemented by different government institutions are lagging behind.

Table 3.3: Delays in the implementation of Training Programs from 2012/13-2015/16

<table>
<thead>
<tr>
<th>Government Institution</th>
<th>Number of Professional skills identified (Set Target)</th>
<th>Actual Number of Professional skills received (Achievement)</th>
<th>Present Gap</th>
<th>%age achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM/TPDC(^\text{12})</td>
<td>344</td>
<td>46</td>
<td>298</td>
<td>13</td>
</tr>
<tr>
<td>VETA(^\text{13})</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>NEMC(^\text{14})</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>OSHA(^\text{15})</td>
<td>31</td>
<td>0</td>
<td>31</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Training Programs and Training Program Reports (MEM & TPDC) and HCDP

Table 3.3 shows that all government implementing institutions failed to implement the training programs as planned. While MEM and TPDC were able to cover almost one-sixth of the planned number of professional skills to be developed, other entities such as VETA, NEMC and OSHA failed to cover any of the identified professional skills during the period.

The main reason for varying performance among those institutions is the inadequate allocation of funds. While MEM and TPDC as the central coordinators of the program were able to allocate some funds for implementing activities under their management but it was not the case for other implementing institutions such as VETA, NEMC and OSHA.

Three main reasons were noted during the audit as the main contributors to the insufficient implementation of the HCD plans and strategies. These include: insufficient coordination among key stakeholders, lack of progress assessment and non-prioritisation of training interventions. These are detailed below:

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\(^{12}\) From Human Capital Development Programme in Oil and Natural Gas Sub-sector & Training programme reports.

\(^{13}\) From Training Needs Assessment presented for ESCBP

\(^{14}\) From Training Needs Assessment presented for ESCBP

\(^{15}\) From Training Needs Assessment presented for ESCBP
Insufficient coordination among key stakeholders: During the interviews held with MEM and TPDC officials, it was revealed that there was no coordination between MEM and the stakeholders in the planning and implementation of the HCD plans in oil and natural gas industry. Lack of progress assessment: During the interviews held with the management of MEM together with the review of the HCDP, the audit team noted that MEM did not develop any tool for assessing the progress of the programs on HCD. Nevertheless, despite the fact that the HCD programme is approaching to an end, MEM has never conducted any assessment of the progress of the program.

Non-prioritisation of training interventions: in the HCDP the Ministry identified several skills which needed immediate intervention. However, upon the review of the training program reports together with the ESCBP implementation quarterly report, it was observed that the identified skills were not prioritized during the implementation instead other skills which were not in the plan were implemented.

Implementation by various key stakeholders

Implementation by Lead Ministry

According to principle (ii) governing MEM human capital development programme in oil and natural gas sub-sector, the programme is designed to meet current skills gap in the oil and gas industry.

However, the review of Capacity Building Marshal Plan (2012-2016) and extract of training programme reports indicated that, the human capital development programme in oil and natural gas sub-sector is not implemented in accordance to the set plans.

For example, having reviewed the training programme reports, it was observed that, many beneficiaries attended courses which are not identified in the plans as shown in table 3.4. As a result some of the crucial professionals in the industry such as reservoir engineering and utility engineers have been marginalised.
Table 3.4: Type of the Short-term Courses organized and not in the plan and the number of staff attended

<table>
<thead>
<tr>
<th>Financial Year</th>
<th>Short-term course organized but not in the plans</th>
<th>Number of Staff attended the course</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013/14</td>
<td>Short course in oil and gas</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Investing in oil and gas</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Gas and oil training</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Internship on gas and oil value chain</td>
<td>21</td>
</tr>
<tr>
<td>2014/15</td>
<td>Strategic environment assessment in oil and gas</td>
<td>9</td>
</tr>
<tr>
<td>2015/16</td>
<td>Natural gas utilization</td>
<td>19</td>
</tr>
</tbody>
</table>

Source: Implementation Status of the Training Programs from MEM and TPDC

From the Table 3.4, it is the observation of the audit team that MEM implemented short courses not identified in the plan while leaving the identified ones, therefore the training programs failed to address the HCD program in oil and natural gas sub-sector directly. There is a risk that the identified skills in short courses were not required to be given immediate intervention.

On the other hand the following Short-term courses were identified in the plans as shown in the table 3.5 but were not attended by the total number of planned beneficiaries.

Table 3.5: Type of the Short-term Courses organized and in the plan and the number of staff attended for the period 2012 - 2016

<table>
<thead>
<tr>
<th>Number of Short-term course planned</th>
<th>Number of Short-term course implemented</th>
<th>Number of Staff planned to attend</th>
<th>Actual Number of Staff attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSA Monitoring and Auditing</td>
<td>-</td>
<td>8</td>
<td>Nil</td>
</tr>
<tr>
<td>Basin Evaluation and Modeling</td>
<td>-</td>
<td>6</td>
<td>Nil</td>
</tr>
<tr>
<td>Seismic Interpretation and Seismo-stratigraphy</td>
<td>-</td>
<td>6</td>
<td>Nil</td>
</tr>
<tr>
<td>Petroleum resource management</td>
<td>-</td>
<td>4</td>
<td>Nil</td>
</tr>
<tr>
<td>Seismic acquisition and processing</td>
<td>-</td>
<td>6</td>
<td>Nil</td>
</tr>
<tr>
<td>Reservoir Modeling</td>
<td>-</td>
<td>6</td>
<td>Nil</td>
</tr>
<tr>
<td>Data Management</td>
<td>-</td>
<td>4</td>
<td>Nil</td>
</tr>
</tbody>
</table>
Table 3.5 shows different short-term trainings/courses which MEM planned to send various staff to attend due to the fact that those skills were identified as crucial. But the analysis indicated in the table shows that none of the staff were able to attend the said courses.

This shows that despite the fact that MEM identified them as crucial skills needed during skills gap analysis it did not prioritize them during the implementation, this was noted during review of the training report. Furthermore, this implies that MEM’s focus changed during the implementation.

On the other hand, comparing the level of implementation of unplanned short term course (Table 3.4) and planned ones (Table 3.5) indicate that MEM did not prioritize the identified short-term trainings/course during the implementation of the training and capacity building program. MEM mostly diverted its efforts on training courses which were not originally identified.

Through review of training reports and Human Capital Development Program in Oil and Gas Subsector (2012) the audit team noted that this was due to: first, the diversion was caused by change of priorities or focus within MEM and TPDC. Second, it was due to inadequate skills gap analysis previously conducted by MEM which failed to capture the actual needs as far as oil and natural gas industry is concerned.

Further, it was noted that this poses the risk of having people trained in skills not needed while leaving the required skills not acquired.
Also, it might result into having staff attended those training interventions unprepared.

Furthermore, MEM did not meet the targets in HCDP. For instance, long-term courses (Degree and Masters) MEM attained only 13 percent of addressing the skills gap identified in staffing requirements assessment. It only managed to train 46 personnel out of 344 (13 percent) and failed to train some professionals like reservoir engineer and utility engineers. In general it failed to implement training programme according to the plan by more than 80 percent.

Moreover, the reviewed Training Programme Implementation Reports and the Quarterly Report for the implementation of the ESCBP showed that, MEM focused much on short-term course trainings whereby they went beyond the plan for about 165.4 percent.

In addition to that, there is no training of the trainers offered as identified in the medium-term plan which is accomplished so far whilst at the technical level which is needed more in the sector compared to professional level only 6 percent was implemented.

**Reasons for inadequate implementation of HCD Plans**

The analysis was made by the audit team to establish reasons for inadequate implementation of the Human Capital Development Plans within the government institutions such as MEM, TPDC, MoEVT and NEMC. The following were the identified reasons as depicted through the interviews with concerned officials as well as reviewed documents on the same area:

*First, insufficient periodical monitoring and evaluation of implementation of the HCD plans.* The audit team noted that MEM had no comprehensive monitoring and evaluation mechanism for ensuring that this area is adequately monitored and evaluated during the whole period of its existence in order to gauge performance as well as identifying challenges and areas for further improvements.

The interviews held with officials from MEM indicated that MEM had not set any performance indicators which would be used to assess and determine the level of performance and through that allow the HCD programs and projects to improve and learn through experience.

On the other hand, it was also noted that MEM did not prepare substantial progress report due to lack of good performance indicators.
that could allow reporting substance. The interviewed officials from MEM mentioned that they were having difficulties of understanding whether other implementing ministries were reaching the set objective or not. They indicated that was mainly due to weak monitoring and evaluation of planned activities in HCD Plans.

Second, lack of focus on the implementation of the HCD Plans. It was noted during the audit that MEM lost focus by starting to implement trainings which were not originally planned. This was noted through the reviewed implementation reports which showed that some training plans were diverted to the new ones\textsuperscript{16}.

The main reason given by MEM officials for that diversion is that the HCD plan was not comprehensive enough when it was prepared. It was lacking a couple of important training programs such as geodesy and survey engineering, natural gas utilization courses, and investing in oil and natural gas courses that necessitated the need for them to include new courses.

But, further interviews with officials from other government institutions such as TPDC which were the beneficiaries of this program indicated that the program lost focus when MEM failed to comprehensively conduct needs assessment of all public institutions which were earmarked for this particular HCD program. As a result the plans were having a lot of gaps and during the implementation it was when they learnt that there is a need to add new courses. The main affected part was Short-term courses which resulted into having unplanned short courses.

Third, risk of not getting fund on time. According to the Human Capital Development Programme in Oil and Natural Gas Subsector (2012), MEM was expecting to receive funds from development partners and voluntary contributions from multinational corporations for the implementation of the HCD programme.

However, through the interview with MEM management, the audit team noted the contradictions regarding the HCD program document as MEM management revealed that the document was unofficial for lacking endorsement by the management while on the other hand,

\textsuperscript{16} Short course in oil and gas; Investing in oil and gas; Gas and oil training; Internship on gas and oil value chain; Strategic environment assessment in oil and gas; and Natural gas utilization
they said that the document was an ad hoc plan which they used to get fund from the World Bank and the Development partners.

Further, MEM has failed to quantify the cost of the received scholarships from the development partners.

Generally, it has been the observation of the Audit team that MEM developed plans and strategies for HCD in oil and natural gas industry without being certain on sources of fund.

Consequently, inadequate implementation of set plans and strategies for human capital development in oil and natural gas industry resulted into the failure of MEM and its institutional partners within the government to lack skills such as utility engineering and reservoir engineering and as a result these identified skills gap still exist despite of their importance for the efficient and effective management of oil and natural gas industry.

*Implementation by Regulatory and Oversight Institutions*

The implementation of trainings of officials from the regulatory and oversight institution was done through HCDP and ESCBP. The following are the findings noted in this particular area;

**Human capital development programme in oil and natural gas subsector**

According to the short-term plan of this programme, needs of various key stakeholders including TPDC, NEMC, EWURA, OSHA, TRA, CAG and MoF were identified. A total of 76 personnel were identified to attend various short-courses.

However, during the review of the Human Capital Development Plan prepared by MEM it was observed that, the plan did not specify the number of personnel to be trained specifically from each identified government institutions. For example, in the field of basin evaluation and modeling 4 people from TPDC/NEMC/CAG hence difficult to know who is supposed to come from where. This would pose difficulties to conduct monitoring and evaluation of the implementation status of the plans.

Further, needs identified for some stakeholders were not covered in the Marshal Plan. Through the review of the Capacity Building Marshal Plan (2012-2016) and extracts of the training program reports, the
audit team noted that the needs identified for the said stakeholders were not covered at all.

Table 3.6 shows the needs identified for the main stakeholders namely, TPDC, NEMC, EWURA, OSHA, TRA and MoF and the needs covered and not covered in the Marshal Plan.

Table 3.6 shows that MEM identified several needs of the key stakeholders but none of them have been implemented.

Further analysis indicated that the main reasons for non-implementation of the identified needs were:

- First, lack of involvement of the stakeholders in the planning and needs identification; and
- Second, lack of prioritization of the stakeholders needs in the sector during the implementation. Hence, when funds received for the capacity building priority was given to the staff from MEM and TPDC while other implementing institutions were not prioritized. Similarly, insufficient coordination between stakeholders and MEM contributed to the inadequate implementation of training interventions geared towards addressing needs of government institutions.

On the other hand, interviews held with officials from institutions which were supposed to prepare their needs indicated that lack of good coordination between MEM and stakeholders identified in the programme to a large extent contributed to some of the most critical needs not to be covered.

Table 3.6: Needs identified for the main stakeholders in the Marshal Plan

<table>
<thead>
<tr>
<th>Institution</th>
<th>Identified skills gap needs(Short courses)</th>
<th>Identified skills gap needs (covered)</th>
<th>%age covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEMC</td>
<td>25</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TPDC/NEMC/CAG</td>
<td>48</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MoF</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>AG’s Office/TRA/EWURA</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Auditors’ analysis, Needs Assessment Reports and Capacity Building Marshal Plan
They indicated that despite the known fact that they were ought to prioritize but the final decision of what could be included or not was supposed to be inclusive. That would allow them to decide on what is crucial for their nature of work as far as management of oil and natural gas industry is concerned.

As a result, due to failure to assist these institutions to address their skills gap which was critical for enhancing their performance in the oil and natural gas industry there is a risk of inability among government institutions to regulate and monitor the industry due to lack of competent personnel with required skills.

**Energy Sector Capacity Building Project**

According to ESCBP project appraisal document, staffs of gas sub-sector management institutions (MEM, EWURA, TPDC, NEMC and OSHA) should be trained to manage, regulate and monitor gas sector.

However, upon review of the ESCBP Project Appraisal Document (2013) and quarterly report of June 2014, the audit team noted that, MEM did not follow the targets due to the lack of prioritization in implementing the project. This is the fact which would expose beneficiary agencies not to benefit from the project accordingly. For example, in the first year of the project implementation no staff from EWURA was trained under this project despite the fact that the plan targeted a total of 12 persons from EWURA to attend the training.

Furthermore, MEM management did not provide to the audit team budget on trainings for financial year 2014/2015 and actual expenditure incurred for those trainings. In addition to that, through the interviews with MEM management and review of project appraisal document together with training budget of 2015/2016 it revealed that more fund were allocated in training activities than originally planned. For example according to project appraisal document training activities for the whole project of five years cost USD 2,850,000.00 However, the cost of training budget for financial 2015/2016 is USD 7,568,669.00 which is 166 percent higher than total fund of USD 2,850,000.00 planned for training activities under the whole project. This would affect the achievement of the project objectives especially on implementation of other activities.

On the other hand, the ESCBP project appraisal document showed that, the beneficiaries of the project attended courses which were not identified in their needs assessments. This leads to misuse of financial
resources. Table 3.8 shows set targets in each implementing agencies and implementation level for the first year of the project (i.e. 2014/15).

Table 3.7: Analysis of targets and implementation of the ESCBP for the 2014/15

<table>
<thead>
<tr>
<th>Institution</th>
<th>Targeted number of officials to be trained</th>
<th>Actual number of officials trained</th>
<th>Deviation</th>
<th>%age Trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM</td>
<td>5</td>
<td>45</td>
<td>40</td>
<td>900</td>
</tr>
<tr>
<td>TPDC</td>
<td>0</td>
<td>16</td>
<td>16</td>
<td>-</td>
</tr>
<tr>
<td>NEMC</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>OSHA</td>
<td>10</td>
<td>6</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>EWURA</td>
<td>12</td>
<td>0</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>VETA</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>-</td>
</tr>
</tbody>
</table>

*Source: Auditors’ analysis and ESCBP implementation quarterly report of June, 2014*

Table 3.2 demonstrates that implementation of ESCBP was greatly varying among government agencies. While MEM was able to training nine-times of the original targeted number of staff planned to be trained and attend short-term courses, other agencies trained none or their performance is less than the targeted number.

The main reasons for varying implementation level among implementing agencies were:

- **First, none adherence to the plan.** It was noted that despite the fact that needs were identified and intervention plan was developed but to a great extent that plan was not adhered to and new priorities were accommodated without consulting other stakeholders. In turn, the interventions aimed for those stakeholders were either not implemented or partially implemented in order to accommodate the newly introduced training interventions;

- **Second, lack of coordination between MEM and key stakeholder.** Due to weak coordination of the activities performed under ESCBP, stakeholders were not able to track or make follow-up on the implementation of their activities and hence, MEM made all the decision without consulting them; and

- **Third, lack of assessment on the implementation of the project.** Failure to periodically assess the performance of the program contributed to the noted weaknesses since no one was able to alert the management of MEM regarding the program performance.
• Fourth, MEM did not prepare budget for the first year after commencement of the project regardless project appraisal document identified targets for each beneficiary agent. MEM management organized trainings without budget under financial year 2014/2015. Set target could be used as basis for developing budgets which are fundamental tools for monitoring the implementation of the project.

3.3.2 Assessment of the implementation of set strategies and plans for HCD

The ESCBP operating guidelines require the management to carry out at least bi-annual reviews on the implementation of the projects/programmes for the purpose of assessing the progress of the programme and suggest appropriate actions.

However, through the interviews held with MEM’s officials it was noted that MEM did not assess the implementation of HCDP. Moreover, there is no performance reports produced that addresses the progress of the programme. This was mainly caused by lack of monitoring and evaluation guidelines regardless the fact that principle (v) of the ESCBP programme calls for M&E to be conducted for the purpose of understanding areas for further improvements.

It was further noted that lack of assessments led MEM to be unable to know the extent to which plans and strategies for human capital development in oil and natural gas industry have been implemented. As a result it was unable to make improvement measures so as to meet the set targets or to adjust the same in case the existing measures were not appropriate.

3.4 Monitoring, evaluation and performance reporting mechanisms of HCD activities

3.4.1 Set-up mechanisms for monitoring, evaluation and performance reporting

According to the National Natural Gas Policy (2013) the Natural Gas Policy Monitoring and Evaluation Plan shall be developed through a consultative process as part of the Policy Implementation Strategy, and outline milestones and key performance indicators. Specifically, the Plan shall be a tool to manage the process of monitoring, evaluating and reporting progress towards the objectives.
Through interviews held with officials from MEM, it was noted that MEM has not developed plan for monitoring and evaluating the human capital development programs in the oil and natural gas sub-sector.

Further interviews with Ministry’s officials indicated that this was mainly attributed to the fact that the Ministry gave priority to other activities such as finalizing the preparation of gas utilization master plan and did not consider the development of this important tool for M&E the implementation of the National Natural Gas Policy with a particular focus on Human Capital Development.

Then it was noted that, in turn this area of Human Capital Development is managed and operated without having a firm mechanism for monitoring and tracing the level of implementation, and through that assess the impact in terms of performance of government institutions in managing and discharging their mandates as far as oil and natural gas sub-sector is concerned.

On the other hand, it was noted that there were no performance reports produced showing the level of implementation of HCD plans and strategies in oil and natural gas industry.

3.4.2 The extent to which performance indicators align with the objectives of HCD plans

Principle (V) governing MEM Human Capital Development Programme in Oil and Natural Gas Sub-sector state that monitoring mechanism should be set to measure the achievement of the programme.

However, through the review of the Human Capital Development Programme in Oil and Natural Gas Sub sector it was noted that MEM did not set monitoring mechanisms for the implementation of HCDP in oil and natural gas industry; in turn no performance indicator was set to measure the achievement of the set targets. This led the Ministry to be less informed and unaware about the achievements made so far and run into the risk of failure to meet programme’s set objectives and targets.

3.4.3 Conducting monitoring, evaluation and performance reporting

Regarding HCDP MEM did not set M&E mechanisms for implementation of the programme regardless the National Natural Gas Policy (2013) together with principle (v) governing the programme, MEM did not conduct M&E for the implementation of the programme. For instance, MEM did not produce any performance report for the implementation
of the programme. Further MEM management did not meet with stakeholders identified in the programme to discuss the progress of the programme.

However, through review of minutes from steering committee meeting it was noted that MEM has not adhered to the requirement since only one steering committee out of three was held so far and it agreed to formulate project monitoring teams, finalize project operating guidelines and agreement as well as submitting training needs by members. The biannual review could have increased the effectiveness of the implementation of ESCBP due to assessment of progress and action to be taken after assessment. These monitoring and evaluation plans may be appropriate and could work effectively when only implemented as per plan.

In respect to ESCBP it was agreed to convene a meeting monthly for the first year as stipulated in the project appraisal document, although the agreement had never been implemented to date. The main reason given by MEM-project management team is that there were no activities which call for those meetings. But the audit team noted that EWURA staff did not attend any course under this project as planned the fact which would lead them to call for a meeting. Further, more funds were allocated to training activities than it was supposed to be something which would necessitate the calling for a meeting.

Failure to conduct Steering committee meeting impede to achieve programme objectives and set targets. This poses risk of little participation of the Tanzanians in the oil and gas value chain. Further, government institutions would lack competent personnel with required skills that can manage the industry effectively and efficiently.

3.4.4 Frequency of reporting/meeting with stakeholders

Principle (iii) governing Human Capital Development Programme in Oil and Natural Gas Sub-sector (2012) state that the programme is a multi-stakeholder process where different players are involved in different interventions. But MEM did not state clearly how often they should meet with stakeholders. By referring ESCBP as best practice they are supposed to meet with stakeholders at least twice a year to discuss progress of the programme.

However, through interviews with MEM’s officials it was noted that MEM and other key stakeholders such as NEMC, TPDC, OSHA and
EWURA do not meet frequently to discuss critical issues in respect to implementation of Human Capital Development Programme in Oil and Natural Gas Sub-sector.

On the other hands no implementation reports are prepared and issued by the Ministry and disseminated to the stakeholders to inform them about the kind of efforts and progress made in bridging the identified skills gaps. This was caused by lack of proper coordination mechanisms among stakeholders.

Consequently, there is no clear status to the stakeholders on the implementation of the programme.

With regard to the ESCBP appraisal document, steering committee meeting shall be held monthly in the first year of implementation and thereafter quarterly.

However through reviewing of minutes from steering committee meeting and interviews with the project managers at MEM and TPDC they declared that the steering committee did not meet frequently as per requirement stipulated in the project appraisal document. Until September, 2015 steering committee met only once out twelve meetings they should have for a year. This was caused by lack of fully time project managers who are fully dedicated to the activities of the projects including convening steering committee meetings. Consequently, the set targets are not met accordingly.
CHAPTER FOUR

HUMAN CAPITAL DEVELOPMENT FOR THE OIL AND NATURAL GAS INDUSTRY IN TANZANIA

4.1 Introduction

This chapter presents findings of the audit which addresses the audit objectives outlined in chapter one. The chapter presents findings relating to human capital development for the oil and natural gas industry in general.

The findings cover three main focus areas;
1. Set-up human capital development strategies and plans,
2. Implementation of set plans and strategies for human capital development, and
3. Monitoring, evaluation and performance reporting on implementation of set plans and strategies for human capital development.

In the oil and natural gas value chain various stakeholders are involved at different levels. In Tanzania government institutions play regulatory functions while operational functions are vested to oil companies.

For the country to realize maximum benefits from oil and natural gas resources, nationals’ participation in the oil and natural gas value chain is of significant importance. This can be achieved through direct employment in the IOCs and provision of services in the industry. Hence, the government has to build capacity of the Tanzanians so that they can grasp the opportunities offered by the industry.

The following are the findings identified during the audit:

4.2 Set-up human capital development strategies and plans

This section covers three areas, first existing plans and strategies for HCD in oil and natural gas, second identification of skills gap and its inclusion in HCD plans and third involvement of stakeholders in developing HCD plans.
4.2.1 Availability of plans and strategies for HCD in oil and natural gas

Through the interviews with officials from MEM and MoEVT, it was noted that the Ministry of Energy and Minerals is not having a comprehensive human capital development plans specifically for oil and gas sub-sector in the country.

The same interviews noted that MEM has got a number of interventions on HCD in oil and gas industry such as HCDP and ESCBP which are not properly coordinated in terms of establishing and projecting the actual human capital demand in the growing oil and natural gas industry in the country. Implementation of those interventions involves several stakeholders mainly the Higher Learning Institutions.

On the other hand, it was noted that MEM does not have a clear picture of what actually the industry needs in terms of human resources in all fields of oil and natural gas industry and through that set clear plans and strategies for its implementation.

Therefore, as a result Higher Learning institutions such as University of Dar es salaam and University of Dodoma responding to the implementation of the national natural gas policy by offering programmes relating to oil and natural gas without having a good coordination with the Ministry as well as having a common target in terms of the number of students to be trained, field of study and also the kind of experience and expertise they are ought to acquire in order to fit well in the labour market.

In turn, it was noted during the same interviews that lack of national comprehensive plan for preparing Tanzanians to be employed and/or employ themselves either directly or indirectly have made it difficult to come up with workable strategies for addressing this challenge. This has resulted into having disjointed efforts which are not adequately coordinated.

The following were cited by the audit team as the main reasons for not having a common comprehensive plan for HCD in the country: First, there was lack of coordination between key stakeholders and second, there was non-involvement of key stakeholders in development of HCD strategies and plans.
4.2.2 Identified skills gap and its inclusion in HCD Plans

The audit team noted that skills gap has been identified by different institutions in the country without considering the whole chain of activities performance in the oil and natural gas industry. The identification has been made separately by those institutions such as the Ministry of Energy, MoEVT through Higher Learning Institutions such as UDSM and UDOM and vocational training institution such as VETA.

However, it was noted that MEM as the responsible ministry and overseer of the oil and natural gas industry did not communicate the identified skills gap together with the needs of the IOCs to the Higher Learning Institutions and VETA through the MoEVT so that the gap could be considered in the development of curriculum based on what the markets need and through that prepare Tanzanians to take part in the oil and natural gas sub-sector.

Table 4.1 shows the relationship between the professional skills needed for the oil and natural gas industry and the type of the courses or training programs offered by the Higher Learning Institutions.

Table 4.1: Relationship between the professional skills needed and training programs offered

<table>
<thead>
<tr>
<th>Skills-gap identified</th>
<th>Training programs offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Engineers; Reservoirs Engineers; Production Engineers; Civil Engineers; Utility Engineers; Gas Engineers; Natural Gas Technologists; Mechanical Engineers; Process/chemical Engineers; Petroleum Geochemists; Petroleum Geologists; Statisticians and Database Management; Oil and Gas Economists; Oil and Gas Accounting; Oil and Gas Auditing; Oil and Gas Contract Negotiations; and Environmental Officers.</td>
<td>Bachelor of Petroleum Engineering (UDOM &amp; UDSM); Bachelor of Petroleum Geology (UDSM); Bachelor of Petroleum Chemistry (UDSM); and Master of Finance and Accounting in oil and gas (UDSM)</td>
</tr>
</tbody>
</table>

*Source: Human Capital Development in Oil and Natural Gas Sub-sector, UDSM and UDOM*
Table 4.2: Professionals required in the Oil and Gas industry

<table>
<thead>
<tr>
<th>Professional Required</th>
<th>Exploration</th>
<th>Production</th>
<th>Transportation</th>
<th>Refining</th>
<th>Distribution</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical job title</td>
<td>Geoscientists</td>
<td>Petroleum Engineers</td>
<td>Mechanical Engineers</td>
<td>Chemical Engineers</td>
<td>Industrial Engineers</td>
<td>Analysts and Traders</td>
</tr>
<tr>
<td>Operationa l job</td>
<td>Oil Drillers and Seismic Crews</td>
<td>Oilfield Workers</td>
<td>Pipeline Workers</td>
<td>Plant Operators</td>
<td>Terminal Operator and Truckers</td>
<td>Service Station Attendant s</td>
</tr>
<tr>
<td>Support position</td>
<td>Landmen</td>
<td>Petroleum Attorneys</td>
<td>Petroleum Accountants</td>
<td>Human Resources</td>
<td>Information Technology</td>
<td>Administrative Assistants</td>
</tr>
</tbody>
</table>

Source: UNCTAD (2012), Extractive Industries: Optimizing Value Retention in Host Countries

Table 4.2 shows professional required in the gas value chain whereas table 4.1 shows skills identified in the Human Capital Development Programme in Oil and Gas Subsector and programs offered by learning institutions. Through the analysis based on table 4.2 and 4.1 the audit team noted that some crucial professionals like oil drillers and seismic crews, oilfield workers, plant operators and industrial engineers are not offered by learning institutions in order to address all skills required in the gas value chain for ensuring strategic participation of Tanzanians in the oil and natural gas industry.

Table 4.1 showed that even-though we have got two Universities which are offering degrees at the same field of study still a number of courses are not covered despite the fact that they are also crucial for the operationalization of the sector.

Further analysis on demand and supply of skilled personnel in the industry particularly for technical level, it was noted that there is huge skills gap. For example the technical level skills gaps for industry based on the study from a LNG project in Australia. The supply is based on the numbers of students trained at VETA Mtwara and VETA Lindi in oil and natural gas. This is as depicted in Table 4.3.
Table 4.3: Comparison of demand and supply of skilled personnel in oil and natural gas industry

<table>
<thead>
<tr>
<th>Skills-gap identified by MEM</th>
<th>Number of Tanzanians undergoing Training (VETA-Mtwara &amp; Lindi)</th>
<th>Estimated peak demand (average demand) during construction phase</th>
<th>Gap identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drilling and Production: Roustabout, Derrick man, Rig Mechanic and Rig Electrician</td>
<td>0</td>
<td>Not known</td>
<td>Difficult to know due to lack of data.</td>
</tr>
<tr>
<td>Welding: Pipeline and Drilling, Welding and Testing, Certified Welding Inspector</td>
<td>29</td>
<td>450 (150)</td>
<td>Ca 421</td>
</tr>
<tr>
<td>Machinists and Filters</td>
<td>0</td>
<td>110 (50)</td>
<td>Ca 110</td>
</tr>
<tr>
<td>Rig Erectors</td>
<td>0</td>
<td>375 (150)</td>
<td>Ca 375</td>
</tr>
<tr>
<td>Heavy Duty Equipment Operators</td>
<td>0</td>
<td>160 (70)</td>
<td>Ca 160</td>
</tr>
<tr>
<td>Port Facilities - Longshoremen</td>
<td>0</td>
<td>Not known</td>
<td>Difficult to know due to lack of data.</td>
</tr>
<tr>
<td>Small vessel operators</td>
<td>0</td>
<td>Not known</td>
<td>Difficult to know due to lack of data.</td>
</tr>
<tr>
<td>Food caterers for Offshore Rigs</td>
<td>0</td>
<td>Not known</td>
<td>Difficult to know due to lack of data.</td>
</tr>
<tr>
<td>Electricians</td>
<td>31</td>
<td>350 (135) + 120 (50)</td>
<td>319</td>
</tr>
<tr>
<td>Pipefitters</td>
<td>0</td>
<td>340 (135)</td>
<td>340</td>
</tr>
<tr>
<td>Instrument Mechanics</td>
<td>0</td>
<td>Not known</td>
<td>Difficult to know due to lack of data.</td>
</tr>
<tr>
<td>Vehicle Mechanics</td>
<td>0</td>
<td>Not known</td>
<td>Difficult to know due to lack of data.</td>
</tr>
<tr>
<td>TOTAL</td>
<td>60</td>
<td>1785</td>
<td>1725</td>
</tr>
</tbody>
</table>

Source: HCDP, Training program report and NORAD report

Table 4.3 shows that regardless MEM identified skills gap through HCDP at technical level still there is huge gap of 1725 skilled personnel. For example HCDP is at last year of implementation but there is no rig erectors produced by any learning institution in the country and the gap still exist.
On the other hand, through the interviews with officials from MEM, the auditors failed to get information on whether the Ministry had conducted a study to establish actual needs of the IOCs and also as a country at large in terms of HCD. This was following the fact that there is no documented information showing the actual Human Capital needs for the oil and natural gas sub-sector have been established.

Consequently, the audit team saw a number of risky areas associated with the failure to adequately identify skills gap and orient the government’s efforts in addressing them. These risky areas include:

First, there is a risk of producing people with skills which are not needed by the market and hence they may remain either unemployed in the industry or cannot employ themselves since their professions might not be relevant for the oil and natural gas sub-sector. For example, report by VSO (2014), titled *Pathway to vocational employment in the emerging Tanzanian gas sector*, indicated that curricula in the relevant trades are largely theoretical, and leave graduates under-exposed to the practical experience (both in training and on-the-job) required to apply skills in a modern technology-intensive industry. Graduates are therefore not considered directly employable, often requiring a minimum of 3-6 months of additional on-the-job training until they become fully effective at a supervised junior level.

Second, there is a risk of producing more people with skills which are less demanded in the oil and natural gas chain whereby the mostly needed skills in the country at the moment are not given due attention. This in turn will endanger effective and strategic participation of the Tanzanians in the value chain of the oil and natural industry.

4.2.3 Involvement of stakeholders in developing HCD Plans

Through the interviews held with officials from MEM, MoEVT, VETA and Higher Learning Institutions, it was noted that inadequate skills gap analysis has been contributed by the lack of coordination between MEM and other government institutions such as MoEVT, Higher Learning Institutions and VETA. The analyses were made by individual institutions without consulting to one another and develop one common plan for HCD in the country.

Furthermore, it was noted that involvement of various stakeholders in the identification of skills gap was very minimal. Some of the key
stakeholders who were not involved include: Higher Learning Institutions, VETA, Ministry of Education and Vocational Trainings, Professional Bodies such as NBAA, ERB, PSPBT, International Oil Companies, National Bureau of Statistics etc.

The interviewed officials from those institutions indicated that involvement of those actors would allow the MEM to have a much wider picture, come up with more realistic projections in terms of Human Resources in the next 5 to 10 years and develop a comprehensive HCD plan that could be implemented by all actors with an intention of improving technical skills of Tanzanians and through that enhance their participation in the industry.

The main reasons noted by audit team for non-involvement of various actors were: first, lack of coordination among key stakeholders and second the HCD strategies and plans were prepared in ad hoc basis.

It was further noted that one of the negative impact of not involving various actors is that the Ministry failed to get inputs from those stakeholders and making the HCD interventions implemented by the Ministry at the moment less focused in addressing the actual needs of the industry.

4.3 Implementation of set plans and strategies for HCD

4.3.1 Level of implementation of HCD Plans among implementing agencies

Implementation by Education Institutions
Education institutions play a vital role in the development of Human Capital. VETA is responsible for providing education and trainings at technical level. In the oil and natural gas value chain, based on LNG project more skilled labour with vocational education and training together with technical training needed than those with professional skills (university degrees) in numbers (Norad Report 16/2013)

The review of extract of Ministry of Energy and Minerals (MEM) training programmes, capacity building marshal plan (2012 - 2016) together with EVT Project Data for Mtwara and Lindi regions in Oil and Gas Trades, Graduates (2014/15), the audit team noted that some critical skills identified in the HCDP were not considered in implementation. These include: rig erectors, heavy duty equipment operator, port facilities (longshoremen), pipe filters and instrument mechanics.
Furthermore, the audit team noted that the focus of MEM is on short courses which were not relevant to vocational education and technical training. For example, Table 4.3 shows analysis of the implementation of HCD plan based on short causes, professional and technical level.

**Table 4.4: Implementation of HDC plans by Education Institutions**

<table>
<thead>
<tr>
<th>Training Programme offered</th>
<th>Planned number of people to be trained (2012-2016)</th>
<th>Actual Number trained (By 2015)</th>
<th>Gaps</th>
<th>%age trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Level (Bachelor and Master)</td>
<td>344</td>
<td>19&lt;sup&gt;17&lt;/sup&gt;</td>
<td>325</td>
<td>6</td>
</tr>
<tr>
<td>Technical Level (Certificates and Diploma)</td>
<td>948</td>
<td>60&lt;sup&gt;18&lt;/sup&gt;</td>
<td>888</td>
<td>6</td>
</tr>
<tr>
<td>Short Courses&lt;sup&gt;19&lt;/sup&gt;</td>
<td>78</td>
<td>205</td>
<td>127</td>
<td>263</td>
</tr>
</tbody>
</table>

*Source: Auditors’ Analysis*

The analysis made from Table 4.4 shows that Higher Learning Institutions are also contributing to train Tanzanians in the Technician and Profession levels in the field of oil and natural gas. So, far they have achieved only six percent of what originally planned by MEM. Furthermore the identified skills gap at both professional and technical level seems will not be covered because HCDP is at final stage since it is supposed to be completed by 2016.

Moreover, the audit team noted that there is mismatch of records maintained by MEM and MoEVT regarding graduates from VETA although they address the same issue whereby one is the implementer and the other one is the coordinator of the oil and natural gas sub-sector. Table 4.5 shows the statistics maintained by MEM and MoEVT regarding VETA graduates on oil and gas related courses in Mtwara and Lindi regions.

**Table 4.5: VETA Graduates on oil and gas related courses in Mtwara and Lindi regions**

<sup>17</sup> Graduates from UDOM  
<sup>18</sup> Graduates from VETA (Lindi & Mtwara)  
<sup>19</sup> Short courses implemented by MEM through training programmes and ESCBP
<table>
<thead>
<tr>
<th>Name of the course offered by VETA</th>
<th>Number of graduates according to:</th>
<th>Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEM</td>
<td>MoEVT</td>
</tr>
<tr>
<td>Carpentry and Joinery</td>
<td>-</td>
<td>69</td>
</tr>
<tr>
<td>Electrical Installation</td>
<td>31</td>
<td>154</td>
</tr>
<tr>
<td>Food Production</td>
<td>-</td>
<td>89</td>
</tr>
<tr>
<td>Motor Vehicle Mechanics</td>
<td>-</td>
<td>118</td>
</tr>
<tr>
<td>Plumbing, Drainage and Pipefitting</td>
<td>-</td>
<td>101</td>
</tr>
<tr>
<td>Welding and Metal Fabrication Course</td>
<td>29</td>
<td>128</td>
</tr>
<tr>
<td>TOTAL</td>
<td>60</td>
<td>659</td>
</tr>
</tbody>
</table>

Source: Auditors’ Analysis and Extract of training programmes and EVT Project Data for Mtwara and Lindi in Oil and Gas Trades

Table 4.5 showed that there is difference in records of VETA graduates maintained by MEM and MoEVT. This indicates that there is poor documentation and data management in the ministry since it was expected to periodically update its database. Further, this would mislead the users of such information when making decisions regarding Human Resources in the natural gas sub-sector.

The main reason for the data mismatch between MEM and MoEVT on the number of graduates on oil and gas related courses offered by VETA in Mtwara and Lindi regions was lack of coordination between MEM, MoEVT and VETA and lack of database maintained by MEM and MoEVT for VETA graduates specifically in oil and gas programmes.

However, some crucial certifications such as Health, Occupation Safety and Environment (HSE) were not given due consideration by both universities and vocational training. The audit found out that institutions such as OSHA and NEMC who are responsible for the issuance of certification on Occupational Health and Safety as well as Environment were not involved in the implementation of Human Capital Development with an intention of ensuring that there are experts in the country to perform those tasks.

The interviews with researchers in the field of oil and natural gas indicated that it is quite crucial to have individuals both in the government as well as Oil Companies who are certified HSE so that they can be able to observe the adherence to the set standards in that particular area. This is due to the fact that those certifications are demanded in the operations of oil and gas activities. They are significant requirements for working in oil and gas companies.
The main reason for not having programs for HSE in the country is that, MEM together with learning institutions is not fully aware of the exact needs of the oil companies and industry in general.

From the above observations, there is a risk that MEM might produce a large number of personnel with skills not actually required in the oil and natural gas industry while leaving the required skills aside.

Nevertheless, the absence of consistence in the information relating to the HCD among two main actors namely, MEM and MoEVT may lead to the failure to assess whether the set targets have been reached or not. On the other hand, it might lead into failure to reach the intended goal since the actors who are working together are supposed to have common information since they are depending to one another in terms of developing needs, pointing out the required number and also provision of needed trainings to the earmarked individuals.

4.4 Monitoring, evaluation and performance reporting on implementation of set plans and strategies for human capital development

According to the National Natural Gas Policy (2013) the Natural Gas Policy Monitoring and Evaluation Plan shall be developed through a consultative process as part of the Policy Implementation Strategy, and outline milestones and key performance indicators. Specifically, the Plan shall be a tool to manage the process of monitoring, evaluating and reporting progress towards the objectives.

4.4.1 Set mechanisms for monitoring, evaluation and performance reporting

Through the reviewed Monitoring and Evaluations plans of the MEM and MoEVT, it was noted that they have mechanism for monitoring and evaluation of various activities performed by the respective ministries.

Further reviews of those mechanism indicated that they are not addressing the issue of HCD in the area of oil and natural gas. This is despite the fact that this area has been one of the activities performed by the two ministries.

However, MEM did not develop a Monitoring and Evaluation plan as a result it failed to assess the extent of contribution of the learning institutions in covering the identified skills gap.
On the other hand, it was also indicated that there are no performance indicators developed by the said ministries to assess the performance of various institutions reporting to them as far as the implementation of HCD activities is concerned.

Moreover, MEM and MoEVT did not conduct Monitoring and Evaluation under these interventions. As a result it has denied the two ministries the opportunity to learn means and ways of improving the implementation of HCD activities.

The following were cited as the main reasons for not conducting Monitoring and Evaluation of HCD activities performed by MEM and MoEVT in the country:

First, MEM did not develop M&E plan which provides guidelines on how to carry-out monitoring, evaluation and reporting performance of the activities specifically for human capital development as one of the objectives of the National Natural Gas Policy; and

Second, lack of flexibility among MEM officials so that they can improve in this area, because they had a chance to adopt monitoring and evaluation mechanisms of ESCAP as the best practice to monitor Human Capital Development Programme in Oil and Natural Gas Sub-sector.
CHAPTER FIVE

CONCLUSION

5.1 General conclusion

General conclusion of the audit work is that the Ministry of Energy and Minerals has HCD plans and strategies which are not effective for ensuring availability and sustainability of the human capital for engaging in the natural gas industry in Tanzania.

This resulted into failure by the Ministry to achieve its target of ensuring that first, it helps IOCs in doing their jobs and provide employment opportunities for Tanzanians by preparing good workforce that can compete and get employed by IOCs operating in the country.

Second, is to improve technical and professional capacity within the government as a promoter of Tanzania’s public interest and being a countervailing power to the IOCs particularly by ensuring that the government possesses the necessary professional capacity to oversee and participate effectively in oil and the natural gas industry.

This was mainly caused by inadequate human capital development plans, inadequate implementations of the set plans and strategies, weak coordination among government institutions with the responsibility of ensuring that there is good and well trained workforce in the country. Lastly, it is due to insufficient monitoring, evaluating and performance reporting on the implementation of human capital development strategies and plans.

Generally based on implementation of HCDP and ESCBP, the level of achievement of set targets and objectives on HCD is very minimal. This will cause doubts among stakeholders within the industry as whether Tanzania will strategically participate in the industry to maximize benefits of its natural gas resource. This was caused by the fact that, MEM as general overseer of the industry has no comprehensive plan which reflect real needs of the whole industry. The plans and strategies which are in place were developed in ad hoc basis such that, key stakeholders were not involved during their development.
5.2 Specific conclusions

The following are specific conclusions of the audit:

5.2.1 Set human capital development’s plans and strategies are not adequate and comprehensive

The set human capital development plans and strategies are not adequate and sustainable because they do not reflect actual needs of the government and industry as a whole in engaging in the exploration and development of oil and natural gas industry in the country.

This was mainly contributed by the failure of the Ministry of Energy and Minerals to correctly conduct skills gap analysis within this industry. Moreover, the skills gap analysis conducted by MEM did not address all professionals required in the natural gas value chain. This was the case simply because non-involvement of the key stakeholders such as TPDC, OSHA, MoEVT, TRA and NEMC etc., in identifying skills and needs in the industry.

Hence, as a result some of the crucial professionals in the industry were not covered such as reservoir and utility engineers.

Inadequate skills gap analysis led to the development of human capital development plans and strategies which were unrealistic and failed to address the actual human capital needs of the natural gas sub-sector in the country. The country will keep on loosing opportunities to employ its citizens in this particular industry since few are professionally prepared to compete and work in this industry.

5.2.2 The set plans and strategies for human capital development are not implemented adequately

The audit concludes that the set plans and strategies for human capital development in natural gas sub-sector were not adequately implemented as it was supposed to be the case. This is because the Ministry of Energy and Minerals failed to meet the HCD implementation targets. The Ministry attained only 13 percent of the set goals for the long-term capacity building programs. This means that more than 80 percent of those who were supposed to receive various long-term capacity building interventions failed to get that opportunity.
One of the reasons for non-attainment of the set target for the long-term capacity building interventions was that the Ministry paid more attention to the short-term capacity building interventions, its implementation target was 165 percent, while the skills gap needs identified in staffing requirements assessment showed that most of the problems and challenges could be addressed by more intensive long-term capacity building interventions.

Another reason for inadequate implementation of the HCD plans and strategies was the non-collaborative formulated plans and strategies which resulted into presenting unrealistic needs and were not tailored to address the problems in the oil and natural gas industry.

As a result of unsatisfactory implementation of the HCD plans and strategies, the country kept on experiencing a growing skills gap in the oil and natural industry. This is despite of the fact that some Tanzanians, with that particularly planned HCD intervention, they would provide a good workforce in the oil and natural gas industry.

5.2.3 The mechanisms for M&E and performance reporting on the implementation of HCD strategies and plans are not effective

The audit concludes that mechanisms for monitoring, evaluating and performance reporting on the implementation of human capital development strategies and plans are not effective. This is because the Ministry of Energy and Minerals has got no monitoring, evaluation and performance reporting plans for human capital development in oil and natural industry. This was caused by the fact that the Ministry paid more attention on activities such as finalizing the preparation of gas utilization master plan and not considering development of this important tool for ensuring well implementation of the national natural gas policy with a particular focus on Human Capital Development.
CHAPTER SIX
RECOMMENDATIONS

6.1 Introduction

The audit findings and conclusion point-out that there are weaknesses in the management of Human Capital Development in oil and natural gas industry in Tanzania. The weaknesses were noted on all three focused areas of the audit namely: setting-up of plans and strategies for Human Capital Development; implementation of Human Capital Development plans; and monitoring, evaluation and performance reporting on the implementation of HCD plans and strategies.

This chapter contains recommendations to the Ministry of Energy and Minerals on what should be done to improve the situation.

The audit office believes that based on principle of 3Es that is Economy, Efficiency and Effectiveness these recommendations need to be fully implemented so as to ensure availability and sustainability of Human Capital Development in natural gas sub-sector.

6.2 Recommendations on Planning for Human Capital Development

The Ministry should:

a) Carry-out intensive skills gap analysis in collaboration with key stakeholders which would reflect real needs of Human Capital in government institutions and industry as whole;

b) Prepare a specific and comprehensive Human Capital Development Plans and Strategies which would address all disciplines needed at each level of oil and natural gas value chain and ensure that they are followed and the results of their implementations are regularly communicated to stakeholders.

c) Develop a coordination system/mechanism that will ensure that MEM is coordinating well with key stakeholders in the HCD by involving them in identifying needs, skills gap, developing intervention plans and strategies, implementing those strategies and provide them with performance reports regarding HCD activities in the oil and natural gas industry;
d) Coordinate with Higher Learning Institutions through the Ministry of Education and Vocational Training to ensure that various training programmes, on highly needed professions and certifications including HSE in oil and natural gas, are initiated and conducted by those institutions in the country.

6.3 Recommendations on the Implementation of HCD Plans and Strategies

The Ministry should:

a) have clear sources of funds for smooth implementation of human capital development plans and strategies in oil and natural gas industry;

b) carry out assessment and evaluation on the progress of the implementation of set human capital development strategies and plans; and

c) make priority of the skills which require immediate intervention during implementation of HCD plans and strategies in order to ensure strategic participation in the oil and natural gas value chain.

6.4 Recommendations on M&E and Performance Reporting of HCD activities

The Ministry should:

a) prepare monitoring and evaluation plan which will provides guidelines on how to monitor, evaluate and report performance on the implementation of the human capital development activities and ensure that those M&E plans are followed;

b) develop a monitoring and evaluation system that will allow tracking of progress of MEM in implementing Human Capital Development activities for natural gas sub-sector in the country; and

c) develop performance indicators to monitor and evaluate the status and effectiveness of Human Capital Development activities for natural gas sub-sector in the country.
REFERENCES


Appendix 1: Responses from the Ministry of Energy and Minerals (MEM)

A: Overall Responses

The scope of the performance audit is relevant to the country as it aims at ensuring that, the government gets their fair share of revenue likely to accrue from the petroleum industry. However, some of the findings are passed by events and some are started to be worked on or implemented. So the Ministry hopes that, the information will be updated accordingly.

B: Specific Responses

<table>
<thead>
<tr>
<th>No.</th>
<th>Recommendation</th>
<th>MEM’s Comment(s)</th>
<th>Action(s) to be taken</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Carry-out intensive skills gap analysis in collaboration with key stakeholders which would reflect real needs of Human Capital in government institutions and industry as whole.</td>
<td>Training Needs Assessment (TNA) underway which outline Upstream and Downstream industry requirements</td>
<td>Procurement of consultant has started</td>
<td>Dec, 2016</td>
</tr>
<tr>
<td>2.</td>
<td>Prepare a specific and comprehensive Human Capital Development Plans and Strategies which would address all disciplines needed at each level of oil and natural gas value chain and ensure that they are followed and the results of their implementations are regularly communicated to stakeholders.</td>
<td>TNA will outline the gaps which will enable the preparation of Human Capital Development Plans and Strategies</td>
<td>To coordinate and ensure that, TNA report is implemented.</td>
<td>June, 2017</td>
</tr>
<tr>
<td>3.</td>
<td>Develop a coordination system/mechanism that will ensure that MEM is coordinating well with key stakeholders in the HCD by involving them in identifying needs, skills gap, developing intervention plans and strategies, implementing those strategies and provide them with performance reports regarding HCD activities in</td>
<td>Coordination mechanism will be developed after receiving the TNA which will outline key stakeholders involved</td>
<td>To communicate with stakeholders</td>
<td>July, 2017</td>
</tr>
<tr>
<td>No.</td>
<td>Recommendation</td>
<td>MEM’s Comment(s)</td>
<td>Action(s) to be taken</td>
<td>Timeline</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>4.</td>
<td>Coordinate with Higher Learning Institutions through the Ministry of Education and Vocational Training to ensure that various training programmes, on highly needed professions and certifications including HSE in oil and natural gas, are initiated and conducted by those institutions in the country.</td>
<td>TNA will outline various industry needs which will be communicated to other stakeholders</td>
<td>To communicate with stakeholders</td>
<td>July, 2017</td>
</tr>
<tr>
<td>5.</td>
<td>Have clear sources of funds for smooth implementation of human capital development plans and strategies in oil and natural gas industry</td>
<td>The ministry has been very keen in setting aside funds for human capital resources development in oil and natural gas industry each year. However the availability of funds depend with budgetary allocation</td>
<td>The ministry to continue allocating funds for human resources training in oil and gas industry.</td>
<td>On going</td>
</tr>
<tr>
<td>6.</td>
<td>Carry out assessment and evaluation on the progress of the implementation of set human capital development strategies and plans</td>
<td>TNA will provide Key Performance Indicators (KPI) which will be used by stakeholders to prepare, assess and evaluate the implementation of set human capital development plans</td>
<td>To communicate with stakeholders</td>
<td>2017</td>
</tr>
<tr>
<td>7.</td>
<td>Make priority of the skills which require immediate intervention during implementation of HCD plans and strategies in the oil and natural gas industry</td>
<td>Results of the TNA would indicate skills priority. However,</td>
<td>To finalize the implementation of Marshall Plan</td>
<td>June, 2018</td>
</tr>
<tr>
<td>No.</td>
<td>Recommendation</td>
<td>MEM’s Comment(s)</td>
<td>Action(s) to be taken</td>
<td>Timeline</td>
</tr>
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<td>-----</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>8.</td>
<td>Prepare monitoring and evaluation plan which will provides guidelines on how to monitor, evaluate and report performance on the implementation of the human capital development activities and ensure that those M&amp;E plans are followed</td>
<td>Marshall Plan outlined short and medium term requirement which require immediate intervention</td>
<td>To prepare Evaluation Reports</td>
<td>June each year</td>
</tr>
<tr>
<td>9.</td>
<td>Develop a monitoring and evaluation system that will allow tracking of progress of MEM in implementing Human Capital Development activities for natural gas sub-sector in the country</td>
<td>Quarterly Performance reports provide a mechanism for monitoring and evaluating this item</td>
<td>To prepare quarterly Performance Reports</td>
<td>Quarterly basis</td>
</tr>
<tr>
<td>10.</td>
<td>Develop performance indicators to monitor and evaluate the status and effectiveness of Human Capital Development activities for natural gas sub-sector in the country</td>
<td>TNA will provide Key Performance Indicators (KPI) which will be used to monitor and evaluate effectiveness of Human Capital Development</td>
<td>To implement TNA observations</td>
<td>Quarterly basis</td>
</tr>
</tbody>
</table>
Appendix 2: List of Documents Reviewed

The following is list of documents reviewed during the audit:

- The National Natural Gas policy 2013
- The national training policy
- Modal Production Sharing Agreement 2013
- MEM’s Strategic plan
- MEM’s Human Capital Development Plan in oil and gas sub sector
- TPDC’s Strategic plan
- Actions plans (MEM and TPDC)
- Minutes of meeting with stakeholders
- Annual performance reports (MEM)
- Training programs (MEM and TPDC)
- ESCBP appraisal document
- ESCBP performance report
- Chinese government scholarships
- Natural gas utilization master plan
- France scholarship
- Public Service Management and Employment Policy, 2008
- Local Content Policy of Tanzania For oil and Gas industry, 2014
- Public service Act No 8, 2002
- Public service Regulations, 2003
- Public Service Standing Order, 2009
- Education Act.
Appendix 3: Detailed List of Individuals Interviewed

The team interviewed various officials from MEM, TPDC, MoEVT and other key stakeholders. Information gathered aim to address the objectives of this audit. Here below is the table which shows the list of officials and stakeholders interviewed:

<table>
<thead>
<tr>
<th>S/N</th>
<th>TITLE</th>
<th>ORGANIZATION</th>
<th>PURPOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assistant director of resource management</td>
<td>MEM</td>
<td>To gather information relating to trainings and management of human capital development in oil and natural gas sub-sector</td>
</tr>
<tr>
<td>2</td>
<td>Assistant Commissioner for Energy Development</td>
<td>MEM</td>
<td>To gather information relating to set strategies and plans on human capital development programme in oil and natural gas sub-sector</td>
</tr>
<tr>
<td>3</td>
<td>Director of policy and planning</td>
<td>MEM</td>
<td>To gather information relating to natural gas policy and plans on human capital development</td>
</tr>
<tr>
<td>4</td>
<td>Assistant commissioner for gas</td>
<td>MEM</td>
<td>To gather various information relating to the set strategies and plans on human capital development in natural gas sub-sector</td>
</tr>
<tr>
<td>5</td>
<td>Other staff from administration and human resource management division, policy and planning division and energy division</td>
<td>MEM</td>
<td>To gather various information relating to human capital development in natural gas sub-sector.</td>
</tr>
<tr>
<td>6</td>
<td>Assistant director of vocational education</td>
<td>MoEVT</td>
<td>To gather information relating to technical education on oil and gas.</td>
</tr>
<tr>
<td>7</td>
<td>Director</td>
<td>TPDC</td>
<td>To gather information</td>
</tr>
<tr>
<td>S/N</td>
<td>TITLE</td>
<td>ORGANIZATION</td>
<td>PURPOSE</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------------------------------------------------</td>
<td>--------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>6</td>
<td>administration and human resource</td>
<td></td>
<td>relating to trainings and management of human capital development in oil and natural gas sub-sector</td>
</tr>
<tr>
<td>8</td>
<td>Assistant exploration upstream manager</td>
<td>TPDC</td>
<td>To gather information relating to human capital required in gas value chain.</td>
</tr>
<tr>
<td>9</td>
<td>Other staff from administration and human resource management division and exploration division</td>
<td>TPDC</td>
<td>To gather various information relating to human capital development in natural gas sub-sector.</td>
</tr>
<tr>
<td>10</td>
<td>Researchers</td>
<td>ESRF</td>
<td>To gather general information relating human capital development in oil and natural industry.</td>
</tr>
</tbody>
</table>
Appendix 4: Audit Questions, sub-questions and audit criteria used during the audit

The audit objective was addressed through the following four audit questions:

**Question 1:** Are human capital development plans and strategies comprehensive for strategic participation in oil and natural gas value chain?

**Sub-question 1:** Does MEM conducted intensive skills gap analysis which addresses all key aspects of natural gas industry?

**Sub-question 2:** To what extent the development of strategies and plans involves key stakeholders and take into accounts needs from them?

**Question 2:** Are human capital development plans and strategies well implemented?

**Sub-question 1:** How various target groups such as VETA are implementing these human capital development strategies and plans?

**Sub-question 2:** How MEM assesses the implementation of set strategies and plans for human capital development?

**Question 3:** Are the monitoring and evaluation mechanisms on the implementation of human capital development working effectively?

**Sub-question 1:** To what extent do performance indicators align with the objective of human capital development plans used?

**Sub-question 2:** To what extend do monitoring, evaluation and performance reporting mechanisms effectively conducted?

**Sub-question 3:** To what extent MEM meets with stakeholders in natural gas industry to discuss human capital development issues?

**Sub-question 4:** What actions or measures are in place to address critical issues identified during the monitoring, evaluation and performance reporting on the activities regarding human capital development for natural gas industry in the country?