



Ushirika wa Maendeleo ya Elimu Barani Afrika
الرابطة لأجل تطوير التربية في إفريقيا
Association for the Development of Education in Africa
Association pour le développement de l'éducation en Afrique
Associação para o Desenvolvimento da Educação em África

STUDY ON THE USE OF ICT IN EDUCATION AND REMOTE LEARNING DURING CRISES AND THE REQUIRED INVESTMENT FOR DIGITAL TRANSFORMATION FOR AFRICAN COUNTRIES

COUNTRY PROFILE REPORT ETHIOPIA

This study was commissioned by the African Development Bank Group (AfDB)
and the Islamic Development Bank (IsDB)





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ETHIOPIA

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ABBREVIATIONS

AfDB	African Development Bank
CEICT	Centre for Educational Information and Communication Technology
CPD	Continuous Professional Development
CRRF	Comprehensive Refugee Response Framework
EMIS	Education Management Information System
EMIS	Education Management Information System
ENAO	Ethiopian National Accreditation Office
ESA	Ethiopian Standards Agency
ESDP	Education's Education Sector Development Programme
ESDP	Education Sector Development Programme
ET	Ethio Telecom
ETA	Ethiopian Telecommunications Agency
ETA	Ethiopian Teachers' Association
ETC	Ethiopia Telecommunications Corporation (ETC)
EthERNet	Ethiopian Education and Research Network
GEQIP	General Education Quality Improvement Programme II
ICTCoE	ICT Centre of Excellence
ILO	International Labour Organization
MCIT	Ministry of Communication and ICT
MoE	Ministry of Education
MoST	Ministry of Science and Technology
MSHE	Ministry of Science and Higher Education (MSHE)
NGO	Non-governmental organization
SMIS	School Management Information System
STEP	Sustainable Training and Education Programme
STIC	Science and Technology Information Centre
TMIS	Teacher Management Information System
TPACK	Technological, Pedagogical and Content Knowledge

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EXECUTIVE SUMMARY

Ethiopia is a landlocked country which spans 1,104,300 km² and forms part of the Horn of Africa. The country borders Somalia, Kenya, Sudan, South Sudan, Djibouti and Eritrea, and is classified as a low-income country and one of the poorest countries in the world. Although there have been some improvements human development indicators remain at low levels.

The country has a predominantly agrarian economy with a small manufacturing sector that focuses on beverages and textiles. Levels of urbanisation are exceptionally low when compared with the rest of the world, with 90% of the poor living in rural areas. The high rural population is impacted by lack of services such as education and electricity and other services which challenge the country's endeavours to provide digital and online learning as a strategy to address the challenges of low-quality education and the high attrition rates of both teachers and learners particularly in the rural areas.

Ethiopia is ranked 129th out of 134 countries on the ITU's digital readiness indicator. This is despite its recent increase in the number of mobile phone subscriptions to 58% suggesting that the country's uptake is still among the lowest level in Africa. In 2021, according to ITU, 15% of Ethiopia's households had internet access while only 5% of households had computers. Ethiopia's low levels of access, ICT skills and competences, and minimal implementation of its ICT policies mitigates the country's vision of becoming a knowledge society. Ethiopia is a low-income country with one of the lowest literacy rates in the world. Current deficient performance in education, particularly the low level of enrolment in higher education institutions, impedes its readiness to transition into a knowledge society.

Notwithstanding the progress made in the education system the country still faces challenges in achieving equity and quality learning outcomes. While the country's policies highlight the importance of the integration of ICT in learning implementation is thwarted by country's low level of digital readiness. However, as this report shows, notwithstanding all the challenges faced by the country, including its low level of digital readiness, the country was to some extent able to use a multi-modal approach to ensure the continuation of learning during the Covid-19 pandemic. Clearly, the Covid-19 experience makes the country more amenable to the use of ICT for learning should resources, infrastructure and funding be in place.

1. INTRODUCTION

This report is structured to include:

- National policies, strategies and programmes that exist in the country for the use of ICT in education.
- A description of the strategies put in place to mitigate the impacts of the Covid-19 pandemic on education.
- A brief description of the current level and types of ICT infrastructure being used in the various education sectors including primary, secondary, technical and vocational education and training, tertiary and non-formal sub-sectors.
- A list of the major initiatives underway.

- A list of major partners.
- Identification and description of factors that enable and constrain the use of ICT.
- The role of ICT to enable the continuation of teaching and learning (Farrel et al 2007).

Data collection was done via desk research, using published sources on the Internet. Limited primary data were collected through telephone and e-mail discussions with country-based contacts, where available to the consultant.

1.1. The review and survey process

This country profile entails a careful review of secondary documents gathered from a range of sources including public government documents dealing with the country's economic and social, legal framework, ICT infrastructure, the availability of ICT tools within the country's education sector system strategy as well as teachers and students' capabilities.

The development of the country profile is based on a review of secondary literary sources provides an initial profile that offers a baseline and frame of reference for understanding the key issues, for the country's experiences, priorities and challenges regarding ICT and remote learning strategy specifically as has been accelerated by the COVID-19 experience.

This review of literature provides a background to what policy initiatives are in place, budgetary allocations, key challenges, and lessons learnt. It will also show the country's interpretation and response regarding ICT in Education, remote learning, and COVID-19 with implications for the country's resiliency levels and the required investment to attain a standard level of resilience. In addition, the literature review provides initial information about the partners engaged in this area and will inform the detailed partner mapping, for which the primary research activities will enable the identification of further key expert informants and partners to provide ways forward for the study.

Essentially the ICT in education study aims to use secondary data for profiling and suggesting proposals for the use of ICT in education in African countries subsequent to the COVID-19 pandemic, across the subsectors of basic education, TVET and higher education specifically focusing on: (1) existence and breadth of ICT policies and strategies; (2) availability and utilisation of ICT infrastructure in learning facilities; (3) the level of the workforce's digital competence including learners' abilities; (4) the availability of electronic systems for learning and assessments; (5) the existence of e-education materials; (6) partners engaged in supporting the use of digital technology in education; (7) challenges related to implementing e-education; (8) and examples of success stories and good practices.

Ultimately the data gathered per country from this mixed methods study will be analysed according to the following thematic areas: (1) common SWOT analysis on the use of ICT in education and remote learning; (2) required enabling factors to support the strong national resilience to future crisis; (3) the key gaps concerning ICT infrastructure, e-learning systems, the ICT literacy of both learners and students, and e-curricula; (4) opportunities for initiating and enhancing regional programs for e-education; (5) key partners and stakeholders currently engaged in supporting the use of digital technology per country, area of support they are engaged in; and (6) best practices that might be replicated.

There are obvious limitations of studies utilising secondary data. Data sources are themselves limited and those available might be incomplete and not current.

2. BACKGROUND INFORMATION

2.1. Economic context

The African Development Bank (AfDB) points out that Ethiopia's economic growth reduced from 6.1% in 2020 to 5.6% in 2021. The bank attributes this decline to civil conflict and to the effects of the COVID-pandemic. It indicates that during the same period inflation grew from 20.4% to 26.7% in 2021. As a result of the pandemic and the civil conflict, the number of people requiring humanitarian support doubled, increasing from 8 million in 2020 to almost 16 million in 2021. Moreover, the AfDB points out that Ethiopia's GDP is projected to decline to 4.8% in 2022 and thereafter to marginally increase to 5.7% in 2023 in the anticipation of growth in tourism and the liberalisation of the telecom sector. However, as the AfDB cautions, civil conflict in northern Ethiopia and the pandemic are expected to increase and this poses serious risks to the economy.

2.2. Climate change issues and policy options

The AfDB points out that subsequent to El Niño in 2016 Ethiopia suffered an extensive drought and the country continues to be vulnerable to further droughts, desertification and water scarcity, as well as flooding, and there has been an increased incidence of pests. The 2016 droughts resulted in 10.2 million people requiring humanitarian support estimated at \$1.9 billion. While Ethiopia is ranked 72nd on the 2021 GCRI, the AfDB nevertheless projects that through its climate policy choices Ethiopia is on course to meet SDG 13 on climate action, AfDB (2022).

The drought has left millions of children acutely malnourished, resulting in lower learning and an increasing number of out-of-school children. UNICEF estimates that at least 500,000 children have dropped out of school due to drought.

2.3. Science, Technology, and Innovation (STI)

Ethiopia has also not made adequate progress in the area of STI. Four years before the United Nation in the Science and Technology conference 1979 introduced most of the developing countries to science and technology policy, Ethiopia had already established the Ethiopia Science and Technology commission in 1975 by proclamation No.62/1975 with a view to initiate, organise, direct and promote scientific and technology research and development endeavours. However, as GESCI points out Ethiopia's innovation performance stifles its overall competitiveness. According to the World Economic Forum's Global Competitiveness Index 2015 – 2016 report, Ethiopia ranks 109 out of 138 countries with a score of 3.7 out of 7. This mitigates against the country achieving its vision of being a knowledge society.

2.4. Education

Over the past two decades, Ethiopia has made progress in expanding access to education the Ministry of Education maintains a reliable Education Management Information System (EMIS) which regularly

provides updated statistics. Despite the progress made in the education system the country still faces challenges in achieving equity and quality learning outcomes.

Figure 1, shows the scale of its schooling sector – the number of schools, learners and teachers.

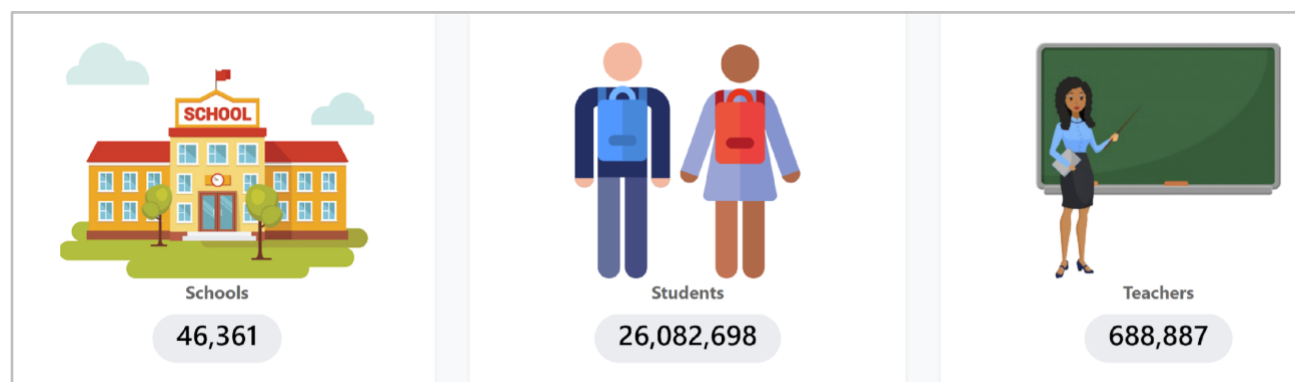


Figure 1: Number of schools, learners and teachers in Ethiopia

Source: Ethiopian Ministry of Education (MoE) Website.

The main guiding document of the Ministry of Education is the Education Sector Development Plan 2020-2025 which makes provision for the improvement of education quality and access by:

- Ensuring equitable access to schooling.
- Reducing attrition rates and improving the transition rates across the phases of the schooling system.
- Developing a learning society which offers lifelong learning opportunities.
- Developing an educational management and information system.
- Using digital technology improve the quality of teaching and learning.
- Developing a systematic quality assurance system to monitor both formal and nonformal education (Global Partnership, n.d).

The above goals refer directly and indirectly to the country's need to integrate ICT in learning however the achievement of these goals has been hampered due to the country's low level of digital readiness.

3. THE COVID CONTINUITY PLAN FOR TEACHING AND LEARNING

Despite Ethiopia's low digital readiness, the country made impressive strides in ensuring the continuation of teaching and learning during the Covid-19 pandemic. The Ministry of Education's Concept Note for Education Sector Covid-19-Preparedness and Response Plan (3 April 2020, Addis Ababa) outlines and costs the Key Activities for the education Covid-19 emergency response with a view to ensuring the continuity of learning across the phases of schooling during the closure of schools. The Concept Note outlines the strategies developed by the Ministry of Education to mitigate the impact of the school closures (Ministry of Education Concept Note for Education Sector, 3 April 2020) as follows:

- Availing digital technology such as e-learning for secondary education.

- Utilising multi-media channels such as TV and radio broadcasts for accessing primary school children.
- Ensuring the continuation of feeding schemes particularly for the most vulnerable and children who reside in areas where food insecurity is prevalent.
- Encouraging a range of social partners and civil society to collaborate in the provision of learning opportunities for vulnerable learners.

This Ethiopian MoE concept note (3 April 2020) considered the context of education in the country and recognised that a one-size-fits-all approach to mitigating the effects of the pandemic was not possible. The MoE explicitly proposed multimodal approaches using appropriate technology to navigate the lack of access to electricity, connectivity, the internet and devices.

The MoE took account of the fact that technology-based approaches could potentially only reach small a small number of learners who had access to internet and devices (such as a computer, tablet, laptop or smart phone) at home so that they could access web-based resources and materials disseminated via the social media.

The use of radio and TV broadcasts were deployed because they were able to address a broad spectrum of learners. This required that existing materials were repackaged for broadcast, and for those learners who could not be reached through the above-mentioned modalities, the Concept Note recommended the distribution of hardcopies of learner support materials and that this was to be accompanied by home visits by teachers and educational leaders and via SMS-support between teachers and parents as a way of supporting learners.

Based on the above modalities the following costed key activities were drafted at an estimated cost of 22,013,550,000.00 ETB to be implemented in three phases.

3.1. First Phase

During the first phase of this response the education sector required a budget estimated at 4.7 billion ETB, of which about 7% was to be sourced from education development partners. The first phase entailed the following:

- Ensuring that appropriate structures were put in place to ensure the continuation of learning during the school closure periods.
- The repackaging and uploading of curricula materials and textbooks and all existing digitised content. Materials were also uploaded on various social media platforms (1,000,000.00 ETB).
- Soliciting volunteers including academics and schoolteachers to video record learning curricula content, develop worksheets, set assignments and tests and to provide detailed solutions and answers (500,000.00 ETB).
- Broadcasting Radio and TV lessons based on the digitised content for secondary education and enhancing the capacity of regional education bureau to podcast radio programmes for primary school learners (230,000,000.00 ETB).
- Providing reading and assignment packages for unreached children (400,000,000.00 ETB).
- Providing safety kits including masks and sanitisers for home visit teachers (75,000,000.00 ETB).
- Providing parental education on how parents/caregivers can help their children (50,000.00 ETB).

3.2. Second Phase

The second phase entailed the introduction of digital technology for the education system in order to deliver teaching and learning both during and after the COVID 19 pandemic (1,880,000,000.00 ETB). This phase undertook the following:

- Enhancing the capacity of the education system to improve the data management system to promote evidence-based planning and accountability (100,000,000.00 ETB).
- Renting satellites to broadcast learning via radio and TV (180,000,000.00 ETB).
- Introducing the digital connectivity of 1500 secondary schools (100,000,000.00).
- Procuring and distributing context-specific connected devices (Tablets/Radio) for Grade 12 Students, teachers and for the hard-to-reach children (1,500,000,000.00).
- Preparing, piloting, validating and conducting Grade 12 national school-leaving online examination (20,000,000.00 ETB).
- Reprinting Grade 1-12 textbooks (6,000,000,000.00 ETB).
- Providing support for teachers to safely conduct home visits and to establish SMS contact between parents and children (1,000,000.00 ETB).
- Developing digitalized training content for teachers to adapt curricular materials to suite for accelerated learning pedagogy to fill the gap of the current remote learning when schools are re-open (2,000,000.00 ETB).

Despite the implementation of the two phases, UNICEF points out that MoE's provision of a comprehensive programme for the continuation of learning using distance education modalities was not equally impactful across the country and nor was it fully inclusive among the most vulnerable. The following table based on UNICEF's findings show the proportion of households who have access to radio and TV channels respectively pointing to the relative learning impoverishment among rural households.

Table 1: ICT availability

ICT	Urban	Rural
Radio	42%	29%
TV	61%	11%

Source: UNICEF.

Providing content for low-income children, those at risk of exclusion, those without internet access, children with disabilities, as well as refugee and displaced children, required additional support. With funding from the UK's Department for International Development, UNICEF and partners invested in 20,000 solar radios and digital devices for vulnerable children. In this way the MoE made provision for learners who would not be able to access materials online and delivered materials and put a volunteer system in place to support these children. In addition, the MoE provided compensatory meals for children who ordinarily obtained meals at school. At the same time, the MoE needed to plan for the reopening of schools.

As part of its programme to continue with learning during the disruption, it was necessary for all social partners to collaborate on the development of distance learning modalities that included online, radio and television content, reading materials and guided homework.

The education policy made no mention of ICT in education at all. However, the Ministry of Education Concept Note for Education Sector COVID 19-Preparedness and Response Plan 3rd April 2020 Addis Ababa outlined the Key Activities for its Covid Response. As shown, they country utilised a multimodal approach with appropriate technology for its highly stratified school population.

The project focused on post Covid sustainability:

- Data system capacity will be improved from the investment on technology and experience gained on crises management and response mechanism.
- Investment on technology will have positive impact on the future outcomes of the education sector.
- The system will be strengthened and readied to meet any future occurring emergencies.
- The time of learning lost to the pandemic will be compensated; this will contribute to the improvement of internal efficiency of the system and consequently student learning outcome.
- Lasting attitudinal changes with regard to digital learning.
- The availability of digital technology such as e-learning for secondary education.
- The use of multi-media channels TV/radio broadcasts primary schools.
- Collaboration with development and civil society partners to ensure learner-support programs for poor learners.

4. COUNTRY DEMOGRAPHICS

Figure 2 shows the high rural population of 78%, and the high number of children from birth to 14 years of age (45,000) as constituting 40% of the total population. These indicators suggest the need for a massive expansion of basic education. With 78% of the population being rural based, the education system is challenged to reach areas away from the urban centre.

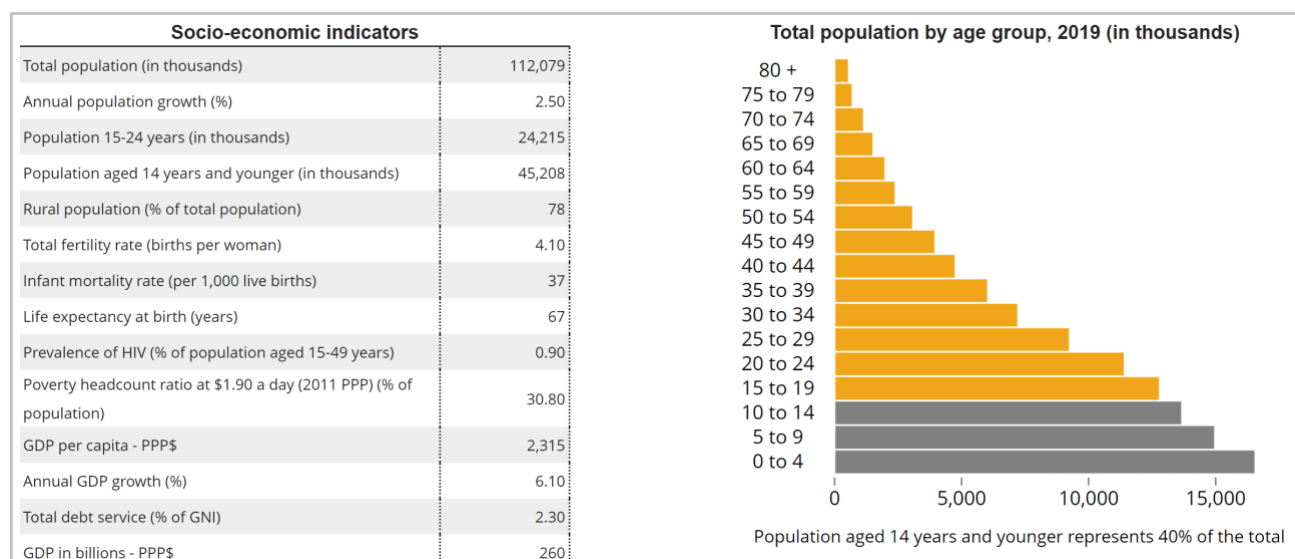


Figure 2: Country Demographics and age breakdown

Source: UIS.

As shown in Table 2, only 25% of the population have access to the internet and the country has extremely sparse numbers of mobile phone subscribers (58%), the use of distance education modalities is beyond the reach of most of the population.

Table 2: ICT infrastructure

Infrastructure and transport characteristics	Measure	Latest value
Internet users, percent of population	percent	25.00
Broadband internet subscribers, in thousands	thousand subscribers	212
Fixed broadband internet subscribers per 100 people	percent	0.18
Mobile phone subscribers, in millions	million subscribers	44.50
Mobile phone subscribers, per 100 people	subscribers per 100 people	38.71
Mobile network coverage, percent of the population	percent	90.00
International Internet bandwidth per Internet user, kb/s	kilobits per second	5.00

Source: <https://www.theglobaleconomy.com/Ethiopia/>

In addition, the country faces problems of excessively high 40% import tariffs on ICT equipment which is overly costly for most citizens. According to GESCI, the incumbent public telecommunications operator dominates the telecommunications service industry. Hence, although the number of mobile phone subscribers is increasing, the uptake in Ethiopia is among the lowest in Africa. This is due to the limited telecommunication infrastructure, low levels of computerisation outside the capital, and lack of capacity (GESCI, 2017). The low level of internet access is limiting the usefulness of ICT in creating a knowledge society.

5. LEGISLATIVE LANDSCAPE FOR ICT IN EDUCATION

The Constitution of Ethiopia of 1995 provides for the role of the state in resourcing universal education to the extent to which National resources permit (Article 90). In 2002 the GoE established the Ethiopian ICT Development Agency (EICTDA) which was mandated with the development of a national ICT policy including:

- Establishing the legal and regulatory frameworks.
- The provision of information technology for the GoE.
- The development of ICT capacity in the GoE.
- The provision of ICT applications in various sectors.
- Enhancing private sector development and community access.

The National ICT policy (2016) aims at:

- Enhancing Ethiopia's telecommunications and physical infrastructure in order to realise Ethiopia's vision of becoming middle-income economy;
- Promoting ICT development across all sectors and across all the educational system;
- Ensuring ICT access and broadband to all citizens;
- Providing broadband to support academic and research networking and promoting STI in ICT;

- Addressing the challenges faced with regard to the utilisation of ICT such including those that impact on women;
- Facilitate service delivery through e- governance;
- Develop enabling legal and regulatory frameworks for smooth functioning of the ICT sector.

Ethiopia's ICT infrastructure comprises Ethio Telecom, which provides telecommunication services; an open-wire, microwave radio relay, radio communication in the HF, VHF and UHF frequencies; and two domestic satellites which provide the national trunk service. There is also a 12 000 km optic fibre cable infrastructure linking central Ethiopia in all directions connecting all cities with capacity to transmit 40 Gbps along the national backbone (GESCI, 2017).

In 2015, according to Ethio Telecom, there were:

- 836,543 fixed telephone lines in use.
- 43 million mobile phone users.
- 13 million internet users with 87% wireless coverage.

5.1. ICT related policies

The latest updated Ethiopian ICT Policy and Strategy (Government of Ethiopia 2016) takes education as one of its strategic pillars for transforming the Ethiopian economy, including the use of ICT to enhance the education system by facilitating access to online resources and developing learners' digital skills in support of the development of human capital. The latest reform initiative put in place in this regard is the Ethiopian Education Development Roadmap for 2018–2030. The document contains a number of proposed reforms and mentions ICT as one of the cross-cutting areas as well as a critical skill in teacher development programmes to capacitate teachers on how to use and how to design high-quality, technology-enhanced lessons. For this, it requires that both student teachers and teacher educators should have access to ICT infrastructure (Government of Ethiopia 2018a, 47).

The draft 2016 National ICT Policy points out that the ICT sector continues to face challenges that were identified in the draft policy framework, including:

- Cross country variances in the use of broadband services and the availability of broadband technologies;
- The excessive costs of broadband connectivity;
- Not all government institutions are connected (education and health);
- The lack of appropriate ICT legislation to and regulation to adjust to the rapidly evolving ICT sector;
- Insufficient locally relevant ICT services and applications for economic and social development and poverty reduction;
- Need for ICT to provide a valuable contribution to monitoring, mitigating and adapting to climate change and for ICT to play an enhanced role in emergency communications and disaster relief;
- Lack of digital literacy and awareness to enable all citizens to access and use ICT to enable the creation of an inclusive information society.

Ethiopia's Education and Training Policy of 1994 is an overarching policy that guides the functions of education. This has given rise to development of five Education Sector Development Programmes

(ESDPs) I–V in the period 1996 to 2020, and a sixth ESDP VI was launched in August 2020 proposing a plan of action to be achieved during the period 2020/2021 to 2024/2025) (Government of Ethiopia 2020).

The ESDP I–V programmes contributed to progress in education, including decentralizing education administration, the teacher development policy and a programme of career pathing for educators as well as policies for inclusion in education. The five Education Sector Development Programmes (ESDPs) I–V which have been functional from 1996 to 2020 contributed to progress in education, including decentralizing education administration, the teacher development policy and a programme of career pathing for educators as well as policies for inclusion in education. Notwithstanding the progress made, the ILO (2021) points out that the education system faces many challenges in implementing the policy specifically with regards to ensuring the quality of education and the ILO (2021) corroborates this, point out that education system faces many challenges with regard to the quality of education and the formulation and implementation of policy – factors to be addressed by the sixth ESDP VI which was launched in August 2020 and which proposes a plan of action to be achieved during the period 2020/2021 to 2024/2025) (Government of Ethiopia 2020). The successive ESDPs were linked to the UNESCO’s “Education for All” and its “Millennium Development Goals” (MDGs) and focused on improving access and on the quality of education.

As early as 2005, The ESDP III referred to the use of ICT in Education. Education was included as part of the GoEs vision to embark on a national ICT capacity-building programme. The programme aimed to undertake the following in education:

- To install fibre cable networking in higher education institutions
- To provide ICT infrastructure to enable secondary schools to receive satellite education transmissions.

Thereafter, the ESDP IV (2010) planned:

- To equip all secondary schools with satellite television education and e-learning programmes
- The SchoolNet initiative aimed to expand and improve ICT infrastructure at all levels of education
- The production and distribution of digital education resources
- Developing ICT competences of teachers to support curriculum delivery.

Moreover, the Growth and Transformation Plan I (2010–2015) identified education as a strategic pillar for achieving the MDGs and offering a long-term vision Ethiopia achieving middle-income status by 2025.

Ethiopia’s Science, Technology and Innovation Policy (2007) also stressed the importance of ensuring human resource development as central for the country’s ICT strategy, stating that the national effort for rapid and sustainable socio-economic development was contingent on the quality and quantity ICT skills among government and the general public at large. This was complemented by the ICT in Education Implementation Strategy and Action Plan (GoE 2006), which recognised ICT as integral to the education system. The 2006 strategy was replaced by the National ICT Policy (GoE 2016) which updated the earlier action plan.

However, as the ILO (2021) argues the recent Ethiopian Education Development Roadmap (2018 – 2030) falls short of integrating education within the context of Ethiopia’s general vision of a knowledge-based and digital society, failing to consider the more recent technological innovations on the way knowledge is accessed and delivered. Moreover, as the ILO (2021) points out, the Roadmap fails take into account ways in which new technologies can be integrated in the education system to address the needs of Ethiopia’s youthful population.

The shortfalls in the Roadmap are considered to be the major limitation on policy implementation. Other limitations include the (1) frequent and sudden policy changes experienced by the teacher education system which makes it difficult for teachers to rapidly adjust; (2) the inaccessibility of ICT facilities and poor infrastructure at school level; (3) inadequate preparation of trainee teachers in the use of ICT as a pedagogical tool; and (4) financial shortfalls in the education sector. In addition, GESCI (2017) refers to the problems associated with the historical establishment, in 1996, of a single national regulator for Ethiopia’s ICT sector. While recent reforms have begun to separate the operational functions and those which were regulatory through the establishment of the Ethiopian Telecommunications Agency (ETA), and a commercial arm the Ethiopian Telecommunications Corporation (ETC) respectively, the separation as not been fully realised.

5.1.1. ICT interventions in education

The Ethiopian Government acknowledges education and training as central for socio-economic development and specifically for the development of education that will enable a knowledge and information society and acknowledges the importance of digital technology for educational development, particularly in the training and development of teachers. However, the use of ICT for teacher management has been cited as an area which requires further development, partly due to the low level of digital literacy of the education workforce requiring training that ensures high level digital competences to use ICT to access, communicate and create information. The ILO (2021) points out that apart from the poor competences associated the integration of ICT in education, are the problems associated with the poor perception of ICT among educators and officials, the lack of appropriate ICT policies and a lack of commitment on the part of school leadership. Adapting technologies appropriate to the context of implementation, and with clear purpose and content, is also necessary (GIZ 2016).

As the ILO (2021) points out, the teaching workforce is the largest sectoral workforce in Ethiopia which in 2019 reached a total 711,863 teachers (430,813 male and 281,050 female) across the system and subsystem. CPD is generally accessible to all teachers and is financed by the government and donor organizations. However, the ILO (2021) points out that despite the teacher preparation and professional development training initiatives, there has been only limited use of digital technology due to a lack of adequate access to ICT infrastructure, absence of a comprehensive teacher preparation and development policy, and lack of a clear governance and accountability system (Government of Ethiopia 2018a, 42–45). Neither student teachers nor teacher trainers receive adequate training in the use of ICT, and the ILO (2021) report points out, the training of TVET teachers in the use of digital technology for teaching and learning has experienced similar challenges.

The National ICT Policy and Strategy (2016), outlines following strategies in relation to teacher development, among others to:

- Revise the financing protocols so that costs do not prohibit the use of connecting educational institutions to the nationwide school network;

- Incorporating ICT in school curricula;
- Ensuring a critical mass of trained ICT;
- Ensuring ICT training across all levels of the education system.

Over the past two decades, Ethiopia has embarked on several digital technology initiatives in teacher preparation.

The two major ongoing interventions to connect educational institutions across the country are the Ethiopian national SchoolNet and the EthERNet initiatives. Both initiatives aim to support the teaching and learning process through the delivery of remote teaching materials where the teacher in a technology-supported classroom and through which learners are teachers use ODL methods which include the use of audio and video recorded modules and virtual teaching.

EthERNet for tertiary education:

The Ethiopian Education and Research Network (EthERNet) aims to develop a network for connecting public universities and educational institutions.

SchoolNet for basic education:

The SchoolNet It is the largest education initiative launched by the Ethiopian Government and constitutes a key component of its e-government programmes. The SchoolNet initiative focuses on the deployment and use of ICT for teaching and learning in secondary schools and linking secondary schools across the country and encompasses teacher training, local language instruction, monitoring and assessment of learner performance, an EMIS and the preparation of learners for the skills required for the changing world of work.

General Education Quality Improvement Programme II (GEQIP II):

As a follow-up to the SchoolNet, the GEQIP II was launched in 2013 with support from the World Bank and the United States Agency for International Development (USAID). The project has broad goals for improving learning conditions in primary and secondary schools through inter alia the integration of ICT in teaching and learning, school manager training and EMIS utilisation. The ICT in education component of the GEQIP II contributes towards improving the learning conditions and outcomes of learners in selected secondary schools and universities, supporting the provision of ICT infrastructure (computer-assisted learning facilities with appropriate and sufficient hardware and software) in 300 secondary schools and 10 universities, and the development of an e-learning system (Government of Ethiopia 2015: ILO 2021).

5.1.2. The urban and rural divide

Ethiopia does not have legislation that makes schooling compulsory however, an official document released in August 2020, the Education Sector Ten-Year Strategic Plan (2020–2030) stipulates that free and compulsory primary education shall be implemented. A report aimed at providing an analysis of the basic education sector (JICA 2012) conducted between 2007 and 2012 found that rural primary enrolments accounted about 76% to 81% of all enrolments, with urban primary school enrolments accounting for about a fifth of total enrolments (approximately 24% to 29%).

This trend was reversed in secondary education with urban enrolments estimated to be between 85% and 92%, and rural enrolments between 8% and 15%. This shows the low transition rates in rural areas. As the ILO (2021) points out the rural areas lack infrastructure, transport facilities, water services, health facilities and housing. Educational facilities are largely under resourced with furniture, books and even teachers resulting in poor motivation and retention of teachers in rural schools. Moreover, as the GoE (2019) points out, the large presence of private schools in cities may be a result of the perception that private institutions provide better quality education and have better infrastructure. For example, the secondary schools in Addis Ababa were the most connected to the internet (76%) during the 2018/19 academic year, as well as Harar and Dire Dawa (as opposed to national coverage which was only 21.5% of total secondary schools). The poor working conditions of teachers, low salaries, and inability to transfer from poorly resourced areas have been cited as the main contributors of the large number of teachers leaving the profession (GoE, 2018a).

5.1.3. Problems facing the sector

- Access to quality education by the most disadvantaged children as well as delayed enrolments and early attrition of rural learners.
- Absenteeism and drop-out rates.
- The direct cost of schooling (such as school uniforms, stationery, and parental contributions towards school improvement activities).
- Low levels of teacher qualification and low rates of CPD.
- A lack of electricity in schools limits access to ICT initiatives.
- At 8%, African higher education enrolment is significantly lower than the global average of 32%, and Ethiopia trails even further behind, with fewer than 6% of university-age adults attending university. Ethiopia desperately needs universities to drive development, and to this end higher education infrastructure has grown in the last two decades (GESCI 2017).

The Implementation Strategy and Action Plan IV of 2010 had already contained an ICT4D component to address the urban-rural divide. The ESDP IV aimed to ensure that secondary schools had the equipment necessary to access satellite television education and e-learning programmes in computer laboratories. By 2015:

- 69% of secondary schools had benefited from educational satellite television broadcast programmes which were subsequently digitised and dispatched on DVDs.
- 28% of secondary schools had access to an internet services. Of these, 6% had high-capacity content servers.
- English language interactive radio instruction programmes were developed by the Centre for Educational Information and Communication Technology (CEICT) of the MoE for use in primary schools.
- These programmes and educational audio programmes in other subjects were broadcast to primary schools (GESCI, 2017).

6. THE EDUCATION SUBSECTORS

The Ethiopian Ministry of Education (MoE) coordinates the various subsectors of education from general, to technical and vocational education and training (TVET) education and higher education in the country (see Figure 3).

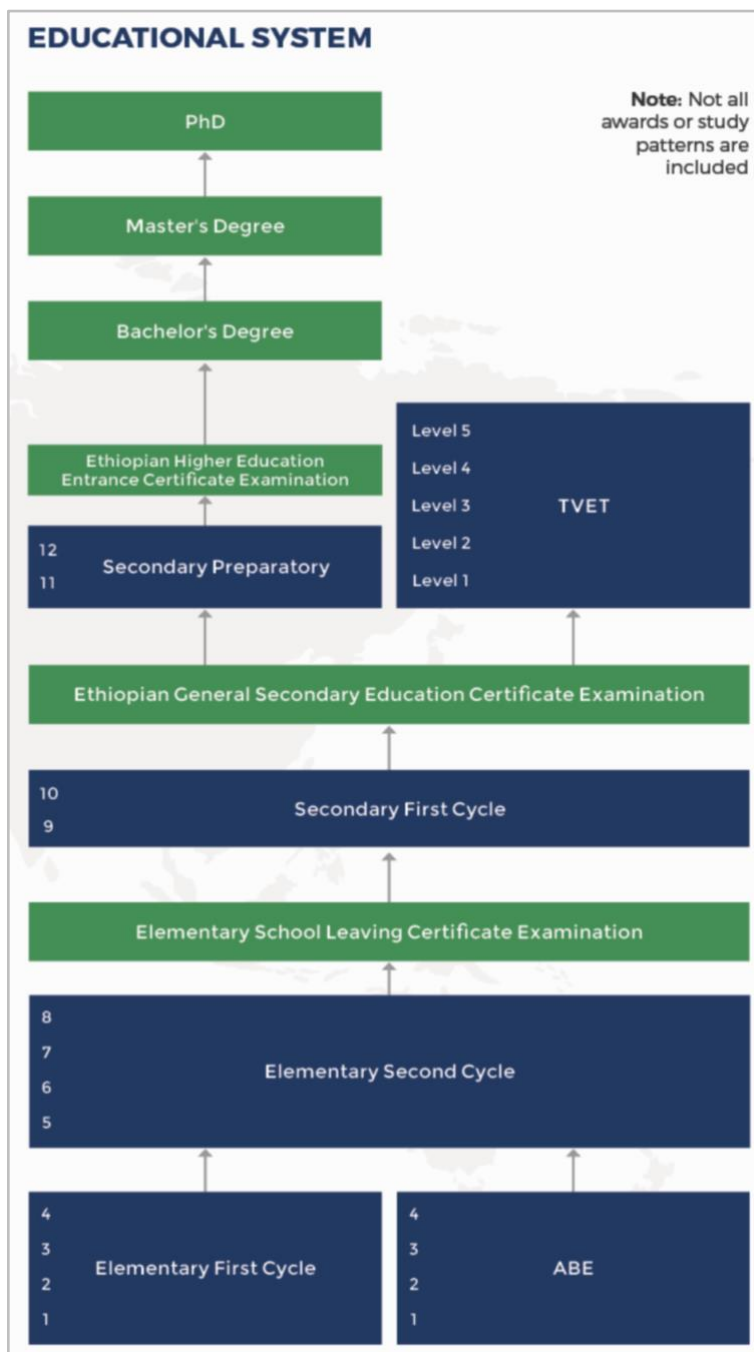


Figure 3: Structure of the education system

Source: Ethiopian Federal Ministry of Education

Figure 4 shows the age and numeric breakdown of the education subsectors with schooling being compulsory from age 7 to 14 years (with some reservations in policy).

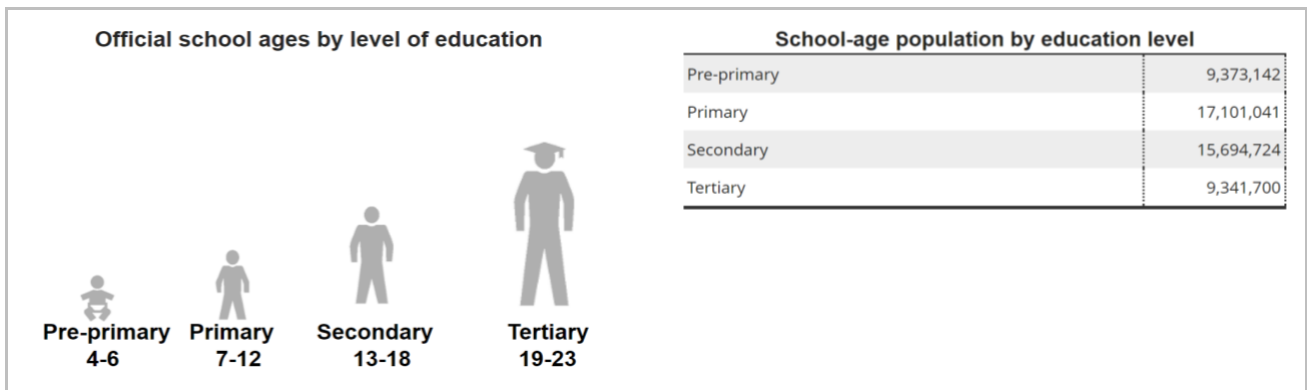


Figure 4: Education population breakdown by subsector

Source: <http://uis.unesco.org/en/country/et>

However, Figure 5 shows the steep decline in out-of-school children from 2011 to 2014; and also indicates the increase in out-of-school adolescents with both categories showing higher numbers of females outside of the educational system. Gesci (2017) refers to the problems of absenteeism indicating that the rates are often higher among boys than for girls and that this is mainly because of their involvement in unpaid domestic/agriculture work (GESCI 2017). They (2017) further point out that Ethiopia has made strides in educating women between the ages of 15 and 19, achieving a 70% literacy rate by 2014 however, as shown in the following figure, the number of females (adolescents and children) out-of-school is much higher for girls than for boys.

6.1. Lower enrolment rates

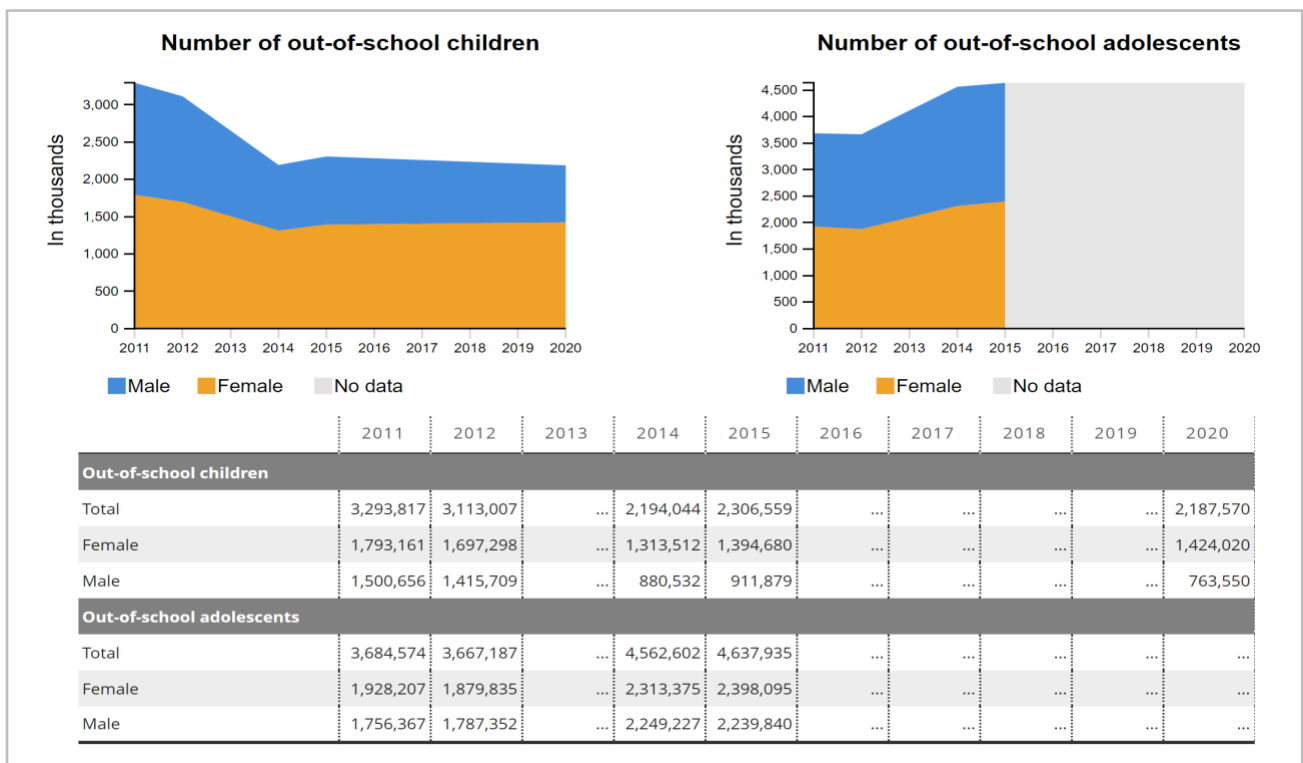


Figure 5: Out of school children and adolescents by gender

Source: UNESCO UIS.

6.2. Pre-primary schooling

While pre-primary enrolment rates have increased, only a third of children attend pre-primary education, the gendered pattern shows more males enrolled in the pre-schooling. All providers would benefit from training and development programmes. Pre-primary education is delivered through three modalities in Ethiopia, namely:

- Kindergarten by non-governmental-, faith-, and community-based organisations as well as private institutions.
- Non-formal pre-school is provided by the child-to-child initiatives.
- Grade 0 is provided by local governments with this being the dominant mode.

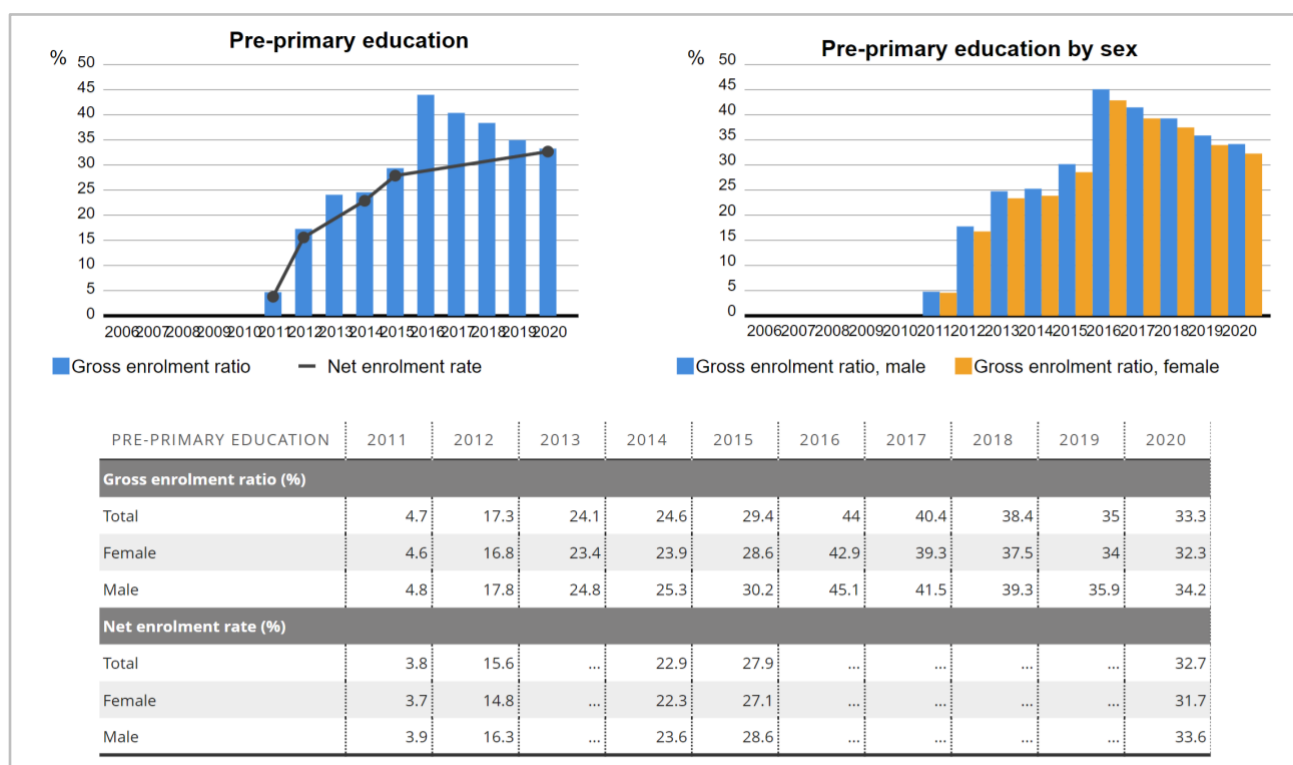


Figure 6: Pre-primary enrolment rates

Source: UNESCO UIS.

6.3. Primary education

In 2018/19 there were 37039 primary schools across the country and of these 7% of schools were private schools. In Addis Ababa, the capital city, the number of public schools is significantly higher than public schools (Yegezu, 2021).

In 2017/18, 573 additional primary schools were established, and this exacerbated the shortage of teachers. There was an increase of 573 primary schools in the public sector from the 2017/18 academic year, which was an additional factor contributing to the shortage of teachers. Exceptionally in Addis Ababa, the capital of Ethiopia, the number of non-government primary schools is higher than

government schools (Yegezu, 2021). There were 3,739 secondary schools in the 2018/19 academic year, of which 89.6% were government owned.

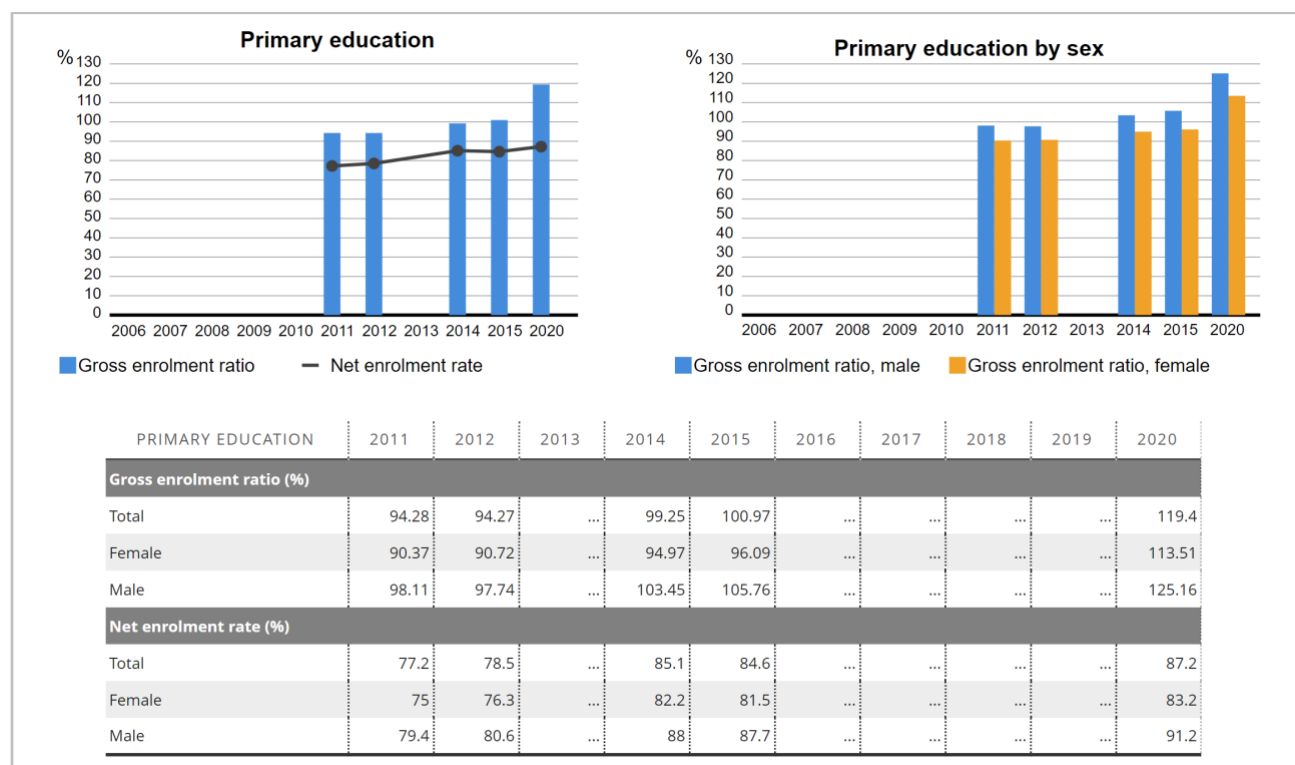


Figure 7: Primary School enrolment rates

Source: UNESCO UIS.

The discrepancy in equity, quality, enrolments, retention and the provision of infrastructure between urban and rural schools is highlighted as a serious obstacle to development and ICT could play a significant role in addressing some of the quality and equity challenges. Social problems and challenges as well as national infrastructural challenges need to be addressed for ensuring quality and universal primary education.

6.3.1. Refugee education

In addition to providing basic education for its citizens, Ethiopia has committed to improving the protection of refugees, including ensuring the right to education for the close to 350,000 refugee children living within its borders (over half of whom are of primary school-age) through the Comprehensive Refugee Response Framework (CRRF). While the Roadmap for Education and Training mentions the importance of including refugee learners and on the provision of learning that is flexible and which responds to the complexity of displacement contexts, teachers in refugee settings (often refugees themselves) need capacity development. The use of online and distance education modalities can go some way to providing flexible learning for this target group.

6.3.2. Transition rates

While there has been a steady increase in net enrolment rates, the system has a number of challenges at the primary level with high learner attrition during primary schooling and low transition rates which

are masked by the high dropout rates in primary school. The rates of survival to the last grade of primary school are extremely low (see Table 3).

Table 3: Schooling enrolments, transition rates

	TOTAL	MALE	FEMALE	
School life expectancy ISCED 1-8 (years)	8.41	8.88	7.92	(2012)
Percentage of repeaters in primary (%)	4.6	4.7	4.5	(2020)
Survival to the last grade of primary (%)	38.25	37.34	39.29	(2014)
Gross intake ratio into the last grade of primary (%)	68.1	70.7	65.4	(2020)
Effective transition rate from primary to lower secondary general education	91.4	92	90.9	(2014)

Source: UNESCO UIS.

6.4. Secondary education

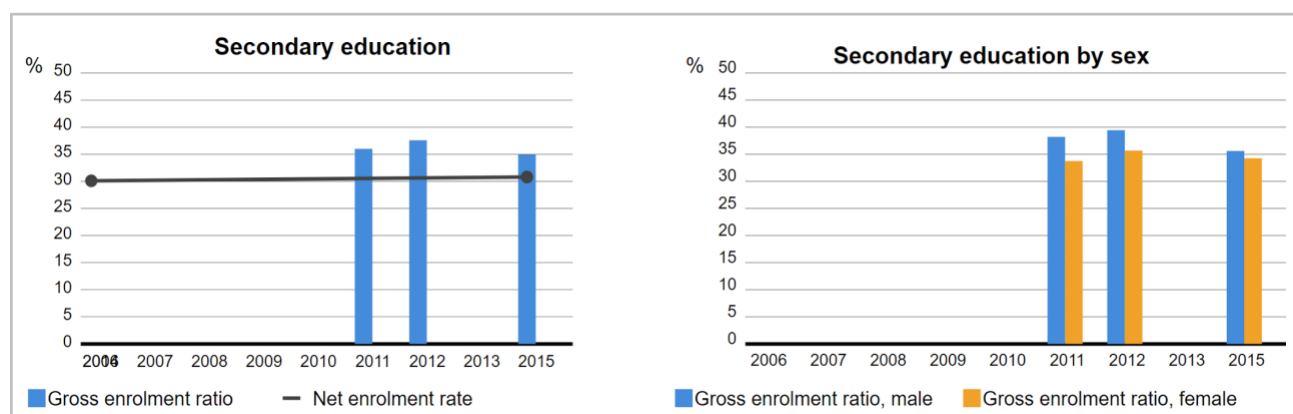


Figure 8: Secondary education: demographics

Source: UNESCO UIS.

6.5. TVET education

Two ministries are responsible for TVET namely:

- The Ministry of Education, which takes responsibility for basic education, including pre-primary, primary and secondary education, integrated functional adult literacy and special education.
- The Ministry of Science and Higher Education (MoSHE), which is responsible for technical and vocational education and training (TVET).

These two ministries formulate policies and guidelines, within the scope of their responsibilities, which are implemented by the various regional offices.

The two ministries work with regional education offices at the regional level as well as sub-regional education offices, which are located at the lowest level of the system.

The regional offices are responsible for the administration and management of basic education, technical and vocational education and training (TVET), and teacher training programs.

Ethiopia's TVET system is also in dire need of government attention in order to overcome the many challenges it currently faces (UIL More specifically, the Ministry of Education's Education Sector Development Programme IV (ESDP IV) calls for better-quality TVET, both formal and non-formal; improved responsiveness of TVET to the needs of the labour market; the establishment of outcome-based approaches; and the promotion of medium-sized and small enterprises using new technologies. Wider access to higher education, in particular to science and technology, is also seen as paramount, as is high-quality training and relevant professional inputs to improve employability. ESDP IV furthermore outlines a comprehensive development vision for the education sector, covering formal, non-formal, initial and further training, providing open access to certification, and creating pathways between the general, TVET and higher education sectors.

Private TVET institutions were more likely to use digital technology in the teaching–learning process. Digital technology, such as phones and tablets, were also being used for assessing student learning and for accessing and sharing teaching materials online.

Ethiopian Education Development Roadmap (2018–2030) Draft strategy displays for the development of TVET in particular aims increase the use of ICT in education and to:

- Develop an effective governance system by establishing a national centre for the development of training programmes and through the creation of national councils for the development of skills, standards, training programs and assessment tools.
- Develop a reform programme for TVET delivery through the establishment of TVET universities to provide skills' training for higher-level technicians and technical engineers.
- Enhance TVET's image for better uptake by students, parents and employers.

6.6. Teacher training colleges

Issues pertaining to teacher education feature prominently among Ethiopia's challenges and are worthy of full consideration in this report. As of 2020, there were 36 colleges of teacher education, training primary school teachers through a three-year diploma programme (ILO, 2021). Since 2010/11 certain identified universities including the Universities of Bahir Dar, Dilla, Jimma and Haramaya have been offering teacher development for secondary school teachers. The Kotebe Metropolitan University, a former teacher training college, offers teacher development programmes for both primary and secondary schools with qualifications at diploma, Bachelor and Master's levels.

According to the MoE, ICT has been integrated in teachers' training programmes supported with practice to develop teachers' competences to use technology for pedagogical purposes and to enable them to assist their students with their technology skills. The MoE indicates that teachers are trained to integrate ICTs in teaching and learning processes of various basic subjects especially in secondary schools. In-service training for all teachers has been offered through a targeted programme of Continuous Professional Development which has been presented at school level as a peer-led programme, was offered to improve a teachers' knowledge, skills and attitudes to improve their professional practice. These CPD programmes have been offered as school-based training for school clusters.

Notwithstanding the endeavours, the ILO (2021) study found that the training and development of teachers, particularly in colleges of teacher education had not improved despite the interventions of the GoE and its partners.

ICT in teacher education is being introduced both as a subject taught to all student teachers as a common course – aiming to develop the basic computer skills of pre-service teachers. As such, the curriculum contains two courses to be provided by the ICT departments of the colleges of teacher education to all student teachers. They are not, however, trained in the use of ICT for pedagogical purposes, that is, for teaching and learning in different subject areas. Second, ICT is taught as a discipline through a three-year diploma programme within the college, with the overall aim of developing ICT teachers. Computers and other digital tools are available in colleges of teacher education but are not sufficient in number. There is also a limited number of ICT teaching staff, from four to six ICT professionals per college.

Student teachers need to be equipped with the appropriate skills and knowledge in the use and potential of digital technology for teaching and learning. A recent review by the Ministry of Education on in-service CPD questioned the quality and relevance of CPD programmes and emphasized the need to: (a) institutionalize CPD in both schools and colleges of teacher education; (b) reconceptualize CPD to include professional development opportunities that incorporate ICT and other emerging pedagogical trends; (c) develop relevant and quality materials and modules for CPD training; and (d) integrate CPD into teachers' career structure and relicensing (Government of Ethiopia 2018a, 45). Given the evolving nature of technology and thus labour market skills, responsive education systems must provide access to CPD opportunities for teachers that integrate digital technology.

In accordance with the TPACK framework, the GoE initiated the Satellite Plasma TV Project in 2003 to improve the quality of secondary education with a view to using educational media to address the challenges such as: (i) the shortage of qualified teachers, especially in remote and inaccessible areas; (ii) to provide models for best practices; and (iii) to compensate for the lack of textbooks and other learner and teacher support materials. The Satellite Plasma TV-Project, provided pre-recorded course content presented by a high quality remote teacher via the plasma screen while the classroom teacher played a facilitative role in mediating the online content.

This constituted a blended mode of instruction which combined the televised instruction (developed by the MoE) with face-to-face instruction (via the classroom teacher), in ratios of 75: 25 respectively. In actual time, the televised instruction was offered for 30 minutes of the total 40 minutes of lesson time and the teacher's mediation and support utilised the remaining ten minutes by way of introducing and concluding the lesson. (Berhanu 2016). The project also aims to standardize delivery of education material nationwide.

Key factors obstructing the implementation of these initiatives include inadequate capacity of existing infra- structure, limited access to the internet and ICT by teachers and lack of coordination among stakeholders. Other major challenges include low proficiency in the use of ICT, general lack of knowledge about technology in teaching and learning, inadequate training curriculum, poor-quality management and leadership and acute shortage of teachers trained to integrate technology into teaching and learning in their subject areas, recent study also indicated that most teachers and students are only proficient in word processing, but not in the use of ICT for teaching and learning in different subject areas.

The use of digital technology in education can potentially overcome issues of cost, teacher shortages, poor-quality education and time and distance barriers, but using digital technology in educational settings on its own may not bring about all expected changes. The idea that ICT can help in overcoming teacher shortages has been entertained by several researchers, with the general argument being that technology should function as a complement to teachers rather than a replacement.

The Ethiopian Roadmap for Education and Training and ESDP VI acknowledges this by focusing on the development of teachers ICT skills, it notes that Ethiopia struggles to attract, train, recruit, motivate and retain good teachers and this impacts on the system. A range of recommendations are made which includes the specialised National University of Education (NUE), focusing on teacher education to enhance its primary-level teaching workforce.

6.7. University provision

Due to massive transformations in and expansion of education over the past two decades, the number of students has increased enormously. The country has a total student population (primary, secondary and TVET) of 25 million (Government of Ethiopia 2019). This expansion has demanded large-scale recruitment and training of teachers (ILO, 2021).

The inequality between undergraduate students will be sustained and widened if this situation continues, universities must develop and apply concerted efforts to better use remote learning.

Higher education in its infancy in Ethiopia and still has low enrolments and is less organised. As Mengistie (2021) explains higher education started in 1950 with limited development until 21st century. This author explains the geographic location of the 45 public higher education institutions, stating they are mainly based in the regional areas of the country with each of the 9 regions having at least one university with institutions providing regular (contact), summer school type, and distance programmes. More than 85% of HE enrolments are from rural areas, from and access to laptops or desktops are minimal except for wealthier urban students. Accessing desktop computers is possible in classrooms and the library but in the absence of digital skills, students are challenged. According to Mengisis (2021) teachers' technology application in the teaching and learning process is extremely low, and except for a few, the majority of lecturers do not have internet access at home.

The urban rural divide and the high poverty rates are interrelated with the need to generate an income and subsistence living and the lack of affordability of laptops or Smartphones for learning – no least the problems of electricity and telecommunication and network facilities. Mengistie (2021) points to the loadshedding of electricity long periods. It was for this reason that the MoSHE directed universities to use their best possible solutions to for dissemination activities and the ministry noted the partnership with Ethio-Telecom, the sole internet providing company in the country, to use zero-rating for education and research websites accessed by students and teachers.

6.8. Adult education

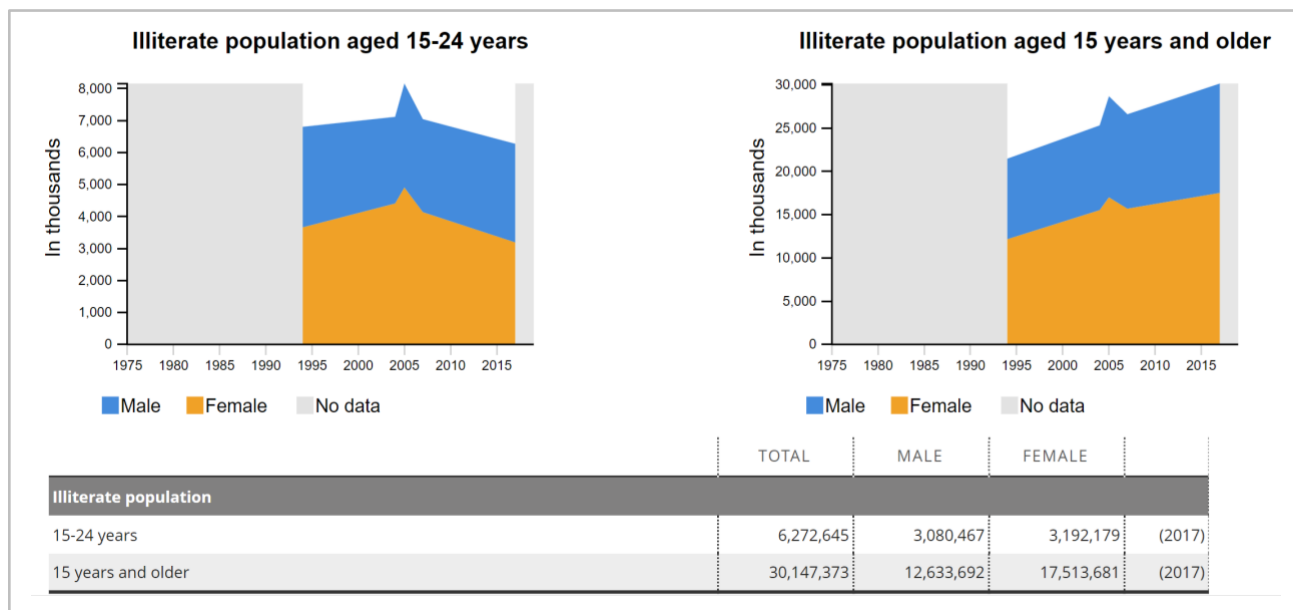


Figure 9: Illiterate population

Source: UIL.

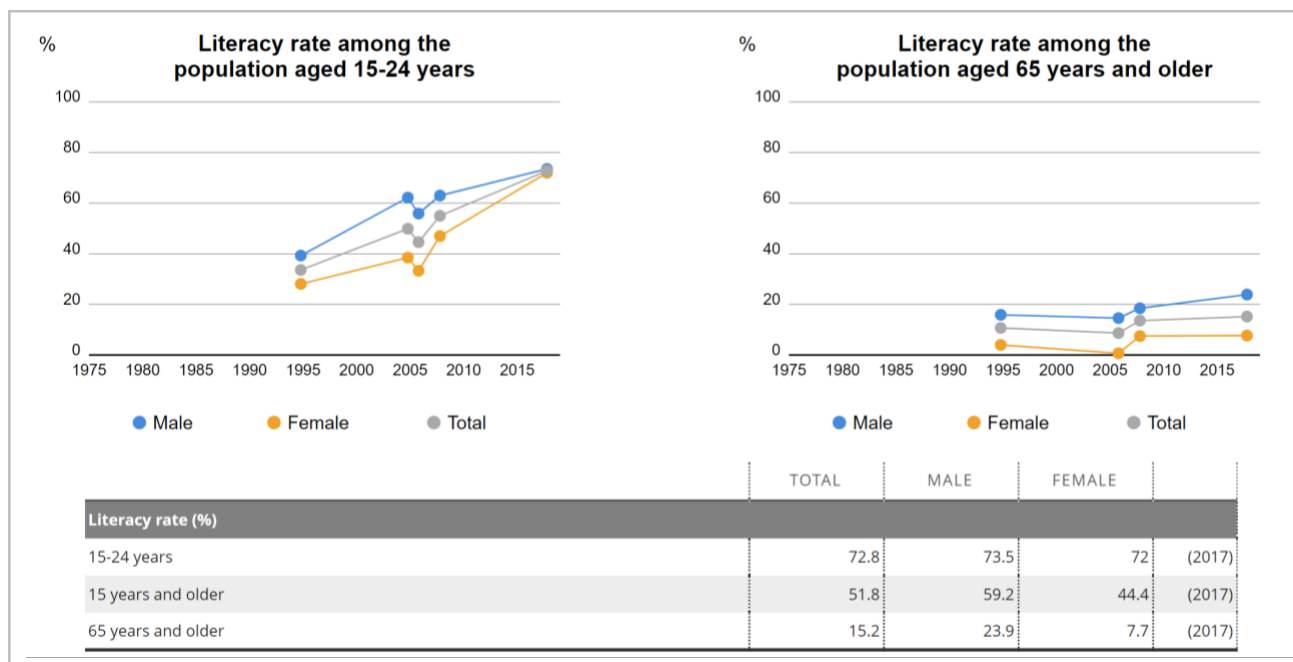


Figure 10: Literacy rates

Source: UIL.

The high illiteracy rates is a matter of concern and is also an indicator of the general health status of the education system. It is likely that the impact of the pandemic reveal further increases in illiteracy with higher school drop outs and lower primary enrolments and primary completion rates. These are issues that require mitigation strategies and in the precarious digital state the country finds itself, traditional methods of enabling literacy and income generation programmes remain important.

7. SWOC ANALYSIS

With strengths and weaknesses identified by the MOE.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Political will. • The existence of policies. • Awareness of the potential of e-learning in teaching. • Educator willingness to undergo ICT in Education pedagogical training for this purpose. • The recognition of the importance of ICT in Education. • The recognition of the importance of pre-and in-service training for educators. • A relatively good Covid-19 learning strategy. • Political commitment of the GoE and international community. 	<ul style="list-style-type: none"> • Lack of ICT infrastructure in schools. • Lack of electrification. • Lack of financial means. • Lack of institutional facilities. • Low level educator competencies. • Fluctuation of internet connectivity, and inadequacy of computers. • Lack of adequate leadership in supporting ICT management and the monitoring if ICT implementation. • Limited telecommunications infrastructure, low levels of computerisation outside the capital, and lack of human resources. • The low level of internet access is limiting the usefulness of ICT in creating a KS.
Challenges	Potential Opportunities
<ul style="list-style-type: none"> • The low levels of digital readiness outside of the main cities. • Taxes on ICT hardware 40% import tariffs on ICT equipment make it too costly for most citizens. • High costs of connectivity. • The incumbent public telecommunications operator's monopoly over all telecommunications services. • The 12,000 km optic fibre cable infrastructure from central Ethiopia to all directions of the country connecting cities with a capacity to transmit 40 Gbps along with the national backbone. 	<ul style="list-style-type: none"> • Common interest developed by stakeholders to strengthen the partnership for fighting the pandemic. • Opportunities for transforming teaching and learning through e-learning innovations. • Donors have expressed consent to pool technical and financial support – from existing projects as well additional ones. • Introduction of a new adaptable innovation and technology for the sectors by the MoE with key priorities identified and paperwork started.

- The political and economic situation of donor countries and economic crises of the country due to inflation.
- Capacity limitation of the education sector to deliver the intended activities (preparation of supportive documents, procuring goods and services).
- Low commitment of some implementers (officers, teachers, parents).
- Although the number of mobile phone subscribers is growing, the uptake in Ethiopia is among the lowest in Africa.

8. OVERVIEW OF THE ICT4E PARTNER MAPPING AND INTERVENTION

The following figure shows the current implementing partners in Ethiopia – indicating where they operate and what their contribution involves.

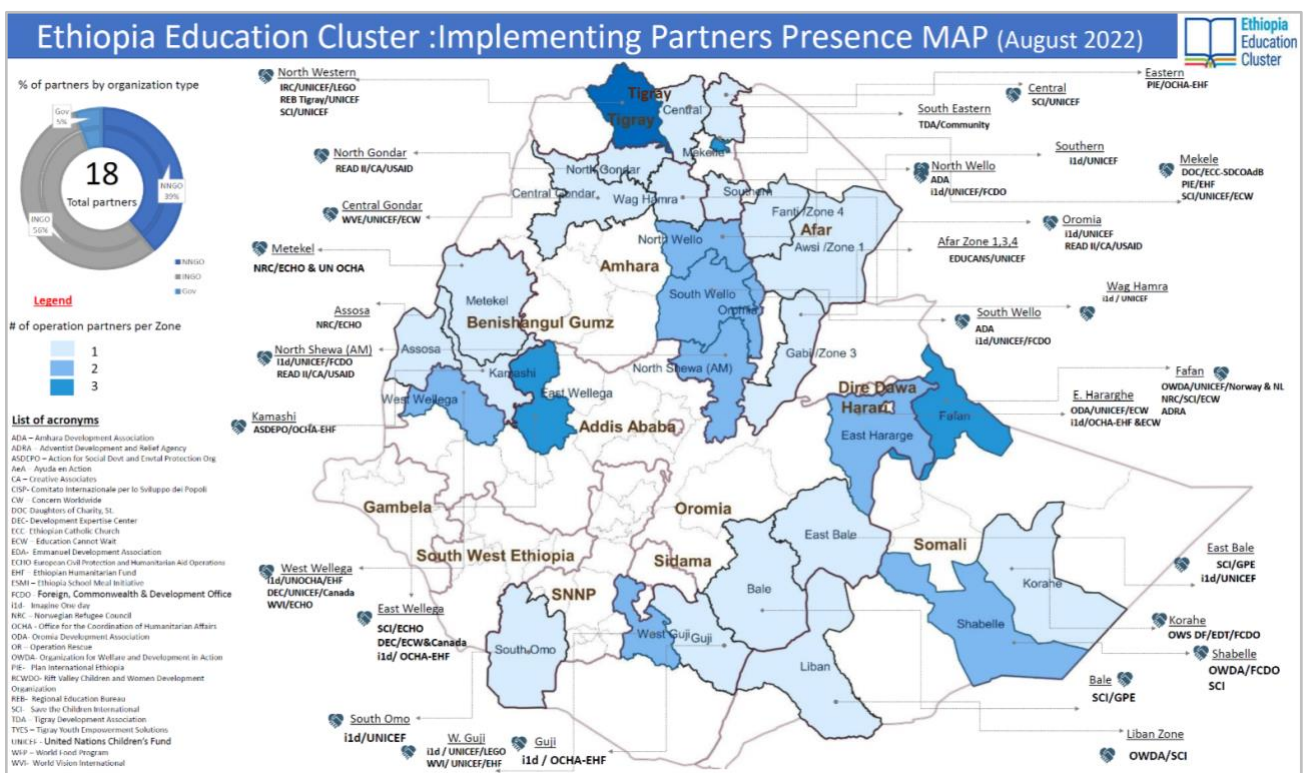


Figure 11: Ethiopia Education cluster Partners presence Map, August 2022

Source: OCHA Services, 2022.

The literature makes further reference to organisations that focus on disadvantaged, vulnerable and refugee learners in the country. These include:

- Noreg/Norwegian refugee council
- Rift Valley Children and women development organisation
- World Vision International
- Save the children
- Noreg Lego
- European civil protection and humanitarian Aid operations
- Foreign, commonwealth and Development office
- Global partnership for education
- The British Department for International Development
- UNICEF
- Microsoft

USAID’s Reading for Ethiopia’s Achievement Developed (READ II) project to improve the quality of literacy instruction by training teachers in reading curriculum, and by providing effective early grade reading materials in seven mother-tongue languages and English as means to improve the literacy of over 15 million children. The READ II project also partners with communities to establish reading camps outside the classroom and supports the Ministry of Education in conducting Early Grade Reading Assessments.

UNESCO and Huawei supported three pilot workshops in Ethiopia, each held over two days (in the period 13 November to 5 December 2021) to introduced teachers to various types of distance learning methodologies, including online, TV based, radio-based and print-based approaches and their contextual application. A total of 117 Ethiopian teachers, over half of which were female teachers (52%), attended these pilot workshops. The teachers attending the training ranged from primary to high school levels and came from both rural and urban areas. While this is minuscule in the context of 700000 teachers, the training could be replicated using online methods and using distance learning in content delivery, lesson plan preparation, classroom management, learning assessment and various aspects of classroom activities.

<p>The Global fund supporting Ethiopia with a US\$15 million grant to support</p>	<ul style="list-style-type: none"> • Creating educational content for radio and TV programs • Providing radios and learning packets to the most disadvantaged students, such as pastoralist girls, students from the poorest households and students with special needs • Creating a back to school campaign to announce the reopening of schools, highlighting safety precautions for parents and students • Supporting the installation of WASH equipment in public primary and secondary schools, including portable handwashing stations, disinfectants and sanitizing materials and first aid kits • Providing accelerated learning and remedial classes to students to mitigate loss of learning from prolonged school closures
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<p>UNICEF and Global fund:</p> <p>The grant will be split between the program-for-results modality of GEQIP-E and an investment project financing component to support targeted capacity building and pilot activities.</p> <p>In March 2020, the UNICEF office in Ethiopia received a GPE grant of US\$140,000 to support the Ministry of Education in planning its response to the pandemic. The funds were used to support 3 regions to deliver radio content for approximately 200,000 children.</p>	<p>Although Ethiopia has achieved remarkable progress in expanding access to education over the past twenty years, the challenges related to equity, efficiency and learning outcomes remain significant.</p> <p>The country’s Education Sector Development Plan 2020-2025 has been designed to address these challenges, with the vision to transform society through harnessing the full potential of learners to become productive citizens. The education plan aims to enhance education and training by:</p> <ul style="list-style-type: none"> • Establishing an effective educational management and administration system with sector-wide accountability. • Developing ethical, civic, and moral values in learners. • Improving the quality of general education. • Improving equitable access and internal efficiency from pre-primary to secondary education. • Building a learning society linked to a lifelong learning opportunity that meets the diverse learning needs of young people and adults. • Building an effective and efficient education system using digital technology. • Putting in place a rigorous, systematic, and objective quality assurance system to monitor schools, colleges of teachers’ education and adult and non-formal education centers’ performance. • Strengthen the system to improve planning, policy formulation, and reform. This aims to improve data collection and analysis, and teacher preparation, to enable students to achieve higher levels of learning.
<p>Ethiopia has been awarded two grants: A US\$125 million Education sector program implementation grant, running from 2021 to 2024, and a US\$20 million accelerated grant for 2020-2021.</p>	<p>The grant is divided into 70% as fixed part (\$87.5 million) and 30% as variable part (\$37.5 million).</p> <p>The implementation grant co-finances the country’s General Education Quality Improvement Program for Equity (GEQIP-E) as an additional financing over three-and-a-half years; and builds on the lessons learned from the initial implementation period (2017-2019). Its overall objective is to improve internal efficiency, equitable access, and quality in general education.</p> <p>The grant is mostly results-based financing with disbursements tied to a series of results, and both fixed part and variable part indicators support four main result areas:</p> <ul style="list-style-type: none"> • Improve internal efficiency. To address the chronic issue of over-enrollment in grade 1 and promote progression of children

	<p>through the early grades, this component will support activities like:</p> <ul style="list-style-type: none"> ○ Training of pre-primary teachers ○ Provision of teaching and learning materials, ○ School inspections. <ul style="list-style-type: none"> ● Improve equitable access for students in three areas (Afar, Ethiopia Somali, and Benishangul-Gumuz) and children with special needs through: <ul style="list-style-type: none"> ○ Construction of 500 new classrooms. ○ Enrollment of 25,000 students in disadvantaged areas, with girls-to-boys enrollment ratio of at least 60%. ○ Establishment of 600 new Inclusive Education Resource Centers within the cluster schools, to promote mainstreaming of children with special needs in education. ○ Enrollment of 21,000 students with disabilities and special needs in all grades benefitting from the services of IERC cluster schools. ● Improve quality by building digital competence of teachers and improving child development and learning in lower secondary schools (grades 9-10). through activities like: <ul style="list-style-type: none"> ○ Updating the teacher licensing assessment to include a digital skills module. ○ Comprehensive teacher training program prepared and piloted on digital skills and the use of ICT in teaching. ○ Digital skills training for at least 1,000 teachers.
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Traditional areas of funding:

The USAID’s **School Net program** of connecting all high schools (over 500) in the country with ICT and plasma screen networking and facilitate video conferencing, reaching out all schools with standardizing quality and relevance of curricula, and partly alleviating teacher shortage has been successfully implemented without piloting.

The **expansion of higher education and TVET** (Multiple donors including the German Government) has continued, largely successfully, with justifications that the country needs medium to high level trained human resource for the growing economy and to become competitive in the global knowledge based world.

Poverty alleviation funding in Ethiopia with donors being more guarded requiring a realistic plan and gradual or phased interventions in the light of limited implementation capacity and finance (multi funders).

9. RECOMMENDATIONS

The study highlights clear needs for funding initiatives and investments in the following areas beyond the numerous socio-political challenges facing the country:

- **Policy and implementation:** While the policies and commitment are in place, there are challenges in translating of policy into practice arising from lack of various forms of access.
- **Workforce competence:** As the country moves towards its vision of a knowledge society, there is need for the massification of workforce training, both during preservice and in-service in order that educators acquire and maintain the ability to integrate ICT into their classrooms. Similarly, training for learners and administrators need to be ongoing since ICT in education affects the entire system. It is proposed that a skills audit be conducted to establish new a skills baseline subsequent to the progress already made.
- **Curriculum development:** The study found that while there was increased use of ICT in education as well as ICT as part of the school curriculum, a more specific curriculum indicating how and where ICTs might be incorporated will be useful for teachers. This process can be supported by well-developed e-learning materials.
- **Connectivity:** With regard to access to connectivity it was clear that more, better and cheaper connectivity is needed. This need is coupled with the need for other infrastructure such as electricity, the availability of optimal devices and a special focus on vulnerable and marginalised communities, particularly in remote areas.
- **Harmonising interventions:** As shown in Figure 11 above, Ethiopia has a number of development and international partners actively supporting its economic development. These interventions need to be harmonise so as to align the diverse digital initiatives for accelerated implementation and impact.

10. CONCLUSION

Ethiopia is a low-income country with one of the lowest literacy rates in the world. Current poor performance in education, particularly the low level of enrolment in higher education institutions, impedes its readiness to transition into a KS. The development of KS is still in the nascent stages (GESCI, 2021).

The country has limited opportunities for learning, and ICT in education can assist in expanding access to primary and secondary schooling, TVET and HE. However, the digital divide and those who are digitally marginalised, including those defined as vulnerable, poor and remote schools and households will require special focus and additional investments. This included the need for focusing on the high numbers of school dropouts, and learners with disabilities.

The growing demographics of young people (1 – 14 years; 15 – 24 years), the number of out-of-school youth and the increasing unemployment rates give a sense of urgency for using ICT to expand learning opportunities. These numbers are bound to escalate as a result of the impact of the pandemic and to make up learning losses caused by the expansion of the system.

While some attempts were made by the response plan of the Ministry of Education to ensure the continuity of learning at all levels, including the use of digital technology such as e-learning secondary education and multi-media channels for primary schools with recommendations to continue providing school feeding for vulnerable children, these had minimal impact (Hailu, 2020) more especially for rural agrarian and pastoralist communities in areas where 90% of poverty prevails. As a strategy, Hailu (2020) proposes that school grants be provided for solar-powered tablets which could also be used offline given that fewer than 2% of the population have regular access to the Internet, making online learning an unlikely solution. Radios are also less common due to the costs of dry cell batteries and television is also high-cost as are mobile phones.

The country needs to focus on moving beyond the problems of the pandemic and the civil uprising in order to achieve minimum standards in education and infrastructure that will make it possible for the implementation of ICT in Education.

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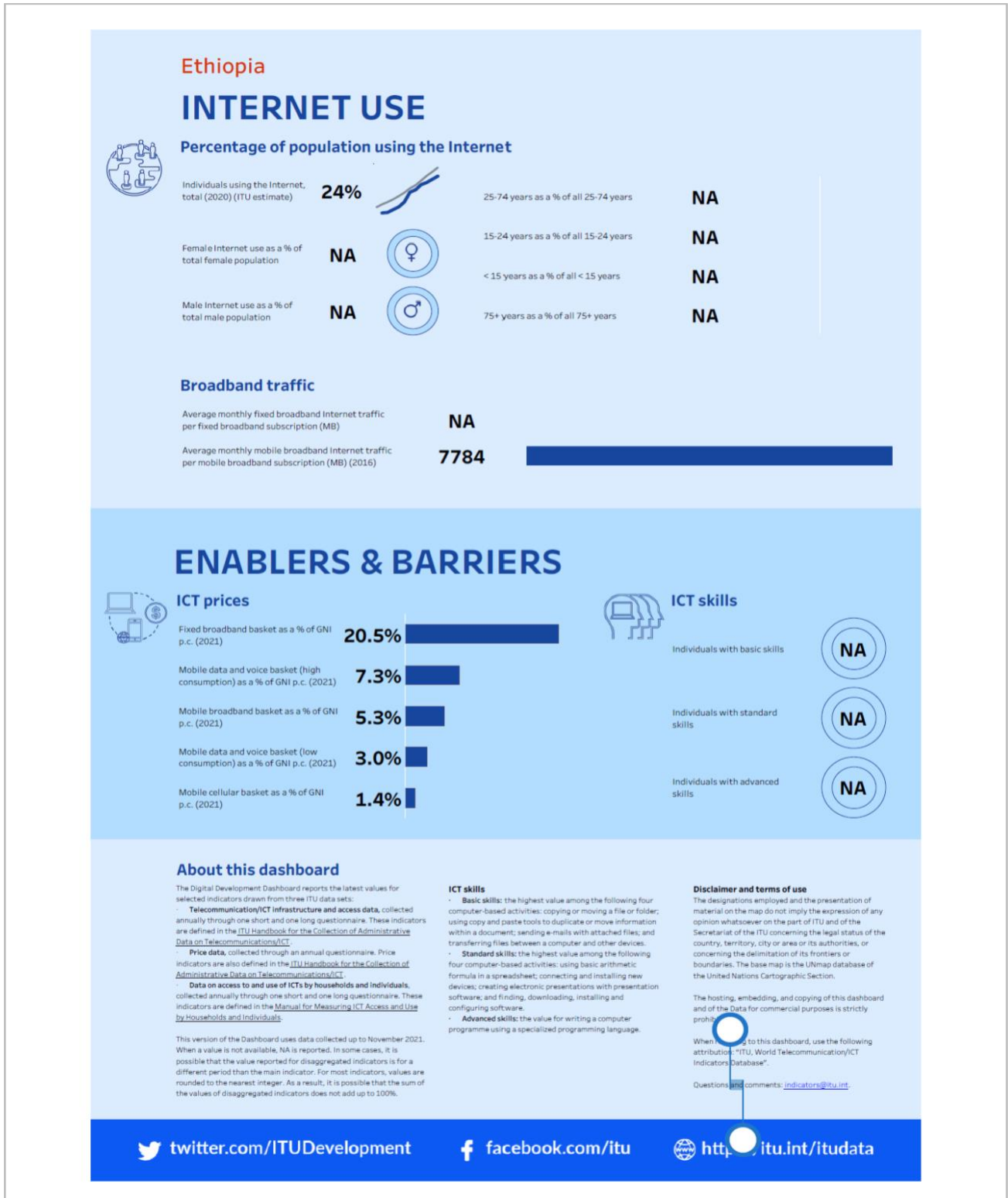
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ANNEXES

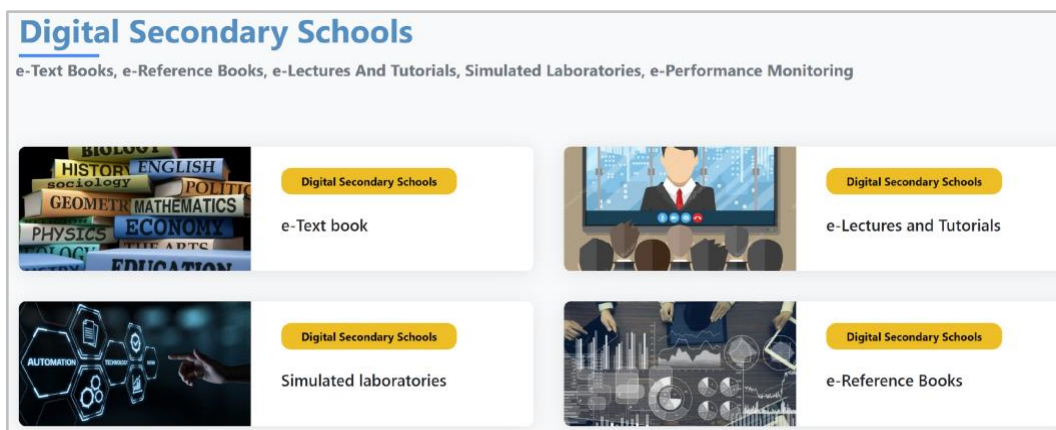
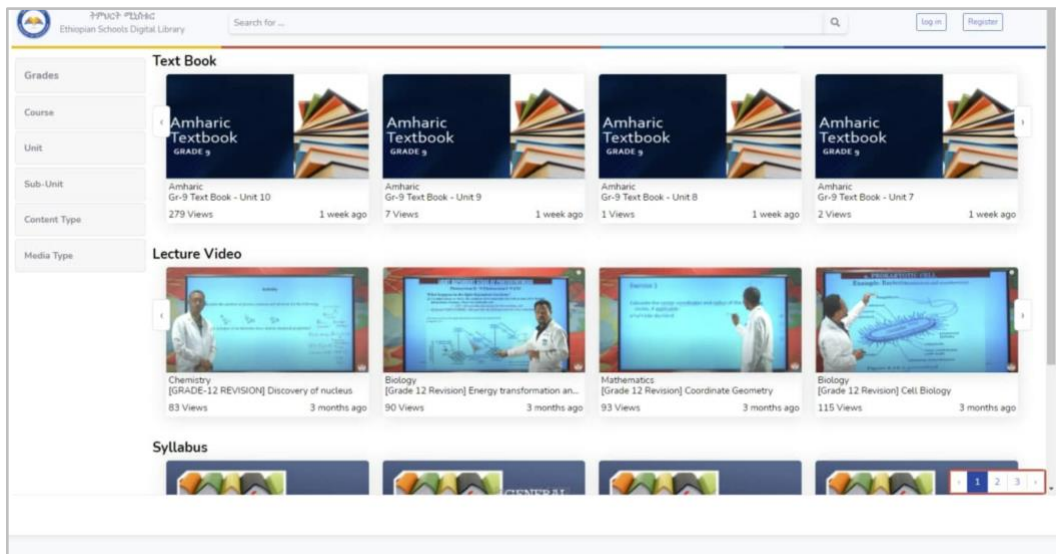
ANNEX A: ITU INFOGRAPHIC ON THE DIGITAL CONTEXT

The following infographic gives an overview of the state of digital development based on ITU data. (Source: <https://library.iated.org/view/JANG2018CAS>)



ANNEX B: DIGITAL MATERIALS USED BY THE MOE

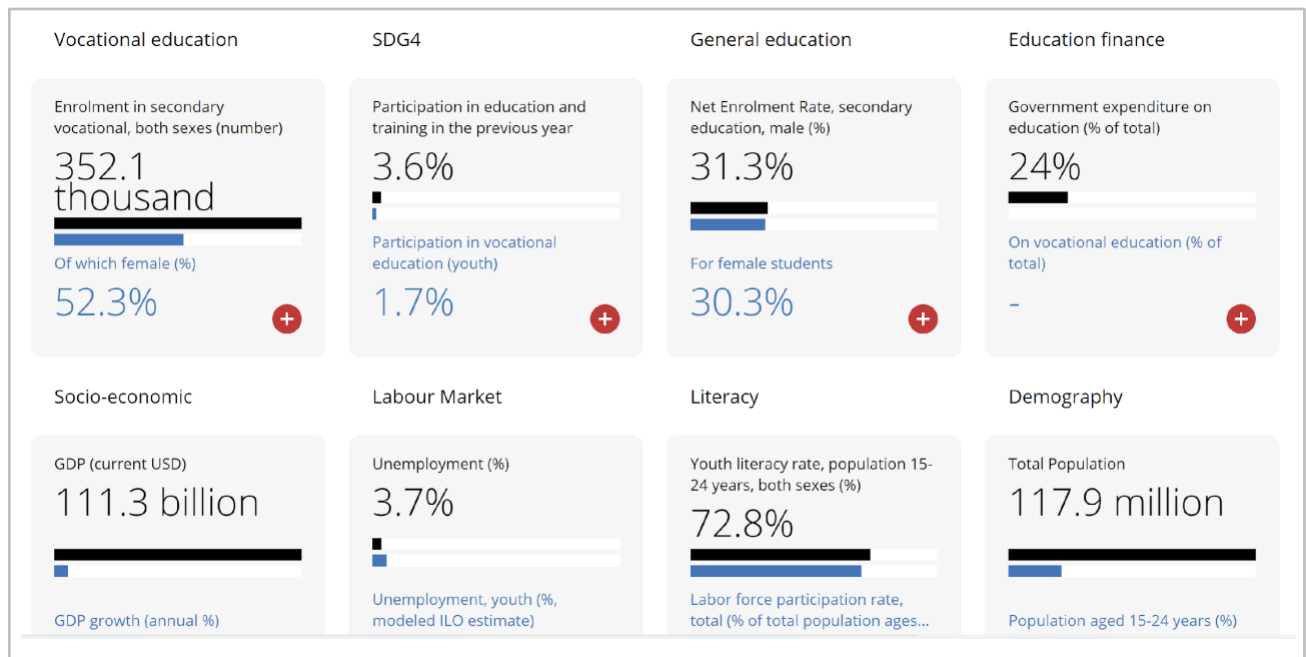
The MoE website contains online materials per grade.



ANNEX C: GOVERNMENT EXPENDITURE ON EDUCATION

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Government expenditure on education										
as % of GDP	5.5	5.6	4.5	4.6	4.7	5.1	5.6	5.1	...	...
as % of total government expenditure	29.7	30.5	27	25.9	27.1	23	26.5	24	...	...
Government expenditure per student (in PPP\$)										
Primary education	91.4	65.8	...	109.1	119.2	...	...	...	...	...
Initial government funding per secondary student PPP\$	260	205.5	...	...	253.8	...	...	...	...	...
Initial government funding per tertiary student PPP\$	3204.3	3410.2	...	3417.2	...	...	...	...	...	...

ANNEX D: EDUCATION STATISTICS





Ushirika wa Maendeleo ya Elimu Barani Afrika
الرابطة لأجل تطوير التربية في إفريقيا
Association for the Development of Education in Africa
Association pour le développement de l'éducation en Afrique
Associação para o Desenvolvimento da Educação em África

Association for the Development of Education in Africa (ADEA)
African Development Bank Group (AfDB)
Immeuble CCIA Plateau, Avenue Jean-Paul II, 01 BP 1387
Abidjan 01, Côte d'Ivoire
Tel: (+225) 27 20 26 39 64
Email: adea@afdb.org – Website: www.adeanet.org

