



SCOPING STUDY OF WATER RESOURCE MANAGEMENT IN THE TEXTILE INDUSTRY IN ETHIOPIA

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List of Abbreviations

AAWSSA	Addis Ababa Water Supply and Sewerage Authority	EPRDF	Ethiopian People's Revolutionary Democratic Front
AGOA	African Growth and Opportunity Act	ESDP	Education Sector Development Program
ATP	Anti-Terrorism Proclamation	ETGMA	Ethiopian Textile and Garment Manufacturers Association
AwBA	Awash Basin High Council and Authority	ETIDI	Ethiopian Textile Industry Development Institute
CET	Common External Tariff	EU	European Union
COMESA	Common Market of Eastern and Southern Africa	FEPA	Federal Environmental Protection Agency
CRGE	Climate Resilient Green Economy	GDP	Gross Domestic Product
CSP	Charities and Societies Proclamation	GNI	Gross National Income
DHS	Demographic and Health Survey	GoE	Government of Ethiopia
ECPGEA	Ethiopian Cotton Producers Ginners and Exporters Association	GTP	Growth and Transformation Plan
EGSLCE	Ethiopian General School Leaving Certificate Examination	ha	Hectare
EHEEE	Ethiopian Higher Education Entrance Examination	HERQA	Higher Education Relevance and Quality Agency
EIA	Environmental Impact Assessment	HESC	Higher Education Strategy Center
EIWR	Ethiopian Institute of Water Resources	HIPC	Highly Indebted Poor Countries
ELIA	Ethiopian Leather Industries Association	HoA-REC/N	Horn of Africa Regional Environmental Center and Network
		HRW	Human Rights Watch

IFAD	International Fund for Agricultural Development	TWSB	Town Water and Sewerage Board
ILO	International Labor Organization	UN	United Nations
IMF	International Monetary Fund	UNICEF	United Nations Children’s Fund
ISS	International Substitution Scheme	UNESCO	United Nations Educational, Scientific and Cultural Organization
IWRM	Integrated Water Resource Management	WaSH	Water, Sanitation and Hygiene
IZ	Industrial Zone	WaSHP	Water Supply, Sanitation and Hygiene Project
JICA	Japan International Cooperation Agency	WIF	WaSH Implementation Framework
JMP	Joint Monitoring Program	WMS	Welfare Monitoring Survey
Ltd	Limited Company	WRM	Water Resource Management
MDG	Millennium Development Goals	WRS	Water Resources Strategy
MoA	Ministry of Agriculture	WSDP	Water Sector Development Program
MoFED	Ministry of Finance and Economic Development	WSSP	Water Supply and Sanitation Project
MoH	Ministry of Health	WWD	Woreda Water Desk
MoI	Ministry of Industry		
MoU	Memorandum of Understanding		
MoWIE	Ministry of Water, Industry and Energy		
MoWIE-BAD	Ministry of Water, Industry and Energy – Basin Administration Authority		
MoWR	Ministry of Water Resources		
m.a.s.l.	Metres above sea level		
MPI	Multidimensional Poverty Index		
NBI	Nile Basin Initiative		
NGO	Non-Governmental Organization		
NHRAP	National Human Rights Action Plan		
NWI	National WaSH Inventory		
OWNP	One WaSH National Program		
PCDP	Pastoral Community Development Project		
PEPE	Private Enterprise Programme Ethiopia		
PhD	Doctor of Philosophy		
PLC	Public Limited Company		
RBA	River Basin Authority		
RBO	River Basin Organization		
RWB	Regional Water Bureau		
RWH	Rainwater Harvesting		
SIWI	Stockholm International Water Institute		
SNNPR	Southern Nations, Nationalities and Peoples Region		
SWSI	Social Water Stress Index		

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Executive Summary

Ethiopia is one of the poorest countries in the world. Significant measures are taken on all levels to change this fact. With a growing population, expanding economy and booming industry development important steps are taken to lift the country towards a more stable and secure economy. Development must, however, progress in a sustainable manner to prevent exhaustion and depletion of natural resources. If this is possible, Ethiopia has the potential to become the middle-income nation it strives towards.

Goals and targets are set by means of five-year development plans, with an aim to promote the Ethiopian economy to higher standards and end poverty. The Growth and Transformation Plan (GTP) 2010-2015 is the current statute implemented. One major goal of the GTP is to pull Ethiopia closer to the United Nations Millennium Development Goals (MDG). Indeed, the implementation of plans staked out in the GTP has moved Ethiopia several steps forward on many levels, as an economic growth of 10.9 per cent on average over the past decade reveals.

Applying the MDG criteria, Ethiopia is “On track” regarding improved water but “Not on track” regarding improved sanitation. The country lags behind by Sub-Saharan standards levels regarding service provision of water supply, sewerage and sanitation. The problems are especially prominent in the rural regions. There is a general lack of infrastructure, skills and knowledge in water resource management. A certain level of nepotism with government officials as owners or partners in industries holds back the development as well. Ethiopia has a strong federal and regional governmental agenda for natural resource conservation and water resources development and a government policy that favors basin management. If these agendas can be withheld and implemented in the face of the currently ongoing and massive industrial expansion remains to be seen.

The highlands are the origin of many major rivers flowing through northeastern Africa to the Mediterranean and the Indian Ocean, which has led geographers to refer to Ethiopia as “The Water Tower of northeast Africa”. The Ethiopian highlands contribute to three major rivers systems including the Nile, Awash, and Omo. The Abbay river system, in the northern and central highlands, contributes with about 85 per cent of the Nile’s water and account for 83 per cent of the total runoff from all catchments. The eastern highlands source the Awash River that, through its basin, provides the catchment area for Addis Ababa. The Omo River originates in the Shewan highlands and flows southward into Lake Turkana on the border to Kenya.

The textile and leather industry is up-and-coming in Ethiopia. The country has the potential to provide services through the whole value chain from cotton to the finished t-shirt. With a combination of low taxation, readily available land for factories, and cheap labor result in foreign companies lining up to invest. China, India and Turkey are big players but Germany, U.S.A., U.K. and Sweden are showing interest as well. Sustainable water resource management is one of several aspects in this very water intensive industry that needs to be addressed.

The general view amongst decision makers is that groundwater is abundant and extraction rates have negligible effects on available resources, something reflected in the lack of legislation regulating groundwater extraction. As utilization of groundwater resources

went, until recently, rarely beyond extraction for drinking water, this assumption probably held up in past times. Current uses go beyond drinking though, with groundwater extraction feeding irrigation and industrial needs. Textile factories in Ethiopia utilize mostly groundwater for their wet-processes. The lack of extraction restrictions has therefore made water access and uses a non-issue for textile factories. However, the rapid expansion of textile industries, as well as floriculture irrigation schemes, predominantly in and around Addis Ababa, have fueled the debate on the need for groundwater extraction regulations.

The level of wastewater management in Ethiopia is low compared to Sub-Saharan standards. The numbers of sewerage and sanitation facilities are all but non-existent in smaller towns. Laws and legislations regulating effluent industrial water are rarely complied with nor enforced by authorities, which leads to highly polluted rivers and lakes. The textile and food industries are the major culprits polluting the Ethiopian watersheds. This becomes very prominent downstream from industrial hubs in the heavily industrialized regions around Addis Ababa. The Awash River Basin provides the catchment area for Addis Ababa and contains the most polluted lakes and rivers in Ethiopia. Considering the current lack of capacity and enforcement from regulating governing bodies in this question the hope for an improvement with a foreseeable future goes to private enterprises. Effluent treatment plants are almost always in place but rarely in use. It is necessary to ensure compliance and enforcement of regulations, as well as providing the right (economic) incentives to make it work.

Ethiopia has a favorable climate for producing cotton. Large areas are available for cultivation but only a fraction is used. The vast majority of cotton producers are small- and medium sized farmers but the bulk of production output comes from large-scale commercial farms. Despite an expanding textile industry cotton production has dwindled over the last few years. The official proximate reason put forward to explain this inverted and illogical relationship is that small- and medium sized cotton farmers switch crops. Though this cannot be the whole explanation it is true that farmers experience variable harvests due to low quality seed cotton, low market prices, and ineffective and improper farming methods. There are programs in place working towards improving the situation spearheaded by Ethiopian agricultural researchers and NGOs.

Ethiopia adopted the National Human Rights Action Plan (NHRAP) in 2013 as part of the GTP to improve the promotion and protection of fundamental human and democratic rights in “a comprehensive and structural manner”. Developed by governmental and non-governmental organizations and through participation of the public the NHRAP strives to advance the respect, protection and fulfillment of human and democratic rights guaranteed by the Constitution. However, reports from human rights organizations (Human Rights Watch (HRW); Amnesty International), policy think tanks (The Oakland Institute), NGOs (Anywaa Survival Organisation-ASO) and the US State Department Country Report on Human Rights Practices bring forward information that highlight serious breaches of the NHRAP as well as international conventions of human rights by Ethiopia.

1 Population

1.1 Overview

Ethiopia is home to approximately 96.6 million people, which makes it the second most populous country in Africa only after Nigeria. With an annual growth rate of 2.89 per cent (July 2014 est.) Ethiopia is projected by the UN to be among the world's most populous countries by 2050^{1,2}. The population is largely rural and only about 15 per cent of the population is urbanized, making Ethiopia one of the least urbanized countries in the world³.

The country has a history of receiving people displaced by cross-border movements due to droughts, conflicts, political events and civil war in neighboring countries including Eritrea, Somalia, South Sudan and Sudan. The Government of Ethiopia maintains an open-door-policy and has continuously allowed humanitarian access and protection to those seeking refuge on its territory. In January 2014, 433,936 refugees listed in Ethiopia and the number is projected to rise to over 500,000 refugees by 2015. Eritrean refugees, including unaccompanied minors who continue to arrive in increasing numbers, tend to move on from Ethiopia to a third country.

The refugees are allocated in 18 different camps located near the borders of their country of origin. Though there are no provisions under Ethiopia's law for local integration of refugees, it supports an out-of-camp scheme, allowing refugees to live outside camps and engage in informal activities such as livelihood opportunities. The main beneficiaries thus far have been students absorbed into universities, whose fees are paid for by the Government (75 per cent) and UNHCR (25 per cent). Environmental degradation around camps, the fragile ecosystem and scarce resources have led

to tensions between host communities and refugees in some locations. UNHCR is working with partners and the Government to address and mitigate the situation within the confines of limited resources.

The UNHCR provide protection and assistance to over 400,000 people in Ethiopia who are seeking refuge from insecurity, oppression or famine in the neighboring countries. They will continue to provide life-saving assistance in the 18 existing camps and four new camps opened in 2014, while enhancing protection by improving registration, basic services, response to sexual and gender-based violence and child protection strategies. While emergency response preparedness will be strengthened, UNHCR will move to stabilizing the operations including focusing on fostering resilience through livelihood activities. Resettlement remains the most viable durable solution⁴.

As with many African nations the age structure of the population in Ethiopia is skewed towards the young (Figure 1), a distribution often reflected in a country with high fertility, high mortality, low life expectancy and high population growth. Gender distribution is even over all age groups with a slight deviation in favor of women over men at 65 years and over. The average life expectancy at birth is 58 and 63 years for men and women respectively¹.

1.2 Language

The official national language is Amharic and is spoken by approximately 29.3 per cent of the population^{1,5}. Several provinces have their own working language such as Oromo (34.4 per cent), Somali (6.2 per cent), Tigrigna (Tigrinya; 5.9 per cent), Sidamo (4

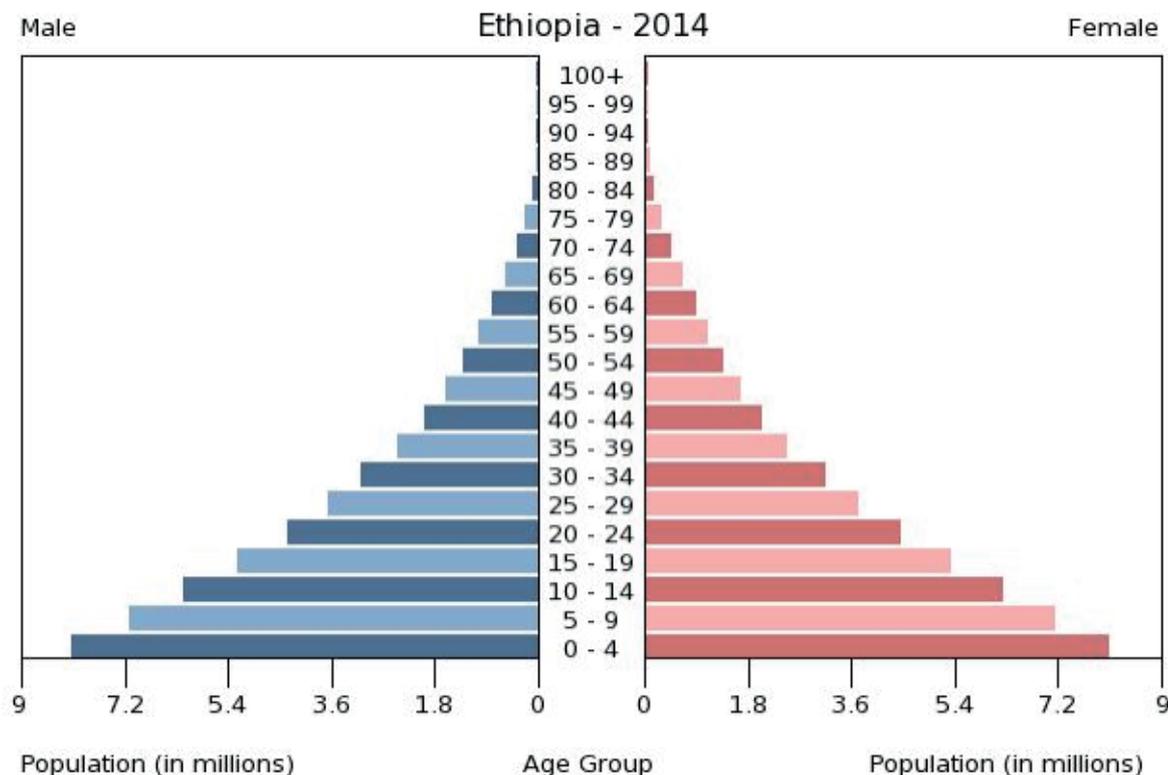


Figure 1. Population pyramid over Ethiopia population in 2014¹.

per cent), Wolaytta (2.2 per cent), Gurage (2 per cent) and Afar (1.7 per cent)^{1,5}. English is the most widely used foreign language⁶. As English is the medium of instruction in secondary school, junior colleges, and universities, language skills are quite sufficient for discussions on detailed topics pertaining to water and textile industry with educated Ethiopians.

1.3 Ethnicity

There are approximately 80 different ethnic groups in Ethiopia⁶. Two groups dominate: the Oromo (34.4 per cent) and Amhara (Amara; 27 per cent); other significant groups includes Somali (Somalie; 6.2 per cent), Tigray (6.1 per cent), Sidama (4 per cent), Gurage (2.5 per cent) and Welaita (2.3 per cent)¹.

1.4 Religion

Most Ethiopians adhere to Christianity or Islam with the dominant branches being Ethiopian Orthodox 43.5 per cent, Muslim 33.9 per cent and Protestant 18.5 per cent¹. The different religions are represented more or less over the whole country but have certain geographic strongholds. Ethiopian Orthodox areas include the Amhara and Tigray regions and also predominate the religious persuasion in Addis Ababa. Muslim areas include Afar, Somali, Dire Dawa, Region 17 and Harari whilst Protestants dominate the religious sphere in Gambella and Southern Nations, Nationalities, and People’s Region (SNNPR) (Figure 2)⁷.

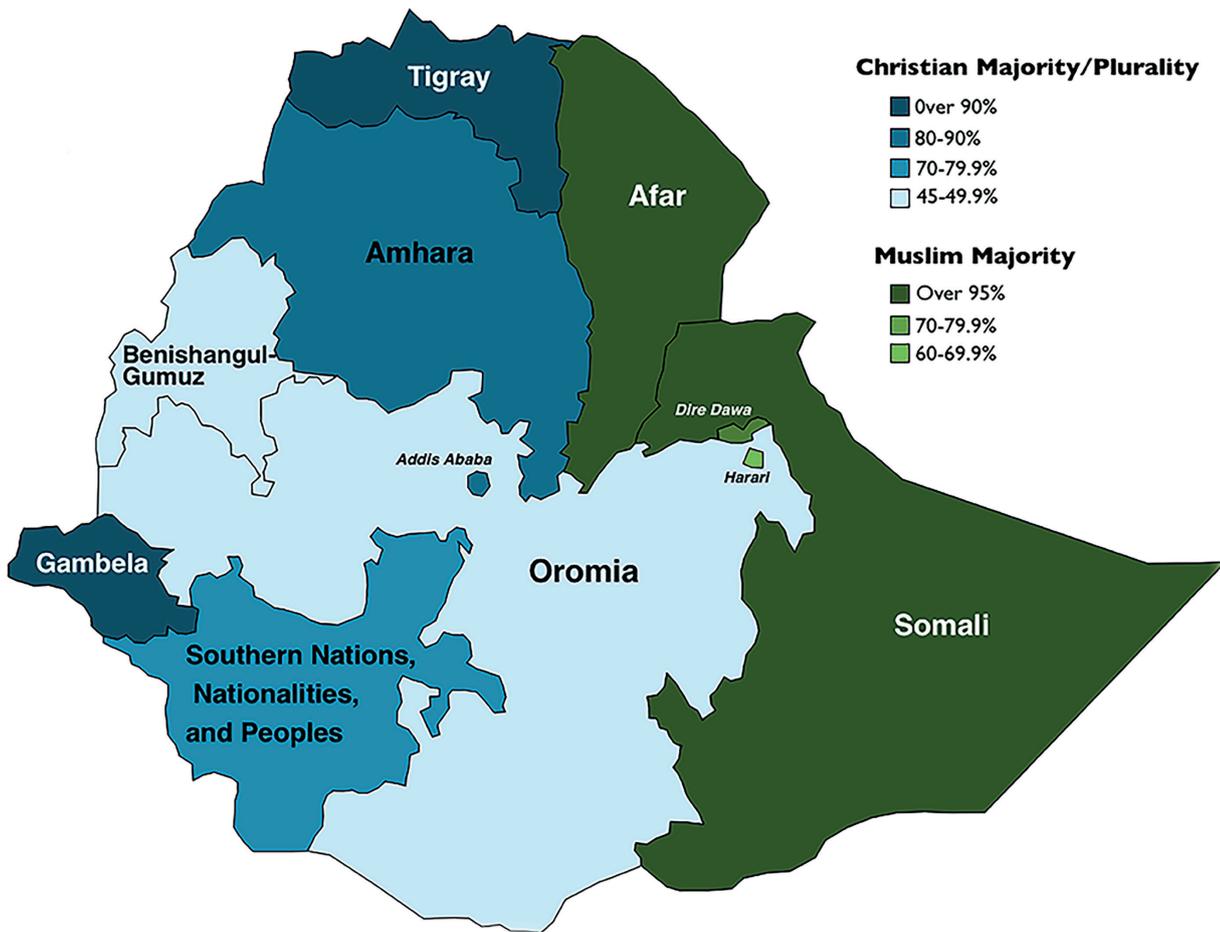


Figure 2. Relative distribution of religions in Ethiopia ⁸.

2 Education

A 20-year education reform was embarked upon in 1997 articulated in four comprehensive Education Sector Development Programs (ESDPs)⁹ (see Table 1 for the educational system in Ethiopia). According to the World Bank the program is “noteworthy for its comprehensive and coherent economic analysis”¹⁰. The reform’s long term objective is to achieve universal basic education by 2015⁹.

2.1 Primary and secondary education

Ethiopia has an adult literacy rate population wide of 39 per cent. The youth (15-24 years) display higher levels of literacy, however variable between males (63 per cent) and females (47 per cent)¹¹. The number of children that enroll into primary school is high with male (90 per cent) and female (84 per cent) students signing up. However, the net levels of attending are merely 66 per cent and 64 per cent respectively. The numbers of children completing the full eight years of primary education varies quite substantially between UNESCO’s admin data (41 per cent) and UNESCO’s survey data (84 per cent). UNESCO publishes their statistics in yearly intervals and suggests that the discrepancy between admin and survey data partially depends on from what year in the interval 2008-2012 the numbers were available. Past the primary education level the gender difference at the secondary level evens out. However, only 16 per cent of the young continue to this level of education. The cost of secondary schooling is often higher than for primary education and more difficult for families to afford; secondary school tend to be farther from home, often requiring transportation; and the pressure to earn an income keeps many adolescents out of the classroom. As a result, secondary education is still reserved for a privileged fraction of the population¹¹.

2.2 Higher education

Higher education has become more readily available, at least the numbers of higher education institutions. The past decade has shown a surge from two public universities to 22 with another ten to open soon. The private sector has become a major player with 327 institutions in 2010 and account for 25 per cent of all students enrolled^{12,13}. The rapid expansion has incurred some resource problems especially for the public universities. It is estimated that about

70 per cent of faculty in the new public universities are qualified only to bachelor level degree. The government tries to find ways to counter-act these problems. For example, the principal research university, Addis Ababa University, has started to collaborate with foreign universities on their masters and doctoral programs as a way to up-grade academic staff in the public sector and prevent brain drain to other countries¹².

Ethiopia appointed the Higher Education Strategy Center (HESC) in 2003 to advise on policy and strategy within the Higher Education sector¹⁴. The areas of focus for the center includes strengthening and improving research, planning and publications capacity and support Higher Education Institutions with management capacity and physical resources¹⁵.

2.3 Areas of Risk and Conflict

The rapid increase of educated young Ethiopians is somewhat of a two-edged sword. Being a key component for the government’s industrial strategy to become a middle-income country by 2025, it is countered by the surge of educated young Ethiopian’s now entering unemployment after graduation. The supply is overwhelming the demand. Frustrated students have entered in violent clashes with the police¹⁷ and the situation has been described as a ticking bomb.

Table 1. Educational system of Ethiopia¹⁶.

	Primary	First Cycle Secondary	Second Secondary	Cycle	Technical	Vocational	University
Type of School	Primary School	General Secondary School	Preparatory Secondary School		Technical School and Junior College	Vocational School and Junior College	Universities, University Colleges and specialized institutions
Length of program (years)	8	2	2		3	3	3-9
Age levels	7-14	15-16	17-18		17-19	17-19	
Certificate/Diploma		Ethiopian General School Leaving Certificate Examination (EGSLCE)	Ethiopian Higher Education Entrance Examination (EHEEE)				Bachelor, Master, PhD

3 Geography

3.1 General

Ethiopia is located on the Horn of Africa. 50 per cent of the Africa's mountains are found in Ethiopia, which sometimes is referred to as The Roof of Africa¹⁸. The country is landlocked and borders to Eritrea in the north, Djibouti in the northeast, Somalia in the east–southeast, Kenya in the south, South Sudan in the southwest and Sudan in the northwest (Figure 3).

The country measures about 1.1 million square kilometres and is defined by a high plateau with the central mountain range clearly demarcated by abrupt rise from the surrounding plains or ocean outside of Eritrea's coastline and divided by the Great Rift Valley (Main Ethiopian Rift)¹. This break in the plateau at about 9°N make way for the Awash River floating eastward into the Awash Valley¹⁹ and split the highlands into a western and southeastern portion¹⁸.

3.2 Topography

Extensive highlands and undulating plateaus and deep river gorges dominate the Ethiopian topography. The Great Rift Valley divides the tectonically uplifted basaltic dome into the central/western and southern/eastern highlands. Altitudes range from 110 metres below at the sea level in the Danakil Depression, part of the Ethiopian Rift Valley, to 4,533 metres above sea level (m.a.s.l.) of Ras Dejen in the western highlands Semien Mountains northeast of Lake Tana²⁰. Several rivers cut through the central/western

plateau flowing down from the mountains down to the lowlands including the mighty Blue Nile¹⁸.

The southern/eastern highlands consist predominately of volcanic rock. The western rim contains the highest mountains, including Mount Batu (4,307 m.a.s.l.), which stretch to the southeastern lowlands of the Somali plains. The major rivers include Wabi-Shebele and Ganale together with their tributaries divide the southeastern highlands^{18,19}.

3.3 Climate

The variable country relief in Ethiopia includes diverse ecological shifts with the deserts along the eastern borders to the tropical forests in the south to the Afromontane regions of the highlands. According to the Köppen-Geiger climate classification system, Ethiopia has ten climate types ranging from Hot Arid to Cool Highland Climate. Temperatures vary with altitude, humidity and wind factors where a mean minimum during the coldest season at the highest altitudes reach 6°C, while the mean seasonal maximum at the lowlands can reach 48°C^{18,21}.



Figure 3. Physical map over Ethiopia with surrounding countries²².

4 Hydrology

4.1 General

Ethiopia is a country of rivers of which more than 90 per cent traverse the national borders²⁰. The best known is the Blue Nile, or Abbay River, not only vital for Ethiopia and the surrounding countries for its water, the river and its tributaries also carry nutritious silt during the rainy seasons that help fertilize the arid countryside it runs through, including Sudan and Egypt^{18,19}. The highlands are the origin of many major rivers flowing through northeastern Africa to the Mediterranean and the Indian Ocean, which has led geographers to refer to Ethiopia as “The Water Tower of northeast Africa”¹⁸. Harboring several lakes together with significant groundwater resources and seasonal rainfall periods Ethiopia appears to be endowed with generous water resources. However, the variable geography and seasonal rainfall patterns induce a hydrological variability, which, in combination with poorly protected watersheds and almost no investment in water storage, leads to a country often afflicted with droughts and floods²³. While Ethiopia is relatively water sufficient when using hydrological stress criteria, it is classified as “water scarce” according to the social water stress index (SWSI)²⁰. Transboundary downstream effects have, historically, depended more on rainfall variation than on human activities but future scenarios will more be a result of infrastructure development such as hydropower and irrigation schemes. Anthropogenic activities will be the major influence²⁴. This will be especially prominent, and potentially ecologically devastating, downstream of the Gibe III Dam on

the Omo River and development of hydropower and irrigation schemes around Lake Tana, the origin of Abbay River (Blue Nile).

4.2 River basins and rivers

There are 12 river basins in Ethiopia (Table 2 and Figure 4) with an annual runoff volume of 122 billion m³ of water and an estimated 2.6 – 6.5 billion m³ of groundwater potential²⁵, the latter figure can be compared to the groundwater abstraction by Turkey (a country that is 3/4 in size of Ethiopia) in 2011 of 13,56 billion m³, and Sweden’s 0.3 billion m³²⁶. Of these 12 basins, 3 are dry basins with little flow of the drainage systems. All but two basins, Rift Valley and Afar-Denakil, are drained by rivers that flow across international boundaries or into shared lakes: Omo River into Lake Turkana, shared with Kenya, and Awash River into Lake Abbe, shared with Djibouti.

The Ethiopian highlands contribute to three major rivers systems including the Nile, Awash, and Omo²³. The northern and central highlands drain westward into Ethiopia’s largest river system, the Abbay (Abay or Blue Nile), into Tekeze River, a tributary of the main Nile, and into the Baro River, a tributary of the White Nile²³. The Abbay river system contributes with about 85 per cent of the Nile’s water and account for 83 per cent of the total runoff from all catchments^{18,19}. However, their basins cover only 38 per cent of the total area of the country²⁰. The eastern highlands further source the Awash River with its water dispersing into Lake Abbe’s saline



Figure 4. River basin map of Ethiopia²⁵.

Table 2. River basins of Ethiopia with estimates of their runoff-capacity, irrigation and hydropower potential and estimated groundwater volume25.

River Basin	Area (Km ²)	Runoff (Bm ³)	Potential Irrigable Land (ha)	Gross Hydro-electric potential Gwh/year	Estimated ground water potential (Bm ³)
Tekeze	82,350 ***	8.2	83,368	5,980	0.20
Abbay	199,812	54.8	815,581	78,820	1.80
Baro-Akobo	75,912	23.6	1,019,523	13,765	0.28
					0.13Recharge/year
Omo-Ghibe	79,000	16.6	67,928	36,560	0.42
					(.10)Rech /yr
Rift Valley	52,739	5.6	139,300 *	800	0.10
Mereb	5,900 ***	0.65	67,560	-	0.05
Afar /Denakil	74,002 ****	0.86	158,776	-	-
Awash	112,696	4.9	134,121	4,470	0.14
Aysha	2,223 ****	-	-	-	-
Ogaden	77,121 ****	-	-	-	-
Wabi-Shebelle*	202,697 **	3.16	237,905	5,440	0.07
Genale-Dawa	171,042 **	5.88	1,074,720	9,270	0.14
Total	1,135,494	124.25	3,798,782	155,102	2.86

Source: Integrated River Basin Master Plan Studies, carried out during 1997-2007 (MoWR 1996, 1997, 1998a, 1998b) Irrigable land from the IWMI irrigation database (based on – MoWR data).

- * Figures need to be updated from recent studies.
- ** Small-scale is not included in the database, medium and large-scale is 49,700 ha.
- *** Indicates the Ethiopian part of the basin area. The total basin area is 23, 932 ha.
- **** Reconnaissance study



Figure 5. Map with the major rivers and lakes of Ethiopia.

lacustrine district along the borders of Djibouti¹⁹. The southern sections of the highland feed the Omo River, which drains in the semi-arid lowlands of the Lower Omo and finally terminates in Kenya's Lake Turkana²⁷. From the southeastern highlands the Wabi-Shebelle (or Shebele) and the Gemele/Jubba starts their descent towards the arid plains of Ethiopia and Somalia. The Wabi-Shebelle connects with the Jubba River near the exit to the Indian Ocean (Figure 5)¹⁹.

4.3 Lakes

Of the more than 100 lakes in Ethiopia most are small (most of them crater lakes or shallow saline lakes in the lowland) but 11 count as major fresh and nine saline lakes, four crater lakes and over 12 major swamps or wetlands^{20,25}. Nearly all of the lakes are situated in internal basins, with important implications for their hydrology and survivability as pressure on water resources increases²⁰.

The largest lake in Ethiopia, and also the source of the Blue Nile, is Lake Tana situated in the Amhara Region in the northwestern highlands²⁸. The lake was targeted for irrigation development and hydropower production, which included the development plan Tana-Beles growth pole that was expected to stimulate integrated water resources development programs as part of the Nile Basin Initiative. The plan included a basin water transfer scheme from Lake Tana to the Beles River for a run-of-the-river hydroelectric power plant and development of storage dams on tributaries of the lake²⁰. The Beles River is a tributary to the Blue Nile and, hence, developments of dams affect downstream countries, and reactions from Egypt against the Tana-Beles were strong²⁹.

Shared with Kenya and fed with 90 per cent of its freshwater and nutrients from the Omo River, Lake Turkana has its northern end crossing into Ethiopia. Lake Turkana is considered to be the world's largest desert lake^{19,27}. An epithet threatened by the construction of the Gibe III dam on the Omo River that will transform the Lower Omo and Lake Turkana Basin. The result induced by the dam construction is considered to be another Aral Sea in the making. The potential 20-meter (or more) drop of the water table (the lake's average depth is 30 metres) inflicted by the dam will seriously reduce the biomass and will affect the socioeconomic structure negatively by reducing or eliminating the dependent fisheries. In the long run, Lake Turkana could be reduced into a northern lake fed by the Omo, and a southern lake fed by the Kerio and Turkwel rivers²⁷.

Most of the lakes excluding Ziway, Tana, Langano, Abbaya, and Chomo have no surface-water outlets. The Shala and Abiyata lakes have high concentrations of chemicals including soda ash²⁵. Increasing soda ash extraction from Lake Abiyata and ongoing large-scale irrigation development around Lake Ziway catchments are significantly reducing their volumes²⁰.

Due to large-scale irrigation development in the Awash Valley, the salt lake Abbe's (located on the Ethiopia-Djibouti border) water levels have declined with two thirds since the 1930's²⁰. With an inflow from the Akaki River that intersects the urban region of Addis Ababa, the small lake/reservoir Lake Aba-Samuel just south of the city is one of the most polluted lakes in the country. Located just south of the leather industry hub of Mojo, and fed by the Mojo River, Lake Koka is facing similar problems of untreated wastewater polluting its waters.

4.4 Groundwater

Ethiopia sits on large volumes of groundwater enough to sup-

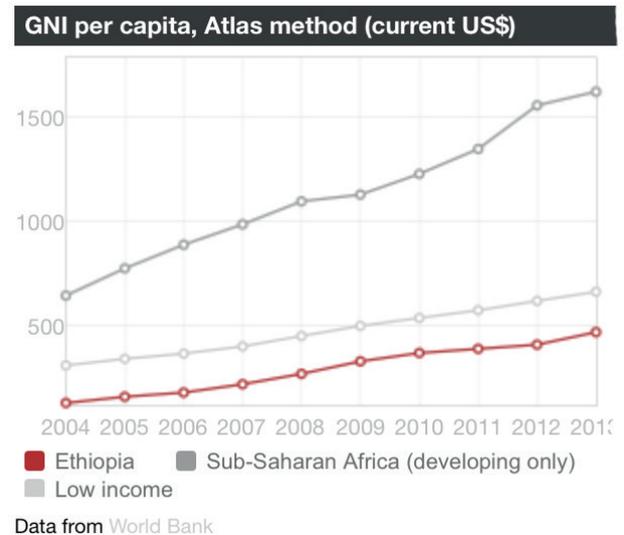


Figure 6. Ethiopia's GNI per capita development 2004-2012 compared to Sub-Saharan Africa's average and Low Income Countries Average⁴¹.

port current and estimated future use both for population and industry. There are some concerns, however, that the uncontrolled urbanization and rapidly expanding industry in and around Addis Ababa, including large groundwater irrigation schemes, could lead to overuse of the groundwater resources. The estimated amount of groundwater annually rechargeable has been estimated at 2.8 billion m³ nationwide²⁵. New studies indicate this is a significant underestimation of groundwater resources, and the two best estimates now puts groundwater potential at 12-30 billion m³ or 13.2 billion m³ water infiltrating into the groundwater system of which 50 per cent could be extractable, meaning 7.6 billion m³ or 271 per cent more than previously thought.

Until recently, the use of groundwater beyond drinking water was limited in Ethiopia and a regulatory framework controlling its use has therefore been absent. The recent surge towards more intense use of groundwater for irrigation and industry means that the development of regulations has become a more pressing issue³⁰. Generally, as the groundwater age and depth increases, the risk of overexploitation increases as the recharge of the groundwater resource may be slow, potentially deplete nonrenewable groundwater resources³¹. High abstraction rates lead to severely lowered water tables and strongly increased hydraulic gradients and the risk of both saline water intrusion and pollution from the surface increases³². Salinity problems are recognized throughout the Lower Awash Valley's groundwater, which also suffer from high levels of fluoride. The developments of large-scale irrigation projects without functional drainage system and appropriate water management practices have led to gradual rise of saline groundwater also in the Middle Awash region. State farms control 80 per cent of irrigated farming in the Awash Basin of which 92 per cent is used for cotton farming³³.

The lack of systematic monitoring and central guidelines as well as uncertainty in organizational responsibility is evident in the scanty data on available groundwater resources³⁴. There are outlined plans in the One WASH National Program from 2013 to develop a National Groundwater Database, to be coordinated by MoWIE, Japan International Cooperation Agency (JICA), and UNESCO,

that indicates towards a will to improve the situation. The establishment of the Ethiopian Association of Hydrologists in 2006 furthers this notion. Some of the objectives of the association are³⁵:

- i. To create a platform of discussion, information and collaboration for groundwater professionals,
- ii. To serve the purpose of using groundwater for development,
- iii. To assist the expansion of groundwater education, study and research in Ethiopia.

4.5 Rainfall

There are long heavy summer rains, called Keremt, and short moderate rainfall in spring, autumn and winter, called Belg. The levels of rainfall vary substantially with altitude. In general, the mountainous regions get heavy rain and up to 1,500-2,000 mm annually whilst the lowlands get light rain with 400-700 mm or less. Almost all parts of Ethiopia get rain from the southwest equatorial westerlies and southerly winds from the Indian Ocean. The mountains in the southwest take the bulk of rainfall and create a rain shadow over the eastern escarpments, northwestern plateau and nearby lowlands, thus making the rainfall more scant. In the South and Southeast the rainfall is highly infrequent and regions are classified after a 4-leveled drought-prone zone categorization¹⁸. Rainwater harvesting (RWH) in Ethiopia dates back to the pre-Axumite period in the 6th century B.C. Some of the indigenous water harvesting technologies and practices surrounding irrigation and domestic water use such as stone and earth dams, rock catchments, terraces, soil bunds, stone-lined canal systems, and storage tanks have prevailed over the years. The Ministry of Agriculture and Rural Development, and NGOs have put their survival in jeopardy in recent years because of the prioritization of modern schemes. Technologies prioritized over the traditional methods include

surface run-off-fed ponds, tanks, and roof water harvesting. A study made by UNEP estimated that RWH could potentially meet the domestic and agricultural needs of about 320 million people in Ethiopia, after allowing adequate river runoff for environmental needs. Currently, over 90 per cent of the food supply comes from rain fed smallholder agriculture^{20,36}. Many households use RWH ponds to meet some of their domestic water needs. The needs for RWH are the highest in the drought-prone northeastern, eastern, and southern lowlands of the Ethiopian Rift.

4.6 Wetlands

No comprehensive inventory of the Ethiopian wetlands have been made but it is estimated that there are 77 wetlands (including lakes) covering an area about 13,700 km², or 1.14 per cent of the country's area. In spite of their functions as flood and erosion control, water purifier, and being one of the most productive ecosystems in the world, little is known about the impact of agriculture and urban development on Ethiopia's wetlands. Only one wetland area, the Omo River Delta in Lake Turkana, has increased in recent years (by more than 500 km²), due to silt inflow from the Omo River and decreasing lake levels, but its future is threatened by the Gibe III, IV and V dam constructions. There is no national wetland policy and none of the country's wetlands have a conservation management plan²⁰.

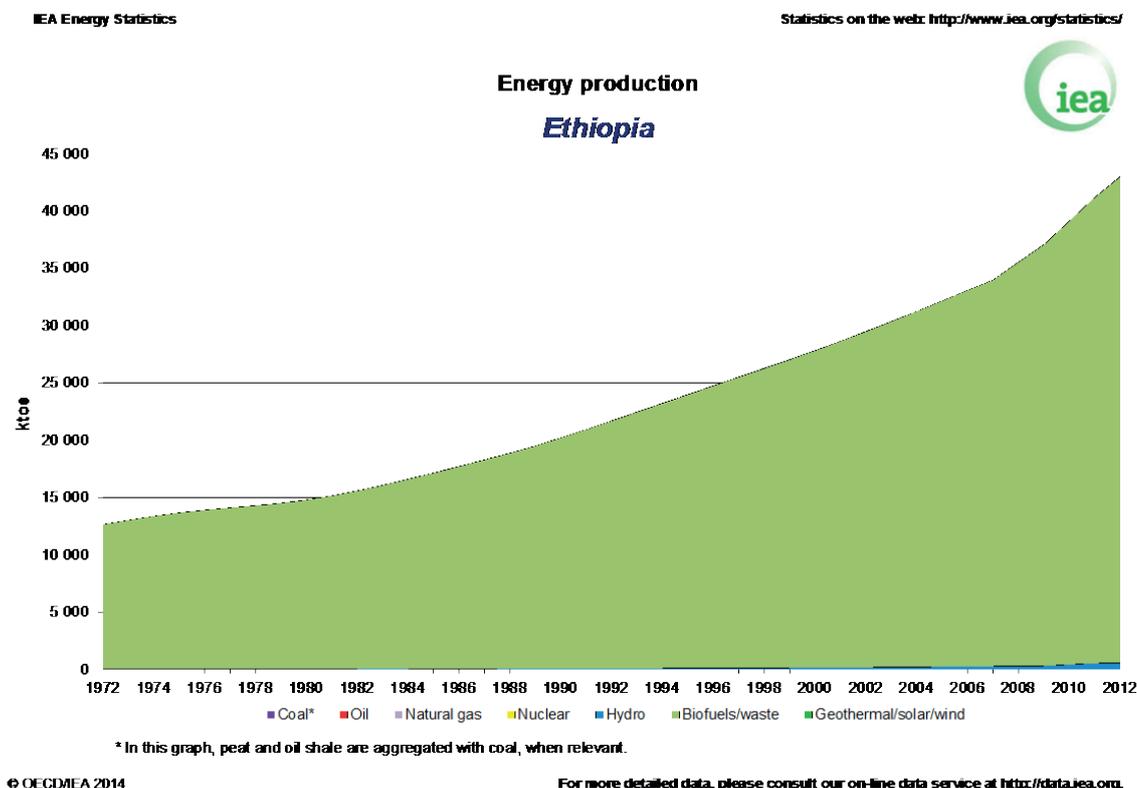


Figure 7. Sources of energy production in Ethiopia between 1972-2012⁴⁸.

5 Economic Development

5.1 Overview

Ethiopia is one of the world's poorest countries. The country's per capita income of \$470 (GNI per capita, 2013) is substantially lower than the regional average of \$1,624 (Figure 6)³⁷. With the Growth and Transformation Plan (GTP) (2010/11 – 2014/15) in place the target of an annual 11 per cent increase in GDP per capita, the economic growth is set on reaching middle income status by 2020–2023³⁸. Approximately 29.6 per cent of Ethiopia's population in 2011 lived at or under the national poverty level³⁹. Following Transparency International's Corruption Perception Index (2013) Ethiopia ranks at 111 of 177⁴⁰.

5.2 Economic growth

The economy has experienced strong and broad based growth over the past decade, averaging 10.9 per cent per year in 2003/04 – 2012/13 compared to the regional average of 5 per cent³⁷. In 2012 Ethiopia was the twelfth fastest growing country in the world⁴². Before 2002, the Ethiopian economy was severely strained due to the Eritrean-Ethiopian war of 1998-2000 and a series of recurrent drought conditions. The tables started to turn when Ethiopia was qualified for debt relief from the Highly Indebted Poor Countries (HIPC) initiative in 2001 and when the International Monetary Fund (IMF) voted to absolve all of Ethiopia's debt in 2005¹⁸.

The economic growth has led to positive trends in reducing poverty in both urban and rural areas. In 2004-2005, 38.7 per cent were living in extreme poverty, five years later this number had gone down to 30.6 per cent. The goal of the GTP is to reduce extreme poverty down to 22.2 per cent by 2014-2015³⁷. Extreme poverty widely refers to earnings below the international poverty line of \$1.25/day. The money metric measures of poverty have been criticized for over-simplifying of a more complex and multidimensional problem. The Multidimensional Poverty Index (MPI) complements monetary measures of poverty by considering overlapping deprivations suffered by people at the same time, such as water access, sanitation, child mortality, malnutrition and years of schooling. When comparing the two measurements of extreme poverty, the general picture of the humanitarian situation of people in poverty in Ethiopia during the year 2011 changes quite dramatically⁴³:

- Earning under \$1.25/day – 30.7 per cent
- According to the MPI index – 87.3 per cent

Ethiopia is one of the first countries in Africa to develop a green growth strategy⁴⁴. The vision and strategy for a green economy

is articulated in its Climate Resilient Green Economy (CRGE) vision document endorsed by the parliament at the end of 2011. Developed under the leadership by the Prime Minister's Office and coordinated by the Environmental Protection Agency (FEPA) the CRGE outlines the vision, strategy, financing, and institutional arrangements Ethiopia will pursue to attain the triple goals of economic growth, net-zero emissions, and climate resilience⁴⁴. The overall responsibility for financing, further development and implementation of the CRGE is the Ministry of Finance and Economic Development (MoFED) responsibility⁴⁵.

5.3 Economic base

Ethiopia's economy is largely based on agriculture with 80 per cent of employment accounted for by the agricultural sector. However, there is a push to diversify into manufacturing, textiles, and energy generation. The GTP-target is to increase the contribution to the national economy from the industrial sector, particularly with focus on increased production in sugar, textile, leather products and cement³⁷. The main commodity that keeps the Ethiopian economy going is coffee^{1,18}. Over the last few decades, low coffee prices in the international market have forced many farmers to look for alternatives to supplement their falling income. Many have thus switched to the production of chat (or qat), a stimulant widely used in the Horn of Africa and the Near East, pulses, oilseeds, and flowers¹⁸. The banking, insurance, telecommunications and micro-credit industries are restricted to domestic investors but Ethiopia has been able to attract significant foreign investment in textiles, leather, commercial agriculture and manufacturing¹.

5.4 Future

The budget for the fiscal year 2014/15 is allocated towards recurrent expenditures, capital expenditures, support regional governments, and to come closer to reach the Millennium Development Goals (MDGs). The highest priority is to speed up the on-going social and economic development including activities undertaken by the GTP. A total of 68.4 per cent of the total budget is aimed at road construction, education, health services, improving agricultural productivity, supplying drinkable water, and expansion of rural electrification⁴⁶. The focus on agriculture is in line with the suggestion from World Bank experts who recommend Ethiopia to improve the quality and further diversifying exports primarily of agricultural commodities to boost the economy⁴⁷. The large share of the budget devoted to pro-poor programs strengthened with large-scale support from donors delivers a strong statement towards the challenges reaching the MDG. However, if the extensive donor support is extended towards the MDG, it will require Ethiopia to improve governance, empower local authorities, and become more accountable for its citizens³⁷.

Table 3. Access to water supply and sanitation services in Ethiopia (2012)¹.

	Urban	Rural	Total
Drinking Water Source	96.8%	42.1%	51.5%
Sanitation facility access	27.4%	22.8%	23.6%

6 Energy

In recent years, Ethiopia's total energy production from electricity (including diesel) was only about 5 per cent. The remaining 95 per cent came from traditional fuel resources such as wood, dung, crop residues, and human and animal power (Figure 7). The power production was, compared to regional standards, very low.

It is estimated that only 1 per cent of the hydropower potential has been developed in Ethiopia. This is about to change with the completion of a series of large dams including the Grand Ethiopian Renaissance Dam, Tana-Beles, Tekeze and the Gibe projects (however, not without potential serious negative environmental impacts; see last paragraph of section 12.4). With the expanding hydropower development the national energy production is expected to sharply increase and it will constitute at least 96 per cent of the country's electricity supply²⁰.

The development of large hydropower projects has been questioned as a detriment to developing alternative energy sources. Ethiopia has considerable geothermal, wind, and solar potential.

The benefit from renewable energy sources is that they can serve as effective technical alternatives that may be deployed in widely dispersed rural communities. Ethiopia began to develop their geothermal energy resources in 1969 and has the potential to meet all their energy needs through geothermal sources. However, by 2005 Ethiopia obtained only 1.6 per cent of its electricity from this resource, compared to Kenya's 15 per cent. High cost and risk of exploratory drilling and institutional, regulator, and capacity barriers have impeded the development of this energy source. Solar photovoltaic systems for cooking were introduced in Ethiopia 2008. Where implemented the decrease in the use of fuel wood and reduction of indoor pollution is evident, inferring a positive environmental and public health trend. Other positive impacts have been solar systems for power lightning, water pumps, radios and the provision of warm water²⁰.

Box 1: Administrative organization for water resource management in Ethiopia.

1. Federal level

- i. Ministry of Water, Irrigation and Energy (MoWIE)

2. Regional level

- i. Regional Water Bureaus (RWBs)

3. Sub-regional Institutions

- i. Woreda Water Desk (WWD)
- ii. Town Water and Sewerage Board (TWSB)
- iii. Addis Ababa Water Supply and Sewerage Authority (AAWSA)

4. Supra-regional institution

- i. Awash Basin High Council Authority (AwBA)



7 Water and sanitation

7.1 Overview

Access to water and sanitation services in Ethiopia has improved over the past two decades (Table 3 for 2012's figures)⁴⁹. However, the improvement is only "On track" following the Millennium Development Goals (MDG) with regard to water, and is considered "Not on track" for sanitation. The pace of progress is also slower than the Sub-Saharan average^{49,50}. Ethiopia's levels of service provision for water supply and sanitation are amongst the lowest in the world⁵¹. Another big problem is that existing water supply schemes often are not functional especially in the rural regions. Common attributes responsible for this problem are lack of spare part outlets, poor maintenance capacity, and insufficient post-construction support from regional bureaus and woreda offices (local government offices)⁵².

7.2 Programs

The Ministry of Water, Irrigation and Energy (MoWIE; established in 2010) has introduced policies, legislation and strategies such as National Water Resource Management Policy (1998), Water Sector Strategy (2000), Water Sector Development Program (2002), and the Water and Sanitation Access Plan (UAP) (2005). MoWIE has also prepared guidelines for gender mainstreaming in the water and energy sectors (2012)³⁵.

MoWIE is the highest instance in Ethiopia setting the agenda for the country's water resource management and energy development. Following the ambitious target of the Growth and Transformation Plan (GTP) for the period 2010 to 2015 Ethiopia's government through the MoWIE set out to provide^{38,52}:

- 98 per cent of the population with improved access to safe water
- 100 per cent with basic sanitation
- 84 per cent coverage for improved hygiene and sanitation
- 77 per cent achievement of proper hand washing
- 77 per cent safe water handling and use

The program for implementing the targets was set in a (World Bank financed project) Memorandum of Understanding (MoU) in November 2012 and signed by the four ministries involved in the sectors:

- Ministry of Education (MoE)
- Ministry of Finance and Economic Development (MoFED)
- Ministry of Health (MoH)
- Ministry of Water, Irrigation and Energy (MoWIE)

The MoU was later integrated with the One Water, Sanitation and Hygiene National Program (OWNP), which was complimented by the WaSH Implementation Framework (WIF) and signed by the same four ministries in March 2013. OWNP is intended to operationalize the MoU including WIF². In February 2014 the Ethiopian government together with the World Bank planned for The Water Supply, Sanitation and Hygiene Project (WaSHP) to be aligned with OWNP. The intended implementation period of WaSHP is March 2014 – June 2019 and the program is expected to increase the chances to meet with the lofty GTP targets⁵².

The WaSHP is intended as a second phase to the recently completed Water Supply and Sanitation Project (WSSP). The WSSP

improved the water supply and sanitation services of more than 5 million people, 3.7 million in rural areas and 1.33 million in urban areas. The success of WSSP was tribute to its unique capacity building arrangement of 'learning by doing' through, what is described as "a tripartite arrangement for technical assistance, and a stepped and gradual approach for rural and urban water supply and sanitation"⁵².

The central agency for measuring the progress of the different WaSH projects implemented is the National WaSH Inventory (NWI). At the establishment of NWI there were some quite substantial statistical discrepancies with other statistics collated by other programs. But by the official release of NWI's findings in 2013⁵³ the statistics were consistent with the Joint Monitoring Program (JMP), the Welfare Monitoring Survey (WMS) and the Demographic and Health Survey (DHS)⁵².

7.3 Areas of Risks

The current WaSH and WaSHP plans to alleviate and improve the water and sanitation situation in Ethiopia is not without implementation risks. Inadequate coordination between WaSH agencies at different levels, managing monitoring and evaluation under a decentralized setting, and programme and donor related risks Pending finalization of ongoing dialogue on implementation modalities for the broader OWNP, acceptable to all donors, are some substantial risks highlighted. Lessons learned from the predecessor Water Supply and Sanitation Project (WSSP) is taken into consideration to mitigate and limit the chance of projected potential implementation failure. For instance, the project will finance capacity building interventions at each level to support program implementation (financial management, procurement, contract management and safeguards) and put in place improved systems for monitoring and evaluation⁵².

7.4 Textile industry

The textile industry depends extensively on groundwater use and one important reason for this might be the lack of regulatory framework of its use (the reason for this is described in 4.4 Groundwater)⁵⁴. Once a permit to extract groundwater is issued there are no limits to how much water that can be extracted. However, the absence of a permanent network for measuring or estimating the quantity and quality of groundwater abstraction and changes in resource conditions⁵⁵, could provide future problems for the industry.

Since there is no enforcement on illegal disposal of effluent water, the extra cost of implementing safe waste disposal is, in general, of no interest to industries, in spite of documented negative downstream effects⁵⁶⁻⁵⁸. Together with the food industry, the textile industry tops the list of primary sources of water polluters in Ethiopia⁵⁹.

8 Governance structure and regulations

8.1 Overview

Ethiopia was a highly centralized state until the power shift from the Derg regime to Ethiopian People's Revolutionary Democratic Front (EPRDF) in 1991. The EPRDF follows a Revolutionary Democracy ideology, not all that different from the Marxism-Leninism it replaced in the early 1990's. Imperialism, or free market capitalist states, is considered as its main adversary. Liberal democracy is considered "ill-fit and unsustainable", but much of the front's economic policies are based on the tacit acknowledgement of the need of some liberalism in the economic field⁶⁰. Once in power, the EPRDF moved Ethiopia towards a decentralized way of governing and is now a federal state governed by a democratic government system with nine autonomous states ('regions') and two chartered cities⁵².

The governance structure is further decentralized into 68 zones, 550 woredas/districts, kebeles (village level), and the community levels. The lower-level administrative units do not exist for the two chartered cities Dire Dawa and Addis Ababa^{61,62}. The member states of the federation have legislative, executive and judicial powers over matters falling under the State jurisdiction, including enacting their own State Constitutions. All powers not expressly given to the Federal Government alone, or concurrently to the Federal and State Governments, are reserved to the States⁶³.

Following the death of Prime Minister Meles Zenawi in August 2012 Ethiopia appointed the successor Hailemariam Dessalegn to the position of leading the ruling party EPRDF. This marked a historical moment in the country's politics. For the first time in its modern history, Ethiopia undertook a peaceful and constitutional transition of power³⁷. As a parliamentary republic, most administrative power falls on the prime minister. The president's role stretches more towards being a figurehead executive. The fourth presidential election in Ethiopia took place on 7 October 2013 and the third president of Ethiopia Mulatu Teshome was elected⁶².

8.2 Water governance and regulations

8.2.1 Overview

Institutional arrangements for water resources development and management in Ethiopia are organized into a three-tiered hierarchy: Policy Maker and Standard Setter at federal level, Resource Manager at basin level and Service Provider at a local level⁵⁵ (see Box 1). According to the Ethiopian Constitution, the management of water and other natural resources falls within the federal jurisdiction and is placed under the Ministry of Water, Irrigation and Energy (MoWIE). However, all or some of the powers and duties in the field of water resource management may be allocated at basin level to the Regional States or River Basin Organizations (RBOs) comprising a Basin High Council and River Basin Authorities (RBAs). Individual RBAs are accountable to the Basin High Council for political matters and to the MoWIE for technical issues, and have functions in water resources planning, administration, coordination, monitoring, data collection and analysis processing, pollution control, allocation (issuing permits) and drought/flood forecasting control. There are currently three RBAs operating in Ethiopia including the Abbay, Awash and Rift Valley Lake basins⁵⁵.

There is no formal delegation of water governance to any of the

five Regional States or two City States in the Awash Basin, but in practice the Regional and Town Water Bureaus (respectively the Zonal and Woreda Water Offices) implements the bulk of water management duties assigned. In this line of power sharing, the Council of Ministers created a new RBO for the Awash Basin, and MoWIE assigned substantive administrative power to the Awash Basin High Council and Authority (AwBA)⁶³.

8.2.2 Detailed description

The responsibility for development and provision of water supply and sanitation services is shared amongst six Federal Ministries with their respective Bureaus at the regional level:

- Ministry of Water, Irrigation and Energy (MoWIE) – the primary authority.
 - Focus on overall water resource management, such as promoting the development of water resources and energy, policy setting, construction and administration of dams and water structures.
 - Directs activities of institutions with mandates and activities relevant to water resource management.
- Ministry of Agriculture (MoA)
 - Focus on implementation of a strategy for sustainable agricultural and rural development, food security and watershed management; initiate extension programs for water harvesting and small-scale irrigation; ensure the proper execution of functions relating to conservation of biodiversity and natural resource protection (forest and wildlife resources).
- Ministry of Finance and Economic Development (MoFED)
 - MoFED is the key institution in Ethiopia's national policy to initiate macro-economic and fiscal policies.
- Ministry of Industry (MoI)
 - Issues requiring licenses and permits for investments and business establishments. The environmental license is based on national standards for water quality.
- Federal Environmental Protection Agency (EPA or FEPA)
 - FEPA is an autonomous Federal institution accountable to the Prime Minister. FEPA's responsibility includes, amongst others, to prepare standards for the protection of soil and water as well as the biological systems; oversee environmental impact assessments (EIAs) of federal projects.
- Ministry of Health (MoH)
 - Responsible for water quality control, waste management, and regulation of sanitation facilities.

The budget for each Federal Ministry is separately allocated. MoWIE's budget also includes the public bodies falling under its umbrella, such as the Water Resources Development Fund and the River Basin Organizations (RBOs)⁶³.

At the regional level, Regional Water Bureaus (RWBs) are responsible for water resource management. Each of the nine Regional States and Dire Dawa City Administration has an RWB. The main focus for the RWBs are program planning, management, coordination and capacity building in the region. Further responsi-

bilities shared by most regions include responsibility for approving programs and consolidating monitoring and evaluation reports of local structures (woredas), for submission to the MoWIE. The RWBs have, in general, subsidiary structures extending to lower levels of administration including Zonal Water Offices, Woreda Water Desks and within Kebeles⁶³.

At the sub-regional level of administration is the Woreda Water Desk (WWD). The WWDs procure the implementation of management and delivery of water and sanitation services at the regional and local levels. Further responsibilities include financial management, contracting and supervision of local service providers at district and community levels. The WWDs often participate in initiating, facilitating and providing motivation for community management of rural water services, the application of cost recovery principles, and the monitoring and evaluation⁶³.

The responsibility of planning and management of water supply and sewage services in towns falls under the hospice of Town Water and Sewerage Boards (TWSBs). It is on TWSBs desk to make sure urban residents get clean drinking water of acceptable sanitary standards in sufficient quantity. They should also run operations and maintenance of infrastructure by contract to Town Water Utility Operators under performance and service contracts, and collect revenues emanating from the provision of water supply, sewage and other services⁶³.

An exception to the usual line of authority in water supply and

sewerage system is found in Addis Ababa City Administration, where responsibility lies under the Addis Ababa Water Supply and Sewerage Authority (AAWSSA)^{63,64}.

8.3 Governance structures relevant for the textile industry

The Federal structure responsible for the textile industry is the Ministry of Industry (MoI). The Ethiopian Textile Industry Development Institute (ETIDI or TIDI) is the governmental agency responsible for implementing policies set by MoI (see Appendix for detailed description of responsibilities).

According to its mandate as environmental regulatory and monitoring body the Federal Environmental Protection Agency (FEPA) undertake monitoring and effectiveness evaluation of the environmental systems set in place, including wastewater quality^{65,66}.

At the regional level RBOs may be delegated the responsibility of regulating, managing, and facilitating operational services for water resources. Important aspects for the textile industry in this regard includes mandate to issue permits for water use, wastewater discharge and waterworks⁶⁷.



Photo: Katarina Veem, SIWI

9 Water resource management

9.1 Overview

With uneven distribution of water resources, both at a temporal and spatial level, a lack of infrastructure in combination with a general lack of skills and knowledge in water resource management⁶⁸, Ethiopia faces a huge challenge to meet the goal set by the GTP and MDG⁶⁹. All industries are required to comply with water and wastewater treatment regulations but a general lack of implementation of controls makes these requirements void. Lack of resources, capacity deficiencies and nepotism, in terms of controlling officers being owners or partners in the factories using water resources, are some of the main culprits to the current situation. Even though there is an Integrated Water Resource Management (IWRM) policy and strategy in place there is an incapability to implement it at the basin level. A Water Partnership Agreement signed by Dutch and Ethiopian water institutes in March 2013 have been set out to improve the situation for the Awash River basin. There appears to be a will amongst Ethiopian officials to improve the general situation in the country. However, the IWRM is in a very early stage of development and the capacity is low⁶⁸, and the River Basin Master Plans set in motion to improve the situation have long implementation periods (30-40 years).

Table 4. United Nations Human Rights treaties considered and/or signed by Ethiopia.

Treaty	Signature date	Ratification date	Accession date
CEDAW - Convention on the Elimination of All Forms of Discrimination against Women	8 July, 1980	10 September, 1981	
CRC-OP-AC - Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict	28 September, 2010		
CRPD - Convention on the Rights of Persons with Disabilities	30 March, 2007		
CAT - Convention against Torture and Other Cruel Inhuman or Degrading Treatment or Punishment			14 March, 1994
CCPR - International Covenant on Civil and Political Rights			11 June, 1993
CERD - International Convention on the Elimination of All Forms of Racial Discrimination			23 June, 1976
CESCR - International Covenant on Economic, Social and Cultural Rights			11 June, 1993
CRC - Convention on the Rights of the Child			14 May, 1991
CRC-OP-SC - Optional Protocol to the Convention on the Rights of the Child on the sale of children child prostitution and child pornography			25 March, 2014

9.2 Governance and policies

The overall goal for Water Resource Management (WRM) in Ethiopia, set forward by MoWIE, aims towards “efficient, equitable and optimum utilization of available Water Resources [...]”. In order to achieve these goals, a set of Objectives and Fundamental Principles are stated that are realized by mainly three sub-sectorial policies, all with sustainability as the core value:

- Water Supply and Sanitation Policy – Provide the Ethiopian people with reliable and clean water supply and sanitation services. Further the contribution of water supply services to the economy by meeting demands of livestock, industry and other water users.
- Irrigation Policy – Strive to develop the extensive potential that irrigated agriculture has to offer in terms of production of food crops and raw materials needed for agro-industries.
- Hydropower Policy – Overall meet the national energy demands as well as cater for external markets.

The Ethiopian Water Resources Strategy (WRS) is set in place to convert the National Policy into action. The overall objective is to make important contributions towards poverty alleviations and sustainable human resource development and further promote sustainable, efficient utilization of the water resources of Ethiopia. The strategies are implemented as sub-sections in the same way

as the policies through development of viable and implementable guidelines⁷⁰.

The Water Sector Development Program (WSDP) use the guidelines set in the WRS for concrete interventions in terms of projects and programs. The WSDP has a 15-year long planning period ranging from 2002-2016 divided into three five-year development programs. The commitment and concrete action implemented through the projects and programs is considered to be a good yardstick of the government's achievements towards the MDG.

The WSDP is structured around five different programs:

- Water Supply and Sanitation Development Program
- Irrigation Development Program
- Hydropower Development Program
- Water Resource Development Program
- Institutional Capacity Building Program

These programs are closing in on their due date and their outcomes are being evaluated as future programs are waiting in the pipeline.

9.3 Transboundary Water Management

Of the 12 river basins in Ethiopia four are confined within Ethiopia's borders either as internal or dry (or both) basins. In other words, most of the rivers originating in Ethiopia are shared with other countries. The major watersheds that have been of importance from a transboundary water management point of view are either located in the Nile River Basin or Omo River Basin. The Nile Basin remains the only major basin lacking an inclusive, permanent legal and institutional framework for its utilization and management^{20,71}.

The overarching responsibility for Ethiopia's transboundary water management and the Nile Basin Initiative's (NBI) (see below) focal point ministry is the Ministry of Water, Irrigation and Energy (MoWIE). The responsible branch at MoWIE is the Boundary and Transboundary Rivers Affairs Directorate.

9.4 The Nile

The control of water resources connected to the Nile has been controlled by various agreements stemming back to colonial times. The two most prominent Nile Water Agreements were signed between Egypt and Great Britain (1929) and Egypt and Sudan (1959). These documents prevented the Nile riparian countries from interfering with the flow of the Nile²⁰. After independence, the countries of the Lake Victoria Basin and the Western Rift Valley (not Ethiopia) began to collaborate regarding resource management. These efforts became stronger after the revival of the East African Community in 1999, the year when the Nile Basin Initiative (NBI) was launched⁷².

NBI is anchored in a Shared Vision "to achieve sustainable socio-economic development through the equitable utilization of, and benefits from, the common Nile Basin water resources". Conceived in frameworks predating NBI, a Cooperative Framework Agreement (CFA), known as the Entebbe Agreement, was agreed upon by all member states, except Egypt and Sudan, in 2010. The CFA brought onto the cooperative agenda the fundamental issue of equitable (re-) allocation of the Nile Waters. In other words, the control of the Nile was shifted away from Egypt and Sudan's previous monopoly over water resources rooted in colonial agreements. The geo-political shift in the region has led to a proliferation of upstream developments, including dams and

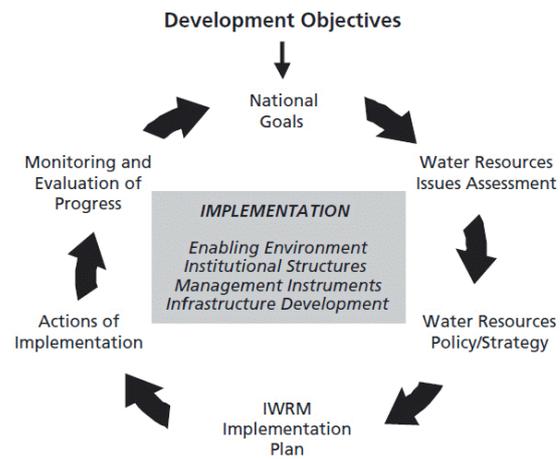


Figure 8. Stages in IWRM planning and implementation ⁷⁶.

irrigation networks. The new agreement, once effective, is designed to replace the NBI^{71,73}.

Regional tensions further complicate Nile cooperation efforts. For example, Ethiopia and Egypt have a long history of distrust, and Ethiopia and Eritrea have long unresolved border dispute.

9.5 The Omo River

Omo River Basin is located in the south-central part of Ethiopia. Originating in the Shewan highlands, the Omo River flows generally to the south and empties into Lake Turkana, the world's largest alkaline lake. The endorheic drainage basin and the northern most tip of the lake is in Ethiopia, but the major part is in Kenya⁷⁴.

Together with its tributaries Gibe, Gilgel Gibe, and Gojeb, the Omo River is highly exploited for hydropower and irrigation projects. Though the effects on Lake Turkana from these projects most likely are detrimental for the environment and livelihood of the local population (see page 38 for details on potential impact of these schemes), the Kenyan government has not expressed concerns about the downstream impacts, though several NGOs have done so^{71,73,75}.

9.6 Areas of Risk and Conflict

A study conducted by the Water Governance Center in collaboration with the Ethiopian and Dutch government highlighted several areas of weaknesses and threats facing the implementation of a water governance program for the Awash River Basin. The study was very comprehensive and highlights issues most likely encountered all over Ethiopia. The conclusions are further strengthened by the information derived during interviews by the author of this study. The main challenges highlighted on the Water Governance in the Awash River Basin was⁶⁸:

- Lack of skills and knowledge in water resource management
- Inappropriate and incompatible institutional setup
- Incapable of implementing IWRM in basin (Figure 8)
- Poor communication/cooperation with stakeholders

Discussions are recommended to be held with the Ministry of Water, Irrigation and Energy – Basin Administration Directorate (MoWIE-BAD, Ethiopia) and with the Abay and Awash Basin Authorities, the latter with importance for the textile industry, for potential capacity and development contributions.

10.1 Overview

The level of wastewater management in Ethiopia is low compared to Sub-Saharan standards. The numbers of sewerage and sanitation facilities are all but non-existent in smaller towns^{20,70}. The wastewater treatment facilities that exist are often inefficient²⁰. Only 10 per cent of the urban area of Addis Ababa is covered by a sewerage system measuring 150 km in total length⁶⁴. No prepared standards for the purpose of controlling effluent discharge, irrigation and industrial water qualities exist and there is no well-established water pollution monitoring system.

10.2 Governance

Ministry of Water, Irrigation and Energy (MoWIE), Ministry of Health (MoH) and the Environmental Protection Authority (FEPA) have the main responsibility for quality control and regulatory aspects of pollution protection of water bodies⁷⁰. At the next level down, using Addis Ababa as an example since 65 per cent of all industrial companies are located there, the responsibility for implementing sanitation services, including collection, transportation and disposal of septic sludge, lies on the municipality. The lack of clear distribution of roles and responsibilities as well as structural lack of funds for public services has made sewage a non-priority⁶⁴. As a result, sanitation and disposal of wastewater are poorly managed in Addis Ababa⁷⁷.

10.3 Wastewater and the textile industry

The Federal Environmental Protection Agency (FEPA) sets the quality standards for water quality in Ethiopia and together with the Ethiopian Textile Industry Development Institute (ETIDI) offer

laboratory tests for water quality assessment. Both governmental agencies lack in-house capacity and allocate testing to external laboratories. The two agencies employ different laboratories that often give different results for duplicate samples. Neither laboratory has the right certifications to meet up with international standards and lack modern and high-tech equipment for complete analysis of organic and inorganic substances⁷⁰.

10.4 Current situation

Current principal sources of wastewater are the households and institutions with input from commercial facilities and recreational areas. Most wastewater is domestic in nature, which due to low living standards, lead to low discharge rates, as most of the population are not connected to the sewerage system. Most water from industries is not treated but is instead disposed directly to nearby water bodies^{56,58,64,75}. This includes the textile and leather (tanneries in particular) industries. An analysis of effluents from the Almeda Textile Industry in Tigray, Northern Ethiopia, revealed that the factory is highly inefficient in reducing its pollutants and also intensifies the pollution load into the environment⁵⁶. The dire situation might have been mitigated somewhat since the analysis was made.

Illegal dumping of waste by factories in Addis Ababa increased during the 1980's to the late 1990's when 90 per cent of all factories engaged in this practice²⁰. This is in spite of the fact that the Penal and Civil codes of the Ethiopian laws states that contamination of drinking water serving the need of human or animal is punishable with simple imprisonment not less than one month, or in more serious cases with rigorous imprisonment not exceeding five years⁷⁸.



In Addis Ababa alone it is estimated that the annual (in 2005) volume of wastewater reached 49 million m³ per year of which 4 million m³ comes from the industry^{79,80}. The Awash River and its tributaries are under huge pollution pressure from the expanding industry and uncontrolled urbanization especially around Addis Ababa. Between the countryside and urban areas of the Akaki River it is quite common for irrigation of agriculture with untreated wastewater. It provides a source of livelihood for farming households but also induces serious health problems and environmental degradation.

10.5 Treatment plants

Two secondary sewage treatment plants Kality Wastewater Treatment Facility on the south and Kotebe Wastewater Treatment Plant on the west side of Addis Ababa are under the responsibility of Addis Ababa Water Supply and Sewerage Authority (AAWSSA). Kality is connected to the centralized sewage system and receives wastewater and storm water with a capacity of 7,600 m³/day. The plant has a series of wastewater stabilization ponds and drying beds and has a retention time of 30 days. The effluent water flows is lead to the nearby Akaki River. Kotebe handles sludge only from septic tanks and pit latrines, with an estimated annual treated volume of 85,000 m³^{64,77,80}. After the sludge has dried up and turned into compost it is disposed of on a nearby dumping site. No information has been found if sludge containing hazardous chemicals is treated in in any particular way. The Wastewater Master Plan from 2002 only states that the industries produce chemical pollutants but does not state if different measures from domestic sludge are taken to treat it⁸¹.

10.6 Laws and regulations

MoWIE has issued the Ethiopian Water Resources Management Proclamation (No 197/2000) and the Ethiopian Water Resources Management Regulations (No 115/2005) to regulate wastewater discharge. The permit needed for releasing or discharging any waste into water resources requires that it will not endanger human life, animals, plants or any living things. If the release or discharged waste is being treated before release the decisive Supervising body may accept such application. The permits must be renewed every two years^{70,82}. The applicable standard for drinking water in Ethiopia is the Ethiopian Drinking Water Quality Standard: ES2601:2001 (second edition), which includes reference values for bacteriological, chemical and physical water quality parameter³⁵. The specifics on emission standards can be found in Annex 19.4. There is conflicting information regarding specifics on national standards for industrial and domestic wastewater. The One WASH National Program (OWNP) document signed off by MoWIE, MoH, MoE and MoFED set as the main instrument for the Government of Ethiopia (GoE) to reach the targets set out in the GTP states: “At present there are no national standards for industrial and domestic wastewater. Developing such guidelines and associated directives and regulation as a collaborative effort between FEPA and MoWIE is an urgent priority”³⁵. However, in the Environmental and Social Management Framework for Bole Lemi II and Kilinto Industrial Zones document signed by GoE, MoI, and the International Development Association (IDA) of the World Bank, states that FEPA has developed environmental standards in 2001-2003 for several industrial sectors including manufacturing and finishing of textiles. Authorities claim to have issued a directive of wastewater treatment

in 2008 that was ignored by the majority of industries (only 10 per cent complied) but if this directive was not complied by September 2013 factories would be shut down⁸³. This clearly did not happen.

Box 2: Human rights violations in Ethiopia according to US Department of State report 2013.

The following human rights issues were listed by the US Department of State in their Country Report on Human Rights Practices 2013⁹² to have occurred in Ethiopia during 2012: restrictions on freedom of expression and association, including through arrests; detention; politically motivated trials; harassment; and intimidation of opposition members and journalists, as well as continued restrictions on print media. On August 8, during Eid al-Fitr celebrations, security forces temporarily detained more than one thousand persons in Addis Ababa. The government continued restrictions on activities of civil society and nongovernmental organizations (NGOs) imposed by the Charities and Societies Proclamation (CSO).

Other human rights problems included arbitrary killings; allegations of torture, beating, abuse, and mistreatment of detainees by security forces; reports of harsh and, at times, life-threatening prison conditions; arbitrary arrest and detention; detention without charge and lengthy pretrial detention; a weak, overburdened judiciary subject to political influence; infringement on citizens' privacy rights, including illegal searches; allegations of abuses in the implementation of the government's "villagization" program; restrictions on academic freedom; restrictions on freedom of assembly, association, and movement; alleged interference in religious affairs; limits on citizens' ability to change their government; police, administrative, and judicial corruption; violence and societal discrimination against women and abuse of children; female genital mutilation/cutting (FGM/C); trafficking in persons; societal discrimination against persons with disabilities; clashes between ethnic minorities; discrimination against persons based on their sexual orientation and against persons with HIV/AIDS; limits on worker rights; forced labor; and child labor, including forced child labor.

11.1 Overview

Ethiopia adopted the National Human Rights Action Plan (NHRAP) in 2013 as part of the GTP to improve the promotion and protection of fundamental human and democratic rights in “a comprehensive and structural manner”. Developed by governmental and non-governmental organizations and through participation of the public the NHRAP strives to advance the respect, protection and fulfillment of human and democratic rights guaranteed by the Constitution⁸⁴. However, reports from human rights organizations (Human Rights Watch (HRW); Amnesty International), policy think tanks (The Oakland Institute), NGOs (Anywaa Survival Organisation-ASO) and the US State Department Country Report on Human Rights Practices⁸⁵ (see Box 2) bring forward information that highlight serious breaches of the NHRAP, as well as international conventions on human rights by Ethiopia of UN treaties signed and /or ratified or accepted by Ethiopia.

11.2 Freedom of speech

The Ethiopian authorities severely restrict freedom of expression, association and assembly⁸⁶. After the controversial 2005 general election in Ethiopia, the ruling party, Ethiopian People’s Revolution Democratic Front (EPRDF), presented a set of laws effectively weakening civil society, opposition political parties and independent media. The laws that had a chilling effect on citizen’s exercise of freedom of association, expression and assembly were: the 2008 Mass Media and Freedom of Information Proclamation; the 2009 Charities and Societies Proclamation (CSP); and the 2009 Anti-Terrorism Proclamation (ATP)⁸⁷. In 2012, a crackdown on freedom of expression saw scores of journalists and political opposition members arrested with charges of terrorism, treason and other offences⁸⁸. In July 2014, three journalists and seven bloggers were charged with “terrorism” for allegedly conspiring to overthrow the government⁸⁶.

11.3 Resettlement – Land grabbing

Large-scale resettlement occurred for the first time during the Derg regime, with 38,000 households involuntary relocated. In 1984, 1.5 million people were relocated from the famine-prone northern areas of the country to the south and southwestern regions of Welega, Gambela and Gojam. No consent was received from either host populations or from those being resettled. The resettlement scheme was largely unsuccessful with many people dying of malaria and other diseases, many fleeing back to their homes, and conflicts arising between new settlers and local people. International concerns were expressed over the human rights violations and forced separation of families that took place⁸⁹.

Mid-1980’s a new process of resettlement was established called “villagization”. The purpose of the new resettlement program was to gather scattered farming communities into larger, more permanent villages to improve service delivery, land use, and conservation of resources. By March 1986, 4.6 million people had been relocated to more than 4,500 villages. The international criticism to the villagization program pointed at concerns regarding timing of relocation (disruption of agricultural production), capacity of government, spread of disease and pests, and deteriorating security conditions⁸⁹.

A resettlement program, much in the spirit of the villagization program from the 1980’s, has since 2008 yet again been set in motion. It is estimated that about 1.5 million rural people will have to relocate, ostensibly to improve their access to basic services. What is coincidental is that current resettlement now occurs at the same time as, and in the same locations where, large-scale land (and water, e.g. dam constructions) investments are being planned⁸⁹. The Ethiopian government states that this villagization program is not linked to land leasing, but part of a separate project to improve access to basic amenities, and that the majority of people

Figure 9. A list of Industrial Zones (IZs) with (or potentially with) textile factories¹⁰⁰.

Industrial Zone	Region	Basin	Catchment	Notes
Bole Lemi I	Addis Ababa	Awash	Akaki – Aba Samuel	In place
Bole Lemi II	Addis Ababa	Awash	Akaki – Aba Samuel	New.
Alemgena	Addis Ababa	Awash	Akaki – Aba Samuel	New. Single-factory zone.
Kilinto	Addis Ababa	Awash	Akaki – Aba Samuel	New.
Kombolcha	Amhara	Abbay (Abay)	Derekolli	Not established if this IZ will harbor textile industry.
Name unknown	Dire Dawa	Awash	Akaki – Aba Samuel	Not established if this IZ will harbor textile industry.

were resettled voluntary⁸⁸. However, some of the relocations in the Gambela region during the first year of the program were accompanied by violence, including beatings and arbitrary arrests, and insufficient consultation and compensation⁸⁶. It was further reported that most people were removed by force and that the new “villages” seriously lacked promised facilities, infrastructure and livelihood opportunities⁸⁸. Both the government of Ethiopia and the donor community have failed to adequately investigate these allegations⁸⁶.

11.4 Textile factories

Saudi Star Agriculture Development PLC., a company owned by Mohammed Al-Almoudi (owner of Kebire Enterprises PLC and MAA Garment and Textiles PLC.), is presently operating on 10,000 ha near Abobo, along the Alwero River in Gambela. Saudi Star is currently growing rice for export on the concession, but with a desire to acquire another 500,000 ha of land, Saudi Star also hope to grow maize, teff, sugarcane and oilseeds. Several small villages within the Saudi Star concession have been relocated across the Alwero River to Pokedi as part of the villagization program in Gambela. Prior to relocation, no community consultation was carried out, either by Saudi Star or the government. Villagers only knew that their land had been given to investors once the bulldozers began clearing the area. While the Gambela’s regional government maintains that the relocations are voluntary, members of one village informed the Oakland Institute that if they did not move “the federal police will arrest us”. When they expressed concern to the government about the clearing of their ancestral lands, government officials reportedly replied “You don’t have any land, only the government has land.”⁸⁹

The Koka Plantation, established in the Zone Bench Maji, SN-NPR, is another site affected by the villagization program. In 2008, it seemed plausible that AgriNexus International, a Malaysian plantation management consultancy company, was associated with the plantation through the Ethiopian Horizon Plantation PLC. (a subsidiary to Al Amoudi Enterprises), which managed the plant, but this cannot be confirmed. The establishment of

the 31,000 ha plantation has dramatically disturbed the delicate political order in the region by upsetting historically established grazing practices and exacerbating pre-existing tensions. Tensions increased particularly between the Suri and the Dizis, but there has also been an escalation of resource wars, tribal leader imprisonment, terror, increased conservatism among ethnic youth, loss of local livelihoods, and increased dependency on food handouts. The Pastoral Community Development Project (PCDP), which plays a pivotal role in the forced resettlement of the Suri pastoralists and the conditional and coercive distribution of food assistance, has received support from both the World Bank Group and the International Fund for Agricultural Development (IFAD) fund⁹⁰. MAA Garment Textiles PLC. buy some of its cotton from farms in the Lower Omo Valley including the company Omo Valley Agro Industry PLC. According to an interview with Mr. Nyikaw Ochalla in the Swedish TV-program “Kalla fakta” forced resettlement had occurred to enable establishment of the plantations used by Omo Valley Agro Industry PLC⁹¹. To highlight these ongoing human rights violations that the governmental resettlement program engage in, Anywaa Survival Organisation and the Oakland Institute put out a press release on 12 November 2014 called out for a fact finding mission and full independent inquiry by the UN Human Rights Commission and related UN Special Rapporteurs on Ethiopia’s human rights situation and the treatment of indigenous and minority peoples in Ethiopia⁹².

It appears that the Ethiopian government’s line of describing the Resettlement or Villagization Program as an agricultural “modernization”, which affected populations voluntary comply to, is agreed upon, or at least not rejected, by many businesses and donor organizations operating in Ethiopia. However, according to cited references above the resettlement seems far from being voluntary but clearly breaching human rights. According to the UN Global Compact Principle Two – “Businesses should make sure they are not complicit in human rights abuses”⁹³. Any business with part of their supply chain originating in or benefitting from the Resettlement Program in these regions will thus violate this principle.

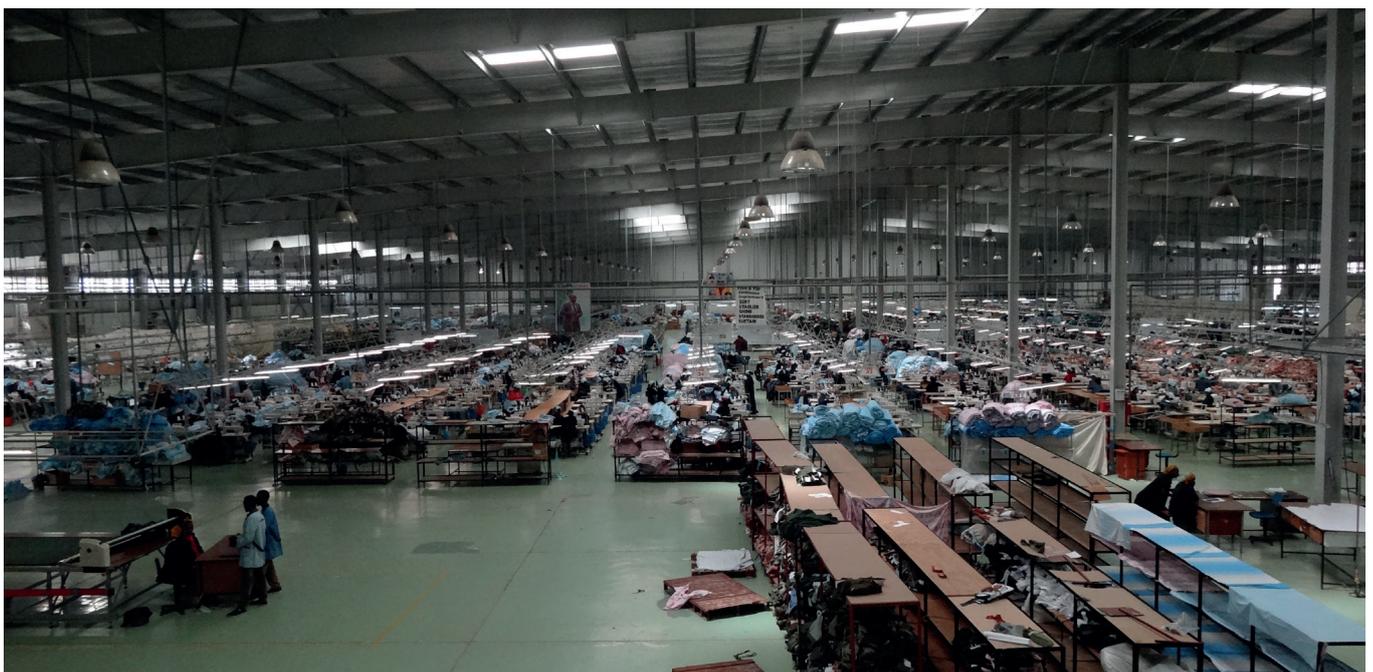


Photo: Katarina Veem, SIWI

12.1 Background

Even though the textile industry has its roots in traditional clothing made on handloom going back in time, the origins of today's industry springs from the post Ethio-Italian war colonial era ruled by Emperor Haile Selassie between 1950-1974⁹⁴. The following Derg regime (1974-1991) invested in more land for cotton production, and more in textile firms to provide yarn and fabric. All private land enterprises were nationalized. Private land tenancy was abolished and usufruct rights granted to peasants. Small producers were in part resettled, forced into cooperatives and grouped in villages, with the aim of improving service and land use⁹⁵. The once foreign owned textile firms were nationalized and focus shifted towards creating job opportunities. Certain aspects of the textile and apparel industry moved forward significantly during this period, but existing technologies were dated and international standards could not be met. The protective measures set up against external competition led to inefficient allocation of resources⁹⁴.

Mismanagement and the Derg's violent rule created strong opposition, which led to a protracted civil war. The Derg regime was overthrown by a coalition of rebel forces from different regions and ethnic groups, which formed the basis for the Ethiopian People's Revolutionary Democratic Front (EPRDF) who took power in 1991⁹⁵.

The new government launched reforms for reconciliation and reconstruction of the country and a series of market-oriented economic reforms were adopted. The government encouraged private capital from national and international investors and many state owned enterprises were privatized⁹⁴. Competition was encouraged and the government reduced their intervention in trade and factor markets. Ownership of land and strategic industries and services, however, remained with the state⁹⁵.

12.2 Current situation

With an estimated contribution towards the GDP of 1-2 per cent the Ethiopian textile industry is now the third largest manufacturing industry next to food processing and the leather industry, and the interest from foreign textile companies are growing⁹⁶. The presence of a cheap (see Salaries below), skilled and highly motivated workforce, a stable and progressing economic growth, wide availability of raw cotton and other natural fibers and Ethiopia's access to domestic, regional and international markets are put forward as reasons for the booming interest in Ethiopia as a textile nation⁹⁷. Further, a more accessible market through initiatives such as AGOA (the African Growth and Opportunity Act; the U.S. market), COMESA (the Common Market of Eastern and Southern Africa), and the "Everything But Arms" program set up to provide access to the EU market for Lesser Developed Beneficiary Countries, free of duty and without quota restriction, for all exports except for arms, also plays a pivotal role for the recent expansion⁹⁷.

The AGOA provides "duty-free and quota-free treatment (for exports to the USA) for eligible apparel articles made in qualifying sub-Saharan African countries (e.g. Ethiopia) through 2015". Eligible articles include:

- Apparel made of U.S. yarns and fabric;
- Apparel made of sub-Saharan African (regional) yarns and fabrics, subjects to a cap until 2015;
- Apparel made of yarns and fabrics not produced in commercial quantities in the United States;

- Textile and textile articles produced entirely in a lesser-developed beneficiary country⁹⁸.

The COMESA strategy has focused on integration of the economic space through removal of trade and investment barriers among COMESA members. This includes zero tariffs for all tradable goods, establishment of a common external tariff, CET, or customs union, the implementation of programs to enable free movement of services, labor, and capital⁹⁹.

All land in Ethiopia is owned by the state. This allows the state to lease land to companies interested in investing¹. The price tag varies between US\$1.50-US\$13.25 per square foot in the Central Business Zone and the regional governments are expected to allocate land within 60 days of receiving application⁹⁷.

12.3 Future

The Government of Ethiopia (GoE) is planning to build a network of Industrial Zones (IZs) in and around Addis Ababa following the direction of the Awash basin towards Djibouti. Locating all industries at the same site make infrastructure, waste treatment and production more effective. The World Bank suggests that the wastewater treatment at these sites should be re-cycled into the industrial processes and/or provided to the agricultural areas for irrigation¹⁰⁰. Each Zone will comprise of one particular industry, including all levels of textile (including dyeing) and leather industries, and will include a central waste treatment plant. There are currently one textile IZ in place, and three textile IZs planned (marked as "New" in the notes of Figure 9). With a growing number of unsolicited IZ development proposals, GoE are under pressure to develop an effective framework and capacity to analyze and enter into fruitful partnerships with the private sector. To date, the GoE has entered into negotiations with foreign developers without any overarching principles or legal and regulatory framework to provide selection or performance criteria, or negotiation guidance¹⁰⁰. The majority of companies interested are Chinese and Indian companies, but South Korean, Pakistani, Indian, and Taiwanese developers are also in discussions.

12.4 Areas of Risk and Conflict

There is very little consideration taken towards the people being displaced in the name of industrial development. In order for the industrial expansion to be sustainable there has to be benefits for the people affected by it. Violations against workers' rights, overuse of resources and lack of environmental consideration may cause a future uproar from the people affected halting the current progressive development. If the current lack of implementation and enforcement of environmental laws proceeds, the industrial expansion will also have serious negative impact on sensitive ecosystems, water resources and public health downstream of factories. Factories do, in general, lack sufficient capacity and knowledge of machinery, water management, chemicals, etc. Workers have, in general, very little social and environmental awareness with regard to chemical use. Very seldom do the workers use any protective measures when handling, using or disposing of chemicals. Factories employ 100 per cent locally for the floor with some input from foreign producers, investors, etc. at the managerial positions, engineers, machinists and so forth, as the Ethiopian authorities primary intent of inviting foreign companies to invest is job creation.

13.1 Salaries

Employees in the public sector are guaranteed a minimum wage (613 birr/month) set by law but in the private sector there are no such regulations and it is up to the employer to determine the wage of the worker. The latter is one of the main reasons why many foreign companies are looking towards Ethiopia for their investments. A significant proportion of workers in the textile and garment industry are considered “working poor”¹⁰¹. The private sector is, however, driven more by supply and demand, which leads to higher salaries on average. The wage level set also depends on what goals the factory has set. Is it quality or quantity? The former requires more skilled workers and, hence, salaries will be higher.

13.2 Unions

The government encourages unions, union laws are implemented and the union organizations are getting stronger. However, there is still a culture obligating the employer to take care of you rather than joining unions and there is a limited understanding of their function both amongst employers and employees. The majority of people think that unions are there to argue with employees, not to support their rights. The textile industry is one step ahead of other industries and unions are in general stronger in this sector. There have been situations where union leaders have discouraged foreign investments and worked against both management and employees. Incidents and issues of similar nature have been and are addressed by the unions and the highest levels of government. At one instance the Prime Minister sat down with union leaders, stressing their role in mitigating conflicts and creating a dialogue between employers and employees.

13.3 Working hours

The normal working day for an Ethiopian factory worker is 8 hours, whilst Chinese factories might employ 12 hour shifts for Chinese employees. The normal working week for a factory employed in Ethiopia is 48 hours, independent of nationality.

13.4 Child labor

According to Ethiopian Labor Law, the minimum working age is fourteen. Verification of age is often difficult, especially in the rural areas, due to lack of birth registrations and official ID documents⁹⁴. Independent international estimates have, however, stated that 53 per cent of children aged 5-14 are used in labor on a regular basis (latest figure retrieved from 2005)¹. However, since the definitions of child labor differ internationally and nationally (see Ethiopian Labor Law above) it is unclear how large the illegal proportion the child labor figure actually is in Ethiopia (i.e. children aged 5-13). Ethiopia ratified two International Labor Organization (ILO) core conventions on child labor (i.e. Minimum Age Convention No. 138 and Elimination of Worst Forms of Child Labor Convention No. 182) in 2008 to show their commitment to reduce this number. However, the implementation of these policies and concrete interventions to address the child labor problem is yet to be put in place^{1,102}. Resource constraints are put forward as the main reason for the lack of follow-up. Child labor is not that common in textile and apparel manufacturing, due to a high availability of cheap adult labor better suited for the required job duties⁹⁴.



Photo: Katarina Veerm, SWI

14.1 Overview

All stakeholder and experts interviewed in Ethiopia are open with the fact that even though laws and regulations regarding pollution from factories are all in place, implementation and enforcement is very weak. Most factories lead their wastewater directly into nearby watersheds. Since water input to the factories, in general, is taken from groundwater resources, the factory is not facing the problem with polluted pre-process water as otherwise might cause problems in factory processes. Instead, people and the environment downstream face the problems.

14.2 Current situation

People that live close to textile factories with wet-processes and leather factories are seriously affected by the untreated wastewater. Rivers and other watersheds are often the source of drinking water, livestock water supply and irrigation for farmland in both urban and rural regions. The catchment areas in and around Addis Ababa are the most polluted in the country, affected not only by wastewater from factories but also the untreated sewage from households.

14.3 Areas of Risk and Conflict

A recent example of the negative effects on livelihood near textile production sites involved a chicken farmer losing all his poultry after using water from the nearby river. The river was shared with

a textile factory that was disposing the effluent dyeing sewage directly into it. The incident caused an outrage in a region where the local inhabitants had suffered from serious health problems, lost livestock and harvests under a long period.

MoWIE, MoH and FEPA are mainly responsible for quality control and regulatory aspects of pollution protection of water bodies. MoA and the Urban Agriculture Department under the Addis Ababa City Administration is responsible for providing agricultural extension services for peri-urban agriculture⁸⁰. The overall responsibility for water supply and sewerage systems in Addis Ababa is the Addis Ababa Supply and Sewerage Authority (AAWSA), but regarding sanitation services the municipalities in Ethiopia are responsible for ensuring collection, transportation and disposal of septic sludge. So far, pollution protection has not been high on the agenda of the urban authorities; there is a lack of clarity and roles and responsibilities. The structural lack of funds for almost any public service in Addis Ababa makes sewage a non-priority issue⁶⁴.

In order to mitigate the damage these kinds of situations cause, there is a need to establish responsibility and accountability. In some way or another, higher authorities need to take action in such a complex situation. How the situation with the affected chicken farmer was handled/resolved is not known.



15.1 Overview

Ethiopia hosts not only a great climate below elevations of 1,400 metres for cotton production but also has about 2.5 – 3 million ha (different sources give different estimates of land available) of arable land to grow it on^{94,103-105}. However, there is a great discrepancy between availability and utilization. Estimated land use for cotton farming during 2013/2014 was only 55,521 hectares, i.e. about 2 per cent. Before the revolution, large-scale commercial cotton plantations were developed in the Awash Valley and the Humera (Tigray) areas. Large-scale cotton plantations still thrive in the Awash Valley, and together with plantations in North Omo (SNNRP), Ababo (Gambella), and Gode (Ogaden) constitutes the major regions for large-scale cotton plantations in Ethiopia. Exempting the plantations in Ababo, irrigation schemes are used at all large-scale cotton plantations¹⁰⁶.

15.2 Structure

Small and medium sized farms dominate the cotton-producing sector in Ethiopia. Many farmers shift their production depending on demand, which makes it hard to pin down exact numbers, but an approximate 25,000-60,000 farmers were in business during 2012-2013. Only 55 large-scale commercial cotton plantations contribute to cotton production in Ethiopia.

15.3 Production

Although the number of practicing small and medium-scale farmers is large, their volumes are very small. The big commercial plantations account for 70 per cent of the annual production. The large discrepancy in production depends on several factors acting against small and medium sized farmers including lack of seeds for sowing, lack of fertilizer and pesticides, lack of water for irrigation, and lack of infrastructure for transporting the finished products. The peak year of 2010/2011 (Table 5) provided the country with a net production that met the demand of the national textile industry. Though the demand for cotton has increased every year since, compared to the peak year, cotton production had dropped in 2013 with only 55 per cent meeting 22 per cent of the industrial needs. A lack of domestic cotton is, however, not an issue according to the industry. Despite the views expressed, the fact remains that, Ethiopia is importing cotton from Asia to cover for the national deficiency.

15.4 Problems

The small and medium scale cotton farmer has, in general, no way to quality check their product since there is no well-established system for grading and classification of cotton quality in Ethiopia.

Table 5. Cotton production trends in Ethiopia⁹⁴

	2009/2010	2010/2011	2011/2012	2012/2013
Area (ha)	81.500	111.900	78.500	57.000
Productivity (kg/ha)	640	710	570	595-755
Production (ton lint)	52.600	77.900	46.800	+/-35.000

In combination with the fact that trade is based more on quantity than quality there is no incentive for these farmers to invest in improvement of the seed cotton quality. There are three potential sources for farmers to pertain cottonseed:

- Retained or recycled seeds from ginneries – this is the predominant source. There are very few varieties available that, in general, also are low yielding and result in low quality output.
- Imported hybrid seeds from private suppliers – the extent of use amongst farmers is unknown. There is only one seed importer in the country.

Seed developed and released by the Melka Werer Agricultural Research Center – the varieties released by the center are not well promoted which leaves them unknown to seed companies.

Some small-hold farmers receive seed from local agricultural offices near to their villages. However, the supply is very scant and farmers more than often has to rely on retained or recycled seed from ginneries purchased at the local market.

The Ethiopian Institute of Agricultural Research is working on new varieties and hybrid types, but how far ahead the development has progressed remains unclear. Ethiopia also suffers from inadequate capacity and lacks resources to properly duplicate and distribute new seed varieties. The Private Entrepreneur Program Ethiopia (PEPE) from the UK Department for International Development (DfID) is currently working on a seven-year program that, amongst many things, has targeted this problem and works towards an improvement of the current situation. Solidaridad highlights the issue of ineffective and improper farming methods as, alongside poor quality seed cotton, a major problem in need of attention.

Lack of farmer cooperatives makes it difficult for the smallholder farmers to keep track of the current market price. The cotton traders (brokers) take advantage of the lack of coordination and ignorance of current market prices and purchase their products directly from the individual farmer and increase their profit margin by offering a very low price⁹⁴.

The hardships and limitations imposed on small and medium sized cotton farmers in Ethiopia, in combination with the lack of knowledge of the current cotton market situation, has induced a switch to crops such as maize and sesame to ensure a more secure income. This is the main explanation given by authorities responsible for the drop in production leading to the huge gap between access and demand. This is, however, a statement that does not hold up for scrutiny.

15.5 Areas of Risk and Conflict

One of the main challenges for the Ethiopian cotton industry is the currently low and stagnating production of seed cotton. Bad seed give low yield harvests and this is one of the reasons that small- and medium sized cotton farmers shift to other crops. The Textile Industry Development Institute (ETIDI) has started to build laboratories for quality assessment all around the country to enable smaller stakeholders to develop their crops more easily. Other areas in need of improvement, if Ethiopia is not to be lagging even further behind, in supply and demand include infrastructure for transportation of cotton to ginneries. External factors such as fluctuations of the rainy season and quality problems due to honeydew are also aspects in need of attention²⁴.

With increasing farmer demand for irrigation development in recent years, existing irrigation areas were expanded and new ones developed, but there were also increases in conflict and competition over water. There has been tension caused by increased abstraction of water for irrigation in up-stream locations in Tigray, Amhara, and other water scarce regions, where the schemes developed has been oblivious to down-stream users in the same catchment²⁰.

Many large irrigation schemes are planned around water reservoirs in conjunction to large dam constructions such as the

Grand Ethiopian Renaissance Dam²⁷. In the case of the Omo River, the impact of irrigation abstraction in conjunction to the Gibe-dams on Lake Turkana, will be devastating. The results have been described to “[...] be a cascade of hydrological, ecological and socio-economic impacts that will generate a region-wide crisis for indigenous livelihoods and biodiversity and thoroughly destabilize the Ethiopia-Kenya borderlands around Lake Turkana”¹⁰⁷. Simulation with different scenarios are implemented following different projected demands of the Master Plan (over different timelines) the lake’s simulated levels will fall from 20 to 45 metres below its lowest ever recorded. Considering that the average depth of the lake is 30 metres, this is clearly an alarming prospect. The effects on fisheries, biomass holdings, and potential long-term ecological changes will be, to say the least, considerable²⁷.



Photo: Katarina Veem, SIWI

16.1 Cotton production

The major players in cotton productions that can be found are:

1. Amibara Business Group – holding several enterprises including:
 - a. Omo Valley Agricultural Development PLC
 - b. Gelsita Agricultural Development
 - c. Middle Awash Agricultural Development Enterprise
 - d. Abaya Farm
 - e. Arba Minch Farm/Ginnery
 - f. Yusuf Omer Zage Farm
2. Blen Tsegaye Business & Industry, Afar Regional State¹⁰⁸

At the end of March 2014, AYCOOM Agricultural Development PLC, a joint venture between Ayka Addis Textile & Investment Group (holding 55 per cent) and Omo Valley Agricultural Development PLC (45 per cent), announced the launch of a project to develop 10,000 ha of organic cotton production in Ethiopia. The project is expected to cost around 815 million birr (approx. US\$ 30.4 million at 4 June 2014)¹⁰⁹.

The production of cotton by the state farms is undertaken by five enterprises, Abobo, Middle Awash, North Omon, and Tendaho Agricultural Development Enterprises.

16.2 Textile manufacturing

Most textile firms in Ethiopia are integrated firms meaning that each entity provides a combination of production activities. This includes spinning, weaving, knitting, and/or garment manufacturing. Each firm has their own combination of production activities. There are currently 21 integrated textile firms in Ethiopia but this number will increase within a near future. Five establishments incorporate all steps in the production line from spinning to finished garments – so called vertically integrated textile firms. The Industrial Zones built in and around Addis Ababa attract many foreign textile-manufacturing companies as well. It is reported that some 15 foreign companies are awaiting the completion of the Bole Lemi Industry Zone II located in the suburbs of Addis Ababa¹¹⁰. The Ethiopian Industrial Zones Development Corporation (EIZDC) will be in charge of developing and administering industrial zones all over the country, excepting those that are currently being developed privately, such as those in Dukem and Sendafa towns in Oromia Special Zone¹¹¹.

However, it is not only in and around these Industrial Zones that the textile industry show interest.

17.1 Main Duties and Responsibilities of the Ethiopian Textile Industry Development Institute (ETIDI)

Following text was derived from the ETIDIs website

www.tidi.gov.et:

According to the Institute's establishment regulation no.180/2010 article 6, the Institute has the following duties and responsibilities:

1. Formulate policies, strategies and programs that assist in the facilitation of the development of textile and apparel industries and implement the same upon approval;
2. Collect, analyze, organize and transfer to the sector's data center and disseminate to users, as may be appropriate, data necessary for the development of textile and apparel industries;
3. Prepare and disseminate project profiles that may be helpful in expanding investment in the textile and apparel industries; conduct feasibility studies for those investors desiring to engage in the sector; follow up project implementation and provide remedies concerning problems encountered during implementation;
4. Advise investors desiring to engage in the textile and apparel industries sector on the selection of technology, negotiation, construction, erection and commissioning;
5. Prepare and conduct practical trainings on technology, technical matters, marketing and management and other tailor made trainings, that assist the development and competitiveness of the textile and apparel industries sector; and issue certificates to trainees;
6. Conduct studies and researches to promote the development of textile and apparel industries;
7. Provide support and consultancy services concerning production process, production planning and quality control;
8. Cooperate with government and private institutions with similar objectives, locally and abroad; and encourage similar co-operations between private institutions;
9. Undertake benchmarking studies that facilitate the development and competitiveness of the textile and apparel industries and assist those conducting similar activity in the sector;
10. Deliver testing services to textile and apparel industries products;
11. Extend support in the creation of input and output linkage;
12. Conduct market study for textile and apparel industries products;
13. Identify technologies that can be developed and undertake product development activities;
14. Cooperate with universities on product development and human resource development, conduct joint research and assist in the strengthening of local research capacity in the sector;
15. Deliver its services to users at one stop shop.

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