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National TVET policies and systems in Ethiopia: Opportunities and issues in challenging times

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for Skill-Up, a Development Cooperation Project
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Preface

Ethiopia has registered impressive economic growth and poverty reduction in the last two decades. However, the structural transformation from agriculture to industry and high-value service sector, which are key factors in ensuring sustainable economic growth, has been slow. The lack of structural transformation has resulted in high urban unemployment, under-employment, and low earnings. In the last decade, urban unemployment in Ethiopia stood at about 17%. More than a quarter of youth (aged 15 – 29) are unemployed. Moreover, a quarter of women are unemployed. Youth women face even lower employment prospects. A high level of underemployment remains another challenge in the country. Low earnings and under-employment are the key challenges in rural Ethiopia. With increasingly more and more new entrants into the labour market annually, job creation is a daunting challenge and will remain so unless effective policies that enhance the employability of the youth are put in place.

The expansion of TVET has been one of the key policies the government has implemented since the mid-1990s to enhance employability of the youth and boost labor productivity. The National TVET strategy was prepared in 2008, replacing the one adopted in 2002. Beyond geographic expansion, the new strategy emphasizes quality assurance by focusing on the need to improve the quality and relevance of the TVET training. Progress since the introduction of the new strategy has been slow performance in improving the quality and relevance of skills has been below par in both first and the second growth and transformation plan periods (2010 – 2020). Unless the quality and relevance of skills produced by the TVET system improves continuously, achieving the goal of enhancing employability and productivity will remain elusive.

This report provides a rigorous and systematic study on the national TVET policies and systems in Ethiopia. It identifies the key features of the TVET and skill system in Ethiopia, the challenges that confront it and the opportunities to address them with the support of the ILO and its partners. The analysis informs development partners on possible technical and institutional interventions on the TVET system in Ethiopia. The SKILL-UP project is supported by the Government of Norway, which has used the findings of this report in guiding some of its interventions.

Table of contents

▶	1. Introduction	1
▶	2. The socio-economic context	3
	2.1. Demographics.....	3
	2.2. Economic Growth	3
	2.3. Poverty	5
	2.4. Trade	5
	2.5. Macroeconomic policy framework	7
	2.5.1. Planning evolution	8
	2.5.2. Skills development and technology policy	9
	2.5.3. Green economy policy	10
	2.5.4. Migration policy	11
	2.5.5. Employment policy.....	12
	2.6. Labour market overview	13
	2.6.1. Change in the labour force participation rate	13
	2.6.2. Changes in sectors of employment	15
	2.6.3. Occupational and employment status of workers.....	17
	2.6.4. Employment in the informal sector	21
	2.6.5. Change in the unemployment rate	23
	2.6.6. Migration	25
	2.6.7. Recruitment, skills shortages and turnover.....	27
	2.6.8. Skills mismatches	31
	2.7. Education and Training.....	32
	2.7.1. Trends in access to basic education.....	32
	2.7.2. Trends in higher education	33
	2.7.3. Trends in access to TVET centres.....	34
	2.7.4. Implications of the socio-economic context for the TVET system ..	36
▶	3. The Technical and Vocational Education and Training (TVET) system in Ethiopia	39
	3.1. Overview of the TVET system in Ethiopia	39
	3.2. Training schemes delivered by other government agencies	40
	3.3. Skill development by NGOs	40
	3.4. Training delivered by industry.....	41
	3.5. Policies and strategies governing TVET in Ethiopia	42
	3.5.1. Policies and strategies for skills development and TVET	42
	3.5.2. Major institutions engaged in implementing TVET programmes ..	50

3.5.3.	Financing skills development	51
3.5.4.	The role of employers' and workers' organizations and social dialogue in TVET governance.....	52
3.5.5.	Skills anticipation in the TVET System	52
3.5.6.	Skills provision in the TVET system	53
3.5.7.	Skills certification and recognition in the TVET System.....	54
3.5.8.	Quality assurance of training delivery	55
3.5.9.	Accessibility of TVET to disadvantaged and vulnerable groups	55
▶	4. Major challenges and opportunities for TVET	57
4.1.	Current challenges.....	57
4.1.1.	Supply-driven nature of the TVET programme.....	57
4.1.2.	Poor quality of training.....	58
4.1.3.	Poor TVET/industry linkage.....	62
4.1.4.	Weak employment services	63
4.1.5.	Underfunding of the TVET programme.....	63
4.1.6.	Other issues limiting the effectiveness of TVET	64
4.2.	Opportunities for TVET in Ethiopia	64
4.2.1.	Enhance stakeholder engagement in the TVET system	64
4.2.2.	Enhance the training-to-job transition of TVET graduates by improving the labor market information system	66
4.2.3.	Development of a comprehensive financing strategy for the TVET programme	67
4.2.4.	Invest in developing the capacities of the TVET workforce.....	67
▶	5. References	69

List of figures

Figure 1.	GDP growth over time.	4
Figure 2.	Poverty headcount ratio at \$1.90 a day (2011 PPP) (% of population).....	5
Figure 3.	Trade, exports and imports in relation to GDP	6
Figure 4.	Manufacturing exports and imports as percentages of total exports and imports of merchandise.....	7
Figure 5.	Participation rate by age cohort and sex.....	15
Figure 6.	Percentage shares of people employed by sector in urban and rural areas	16
Figure 7.	Changes in shares of sectoral employment over time by sex.....	17
Figure 8.	Employed population aged ten and above by major occupational categories and sex	18
Figure 9.	Share of female employed population aged ten and above by major occupational categories.....	19
Figure 10.	Employment status by sex.....	20
Figure 11.	Percentage share of people employed in rural and urban areas.....	20
Figure 12.	Share of informal workers by sex and location (2013).....	22
Figure 13.	Share of informal workers in urban areas over time	23
Figure 14.	National unemployment over time.	24
Figure 15.	Urban unemployment over time.	25
Figure 16.	Share of migrants who are unemployed (2013).....	26
Figure 17.	Key HR problems identified by firm managers	29
Figure 18.	Lack of skilled manpower as a key constraint in three labour-intensive industries.....	30
Figure 19.	Skills mismatches in urban Ethiopia (2003-2014): Percentage of workers mismatched.....	32
Figure 20.	Drop-out rate for primary grades 1 to 8	33
Figure 21.	Enrolment in undergraduate and postgraduate education programmes	34
Figure 22.	TVET enrolment by sex.....	35
Figure 23.	TVET enrolment in relation to secondary-school and tertiary enrolment.....	36
Figure 24.	Ratio of TVET trainers to trainees (%).....	59
Figure 25.	Satisfaction with the performance of TVET graduates.....	60
Figure 26.	Perception of change in the quality of the TVET system over the last four years .	60

List of tables

Table 1.	Sectoral shares and contributions to growth in GDP.....	4
Table 2.	Labour-force participation rate over time	14
Table 3.	Recruitment of professional workers between July 2013 and August 2014.....	28

Executive summary

Economies at an early stage of industrial development invariably face challenges that could hinder progress and set the development clock back. Successfully industrialized countries have managed to overcome these challenges and build more resilient economies. In its drive for industrialization, Ethiopia has attempted to absorb valuable lessons that are crucial in developing relevant skills for industrial upgrading and economic transformation. The various development plans the country has introduced show a genuine recognition among policymakers that investment in human capital and skills formation are prerequisites for successful industrialization and that, without such investment, the desired transformation of the economy will remain an elusive mirage.

Indeed, investment in human capital enhances the productive use of labour, which in turn contributes to poverty reduction as labour is probably the only asset over which the poor have unrivaled command. The key determinant of labour productivity is skills, and skills can be developed. Expanding access to education and training and improving its quality are thus the main routes by which investment in people can enhance both efficiency and equity.

The Ethiopian Government has recognized the importance of improving access to quality education in enhancing the nation's human capital. Over the past two decades, investment in the education sector has brought about substantial improvements in terms of gross enrolment ratio (GER) and extended reach, and has narrowed gender and regional disparities in the general education system. A further government priority has been the adoption of best practice in support of sustainable vocational training under the overarching umbrella of the technical and vocational education and training (TVET) system.

In this report, we examine Ethiopia's TVET policies and systems with a particular focus on current opportunities and challenges. To provide context for the TVET analysis, we conduct a comprehensive review of the country's socio-economic situation, taking into account macroeconomic conditions, the labour market, and education and training policies. In subsequent chapters, we discuss specific issues, including institutional and market conditions in relation to the TVET system.

In the Ethiopian context, TVET is considered a key mechanism for nurturing skills to improve labour productivity and help reduce the country's unemployment problem. As explicitly recognized in various government strategy documents and development plans, the TVET system is vitally important for skills development and policy coordination, requiring the participation of multiple stakeholders, including the Government, the private sector, and development partners. From the Government's point of view and in line with its development plans, in particular the national Growth and Transformation Plan (GTP), the TVET system has

a critical role to play in sustaining growth and enhancing labour productivity, and hopefully promoting the structural transformation of the economy. The importance ascribed to the TVET system underlies the significant expansion of TVET institutions throughout the country – an area which also seems to have attracted significant attention from development partners and the private sector. The number of TVET institutions in fact increased from barely 15 in 1994 to more than 582 in 2017, while enrolment expanded from fewer than 10,000 trainees in the 1990s to more than 300,000 in 2017.

TVET programmes are also seen as a crucial way of bridging the skills gaps observed in the “modern” economy. For example, studies have indicated that, in addition to the usual constraints on industrial development, Ethiopia’s effort to industrialize have been frustrated by the limited availability of both soft and hard skills. Upgrading technical, entrepreneurial and managerial skills through the TVET system is therefore expected to promote job creation and enterprise competitiveness. The industry extension packages designed to promote enterprise productivity and profitability are implemented mainly by TVET institutions. Furthermore, the vocational training programmes delivered by the TVET system are expected to generate productive skills that will make outbound and possibly illegal migration less attractive. To improve the TVET system, the Government has been working on the development of occupational standards, the accreditation of competencies, occupational assessment and the establishment and strengthening of the curriculum development process.

In short, the TVET system is a vital aspect of the Government’s plan to expand job opportunities and increase exports by establishing and expanding industrial parks, attracting private foreign direct investment, supporting small and micro enterprises, and improving infrastructure, skills and competitiveness. Despite its prominence in government documents, however, the TVET system faces multifaceted challenges. Problems related to access, quality and relevance are still important constraints on the contribution it should be making to skills formation. As a result, the graduates of TVET centres often fail to meet industry skills standards and skills mismatches continue to hold back industrial development.

Our assessment also indicates that the TVET system is not well integrated with some of the key government policies designed to transform the economy. It is not clear, for example, how the TVET system can help achieve the Sustainable Development Goals (SDGs) or the low carbon-economy envisioned in the Climate Resilient Green Economy (CRGE) document.

The attitude of society in general and prospective students in particular is also not conducive to attracting the able and talented, making the TVET track a last resort for those failing to gain places at more prestigious higher-education institutions. A lack of information on the needs of the labour market further discourages young people from taking TVET programmes offering only limited career prospects, thus swelling the ranks of educated but unemployed youth in Ethiopia’s cities.

Furthermore, the TVET system as a whole has remained largely supply-driven with only limited involvement on the part of the private sector and NGOs in the governance and delivery of skills. It is vital that the private sector be engaged in curriculum design, training, placement and retraining to ensure that TVET training programmes are responsive to labour-market demand and conditions. Such engagement will also ensure that enterprises are supplied with the skills they need on a continuous basis.

In urban areas, the TVET system has largely targeted the formal economy, with training programmes delivering college-level education appropriate to the formal sector. While programmes such as industry extension services target relatively smaller enterprises, the TVET training programme could be made more flexible to include unregistered jobseekers and unlicensed business owners and their workers. Tailoring training programmes to the needs of the informal sector is important. Similarly, the TVET system can serve to make useful skills available to outbound migrants and returnees. Our assessment indicates that the training programmes run for out-migrants to destinations such as the Middle East and the Gulf States are still very rudimentary. More advanced vocational training programmes in machine operation, metalworking, electronics, masonry and plumbing are not offered as part of the effort to build the skills sets of migrants. Indeed, except for project-based interventions, often initiated by development partners (e.g. the EU's SINCE project), it is not clear to what extent the TVET system is an integral component of migration policy.

While the TVET system's focus on industrial and urban areas is highly relevant and in keeping with the Government's industrialization plan, it is also important to tailor the TVET system to address the growing problem of both open and disguised unemployment in rural areas. While relatively specialized and advanced vocational training programmes might be required for industrial jobs in urban areas, the increasing numbers of non-farm workers in rural areas would also benefit from vocational schooling focusing on more general skills. In line with the Government's long-standing objective of modernizing agriculture, it is imperative to assess the TVET system's capacity to include training programmes that would help to bridge the skills gap in the agricultural sector.

The current study has identified a number of problems facing the TVET system. These include its supply-driven character, meaning that it responds poorly to changing skills needs and produces mismatches between demand and supply; the poor quality of the training delivered because teachers lack the necessary competencies; low teacher-student ratios, poor equipment and limited access to apprenticeships; inadequate contact between the TVET system and industry; a dearth of labour market information (inadequate job centres, high search and recruitment costs); and general underfunding.

Despite this immense potential of the TVET system to develop managerial, technical and vocational skills for the labour force, its success in bridging the skills gaps evident in the economy is said to be minimal. The TVET system and its training programmes have

certainly contributed to job creation, improvements in enterprises productivity and rural industrialization. However, the TVET system still requires critical attention and a substantial effort is needed to introduce improvements in access, quality and relevance.

The TVET system also appears to be highly supply-driven, with limited participation on the part of the private sector in the development of TVET curricula and the implementation of vocational training programmes. This has resulted in an obvious gap or mismatch between TVET graduates and the operational standards of industry. The lack of coordination between the various stakeholders attenuates the TVETs potential for reducing unemployment and boosting skills formation. As a result, firms undervalue and underpay TVET graduates and, worse still, TVET graduates suffer from excessively high levels of unemployment.

Key areas of intervention to ensure a functioning and sustainable TVET system include enhancing stakeholder engagement in the system, improving the training-to-job transition for TVET graduates, developing a comprehensive financing strategy, and investing in developing the capacity of the TVET workforce. It needs to be recognized that, as the Ethiopian economy grows and its structure changes, the nature and composition of the skills the economy needs will also change. The TVET system should therefore be organized in a way that encourages the constant updating of courses, training programmes and curricula.

1. Introduction

The objective of this report is to identify the key features of the TVET and skills development system in Ethiopia, the challenges that confront it and the opportunities to address them with the support of the ILO and its partners. The analysis will be used to inform development partners concerning possible technical interventions in Ethiopia, including for example the SKILL-UP project supported by the Government of Norway.

The report presents an analysis of the following:

- ▶ The socio-economic context:
 - Demographic and economic context/trends, indicating current and future labour demand, job creation needs and challenges, and the skills needed to support inclusive growth;
 - Educational context/trends, indicating the current supply of skills and gaps to be addressed, including in secondary and tertiary education more broadly;
 - Labour market context/trends, showing how the demand for and supply of skills do or do not match;
 - Policy mix in the country, indicating the government policy measures directly or indirectly influencing the supply of and demand for skills.
- ▶ Key elements of the national TVET system, including governing institutions, regulatory systems, mechanisms for ensuring alignment of skills supply to demand, social dialogue, and others;
- ▶ Challenges and opportunities in skills development in general and the TVET system in particular.

To achieve the objectives of the report, we have largely followed a desk-review approach taking into account policy papers and empirical studies. We have also used data produced by the Central Statistical Agency, including the National Population Census, national labour force surveys and urban employment/unemployment surveys. We have also documented the findings from our discussions with stakeholders, albeit to only a limited extent.

We also concede that the study may not be comprehensive in its assessment of the TVET system as it is largely based on the stock of knowledge and data already produced and readily available. The most recent developments in the education system and the Government's plans for the TVET system may therefore not be sufficiently reflected in the report. Most of the figures and tables presented here are also drawn from official sources, including the Central Statistical Agency (CSA) and the Ministry of Education (MoE). Some of these datasets may not be up to date and some may lack useful information that could have further enriched the report. These data limitations also constrain our ability to draw precise inferences from some of the observations we make in the analysis.

The rest of the report is organized as follows. Section 2 presents an analysis of the socio-economic context of the country. Section 3 analyses the national TVET system, while Section 4 considers the challenges and opportunities of the current TVET system.

2. The socio-economic context

2.1. Demographics

With an estimated population of more than 105 million, Ethiopia has the second-largest population in Africa, following Nigeria, as well as being the sixth-largest landlocked country in the world.

The population grew at a rate of 2.9 per cent per annum between 1984 and 1994 and 2.5 per cent between 1994 and 2007. This growth took place mainly in rural areas. There are, however, signs that the rate of population increases in rural areas has been slowing down in more recent years. For example, between 1984-1994 and 1994-2007, while population growth in urban areas declined from 2.7 to 2.3 per cent, the rate in rural areas declined by a full percentage point, from 4.8 to 3.8 per cent (Bayru et al., 2018). Recent evidence also suggests that there has been a significant expansion of the urban population, which is growing at an annual rate of 5 per cent (Bayru et al., 2018). The 2013 National Labour Force Survey (NLFS 2013) also indicated that the proportion of the urban population had increased from 15 per cent in 2008 to 18.2 per cent in 2013, and this figure was estimated to have further increased to 19 per cent in 2015 (Bayru et al. 2018).

The 2007 census showed that the average household size was 4.7 people (3.8 in urban areas and 4.9 in rural areas). The national literacy rate, defined as the share of five-year-old able to read and write, was about 40 per cent in 2007.¹ The census indicated that nearly two in three females in the population were illiterate.²

2.2. Economic Growth

The presence of a large population is both an opportunity and a challenge for poor countries like Ethiopia. Absorbing a large population into productive employment requires a continuous expansion of job opportunities at a rate much faster than that at which the population grows. This would imply moving a large fraction of people from low-productivity agricultural jobs and informal self-employment to the highly productive service and industrial sectors. Since labour is an important factor of production, the youth bulge could present the economy with a demographic dividend to further spur economic growth.

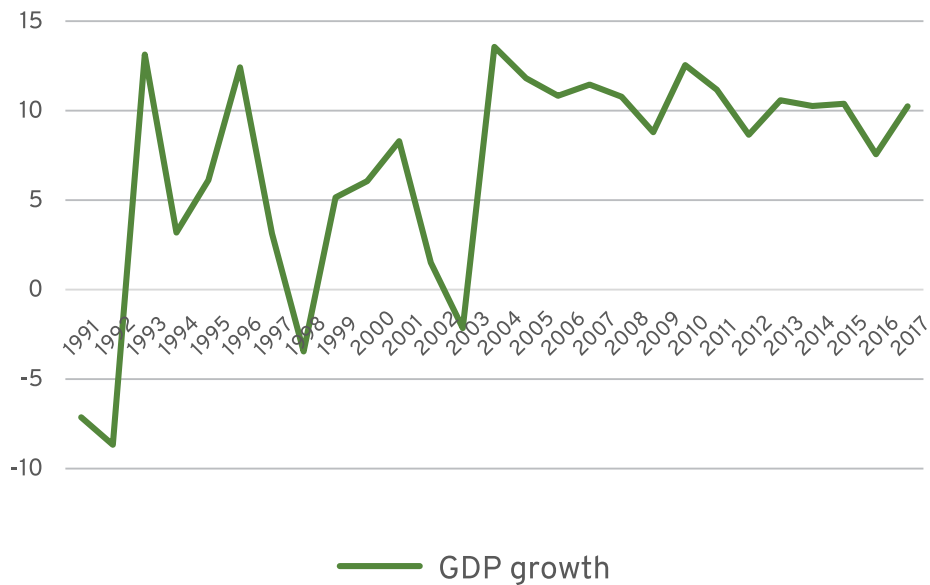
Notwithstanding the debate on whether the demographic dividend is a reality, the growing population does not seem to have prevented Ethiopia from achieving one of the fastest

¹ A person is described as literate if he/she “can read and write a simple sentence in any language” (CSA, 2007, p.229).

² Male literacy was 46 per cent, female literacy 33 per cent.

growth rates on the continent.³ Since the start of its growth spurt in 2002/2003, the economy has grown on average by 10 per cent a year (see Figure 1), with capita GDP increasing from US\$ 119 in 2003 to US\$ 768 in 2017 (WDI, 2018).

► **Figure 1. GDP growth over time.**



Source: Own compilation based on World Bank (WDI) data

As indicated in Table 1, the Ethiopian economy is largely split between the service (39%) and agricultural sectors (36%), with industry accounting for a quarter of GDP. Table 1 also indicates that GDP growth is driven mainly by the strong performance of the industrial and service sectors.

► **Table 1. Sectoral shares and contributions to growth in GDP**

	2015/16	2016/17
Share of GDP (%)		
Agriculture	37.8	36.3
Industry	23.9	25.6
Services	39.5	39.3
Contribution to annual growth rate (percentage points)		
Agriculture	0.9	2.5
Industry	3.1	4.4
Services	4.0	4.0
Annual GDP growth	8.0	10.9

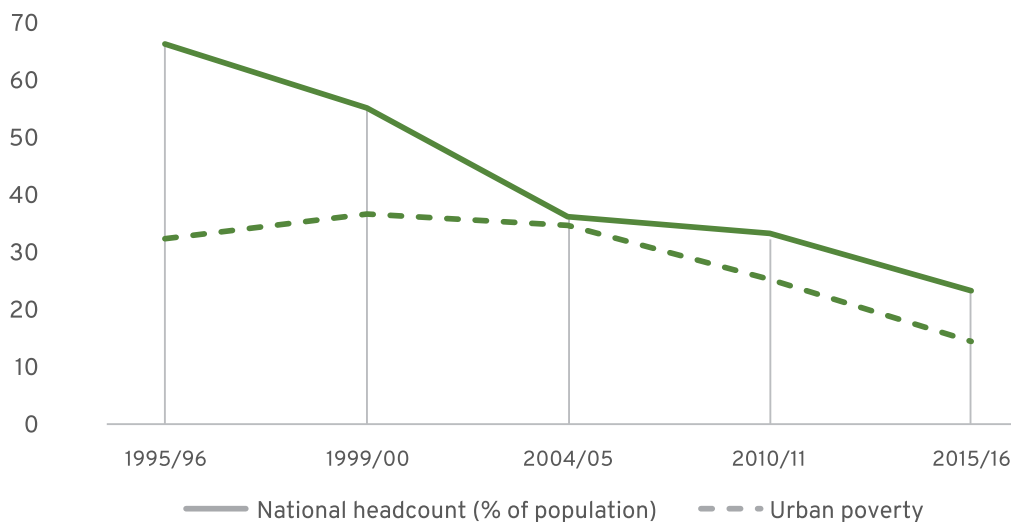
Source: National accounting data from the National Planning Commission (NPC 2018)

³ Studies indicate that the dependency ratio has sharply declined in Ethiopia, while remaining high in other parts of Africa (Seid et al., 2015; Meagher, 2016).

2.3. Poverty

The robust and sustained economic growth of the last 15 years has had a significant impact in reducing poverty levels in Ethiopia. Strong agricultural sector growth and pro-poor spending on infrastructure, health and education, as well as the presence of rural safety-net programme, have had the combined effect of lifting millions of people out of poverty in many parts of the country.⁴ Indeed, the number of people living in poverty declined from 44 per cent in 2000 to 30 per cent in 2011, according to the World Bank's poverty assessment report (World Bank, 2013). In a more recent report, the National Planning Commission found that the headcount poverty level had declined to 23.3 per cent in 2015/16 (see Figure 2). The figures for urban poverty, in particular, declined from 35.1 per cent in 2004/2005 to 14.8 per cent in 2015/16.

► **Figure 2. Poverty headcount ratio at \$1.90 a day (2011 PPP) (% of population)**



Source: Own compilation based on National Planning Commission (NPC) data.

2.4. Trade

The Ethiopian economy is relatively closed to international trade. The share of GDP accounted for by foreign trade, i.e. the sum of exports and imports of goods and services, was 31 per cent (WDI, 2018), in contrast with figures of 40 per cent for Kenya and 42 per cent for Tanzania (2017). As indicated in Figure 3, the share of foreign trade, both imports and exports, has actually declined in the past seven years. This suggests that growth in GDP is mainly driven by the non-tradable sector, such as investment in infrastructure and social services.

⁴ The Government's safety net programme has been extended to 11 cities since 2016. The programme targets the urban poor and has three main components: i) a public work component for those who are able to work, ii) a graduated path from public work to waged and self-employment through livelihood support, and iii) direct cash transfers to those unable to work due to sickness or old age.

In an earlier period, particularly between 2004 and 2011, good export performance was said to be one of the key factors in Ethiopia's economic growth. However, despite a significant policy focus on the export sector, the contribution to GDP made by exports has stood at less than 10 per cent in recent years. Structural problems in expanding supply, poor terms of trade, a lack of skills, the limited diversification of exportable commodities, bureaucratic hurdles in customs clearance and poor trade logistics are cited as some of the obstacles in the way of exporters. As a result, Ethiopia continues to export mainly primary agricultural products, such as coffee, sesame seeds, khat and livestock. While the new floriculture industry has expanded its exports from virtually zero to more than 250 million dollars in recent years, the growth in this sector appears to have levelled off prematurely (Suzuki et al., 2018).

► **Figure 3. Trade, exports and imports in relation to GDP**



Source: Own compilation based on World Bank (WDI) data

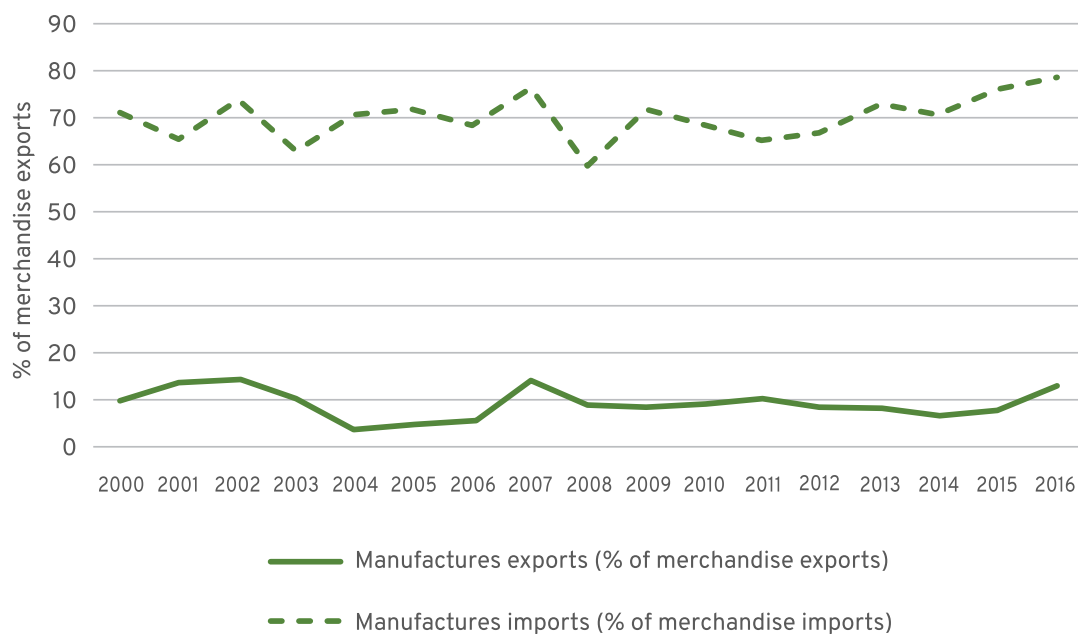
The much-anticipated export growth from the manufacturing sector, heralded in the various five-year development plans, has also been less than stellar and much remains to be done. The 2015 export targets for leather goods, textiles and garments in the first Growth and Transformation Plan (GTP-I) were missed by wide margins and it is now clear that the 2020 targets set in GTP-II will also not be met. In 2016/2017, for example, only 33 and 42 per cent of the targeted annual export revenues were generated by the textile-and-garment and leather-goods sectors respectively.

As indicated in Figure 4, the age-old problem in the manufacturing sector of poor export performance and increasing reliance on imports still bedevils the economy. While imports have been on an upward trajectory since 2008, manufacturing exports have largely stagnated, hovering around the 10 per cent mark. In contrast, the share of manufacturing imports as a proportion of total imports of merchandise had reached a whopping 80 per cent by 2016.

The trade gap has widened in recent years and consequently Ethiopia is running a negative trade balance, estimated at more than 14 billion US\$ in 2016 (WDI, 2018).

The severe foreign currency shortage the economy has experienced in the past few years is largely the result of the poor performance of the export sector. While the building of industrial parks and improvements in value addition are expected to improve export earnings, concomitant macroeconomic policy adjustments may be required to increase the competitiveness of Ethiopian manufacturers.

► **Figure 4. Manufacturing exports and imports as percentages of total exports and imports of merchandise.**



2.5. Macroeconomic policy framework

Ethiopia has undertaken a far-reaching programme of economic reform since the introduction of the first wave of reforms in the early 1990s. During the transitional period, the first half of the 1990s, the Ethiopian government introduced “agricultural-development-led industrialization” (ADLI) as the key policy driver for the economy. Since the 2000s, aligned with the Millennium Development Goals (MDGs), Ethiopia has launched various policies and strategies including a Sustainable Development and Poverty Reduction Program (SDPRP) 2002/03-2004/05, and a Plan for Accelerated and Sustainable Development to End Poverty (PASDEP) 2005/06-2009/10.

The Growth and Transformation Plans (GTPs), which incorporate the ideas of ADLI and the democratic developmental state, are the successors to the SDRP and the PASDEP. Between 2010/11 and 2014/15, the country implemented its first GTP. In 2015/16, GTP-II was developed in line with the SDGs, with the aim of achieving broad-based economic growth of 11 per cent per annum, which was expected to be supported by strong manufacturing and export sectors. The policy focused on aggressive measures to bring about rapid industrialization and structural transformation and on ensuring the sustainability of growth by fostering a stable macroeconomic framework and a climate-resilient green economy (FAO, 2017; IMF, 2015).

Agriculture is still the lynchpin of the Ethiopian economy and therefore continues to occupy a central place in development planning. The policy targets in the sector have been geared towards achieving a high rate of growth by encouraging smallholders and educated young farmers to engage with private investors in adopting new technologies and producing significant marketable surpluses. To meet these objectives, the Government has developed an Agriculture Sector Policy and Investment Framework for the period of 2010-2020. The framework sets ambitious targets for improving farmers' access to inputs, such as fertilizers and chemicals, as well as aiming to increase investment, particularly investment in infrastructure (roads, electricity and telecommunications). It is hoped that the reduction in input procurement and marketing costs will contribute for agriculture growth and development (NPC, 2016; FAO, 2017).

2.5.1. Planning evolution

The chronology of the various development plans indicates a gradual evolution in government policy. Priority seems to be slowly shifting from agriculture to the industrial sector. While the agricultural sector's development, particularly smallholder agriculture, had remained an area of focus for accelerated, inclusive and equitable economic growth, its share of GDP has also recently declined.

In the more recent development plans, the industrial sector, mainly manufacturing, has been prioritized as the key to sustaining economic growth and stimulating structural transformation. The aim is to increase the industrial sector's share of employment, GDP and exports by establishing and expanding industrial parks, promoting private investment and attracting foreign direct investment, supporting small and micro enterprises, and improving the quality of infrastructure, skills, and competitiveness (NPC, 2016; WB, 2015).

In GTP-II, the Ethiopian Government aimed to encourage labour-intensive manufacturing industries and use agricultural products as inputs as a way of contributing to job creation and strengthening the agriculture/industry and the rural/urban linkages. Priority in manufacturing is given to small, medium and large-scale enterprises that have strong

connections with the agricultural sector and exploit the country's comparative advantage in having an abundant labour force, in particular the textile-and-garment, leather-and-leather-goods, food, beverage, pharmaceutical, furniture and construction-materials industries. Selected heavy manufacturing industries, such as chemicals, steel, equipment manufacture, engineering, and turbines, have also been given due attention in GTP-II (NPC, 2016).

2.5.2. Skills development and technology policy

Educational qualifications and skills enhance the employability of workers, enterprise productivity and the inclusiveness of economic growth. Indeed, ensuring universal access to equitable and quality education is one of the goals of the SDGs. There is a keen understanding among Ethiopian policymakers that human skills and technology are fundamental to upgrading both the agricultural and industrial sectors. In line with the SDGs, the Ethiopian Government has invested aggressively in the expansion of education, the upgrading of skills and the importation of technology to make the country competitive internationally. Ensuring universal primary education, boosting secondary and tertiary enrolment, and improving the quality and relevance of education generally are the priorities.

Notwithstanding significant progress in expanding access to education, skills shortages remain a key constraint on growth and productivity, especially in Ethiopia's manufacturing sector. Overall access to education is poor, lagging behind the enrolment averages of even lower-middle-income countries (WB, 2015). To address this problem, vocational education is seen by the Government as one of the key ways of providing relevant, demand-driven education and training to meet the changing skills needs of the economy.

For this purpose, the country adopted a National Technical and Vocational Education and Training Strategy in 2008 to improve the quality and relevance of the TVET system and tackle the challenges of unemployment and low productivity by producing a middle-level labour force. The strategy stresses the importance of strengthening the country's self-employment culture and supporting job creation by increasing the role and involvement of the private sector, NGOs and communities (MoE, 2008). While a full evaluation of the strategy is not available, it was developed to complement the Government's five-year development plan. For example, in GTP-II the Government placed strong emphasis on increase the scientific orientation of education and developing vocational, technical and polytechnic studies. The TVET system, in combination with the recently established universities of science and technology, is supposed to work to support the industrial sector, mainly manufacturing, by providing skilled, motivated and disciplined manpower (NPC, 2016). In addition, the Federal TVET Agency works closely with development partners such as the GIZ, whose focus is on the technical training of middle managers, the introduction of competency-based training and assessment, and data collection and analysis where the demand for labour is concerned.

However, as will be discussed in detail in the next section, the overall TVET system has remained largely supply-driven, with limited involvement on the part of the private sector and NGOs. For example, there appears to be only limited interaction between employers, including the Ethiopian Employers Federation, and the Federal TVET agency.⁵ Furthermore, the skills challenges faced by the economy remain as acute as ever and employers often identify the lack of both hard and soft skills in the labour force as a major constraint (World Bank, 2015; Abebe et al, 2018).

The development and transfer of new technologies is another way of accelerating economic transformation (WB, 2017; NPC, 2016). In this area, the Government's policy is to focus on building capacity, expanding industrial parks, boosting manufacturing and engineering capacities, establishing clusters and creating linkages between domestic and foreign firms. Promoting science and engineering universities and linking them with foreign institutions, introducing kaizen and benchmarking tools, and developing infrastructure are also seen as ways of transferring technology. Moreover, the Government plans to encourage technology transfer by promoting private-sector investment and giving special support to manufacturing industry, particularly to those institutions that play a key role in industrial development, such as mining and engineering companies, the Great Ethiopian Renaissance Dam, and wind-power, railway, and sugar-growing concerns. In addition to all this, TVET is expected to play a central role in technology transfer and accumulation, especially for micro and small-scale enterprises. To realize this, the Government has been working on the development of occupational standards, the accreditation of competencies, occupational assessment and the establishment and strengthening of the curriculum development system (NPC, 2016). However, it is doubtful whether these measures will in themselves contribute to technology transfer without parallel investment in outreach services, intermediaries and the capacity-building of teachers and trainers.

2.5.3. Green economy policy

Ethiopia aims to be a middle-income country by 2025, while developing a green economy (FDRE, 2011). However, the country is prone to frequent droughts lasting several years, which expose millions to food insecurity. Although Ethiopia has recently registered improvements in its agricultural sector, significant challenges remain in the areas of agricultural productivity, marketing and adding value, natural resource management, coping with vulnerability, and risk reduction (FAO, 2017; FDRE, 2011). To address these challenges, the Government has formulated a Climate Resilient Green Economy (CRGE) strategy, with the objectives of fostering economic growth and development, abating and avoiding future greenhouse gas emissions (limiting GHG emissions to around today's 150 Mt CO₂e by 2030 – roughly 250 Mt CO₂e less than estimated under a conventional development path) and improving resilience to climate change. With this

⁵ ILO mission report on visit to Addis Ababa, 25-29 June, 2018.

in mind, the Government has produced a plan for establishing eco-friendly, integrated agro-industry parks, which will link crop and livestock production to storage and processing facilities further up the agricultural value chain. Four special initiatives are being taken as part of the CRGE strategy: exploiting the country's vast hydropower potential, the large-scale promotion of advanced rural cooking technologies, efficiency improvements to the livestock value chain, and reducing emissions from deforestation and forest degradation (FDRE, 2011).

Apart from a broader ambition to reduce carbon emissions by establishing integrated agro-processing parks (eco-parks), however, it is less clear how such ambitions can be transformed into concrete actions. More importantly, given that the skills and workplace requirements of green industrialization may differ from conventional forms of production, consistency between the Government's green economy policies and its skills and technology policies is vitally important. In the industrial sector, for example, eco-friendly production would presumably mean using advanced machinery and equipment, which in turn would require highly skilled technicians trained to operate it efficiently. We very much doubt whether the current forms of vocational training focused on conventional production techniques take into account the possibility of adopting such technologies in the near future. From our reading, it would appear that the skills needs for the envisioned low-carbon economy with all its implications for on labour recruitment, skills formation and productivity are not well articulated in the CRGE or in other government documents. Moreover, the TVET system does not seem to be integrated in any way with the CRGE; there is, for example, barely any mention of TVET or vocational training in the CRGE document.

2.5.4. Migration policy

Migration is one of the priority issues being discussed in international and national forums. Ethiopia registers one of the highest migration rates in Africa. In 2017, for example, around 1,227,000 Ethiopians (1.2% of the total population) were living outside their home country. This is a huge increase on the number of Ethiopian international migrants in 2000 (611, 000 or 0.9% of the total population) (UN, 2017). However, the real number is thought to exceed this figure and may be around 2 million, due to a high number of illegal migrants and the absence of a centralized registration system (ILO, 2017).

In recent years, after a series of disturbing reports on the fate of Ethiopian migrants in Middle Eastern countries, the Government has been working hard to reduce the outflow of illegal migrants. With the aim of raising their productivity and income-earning potential, the Government has also focused on improving the skills and competencies of legal migrants (MoLSA, 2009). For instance, after imposing a temporary ban on overseas labour recruitment between 2013 and 2015 in response to human-rights violations, mainly in the Middle East and the Gulf States, the Ethiopian Government introduced new legislation with the aim of

safeguarding the fundamental rights and dignity of Ethiopian workers in foreign countries. The new legislation identified three channels of recruitment for overseas jobs (public employment bodies, private agencies and direct employment). The legislation stipulates that no deployment of Ethiopian workers to work abroad is permitted in the absence of a bilateral agreement with the recipient country and prohibits the migration of persons under the age of 18 who have not completed the eighth grade of schooling or do not have a certificate of occupational competence. Furthermore, the private employment agencies are limited to acting on behalf of Ethiopian citizens who have capital of one million Birr and have deposited a guarantee of 100,000 US\$ (ILO, 2017).

Development partners have also realized that responding to their economic and social needs can reduce the flow of migrants from developing countries, including Ethiopia. Vocational training programmes have recently been added to the menu of policies designed to improve the livelihoods of people in their home regions and countries. These training programmes are assumed to improve the employability of prospective migrants and broaden the scope for their being self-employed in their places of origin. This assumption undergirds the Stemming Irregular Migration in Northern and Central Ethiopia – SINCE project financed by The European Union Emergency Trust Fund for Stability. The SINCE project aims to provide vocational training, stimulate the creation of micro and small enterprises, and increase job prospects for young people and women in migration-prone regions of Ethiopia. The project has two main components: (1) “Development benefits of migration and addressing root causes of irregular migration and forced displacement” and (2) “Return, readmission and reintegration”. The vocational education system plays a critical role in both components by facilitating the acquisition of new skills through on-the-job training and capacity development, thereby helping prospective migrants and returnees to enter and/or re-enter the labour market.

2.5.5. Employment policy

In 2009, the Ethiopian Government framed a National Employment Policy and Strategy, with the goals of promoting productive employment and reducing poverty. The strategy consisted in accelerating private-sector development, mainly in the areas of agricultural production, labour-intensive agro-processing and export-oriented industries. This was to be achieved by creating a conducive business environment, maintaining macroeconomic stability, providing a special incentive scheme, enhancing infrastructure development and ensuring good governance. Ensuring effective and efficient public-sector employment, enhancing labour productivity, improving labour administration and strengthening labour market institutions were further strands of the strategy to create new employment opportunities (MoLSA, 2009).

Government policy, including the 2009 National Employment Policy and Strategy, places much emphasis on creating employment for young people by improving the quality of general education and TVET, creating decent work in the formal sector, fostering entrepreneurship

and empowering youth, and facilitating entry into business for young people (MoLSA, 2009). The Government has also set up a revolving fund to benefit young people by systematically deploying them in development interventions and has introduced a safety-net programme in selected towns to generate employment (public works, for example). Developing infrastructure, improving financial inclusiveness and expanding manufacturing industry in industrial parks are also part of the strategy to reduce unemployment (NPC, 2017). Even so, it is not clear whether there are any skills-related targets and, if so, whether these have been properly monitored and evaluated. Understandably, the overwhelming focus appears to be on expanding employment opportunities, with relatively limited focus on the quality of the jobs created and the nature of skills required therein.

2.6. Labour market overview

In this subsection, we look at key labour market indicators to explore how the labour market has evolved in the last several years, using the National Labour Force Survey (NLFS), and the Urban Employment / Unemployment surveys. We have also drawn on the International Labour Organization's model estimates based on the World Development Indicators to chart the path of some of the key indicators for more recent years.

2.6.1. Change in the labour force participation rate

Ethiopia's labour force has more than doubled in the last 20 years and more than 1.8 million people are entering the labour market each year (World Bank, 2018). Between 2005 and 2013, the employed population increased by nearly 11 million, equivalent to a 26 per cent rise over the period. This is largely driven by the increasing participation of women in the labour force, with the population-to-employment ratio rising from 58.5 per cent in 2005 to 70 per cent in 2013. The corresponding increase for males was only 2.5 percentage points (from 80.2% to 82.7%).

The most recent national labour force survey, conducted in 2013, showed that 79.8 per cent of the population were economically active and that the employment rate stood at 76.2 per cent (CSA, 2013).⁶ The participation rate, however, differs by sex, with male participation as high as 85 per cent and female participation on 74.6 per cent. However, considering how low the figure was in 1999, the current female labour participation rate represents remarkable progress (see Table 3). Table 2 also indicates that participation rates in both rural and urban areas increased between 1999 and 2013. The rising female labour force participation in rural areas seems to have made the largest contribution to the overall growth in labour-force participation across the country.

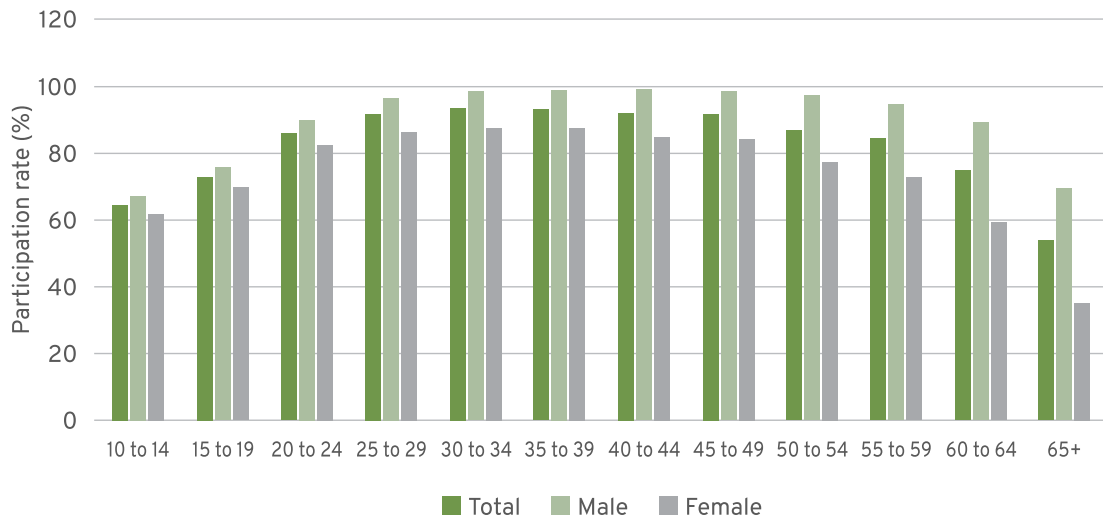
⁶ According to the CSA (2013): "The economically active population comprises employed and unemployed persons aged ten years and above". The economic activity rate, also known as the labour force participation rate, is thus measured by adding all those employed and unemployed people who are available for employment and dividing the sum by the total population of working age. For ease of discussion, we present the rate as a percentage of the total population of working age.

▶ Table 2. Labour-force participation rate over time			
	1999	2005	2013
Country level			
Male + Female	71.1	78.4	79.8
Male	80.4	86.1	85.0
Female	62.2	71.2	74.6
Urban areas			
Male + Female	55.4	57.7	66.5
Male	63.6	64.4	73.3
Female	48.7	52.0	60.5
Rural areas			
Male + Female	74.0	82.6	83.3
Male	83.3	90.2	87.8
Female	65.0	75.2	78.6

Source: Data from the 1999, 2005 and 2013 National Labour Force Surveys (CSA 2000, 2006, 2014).

Figure 5 presents the participation rate by sex and age based on the 2013 NLFS round. The aggregate participation rate across different age groups is charted as an inverted U-shaped curve, starting low for the 10 to 14 age category, rising to its highest level for the 35-39 and 40-44 cohorts and declining to a lower rate for the 65-and-above age group. Figure 5 also shows that the participation rate is highest for the male segment of the population across the different age groups.

► **Figure 5. Participation rate by age cohort and sex**



Source: Own compilation based on the National Labour Force Survey (2013)

With the continuous increase in entrants to the labour market and the rising participation rate, employment opportunities need to expand substantially to absorb the growing labour force. Employment and skills policies delivered through TVET are important for the productive employment of semi-skilled and unskilled workers. A concomitant expansion of TVET centres, increasing their reach to densely populated areas that have so far been neglected and improving their quality, are key interventions on the supply side.

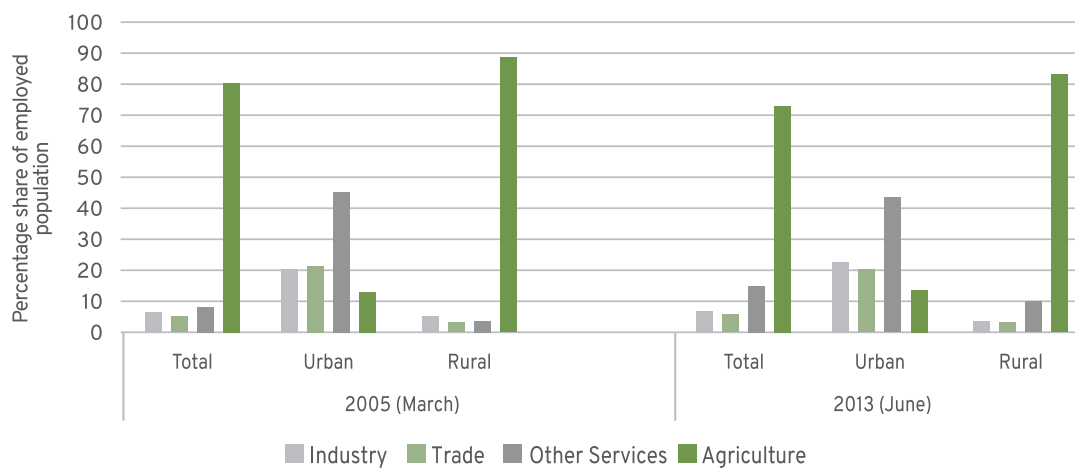
The substantial increase in overall and female labour force participation rates in both rural and urban areas over the past decade also suggests an increased need for vocationally training. Having vocational skills would boost young people's transition into work, helping them to be more productive and earn higher wages. Even when increased participation is not accompanied by an economy-wide expansion in waged job opportunities, skills training programmes have the potential to induce business start-ups.

2.6.2. Changes in sectors of employment

Not surprisingly, the vast majority of employment is created within the agricultural sector in rural areas. Figure 6 presents the sectoral shares of employment in 2005 and 2013. It shows that, while agriculture's share of all employment declined slightly from 80.2 to 72.7 per cent, the other sectors have barely made inroads in creating non-farm employment in rural areas. In contrast, other services continued to employ some 45 per cent of the urban population.

To explore more recent changes in the sectoral composition of employment, we rely on the ILO's modelled estimates for the period between 2014 and 2017. Figure 7 indicates that the shares remained more or less stable during this period. By 2017, for example, the ILO estimates indicate that the share of employment in the agricultural sector had declined slightly from 71 to 68 per cent, with the balance going to the industry and service sectors, which showed roughly corresponding increments. More precisely, the industry share increased from 8 to 9.4 per cent and the service share from 20.7 to 22.4 per cent. The difference by sex between the two groups had also slightly narrowed, with a substantial reduction in the share of female employment in agriculture and a corresponding increment in industry and services. The growing trend towards urbanization and the strong government focus on investment in small, medium and large-scale manufacturing industries would suggest that a substantial relocation of labour from rural to urban areas can be expected.

► **Figure 6. Percentage shares of people employed by sector in urban and rural areas**



Source: Own compilation based on the National Labour Force Survey (2013)

The predominance of rural areas in providing employment and the considerable scope for rural industrialization highlights the value of skills formation via the TVET system in rural areas. In this spirit, the Ethiopian Government has conceived a plan for building more than 17 integrated agro-processing industrial parks (IAIPs) and several SME clusters in the countryside over the next few years. It is hoped that these initiatives will create employment for people in their areas of residence and, at the same time, speed up the urbanization of small towns and villages. The IAIPs and SME clusters will thus help to reduce migration to the big cities and reduce the growing pressure on cities to provide employment, housing and basic services.

The skills requirements for workers to be employed in rural industries (IAIPs and SME clusters), however, are fairly demanding. Without TVET education programmes that are well-tailored to rural areas, it is not clear how the skills needs of these segments of the labour market can be met. While relatively specialized and advanced training programmes in vocational schools might be required for industrial jobs in urban areas, the increased availability of non-farm jobs in rural areas would benefit from vocational schooling in more general skills.

► **Figure 7. Changes in shares of sectoral employment over time by sex.**



Source: World Development Indicators (modelled ILO estimates)

2.6.3. Occupational and employment status of workers

While, to some extent, sectors of employment can be correlated with the nature of the jobs involved, one needs to explore further to gain a better insight into the quality of the labour force. One important labour force characteristic that relates to the quality of work performed is the occupational status or level of attainment of different groups of workers. Occupational status distinguishes jobs that are prestigious, high-paying, stable and less precarious, such as professional, technical and managerial employment, from those that are less prestigious and well-paid, such as blue-collar and clerical jobs.

Figure 8 presents employment in the Ethiopian labour force by occupational status in 2013. It shows that nearly half of the workforce was engaged in the “skilled agricultural and fishery” category, with a higher proportion of male (60%) than female (34%) workers. Given that

the vast majority of people continue to live in rural areas, the large share of the workforce employed in agriculture is not unexpected. The second most common category is a broadly defined as “elementary occupations”. One in three male workers and 45 per cent of female workers are employed in such occupations, more than half of them as agricultural, forestry and fishery labourers – a further indication of the importance of the agricultural sector for overall employment (CSA, 2014).

► **Figure 8. Employed population aged ten and above by major occupational categories and sex**

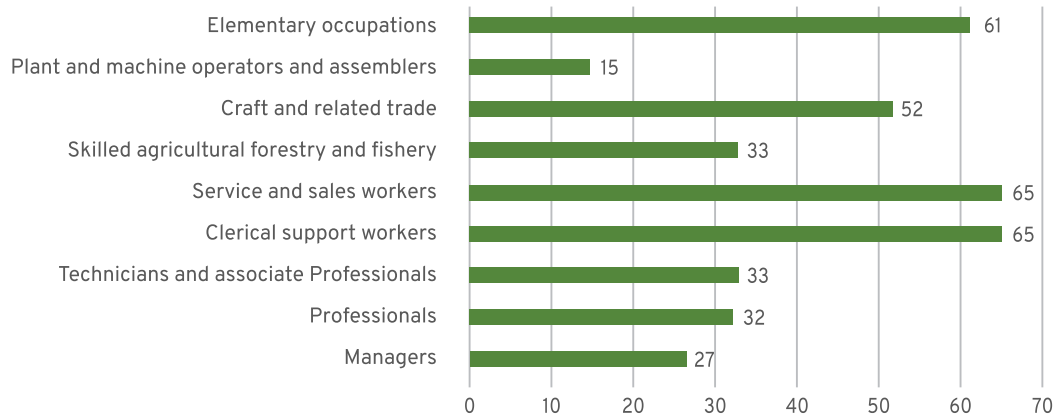


Source: Own compilation based on the National Labour Force Survey (2013)

Figure 8 also shows the limited share of employment in management, professional, technical and associated professional occupations. These three categories together employ a mere 4 per cent of the labour force, with a slightly higher share for male (5%) than female (3%) workers.

Disaggregating the data further and examining the share of female workers in these occupational groups generates some interesting insights, as indicated in Figure 9. Compared to male workers, female workers are less likely to be in management, professional/technical or associated professional positions. Lower levels of educational attainment, a tradition of male dominance that burdens women with a disproportionate share of household activities, as well as covert or overt workplace discrimination, might possibly explain the limited presence of women in high-status occupations. Female workers are more active in clerical and support work, services and sales, crafts and related trades, as well as elementary occupations.

► **Figure 9. Share of female employed population aged ten and above by major occupational categories**

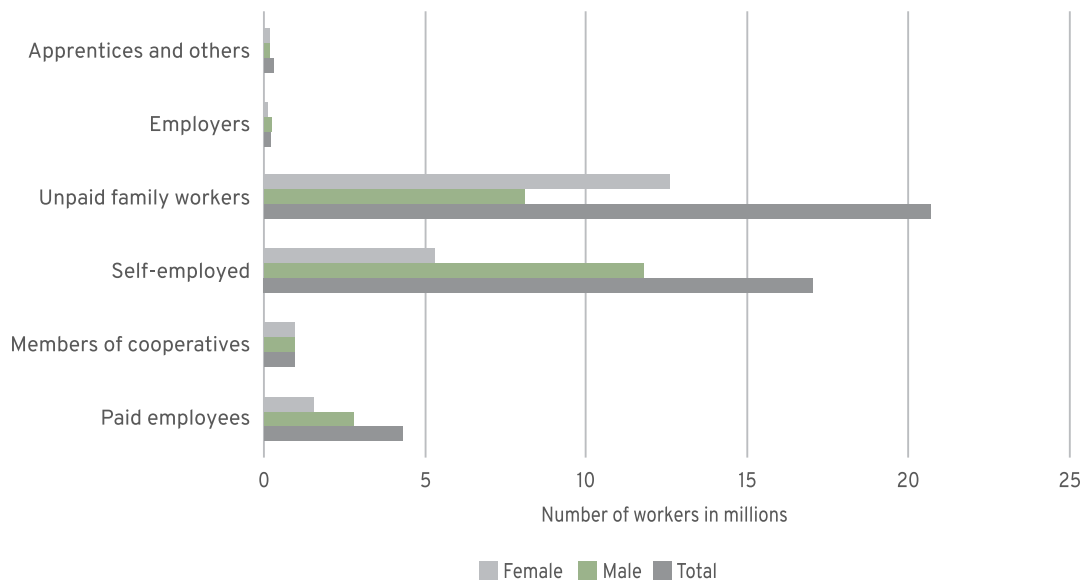


Source: Own compilation based on the National Labour Force Survey (2013)

As indicated in Figure 9, the vast majority of female employment is in the unpaid family or self-employment sectors. Of the 42 million women employed during this period, 37 million (89%) were working in these two sectors. In contrast, only 4.3 million people (or 10% of the employed) were in paid employment.

Figure 10 also shows some interesting differences in employment status between male and female workers. Most female workers (12.6 million) perform unpaid family-related work or are self-employed (5 million). The reverse is true of male workers: 12 million are self-employed, while only 8 million are in unpaid family-related jobs. Paid employment is also mostly dominated by male workers: while 2.7 million male workers perform paid work, only 1.5 million women enjoy the same employment status.

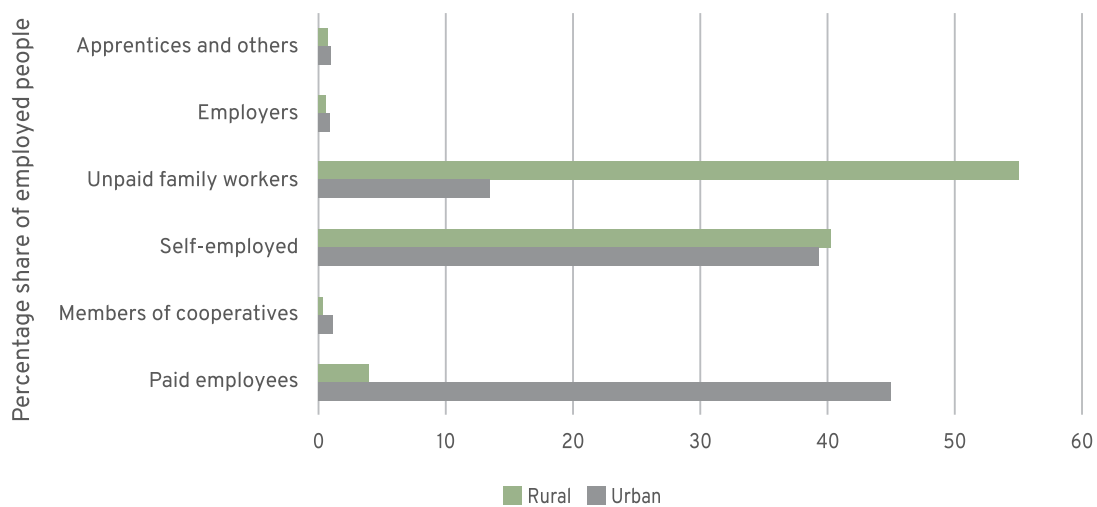
► **Figure 10. Employment status by sex**



Source: Own compilation based on the National Labour Force Survey (2013)

The breakdown of the labour force by employment status is also significantly different in rural and urban areas, as shown in Figure 11. Paid employment is mainly concentrated in urban areas, with 45 per cent of workers working for pay. The corresponding figure in rural areas, however, is less than 4 per cent. While unpaid family-related work absorbs 55 per cent of the workforce in rural areas, it is much less common in urban areas. The share of self-employed workers is roughly 40 per cent in both rural and urban areas.

► **Figure 11. Percentage share of people employed in rural and urban areas**



Source: Own compilation based on the National Labour Force Survey (2013)

Not surprisingly, the foregoing indicates that formal (paid) jobs are common in urban areas, where the penetration of TVET centres is also more evident. In contrast, in rural areas unpaid family work and self-employment are much more common. The expansion of TVET colleges into these areas would impart more specialized production skills, most likely pushing people out of low-productivity self-employment and subsistence farming activities. Possessing such skills would also expand labour-market opportunities for landless young people, whose options are limited to working in the non-farm sector.

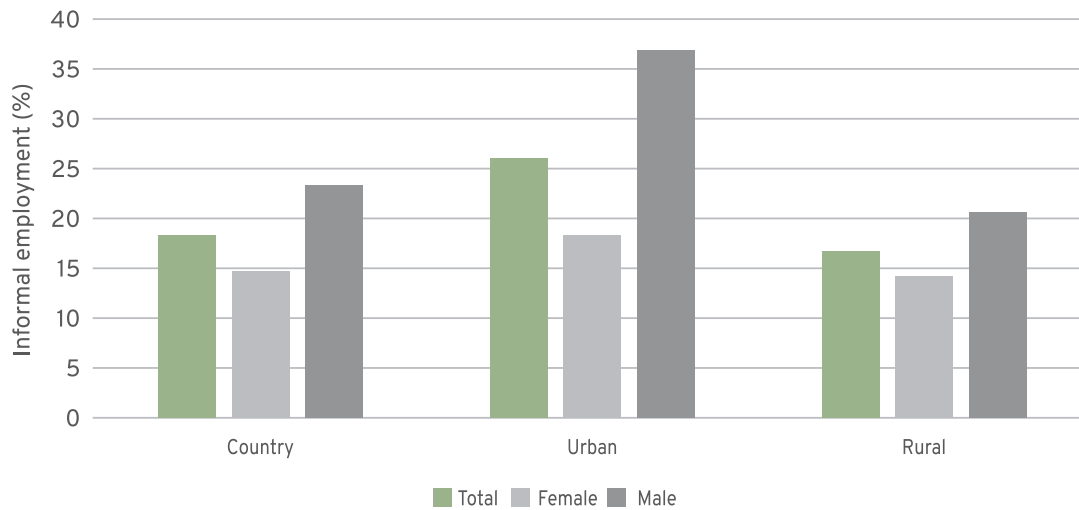
We have already mentioned that the vast majority of Ethiopian workers are engaged in the “skilled agricultural and fishery” sector. Strikingly, training skilled workers for this sector is left to the agricultural colleges, while the TVET system is mainly industry-focused. While there are agricultural TVET colleges, they do not feature prominently in the official documentation, therefore we found it difficult to assess their importance or performance. The question thus remains as to whether there is scope for the TVET system to include training programmes that can bridge the skills gaps in the agricultural sector.

2.6.4. Employment in the informal sector

As in many economies at an early stage of industrial development, employment in the informal economy is a significant factor in Ethiopia.⁷ As indicated in Figure 12, informality is more common in urban areas and among female workers than in rural areas and among male workers. Nationally, and excluding employment in subsistence agriculture and private households, more than one in six workers (about 18%) were employed in the informal economy in 2013. This represents a substantial reduction as compared with 2005, when the informal employment rate was 26.2 per cent (CSA, 2014).

Figure 12 shows that 15 per cent of male workers and 23 per cent of female workers were informally employed in 2013. The gender gap is much higher in urban areas, where more than a third of female workers were in informal employment, as compared with only 18 per cent of males. The gap in rural areas was smaller, with female informal employment at 20 per cent, as compared with 14 per cent for men.

⁷ According to the CSA (2013), the informal economy is defined as all economic activities that are undertaken as “part of the household sector, as household enterprises or, equivalently, unincorporated enterprises owned by households”. However, they make an important qualification that excludes people who are “engaged in subsistence farming and work in private households” from the entire formal and informal sector analysis (CSA, 2013, p.153).

► **Figure 12. Share of informal workers by sex and location (2013)**

Source: Own compilation based on the National Labour Force Survey (2013)

A further look at the National Labour Force surveys conducted in 1999, 2005 and 2013, presented in Figure 13, suggests that the share of informal employment in urban areas has substantially declined over time. While in 1999 one half of workers were employed in the informal economy, the share had declined to 26 per cent by 2013. This substantial reduction has been largely driven by the rise in formal employment opportunities for female workers. In 1999, nearly two-thirds of female workers were engaged in the informal sector. By 2013, the share of informally employed female workers had declined to 36.5 per cent. The corresponding shares of male workers in the informal sector in urban areas in 1999 and 2013 were 39 per cent and 18 per cent respectively.

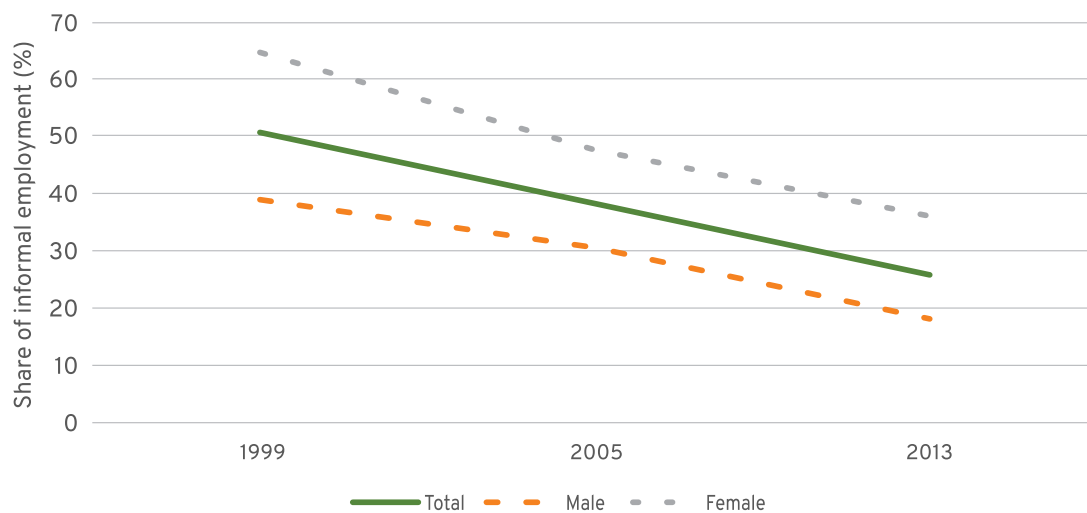
The creation of formal employment opportunities ensures better incomes, job security, protection and social mobility. Promoting business formalization and expanding formal job opportunities for TVET graduates is thus vital for making the best use of their skills. However, while informal employment has declined over time in urban areas, it remains a major factor and will not disappear any time soon. In fact, vocational and on-the-job training can lead to the propagation of informal start-ups, albeit on a limited scale.

It is also important to note that informality does not necessarily imply a complete lack of skills and business knowledge and therefore complete exclusion from the formal sector. The fact is that formality does not have hard and fast boundaries and the dichotomy with informality may well be misleading, particularly in the context of developing countries like Ethiopia, where both the concept and the boundaries remain fluid. In practice, formality and informality can encompass a wide spectrum of employment opportunities with substantial overlap between the two. For example, traditional craftsmen and master technicians well versed in their trades may lack basic procurement, management and marketing skills.

Unable to grow their businesses, they could be stuck in a perpetual state of informality. In other contexts, informality may be a deliberate strategy to avoid official scrutiny – a way of dodging tax and social security obligations.

While a sprawling informal sector is certainly not in the best interests of the Government, the growth and transformation of informal businesses with high potential can generate substantial gains for the local economy, so they should not be discarded outright. Rather, it is important to recognize and accept informal employment as an inevitable fact and extend support to the sector, both to help it formalize and increase productivity. TVET training programmes can be flexible enough to include unregistered jobseekers, and unlicensed businesses owners and their workers. Tailoring training programmes to the needs of informal enterprises is therefore important. The Government and development partners should join forces in designing and implementing vocational training programmes that both elicit greater participation and generate benefits for people in the informal economy.

► **Figure 13. Share of informal workers in urban areas over time**



Source: Own compilation based on the National Labour Force Survey (2013)

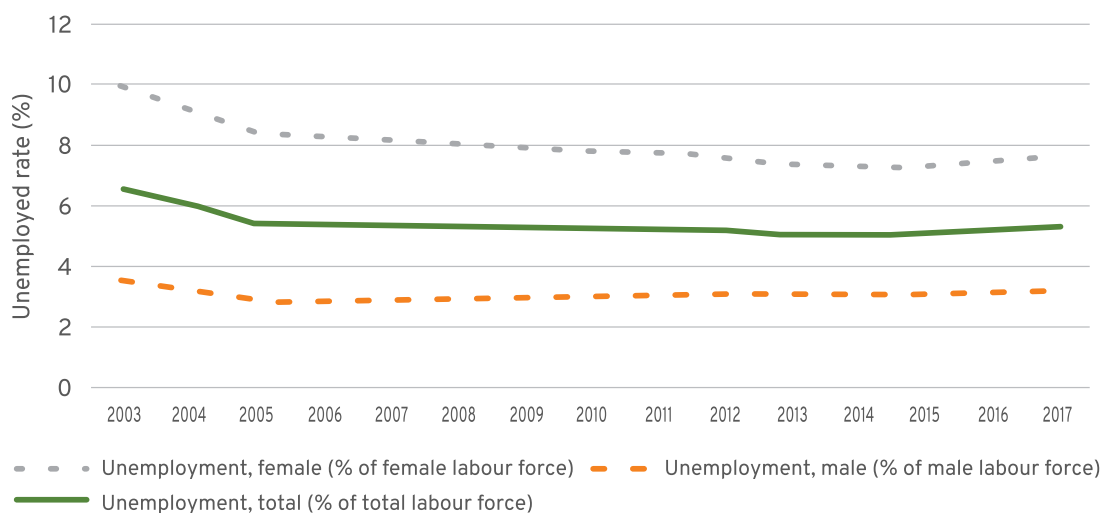
2.6.5. Change in the unemployment rate

The unemployment rate is one of the most widely used metrics for measuring the state of the labour market and the overall performance of the economy. While growth often expands job opportunities, there is no guarantee that it will lead to job creation. The term “jobless growth” is often used to express the phenomenon of growth that is not accompanied by a concomitant expansion of employment opportunities. This often happens when growth is driven by knowledge- or capital-intensive sectors, such as natural-resource and mineral extraction, and the economy fails to absorb its growing labour force. How has the

Ethiopian economy performed in this respect? In the following section, we take a look at the unemployment rate over time to explore how well the Ethiopian economy has managed to create jobs for the burgeoning population.

We first present the national unemployment rate, using ILO-modelled estimates to show the trend since the start of the current period of growth. The unemployment rate is defined as the fraction of the population who are able to work but are unemployed divided by the total number of the economically active population. Figure 14 indicates that the national unemployment rate declined from 6.5 to 5.2 per cent between 2003 and 2017, due largely to increasing female participation in the labour force and the expansion of employment opportunities. The female unemployment rate in fact declined from 10 to 7.5 per cent over this period.

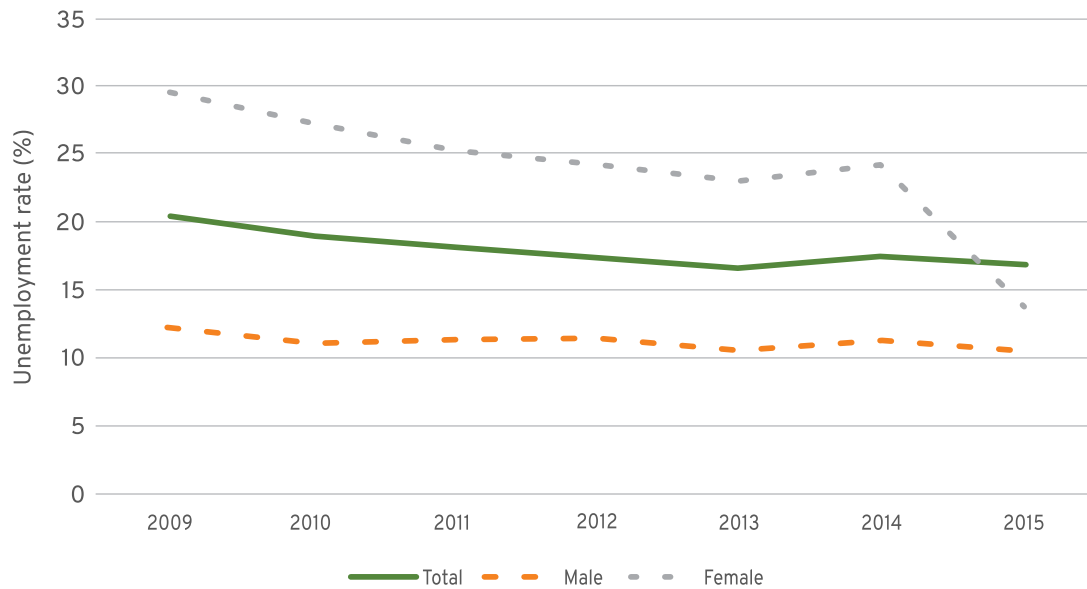
► **Figure 14. National unemployment over time.**



Source: World Development Indicators (ILO-modelled estimates)

The low national levels of unemployment, however, mask substantial differences between rural and urban areas. Figure 15 indicates that while the urban unemployment rate has declined, it still remains high at 17 per cent. The figures also indicate that female unemployment has markedly declined in the last few years, while male unemployment has remained more or less stable. Moreover, working poverty is common: people are likely to take any jobs in countries where social security is poor or non-existent (see Hino and Ranis (2014)).

► **Figure 15. Urban unemployment over time.**



Source: Urban Employment Unemployment Survey (CSA, various years)

It is important to note that vocational training has a significant role to play in reducing unemployment by equipping people with the skills required in both waged and self-employment. While there is little systematic evidence from the Ethiopian labour market, a study conducted in Colombia has shown promising results. Attanasio, Kugler and Meghir (2011) found that a subsidized vocational training programme targeting disadvantaged youth increased employment opportunities and earnings for women, mainly in formal-sector jobs. In a recent paper drawing on data from metalworking enterprises in Ethiopia, Abebe et al (2018b) found that firms employing a large proportion of workers with a vocational training background tended to be run more efficiently, i.e. they tend to have higher labour and total-factor productivity.

2.6.6. Migration

To the extent that labour mobility affects the performance of the labour market, migration is also a phenomenon that needs exploring. Migration may result from the need of individuals to benefit from better education, jobs or public services and, seen in this way, can be considered an investment. Alternatively, migration may entail forced displacement due to difficult circumstances and shocks in a person's original place of residence. The 2013 NLFS survey shows that 15 per cent of Ethiopia's national population can be classified as migrants.⁸ The share of female migrants (16.7% of the total female population) is larger

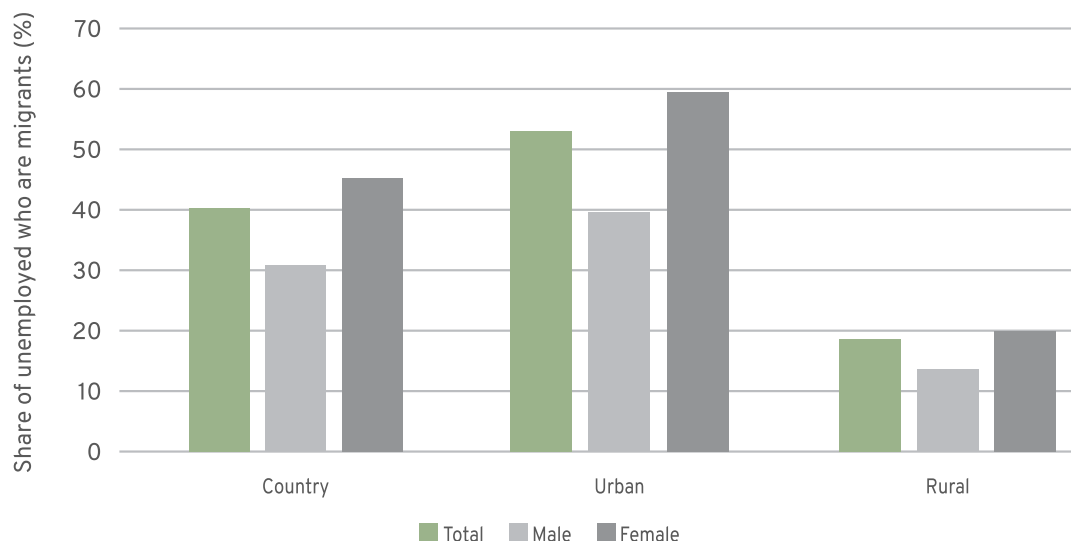
⁸ The survey defines migrants as persons who left their normal place of residence at least six months ago and do not intend to return to it.

than that of males. Migration is concentrated in urban areas, with 44 per cent of the urban population classified as migrants. In rural areas, on the other hand, the share of migrants in the total population is a mere 8.4 per cent. Evidently, the traffic is largely one way, with a growing proportion of the population moving from rural to urban areas.

People migrate to other areas for a number of reasons. The three most significant are i) to search for work (24%), ii) to follow family members who have already moved to a different area (23%), and iii) marriage (16 %) (CSA, 2014). Nearly one in three migrants to urban areas go there in search of work. While job-seeking is the single most important reason for male migrants (44%), it accounts for only 26 per cent of female migration, which is roughly in the same order of magnitude as migration induced by the need to follow or live with family members. The NLFS also shows that young people are also more likely to migrate: at national level 37 and 57 per cent respectively of migrants come from the 15 -29 and 15-39 age cohorts.

We also examined the likelihood of migrants being unemployed in their current place of residence. As a proxy measure, we used the share of unemployed who happen to be migrants for this purpose. As indicated in Figure 16, nationally roughly 40 per cent of unemployed people are migrants and, mirroring the high levels of unemployment among female workers, 45 per cent are female. The corresponding figure for males is 31 per cent. Figure 16 also indicates that the share of unemployed migrants is much higher in urban than in rural areas.

► **Figure 16. Share of migrants who are unemployed (2013)**



Source: Own compilation based on the National Labour Force Survey (2013)

With increasing population density and land fragmentation in rural areas, migration from rural to urban areas is inevitable. Rural industrialization policies can attenuate the pressure on urban centres by providing jobs for rural youth and women, who are often likely to migrate. However, such policies can succeed only if there are complementary training systems that produce workers with at least basic hard and soft skills. The TVET system should be able to assist in bringing about rural industrialization by fulfilling this need. Seen in the light of the Government's plan to launch several integrated agro-processing Industrial parks (IAIPs) in rural areas, the importance of beefing up the TVET system becomes more apparent.

Interestingly, Chinese industrial development has been associated with both the rapid urbanization of smaller towns and villages and a massive movement of unskilled rural migrants to large cities and coastal areas. In the process, the vocational education system has played an important role in training young people and moving them from rural areas to industrial jobs (Fudan University, 2017). Training is so vital that companies sometimes operate their own vocational training centres (Biermann, 1999).

Moreover, even in those areas where industrialization cannot take hold and migration will continue to be acute, the TVET system would be potentially useful in preparing prospective migrants for better jobs in the cities.

The Ethiopian Government recognizes that the successful reintegration of returning migrants depends very much on the skills they have acquired. With this in mind, training is being given to migrants destined for the Middle East and the Gulf States. Although this training may be relevant to the types of occupation that most of them will take up in these countries, it remains very rudimentary. More advanced vocational training in machine operation, metalworking, electronics, masonry and plumbing are not offered as part of the effort to build the skills sets of migrants. Indeed, except for project-based interventions initiated by development partners (e.g. the EU's SINCE project), it is not clear to what extent the TVET system is an integral component of migration policy.

2.6.7. Recruitment, skills shortages and turnover

Ethiopia is often touted as home to a "large and easily trainable" labour force that can easily be transferred from unemployment or low-paying activities to productive and high-paying formal jobs. While there is some truth in this narrative, the relocation of labour from the low- to the high-productivity sector cannot be taken for granted (Thirlwall 2011). Indeed, a careful look at the labour market indicates that the reallocation process is often hindered by problems relating to worker recruitment, firm/worker skills matching and worker retention.

Recruiting workers is a process that often taxes a firm's resources. Based on a survey of nearly 500 firms across different sectors, Table 3 indicates the costs associated with the recruitment of professional workers (Abebe et al., 2018a). Table 3 shows that 82 per cent of the firms had advertised vacancies for professional positions in the 12 months between

July 2013 and August 2014. On average, one vacancy remained unfilled during this period because workers with the required skills and experience could not be found even, when an average of 74 applications had been submitted for each advertised position. The table also shows that roughly two out of three positions were subject to written tests, with testing more common in financial services and the retail trade. The last two columns of the table show that the cost of recruiting professional workers is far from small. To recruit one worker, firms spend a little less than 2000 birr and 10 hours of staff time.

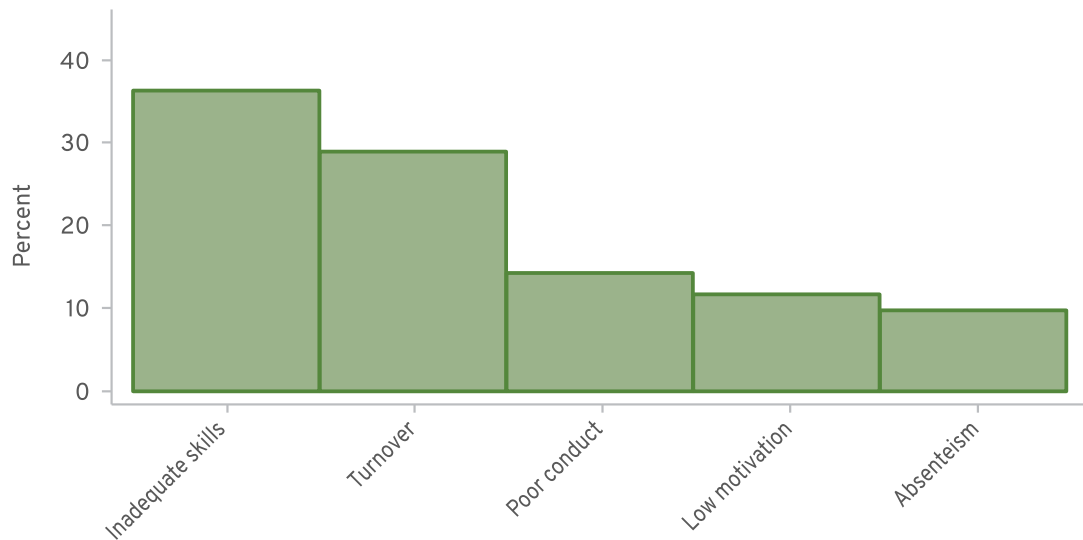
► Table 3. Recruitment of professional workers between July 2013 and August 2014

	Had a vacancy for a professional position	Number of unfilled vacancies	Number of applications per position	Written test	Cost of recruitment per professional worker	
					Monetary cost in (birr)	Staff time (hours)
Tourism, hospitality and transport	0.768	0.774	23.8	0.509	1379.5	7.9
Financial services and retail	0.895	1.26	210.7	0.805	1987.4	12.4
Education, health and aid	0.956	1.402	48.5	0.759	2992.9	10.4
Manufacturing	0.663	0.725	19.2	0.536	1400.4	7.5
Construction, mining and farming	0.816	0.35	29.4	0.55	1016.1	7.1
All firms	0.817	0.994	74.3	0.656	1913.5	9.4

Source: Abebe et al. (2018a)

A more recent survey asked firms which were the most important HR problems they faced. The figures, derived from Abebe, Caria and Ortiz-Ospina (2018), indicate that, for more than a third of firms, finding workers with an adequate set of skills was the most serious problem.

► **Figure 17. Key HR problems identified by firm managers**

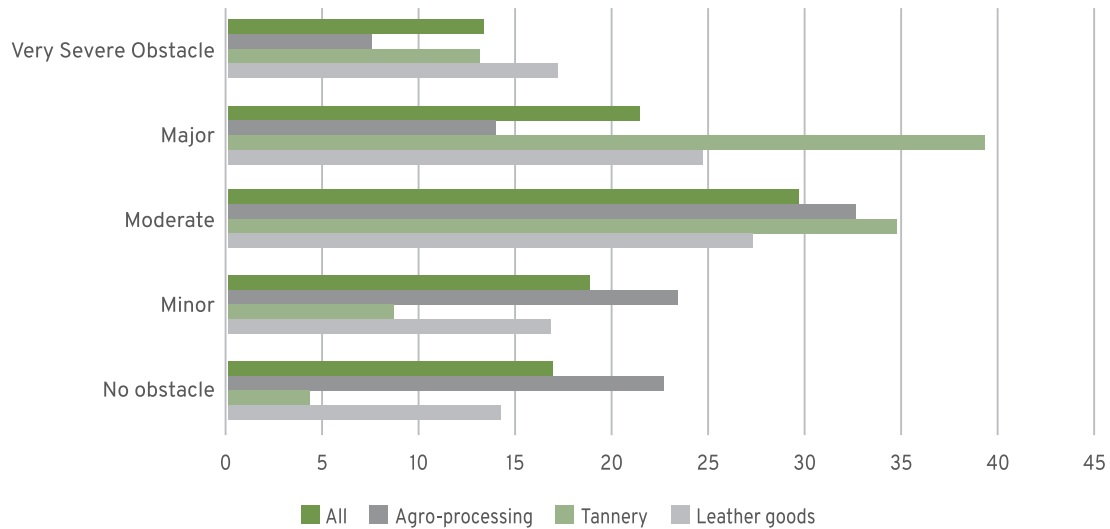


Source: Abebe, Caria and Ortiz-Ospina (2018)

Recruiting workers with the right skills has for a long time been understood as a key challenge. Hard skills relating to the work of production, processing, management and service delivery are vital determinants of worker productivity, hence firms' recruitment strategies reflect the desire to secure such skills. Soft skills, including good communication, time management, responsiveness, team coordination and conformity with corporate norms are also increasingly seen as important in improving worker productivity and therefore the overall productivity of the firm.

Despite the massive expansion of the educational sector in general and of technical and vocational education and training (TVET) in particular, skill shortages of both types (hard and soft) remain a key constraint on growth and productivity (World Bank, 2015). In a recent survey of agro-processing, tannery and leather-goods manufacturing enterprises, for example, the shortage of skilled labour was cited as a major constraint inhibiting corporate growth. The skills shortage is particularly acute in the tannery sector, where skills requirements tend to be higher than in the agro-processing and leather-goods industries (Figure 18).

► **Figure 18. Lack of skilled manpower as a key constraint in three labour-intensive industries**



Source. Abebe et al. (2018)

The World Bank (2015) study found that formal employers in the manufacturing sector were more concerned to recruit workers with soft skills, as opposed to hard or technical skills, reflecting their willingness to develop technical skills through on-the-job training. In labour-intensive but relatively low-tech light-manufacturing industries, soft skills, combined with worker discipline and commitment, are a key determinant of productivity. A recent study conducted in an Indian garment factory, for example, showed that on-the-job soft-skills training increased worker productivity by 20 per cent and that, eight months after the soft-skills training, the firm had experienced a 258 per cent return from its investment in this training (Adhvaryu et al. 2017).

In Ethiopia, while improving the quality of education generally, enrolling more students at the secondary level and investing more on employability-skills training is imperative, the TVET system could be used to address the skills shortage problem in the short to medium term. The current focus of the TVET education system is, at least in principle, on hands-on practical skills, but there is only limited emphasis on soft-skills training. To overcome the skills shortage problem, the TVET system certainly needs to integrate soft-skills training into its curriculum.

Nevertheless, the TVET system as a whole requires further improvement to meet the growing labour force needs of the private sector. Earlier studies have indicated that, due to information problems, skills mismatches and failure to meet quality standards, the TVET system is not producing graduates who possess the skills required by employers (Shaorshadze and Krishnan 2013). This has two important implications. First, the TVET graduates may suffer excessively high levels of unemployment in some areas of specializations, as high as 60 per cent in textile

engineering or 70 per cent in plumbing (World Bank, 2015). Second, firms wanting to hire TVET graduates fail to recruit workers who meet their standards, therefore vacancies either remain unfilled or are filled by inept workers (Shaorshadze and Krishnan 2013).

It is certainly true that the Ethiopian Government has recognized the central role TVET colleges could play in skills formation and dissemination. However, this recognition translates only into a massive expansion in supply, with limited focus on quality and relevance. A good example is the industry extension system. With the aim of reducing urban unemployment and improving enterprise performance, in 2011 the Government initiated industrial extension programmes, mainly targeting micro and small enterprises. The packages, which are centred on and carried out through the existing TVET system, are integral parts of the TVET outreach programmes. They included management and business skills training, and Kaizen and entrepreneurship training. Of these, only Kaizen seems to have been successfully adopted by trained enterprises (Dehnie, 2014).⁹ When it came to implementing the industry extension services, TVET institutions were found to lack motivated and capable trainers who could provide practical advice and on-site coaching to meet the industry demand and standards. Despite its promise and potential, the industry extension service is yet to yield returns worth documenting.

It is obvious that enhancing the relevance of training programme to meet industry needs would increase the quality of TVET education. Moreover, improving the relevance of vocational training would help foster the productive employment of young workers in non-agricultural sectors in rural areas.

2.6.8. Skills mismatches

A skills mismatch is an imbalance between the skills available (supply) and the skills required by the economy (demand). In macro terms, it means a shortage in the supply of skills at aggregate level; in micro terms, a skills gap or shortage in a particular enterprise, cluster or sector.

Using several indicators of qualification mismatches, Mekonnen and Tekleselassie (2018) found that in Ethiopia's urban labour market about a quarter of employees were mismatched, with overqualification the more prevalent problem (Figure 19). In keeping with findings from developed countries, their analysis revealed that overeducated workers earn less and are less satisfied in their jobs than those well matched in terms of their level of education. This suggests that avoiding skills mismatches needs to be a key aspect of labour-market policymaking, along with issues of decent and productive work. They found comparable

⁹ Our field visits to enterprises to study Kaizen in October 2017 and November 2018 also indicated that, while many managers were aware of the industry extension services, they did not seem to have greatly benefited from them. This is partly because the services appear to be delivered by TVET instructors with limited practical knowledge of how enterprises operate and partly because the instructors did not seem to be motivated to deliver the packages as stated in the strategy document.

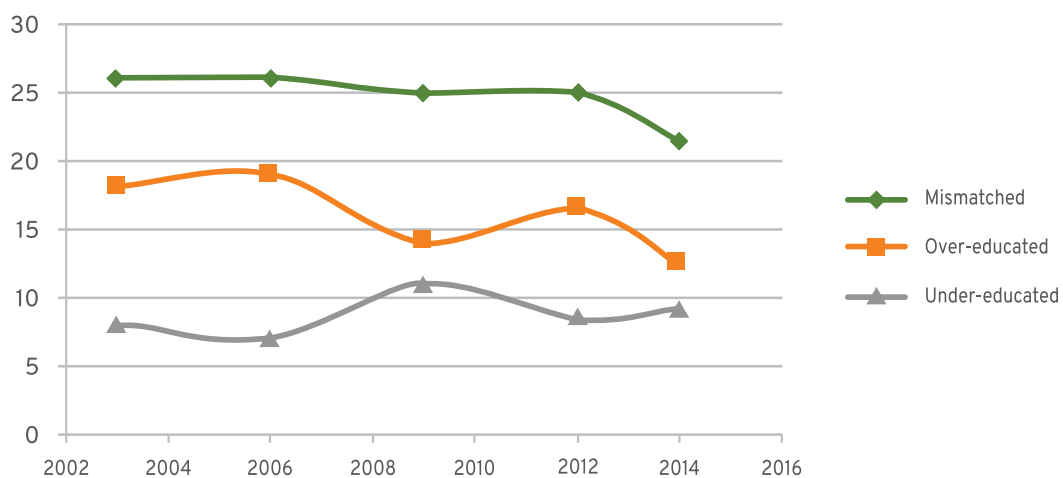
levels of mismatching for men and women. However, women were slightly more likely to be overeducated for their jobs than men. Overall, young people were more likely to be mismatched, particularly in being overeducated. This could indicate that young people try to compensate for their lack of experience by undertaking more years of schooling than their older counterparts. Moreover, the high levels of unemployment faced by young people may be forcing them to take jobs even if they are overqualified, as compared with older, more experienced individuals.

However, the way of measuring skills mismatches reported by Mekonnen and Tekleselassie (2018), based merely on qualification level, fails to take into account not only the specific skills required by particular jobs but also the type of education required, as it considers only the number of years of education. Therefore, the extent of mismatches reported by Mekonnen and Tekleselassie (2018) should be taken as a lower estimate.

Subjective assessment of the skills required by firms also points to the existence of skills gaps and shortages. For example, according to World Bank's Ethiopia Skills Module Survey conducted in 2013,¹⁰ roughly half of the firms sampled had difficulty in finding workers with the required technical skills. Similarly, about 43 per cent of the firms reported difficulties in finding workers with the ethical values and commitment they were looking for, while more than a quarter struggled to find workers with adequate computing skills.

It is important to recognize that there are various types of skills mismatch, in particular skills shortages/surpluses and skills gaps. Certainly, more systematic empirical work on this issue is required in the Ethiopian context.

► **Figure 19. Skills mismatches in urban Ethiopia (2003-2014): Percentage of workers mismatched**



Source: Mekonnen and Tekleselassie (2018)

¹⁰ World Bank (2013) "Skills Module Survey of Ethiopia", World Bank

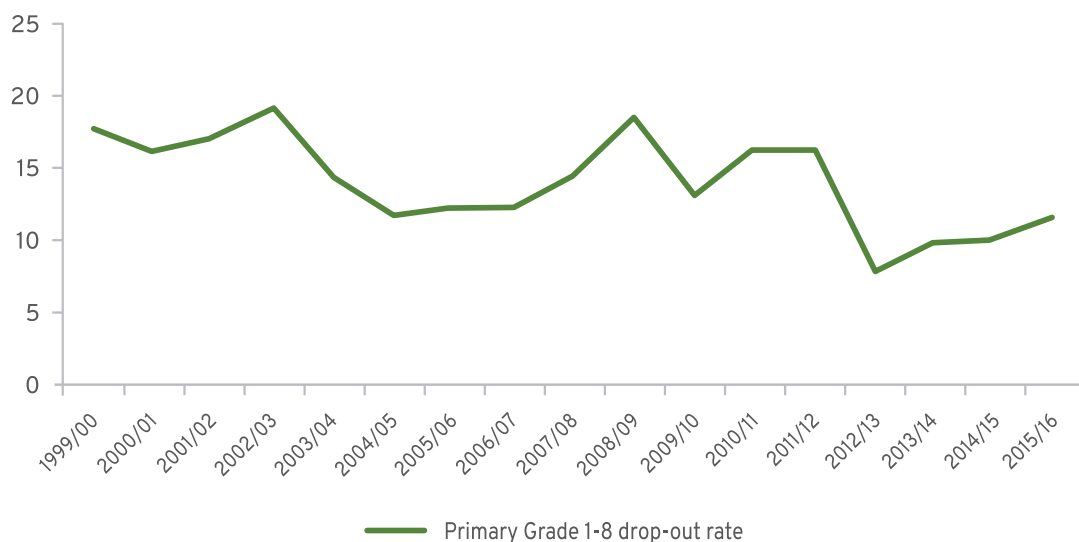
2.7. Education and Training

2.7.1. Trends in access to basic education

As part of its pro-poor development strategy, the Ethiopian Government has placed great emphasis on investment in human development. Investment in people, through education, is understood to transform the lives of the poor by improving their productivity in both waged and self-employment. In recognition of these benefits, the Government has invested heavily in the education sector over the past two decades: increased public-sector investment, the rapid expansion of school infrastructure and the hiring and training of teachers are all manifestations of its commitment to improving the education sector. In fact, nearly a quarter of total Government expenditure is devoted to education.¹¹ About two thirds (66.6%) of the total education budget is earmarked for general education, while 22.6 per cent is devoted to higher education. In contrast, only 7.3 per cent of the budget is spent on TVET, i.e. about one third of the amount allotted to the higher education sector (Ministry of Education, 2015).

Overall, the Government's commitment to the education sector has had the effect of substantially increasing student enrolment, reducing drop-out rates, narrowing the gender gap in educational attainment and expanding access in rural areas. Figure 20, for example, shows that the primary school drop-out rate declined from 18 to 12 per cent in the period between 1999 and 2016. Moreover, the country has recorded a substantial increase in the literacy rate, from 27 per cent in 1995 to 40 per cent in 2008.

► **Figure 20. Drop-out rate for primary grades 1 to 8**



Source: Ministry of Education, Education abstract, various years

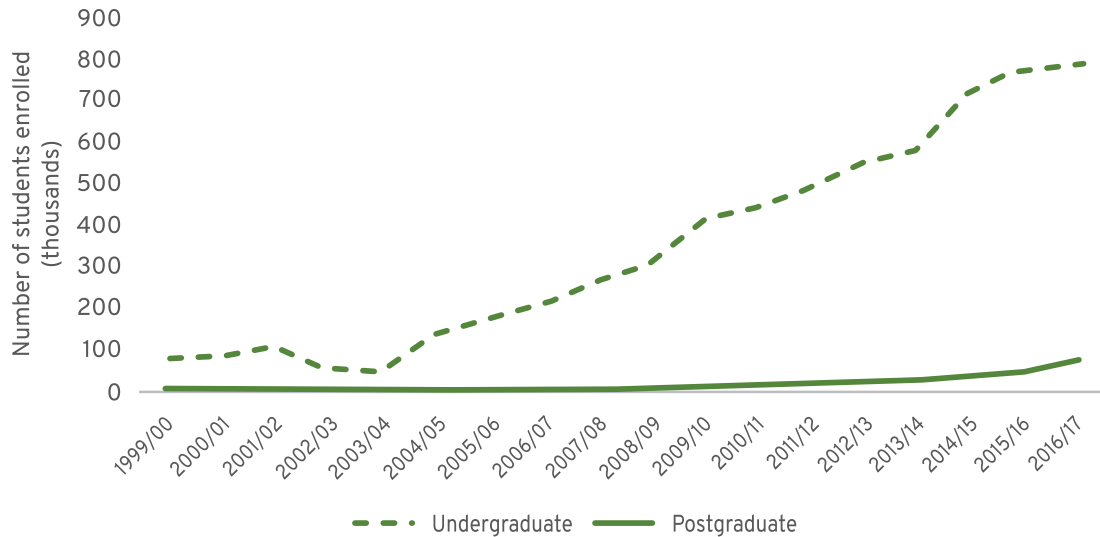
¹¹ These levels of investment in education represent a substantial increase on investment in the 1990s, which represented barely 10 per cent of Government spending.

Despite significant improvements over the last two decades, access to primary education remains low in rural areas and in some regions. This has important implications for both equity and efficiency: for equity because limited access to education fuels regional and local marginalization and breeds social tensions; for efficiency because the scope for investment in human capital to improve productivity is not fully utilized, resulting in sub-optimal employment of resources.

2.7.2. Trends in higher education

Ethiopia has also aggressively expanded access to tertiary education over the last two decades. The number of universities has increased from fewer than eight 15 years ago to more than 40 (2018). Consequently, university enrolment at undergraduate level has increased from 10,000 in 1990 to 788,033 (MoI, 2017). Postgraduate enrolment has also substantially increased, from 969 students in 1999 to 72,345 (2017), a more than 72-fold increase. Figure 21 shows the progress in student enrolment at both undergraduate and postgraduate level between 1999 and 2017.

► **Figure 21. Enrolment in undergraduate and postgraduate education programmes**



Source: Ministry of Education, Education Abstract, various years

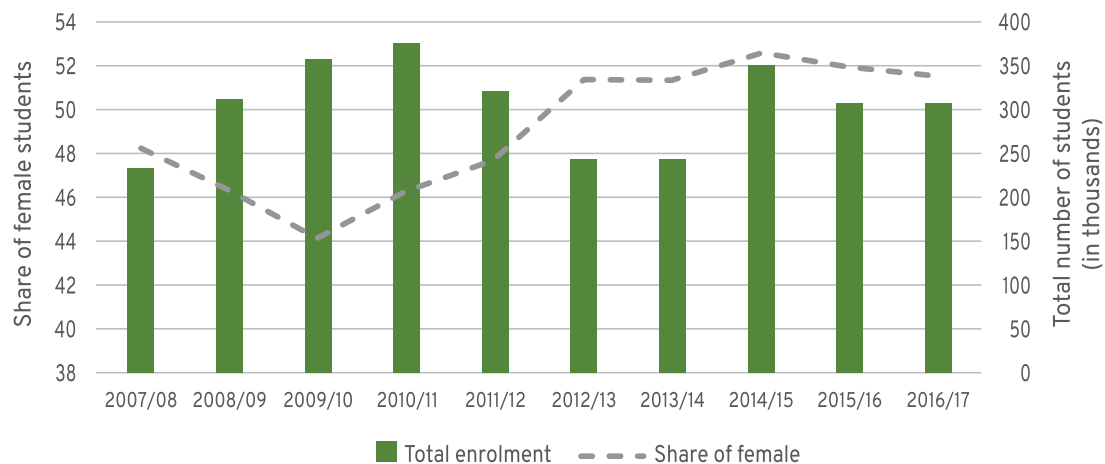
2.7.3. Trends in access to TVET centres

The number of TVET centres has also massively increased. In 1994, there were only 15 TVET centres throughout the country, but this figure had increased to 153 by 2002 and 582 by 2017.¹² The number of students enrolling, meanwhile, increased from fewer than 10,000 in

¹² Even so, the number of TVET institution is far lower than the target set by the Government. In 2013/14, for example, the Government had planned to increase the number of TVET institutions to 1,102, but there were in fact only 437 institutions, less than 40 per cent of the target figure (MOE, Education Abstract, 2015)

the early 1990s to more than 72,000 in 2002/2003 and 300,000 by 2016/2017. As indicated in Figure 22, TVET enrolment has slowed down in recent years but the share of female students has continued to increase, reaching more than 50 per cent in 2011/12.

► **Figure 22. TVET enrolment by sex**



Source: Ministry of Education, Education Abstract, various years ¹³

While there are some indications that adults also participate in the TVET system, we are not aware of accurate data sets showing the extent of participation by different age groups.

The vast majority of TVET students continue to enrol in government-run TVET institutions. The share of students attending non-governmental TVET institutions has barely changed over the last few years and stood 13.5 per cent in the 2016/2017 tax year (MOE, 2016). The non-governmental TVET centres are a combination of for-profit private enterprises that charge tuition fees and non-profit entities that offer scholarships for students. Unlike government-run TVET centres, such institutions rarely receive direct funding from the Government but rely mostly on tuition fees or donor funding (Aytenew, undated).¹⁴

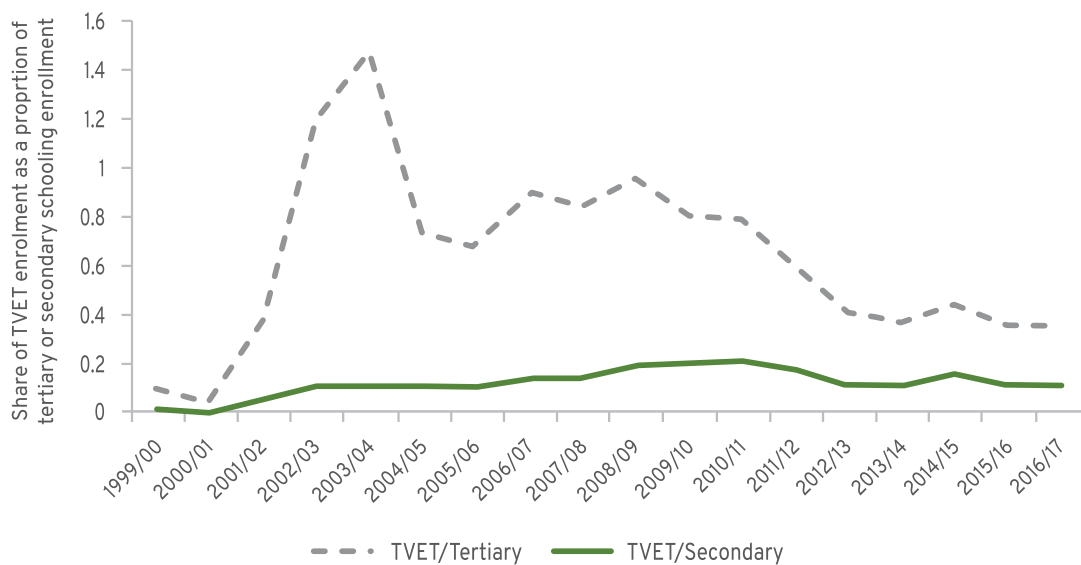
The aggressive expansion of the TVET system by the Ethiopian Government is based on the assumption that TVETs institutions teach productive skills that can be applied for both self- and waged employment. This idea is well articulated in the Ethiopian Education and Training Policy and in the 2008 Ethiopian National TVET Strategy.

¹³ The MoE notes that the data is based on only four regions (Tigray, Amhara, Oromia and Harari). While the information from the MOE is precisely disaggregated by age for general education levels, age-level analysis is not possible for TVET and higher-education groups.

¹⁴ The MoE's recent Education Abstract does not clearly show the number of TVET institutes and their levels of accreditation. Our effort to obtain this information from other sources was also unsuccessful. We therefore do not know whether this information is collected and compiled. Indeed, highlighting the difficulty of obtaining such data, other researchers report that "Government sources estimate that private TVET providers currently provide approximately 30% of all TVET in Ethiopia, while private TVET providers estimate their share of the market to be around 50%" (Shaorshadze and Krishnan 2013, p.13).

Despite the expansion of TVET and the significant budget devoted to it, the share of secondary school students enrolled in TVET programmes does not appear to have greatly changed over the last 15 years, as indicated in Figure 23. Figure 23 shows that in the late 1990s and early 2000s TEVT was something of a rarity. In 2003, the TVET-to-secondary-school student enrolment ratio reached 10 per cent, peaked at 21 per cent in 2010/11, then declined to 12 per cent in 2016/17. By 2016/17, TVET enrolment also accounted for only 35 per cent of total university enrolment in the country.

► **Figure 23. TVET enrolment in relation to secondary-school and tertiary enrolment**



Source: Ministry of Education, Education Abstract, various years

2.7.4. Implications of the socio-economic context for the TVET system

Ethiopia has certainly made great progress in achieving one of the fastest growth rates in Africa and reducing poverty in both rural and urban areas. The series of five-year development plans increasingly recognize the importance of industrialization in transforming the structure of the economy from one based on traditional low-productivity agriculture to one driven by the industrial and service sectors. The recent second Growth and Transformation Plan (GTP-II, 2015/16-2019/20), with its focus on aggressive industrialization, is considered to be an important vehicle for Ethiopia's renaissance. As part of the drive for rapid industrialization, the Government has set some crucial objectives: to create jobs and boost incomes, to improve export performance, to make the economy more competitive, and to enhance technological capabilities and develop skills. The focus on structural transformation, already present in GTP-I, is magnified in GTP-II, which holds out the vision of Ethiopia becoming Africa's light-manufacturing hub over the next 10 years.

With this in mind, the Government increasingly recognizes the important role of skills development and the adoption of new technology. This undergirds the substantial investment it has made in human capital formation, as manifested by the larger share of the budget allotted to education. The substantial expansion of access to primary and secondary education over the last decade signals the Government's commitment to improving overall education in the country. Moreover, in the expectation that the skills needs of the economy will continue to grow, the Government has placed considerable emphasis on the expansion of TVET and higher education. The number of TVET institutions has increased from barely 15 in 1994 to more than 582 in 2017, while student enrolment has expanded from fewer than 10,000 in the 1990s to more than 300,000 in 2017.

TVET is seen as the key to nurturing skills, improving productivity and reducing the problem of unemployment. TVET institutions are expected to produce skilled production workers who meet the skills needs of both domestic and foreign industrialists, whose activities are mushrooming in and outside of industrial parks.

TVET institutions are also expected to contribute to job creation for young people in both the waged and self-employment sectors. In particular, it is hoped that the increase in TVET provision and student enrolment will help to reduce urban unemployment. Urban youth unemployment in the 20–24 and 25–29 age groups is very high at 30.2 per cent and 24.2 per cent respectively and remains a serious problem in the context of ongoing urbanization and industrialization (CSA, 2014). It is hoped that the skills acquired on vocational training programmes will improve young people's employability and foster business start-ups in the micro- and small-enterprise sector, thus reducing unemployment in cities.

Where the structure of rural employment is concerned, there is a surplus of farm labour, which needs to be absorbed by creating productive off-farm jobs. Rural industrial development, generated by setting up integrated agro-industry parks (IAIPs) linking farming with industrial processing, requires skills sets not yet available in rural areas. The TVET system can potentially teach skills that will reduce post-harvest losses and improve product quality and standardization – essential considerations as production activities move further up the value chain. While recognizing the importance of job creation, the TVET strategy needs to take into account the demands of industrialization in the rural context. Increasing the pace of job creation in rural areas should become a central aspect of the national TVET strategy.

Despite the immense potential for the TVET system to develop managerial, technical and vocational skills in the labour force, its success in bridging the skills gaps observed in the economy appears to be minimal. The TVET system and vocational training programmes have certainly contributed to job creation, improvements in productivity and rural industrialization. However, the TVET system is still lacking in terms of quantity, quality and relevance, and a substantial effort is needed to bring about improvements in both access and quality. The enrolment rate, for example, has fallen below the Government's targets: in 2010/11

it amounted to only 51 per cent of the planned total. In 2012, the majority of graduates (approximately 78%) were not considered sufficiently competent, which implies the training provided was below the minimum quality required of the education system (Edukans Foundation, 2012). This problem can be partly explained by the substandard quality of TVET instructors: of the 2,311 instructors assessed across the country in 2012, only 53 per cent were found to be competent (Edukans Foundation, 2012).

The TVET system also appears to be highly supply-driven, with only limited participation on the part of the private sector in developing TVET curricula and implementing vocational training programmes. This has led to an obvious mismatch between the real abilities of TVET graduates and the operational standards of industry. A lack of coordination among the many stakeholders weakens the impact of TVET in reducing unemployment and boosting skills formation. As a result, firms undervalue and underpay TVET graduates and, even worse, TVET graduates are likely to suffer excessively high levels of unemployment.

Another factor is that students' general attitude towards TVET education is not very positive: those who enrol tend to be students who have failed to gain places at more prestigious higher-education institutions. The TVET system thus attracts low achievers and, in many cases, less talented individuals. Analyzing and disseminating information on labour-market demand and fine-tuning training programmes to respond to changing circumstances in the economy are critical if TVET centres are to attract promising students.

The real or perceived prestige (or lack thereof) of the TVET system shapes the attitudes of students and society generally towards its training programmes. Ensuring that TVET is a stream of education that matches the prestige and earning potential of the higher-education sector would lead to greater participation and a lower drop-out rate. In short, a paradigm shift in the public image of TVET, so that it is seen as a bastion of brilliance and a supplier of skilled manpower to the economy, is vital for attracting talented students.

3. The Technical and Vocational Education and Training (TVET) system in Ethiopia

3.1. Overview of the TVET system in Ethiopia

The TVET system in Ethiopia aims to fill skills gaps in the economy, mainly by training youth and young adults. The system has a largely pre-employment character, aiming to prepare new graduates for the job market. In recent years, however, short courses lasting several months have also been offered to equip unskilled individuals with entry-level skills. At the municipal level, courses have been organized for the unemployed. In some cases, companies cooperate with TVET institutions to deliver training. Moreover, non-formal TVET programmes are available to anyone wanting to improve their chances on the labour market (GIZ, 2018).

The TVET system in its current format was set up in 2000/01, since when it has been afforded significant coverage in all the subsequent five-year development plans. The main focus of the TVET system in the SDPRP (2002 – 2005)¹⁵ was to increase enrolment in TVET institutions (MOFED, 2002). During the PASDEP (2005-2010), quality concerns started to surface and the focus shifted to finding ways of improving quality, making it more demand-driven, and providing training based on occupational standards (MOFED, 2005).

During GTP-I (2010-2015) quality-assurance issues were emphasized once again, in particular the need to strengthen occupational standards and the accreditation of competencies, and to improve the curriculum development process (MOFEC, 2010). GTP-I identified TVET institutions as hubs of technology and skill development for micro and small enterprises (MSEs). Quality and the relevance of the training delivered remained the key challenges during the implementation of GTP-I.

During the second GTP (2015-2020), the emphasis on TVET institutions as skills development hubs for SMEs and the need to improve the quality of and access to the TVET programme has been maintained (NPC, 2016). In 2008, the National TVET Strategy was revised mainly with the aim of making TVET an outcome-based system, anticipating the skills needs of the economy and informing the design and content of TVET programmes (demand-based curricula), with special attention to quality and relevance. However, the system does not as yet offer other forms of training, such as on-the-job training, skills upgrading or re-training, to those who have lost their jobs or wish to change careers, as identified by Krishnan and Shaorshadze (2013).

¹⁵ SDPRP refers to the Sustainable Development and Poverty Reduction Program

Currently, the TVET provided by public and private organizations in Ethiopia is delivered at five levels (Level 5 being the highest). The levels reflect the duration of training (from one to three years) and the more or less advanced nature of the skills imparted. Trainers are categorized in three levels (Level A, Level B, and Level C) with Level A being the highest.

TVET policies are formulated and implemented under the auspices of the Ministry of Education, except for the now-defunct Engineering Capacity Building Program (ECBP), which was supported by the German government and was under the purview of the Ministry of Capacity Building. As of 2018, the Ministry of Education has been split into the Ministry of Education and the Ministry of Science and Higher Education (MSHE). The TVET programme now comes under the MSHE.

3.2. Training schemes delivered by other government agencies

The Ministry of Industry manages six sectoral development institutes that provide specialized training. These are the Metal Industry Development Institute (MIDI), the Leather Industry Development Institute (LIDI), the Textile Industry Development Institute (MIDI), the Chemical and Construction Inputs Industry Development Institute (CCIIDI), the Ethiopian Industrial Inputs Development Enterprise (EIIDE), and the Food, Beverage and Pharmaceutical Industry Development Institute (FBPIDA). These institutes provide a range of technical services to industry, including worker training and counseling and support services. They are also set up to work as incubators, adopting production technologies that can then be passed on to industry operators.

However, surveys of specific sectors by the Ethiopian Development Research Institute (EDRI) indicate that these institutes are engaged mainly in facilitation work, such as credit provision, rather than serving as knowledge and training hubs. Enterprises that use their services complain that they do not have competent trainers and are more involved in bureaucratic box-ticking than in technology-related issues.

3.3. Skill development by NGOs

Various government-affiliated and private business development service (BDS) providers are engaged in offering training programmes, particularly to micro and small enterprises. However, discussion between BDS providers and EDRI researchers indicates a lack of interest on the part of firms in receiving such training programmes. The main factor in this lack of interest is the incompetence of the trainers, partly because each trainer delivers training in all aspects of industrial extension services (financial, technical and managerial), rather than specializing.

A number of non-governmental actors are also involved in skills development.¹⁶ UNESCO is running the Better Education for Africa's RISE (BEAR) project, focusing on the quality of training in agro-processing. UNIDO has launched a Programme for Country Partnership (PCP) for Ethiopia, the mandate of which include support for skills development, in particular the creation of R&D units linked to universities and TVET institutions. The ILO has a project involving the development of a Youth Employment Service Centre. The European Union Emergency Trust Fund for Stability finances the SINCE (Stemming Irregular Migration in Northern & Central Ethiopia) project, which aims to provide vocational training and stimulate the creation of micro and small enterprises and livelihood activities for young people and women in migration-prone regions of Ethiopia.

The GIZ is starting a second phase of its Sustainable Training and Education Programme (STEP), focusing on the transition of graduates from training to employment. STEP seeks to improve the employment prospects of young people by enhancing the quality and relevance of the vocational and higher education system in Ethiopia. By establishing a strong linkage between education and the private sector, the programme aims to enhance the relevance of the education system and gear it towards employment. Where TVET is concerned, STEP supports the Federal TVET agency and regional TVET bureaus in developing, piloting and implementing innovative cooperative training models in cooperation with the private sector. It also supports TVET teacher training. To improve matching between skills training and the labour market, STEP supports the development of data management systems that will promote evidence-based decision-making, establish regional stakeholder dialogue in favour of support demand-driven training, and provide short-term training to improve pathways to employment. In addition, the GIZ is partially funding centres of excellence for skills development in Mekelle and Hawassa.

However, the skills development activities of these NGOs, while vital, do not seem to be harmonized with one another or with government initiatives.

3.4. Training delivered by industry

Public enterprises such as Ethiopian Airlines, Ethio-Telecom and other large utility companies provide in-house training tailored to their specific needs and standards. Similarly, textile companies, particularly the larger ones, hire unskilled workers (below Grade 10) and provide them with basic training in work ethics, basic skills and communication. However, due to high levels of labour turnover, companies argue that they rarely recoup the investment they make in training their workforces. Turnover is induced by low wages and relatively expensive housing, with the result that workers often leave their factories within a year (GIZ, 2018). The high labour turnover in the manufacturing sector also acts as a disincentive

¹⁶ Details of specific non-governmental skills development projects/programmes in Ethiopia can be found in the ILO's Mission report of June 2018.

for firms that invest heavily in advanced training for workers such as industrial mechanics and industrial electricians, who often then go abroad or seek employment with competitors (GIZ, 2018). Unless the TVET system produces adequately trained workers with advanced skills, the current attempts by some factories to train workers are therefore unsustainable.

3.5. Policies and strategies governing TVET in Ethiopia

The policies and strategies governing TVET can be analyzed as part of overall education policy, as well as on their own terms.

3.5.1. Policies and strategies for skills development and TVET

a. Education and skills development policies and strategies

To guide the development of the education sector, in 1994 the Government of Ethiopia produced an Education and Training Policy (ETP). The ETP was intended to regulate the implementation of various strategies for addressing the poor performance of the education sector.

To implement the ETP, periodic Education Sector Development Programmes (ESDPs) were implemented in phases. To date, five ESDPs have been rolled out: ESDP-I (1997/8 – 2001/02), ESDP-II (2000/01-2004/05), ESDP-III (2005/06-2009/10), ESDP-IV (2010/11-2014/15) and ESDP-V (2015/06 – 2019/20). The ESDPs have been aligned with national development plans.

ESDP-I (1997/08 – 2001/02) was directly derived from the ETP. ESDP-II (2000/01-2004/05) saw the first attempt to align an ESDP with the country's five-year development plans. The first formal TVET strategy was formulated in 2002, followed by a TVET Proclamation in 2004 (FDRE/MoE, 2008). The strategy was concerned mainly with the expansion of TVET, but without due emphasis on demand or quality.

In line with the SDPRP and the MDG, ESDP-III (2005/06-2009/10) aimed to improve educational quality, relevance, efficiency, equity and expansion of access, with special emphasis on primary education in rural and under-served areas, as well as the promotion of education for girls, as a first step towards achieving universal primary education by 2015.

The two main goals of the ESDP-IV (2010/11-2014/5) were to improve access to quality primary education and sustain equitable access to quality secondary education. In primary education, the aim was to ensure competencies in skills and values that would enable all children, young people and adults to participate fully in the development of the country. The aim of sustaining equitable access to quality secondary education was to respond to the economy's demand for middle and higher-level personnel.

Key interventions during ESDP-IV included the implementation of a National Adult Education Strategy (MoE, 2015). The Government also initiated and implemented a General Education Quality Improvement Programme (GEQIP) in collaboration with the World Bank. The GEQIP supported the introduction of a revised curriculum, the provision of textbooks, teacher training, and capacity-building for the education management information system.

While TVET institutions have been established in all regions, enrolment in some of them has been disappointing. In Afar, Gambella, Benishangul-Gumuz, Somali and Harari, TVET enrolment is particularly low (MoE, 2015). The poor levels of attainment of students feeding into higher education and the limited capacities of regional and federal education offices contributed to poor education outcomes during ESDP-IV (MoE, 2015). Moreover, there was insufficient focus on and coordination around cross-cutting issues such as gender and HIV/AIDS, despite these issues being officially included in the plan.

The ongoing ESDP-V (2015/06 – 2019/20) identifies six priority areas and related themes at different levels, from pre-primary to tertiary education:

- ▶ *Capacity development for improved management*
- ▶ *General education: quality*
- ▶ *General education: access, equity and internal efficiency*
- ▶ *Adult and non-formal education*
- ▶ *Technical and vocational education and training*
- ▶ *Higher education*

ESDP-V includes provisions for cross-cutting issues such as gender, special needs and inclusive education, HIV/AIDS, education in emergencies, school health and nutrition, the prevention of drug and substance abuse, and water, sanitation and hygiene.

Key challenges at present include (see, for example, MoE, 2018):

- ▶ **Access.** Some regions, such as Somali and Afar, still face substantial access problems as measured by gross and net enrolment rates in general education. The problem is particularly apparent in secondary education.
- ▶ **Equity.** Girls' enrolment rates remain lower in rural areas and in some regions, such as Afar and Benishangul-Gumuz.
- ▶ **Quality.** The quality of education at all levels remains a concern.
- ▶ **Low competence of teachers.** The limited capacities of teachers, particularly in secondary, TVET and higher education, remain a key challenge.
- ▶ **Poor relevance of TVET and higher education training.** The nature of the training offered by TVET centres and universities is largely supply-driven, leading to mismatches between the demand for and supply of skills.

- ▶ **Financing problems.** While donor financing is available in general education, financing for TVET and higher education comes mainly from the Government.
- ▶ **Lack of competency and teaching materials.** TVET institutions suffer from a lack of competence on the part of teachers and from limited availability of machines and equipment. Moreover, graduates benefit from little practical education and have only limited access to internships and apprenticeships.

b. The 2008 National TVET Strategy

The 2008 National TVET Strategy replaced the previous strategy, which was formulated in 2002. The 2008 strategy emphasizes the need to shift the focus from quantity to quality and from a curriculum-based approach to an occupational-standards-based one. This is complemented by a plan to establish an occupational assessment system open to graduates and candidates from all formal, non-formal and informal TVET schemes. It was thought that these reforms would gear the TVET system towards relevance, demand-orientation and accessibility (MoE, 2008).

The TVET strategy aims to produce a competent, motivated and innovative workforce that will contribute to poverty reduction, equity and economic growth. Its goals include the creation of an integrated yet decentralized and results-oriented TVET system; the establishment of TVET hubs for technology development and transfer; and the restructuring of the TVET system to deliver its goals effectively. Some of the key principles of the strategy are to make the TVET system demand-driven, ensuring quality and accessibility, flexibility in changing circumstances, and linkages among professionals working at the various levels and in different sectors.

A major departure of the current (2008) strategy is that it aims to create an outcomes-based TVET system. The previous strategy did not cater for the changing nature of skills demand in the economy. The TVET system is now expected to respond to the dynamics of skills demand by taking occupational standards as a guide for the provision of training, thus enabling it to respond better to the skills needs of the economy. The quality of students' learning and competence would be measured by a standardized process of occupational assessment based on the occupational standards. A candidate who is found to be competent through occupational assessment would be awarded a National Occupational Certificate.

The strategy is led and implemented by the Federal TVET agency, with the implementation of some of its activities possibly delegated to regional TVET offices. The Federal TVET Council is responsible for overseeing the Federal TVET Agency. Members of the Council include representatives of the Ministry of Education, the Ministry of Works and Social Affairs, the Ministry of Agriculture and Rural Development, the Ministry of Health, the Ministry of Trade,

the Ministry of Industry, the Ministry of Urban Development, and the Ministry of Youth, Women and Children.¹⁷

Technical and vocational education and training (TVET) is one of the priority components of the current ESDP (2015/6-2019/20), the aim of which is to produce a demand-driven lower- and middle-level workforce that is competent, motivated, adaptable and innovative (MoE, 2015). TVET graduates play a valuable role in contributing to poverty reduction and economic development by facilitating technology transfer to SMEs. The ESDP focuses on strengthening the development and assessment of occupational standards (OS); trainees' development; institutional capacity building; and industry-extension and technology-transfer services.

Where OS are concerned, the key targets of the current ESDP are to increase the percentage of industry sectors using OS in their human resource development from 10 to 60 per cent by the end of the programme period; ensure that all TVET trainees (formal and non-formal) are assessed upon completion of training; and increase the percentage of fully qualified industrial workers from 2 to 35 per cent. To achieve these goals, a stronger link between industry and TVET institutions is envisaged.

With regard to industry-extension and technology-transfer services, the key targets are to increase the number of MSEs supported by industry extension services from 463,573 to 567,115 and increase the number of technologies identified through value-chain analysis and transferred to MSEs from 3,338 to 7,379. To achieve these goals, the technical and entrepreneurial skills of MSE operators will need to be enhanced through capacity building in response to skills-gap analyses conducted by TVET trainers. In addition, all TVET trainers will receive training in Kaizen principles and techniques, which they will transfer to the MSE operators.¹⁸

In a key informant interview conducted with a representative of the FeSMMEDA,¹⁹ the view was expressed that TVET institutions' focus on a standard curriculum fails to take into account the need for practical and soft skills, which are increasingly demanded by the labour market. The result can be unproductive entrepreneurial endeavours or graduates who are unemployable because they lack the skills conducive to improved productivity.

TVET institutions are also seen as nodes for the provision of industry-extension services to micro and small enterprises (MSEs). These services include four key components: training

¹⁷ Following the cabinet reshuffle in October 2018, some of these ministries are now merged, while others have been downgraded to commission level and have assumed new names.

¹⁸ Kaizen is a Japanese management philosophy that emphasizes continuous productivity improvement through incremental changes, as opposed to the radical and costly reorganization of enterprises.

¹⁹ The FeSMMEDA is the Federal Small Medium Manufacturing Enterprises Development Agency.

to fill skills gaps, Kaizen, technology transfer and entrepreneurship training. Except for Kaizen and, to some extent, entrepreneurship packages, the industry-extension services do not seem to have succeeded in bridging the skills and technology gaps faced by many MSEs. The service is reckoned to be very weak as the trainers who provide on-site consultation to enterprises by going door to door are themselves not properly trained.²⁰ The trainers' lack of practical skills reduces the extent to which their advice is practicable.

The TVET strategy needs to be revised/updated to address the governance, funding, and quality problems facing the TVET system. In fact, the development of a new TVET strategy with appropriate monitoring and evaluation to track progress and address budding constraints on a regular basis is definitely warranted.

c. Other policies and strategies related to TVET

A number of policies and strategies that complement the country's TVET system have been promulgated over the last two decades.

The MSE Developments Strategy

The 1997 MSE Development Strategy, revised in 2011, recognizes MSEs as the natural habitat of entrepreneurship, essential for job creation and equitable income distribution. The strategy aims to create favorable conditions for the MSE sector, especially for enterprises owned by women. It emphasizes the need for the training and skills development of MSE operators. The latest version of the policy prioritizes the development of human capital and technology as key areas, focusing on the provision of entrepreneurial, technical and marketing training in TVET institutions and making TVET institutions centres of technology incubation and diffusion. Specifically, the strategy stresses that entrepreneurship training would be integrated into the curriculum of TVET institutions, together with technical and vocational training. TVET centres should be geared to provide training based on demand from MSEs. Moreover, they should assist MSEs in enhancing their competitiveness and acquiring production and skills-standard certification, such as that awarded by the ISO. We are not aware of any systematic study that evaluates the effects of the MSE development strategy. Even though the MSE sector expanded following publication of the 2011 MSE Development Strategy, the performance of manufacturing MSEs has been poor. According to a review by the NPC, the major factors hindering the growth of micro and small enterprises include low levels of entrepreneurial capability, technology and skills competence, and limitations related to finance and marketing (NPC, 2016). A recent paper by Abebe and Gebreeyesus (forthcoming) makes a comparative analysis of MSEs directly initiated and supported by

²⁰ A Kaizen assessment survey by one of the authors of this report indicates that many of the MSEs that received industry extension services regarded the TVET trainers' lessons as very shallow and impossible to implement sustainably.

the state (cooperatives) and MSEs that are self-initiated. They found that MSEs aggressively supported by the state in line with the Development Strategy perform no better than MSEs created with no such support systems. In fact, the authors argue that the result casts doubt on the “Ethiopian’s government use of worker cooperatives as key levers to foster entrepreneurship” (Abebe and Gebreeyesus, forthcoming).

The National Youth Policy (NYP) and the National Employment Policy and Strategy (NEPS)

In 2004, the Ministry of Youth Sports and Culture formulated a National Youth Policy to encourage young people to participate efficiently and effectively in the country’s development and democratization (MoYSC, 2004). On the economic front, the policy aims, among other things, at creating supportive conditions to enable youth to benefit from the education/training and ICT systems and thereby generate jobs for themselves. It also aims to encourage the private sector to create jobs and so increase opportunities for youth employment.

The 2009 National Employment Policy and Strategy (NEPS) is designed to alleviate unemployment and underemployment, working poverty, and lack of protection in the informal sector by establishing a coordinated employment policy framework to address the issues of labour demand, labour supply, and labour market institutions in an integrated manner (MoLSA, 2009).

Both the NYP and the NEPS lack clear action plans and are not integrated with or mainstreamed into the other sectoral strategies and policies. Their implications for TVET-sector growth and improvement are not at all clear.

Science, Technology and Innovation Policy (STIP)

The STIP was formulated in 2012 to enhance technology transfer by creating a national framework for the selection, adaptation and utilization of appropriate foreign technology, as well as establishing a national innovation system (ESTC, 2012). Several key policy issues were identified, and implementation strategies devised. One of the policies was to link universities, research institutes and TVET institutions, on the one hand, with industry, science and technology information systems, and intellectual property systems, on the other. The main implementers of the STIP are the National Science, Technology and Innovation Council and the Ministry of Science and Technology (MoST). Universities, government research institutions, national laboratories, TVET institutions, financial support service providers, science and technology parks, the intellectual property office, manufacturing and service enterprises and the agencies of the national quality infrastructure also have a hand in its implementation.

All this shows that there are plenty of policies, strategies and programmes that directly or indirectly contribute to skill development in Ethiopia. However, there is no overarching strategy or policy that ensures coherence and coordination among the various initiatives. Moreover, there is no coordinating body or ministry that oversees and coordinates skills development as promoted by the various government agencies and NGOs. The fragmented efforts of government, the private sector and NGOs results in duplication of effort and wastes, not to mention mismatches between the skills the economy requires and the actual supply of the same.

d. Cross-cutting issues

Female participation

Female participation in TVET is on a par with males. Overall, women tend to participate more at levels 1 and 2 and less at levels 3 to 5.²¹ The reason generally given is that shorter-term courses in such fields as ICT, business and hairdressing are traditionally more appealing to women (MoE, 2015).

Students with special needs

In 2006, as part of ESDP-III (2005/6-2009/110), the MoE designed and implemented a Special Needs Education Programme strategy, which was revised in 2012. The participation of students with special needs in TVET has recently been rising but still remains low. In 2009/10, only 398 students with special needs were involved in the TVET programme nationwide. The number had increased to more than 1,000 in each subsector by 2015. One of the reasons for the limited participation of students with special needs is that only a small number of such students finish secondary school. The MOE reiterates that improving access to higher education institutions for students with special needs, equipping staff with suitable skills and providing adapted learning materials in general education are necessary to increase the participation rate. Expanding the fields of study available in Special Needs Education (SNE) would also boost the access of students with special needs to higher education, including the TVET programme (MoE, 2015).

Rural/urban linkage and migration

An important aspect of sustainable urbanization is the linkage between rural and urban areas. Ethiopia remains largely rural, with about 80 per cent of its population living in the countryside. However, the rate of urbanization is very high and the influx of people from

²¹ The percentage of female trainees in TVET, which stood at 46 per cent in 2009/10, had increased to 51 per cent by 2012/13.

rural to urban areas inevitable. Any education and training policy should therefore include provisions to support rural-to-urban migrants. Relatively, Ethiopia is considered to have a low rate of rural-to-urban migration, as government policy is to discourage it (see, for example, the National Policy of Ethiopia, 1993). In fact, migration of this kind is largely ignored in many policy discussions, national development policies and education/training programmes. Economic policy tends to dichotomize development as rural (agriculture) or urban (services and industry) and assumes that the movement of rural workers to the urban sector will be addressed naturally and seamlessly. However, poverty is still rampant in rural areas and this will continue to be a major factor in rural-to-urban migration. Policies that ignore this phenomenon and do not make provision for job creation and the training needs of potential migrants will inevitably result in uncontrolled and unsustainable urbanization. The TVET strategy fails to take into account the rural-urban linkage in general and migration in particular.

Green economy aspects

Another crucial cross-cutting issue is greening the economy. In 2011, the Government of Ethiopia formulated a Climate Resilient Green Economy (CRGE) Strategy to ensure sustainable economic and social development. However, awareness of issues relating to environmental sustainability is still very limited among firms, entrepreneurs and employees. Education and training policies, strategies and programmes should take into account environmental issues and the need for sustainable livelihoods. Raising awareness of sustainable (green) business practices is therefore necessary, in addition to providing technical and business-management training. Currently, very few firms have prepared and submitted environmental impact analyses (EIAs) to the relevant authorities: according to a survey of MSEs conducted by the EDRI in 2016, only 18 per cent of micro and small enterprises had submitted an EIA. Similarly, only 12 per cent had operational wastewater treatment facilities and some 68 per cent simply dumped their firms' solid wastes without treatment. This is indicative of the low level of awareness of and commitment to environmentally sustainable production practices.

The current skills development strategies, such as the 2008 TVET Strategy, have not been updated to take into account green-economy initiatives such as the CRGE. There is therefore a need for the TVET system, and the education system in general, to integrate recent initiatives concerned with greening the economy, so that graduates and entrepreneurs have a basic awareness of environmental issues and how to comply with environmental protection standards.

3.5.2. Major institutions engaged in implementing TVET programmes

As mentioned in preceding sections, the TVET strategy should be directed and implemented by the Federal TVET Agency, while some of its activities are delegated to regional TVET offices and TVET colleges. The Federal TVET Agency reports to the Ministry of Education.

Some of the key stakeholders in the TVET programme are the Federal Small and Medium Manufacturing Enterprises Development Agency (FeSMMEDA) and the Federal Urban Job Creation and Food Security Agency (FUJCFSA) and its rural counterpart, as well as individual firms and chambers of commerce. However, coordination among the Federal TVET Agency, the FeSMMEDA and the FUJCFSA is very poor as the institutions report to different ministries: the Federal TVET Agency to the Ministry of Education (MoE), the FeSMMEDA to the Ministry of Industry, and the FUJCFSA to the Ministry of Urban Development.²² Hence, there are overlapping jurisdictions and unclear institutional arrangements in relation to the TVET system.

The mandate of federal authorities includes the formulation of national policy, the performance of all statutory functions at national level (formulation of occupational standards, assessment, certification, drawing up of accreditation rules, etc.) and running the system of TVET teacher/instructor training and further training, as well as coordination, advising authorities at lower levels and providing selective support to the implementing actors.

The main responsibility for implementing the TVET system rests with the regional authorities, which may again delegate functions to lower-level administrative units, i.e. zonal and woreda TVET offices and TVET councils. The regional authorities are responsible for planning, coordinating, supporting and supervising the TVET institutions in their jurisdictions. Moreover, the regions are responsible for securing funding for the public TVET institutions under their control and for developing incentive arrangements for private and NGO-run TVET colleges.

The Federal TVET Agency is mandated with organizing, facilitating and endorsing occupational standards in consultation with experts from industry. The Ministry of Labour and Social Affairs and the Civil Services Agency are key players in the development of national occupational standards and are regularly consulted.

To ensure quality, the Federal TVET Agency is responsible for establishing and facilitating a national occupational assessment and certification system, laying down the necessary rules and procedures. Ensuring that occupational assessments are properly conducted and

²² Following the cabinet reshuffle in October 2018, the reporting requirements of some of these institutions may have changed.

certificates correctly issued are matters for the regional TVET authorities. The TVET strategy stipulates that assessments must be conducted by accredited assessors, preferably experts from industry or experienced trainers. The assessments themselves take place in designated or accredited public or private assessment centres.

3.5.3. Financing skills development

Currently, the bulk of TVET funding comes from the Government. However, the share of public spending on TVET is about 5 per cent of all spending on education, which is less than half in per capita terms of the money spent on higher education (GIZ, 2018).

The participation of NGOs in TVET financing and private TVET provision is limited. For example, in 2015 more than 80 per cent of Level 1 and 2 graduates were trained at public TVET institutions, though the participation of private institutions is higher for Levels 3 to 5.

The TVET strategy stipulates that public TVET institutions should introduce cost-saving mechanisms, encouraging private investment in the sector and running revenue-generating activities within the colleges themselves (for example, sales of items produced by students and the hiring out of facilities). However, the extent to which this takes place is unclear.

In practice the involvement of private TVET institutions and NGOs has been limited. The TVET strategy lacks a viable incentive system to encourage the involvement of private training providers and the development of a more robust market for education and training services.

Training in work ethics, basic skills and communication is provided in house by some enterprises, particularly the new textile factories in the industrial parks. Several enterprises also invest heavily in provide advanced training for some of their key workers, such as advanced industrial mechanics and industrial electricians, either training them in house or sending them abroad. However, the high labour turnover in the manufacturing sector can result in losses for firms that have invested heavily in training (GIZ, 2018). There is therefore a disincentive for firms to continue investing in the skills of their workers, so this is not a sustainable model for skills development. There is therefore a need to improve the existing skills development system, particularly the TVET system, to cater for the needs of enterprises.

To alleviate the acute shortage of advanced technical workers, the Volvo Truck Unit, in conjunction with UNIDO and a private TVET institution, started a joint training activity for heavy-engine and machinery technicians six years ago. The German Government (with input

from BML, BMZ, GIZ and German machinery companies) has also started an agricultural machinery training programme (GIZ, 2018). However, such attempts are a drop in the ocean relative to the overall demand for such skills.

3.5.4. The role of employers' and workers' organizations and social dialogue in TVET governance

The involvement of employer's and worker's associations in the TVET system is limited, despite a provision in the 2008 Strategy that TVET councils at federal and state level should include representatives of the business community. Discussion with representatives of the FeSMMEDA indicates that the TVET Agency and TVET colleges rarely involve them in curriculum development and that regular dialogue on the challenges of TVET is very limited.

The TVET strategy also emphasizes the need for cooperative training and apprenticeships whereby the bulk of training (70%) takes place on enterprise premises. These arrangements are intended to enhance the quality of training and expose candidates to the world of work, thus promoting their prospects of employment. The TVET executive bodies (the federal and regional TVET agencies) are mandated to explore the possibility of encouraging firms (large, medium and MSEs) – by advertising, rewarding participating companies or offering financial incentives – to cooperate with TVET institutions and host apprenticeships.

Lack of engagement with the TVET agencies and colleges on the part of the business community has resulted in a reluctance to provide apprenticeship and internship opportunities for TVET candidates. Cooperative training has therefore not been successful in terms of take-up by the various industries. The TVET strategy requires that 70 per cent of training should consist of practical experience in industrial settings, while only 30 per cent is expected to be school based. Currently, however, the offer of cooperative training is limited. There are just a few examples of successful cooperation of this kind between NGO-run TVET institutions and private enterprises. Most other TVET institutions send their candidates to publicly owned companies as take-up by private enterprises is so limited (GIZ, 2018).

3.5.5. Skills anticipation in the TVET System

The 2008 National TVET Strategy was revised mainly to make TVET outcomes-based, anticipating the skills needs of the economy and thus informing the design and content of TVET programmes. The management information system envisioned in the TVET strategy (TMIS) was intended to inform trainees on how to get places at the TVET colleges and how to engage with the labour market after graduation (Krishnan and Shaorshadze 2013).

However, the TMIS has not been implemented and the provision of TVET training continues to be supply-driven. Prospective TVET trainees therefore have to make decisions without a systematic induction or advice on the employment opportunities of specific areas of study. For example, discussion with representatives of the FeSMMEDA indicated that, while the manufacturing sector prefers to recruit Level 1 and Level 2 trainees and provide further tailored training in situ, most young people prefer to be trained to Level 3, 4 or 5 because higher levels of training correspond to better pay. This has resulted in a situation where manufacturing firms struggle to find suitably trained workers at lower levels, even when there is high unemployment among TVET graduates.

There is also no functional system whereby data on the skills needs on the economy can be collected and reported to potential TVET trainees, TVET colleges, ministries or the Federal TVET Agency, with the result that TVET programmes do not take demand for labour into account. In addition to the lack of LMI and data on skills needs, the limited involvement of industry representatives in curriculum and programme development has also contributed to the prevailing skills mismatches.

3.5.6. Skills provision in the TVET system

Government TVET institutions provide the bulk of TVET training. In 2015, there were 169,0398 students taking courses at Levels 1 and 2, 89,549 at Levels 3 and 4, and 12,802 at Level 5. Of these, roughly 84 per cent of Level-1 and -2 trainees, 84 per cent of Level-3 and -4 trainees, and 35 per cent of Level-5 trainees were studying at public TVET institutions, while the remainder were attending private facilities (see Seid et al., 2016, for data on the sectoral distribution of trainees). Investment in TVET provision by private training providers therefore been low and largely limited to Level 5-training. Since the early 2000s, TVET has expanded rapidly. The number of TVET colleges increased from fewer than 20 in 2000 to more than 600 in 2015.

Private-sector participation in TVET can also take the form of cooperative training. Many firms shy away from this as the interns need to be supervised and will be operating expensive machinery with the risk of damage. Many firms therefore see cooperative training as risky and costly. A study by the GIZ indicated that if firms were given the opportunity to select the apprentices they took on, and how many, they would be more willing to offer cooperative training. Unlike the German model of dual training, which gives freedom to employers to choose the applicants they accept as apprentices, this is not currently the case in Ethiopia, where employers have no say in whom they accept as interns. Instead, the TVET system allocates trainees to enterprises on an ad hoc basis, without consulting firms on their skills requirements or the availability of places (GIZ, 2018).

Donor participation in the education sector in general and TVET programmes in particular remains limited. Therefore, the limited government budget is spent on teaching, with little funding remaining for equipment, research and capacity building.

3.5.7. Skills certification and recognition in the TVET System

The TVET strategy aims to create an outcomes-based system able to respond to the dynamics of skills demand by following occupational standards. In other words, occupational standards guide the provision of training, which is thus able to respond better to the economy's skills requirements.

The TVET strategy stipulates that a TVET Qualifications Framework (ETQF) must be established to define the value of qualifications, ensure that different qualifications are comparable, and facilitate horizontal and vertical mobility within the TVET system. The ETQF defines the different levels of occupational qualification, details level descriptors, and formulates rules for horizontal and vertical mobility (i.e. for moving between different occupational areas and qualification levels).

In practice, however, TVET remains a pre-employment system. Opportunities for vertical and horizontal progression remain limited (Krishnan and Shaorshadze, 2013). The ETQF is in fact far from being fully implemented. Even so, there are short courses lasting several months that aim to equip unskilled individuals with a minimum qualification. There are programmes at the municipal level that encourage the unemployed to enrol and get some training, and in some cases companies cooperate with TVET institutions to provide training. Meanwhile, there are always those who seek training on their own initiative. Moreover, non-formal TVET programmes are available to anyone wanting to improve their chances in the labour market (GIZ, 2018). Recipients of non-formal TVET training can undergo formal assessment and obtain certification under the EQTF. The TVET strategy stipulates that non-formal and informal training should be integrated with formal TVET through the recognition of prior learning (RPL) as a way of avoiding unnecessary duplication. The modularization of TVET and the implementation of occupational standards, occupational assessment and certification is expected to facilitate RPL, particularly for non-formal TVET and skills acquired through work experience. An assessment by the GIZ indicated that currently the certification of prior learning has been adopted mostly in the sectors of construction, road-building and tourism (GIZ, 2018).

The current ESDP (2014-2020) focuses on the development and assessment of occupational standards (OS) and trainees' development. Only recently, therefore, has the certification of occupational qualifications been introduced into the TVET system. Occupational assessments

are made of formal attendants, as well as those who have learned their skills informally and those who have undertaken traditional apprenticeships (Seid et al., 2016). Some of the key OS targets of the current ESDP are to increase the percentage of industry sectors using OS for their human resource development from 10 to 60 per cent by the end of the programme period; ensure that all TVET trainees (formal and non-formal) are assessed on completion of training; and increase the percentage of industry workers with qualifications for the work they are doing from 2 to 35 per cent. To achieve these goals, the ongoing ESDP plans to institute strong industry/TVET linkages.

3.5.8. Quality assurance of training delivery

Both private and public TVET institutions are accredited by the Federal TVET Agency and the regional TVET bureaus. The rules and procedures for accreditation are laid down by the Agency based on international experience and in consultation with the TVET institutions themselves. It is the responsibility of the Federal TVET Agency to keep a register of accredited TVET establishments as part of its management information system, and to publish an annual list (MoE, 2008).

However, the Federal TVET Agency and its regional counterparts report to the Ministry of Education and regional education bureaus, which are public entities. This raises issues of autonomy as the agencies and bureaus accredit both public and private entities. A special agency reporting directly to the office of the Prime Minister or to Parliament and staffed with appropriately qualified accreditation professionals would do a better job of accrediting TVET institutions.

3.5.9. Accessibility of TVET to disadvantaged and vulnerable groups

Although TVET institutions have been established in all regions, enrolment in some areas is disappointing. In Afar, Gambella, Benishangul-Gumuz, Somali and Harari, TVET enrolments are particularly low (MoE, 2015). Moreover, some woredas do not have TVET centres, which poses accessibility problems for women and people from poorer backgrounds as attending training far away from home is costly.

Generally, female participation in TVET is on a par with males. Overall, women tend to participate more at Levels 1 and 2 and less so at Levels 3 to 5.²³ (MoE, 2015).

In 2006, during ESDP-III (2005/6-2009/110), the MoE designed and began implementing a Special Needs Education Program strategy, which was revised in 2012. Participation on the

²³ The proportion of female trainees participating in TVET, which stood at 46 per cent in 2009/10, had increased to 51 per cent in 2012/13.

part of students with special needs has recently increased but is still limited. In 2009/10, only 398 students with special needs took part in the TVET programme nationwide. The number had risen to more than 1,000 in each subsector by 2015. One of the reasons for the low participation of students with special needs is the limited number of students who finish secondary school. The MOE reiterates that improving access to higher education institutions for students with special needs, equipping staff with appropriate skills and providing adapted learning materials in general education are the measures required to enhance the participation rate. Expanding the fields of study available to students with special needs would boost the numbers wanting to access higher education, including the TVET programme (MoE, 2015).

4. Major challenges and opportunities for TVET

4.1. Current challenges

Ethiopia's TVET programme is beset with a range of problems, despite being a central aspect of government policy. The key challenges relate to the implementation of the TVET strategy rather than its content.

Factors contributing for the ineffectiveness and inefficiency of the TVET system include a lack of awareness among students of the benefits of TVET, inadequate participation on the part of stakeholders, lack of competence and capacity on the part of experts and trainers (including the adoption and transfer of technology), poor monitoring and evaluation, inadequate labour market information, an insufficient supply of human and material resources, and inefficiency in the use of the resources and equipment available (Edukans Foundation, 2012). These problems are of course not unique to Ethiopia.

The major constraints are outlined below.

4.1.1. Supply-driven nature of the TVET programme

The 2008 TVET Strategy calls for an outcomes-based system that responds to the skills needs of the economy. However, actual performance is mainly supply-driven, based on the available facilities and student preferences (see Krishnan and Shaorshadze, 2013). Students choosing a field of study lack information concerning job-market prospects and the skills that are in demand. The fields of study do not necessarily correspond to the changing skills needs of the economy, as there is no agency that collects and consolidates data on the demand for different skills. The lack of an LMI system and of job centres means that TVET trainees embark on programmes of study without sufficient information.

Candidates also prefer to take higher-level TVET courses (Levels 4 and 5), even though the economy requires workers qualified at lower levels, especially in the manufacturing sector. Misinformation regarding the return on training in different areas of specialization affects the attitudes and expectations of students when selecting programmes of study. This in turn contributes to problems of under-utilization of capacity in most TVET institutions, as students are not willing to engage in certain fields of training. Mismatches between students' interests and the field of study they undertake can result in a lack of commitment and effort on their part, which in turn contributes to high drop-out rates (World Bank, 2015). Students attending such programmes also increasingly view TVET as "a solution of last resort", which they are happy to abandon the moment alternative opportunities arise.

Furthermore, the current supply-driven nature of the TVET programme has resulted in mismatches in skills supply and demand, i.e. skills shortages or surpluses (see Mekonnen and Tekleselassie, 2018). The consequence of this is that, on the one hand, firms suffer from skills shortages; on the other, TVET graduates face high unemployment. For example, the ITC (2016) found that the misalignment of skills development in the textile and clothing industries in Ethiopia resulted in low productivity and competitiveness.

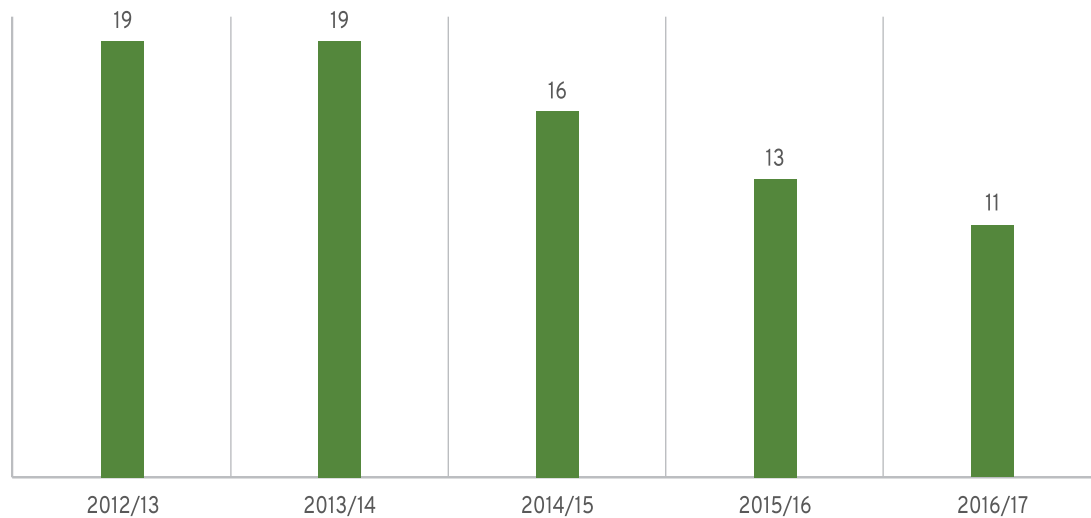
The absence of an organization dedicated to conducting regular skills need assessments of the economy in general and the industrial sector in particular is a huge challenge. It makes production of the right skills to match the available jobs impossible and means that the system will continue to be supply-driven. Experience from successful economies such as Singapore and the Republic of South Korea indicates that organizations that conduct periodic skills needs assessments, and thereby coordinate education/training with skills needs, are indispensable for a motivated, productive and stable workforce.

The current mechanism for allocating students to particular fields of TVET, as well as higher education, does not allow students to choose a field of study corresponding either to their talents or to opportunities in the labour market. The current system lacks a mechanism for responding to new developments in the demand for skills (GIZ, 2018). Although the private education sector does better in responding to changing the skills demands, students are often forced into the public sector due to costs (GIZ, 2018).

4.1.2. Poor quality of training

As in any education system, measuring quality in the TVET system is challenging. Common indicators of labour market performance are difficult to obtain and we are not aware of any tracer study that measures quality in a systematic fashion. One metric that can be used as a proxy for quality is the ratio of TVET teachers to students. The ratio is computed by taking “the average number of regular trainees during the year divided by the total number of regular trainers of the programme year” (MOE, 2017). As indicated in Figure 24, the ratio has declined in the last five years, raising further concerns as to the quality of the TVET system. For example, in 2016/17, there were 11 trainers per 100 trainees, down from 19 trainers per 100 trainees in 2012/13.

► **Figure 24. Ratio of TVET trainers to trainees (%)**



Source: Ministry of Education, Education Abstract, 2017

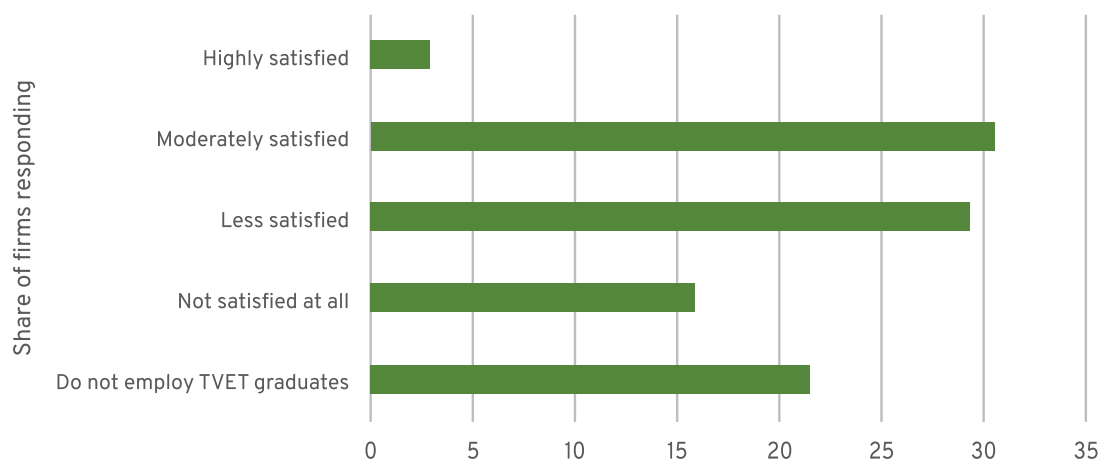
It is also important to note that the general attitude towards TVET education is not always positive. Students often see TVET as a fallback solution, to take up if other options are not available.

Further evidence on the quality of TVET education comes from a recent survey that assessed 246 metalworking enterprises operating in and around Addis Ababa. The survey asked two questions about TVET training.²⁴ The first was how satisfied the firms were with the skills of workers who had graduated from technical schools. The second asked the firm managers to judge the change in quality over the last four years of those who had graduated from technical schools.²⁵

²⁴ The data is also used in Abebe et al. (2018b).

²⁵ The possible responses were: 1=has deteriorated significantly, 2=has deteriorated slightly, 3=has remained the same, 4=has improved slightly, 5= has improved substantially.

► **Figure 25. Satisfaction with the performance of TVET graduates**

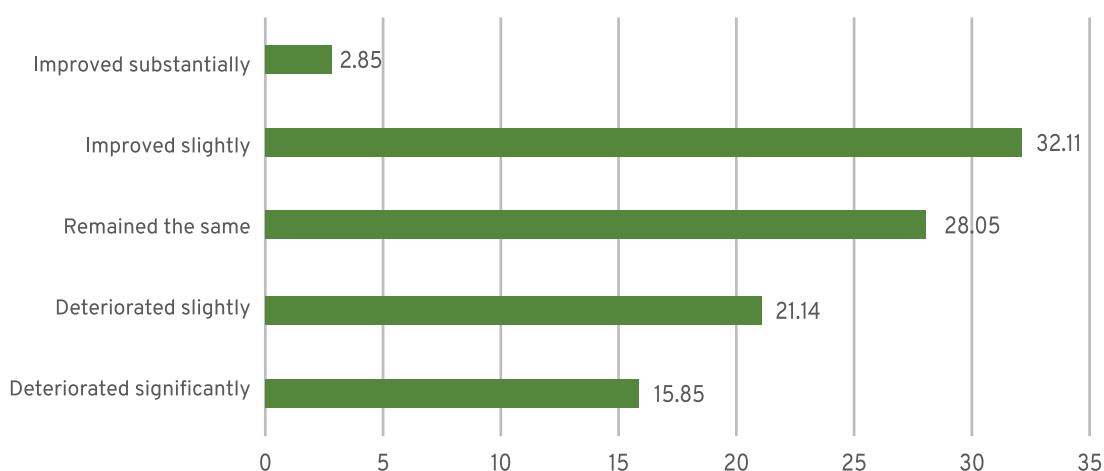


Source. Abebe et al. (2018b)

As indicated in Figure 25, nearly 80 per cent of the firms in the metalworking industry employed TVET graduates. The majority, however, did not appear to be satisfied with the performance of their TVET-educated employees, indicating a problem of trainee quality. The survey further asked respondents how they perceived change in the quality of the education system over the last four years (Figure 26).

The quality problem is partly due to the disconnect between the skills sets that are taught at TVET colleges and those sought after in the private sector. Fashioning strong links between the labour market needs of employers and the TVET system is important for upgrading the quality of the TVET system.

► **Figure 26. Perception of change in the quality of the TVET system over the last four years**



Source. Abebe et al. (2018b)

Despite the absence of an objective assessment of the quality of the TVET system in Ethiopia, there is general agreement among stakeholders, particularly in industry, about the poor quality of TVET training (see ITC (2016) in relation to the Ethiopian textile and clothing industry).

The key reasons for the low quality of TVET include:

The limited competence of teachers, particularly at the higher levels. The TVET profession has poor reputation and so fails to attract instructors of high calibre. The teachers lack practical experience and rarely visit industrial premises to update and upgrade their skills. In Vietnam, TVET teachers are placed in an industrial setting every two years. As discussed in previous sections, the teacher/student ratio has been declining.

Lack of appropriate equipment: TVET institutions are short of appropriate equipment and tools to support training.

A dearth of apprenticeships as many firms are reluctant to take on TVET candidates.

The combined effect of these problems is skills gaps among TVET graduates joining the labour force.

According to World Bank's Ethiopia Skill Module Survey conducted in 2013,²⁶ roughly half of the firms sampled reported difficulties in recruiting workers with the required technical skills. At the same time, roughly 43 per cent mentioned difficulty in finding workers with the necessary ethical understanding and commitment, and more than a quarter struggled to recruit workers with adequate computing skills. Nearly 80 per cent of the surveyed firms employed TVET graduates. The majority, however, did not appear to be satisfied with the performance of these graduates, again indicating a quality problem with programmes and institutions. The current focus of the TVET system is, at least in principle, on hands-on, practical skills training, with little emphasis on soft skills training. To alleviate the skills shortage problem, the TVET system should also integrate soft-skills training into its curriculum.

High-quality training in both "hard" and "soft" skills requires competent teachers and trainers with access to adequate training materials: the machinery, equipment and tools used in industry. A substantial budget is required to equip TVET centres with quality human and physical capital, together with stronger links with enterprises willing to share the responsibility for training.

²⁶ World Bank (2013), "Skills Module Survey of Ethiopia".

4.1.3. Poor TVET/industry linkage

As discussed earlier, participation in TVET curriculum development on the part of industry representatives is limited. Yamada et al., (2016) found limited interaction between TVET institutions and the country's garment factories.

Firms are not willing to provide internships and apprenticeships for trainees. Engaging employers in TVET programmes in some sectors, in particular state-owned enterprises, has been fairly successful, but other companies are resistant to taking on TVET apprentices and see them as a burden (see Krishnan and Shaorshadze, 2013).

Firms perceive TVET graduates as incompetent and are therefore unwilling to take the risk of giving them access to expensive machines and equipment. They also see the task of supervising TVET candidates during apprenticeships as time-consuming and costly. Apart from the fulfilment of corporate social responsibility (CSR) obligations, it is not clear to firms that the return that they would get by hosting interns justifies the supposed high risk of having them operating their machines.

Although there are many vacancies for skilled production workers, only a few firms contact TVET institutions with a view to filling them. In a recent the World Bank survey, less than of quarter of firms reported contacting TVETs to fill outstanding technical positions (World Bank, 2013). In the same survey, only half of the firms reported hiring TVET workers directly from TVET institutions. Coordination between TVET colleges and industry therefore remains poor (see also World Bank, 2015). Furthermore, many TVET centres are ill-equipped and unprepared to engage with enterprises and offer programmes that meet industry needs.

The limited interaction between the TVET system and industry has also contributed to the prevailing skills mismatches, as skills are taught without adequate consultation with the industries that require them. The participation of chambers of industry and other private-sector representatives in the development of occupational standards and assessment tools remains limited and, clearly, improved institutional arrangements and policy initiatives to facilitate industry engagement with the TVET system are required. Elsewhere, industry-sector skills councils or committees have been effective in bringing TVET and skills policy closer to industry. Countries such as South Africa, the Netherlands, Canada and Australia have used such bodies over many years to shape their national TVET systems, and many countries around the world are beginning to explore this approach, for example India, Ghana, Jordan and Vietnam.

4.1.4. Weak employment services

- ▶ Existing job centers, run by Bureaus of Labour and Social Affairs (BoLSAs), focus on specific types of employee, such as house maids, and on foreign employment, therefore job-support services for semi-skilled workers are either weak or altogether absent. Our assessment further indicates that there are no dedicated job centres that focus on the industrial workforce. Possible exceptions are the industrial parks at Bole Lemi and Hawassa . However, employers in these parks mostly recruit machine operators, who are largely high-school graduates. Recruitment centres in different catchment areas tend to be focused on low-skilled workers and so do not cater for TVET graduates. An assessment of public employment services (PES) and the labor market information system in Ethiopia commissioned by the ILO has shown that, even though PES exist at woreda and city administration level, they focus mainly on registering jobseekers but do not provide proactive coaching or active matching of jobseekers with firms (Yilak, 2017). The assessment showed that PES are poorly coordinated with other employment service providers, such as micro- and small-enterprise development agencies, and youth and sports bureaus. PES lack systematized and automated processes for fulfilling their job-matching role efficiently and are seriously understaffed (Yilak, 2017).

Because of high recruitment costs, firms to resort to informal recruitment practices, such as networking and job referrals (biased against women and youth).

Where jobseekers are concerned, searching for vacancies posted on physical job boards at specific points in the city entails high transport costs. For many in rural areas, manufacturing jobs outside their woredas are difficult and expensive to access, if not completely inaccessible.

4.1.5. Underfunding of the TVET programme

The TVET strategy emphasizes the need to engage the private sector in improving the TVET system. However, mechanisms to facilitate the integration of private-sector needs into the TVET curriculum and operational standards have not been well established (World Bank, 2015). The outcome-based approach stipulated in the TVET strategy has not been adequately implemented.

Furthermore, there is no strategy to encourage industry to contribute to TVET financing. The TVET strategy does not include detailed provisions for public-private partnership, apart from mentioning its importance. Moreover, the strategy does not provide any clear ideas on how the donor community can support TVET. To avoid duplication of effort, it is important to incorporate donor support into the TVET system, alongside government and private-sector TVET provision.

Unlike the health sector, donor participation in the education sector in general and TVET in particular is limited. In the absence of a more sustainable solution to enhance private-sector participation and public-private partnership, in the short-term donor assistance geared towards TVET could alleviate the funding problem. As previously noted, a mere 5 per cent of the government budget allocated to education is currently spent on TVET.

4.1.6. Other issues limiting the effectiveness of TVET

Other issues limiting the effectiveness the TVET provision in Ethiopia include the following:

Lack of access to TVET provision (only 40 per cent of woredas have access to TVET).

Lack of effective evaluation of the TVET system: there is no central agency that keeps data on the labour-market outcomes of TVET trainees. The management information system envisioned in the TVET strategy (TMIS) is supposed to gather such information, but it has not been implemented in practice.

- ▶ Lack of awareness of TVETs benefits on the part of implementing bodies.
- ▶ As well as a shortage of resources, inefficiency in the use of the resources and equipment that are available (Edukans Foundation, 2012).

4.2. Opportunities for TVET in Ethiopia

The high level of government commitment to improving the quality of education and training means that there is a clear justification for addressing the challenges identified here, and a foundation for action by policymakers. For example, the Ministry of Education has now been split into the Ministry of Education and the Ministry of Science and Higher Education, which might be interpreted as an increased commitment on the part of government to enhancing access and quality where education and training are concerned. Moreover, the Government recognizes that a key avenue for development is a competent and productive industrial workforce, which the TVET programme is intended to produce. In this context the following are some of the ways in which the TVET system can be improved.

4.2.1. Enhance stakeholder engagement in the TVET system

As discussed in detail in earlier sections, the TVET system has been backward in soliciting stakeholder engagement. Weak linkage between TVET institutions and enterprises, as well as poor coordination with other stakeholders, such as the Ministry of Labor and Social Affairs (MoLSA), the Bureaus of Labor and Social Affairs (BOLSAs) and the Ministry of Trade and Industry (MoTI), has undermined the effectiveness of the TVET and skills development system. Poor coordination among stakeholders has resulted in a continuance of the supply-

driven nature of the TVET system and in the poor quality of training, as trainees receive hardly any practical training in industrial settings. Therefore, encouraging the engagement of stakeholders in the governance of the system, curriculum development, skills identification and training would greatly improve the functioning of the TVET system. To this end, we would make the following recommendations:

- ▶ Arrange regular job fairs at universities and TVET institutions, giving firms opportunities to recruit potential employees.
- ▶ Set up regular higher TVET/industry forums, where the types of skills needed and the weakness of current TVET can be discussed and remedies proposed.
- ▶ Set up an agency or department within the Federal TVET Agency and regional TVET bureaus to conduct regular assessments of the skills needs of the economy, involving representatives of industrial enterprises, chambers of commerce and sectoral associations.
- ▶ Involve industry in skills needs assessments, coordinated by the TVET Agency.
- ▶ Incentivize firms that provide internship and apprenticeship opportunities (e.g. subsidies) in collaboration with the ministries responsible for finance, trade and industry, as well as sectoral associations.
- ▶ Arrange for TVET instructors and management to spend time at enterprises to update their skills and acquaint themselves with new technology. For example, the TVET Agency, in collaboration with the Industrial Parks Development Agency could arrange short-term visits of this kind.
- ▶ Arrange for enterprise managers and operators to give guest lectures at TVET centres.
- ▶ Arrange an insurance system for firms that offer apprenticeship opportunities to cover any damage to machinery caused by TVET trainees.
- ▶ Conduct tracer studies to follow the changing career market circumstances of TVET graduates over time.
- ▶ Pursue a sectoral approach to skills, considering skills needs/issues in priority sectors and bringing together stakeholders in these sectors to develop a coordinated strategy.

4.2.2. Enhance the training-to-job transition of TVET graduates by improving the labor market information system

As discussed, skills mismatches are a serious problem. On the one hand, the number of TVET graduates is increasing; on the other, firms struggle to find workers with appropriate skills. This calls for support for TVET graduates in their job searching and for firms in their skills searching. Assisting with the training-to-job transition would go a long way to alleviating this problem. The following actions could help to bridge this gap.

- ▶ Currently, job-centre support for the unemployed as delivered by the MoLSA is limited to housemaids who aspire to work in the Middle East. Similarly, private job agencies either concentrate on the lower rungs of the labour market, finding jobs for cleaners, drivers and housemaids, or are employer-centered, recruiting for multinational companies wanting to employ highly skilled workers. Job centres catering for TVET graduates are therefore virtually non-existent. Setting up specialized industrial job centres in collaboration with the MoTI and agencies such as the FESMMIDA and the FUJCFSA to support TVET graduates in their search for jobs would greatly improve skills matching.
- ▶ Ongoing acquisition of data on labour market indicators and outcomes, undertaken in collaboration with the Central Statistical Agency, the MoLSA, and the MoTI, would also help in improving skill-matching.
- ▶ Key informants from MoLSA spoke of a government plan to set up a Job Market Information System. The purpose of the plan is to regularly collect information on vacancies and make it available to job seekers at no cost. However, there is not sufficient funding to get the system up and running. Since several potential funding partners are interested in making the labour market work better in developing countries (for example, the World Bank and European Union's Jobs Compact Project), we recommend that the Government seek funding to set up this Job Market Information System. This would benefit not only TVET graduates but all jobseekers, who often struggle to access information on job vacancies.
- ▶ Encourage the use of ICT by employers and TVET graduates to publish and access information on job vacancies.
- ▶ Broaden the TVET system to provide opportunities for previously trained students to upgrade and renew their skills.

4.2.3. Development of a comprehensive financing strategy for the TVET programme

As discussed previously, high-quality skills training calls for competent personnel and adequate training materials in terms of machinery and equipment. Currently, the TVET programme is largely government-driven. Given the limited government budget currently going into the TVET system, it is unlikely that the skills needs of the growing economy will be met. Therefore, a viable financing strategy is needed. We would make the following recommendations to tackle this problem:

- ▶ Encourage private TVET providers, especially those delivering Level 1 and Level 2 courses, which are in high demand from the manufacturing sector, by offering subsidies and tax breaks.
- ▶ Encourage private-public partnerships in TVET provision.
- ▶ Elicit donor support for the TVET programme in the short-term. Donor involvement, such as the now-defunct ECBP programme and some ongoing schemes, would provide additional finance to enhance the quality of the TVET system.
- ▶ Harmonize donor-supported skills development schemes with one other and with government programmes and plans.
- ▶ Increase the share of the budget allocated to the TVET system

4.2.4. Invest in developing the capacities of the TVET workforce

Enhancing the capacities of TVET graduates is vital to bridging the evident skills gaps. More investment in education and training programmes is required to equip TVET graduates with job-relevant skills. Such investment will build much-needed technical skills, open the way for TVET graduates to engage in gainful employment, and enable firms producing goods and providing services to move higher up the value chain. Investment is also required in teaching soft skills relating to industrial culture, communication, discipline and punctuality. These are increasingly necessary in today's interconnected and fast-moving world. In particular:

- ▶ Invest in practical and visual learning platforms, including machines and equipment that allow for visual inspection and learning-by-doing.
- ▶ Invest in creating diagnostic tools to regularly assess the skills levels of graduates and their ability to fit into the labour market.
- ▶ Invest in changing attitudes towards TVET education. As well as the recently started information campaigns, policies that reward the skills sets of TVET graduates could change society's attitude towards TVET education.

- ▶ Invest in careers advice services to ease the job-search challenges faced by recent TVET graduates. Coaching young graduates to develop entrepreneurial acumen, motivation and the flexibility to navigate the labour market is important.
- ▶ Invest in improving the competence of teachers/trainers.
- ▶ Invest in building the capacities of the staff and management of federal and regional TVET bureaus and the managers of TVET institutions.
- ▶ Invest in developing the capacities of policymakers in the education and skills development sector, particularly as regards the fostering of cooperation among the stakeholders involved.

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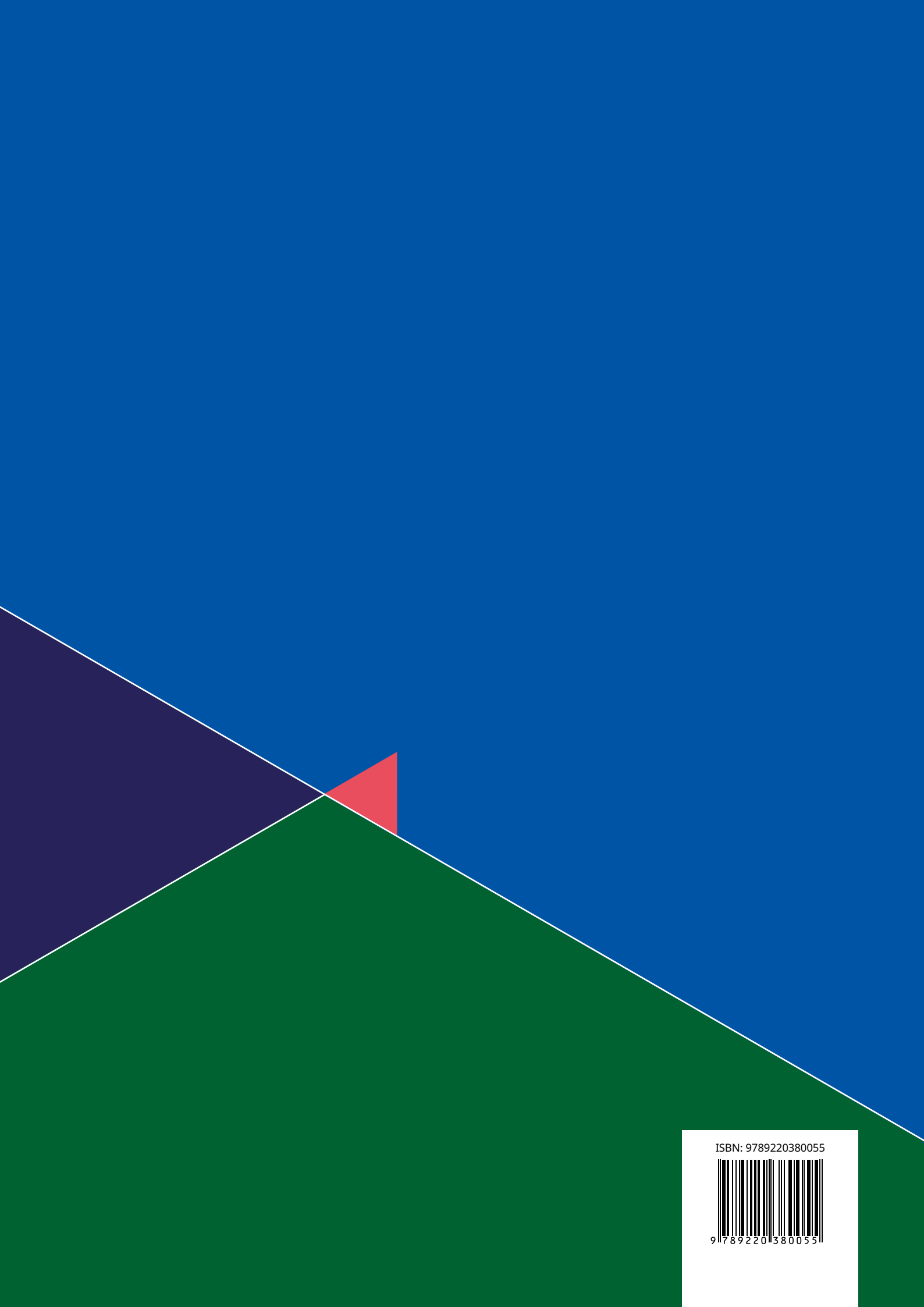
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