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SINCE
Stemming Irregular Migration
in Northern and Central Ethiopia

Funded by
the European Union

Final Report on

Centre of Excellence and Business Cluster Study in three Economic Sectors: Construction, Textile and Metal

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Insieme, per un mondo possibile

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Acronyms

- **CGFC** : Capital Goods Financing Company
- **CoE** : Center of Excellence
- **DBE** : Development Bank of Ethiopia
- **FGD** : Focus Group Discussion
- **KII** : Key Informants Interview
- **MFI** : Micro Financial Institution
- **MSE** : Micro and Small Enterprise
- **SME** : Small and Medium Enterprise
- **TVET** : Technical and Vocational Education and Training
- **UNIDO** : United Nation Industrial Development Organization

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Part I: Introduction and Background

1.1. Introduction

This report is about the mapping of industry clusters of textile, metal and construction enterprises in four geographic areas of Tigray Regional State, Ethiopia. An attempt was also made to identify the Centre of Excellence (CoE) in the targeted areas, and the way forward was proposed.

MAE Consulting PLC is selected to conduct the study on the creation of a Centre of Excellence to strengthen textile, metal, and construction sector value chains and explore the challenges and opportunities that exist in the clusters of the three sectors.

1.2. Background of VIS

SINCE Programme *"Stemming Irregular Migration in Northern and Central Ethiopia"*, is one initiative financed under the European Union Emergency Trust Fund for Africa (EU Trust Fund) aiming at addressing the root causes of irregular migration and displacement in Africa. SINCE Programme is funded by the European Union and managed by the **Embassy of Italy in Ethiopia.** SINCE intends to foster a more inclusive economic environment across the Regions to improve the living conditions of potential migrants, returnees, youth and woman. The intervention logic assumes that the reinforcement of productive value chains, access to economic stability, skilled labour, Public-Private Partnerships (PPPs), Technical and Vocational Education and Training (TVETs) and future industrial production increase employment opportunities that help to reduce the root causes and risks of irregular migration. In so doing, SINCE promotes the improvement of potential migrants and returnees living conditions through the reinforcement of existing value chains, cluster of enterprises, on the job training and capacity development of the target selected beneficiaries from the primary migrant prone Regions and Woredas of the Country, and in particular from the rural towns and urban areas in North and Central Ethiopia.

The Overall Objective of SINCE is to contribute to the reduction of irregular migration from Northern and Central Ethiopia by improving the living conditions of the most vulnerable population, including potential migrants and returnees with a specific focus on youth and women.

The Specific Objective is to establish inclusive economic programs that create employment opportunities for potential migrants, returnees and refugees, especially women and youths, in the most migration prone regions of Ethiopia (Addis Ababa, Amhara, Oromia, SNNPR and Tigray) by strengthening the capacities of local vocational training providers (TVET) and promoting public-private partnerships (PPPs) in strategic economic clusters.

To shape SINCE actions, an inception phase was carried out through the technical assistance of the United Nations Industrial Development Organization (UNIDO) in joint cooperation with the International Labour Organization (ILO) between August 2016 and March 2017. The aim was to gain a better understanding of migration dynamics, particularly on the root causes of migration and their nexus with the lack of decent livelihood and employment opportunities in the targeted areas.

Since November 2018, VIS has been implementing a "DEAL: Development of innovative Employment oriented schemes and Active Labour market measures to increase livelihood and decent work opportunities for vulnerable youth and women at risk of irregular migration in Tigray". The project has been implemented in four cities of Tigray. DEAL has been elaborated an employment strategy that involves the support to existing clusters in the areas of the project, Mekelle, Wukro, Atsi womberta, Raya Alamata for the construction, textile and metal economic sectors.

Therefore, the main purpose of this assignment was to conduct an assessment and identify areas where by VIS can extend its support to enterprises in the clusters so that they can create more employment opportunities to the women, men, and the youth in the intervention areas.

Part Two

Purpose and Methodology of the Assignment

2.1. The Purpose of the Consultancy Assignment

The main purpose of the consultancy was to conduct a study of metal, textile and construction clusters and an economic study on the creation of a Centre of Excellence to strengthen the three sectors value chain and on the development of clusters. The study tried to identify the existing clusters, the key constraints, opportunities and proposed possible intervention. This will greatly help VIS and other development partners to provide evidence-based contribution for youth job creation by strengthening the capacity of enterprises engaged in the three economic sectors.

2.2. General Objectives of the Assignment

General Objectives of the Assignment

The overall objective of this Consultancy Service was the production of an economic study on the creation of a Centre of Excellence to strengthen the metal, textile, and Construction sector value chain and on the Clusters Development.

Specific Objectives (1) - Cluster Development

The specific objectives of the study in terms of cluster development are:

- To identify and map the existing clusters in Metal, textile and construction Sectors in the project area;
- To identify the policy framework within the cluster system does exist and operate in Tigray Region;
- To identify the weakness within the clusters in Metal, textile and construction value chain in order to attract investors and business;
- To Identify the skills gap in terms of technical know-how, machinery and technologies and access to markets in the identified clusters;

- To provide recommendations on the linking of the clusters with medium and big size companies for subcontracting arrangements in the identified clusters.

Specific objectives (2) - Centre of Excellence (CoE) Development

The study aims to identify the existing CoE related to Metal, textile and construction sectors to understand the unexploited potentialities for developing Centre of Excellence. The specific objectives of the assignment related to the development of the centre of excellence are:

- To identify and mapping of the existing Centre of Excellence associated with Metal, textile and construction Sectors and the major actors involved in the sector in the Tigray Region (UNIDO; GIZ; Enterprises; ETIDI, etc.);
- To identify the potential skills and or capacity to strengthen and developed with the objective to create a leadership practice related to Metal Sector;
- To assess the gaps in the Metal, textile, and construction value chain that need to be filled in order to improve the Regional production in the Metal, textile and construction sectors (for instance, the existence of a centre specialized in design or in the value chain of the cotton if it is needed, and so on.)

2.3. Methodology in the Study

In order to achieve its intended objectives, the study used a range of primary and secondary data, mainly qualitative data. The data were analyzed systematically in order to understand the sector, contribution of the sector for job creation, the existing constraints, and gaps for improvement of companies in the study areas.

2.3.1. Approaches and Procedures

A. Assessment of the Industry Clusters

The consulting firm has developed an assessment tool based on previous experiences for the cluster development study, and the data collection was done as per the following four steps for cluster assessment.

Step 1: Cluster Mapping

The cluster mapping will be the first step of the study to identify the potential localities where the enterprises are concentrated and further to assess the challenges, skill and capacity gaps so that potential support can be provided.

Step 2: Data Collection about the cluster enterprises that are already available

The consultant conducted an assessment on the existing Metal, textile, and construction cluster enterprises in the target areas of the project, i.e., Mekelle, Wukro, Atsi womberta, Raya Alamata for the three sectors. The concerned regional and woreda level cluster development officers, individual enterprise owners provided the data.

Step 3: Analyzed the collected Cluster enterprises

The data were analyzed and triangulated to identify the weakness and strengths of enterprises in the clusters. In addition to the data related to the particular enterprises contacted, the consultant also reviewed industry cluster development related policies and strategies of the region and the country.

Step 4: Recommend future design or action planning based on the study.

B. Assessment of Centre of Excellence (CoE)

In this case, the consultant assessed all the existing CoEs related to the three sectors and tried to understand the existence of the unexploited potentialities to develop such a centre. In order to identify the CoE for the three sectors, the following steps were followed: setting criteria for CoE in the cluster, mapping the existing CoE, identifying the existing potential of the cluster, identification of the potential skills and or capacity to be strengthen and developed an assessment on the gaps in the value chains that need to be filled. The consultant used both primary and secondary data collection methodology for the CoE assessment of the three economic sectors.

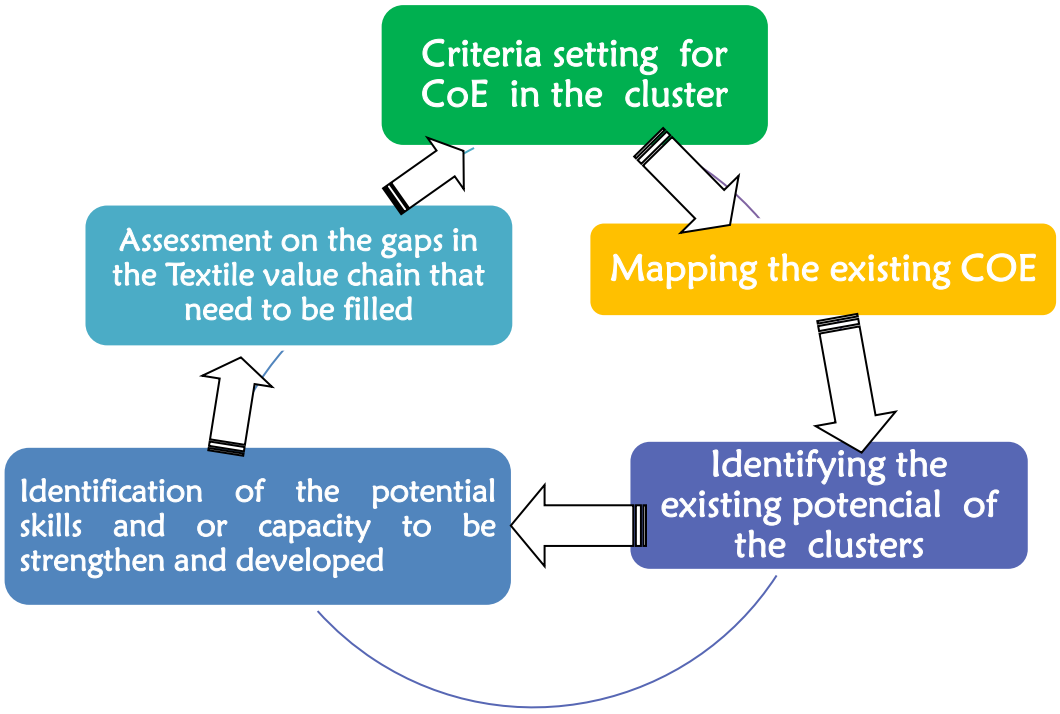


Figure 1: CoE identification process

2.3.2.Study Setting

The study will be conducted in the area of the project, Mekelle, Wukro, Atsi womberta, Raya Alamata for the three sectors, in Tigray region, Ethiopia.

2.3.3. Study Design

A cross-sectional design that incorporates Metal, Textile, and Construction clusters assessment, focus group discussions, key informant interviews, and observations were conducted.

2.3.4.Study Population

The study population was youth, owner and employees engaged in the three economic sectors.

2.3.5.Data Collection Methods

The data for this assessment was collected using methods:

1. **Document Review**

In line with the TOR and based on consultant's experiences and access to relevant documented sources, the following documents were reviewed, i.e., directory of clusters, SMEs development strategy, construction, metal and textile-related researches and reports, micro, small and medium enterprise development related strategic documents, FDRE guidelines, legal and policy frameworks, proclamations and other relevant documents and publications.

II. Key Informant Interview

Key informant interviews are qualitative in-depth interviews with people who have in-depth knowledge about the economic clusters and the issues related to the assessment objectives. The purpose of key informant interviews is to collect information from a wide range of respondents including government sector offices, development actors and SMEs owners and managers *(see the list of interviewed organizations in Annex 1 attached at the end of the report)*. These respondents, with their particular knowledge and understanding, provided pertinent data and evidence on the study area. Well experienced consultants conducted the face-to-face interview using open-ended interview guides, attached in Annex 2.

III. Focus Group Discussions

Focus group discussion (FGDs) was conducted with the Metal, Textile, and Construction cluster enterprises owners and associations.

IV. Observation and transit walk

Our experts made an observation of the clusters in order to realize how Metal, Textile, and Construction clusters are operating and functioning. It was used to gather on-site information on what resources, assets, services and infrastructure existed in the clusters, how far the clusters are located from the centre of the city, as well as the challenges they are experiencing.

V. Case Studies

Some selected case studies were made to provide live evidence on the situation of the cluster development, contribution of Metal, textile, and construction cluster in the job creation, challenges and contributions of the cluster for their livelihood. The case study

approach was used to document the existing cluster situation, challenges, and gaps to the perceived benefits, and impacts.

2.3.6.Data Analysis

Data generated through key informant interviews and focus group discussion was transcribed and summarized. A thematic approach was followed in the analysis of the data. That means the data was thematically sorted by major report outlines or main study variables identified earlier and following the outlines of survey questionnaires whenever possible.

To increase the reliability of the data, findings from primary qualitative data, personal observation, and document review were triangulated and discussed in the final report to provide a full picture of assessment.

2.4. Scope of the Assignment

In terms of topical coverage, the study was limited to:

- Review documents relevant for the assignments;
- Develop overall assessment methodology and data collection tools;
- Prepare and submit the inception report;
- Conduct the study;
- Provide a draft report;
- Incorporate inputs from the client; and
- Submit a final report.

2.5. Deliverables

The following deliverables are expected, but not limited to:

1. Inception report with detail tools and work plans.
2. Draft assessment report with a detail report on Cluster assessment and CoE, and
3. The final report with a detail report on Cluster assessment and CoE.

2.6. Report Structure

As per the agreement, the whole report shall not exceed 50 pages. The report is prepared in is an English language, and the content includes the following components.

- Cover page
- Table of Contents
- Acknowledgements
- Glossary of terms
- Executive Summary
- Introduction/Background of the Survey
- Methodology
- Key findings
- Conclusion and recommendations
- Appendices (Copies of all tools, list of people and institutions conducted, survey timeline).

2.7. Ethical Issues

From starting the survey, the consultant discussed with managers of VIS-Tigray office and obtained a letter of authorization from VIS -Tigray office stating the purpose of the study and consultant's identity. Then, permission to conduct the survey was obtained from the concerned government offices in the region, and specific cities visited. Confidentiality and privacy will be assured in all the interviews to be conducted. Before starting interviews, the participants were informed about the purpose of the study and interviews were conducted after their consent was secured. Anonymity is maintained throughout this report. As a result, the names of people interviewed are not mentioned in the report.

Part III: Industrial Cluster in General

3.1. Introduction

This section of the report provides a detail description of the industrial cluster in general and its importance, types, challenges, and role based on the available pertinent literature.

3.2. Industrial Cluster Development Approach in General

Research showed that the cluster approach had been widely recognized as one of the ways of overcoming the limitation of micro, small and medium enterprises. It has been recognized as an important instrument for improving their productivity, innovativeness and competitiveness (UNIDO 2016). However, the approach is conceptualized differently by different people in the field.

For instance, Porter (1998) who is considered as one of the most prominent authorities in the field, defined cluster approach as "geographical proximity of entrepreneurs and that geographical proximity enhances division of labour among firms with physical proximity among numerous competing producers thereby encouraging innovation and facilitating transmission of knowledge".

Ronsenfeld (1997) also defined cluster approach as "geographically bounded concentrations of interdependent firms which should have active channels for business transactions, dialogue and communication and it is consist of private enterprises of various sizes, including producers, suppliers and customers, plus labour, government, professional associations and academic, research or training institutes."

For Ali (2012), industrial cluster means the concentration of economic activities of a certain sector in a certain location producing similar and closely related goods. Industrial clusters include not only the concentration of output producing enterprises but also input

suppliers, output buyers, various service providers and in some cases, government and non-governmental institutions.

Similar to the above definitions, UNIDO (2000) also defined cluster as "the sectoral and geographical concentrations of enterprises that produce and sell a range of related or complementary products and who also face common challenges and opportunities, these concentrations give rise to external economies such as the emergence of specialized suppliers of raw materials and components or growth of a pool of sector-specific skills and can foster development of specialized services".

Therefore, from definitions, it can be concluded that cluster means a group of enterprises within an identifiable, contiguous area and producing same/similar products/services. The key elements of the definitions are:

- **Similarity:** the enterprises in the cluster are similar in their methods of production, quality control and testing, energy consumption, pollution control, etc.,
- **A similar level** of technology and marketing strategies /practices,
- **Similar channels** for communication among the members of the cluster, and
- **Having common** challenges and opportunities.

With this in mind, policymakers and non-governmental development actors promoted the cluster business support approach. They use it to reduce the isolation of micro, small and medium enterprises by strengthening linkages among all actors of the cluster (MSE, larger enterprises, and support institutions) and assisted in order to coordinate their actions and pool their resources for a common development goal (UNIDO, 2007).

The cluster approach as a development tool involves several development actors that have various roles and responsibilities. Figure 1, below summarizes the actors of the industrial cluster.

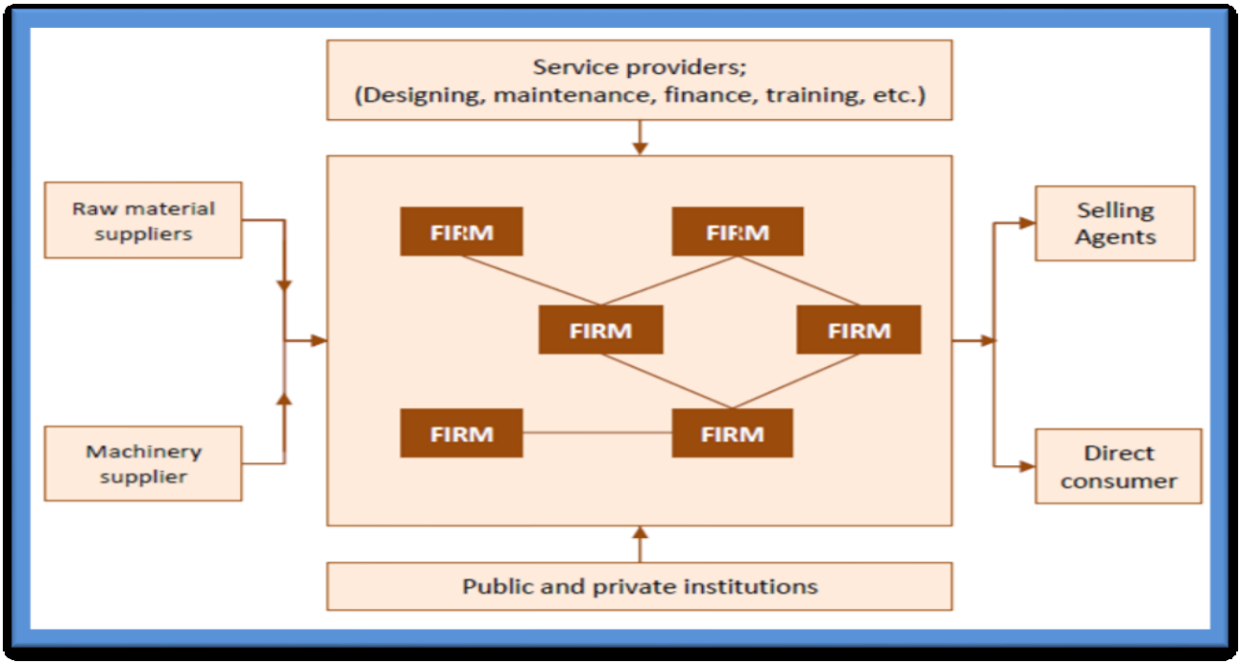


Figure 2: Composition of an Industrial Cluster (Ali, 2012)

3.3. Types of Clusters

There are two main types of industrial clusters in the world. They are natural and government-created clusters.

Natural Clusters: These types of clusters are those that spontaneously grow out of the concentration of economic activities based on market forces over a long period of time. Such types of clusters are common throughout the world among different sectors.

The initial pull factor that stimulates natural clusters to arise could vary such as availability of raw material; suitable climate condition; proximity to markets; availability of educated workforce or research and development (R&D) facilities; etc.

The government created clusters: This type of clusters are formed deliberately by the policy actions of the government, such as the establishment of industrial parks and export processing zones to attract certain industries to specific locations.

Table 1 below summarized the similarity and differences of the two cluster types. For instance, physical closeness of enterprises exists both in natural and government-created clusters. However, there are a number of differences across the two. While input supplies and various service providers are often present in natural clusters, they are usually absent in government created clusters. This is because, government-created clusters such as those in industrial parks and export processing zones often attract large and vertically integrated firms, which don't rely much on the output of other firms to be used as inputs in their production. Related with this, the level of specialization and inter-firm linkages in government created clusters is not as high as that of natural clusters.

The functional elements of clustering such as trust, collaboration and tacit flow of knowledge that are often present in natural clusters are also absent in government created clusters. This is because it takes a longer period for the functional elements of clustering to develop. Physical closeness alone is neither a necessary nor a sufficient condition for inter-firm linkages and spillovers that are held to be key cluster features, to occur (Boschmn, 2005). Without the functional elements among related enterprises, such as specialized suppliers and service providers, physical closeness alone cannot help maximize the clustering advantages mentioned above. In addition, the government created clusters may fail to attract large markets in the vicinity of the cluster because it usually takes time for consumers to adapt to the new location (Ali, 2012).

However, one of the main reasons behind government created clusters is because it is cost-effective for governments to provide a group of firms operating in the same sector with the necessary services like electricity, water and road. In addition, government-created clusters are helpful to make targeted and sector-specific interventions. The general benefits of clustering approach are explained below.

Table 1: Difference between Natural and Government create clusters

Comparison Factors	Natural Clusters	Government created clusters
1. Physical closeness between enterprises	Present	Present
2. Level of specialization among enterprises	High	Low
3. Type of firms	From micro to large scale firms	Mostly large and vertically integrated firms
4. Input suppliers and various service providers	Present	Absent in most cases
5. Inter-firm linkages	Mostly present	May be seen between few enterprises in the cluster
6. Trust and collaboration among agents in the cluster	Already developed	Absent (Takes time to develop)
7. Large markets around the cluster	Already developed	Takes time to develop

Source: Ali, 2012, Government's Role in Cluster development

3.4. Benefits of Industrial Clusters

Previous studies indicated that industrial clusters provide a wide range of advantages that enables enterprises to become competitive and profitable. Some of these advantages are (Schmitz and Nadvi, 1999):

1. **Low cost of Business:** The availability of inputs, specialized labour and various services in nearby locations help reduce costs of doing business within clusters.
2. **Easy flow of Knowledge:** The presence of various actors close to each other also facilitates easy flow of knowledge and information exchange.
3. **Joint Actions:** Moreover, the trust that naturally develops within clusters helps provide the basis for joint actions (cooperation) to invest in common facilities and facilitate a smooth commercial transaction, reducing risk and uncertainty.

4. **Large Market:** Industrial clusters typically lead to large markets that enable enterprises to operate at a larger scale arising from the division of labour within clusters. The available large markets within clusters also provide consumers with greater choices and convenience by reducing search cost.

3.5. Micro and Small Enterprises in Ethiopia

The private sector, particularly the micro and small enterprises, are often considered as a key driving force for industrialization in Africa. The micro and small scale enterprises (MSEs) constitute the lion's share of the private sector in Africa, which account for more than 90% of all firms outside of the agriculture sector and generate 50-60% of employment (Ali, Godart, & Seric, 2016). This is also similar in the case of Ethiopia.

Therefore, promoting MSEs and stimulating their growth is viewed as a key instrument in poverty reduction efforts both by development agencies and policy-makers in Africa and Ethiopia (Ali et al., 2016)(Collier & Esteban, 2007).

In Ethiopia, the Federal Micro and Small Enterprise Development Agency have formulated a strategy in 2011 that aimed at promoting the growth of the sector. The strategy provided a definition of micro and small enterprises, which is summarized in Table 2 below.

Table 2: Definition of MSEs in Ethiopia

Level of the Enterprise	Sector	Number of people engaged	Total asset in Ethiopian Birr (ETB))
Micro enterprises	Manufacturing	≤ 5	≤ Birr100,000.00
	Service	≤ 5	≤ Birr 50,000.00
Small Enterprises	Manufacturing	6-30	≤ Birr 1.5 million
	Service	6-30	≤ Birr. 500,000.00

Source: FMSEDA (2011)

In 2016, however, the Federal Micro and Small Enterprises Development Agency were replaced by two separate agencies: Small and Medium Manufacturing Industries Agency and Urban Job Creation and Food Security Agency. As a result, the rights and obligations of the Federal Micro and Small Enterprises Development Agency which are applicable to small and medium manufacturing industries are transferred to the Small and Medium Manufacturing Industries Agency, whereas those duties and obligations related to micro-enterprises and small enterprises that do not fall under the manufacturing sector are transferred to the Urban Job Creation and Food Security Agency (Proclamation 373/2016, 374/2016).

As a result, currently, there are two separate agencies that support and promote the development of the private sector to ensure the continued generation of employment opportunity and economic transformation.

3.6. Clustering Approach in Ethiopia

3.6.1. In general

Cluster development programs have become increasingly widespread tools in fostering innovation and growth of a competitive private sector in developing countries, including Ethiopia (Ali et al., 2016). Naturally emerged clusters of micro- and small-scale enterprises (MSEs) are predominantly common in Ethiopia in traditional and labour-intensive sectors in rural and poor urban areas. This has attracted the interest of policy-makers and various development organizations such as UNIDO to promote such clusters because of the direct impact they have on employment generation and poverty reduction. As a result, the Ethiopian government has given priority to a cluster-based development approach in its five years Growth and Transformation Plan (GTP) I and II (Ali, 2012).

Studies showed that government created and natural clusters are commonly found among labour-intensive manufacturing sectors and are mostly located in urban centers, rural towns and touristic areas. Some examples of such clusters in Ethiopia are the footwear cluster in Mercato and the handloom cluster in Shiro Meda, Addis Ababa, the

metal and woodwork cluster in Mekelle, and the bamboo work cluster in Hawassa (Ali, 2012)

Though the natural industrial clustering of enterprises has existed many years back, the cluster approach as a development tool has first introduced in Ethiopia by UNIDO as micro and small enterprises supported strategies in 2003. Ethiopia is striving to bring economic development focusing on industrial cluster development in order to enhance the competitiveness of Micro and Small Enterprises (MSEs) and lay the foundation for industrial development in various regions across the country (UNIDO, 2016a). Further, in 2016, the micro and small enterprises are separated and managed by two different and autonomous government agencies.

3.6.2.Why industrial cluster approach in Ethiopia?

It is imperative that MSEs play an important role in the creation of jobs for the vulnerable and marginalized segment of society. However, various studies in developing countries, including Ethiopia, showed that MSEs are constrained by various challenges. These constraints include lack of access to markets, finance, business information; lack of business premises; low level of skills and managerial expertise; low access to appropriate technology and poor access to quality business infrastructure (UNIDO, 2016).

In order to enjoy the benefits of SMEs, alleviating their challenges is a very crucial step for the owners, policymakers, and supporting institutions. One of these strategies or action put in place was the formation of industrial clusters of MSEs.

As mentioned above, the clusters enable knowledge spillover, collaboration, specialization, and multi-faceted innovation that could be created through horizontal and vertical linkages and competition among enterprises (UNIDO, 2016).

3.6.3.Type of Clusters in Ethiopia

As explained above, in Ethiopia, both natural and government-created clusters exist all over the country.

Natural Clusters

In Ethiopia, natural clusters are the most common types of industrial clusters that spontaneously grow out of market forces over a longer period of time (Ali, Coniglio, & Seric, 2013).

Unlike their numbers, studies showed that the performance of the natural clusters is not as expected. A case study on the Shiro Meda handloom cluster in Addis Ababa showed that the cluster, which has been operating for decades, although there are some advantages that enterprises automatically gain from operating close to each other such as the availability of large markets and the flow of tacit knowledge, the cluster is unable to grow into a stage where rich competitive advantages can be found (Alemayehu 2006; Ali 2007). As per the study, the typical features of an industrial cluster, such as a high degree of specialization and inter-firm cooperation are weak in the cluster and there is a low level of trust between enterprises and low level of willingness to cooperate (Ali 2007).

According to the case study, the main reason for the low level of trust is associated with the culture of imitation that makes enterprises reluctant to share information, which has undermined enterprises' potential to innovate.

Government Created Clusters

Since 2003 the second types of clusters, i.e., the government created industrial clusters focusing on MSEs has been emerged following policy decision of the government. These clusters are established with the core intention of alleviating the shortage of working premise for MSEs (UNIDO, 2016b). As a result, the government has constructed working premises to be used by SMEs and avail free land for those SMEs who are capable of constructing their own working premise. The approach still did not bring the desired

outcomes due to various challenges facing the enterprises. Such challenges are explained below.

3.6.4.Challenges Facing Enterprises in the Clusters in Ethiopia

Based on the review of the available literature, the following were identified as the major challenges enterprises are facing while operating the clusters in Ethiopia. It was also found that the problems are common in all the visited clusters with minor variations among the enterprises in the clusters in different cities.

1. **Lack of horizontal and vertical linkages:** Manufacturers in some areas do not have any business-linkage practices, bulk purchasing of inputs, using common types of machinery and marketing strategies. A study by UNIDO (2016) revealed that manufacturers are competing among themselves, especially in selling their products to the wholesalers and retailers. In general, there is no cooperation among the manufacturers that yields mistrust and increase unfair competition among themselves. This results in stagnation of their business.
2. **Obsolete technology:** Previous studies and reports revealed that the technology used by the MSEs' is obsolete. They used old technology, which is less productive and requires high maintenance costs.
3. **Inadequate premises:** The government has provided working premises to the enterprise, which are particularly useful for strengthening the implementation of the cluster approach among the cluster's members. However, these public premises are not correctly designed for supporting MSEs development. They are characterized by obsolete workshops, exposed to environmental and social hazards, lack of ventilation system, poor architectural design, poor accessibility of the spaces, etc.).
4. **Lack of Capacities/skills:** Previous assessments indicated that MSEs engaged in the manufacturing sector has the capability to design and produce their products. Both the owners and employees have the necessary manufacturing skills acquired through learning-by-doing over the years. Only a few employees have acquired skills from formal training institutions such as the Leather Industry Development Institute (LIDI),

TVET colleges and universities. However, the manufacturers lack the capabilities of resources arrangement and management within the manufacturing premises. Also lack soft skills such as management and leadership, entrepreneurship, marketing, finance, and life skills.

5. **Lack of markets and marketing skills**: the marketing of the products produced by the small production units is still minimal. Currently, all marketing initiatives, strategies and opportunities of cluster enterprises are fragmented and are mainly dominated by wholesalers and retailers.
6. **Limited organization of the support of local Institutions**: the governance body of the cluster enterprises is not at the expected level. Studies indicated that some deficiencies of the local Institutions in terms of capacity to provide comprehensive support services to SMEs had been identified.
7. **Limited access to loans**: Micro and small enterprises do have minimal access to bank loans, demonstrating that they are un-bankable or not aware of financial schemes availability. The collateral requirement of MFIs and lease financing institutes is also unaffordable for SMEs.

This study investigated the current status of government created clusters in four cities of Tigray Regional State. Below are the findings of the assessment.

Part IV: Industrial Clusters in the Study Area: Key Findings

This section of the report provides a detail description of the critical findings of the situations in the study *woredas*/cities. Specifically, the status of industrial clusters in the study areas, institutions supporting the clusters, and the challenges facing enterprises are explained. Following this, the gaps that exist in the existing clusters of Mekelle, Wukrao, Raya Alamata and Atsbi Womberta city administrations, their opportunities and resource that are available for the clusters are outlined.

The analysis is based on the interviews and group discussions made with concerned officials at regional and woreda level and owners/managers of enterprises in the cluster.

4.1. Status of the Clusters in the Study areas

According to the interview with Tigray Region Manufacturing Industry Development Agency officials, it was found that in the region, there are about 6,380 small and medium manufacturing cluster enterprises. Out of these 800 enterprises are medium and the rest small enterprises. They are engaged in the manufacturing sector with the support of the regional and federal government. The enterprises are involved in the six priority areas: textile, metal and woodwork, agro-processing, construction input manufacturing, chemical, mineral and mining sectors.

The officials stated that the primary purpose of the agency is to facilitate industry expansion, employment generation, and poverty reduction. The officials further explained that the textile, construction, and metal and woodwork economic sectors are those that generate the majority of the employment opportunities in the region. This claim is also in line with the project focus of VIS.

In general, based on the interviews, document review and observations, a summary of the status of industrial clusters in the study woredas/cities is given below.

4.1.1. Mekelle City

The available data indicated that the small and medium manufacturing enterprises operating in the clusters in Mekelle city are larger than those that exist in other woredas. Table 3 below summarizes the number of enterprises owners for last two years categorized at sub-city level.

Table 3: Number owners of enterprises in 2011 and 2012 E.C.

S. No	Sub City	2011 E.C			2012 E.C		
		Enterprise owners			Enterprise owners		
		M	F	Total	M	F	Total
1	Kedamaye Woyane	161	45	206	160	47	207
2	Semen	276	73	348	275	73	348
3	Ayder	377	138	515	377	138	515
4	Hawlti	297	131	428	303	132	435
5	Aki Hadi	128	79	207	131	81	212
6	Hadnet	290	120	410	293	121	414
7	Quiha	119	62	181	120	60	180
	Total	1,647	648	2,295	1,659	652	2,311

Source: Mekelle Small and Medium Manufacturing Industries Development Office

Based on the interviews and observations made by the consultant, in Mekelle City, there are large numbers of working premises for those enterprises operating in Metal and woodwork manufacturing. There are also four (4) G+4 buildings for the textile clusters. For the construction sector, the city administration prepares fee land (industrial zone) for the enterprises' owners to construct their temporary working premises. As observed by the consultant and also confirmed by key informants, the construction clusters are not

well organized, and the working space is not convenient for smooth operation as well as expansion.

One KI stated the situation as follows: "the government is no more in a position to construct working premises and arrange land for the enterprises. On the other hand, the enterprises cannot construct a well-designed facility." The KI further argued that lack of working premises is a crucial factor and requested the stakeholders such as VIS to assist the government and enterprises by engaging in the construction of a working premise.

4.1.2. Wukro City

The situation in Wukro is almost similar to that of Mekelle. However, in Wukro city, the location of the construction, metal, and woodwork clusters are located outside of the town. However, the textile cluster is in the centre of the town. The unique characteristics of the textile clusters located in the common market place with other enterprises not supported by the agency. They are operating in a shop constructed by the government.

There is a significant difference in terms of the number of cluster member enterprises as well as the number of jobs created in the two cities. That means the numbers are smaller in Wukro as compared to Mekelle. *Table 4* below summarizes the number of manufacturing enterprises who have to get support from the government.

Table 4: The Total Number of Manufacturing Enterprises and owners as of January 2020

S. No	The situation of enterprises	Total No of enterprises	Number of Owners		
			M	F	Total
1.	Previous	205	226	58	284
2.	Transformed from Micro	18	15	3	18
3.	New Enterprises	12	11	1	12
4.	Enterprises that did not exist	6	27	34	61
	Total	**229**	**225**	**28**	**253**

Source: Wukro Small and Medium Manufacturing Industries Development Office

4.1.3. Atsbi Womberta

According to the key informants, in Atsbi Womberta the current numbers of enterprises are small in number as compared to the other project woredas or cities. According to key informants, one of the main limiting factors is access to land. As most of the area is farmland and there is no organized municipality system in the town, it becomes difficult to get land that can be used to construct working premises.

4.1.4. Raya Alamata

Based on the observations and the discussions with key informants, the metal and woodwork clusters in Raya Alamata are well organized, and almost all the working premises are occupied, and enterprises are active in their operations. The construction clusters are located closer to metal and woodwork clusters, which might create some linkage in the long run. However, there is no separate working premise for those engaged in the textile sector. They operate in a common market place combined with other business owners, who are not supported by the agency.

4.2. Employment Generated by the Enterprises in the Cluster

The enterprises in the clusters have a limited capacity for generating employment opportunity. Most interviewed enterprises indicated that they have created from 1 to 10 employment opportunities. The officials also confirmed that most enterprises created on average 3-5 employment opportunities to the nearby community. The numbers are consistent with responses of other experts and owners close to the enterprises.

When the employment opportunity created is disaggregated by sector, KIs indicated that textile sector creates more employment opportunity than others. The reason is that, by its nature textile business is labour intensive; one machine is for one man. Some enterprises have created a relatively large number of employment opportunities for the community. For instance, In Mekelle, an enterprise has created more than 34 job opportunities.

4.3. Availability and Set up of Support Services Institutions

As stated in the previous section, a functional cluster is characterized by the availability of skilled labour, the possibility of promoting and replicating the clusters', existence of forward and backward linkages, maximizing the economies of scale, the capacity of creating employment opportunity etc. To enjoy these advantages, particularly for the government created clusters, the existence of support services institutions has paramount importance in terms of providing support to cluster enterprise. The basic services packages that are important to the enterprises in the clusters are training services, working premises, financial services, and utilities.

In the study region, the following institutions provide the services and support mentioned above.

4.3.1. Small and Medium Manufacturing Industry Development Agency

The Agency, which established in 2016, is the ultimate responsible body to formulate policies, strategies, plans, programs and projects that assist in the acceleration of small and medium manufacturing industry development in the country and regions, among other responsibilities. The Agency is also responsible for creating conducive environment for the development of small and medium manufacturing industry, identify constraints that affect their competitiveness through studies, and provide a remedy for the same (Proclamation 374/2016). The structure of the Agency extends down to regions, zones and districts/*woredas*, including Tigary region.

The office of the Agency in Tigray regional state is responsible for the formation, development and growth of the enterprises. It avails all the necessary services and supports within its mandates. For instance, at District or *woreda* level, the Agency set up one-stop-shop service centers that have well-trained experts who provides services in all the identified economic sectors. The agency has developed a standard that guides the assignment of experts who can support businesses with the following ratio in mind: 1 to

50 (one expert for 50 enterprises) and 1 to 70 for metal/textile, and construction enterprises respectively. According to the standard, the enterprises can get all the services at this centre.

The Agency also tries to identify and compile the available technologies in the TVET colleges, owned by individuals, and other institutions. Every year the Agency develops a plan in this regard, focusing on the source of the technology, what it is, how much it costs, and how will it be transferred to the business enterprises.

4.3.2.Industrial Corporation

The industrial corporation is another government organization responsible for the management of the working premises constructed by the government for the enterprises. The corporation enters into a contractual agreement with the enterprises and collects rent for the working premises.

4.3.3.TVET Colleges

TVET colleges and Poly technique colleges play a very significant role in terms of skill development, technology transfer and business development. They provide specialized vocational training in traditional and newly emerging skills needed for existing jobs and production practices, which encourages self-employment and improves productivity. In principle, these initiatives enable MSE operators to enjoy commercial viability and evolve into a robust private business sector in the economy (Dereje, 2017).

According to Dereje (2017), the integration of Technical and Vocational Education and Training and Small and Micro business sectors is essential, particularly in developing countries since unemployment and underemployment is high. Therefore, the TVET system has the mandate and takes responsibility for building a competent and adaptable workforce according to the needs of different segment of the labour market with particular emphasis on micro and small business enterprises. So, the TVET program was

designed to intensify productivity in this sector. And the linkages are often everlasting and essential when thought employability and reduction of poverty (Gebeyehu, 2014). Similarly, the TVET colleges in the country as a whole and Tigray region, in particular, are expected to transfer relevant technologies to MSE sector to increase their productivity, to improve the quality of products and services and facilitate the creation of a new business. Provision of TVET programs and technology transfer services are the means to strengthen MSE in urban and semi-urban areas (MoE, 2008).

As the Federal Micro and Small Scale enterprise implementation framework of 2011 stated that the Technical and Vocational Education and Training play the following roles to strengthen the MSEs:

- Organize and provide industry extension services that enable to be effective.
- Identify the provided technology undertaken and distribute sample and design activities.
- Prepare and provide training on the basis of the MSEs level of growth.
- Provide support to trainers to get a certificate of assurance.
- Provide training and advice services about job creation/innovation/ hard working competency, KAIZEN that helps to realize saving attitude/ outlook and analyzing other related management principles and methods.
- Provide support and standard services of quality control, design, maintenance and material rent services to MSE of the region.

In general, Ethiopian Education and Training Policy has given particular emphasis to TVET to integrate with job creation and enterprising. The Ethiopian Government has to establish MSE development strategy to create long term employment and facilitate growth and equitable development.

In line with the above discussion, the interview with TVET College officials and other KIs indicated that TVET colleges in the region play a significant role in the growth of businesses. They work as a centre of technology development and transfer and the

advancement of skills and knowledge through short and long term training. In the TVET colleges, there is a unit that works on technology innovation and diffusion. For instance, Alamata TVET College is currently developing 15 different technologies out of which five are ready to be transferred to micro and small enterprises through its technology transfer division. The other five technologies are skills that are going to be transferred through training, and the manual is already prepared to facilitate the training.

The KIs stated that the TVET colleges work as a member of the permanent committee at the regional level involving deans of colleges, government sector office managers to promote technology development and transfer.

KIs stated that the cluster member enterprises are key players for the multiplication and transfer of the technology. The enterprises buy the technology from the colleges via auction. They develop and transfer it to other enterprises. The business owners' stated that the major challenge facing them in the process is that there is no legal protection to those who buy the technology from being copied by other enterprises.

The TVET colleges also provide machine services to cluster member enterprises engaged in metal and woodwork sectors, as there are modern machines used for training purpose in the colleges. These machines are not available in the hands of growing small enterprises. The enterprises use such machinery for critical activities such as cutting, bending, welding, and so on at a minimum service charge.

For instance, in addition to the formal training and education, technology development and transfer, and machine services, the Alamata TVET College is well equipped to provide short term training to owners of enterprises and anyone interested to take the training.

The consultant has identified the following challenges related to TVET Colleges:

- TVET colleges are the source for introducing new technology. However, the incentives for those engaged in technology innovation are minimal. The only incentive they have will be the recognition given to them if the technology.
- Though the colleges are equipped with highly advanced technologies and machines, there are an installation and electrical power capacity mismatch problems. It was learnt that there are machines that remain idle due to lack of expert who can install them.
- TVET Colleges also lacks training facilities and materials.
- Apprenticeship training effectiveness challenge. The host enterprises raised their concern about the effectiveness of the training due to two main reasons. The first one is the trainee lacks the motivation to work hard. They even prefer what to do and not to do. The second reason commonly mentioned was the enterprises do not want to waste their inputs and risk their machines. As a result, they do not allow trainees to use limited input for practicing. They also do not enable then to use the machines. This has limited the effectiveness of the training. Owner of enterprises advises colleges or any concerned agency to provide them with inputs and properly orient the trainee.

4.3.4.Micro Financial Institutions (MFIs)

The role of micro-financial institutions in the growth of micro and small businesses is vital as they help these enterprises overcome their major challenge of securing capital for their business. In this regard, Dedebit Saving and Credit Micro Financial Institute are one of the key players in the sector as a source of finance for SMEs in the region.

The interview with Enterprise Credit Division Manager of Dedebit MFI showed that there are both opportunities and challenges in terms of access to finance in the region.

According to the responses of the official, there is a high-level demand for loan. To fulfil the demand, the institute is working with various stakeholders (Small and Medium Manufacturing Industries development agency, urban Job creation and food security

agency, development agents, and youth and women affairs office) who motivates the youth to seek on. To make the process smooth, these parties organize the unemployed youth in groups, identify their loan demands, evaluate their eligibility and connect them with the institute so that they can have access to a loan.

However, the youth believe that they can easily access the capital they needed for the business. There is an assumption that access to loan without fulfilling requirements. As a result, when asked to fulfil the criteria, they complain. According to the official's response, finance is not the major problem in business in the region. The major obstacles to SMEs are market linkage, behaviour (such as dependency syndrome), working premises, marketing-related gaps, and high expectation from the government as a loan provider.

Still, the institute is trying its level best to fulfill the financial requirements. For instance, recently a new product was developed only to the youth with a 2% lower interest rate, financed by the government. This product meant to involve fresh graduates of TVET colleges and universities in the self-employment process.

As a requirement, for loans above 60,000 birr, the Institute provides need collateral. Unlike commercial banks, the advantage of MFI is that the collateral is not one to one. If they have a house that can serve as collateral that worth one million birr, they might take a loan amount higher in value as compared to the collateral.

Challenges of the MFIs

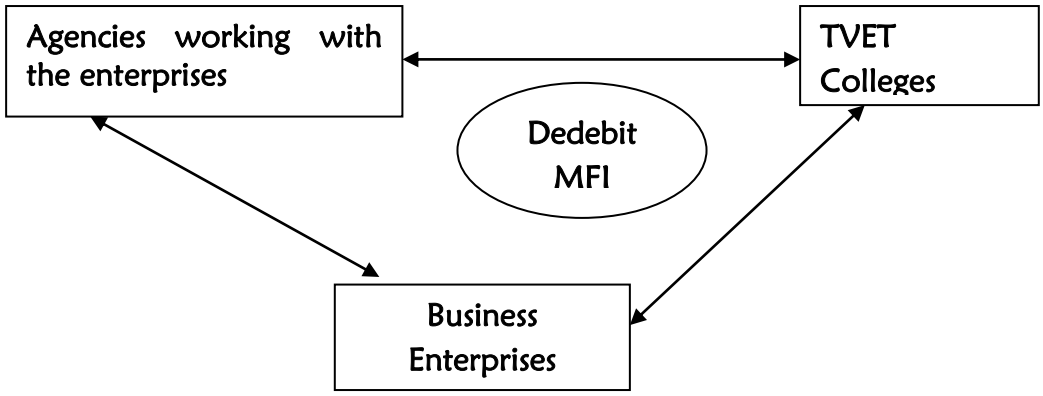
The KIs stated that the following are the challenges facing Dedebit saving and credit S.Co.;

- Failure to pay the loan repayment amount and required interest on time. Some claim that interest rate is also high and difficult to afford by the small businesses.
- The service provision is manual. The institute is not using appropriate banking technology that can facilitate its service provision.

- Liquidity problem. There is a mismatch between the demand for a loan and the available cash for credit to the customers. There is a massive gap in this regard. Notably, this is due to the existence of a large number of unemployed youth who are motivated to start their own business by job creation agencies and other stakeholders.

According to the official, there is strong partnership relationship between the stakeholders: Urban job creation and food security agency (responsible for micro-enterprise), small and medium manufacturing agency, one-stop-shop service centres, TVET colleges, and, the enterprises themselves.

Figure 3: Stakeholders working with Dedebit MFI



Responsible government agencies register the unemployed youth and organize them in groups and send them to TVET for training, develop a business plan and submit it to Dedebit MFIs to secure a loan. Such effort reduces the workload of MFI as other stakeholders make the identification. After the loan, the one-stop service centre will take care of the businesses operation.

4.3.5.Machine Lease Finance Providers

Previous studies showed that leasing fosters economic development and job creation, by providing access to financing to micro, small and medium businesses that often cannot access other forms of financing (IFC, 2009). According to ILO (2003), leasing offers

several advantages over other alternative financing options. The most important benefits are:

1. *Absence of collateral requirements*: The great advantage of lease financing is the absence of (or very few) collateral requirements. The equipment itself serves as security because the lessor retains ownership. If the lessee is unable to make payments, the lessor can repossess the asset.
2. *More straightforward evaluation*: A lease can be concluded more quickly and simply than a bank loan. Rather than looking into the credit history and asset structure of the client, the leasing company only has to make sure that the client can generate sufficient cash through the leased equipment. Less detailed documentation is necessary, and the appraisal can be processed relatively quickly.
3. *100% finance:* Banks usually require from clients that they finance part of the investment from their own resources. Down payments are often up to 40%, thus reducing the amount of the loan. In a lease, 100% of the equipment value is financed, and up-front security payments seldom exceed 10%. The small down payment enables lessees to retain more of their scarce resources as working capital.
4. *Tax incentives:* In many countries the tax system is conducive to leasing. The lessor, as the owner of the equipment, registers the full lease payment (principal plus interest) as income but deducts the depreciation of the asset, usually on an accelerated schedule. The lessee claims the lease payment as a deduction from taxable income. The lease term is generally shorter than the economic life of the equipment, so the lessee in fact "depreciates" the equipment more rapidly than if he/she had purchased it. Since both parties benefit from tax relief on an accelerated basis, overall tax payments on the lease are reduced.
5. *No risk of fund diversion*. The fund provided goes to the purchase of equipment without even passing through the hands of the lessee. This averts the risk that the lessee might use the funds for purposes not agreed upon. It also avoids the risk that the lessee might use the credit to pay back a loan from another financial institution (ILO, 2003).

The current status of Lease Financing in Ethiopia

Lease financing is a new phenomenon in Ethiopia and yet at its infant stage of development. Although the first leasing law, i.e. Capital Goods Leasing Business Proclamation No. 103/1998 was issued in 1998, leasing business has not developed as envisaged. The law was issued to address two major gaps: i) to create an enabling environment for the establishment of alternative sources of funding for those entrepreneurs that lack capital; ii) to fill the existing financing gap which was not addressed by the existing financial institutions.

Existence of this gap coupled with the government's need to support the development of manufacturing sector and industrialization of the country, lead to the coming into effect of the amendment of capital goods leasing proclamation in 2013 (Proclamation No. 807/2013). Following the enactment of the amended proclamation, the NBE, regulatory body of financial institutions, licensed five lease finance companies that operate in five different regions of the country. Accordingly, Addis CGFC, Oromia 41 CGFC, Waliya CGFC, Debub CGFC and Kaza CGFC, obtained capital goods finance business license in 2014 and currently operating in Addis Ababa, Oromia, Amhara, SNNR, and Tigray regions, respectively. Another two more companies, First Capital Goods and Ethio Lease Capital, have joined the sector very recently. The major shareholders of these leasing companies are regional governments and the five big MFIs in the country.

In Tigray region, Kaza Capital Goods Finance Business Share Company is involved in financial leasing business aiming to solve the financing problems of MSEs and medium enterprises in the area.

However, KIs stated that they could not fulfil the requirements of Kaza. As a result, they are no more beneficiaries of the services of the business. Government officials in the region also confirmed this claim. Most enterprises are small in their capacity and do not have a property such as a house that can be used as collateral to get financial service.

In addition to Kaza, Development Bank of Ethiopia (DBE) also provides lease financing services. However, the bank's requirement is more stringent than that of Kaza. Table 5 summarizes the provisions and limitations of the two financers.

Table 5: Machine Lease Financers and their requirements

Factors	Kaza	DBE
• Loan access process	• Flexible	• Rigid and lengthy
• Loan amount	• 50,000 to 1 million	• Minimum 1 million
• The time required to access the loan	• Relatively faster	• Takes a long time
• Machine	• Accept local machines	• Cannot accept local machinery and as a result, it takes a long time
• Basic requirement	• House rent- they accept promise letter • Collateral • 20% saving	• House rent should be secured to apply for the loan. If the process took two years, the owners are going to pay rent for two years without any operation • Collateral • 20% advance saving

Source: KII

4.3.6.One-Stop-Shop Service centres

The agency has established premise one-stop-shop service centres at city/district/woreda level. They are supposed to provide all services at one centre to enterprises. The experts in the centre identify the service needs of enterprises and present it to the council for their action. For instance, if the demand is a loan, the council tries to make an arrangement with the MFI and help them secure it.

4.4. Policy frameworks Related to Clustering

The existence of favourable policy frameworks both in the region and the national government about clustering is an essential factor for the development and growth of the enterprises.

As explained in part three of the report, micro, small and medium enterprises are considered as a priority sector in Ethiopia. They are expected to generate employment and contribute to economic and social development. Particularly, the GTPII considered the manufacturing sector (construction, metal, textile, etc.) to have a significant contribution (EFDRE, GTP II, 2016).

As a result, the Micro and Small Enterprise Development Policy and Strategy were developed in 2012 and revised in 2016, and this can be an evidence of the focus given to MSE development (FDER, 2016).

As mentioned above, the SMEs are supervised by two agencies: Small and Medium Manufacturing Industry Development Agency and Urban Job Creation and Food Security Agency. The Agencies, which was established in 2016, are the responsible bodies to formulate policies, strategies, plans, programs and projects that assist in the acceleration of micro, small and medium enterprises in the country and regions, among other responsibilities (FDRE, Proclamation No. 373/2016, and Proclamation No. 374/2016).

The Tigray regional state and the responsible agencies have their own policies and guidelines derived from the proclamation. The KIs mentioned that to curve some of the challenges and to provide efficient services, procedures and manuals are revised. They are waiting for the approval of the regional council.

The policy frameworks encourage working in collaboration with various stakeholders, KIs mentioned that since 2019, after identifying significant gaps in the sector, an MoU was signed and some improvements have been made this year. For instance,

1. Lease financing: According to the MoU with Kaza, the maximum lease financing amount increased from 1 million to 5 million birr.

2. MFI: The saving requirement to access loan reduced from 20% to 10%. On the other hand, for model enterprises, the loan amount without collateral increased from 60,000 Birr to 300,000 Birr
3. The leadership and support have been given a priority in the region. Leadership become merit based, and experts are assigned to strengthen the one-stop service centres etc.
4. There is also a council consist of members from all concerned stakeholders lead by the Agency. The council evaluates and forwarded its recommendations on issues related to access a loan, technology transfer, and other technical matters that need to be addressed to make the situation convenient for the growth of enterprises in the clusters.
5. Use of appropriate development approaches emphasized. The stakeholders identified cluster development approach and incubation centre as an essential development approach for the coming years.

Therefore, it can be concluded that there are a favourable policy framework and the high level of initiatives from the government side to exert effort for the development of micro, small and medium enterprises in the region.

4.5. Common Problems of Small and Medium Enterprises in the Clusters

Based on the findings of the study, the following are the major challenges enterprises are facing while operating a member of the clusters. It was found that the problems are common in all the visited clusters with minor variations among the clusters in different cities.

A key informant from Agency mentioned that the following are the common problems of small and medium enterprises (SMEs) identified through observations and assessments

made by the Agency. When summed up, the KI said that "the problems arise either from the enterprises themselves or from the government side". The major challenges are:

1. Lack of attention or focus from the concerned stakeholders

For the industry to have a multiplier effect, the enterprises were not getting appropriate support and leadership from the concerned government offices, though it varies by woreda. For instance, in government side, there is a failure to fulfill the minimum required infrastructure, inability to force the enterprises to work as per their contract with the government, selecting wrong persons to work in cooperatives, and so on. The key informant further stated that from the enterprises' side, some owners suffer from 'dependency syndrome'. They expect the government to fulfil everything, such as doing minor repair activities, keeping everything safe, clean, and comfortable for work. They even expect the government to provide a loan without fulfilling the minimum requirements.

2. Lack of access to Finance

The assessment indicated that almost all contacted enterprise owners stated that finance is the major constraint for their growth. They have mentioned that major obstacle in securing a loan is the "stringent requirements of the financial institutions".

One the other hand, the financial institution working with the SMEs in the region claim that they are ready to assist the enterprises as far as they are ready to work with them. For instance, the enterprise financing department of Dedebit MFI stated that "If they have the commitment to work, the institute is ready to support them". But the institute demands guarantee for a loan amount that exceeds 60,000.00 Birr for micro and small enterprises, and 80,000 Birr for model SMEs. The loan that does not require guarantee is "very small as compared to the requirements enterprises. It does not consider the current inflation". One enterprise operator his dissatisfaction as "What can I buy with 60,000 Birr taking in to account the current inflation. A loan amount of less than 500,000.00 Birr is meaningless if I have to bring a change in my business".

According to the official from Dedebit MFI, the guarantee requirement is not 'one to one, unlike the commercial banks.

3. Budget shortage

To fulfil its responsibilities of supporting the enterprises that are in clusters, the regional government needs a huge amount of budget. However, the allocated budget from the National and Regional government is minimal for this purpose. As a result fulfilling necessary infrastructures such as electricity, water, road, and telephone services become a challenge in some areas.

4. Poor Infrastructure

In general, in the study districts, access to infrastructure is mentioned as a significant problem around the clusters. In some clusters, there is a shortage of access to road facility, electricity, and water services. For instance, in Mekelle, some clusters are far from the main road, and lack of electric power and other utilities are the major infrastructural challenges.

As per the KIs, the commonly mentioned challenge in the clusters is the mismatch between the power supply and demand of enterprises. The government constructed the facilities with the assumption that power consumption is small and similar. However, some enterprises demanded more than the designed capacity of the facilities. Others buy additional machines later on due to business growth, which requires high power capacity.

5. Physical problems of the working premises

The working premises of the clusters are almost similar across the study *woredas*. The government constructs them with same design except for the Metal and woodwork clusters that exist in Mekelle city, Semen Sub City. Based on the observation of the consultant and responses of enterprise owners, the working premises in Mekelle City are

designed taking in to account the standard manufacturing operation ergonomics. However, the working premises in other areas have the following major limitations:

- Design problem: The doors are not designed in such a way that facilitates the movement of heavy machines and equipment; there is no partition separating two different owners using the same working premises, and the roof is closer to the ground.
- The space problem: For many enterprises, the size of the working premise is below their actual requirements due to limited capacity from the government side.

The challenge is in line with the assessment of the Ministry of Urban Development and Housing. "Many of the facilities were built using poor building designs on sites that lacked title deed; many did not have access to basic infrastructure and services (water and electricity), had an inadequate provision of the premise" (FDRE-MoUDH, 2016).

As shown in *Figure 4* below, the construction input production cluster is very disorganized and not attractive. Similarly, *Figure 5* indicated that the gate for the metalwork premises is not convenient for moving heavy items.

Figure 4: Photo of a Construction Cluster in Mekelle

Figure 5: Metal Clusters in Raya Alamata

However, the consultant observed that these problems do not exist in Mekelle Metal and woodwork cluster working premises. They are very spacious; doors are wide and

comfortable to move in and out of the premise heavy equipment, machines and raw materials.

Some enterprises in Wukro and Alamata considered this as an important challenge. The KIs stated that “the concerned party should take action that can improve the situation”. The consultant also learnt that the enterprises do not take any action to make modification on the working premise. They expect the government to take the responsibility to do something to make them workable.

There is also an attitudinal challenge in making use of the working premises for its intended purpose. In this regard, the enterprise owners considered the working premises as 'something extra', and they do not give due attention to the importance of the working premises as they are provided by the government free of charge or at minimal rent. For Instance, if a window's glass is broken, they do not maintain or replace the damaged one. They said, "why the government repairs it?", implying that there is dependency syndrome developed by the owners.

In some clusters, the consultant has observed, through the support of experts from the agency, a small number of cluster member organizations have implemented kaizen approach, which is believed to improve productivity, effectiveness, safety, and ensure waste reduction.

6. Failure to Work as per the Cluster Approach

Officials from the Agency stated that according to the general understanding of the concept, cluster means "enterprises working in one area". The approach was introduced in the region in 2003.

As mentioned above since 2016, the Small and Medium Manufacturing Industry Development Agency tried its best to move the enterprises into one area to provide better services and increase their market success. However, the true concept of the cluster

approach has not been implemented in the region. As a result, the expected outcome of a cluster approach was not enjoyed by the enterprises, operating in one location. Some of the reasons are:

1. **The culture of working alone**. The key informants stated that owners of enterprises prefer to work alone and do not want to cooperate with other enterprises in the cluster. They see other enterprises as a competitor rather than as complement or partner. KIs further stated that particularly youth are not willing to work together.
2. **Lack of appropriate support:** The assessment indicated that the stakeholders, including from the agencies that are directly responsible for promoting the growth of these enterprises are not providing proper support. Almost all contacted enterprises share this view. On the other hand, the officials from the government offices stated that they are trying their level best to promote the enterprises. However, they have admitted that still there is a capacity limitation from the government side, mainly budget.

Overall, the applicability of the clustering approach in the region remains very limited. Important indicators of such stagnation are:

1. The enterprises' growth is prolonged and almost non-existent,
2. The innovativeness of the enterprises is very limited,
3. The employment opportunities created by these enterprises remain unchanged for years, and
4. The employment potential of the enterprise is not as expected.

7. Skill gaps of the Enterprises

Enterprise owners were asked whether they have skill gaps or not. The result is mixed. The majority in the enterprise in the metal and construction sectors stated that they do not have a skill gap. Notably, the owners mentioned that "we have the requisite skill acquired through practice and/or have taken formal training before or during the establishment of the company". As a result, they themselves apply the skill or transfer it

to their employees through on the job training. One KI stated this situation as: "I hire someone who is willing to work and learn. I assign him/her in the position of an assistant, and the senior expert or I coach him until he becomes an expert." Other owners also share this view.

The consultant found that almost all owners of small and medium enterprises are not interested in hiring graduates of TVET Colleges. One KI stated that "they do not fit our working system. They either do not have the required skill, or they are not willing to work flexibly. Their salary expectation is also higher than what my small business affords to pay".

8. Lack of trust among enterprises

A key informant in Raya Alamata Metal and Woodwork cluster expressed his concern as follows: "I am no more motivated to innovate new technology as other enterprises will copy it before I recover my cost". He continued saying "last year I came up with new machine design and started to produce it to sale to other enterprises. However, before I produce and sale reasonably enough quantity of the same, it was imitated and produced by other enterprises, and I was forced to bear the loss".

The study reveals that enterprises in the clusters do not cooperate with each other on matters of equally for both such as innovation, sharing common facilities and technologies. The reason is they see each other as competitors due to lack of trust.

9. Weak Backward and Forward Linkages/Market Linkage

As mentioned by many scholars, the cluster approach was promoted to encourage backward and forward linkages.

Backward linkages

Backward linkages are basically business-to-business relationships with input and accessory suppliers aimed at establishing direct supply channels with input providers and

accessory importers to secure advantageous prices and better variety and quality by avoiding or minimizing the involvement of intermediaries. In the study woredas, the effort to create backward linkages was found less effective.

The assessment found that there were no formal agreements signed between the visited enterprises and input providers for large quantities of right quality inputs at competitive prices. Some enterprises' tried to create backward linkage with big industries. However, the owners complained that the minimum quantity requirement, payment arrangements and other requirements of the industries had become an obstacle and difficult for them to fulfill.

Forward linkages

Forward linkages, on the other hand, are business relationships between enterprises in the cluster and market players such as wholesalers, retailers, and exporters. The clustering approach also designed to encourage such linkages. However, in the study areas, it was found that such linkage is also very weak. It was also learnt that "the within the clusters the linkage is almost non-existent". As a result, there is also a market access problem for most producers in the three economic sectors. They complained that "the market linkage is very weak". The concerned officials also confirmed that the role of the government in creating market linkage is limited to 30%. The enterprises are, therefore expected to do their forward linkage and find out their market linkage.

From the Agencies side, the provision of market-related support to MSEs has generally focused on procurement by institutions, which may have undermined the prospect of MSEs becoming self-sustaining and competitive in the market. MSEs, in most cases, were barely able to take advantage of the opportunities provided by government-sponsored programs. The products and services supplied by MSEs were often not competitive in terms of price or quality (FDRE-MoUDH, 2016).

As a result of weak forward and backward linkages, the enterprises are not growing at the expected rate. The guidelines of the Agency explicitly stated that enterprises are expected to be promoted to the next level, i.e., from micro to small and from small to medium within five years. By doing so, they should leave the working premise to other newly emerging enterprises. KI enterprise owners and government officers stated that almost all the enterprises are not growing as expected and they stay at the same level for many years. Tremendously few enterprises grew into the next level within the stated time. This stagnation showed that firms had developed dependency syndrome.

To triangulate the result, the consultant discussed with the VIS Mekelle team, who had conducted an assessment some week before this study. It was found that their observation is almost similar to what is mentioned above. According to the experts, the implementation of the cluster concept is very poor in the study *woredas*. They explained that "it could be due to the low level of government support to the enterprises". Services rendered to these enterprises are below what is stated in the documents and guidelines set out by the respected offices themselves.

In their preliminary result of the assessment, the experts identified the following problems. The clusters are far from the centre of the city- they are located in the outskirt of the cities; there is limited working space, shortage of finance, input, illegal traders that make competition unfair, weak market linkage, and poor utilities and infrastructure. There is no proper backward and forward linkage among the enterprises in the cluster and others outside of the cluster, such as input suppliers and distributors.

4.6. Recommendations / Suggested solutions to the problems

To overcome the challenges of Micro, small and medium enterprises on the one hand, and to exploit the advantages of operating in a cluster, on the other side, the following recommendations are forwarded:

1. It was found that the applicability of the clustering approach in the region remains very limited. As a result, the benefits of cluster approach are not exploited. Therefore, the Agency and Development partner organizations should promote the approach. Particularly, Development agents such as VIS, in collaboration with the concerned government agencies, shall do the following:
    - Encourage and create a platform for collaboration among enterprises within the cluster. This can be done through awareness creation workshops and training, developing common facilities that can be shared by the cluster organizations.
    - To alleviate the input shortage and market limitation for products, the backward and forward linkages of cluster enterprises should be facilitated. This might need a design of a project that can identify and facilitate the establishment of long term relationship by signing long term agreement with the input suppliers and market players (wholesalers and retailers).
2. Access to finance is widely mentioned as a challenge for micro, small and medium enterprises in the study areas. The requirements are challenging for SMEs to fulfil. Therefore, there should be other innovative mechanisms to be developed so that the stringent requirements can be relaxed. For instance, the enterprises should be given machines without a need for additional collateral. Development agents such as VIS may design a project and make arrangements that facilitate the machine lease financing.
3. Though the working premises given to members of the cluster industries are particularly useful for strengthening the implementation of the cluster approach among the cluster member enterprises, these public premises are not properly designed for supporting SMEs development. They can be characterized by obsolete workshops, environmental and social hazards, lack of ventilation system, disorganized

installation of machines, inaccessibility of the premise, and so on. Therefore, the current working premises need renovation to facilitate efficient and effective operation.

4. Experience indicated that in the cluster approach, working in collaboration among the cluster member organizations is a proven strategy to be effective in their forward and backward linkages. Therefore, the enterprises in the cluster should form an association and mobilize joint fund and engage in collective purchasing of raw materials, launch a joint marketing initiative to expand market reach and increase sales volume. Specific actions include having common shops and joint distribution channel, promoting together and the like. However, there is a need for support from the Agency and development organizations like VIS.
5. To exploit the advantages of industrial clusters, awareness creation programs, establishing common facilities, sharing similar machines and technologies should be encouraged by the support institutions.
6. The technology used by MSEs demands serious attention from all concerned stakeholders as advanced/modern one should substitute it to improve the products' quality and the competitive capacity of enterprises.
7. It was also recommended that in addition to joint marketing strategy, enterprises should use subcontracting strategy to get subcontract agreement with more prominent companies so that they can increase their access to the market by producing products for the subcontractor.
8. Trade fairs and exhibitions participation strategy has been the most common avenue to create a market for micro and small enterprises. Therefore, the concerned government agencies should facilitate to increase the frequency of the event to create market access to the enterprises. The enterprises also should work together to overcome factors that inhibit their participation.
9. Since 2016 the Tigray regional state tried to change the situation by reducing the dependency of small and medium enterprises on the government for their market linkage and working premises. Mainly small and medium enterprises are expected to find out markets in their way. For their working space requirements, newly

established enterprises get access to land and the government avails the necessary infrastructure. The enterprises themselves do the construction of the working premises.

10. The efficient and effective utilization of the working premises should be improved by fulfilling the minimum requirements such as electricity, toilet, water, and road and other infrastructures necessary for the enterprises. The Agency and other development agents should allocate budget for such activities.
11. To minimize the dependency syndrome developed by some enterprises and make them competitive, the concerned government parties should strictly follow the policy, procedure and guidelines of SME support and development. For instance, they have to be promoted to the next level and leave the working premise within five years.
12. The concerned stakeholders should work in collaboration with stakeholders that provide utility services, technical support and input providers such as Ethio telecom, Ethiopian electric power and utility, finance providers, TVET Colleges, research institutes etc.
13. Skill gaps should be identified thoroughly to provide tailor-made training to owners and employees of enterprises in the cluster. The training should be a mix of both technical and soft skill.
14. Stakeholders such as VIS should support enterprise to have access to machines and tools by designing a mechanism by which a guarantee from the development partner can substitute the collateral requirement of lease financers. Or the development partner can directly avail the machines.
15. The KI from Mekelle strongly argued that the significant challenge for the enterprises is working premises. Therefore, they advised stakeholders to engage in the construction of working premises as the government is not extending its support in this regard.

Part V

Mapping of the Center of Excellence in the Target Areas

This part of the report describes the concept of centre of excellence, mapping of the available CoEs in the study area, and recommendation what development actors should do in strengthening CoEs as means to bring development in the study areas.

5.1. Definition CoE

Research provided several definitions of a centre of excellence. In general terms, a *centre of excellence can be defined as a premier organization offering an exceptional product or service in an assigned sphere of expertise and within a specific field of technology, business, or government, consistent with the unique requirements and capabilities of the CoE organization* (Craig, 2009).

A CoE can be a logical or physical "service bureau" that provides expertise across projects in a "shared services model." The function of the CoE is to drive standardization of quality products, architecture and governance policies, and processes across the enterprise.

The main goal of the CoE is to focus on process and efficiency - leveraging centralized management and automation platform for operations, consulting, and support services, as well as delivering leadership and advocacy to help the organization improve business outcomes (Craig, 2009).

5.2. Center of Excellence success factors and components

Center of excellence has the following dimensions: *Internal business process*, *customer focus*, *leadership*, *innovation* and *learning*, and *financial* (Craig, 2009), which is in line with balanced scorecard (BSC) approach. This implies that the centre should have well designed internal process, give priority to its customers, have well-organized leadership

and technology, and make sure that profitability and less cost of operation are put in place.

CoE and SMEs

In some countries of the world, which was also promoted by the World Bank, to empower the micro, small, medium enterprise, establishing Center of Excellence was found an important action. Because it is believed that CoEs can contribute to the sustainable growth of knowledge in developing SMEs.

CoE established to support SMEs can have four main activities:

- **Knowledge creation:** The first activity of the CoEs is to map local or regional SMEs by conducting a periodic survey and encourage research engagements in various topics of SMEs in collaboration with research institutes.
- **Knowledge dissemination:** The knowledge created through research should be disseminated to the SME owners, policymakers and the general public through various outlets such research reports, and publication on SMEs, web sites, and electronic newsletter, and Annual research seminar and conference.
- **Knowledge application:** The other responsibility of the centre should be transferring the knowledge into practice. This involves giving tailored training, business consulting and Entrepreneurship for SMEs, customized seminar and workshop, and advanced education and training in collaboration with TVET colleges.
- **Knowledge conservations and networking:** There should be a database on local or regional SMEs, collection of articles on SMEs, and collaboration with other centre and networking.

In a nutshell, establishing CoE ensures that micro and small businesses can have access to the best possible range of supports at all stages of their developments. The creation of a Centre of Excellence in clusters mainly can drive the delivery of best practice supports, ensure that small business people have access to the supports they need so that they can expand, grow and create the jobs the government wants to create.

Center of Excellence: Success Factors

As the key to success, every Center of Excellence should have a set of clearly and concisely defined guiding principles that will provide its direction and focus.

1. **Standardization:** At its core, the primary purpose of a CoE is to define and develop standards and best practices. Standardization includes developing and documenting templates, blueprints, and repeatable processes and methodologies for all significant work efforts
2. **Leveraging Assets:** The Center of Excellence team should strive to identify all of the valuable assets that exist within the organization and the CoE itself. These assets can be physical or intellectual, and typically include human resource, relationships, networks, culture, and so on.
3. **Measuring Performance:** As with any successful endeavour, the CoE must develop the ability to track, measure, and report on the performance of the team's initiatives across all areas of its efforts, as well as specific metrics within the organization itself. Doing this is critical to the growth and evolution of the CoEs since clearly demonstrating success will be a major factor in buy-in and support from stakeholders throughout the organization, particularly upper management.
4. **Guidance and Governance:** To provide useful input, the CoE should be aware of all significant work efforts in which the organization is currently involved, or which it has an interest in pursuing.
5. **Balance subject Matter Experts:** to be effective, there should a balance in the team composition.

5.3. Mapping of CoE in the Study Areas

As mentioned above, identification of the Center of Excellence (CoE) or proposing a new one was the objective of the study. The consultant tried to map the CoEs in the region. The result showed that the following are the existing centres identified.

1. The Common Facilities in the Clusters

In the government created clusters, there exist 12 common facilities in 12 different cities of the region. These facilities are well equipped with very complex and sophisticated machines and technologies by the Federal Government. Their primary purpose of the equipping such common facility is to provide support services to all enterprises in the cluster. This was with the assumption that buying the machines is expensive to individual enterprises. In Raya Alamata Metal and Woodwork cluster, 35 enterprises are operating in the clusters. For these enterprises, there is one centre equipped with 14 different modern and advanced machines. The facility is dedicated to giving services to all the 35 enterprises. As a standard, the facility is provided to 12 selected (actually they are 5) and well trained (the training facilitated at regional level) enterprise owners. These individuals operate the machines and provide services to the rest of the enterprises with a minimum fee.

However, the consultant learned that the facilities in Raya Alamata metal cluster out of the 14 machines only two of them are currently functional due to installation, shortage of raw material and chemical. To make them fully operational, it needs a huge budget. The federal government and regional government should repair the machines and avail spare parts. Such facilities are the centre of excellence for the clusters in transferring technology to enterprises in the cluster.

In other areas such as Wukro, such centre of excellence is not functional due to disagreement of the experts assigned to operate the centre, lack of spare parts, and installation problems.

In general, the purpose of the shared facility is to provide machine service to users for works activities that are beyond the capacity of their technology and machinery. However, as per our observation and responses of the officer and individual enterprise owners' response, the machines are not serving their purpose in most study areas such as Wukro. The reasons are lack of spare part, maintenance, and power shortage. The disagreements with those who are expected to manage the facility are also one crucial factor. An electric meter is also another challenge. There are also challenges related lack of skilled maintenance expert, budget shortage to finance the need for spare parts, and electrical power supply imbalance.

If these machines become functional, it will create more employment opportunity, increase production and productivity, and technology transfer. It will also create more employment opportunities. A KI with the enterprise owner in Raya Alamata stated that if the 14 machines become functional, they can create job opportunity for more than 80 employees.

2. One-stop-shop centres

The assessment revealed that in all the studied *woredas* or city administrations, there is an office that provides all the necessary support and services to small and medium enterprises. The centres are staffed with subject area experts, who are well trained and dedicated to extend their support and transform SMEs.

According to an international consultant, "Center of Excellence is a team of dedicated individuals managed from a common central point, separate from the functional areas that it supports within a practice or organization. Sometimes referred to as a competency or capability centre, the CoE is often the team leading the way in exploring and adopting new technology tools, techniques, or practices".

In line with this definition, the one-stop-shop centres can be considered as the centre of excellence for the development of micro, small and medium enterprises. However, KIs

mentioned that the number of experts are small and need additional training. Most of the experts lack experience. Consequently, they fail to provide the necessary support.

3. Mekelle Garment College CoE

The college was established in 2004 to provide short term and long term training on leather and textile. Since September 2019, the college was promoted to the level of the centre of excellence in garment training and technology transfer with the financial support of the Italian Agency for Development Cooperation through a project implemented by UNIDO.

The regional government covers the cost of the building, whereas the UNIDO's project includes the cost of machines, material, and human resource development costs, salary and other running costs. The project's total budget was 2.5 million birr, including other components such as industry development.

According to the interview with the dean of the college, the evaluation was made by an international consultant and fulfilled the following three standards to be considered as the centre of excellence:

- A technology with acceptable international standard,
- Well trained and experienced workforce, and
- Internationally acceptable training module.

The Figure 6 below is one of the training centres in the college equipped with modern sewing machines.

Figure 6: Photo of Textile Training centre @Mekelle Garment College Center of Excellence

4. TVET Colleges

In all the four cities there are TVET colleges and poly technique Colleges, which lead the technology development, transfer, and skill development role in the region. They have technology innovation centres that are engaged in innovation and technology transfer through training, participating in exhibitions, competition and direct sales of the technology to micro, small and medium enterprises. KIs stated that "the TVET colleges are the centre of excellence in the region".

5.4. Recommendation on CoE

Based on the findings of the study, the following recommendations are forwarded.

1. **Strengthening the existing CoE:** The first option available for Government as well and development partners in mapping the existing CoEs and strengthening them. Expressly, the concerned authorizes, including VIS, can take the following actions:
    - Strengthen the existing common facilities designed by the government in the clusters. As mentioned above, these common facilities need additional modern machinery, spare parts and chemicals to make them fully functional. Besides, there are uninstalled machinery due to technical problems, machines that are not functional due to a shortage of spare parts and chemicals, lack of sufficient power supply, and skill gaps in operating the machines. Therefore, these other challenges should be further studied and remedial action such as training operators, allocating budget to buy spare parts and chemicals, acquisition of new machines based on need, and commission the installation of the existing idle machinery.
    - Reorganize and supporting the one-stop-shop centres.
    - TVET colleges are one of the CoEs in the region. They work as a technology transfer centre and workforce supplier. Therefore, development agents can assist the TVET Colleges to design a tailor-made curriculum that can produce a highly trained workforce to the enterprises. Experience can be taken form Mekelle Garment College that was recently promoted to a centre of excellence with the financial support of AICS.

2. **Establishing new CoE:** The second option available for Development partner organizations such as VIS is the establishment of new CoE in the region, as a project that can last for five years. The CoE office can have the following roles:
    - Set up an office equipped with a trained workforce, technology, machines and equipment to provide training and facilitate technology transfer to Enterprises in the Region.

- Follow and expedite the progression of high potential companies from the micro level to small and then medium.
- Develop and train staffs of the one-stop-shop centre of the Agency so that they can provide better support to the enterprises.
- Train owners and employees of enterprise on how to make use of new technology, machines, develop new and improved product design, improved efficiency, and productivity.
- Establish a new practical and efficient support system, which will respond to the needs of all enterprises throughout the region.
- Design a phase-out strategy so that the centre can be smoothly taken over by the concerned government agency. This strategy is required to ensure sustainability of the center, as VIS cannot continue supporting or running the center for an indefinite period.

Part VI

Specific issues by Economic Sectors

The discussion in the previous sectors deals with general issues common to all the three economic sectors - construction, metal, and textile. The challenges identified and the recommendations proposed apply to the three economic sectors. However, this section gives additional data and emphasizes on some unique issues and cases of the three sectors.

As mentioned in the previous sections, the consultants visited all clusters and made an observation, took photos and conducted an interview with owners and managers of the enterprises.

6.1. Construction Industrial Cluster

The consultant observed that in both the study areas, the construction input production cluster member enterprises operate in temporary working premises constructed by the enterprises. They produce similar products, mainly bricks and use the same type of simple technology.

Working Premises: Based on the consultant's observation and KI repose, the working space for the construction clusters is small. In addition, the machinery arrangements and the space utilization are not based on a proper plan. It was found very much disorganized and is not convenient for their smooth operation. The figures below can testify this claim. The owner mentioned that they are not in a position to invest in the shed because all construction clusters are operating on temporary premises.

Figure 7: Photo of Construction Input production Clusters in Mekelle

Figure 8: Photo of Construction Input production Clusters in Wukro

Technology: The enterprises use a similar type of machine that produces one brick at a time, and when the owners want to produce more at a time, they duplicate the number of machinery. There are no industrial clusters that have a machine that can produce more than one brick at a time. KIs stated that "the modern machines need more investment in terms of preparing the working premises to accommodate the high production capacity".

Input supplies: the major inputs for bricks are sand, clay, and cement, among others. KIs unanimously stated that they have a problem of getting major inputs. They buy them from retailers, which makes the price of the product high. They also suffer from shortage utilities such as water and electricity. Unlike other study areas, water and electricity interruption are not the major problems in Raya Alamata.

However, KIs in Raya Alamata strongly demanded development agents like VIS or the government to support them in buying sand crusher machine so that they can produce sand for the cluster members and others enterprises in the area. They said, "If we get the crusher machine, we can solve our major problem and create employment opportunity for more than 300-400 employees." In general, the backward linkage is very weak in the construction cluster.

Market access: Except few, almost all enterprises in all the study areas, did not mention market access as a challenge for their business. They stated the situation, "except temporary slowdown; there is no market problem for the bricks". But they mentioned one challenge, "location disadvantage" as compared to those enterprises that operate in their preferred premises in the centre of the city.

Gebrehiwot's Success Storey

Gebrehiwot has started his construction input production business (bricks) many years back at a micro-level in Raya Alamata. Since 2017, he was promoted to small enterprise-level and moved to the cluster. He has been doing well in his business and has shown tremendous improvement. Currently, the company has created an employment opportunity for more than 20 employees. Besides, he has also created an indirect employment opportunity for those who transport the bricks (5-6) to customers and daily labourer engaged in loading and unloading of the bricks and other inputs.

However, he mentioned that the major challenge is getting inputs for the manufacturing of the bricks. He was planning to engage in the production of sand and looking for options to acquire the machine.

Gebrehiwot is the role model in the cluster. He is also planning to expand his business. He is given an investment permit and has received land from the government for his new business. He is already promoted to medium enterprise level.

The figure below shows the supply chain linkage in the sector. Following the concentration of the enterprises in the cluster, other individuals have started transportation services using carts. The carts are ideal for transporting small quantities of bricks.

Figure 9: Photo of Bricks transported by Carts (Wukro)

6.2. Metal Industrial Cluster

Like other clusters, metal and woodwork cluster member enterprises have both opportunities and challenges.

In Mekelle City, there are metal clusters located in different sub-cities that host various enterprises engaged in manufacturing of metal and woodwork products. For instance, the clusters that exist in Semen Sub City have facilities that are well organized. In this area, both the permanent and temporary sheds exist.

Figure 10: Photo of Metal cluster working premises at Mekelle

Both interviewed KIs stated that the shortage of capital is the reason for the low level of operation in the sector. They complained that they could not get access to loan due to the difficulty in fulfilling the requirements of MFI and lease financers.

The other challenge mentioned by KIs was the low capacity of power to operate bigger machines, interruption of power, the complete absence of water, and working space to those who have a better operation.

Amare Metal and Woodwork Enterprise

The company was established in 2015 in Raya Alamata city with the plan to produce and sale metal and woodwork products and services. The business is a role model in the cluster. Amare is happy to be here in the cluster. He mentioned that the area is convenient for operation, reduced his cost, and avoids the sound disturbance of the community.

He has purchased a machine that cost 570,000.00 Birr woodwork machine which is the only machine in the cluster. The business has created an employment opportunity for six employees (2 permanent, and four part-time). Amare is planning to supply lumber to distributors in Alamata and other surrounding areas.

Amare is also a member of the association that operates the common facility machines. He is well trained and ambitious. Regardless of his effort, Amare was open to mention the challenges he is facing. Mainly, he stated that "the backward and forward linkage is very poor. I try to find out market linkage and acquire the inputs in my way". He is planning to create intra-firm linkage by supplying lumber as an output to other enterprises in the cluster.

Amare has also innovated injera backing machine and will compete in the regional technology innovation competition to be held this year. Amare is one of the 12 individuals who are managing the common facility. His ambitious and aspires to be one of the successful person in the area.

Figure 11: Photo of Amare with his power saving Injera backing Machine

The Figure below is metal and woodwork cluster shed or working premise in Alamata and Wukro.

Figure 12: Photo of Metal Cluster (Working premise) (Wukrao)

Figure 13: Photo of Metal Cluster Working premise (Alamata

6.3. Textile Industrial Cluster

In Mekelle City, there are 4 G+4 buildings dedicated to textile and leather processing. Whereas, in Raya Alamata and Wukro cities, textile clusters are located in the common market place with other shops. However, in Atsbi Wonberta there is no Textile cluster.

The consultant observed that in Mekelle textile clusters, the space utilization is mixed. Some enterprises have a shortage of space as their operation is large as compared to the available space, but others have owned large space, which is idle at the time of the visit. In Ray Alamata and Wukro, the enterprises have small shop used for produce and sale of both modern and traditional textile products.

Figure 14: Photo of a Textile Cluster in Mekelle

Figure 15: Photo of Textile Shops in Alamata (operators at work)

Figure 16: Photo of Textle shops at Wukro

Challenges of Textile Sector

Both interviewed KIs stated that the shortage of capital is the reason for the low level of operation. They complained that they could not get access to loan due to the difficulty in fulfilling the critical to be eligible to have access to a loan.

The other challenge mentioned by KIs was an interruption of power, grave shortage of water and working space to those who have a better operation.

Market Access: By their nature, the textile and leather sector is more labour intensive than other sectors. From owners and services providers such as one-stop-shop centres, the consultant understood that so far, there is no market problem for the sector. One KI stated that relatively it is the profitable business sectors. He further stated that "Regardless of their economic status people buy clothes".

However, like other clusters, the backward linkage was mentioned as a major constraining factor. Getting the major inputs from textile factories is difficult for small businesses.

Case study

Sebrome General Trade PLC

Six individuals own Sebrome in 2017 in Mekelle City. It is engaged in the textile business. The company tries fulfilling the demand that exists in the market.

The business have Production manager, Operators (sewing), cutting, quality control, assistant, Finance, and Marketing experts. It has created employment opportunities for about 36 individuals, among the operators take the largest number, i.e., 30.

As per the interview with the production manager, the company is doing very well, and it has no market problem. The owners have created the market linkage in Mekelle and Addis Ababa. But there is a long term market relationship with buyers.

The major challenge, according to the manager, is space limitation, electric power interruption, and water shortage. There machines that idle due to space limitation.

The manager said that there is no well-established backward and forward linkage in the clusters and with bigger companies. She said the company tries to find out the market for its products and inputs as well. We buy inputs from wholesalers and retailers at a higher price as we do have limited capacity to establish a relationship with producers of inputs. She said further explained that raw material shortage is the major challenge for most of the enterprises in the cluster.

The manager stated that manpower is not an issue—there are trained people in the market, including those by VIS. Besides, she said, "We hire young as well as willing to learn as an assistant, and it takes a few weeks for them to learn and become an expert".

Case 2

Aregawi Mulugeta Leather and leather products partners

The enterprise was established four years ago by two well-trained individuals in footwear production in Mekelle City. The enterprise is still at the micro-level and could not grow to the next level.

The owners mentioned that the major challenges limiting their growth are: lack of access to capital requirement of their business, poor backward and forward linkages, and input shortage. They said that their business needs 33 different types of raw materials, which is purchased with a certain minimum quantity limit from the suppliers. This implies that there is a need for high capital to acquire the inputs; some of them might be stored for a long time and tied up the capital. He further mentioned that "as our financial capacity is limited, we are also forced to buy in the near buy supplier at a higher price." On the other hand, the forward linkage of business is almost none. This implies that access to the market is limited. As a result, the businesses are not growing at the expected level.

In terms of skill gap, the respondents did not consider it as a major constraint of the sector in general and their growth in particular. One of the owners stated that "I have the training and experience and can design and produce any product". However, he does not deny the need for advanced training.

As mentioned in the previous sections, the consultants visited all clusters and made an observation, took photos and conducted interview with owners and managers of the enterprises.

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Annex 1: Interviewed Individuals and their address

1. Concerned stakeholders of Clusters (Officers)

S. No.	Name of individuals interviewed	Position	Location	Address
1.	Kinday Weldi	Plan and Information Directorate Director	Tigray Region	0914552696
2.	Ato Girmay G/Kidane	Regional Manufacturing Cluster Industry Support head	Tigray Region	0914708237
3.	Kidane Seyoum	Micro enterprise Industrial Extension Director	Tigray Region	0928935447
4.	Gebre Cherkos	TVET Bureau, result based training director	Tigray region	0914730959
5.	Ato Binaiam	Enterprise Credit Division Manager	Dedebit MFI, Head office	0913218218
6.	Ato Getahun	Mekelle Garment College dean	Mekelle City administration	0913380837
7.	Zeru Fesseha	Manufacturing Cluster Industry extension head	Mekelle City Administration	0914753040
8.	Labor and Social affairs office	Head	Mekelle City Administration	
9.	Kassaye Desalegn	Development Bank, Branch Manager	Raya Alamata	
10.	Temesgen	Manufacturing Industry development Coordinator	Wukro	0923413164
11.	One stop service experts (Metal, Textile and Construction)	Experts	Wukro	
12.	Ato Desta	Cluster Coordinator	Wukrao	0914123175
13.	Haile G/Yohannes	TVET College	Raya Alamata	0914297981
14.	Abreha Kassaye	Manufacturing Cluster	Raya Alamata	0914611065

		Industry One stop service center coordinator		
15.	One stop service experts (Metal, Textile and Construction)	Experts	Raya Alamata	
16.	Sector Associations	Leaders and members	Raya Alamata and Mekelle	
17.	Sisay and Million	textile and Metal experts	VIS/ Mekelle	

2. Owners/managers of enterprises

In all the visited woredas, the following individuals were interviewed to get relevant data:

1. Owners/ managers of enterprises in the clusters
2. Association heads (metal and wood work, construction and textile associations).

3. Organizations contacted

- Regional Micro Enterprise Development Agency
- Regional Small and Medium Industry Development Agency
- Regional/city Technical and vocational Educations Office
- Regional/city Technical and vocational Educations Colleges
- Regional Micro finance Institutions (MFIs)
- Ethiopian Development Bank (Branch Office)
- City/woreda level Small and Medium Industry Development Agency
- One shop stop center

Annex 2: Data Collection Guides and Questions

Interview Questionnaire for owners/managers of SMEs in the Cluster [Tool # 1]

Dear Respondent,

MAE Consulting PLC is conducting a research on MSE's cluster development in Tigray region on behalf of **VIS**. The objective of the research is to closely analyze the challenges and opportunities that exist in the cluster development initiatives in the region taking **Mekelle, Wukro, Atsiwomberta, Raya Alamata** as a case study area and seek ways how to overcome these challenges. The study will also evaluate the gaps that are present in the current cluster development process. Finally, based on the findings, the consultants will recommend a suitable solution on various aspects of cluster development challenges in the region so that more employment opportunity can be created. The study also will recommend the whether there is a need to establish center of excellence (CoE) in the project intervention areas or not.

Thank you for your time and effort!

Part I: Background Information

1. Name of the organization: _____
2. Date of establishment: _____
3. Number of owners/members of the business: _____
4. Date of visit: _____
5. Your level of education:
   No education ☐ **Primary** ☐ **Secondary** ☐
6. Your Gender: **Male** ☐ **Female** ☐
7. Your age: _____
8. Types of your engagement in the business: full-time ☐ part-time ☐
9. List the main products of the Business:_____
10. Number of enterprises in the cluster _____

Part II: Main Questions

1. For how long have you been in the cluster? _____
2. How your enterprise is a member of the cluster (naturally progressed, formed by the government or NGO support)?
   _____
   _____
3. What are the benefits of being a member of the cluster? _____
   _____
4. List the most important development/**improvements** since the cluster development?
   _____
   _____
5. If there is an improvement, who are the key players (agents) for these improvements of the businesses in the cluster? *(please specify those who provided support)*
   - NGOs ☐

- Government Agencies ☐
- Others please specify:

_____
_____

6. List out the major problems/challenges in the cluster in their order of their severity?

_____
_____

7. What are the actions you and other members of the cluster have taken so far to improve or develop the cluster for mutual benefit?

_____
_____

8. What are your sources of information regarding raw material, production, designing, market, technology, finance, training, new legislation?

_____
_____

9. What are the roles of your enterprise in the Cluster?

_____
_____

10. What is the requirement or criteria to become the member of the Cluster?

_____
_____

11. List the major benefits that your organization has got as a member of the Cluster.

_____
_____

12. Is there a relationship between the enterprises within the Cluster?

_____
_____

13. What kind of business relationship do you have in the cluster? Please list the name of the institution (Enterprise which exist in the cluster) and the type of business relationship.
    - Suppliers: _____
    - Traders: _____
    - Larger firms: _____
    - Business Development Services (BDS) providers: _____
      _____
    - Support institutions: _____
    - Others _____
14. Are these relationships useful to address the problems you mentioned above? How? Please explain?

_____
_____

15. What are your recommendations to make the clusters effective?

    _____
    _____

Employment generation capacity of the sector

16. How many employees do you have?
17. Permanent _____temporary _____
18. Where do you get employees?
    - TVET Colleges
    - From the labor market
    - By recommendation
19. Do you have employees who are returnees from migration (mainly from Gulf countries)? If your answer is yes? How many (male _____women _____)?
20. Do you think the sector is contributing towards reducing unemployment rate and irregular migration of youth? How? Explain.
21. Do you think the sector is more human resource or technology? Please explain it from employment perspectives?

Semi Structured Interview Guide
Organizations Doing Business with SMEs (suppliers and buyers) in the Cluster
[Tool # 2]

Dear Respondent,

MAE Consulting PLC is conducting a research on MSE's cluster development in Tigray region on behalf of **VIS**. The objective of the research is to closely analyze the challenges and opportunities that exist in the cluster development initiatives in the region taking **Mekelle**, **Wukro**, **Atsiwomberta**, **Raya Alamata** as a case study area and seek ways how to overcome these challenges. The study will also evaluate the gaps that are present in the current cluster development process. Finally, based on the findings, the consultants will recommend a suitable solution on various aspects of cluster development challenges in the region so that more employment opportunity can be created. The study also will recommend the whether there is a need to establish center of excellence (CoE) in the project intervention areas or not.

Thank you for your time and effort!

Part I: Background Information

1. Name of the Respondent: _____
2. Name of organization: _____
3. Contact details of respondent: _____
4. Level of education: _____
5. Gender: **Male** ☐ **Female** ☐
6. Age:_____
7. Form of organization and ownership:_____
8. Experience of the firm (in years): _____
9. Main product: _____

Part II: Questions

1. Do you have any business relationship/ partnership with the members of the cluster?

_____

_____

2. What is the nature of your relationship with cluster enterprises? [Elaborate]
   - Input supplier ☐
   - Output buyer ☐
   - Other please specify: _____
3. Volume of transaction/annum: _____
4. How was this relationship established? _____

_____

5. How the relationship between your enterprise and those in the cluster is going? (getting weaker/stronger, positive/negative) **Why**?

_____

_____

6. What is the main motivating factor for these business relations?

• Low cost	_____
• Convenience	_____
• High quality	_____
• Easily Availability (within the cluster)	_____
• Other Please specify:	_____ _____

7. Do you see any opportunity for further relationship/cooperation with other enterprises in the cluster taking in to account the value-chain? In what area? How?

_____
_____

8. What types of support or inputs are needed to establish further the relationship?

_____
_____

9. Who do you think shall provide the support?

_____
_____

10. What main problems are experienced in relationships/networks?

_____
_____

11. What are your recommendations to solve these problems?

_____
_____

Semi Structured Interview Sheet
Organizations providing Support (TVET, SMEs Agency, NGOs, MFIs) to the Cluster [Tool #3]

Dear Respondent,

MAE Consulting PLC is conducting a research on MSE's cluster development in Tigray region on behalf of **VIS**. The objective of the research is to closely analyze the challenges and opportunities that exist in the cluster development initiatives in the region taking **Mekelle**, **Wukro**, **Atsiwomberta**, **Raya Alamata** as a case study area and seek ways how to overcome these challenges. Study will also evaluate the gaps that are present in the current cluster development. Finally, based on the findings, the consultants will recommend a suitable solution on various aspects of cluster development framework in the region and also propose the necessary policy framework for cluster development and establishment of center of excellence in the project intervention areas.

Thank you for your time and effort!

Part I: Background Information

1. Name of the person: _____
2. Name of organization: _____
3. Contact details of respondent: _____
4. Date of visit: _____
5. Level of education: _____
6. Gender:
    - Male
    - Female
7. Age: _____
8. Form of organization and ownership: _____
9. Area of support:_____
10. Date of your engagement in the cluster development:_____

Part II: Main Questions

1. Mention the **criteria** do you use in forming the clusters in the region/city?

_____

_____

2. What **benefits** have you observed by establishing clusters in the region/city?

_____

_____

3. List critical conditions that must exist for cluster to exist and grow?

_____

_____

4. Do you think such conditions exist in the Clusters formed in the region?

_____

5. What is the role of your organization in strengthening the clusters?

6. Do you think your organization have a limitation in supporting the cluster? Mention the limitations you have as an organization.

7. Do you think the cluster is contributing to reduce illegal migration by creating job for unemployed youth?

8. You have an experience in linking returnees and most at risk youth for migration to the clusters to create job before?

9. Do think that the clusters have a shared vision?

10. What are the major technical and managerial skill gaps that exist in the clusters?

11. What are the bureaucratic challenges faced by the clusters?

12. What kind of support the clusters need to make them more effective and productive for creating employment opportunity for more youth?

13. How do you evaluate the support of government and NGOs to strengthen cluster and its value chain for country development as well as to create employment opportunities?

14. Is there any forum that brings your institution and other relevant institutions together to tackle the specific cluster challenges?
    If yes, how often such forum is held?

_____
_____

15. If yes, how often such forum is held?

_____
_____

16. What are the major challenges you face to support and upgrade clusters in the region?

_____
_____

17. Give us your recommendations to solve these problems?

_____
_____

18. Is there an institution of enterprise that can serve as a Center of excellence? Why?

Focus Group Discussion (FGD) Guide
With stakeholders working with Targeted Clusters [Tool #4]

The purpose of the focus group discussion is to understand the challenges and skill gaps of Cluster in the region. This is done by way of bringing together the various stakeholders ***(Job creation office, MFIs, trade and industry etc)*** in the cluster. The main themes of this focus group discussion are:

Question	Probing Question
1. What is the current situation of the Cluster?	• How many clusters exist in the city? • Minimum and maximum number of members of the cluster • Their performance/growth since establishment of the cluster • Are the clusters government formed or naturally evolved? • Do clusters have shared vision?
2. What are benefits/advantages of operating in the cluster?	• In terms of information sharing, technology transfer, specialization, market access, working space, networking with bigger firms etc.
3. What are the major challenges and barriers in the cluster?	• Machinery, technology, skill gaps, market access, working space, competition among firms in the cluster, access to input, and so on
4. How can these challenges and barriers be addressed?	• Specific actions taken by various stakeholders
5. Do you think clusters are creating more jobs for unemployed youth? How?	• Number and quality of jobs created
6. What are the key supports from NGOs, Federal governments in Cluster development?	• Technical, financial, material, experience sharing, market linkage etc
7. How the government creates an enabling environment for youth to organize themselves in SMEs and make them part of the cluster?	• Support, policy issues
8. Is there any enterprise or agency who can serve as a CoE?	• Identify the enterprise and state its strength and challenges

Focus Group Discussion Guide
With owners/managers of Enterprises in the Cluster [#Tool 5]

The purpose of the focus group discussion is to understand the challenges and skill gaps of Cluster in the region. This is done by way of bringing together the various stakeholders in the cluster. The main themes of this focus group discussion are:

Question	Probing Question
1. What is the current situation of the Cluster?	• Minimum and maximum number of members of the cluster • The performance/growth of the cluster since establishment • Are the clusters government formed or naturally evolved? • Do clusters have shared vision?
2. What are benefits/advantages of operating in the cluster?	• In terms of information sharing, technology transfer, specialization, market access, working space, networking with bigger firms etc.
3. What are the major challenges and barriers in the cluster?	• Machinery, technology, skill gaps, market access, working space, competition among firms in the cluster, access to input, and so on
4. How can these challenges and barriers be addressed?	• Who assist you in handling the challenges? • Specific actions taken by various stakeholders