

Ethiopia Environmental and Climate Change policy brief



Photo: Emelie César

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1. Introduction

During the last couple of years Ethiopia has had a remarkable economic growth (an average of 10%/year) and the country has achieved notable progress towards many of the millennium development goals (MDGs), including those for poverty, access to education and health. Improvements have also been made in basic infrastructure and in strengthening both regional and national policies and governance capacity.

Today over 80 million people live in Ethiopia, and over 80% are living in rural areas. Population growth remains high at 2% and Ethiopia is expected to reach over 120 million people by 2030¹.

Ethiopia's economy and ecological system are fragile and vulnerable to climate change. Environmental challenges in Ethiopia include climate change, soil degradation, deforestation, loss of biodiversity and ecosystem services, and pollution of land, air and water. Ethiopia's economy is also highly dependent on natural resources. Exploitation of these natural resources may generate large economic benefits in the short term. However, in the long term unsustainable use of these natural resources increases not only environmental degradation, but decreases economic growth and livelihood opportunities.

The key poverty-environment linkages in Ethiopia are related to: environmental health concerns related to malnutrition, polluted water and indoor air pollution; vulnerability to natural disasters and climate change; lack of secure tenure to land and other natural resources; and unreliable access to food and water.

Ethiopia's vision is to reach a middle-income status by 2025. Over the last two decades, the Ethiopian government has put in place a number of policies, strategies and laws that are designed to support sustainable development and the country is set to move towards a greener economy. There are gaps between the environmental commitments made and the actual implementation to improve environmental outcomes. Weak capacity in environmental management and enforcement are key challenges.

This environment and climate change policy brief aims at briefly presenting key environmental sustainability challenges and opportunities in Ethiopia, their linkages to poverty reduction and socio-economic development.

¹ Government of Ethiopia, 2012

2. Key environmental problems, their causes and opportunities

The most important environmental problems in Ethiopia include, climate change, land degradation, overgrazing and deforestation, indoor air pollution and water pollution. Other, important environmental problems include loss of biodiversity and ecosystem services, spread of invasive alien species, urban outdoor air pollution (mainly in Addis Ababa), and toxic household wastes.²

Climate change: The Ethiopian population is experiencing climate change and its impacts on the environment and natural resources. Continued climate change is expected to bring greater variability, and extreme weather events (e.g. droughts) which will further drive degradation of the country's ecosystems.³ The impact of climate change in Ethiopia is already apparent in the increasing temperature and declining rainfall, particularly in northern parts which are exceptionally vulnerable to drought. Agriculture is the source of livelihood to an overwhelming majority of the Ethiopian population (it employs more than 80% of the labour force⁴) and is the basis of the national economy. A decrease in seasonal rainfall has devastating implications on agricultural production leading to food insecurity, malnutrition and famine. The frequency and intensity of drought is likely to increase over the coming decades, which will present a serious threat to biodiversity, ecosystems, water, agricultural and human health. Impacts of increased climate variability and change include (i) increased food insecurity; (ii) outbreaks of diseases such as malaria, dengue fever and water borne diseases such as cholera and dysentery due to floods, and (iii) respiratory diseases associated with droughts; (iv) heavy rainfalls which tend to accelerate land degradation and damage to communication infrastructure.

Land degradation: Land degradation is one of the most serious problems in Ethiopia. In addition to natural factors such as rainfall and erodible soils, population pressure, overgrazing, unsustainable land use and expansion of farming causes severe land degradation which affects agricultural productivity. Furthermore, land degradation leads to loss of vegetation cover and loss of biodiversity and ecosystem services. The estimated annual costs of land degradation in Ethiopia range from 2% to 6.75% of agricultural GDP.⁵

Deforestation: Forests cover 12.3% of Ethiopia. Deforestation is widespread. The average annual deforestation rate is 1% which is high compared to other Sub-Saharan African countries (0.6%).⁶ The growing population requires more fuel wood and more agricultural production which increase needs for new farmland, which accelerates deforestation and forest degradation. It is estimated that unless action is taken to change the traditional development path, an area of 9 million ha might be deforested between 2010 and 2030. Over the same period, annual fuel wood consumption will rise by 65% with large effects on forest degradation.⁷

Indoor air pollution: Indoor air pollution is a serious environmental problem causing acute respiratory illness (ARI). It hits the poorest the most, particularly women and children. These problems are mainly caused by the poor households' use of traditional polluting stoves and

² European Commission, 2007

³ World Bank 2012

⁴ MoFED, 2006

⁵ Yesuf et al, 2007

⁶ World Bank, 2012c

⁷ Government of Ethiopia, 2012

woody biomass, which is their major source of energy for cooking, heating and lighting. About 95% of Ethiopia's energy supply comes from woody biomass, mainly fuel wood (77%), dung (8%), crop residues (9%) and charcoal (1%). Electrification mainly for lighting is concentrated in the urban areas. Electrification of the rural areas is increasing but still limited. Only about one household in every four (23%) has electricity, with a very large disparity between urban and rural households.⁸

Water pollution and lack of access: Water pollution constitutes a large risk to Ethiopia's public health, mainly caused by high levels of organic pollutants and water-borne diseases. Access to safe water in terms of improved water sources is very poor. In rural areas only 39% of the population have access to improved water sources. Compounded with the extremely limited access to improved sanitation (19%) in rural areas, the prevalence of water-borne diseases is therefore very high. Estimates show that over 112 000 people die every year due to water and sanitation-related diseases. Children are most vulnerable to lack of safe and improved water and sanitation. Prevalence of diarrhoea among children under is high among children that drink water from unprotected wells (18%). A recent health survey showed that one in four children (between 6-23months) had diarrhoea within a two-week period of the survey.⁹

Reflection:

The main drivers of environmental degradation in Ethiopia include high population growth, high urbanisation rate, as well as an economic growth that is largely driven by agricultural production, infrastructure expansion and increasing energy demand. Key environmental challenges for Ethiopia include climate change, soil degradation and deforestation.¹⁰ Climate change leading to variability in temperature and rainfall is expected to increase further over the past century. More droughts and floods will have negative impacts on agricultural production and negatively affect the national economy and peoples livelihoods.¹¹ Although some progress has been made Ethiopia faces many challenges towards achieving the MDG 7 - Ensure environmental sustainability. Efforts have been made to increase forested areas, however total land area covered by forest has decreased from 12.5% to 11.2% since 2000. Moreover, deforestation appears to be happening at a more rapid pace today compared to 2005.¹² In terms of environmental performance, Ethiopia is ranked 70 out of 132 countries according to the 2012 Environmental Performance Index (EPI).¹³ Overall, some improvements are seen in the area of environmental health but there is a downward trend in terms of ecosystem vitality. Although improving Ethiopia is still among the countries in the world with the lowest performance regarding indoor air pollution and water in terms of effects on human health. Furthermore, according to the EPI trend Ethiopia's performance is declining in the area of climate change, state of the forests and water in terms of ecosystem effects.¹⁴

⁸ SCA, 2012

⁹ SCA, 2012

¹⁰ AfDB, 2011

¹¹ World Bank, 2012b

¹² World Bank, 2012 and World Bank, 2005

¹³ Yale University, 2012

¹⁴ Yale University, 2012

3. What are the effects of the environmental problems?

3.1 Impacts on poverty

Population growth remains high at around 2.2%¹⁵ and out of the over 84 million people that today live in Ethiopia around 80 % live in rural areas and 20% in urban areas¹⁶. Many are poor but according to the MDG progress report of 2010, Ethiopia is on its way to achieve the targets of halving poverty by 2015. Around 29% of the population live in extreme poverty.¹⁷ However, even though the MDG1 target would be reached 2015, still over 20% of the Ethiopian population, almost 20 million people¹⁸ will live in poverty and hunger.¹⁹ Furthermore, despite the progress of reducing poverty in Ethiopia during the last years, poverty is still widespread and inequality remains high. Income inequality has risen in both rural and urban areas but is more evident in urban areas.²⁰ During the last years the Human Development Index (HDI) for Ethiopia has improved. However, Ethiopia is still far below the regional average in Sub-Saharan Africa. Furthermore, an adjusted HDI that includes the large inequalities in life expectancy, education and income makes the HDI fall even lower.²¹

For many of the poor people in Ethiopia, land, water, forests and other natural resources are important for their livelihoods. Lack of access to land and other natural resources may be a key constraint to improved livelihood opportunities. Environmental quality and sustainable management of natural resources play important roles for the people of Ethiopia and the country's prospects to reduce poverty, enhance welfare and sustain economic growth. The key poverty-environment linkages in Ethiopia are mainly related to natural disasters (e.g. drought), lack of secure tenure of land and other natural resources, deforestation and decreasing resilience of ecosystems, unreliable access to food and water, and climate change.

Research indicates that climate change impacts will increase the challenges faced by poor women and men in Ethiopia whose livelihoods depend on the environment. Deforestation, loss of soil resources, and loss of water access are weakening the resilience of the men and women who are most dependent on these resources. Effects of climate change e.g. changed rainfall patterns and also extreme weather events such as droughts negatively affect agricultural production and food security. In Ethiopia, food insecurity is widespread due to chronic drought and flooding.²² Moreover, climate variability and change affects women disproportionately as it makes fuel wood and water difficult to access forcing. This forces particularly rural women, to walk longer distances to fetch water and collect fuel wood.²³

Women's status is generally low and women are at a disproportionate at risk from environmental degradation, conflicts, and natural disasters, due to gender roles, and historic, cultural and socio-economic reasons. Despite legislation to protect their land rights women often have insecure access to land and their land ownership is secondary (through their relationships to men). Traditionally, land is transferred to men, but land certification in both

¹⁵ World Bank, 2012b

¹⁶ CIA, 2013

¹⁷ MoFED, 2010

¹⁸ Estimates made without including population growth.

¹⁹ MoFED, 2010

²⁰ UNDP, 2011

²¹ UNDP, 2011

²² World Bank 2012

²³ MoFED, 2010

women's and men's names have increased which has given women a somewhat better negotiating status within the households.²⁴

Only about one household in every four (23%) has electricity, with a very large disparity between urban and rural households (85% versus 5%).²⁵ Due to the lack of electricity other energy sources such as wood, charcoal, dung and crop are used for cooking and heating. Urban populations are growing and although an enormous effort has been put into the provision of housing and basic services and improving slum areas, further efforts are required due to increasing demand. There is a need to improve urban land management, the implementation of solid waste disposal and water-borne sewage disposal systems.²⁶

The economic costs of environmental degradation on poor are clear as the poor are unable to protect themselves adequately against environmental hazards such as drought, afford to take sufficient remedial actions, to engage in alternative livelihoods which can protect them from the environmental risks, or to provide themselves with alternative sources of income and employment.

3.2 Economic development

Ethiopia has set its vision to reach middle-income status by 2025. During the last decade Ethiopia has had a remarkable economic growth rates with an increase in GDP by an average of 10%/year. The high growth rate is expected to continue.²⁷ An analysis of the high economic growth rate and export per sector from 2003 until recent years (see Annex I) shows that agriculture is one of the large economic sector and that Ethiopia has had noticeable growth rate in the mining sector. During 2011 growth rates the Ethiopian mining sector was remarkably high at 55.7%.²⁸ Furthermore, the service sector has also been a major drive towards the economic growth, contributing to half of the total growth during the last decade.

It is evident that the Ethiopian economy (as most economies) is highly dependent on natural resources. Exploitation of these natural resources may generate large economic benefits in the short term. However, in the long term unsustainable use of these natural resources increases not only environmental degradation, but decreases economic growth and livelihood opportunities.

Ethiopia's flourishing economy is both a key driver to environmental degradation and at the same time the economy is negatively affected by the environmental problems that the country is phasing. The agricultural together with the service sector is the backbone of the Ethiopian economy. Both smallholder and commercial agricultural production may have significant impact on the environment. Unsustainable agricultural practices cause soil erosion, loss of soil fertility, loss of biodiversity and ecosystem services. For example, the use of chemical fertilisers to increase agricultural yields has serious impacts on the surrounding environment. Intensified and inefficient agricultural production not only leads to soil depletion, pollution and loss of ecosystem services it also causes water shortage.

²⁴ World Bank 2012

²⁵ EPA, 2012

²⁶ MoFED, 2010

²⁷ Economist, 2011

²⁸ AfDB, 2012

Agriculture is the source of livelihood to an overwhelming majority of the Ethiopian population as it employs more than 80% of the labor force.²⁹ Ethiopia's agriculture is heavily dependent on natural rainfall, with irrigation agriculture accounting for less than 1% of the total cultivated land. Thus, temperature, the amount and temporal distribution of rainfall and other climatic factors during the growing season are key determinants to the crop yields and, in turn, food shortages, malnutrition and famine.³⁰ Access to water is extremely important to maintain agricultural production and will become even more pressing in some areas of sub-Saharan Africa, including Ethiopia, due to the impacts of climate change. The expanded cut flower industry in Ethiopia is an example of an industry that requires intensive water use. Moreover, the cut flower production also requires use of fertilizers and pesticides, which pose a risk of pollution to water, soil and air.

Mining operations are unsustainable mainly due to the depletion of a finite non-renewable resource and insufficient investments from resources revenues. Furthermore, mining has a large negative impact on the environment through e.g. high energy and water consumption, air, water and land pollution and soil erosion. During the recent years higher metal prices have made mining of lower grade "difficult-to-access ores" profitable which has resulted in higher energy and water use, and more pollution.

3.3 Impacts on Public Health and Education

Lack of access to safe drinking water, sanitation, and health services negatively affects people's health. There are strong links between environment and health concerns in Ethiopia, particularly related to malnutrition, indoor air pollution and water-related diseases. In Ethiopia about 40% of the population is undernourished and over 28% of all children are underweight.³¹ Despite improvements, significant reductions in the current levels of underweight children under five years old are required to meet the MDG target 2015. Malaria, pneumonia, and diarrheal diseases account for the major causes of child deaths in Ethiopia.³²

Diarrheal diseases are strongly linked to contaminated water and lack of access to basic sanitation. Diarrhoea prevalence is highest among children in households in rural areas that drink from unprotected wells.³³ There are large differences in access to water between rural and urban areas, 34% in rural areas have access to an improved water source compared to 97% urban areas. Furthermore, the access to improved sanitation is low both in rural and urban areas. Only 19% have access to improved sanitation in rural areas and 29% in urban areas respectively.³⁴ WHO estimates show that over 112 000 people die every year due to lack of access to safe drinking water and sanitation.³⁵ Climate change may impact both quantity and quality of water resources, and may thus worsen the situation if no adaptation measures are introduced. Deaths due to diarrhoea are significantly larger compared to many other Sub-Saharan African countries (See table below). The table shows figures for Ethiopia, Kenya and Uganda for comparison. The table also shows a high number of deaths per year due to indoor and outdoor air pollution.

²⁹ MoFED, 2006

³⁰ Yesuf, 2007; Yesuf and Kassie, 2007

³¹ MoFED, 2010, and FAO, 2009

³² MoFED, 2010

³³ CSA, 2012

³⁴ CSA, 2012

³⁵ WHO, 2009

Biomass fuel such as wood, charcoal, dung and crop residues remains the principal energy source of the country. Rural poor households often use open fires for cooking, causing indoor air pollution resulting in respiratory diseases. Over 70 000 Ethiopians die every year due to indoor air pollution. Especially women, children and elderly are exposed to indoor air pollution.³⁶ Reducing indoor air pollution will yield benefits for the poor, and help achieving the MDG 4 (reducing child mortality), and 5 (improve maternal health).

Table 1. Estimated deaths and DALYs³⁷ attributable to selected environmental risk factors

WHO estimates	Water Sanitation & Hygiene	Indoor air pollution		Outdoor air pollution	
Country	Diarrhoea DALYs/1000 capita per year	Deaths/year	DALYs/1000 capita per year	Deaths/year	DALYs/1000 capita per year
Ethiopia	49	72 400	31	2500	0,5
Kenya	24	14 300	13	600	0,2
Uganda	35	19 700	23	100	0,1

Source: WHO (2009)³⁸

Malnutrition is a serious problem, indicating that socio-economic human rights are not fulfilled. The high level of undernourishment (41%) has large consequences for health, productivity and education. For example, malnutrition has a negative impact on children's educational achievement. It is difficult to focus on studies when hungry and fatigued. Climate variability e.g. droughts and floods is a threat to food security and children's education.³⁹ Around 10 million people live in hazard zones at high risk of droughts. Furthermore, since the 1980s more than 57 million people have been affected by extreme weather events e.g. floods and droughts.⁴⁰ These events are expected to become more common due to climate change.

Reflection:

Key poverty-environment linkages in Ethiopia are related to: environmental health concerns related to malnutrition, polluted water and indoor air pollution; vulnerability to natural disasters and climate change; lack of secure tenure to land and other natural resources; and unreliable access to food and water. Ethiopia has during the last years made progress in terms of share of population that has escaped extreme poverty and food insecurity. Population living in poverty has decreased from 39% (2005) to 29% (2011) and people that are undernourished has decreased from 47.7% (2005) to 40.2% (2011).⁴¹ However, due to population growth still over 24 million people lives in poverty (compared to 26.5 million in 2005) and more people (over 33 million) lack sufficient food today compared to 2005 (32 million).⁴² Furthermore, Ethiopia is one of the 10 countries in the world with the largest un-served populations in terms of access to water and sanitation.⁴³ Access to clean water has significantly increased since 1990 (MDG baseline), from 14% to 44%. According to MoFED Ethiopia seems to be on

³⁶ WHO, 2009

³⁷ Disability-adjusted life year (DALY) is a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death.

³⁸ The latest data presented by WHO

³⁹ MoFED, 2010

⁴⁰ Preventionweb, 2013

⁴¹ UN Statistical Division, 2013, MoFED, 2010

⁴² Calculations based on information from Un Statistical Division 2013, CIA 2013 and World Bank 2005.

⁴³ Unicef/WHO, 2012

track to meet the MDG target of access to water (57%) in 2015.⁴⁴ Improvements regarding access to sanitation are lower. In 1990 only 3% of the Ethiopian population had access to basic sanitation. Today around 21% have access to basic sanitation, which is low, and the target of 51.5% will most likely not be achieved in 2015.⁴⁵ Moreover, although the proportion of urban population living in slum has improved, still more people are living in slum with lack of sufficient housing, basic services etc. today than in 2000.⁴⁶

Regarding the Ethiopian economy, the national expenditure is focused on growth enhancing pro-poor sectors of agricultural development, food security, water, education, health, road and rural electrification programs.⁴⁷ Accelerated growth rates in agricultural sector, industrial sector as well as services has led to high economic growth during the last years. During the last two years improved agricultural inputs and practices e.g. fertilizers, improved seeds, dissemination of best agricultural technologies and farming techniques via training have led to an increase in agricultural production, however, contribution of the agricultural sector to the overall economy is slightly declining. Increase agricultural production and expand infrastructure investments is seen as two prioritised areas to maintain high growth rates.⁴⁸

4. Policy framework for managing environmental challenges

This section provides brief information on Ethiopia's national development priorities, how environmental aspects are mainstreamed into policies, which the key actors are, and how the environmental challenges are addressed.

4.1 Policies, laws and regulations

Over the last two decades, the Ethiopian government has put in place a number of policies, strategies and laws that are designed to support sustainable development. The country has developed and implemented a wide range of legal, policy and institutional frameworks on environment, water, forests, climate change, and biodiversity (see Annex II).

Under the Plan for Accelerated and Sustained Development to End Poverty (PASDEP), implemented from 2005/06 to 2009/10, Ethiopia achieved rapid economic growth and laid a foundation for future growth by e.g. investments in infrastructure and human capital.⁴⁹ Ethiopia's new five year plan, the Growth and Transformation Plan (GTP) for 2010/11–2014/15, sets even higher growth and investment targets, including achievement of all Millennium Development Goals.⁵⁰

The Environmental Policy of Ethiopia was approved in 1997 and is the first key document that captured environmental sustainable development principles. Ethiopia's Programme of Adaptation to Climate Change (EPACC) is a programme of action to build a climate resilient economy through adaptation at sectoral, regional and local community levels. The EPACC updates and replaces Ethiopia's National Adaptation Programme of Action (NAPA) which

⁴⁴ MoFED, 2010 and UN Statistical Division, 2013

⁴⁵ UN Statistical Division, 2013 and MoFED, 2010

⁴⁶ UN Statistical Division, 2013

⁴⁷ MoFED, 2013

⁴⁸ MoFED, 2013

⁴⁹ Engida et al, 2011

⁵⁰ World Bank, 2013a

was formulated and submitted it to the UNFCCC Secretariat in 2007. Ethiopia also has an overarching framework and a national strategy towards a green economy, the “Climate Resilient Green Economy” (CRGE) 2011.⁵¹ For more information regarding the CRGE see chapter 5.2.

EIA procedures should be applied to plans according to the EIA proclamation No: 299/ 2002. Strategic Environmental Assessment (SEA) has been introduced to Ethiopia quite recently. However, there is no SEA proclamation or guidelines on SEA in place.

4.2 International obligations

Ethiopia is signatory to a number of multilateral agreements that have bearing on the sustainable development efforts of the country. Ethiopia has signed and/or ratified many of the international conventions and protocols e.g. the United Nations Framework Convention on Climate Change (1994), the Convention on Biological Diversity (1994), the United Nations Convention to Combat Desertification (1994), the Cartagena Protocol on Bio-safety to the Convention on Biological Diversity (2000), and the Stockholm Convention on Persistent Organic Pollutants.⁵²

Two environmental issues are of particular relevance and importance to Ethiopia from an international perspective: regionally shared water resources and climate change. Regarding regional water resources, Ethiopia is home to the Blue Nile and Ethiopia’s role as a major upstream water source constitutes an opportunity as well as a potential source of international conflict. Generally, the downstream countries are vulnerable to changes in water flows induced by action in the upstream countries. Consequently, Ethiopia is a member of the Nile Basin Initiative (NBI) and participates together with the governments of Egypt and Sudan in the Eastern Nile Subsidiary Action Programme (ENSAP).

4.3 National priorities

The Government of Ethiopia’s current five-year development plan (2010/11-2014/15), the Growth and Transformation Plan (GTP) is focused on a broad-based development in a sustainable manner to achieve all the MDGs. Key goals include:

- Rapid economic growth with GDP per capita expected to reach US\$698 by 2015 (almost doubled compared to current GDP per capita US\$350);
- Increase agricultural production is to double, to ensure food security in Ethiopia for the first time;
- Increase contribution from the industrial sector (mainly production in sugar, textiles, leather products and cement)
- The roads network should increase from 49,000 km to 64,500 km by 2015;
- Power generation capacity will increase from the current 2,000 MW to 8,000 MW, and the number of customers from the current two million to four million by 2015;
- Construction of 2,395 km of railway line; and,
- Achievement of all Millennium Development Goals (MDGs)⁵³

Ethiopia has also taken the decision to set its vision to achieve middle-income status by 2025 while developing a green economy through the Ethiopia’s Climate-Resilient Green Economy (CRGE) vision and strategy. For more information see chapter 5.2.

⁵¹ EPA, 2012

⁵² EPA, 2012

⁵³ World Bank, 2013a

Large financial investments are needed to reach the vision of a middle- income country by 2025. The Ethiopian government spends around 60% of its total expenditure on poverty oriented sectors, such as agriculture, education, health, water, and road development.⁵⁴

4.4 Mainstreaming of environment and climate change in the policy framework

According to African Development Bank (AfDB) the Ethiopian government's existing policy and institutional framework for natural-resource management and the environment is adequate and sound. Policies are mainstreamed in sectoral programmes which are implemented at the federal, regional and district (woreda) levels. Furthermore, the Growth and Transformation Plan recognizes poverty-environment linkages and the importance of sound environmental management in sustainable development.⁵⁵

The Ethiopian government continues to make efforts to mainstream environmental issues in development processes. In Woredas preparations and implementation of environmental management plans is on-going, including the scaling up of the protection and conservation practices (water, forestry) through community participation.⁵⁶

Although progress has been made and environmental issues are stated as priority in many policies, there is lack of implementation, and enforcement needs to be strengthened. Increasing economic growth and attaining middle-income country status by 2025 might result in improvements for some environmental problems but might increase pressure on some resources (such as water and energy) and increase emissions of some pollutants, typically those linked with urban traffic, transport and industrial production. Furthermore, environmental degradation and climate change hampers Ethiopia's economic growth. To reach its vision Ethiopia needs to speed up mainstreaming of environmental issues and institutions need to be strengthened to attain sustainable development and a green economy.

4.5 Governance, enforcement and implementation

Strengthening important human rights principles such as the rule of law, transparency and public participation may be equally or more important than specific environmental policies or projects in order to improve environmental outcomes. Improving environmental outcomes is thus not only dependent on legal frameworks and the capacities of the environmental authorities and sector ministries, but also largely on external factors that provide the 'enabling environment'.⁵⁷

Ethiopia has during the last years developed many policies and laws that link to improving the environment. Environmental authorities are in place and many international environmental agreements have been signed. However, there are gaps between the environmental commitments made and the actual implementation to improve environmental outcomes.

During the past decade Ethiopia has made progress in decentralizing authority and service delivery which has contributed to improved access to basic services and to more effective decision-making bodies. Legal frameworks at the federal and regional levels have been

⁵⁴ MoFED, 2010

⁵⁵ AfDB, 2012

⁵⁶ AfDB, 2012

⁵⁷ Ölund Wingqvist et al, 2012

strengthened.⁵⁸ However, as mentioned above, there is still a lack of capacity, law enforcement remains weak and implementation and follow up needs to be strengthened.

There has been a series of modernization efforts across the public service, including Public Financial Management reforms.⁵⁹ Efforts have been made at reforming the tax system resulting in a fivefold tax collection increase from 2005 to 2012.⁶⁰ However, although improvements have been made assessments of 2007 and 2011 indicates that there is a wide variability in capacity, systems and practices across the country. Furthermore the assessments highlight the need to address remaining PFM weaknesses in e.g. tax collection, internal and external audit, legislative oversight and scrutiny as well as transparency.⁶¹ The low ranking of the Transparency International corruption perception index (CPI)⁶² indicates that incidence of corruption is high (Ethiopia is ranked 133 of 176 countries).⁶³

4.6 Capacity constraints

Weak capacity in environmental management and enforcement are key challenges.⁶⁴ There is a lack of skilled human resources in key sectors and prioritized initiatives. Pollution control is lacking and monitoring, reporting and verification of abatement measures is weak.

There is a need to strengthen capacity (for analysis, monitoring, reporting and verification) at all level and invest in human resources development if the ambitious goal of the CRGE is to be met. Financial constraint is another area of concern. According to the EPA external factors such as the declining flow of new and additional financial resources from developed countries to developing countries (as promised by the international community) is affecting the progress towards sustainable development and the implementation of both the GTP and CRGE.⁶⁵ Ethiopia also phases challenges in coordinating and integrating different development initiatives.⁶⁶

Moreover, follow up on implementation is weak as there is a lack of statistics and suitable indicators. There is both a need for proper indicators that are possible to monitor and for mechanisms that ensures repeated assessments of progress. Proper indicators of sustainable development are currently not available in Ethiopia.⁶⁷ The quality of the data is improving although it is still a challenge, and there are doubts around the accurateness of the figures.

⁵⁸ AfDB, 2012b

⁵⁹ World Bank 2012b

⁶⁰ World Bank 2012a

⁶¹ World Bank 2012b

⁶² The Transparency International Corruption Perception Index (CPI) measures the degree of perceived corruption in a country. Corruption is relevant for natural resources, as for example illegal logging and extraction of minerals (diamonds, gold, coal etc.) and associated illegal trade are almost always intertwined with corruption. Corruption then results in a loss of government revenue that could be invested in sustainable natural resource management or general economic development. Corruption levels are also relevant for concessions and for (poor people's) access to land. CPI score and rank 176 countries and is updated annually and easily accessible.

⁶³ Transparency International, 2013

⁶⁴ AfDB, 2012b

⁶⁵ EPA, 2012

⁶⁶ EPA 2012

⁶⁷ EPA, 2012

Reflection:

Ethiopia's government has shown political environmental will by establishing environmental protection agencies at federal level and in all regional states, as well as formulating various environmental proclamations and ratifying important environmental conventions.⁶⁸ Moreover, establishment of the national strategy Climate Resilient Green Economy (CRGE) gives a strong indication of Ethiopia's high ambitions and strive to move towards a greener economy. However, Ethiopia phases many challenges in terms of lack of human and financial capacity. Environmental governance needs to be improved at all level. Weak capacity in environmental management, law enforcement and monitoring are key challenges that need to be addressed in order to meet MDG targets and move towards a greener economy.

According to the EPI trend Ethiopia's performance is declining in the area of climate change, state of the forests and water in terms of ecosystem effects. This means that if the environmental governance will not improve the state of Ethiopian ecosystems and its services will continue to deteriorate with consequences on economic growth, public health, resilience, agriculture and energy.

5. Risks and opportunities

5.1 Risks

Pollution, natural resource depletion and human health are closely linked, and particularly so in Ethiopia, where the environmental degradation poses a major risk to human health. Indoor and outdoor air pollution, unhygienic or unsafe food, improper waste disposal, absent or unsafe vector control and exposure to chemicals are major environmental health hazard and adequate water and access to sanitation and hygiene is of outmost importance for people's health. Biodiversity provides goods and services such as food and medicinal plants that promote human health. However, rapid population growth, urbanization, agricultural expansion, land degradation and climate change are threatening these services. This indicates that environmental-health issues deserve a high priority consideration in national development.

Climate change mitigation is stated as key issues to reach a green economy. Although this is true, adaptation measures should receive as much focus (if not more) than mitigation as Ethiopia is one of the countries in the world that is extremely vulnerable to impacts of climate change but has contributed the least to the problem. When moving towards a green economy low-carbon investments in e.g. infrastructure are highly important. However, in a country that is extremely vulnerable to climate change like Ethiopia focus should also be on sound adaptation measures. Investments should be low-carbon and high resilient.

Secure low carbon high resilient energy supply is a challenge that Ethiopia phases. Hydropower is important for Ethiopia and the Grand Millennium/ Renaissance dam and Gibe III dam is expected to be large sources of energy. Moreover, Ethiopia would like to make hydropower a major national export, but there is a risk that increased climate variability in the future could cause the nation's dams to generate less power than expected.

⁶⁸ UNDP, 2010

The high growth rate within the mining industry and continued global demand is both an opportunity to increase the country's revenues, in line with the vision 2025, but it is also a major challenge in terms of natural resources and environmental degradation. Mining practices demands a lot of water as well as energy. Mining sites are a major risk to the surrounding environment due to the high risk of pollution to water, soil and air, threatening nearby ecosystems as well as human health.

5.2 Opportunities

Green Economy/Green Growth

As mentioned briefly above, Ethiopia has embarked on implementing an ambitious Climate Resilient Green Economy (CRGE) Strategy. Coordinated by EPA, and with strong political support from the Prime Minister's Office and the Ministry of Finance and Economic Development (MoFED) and line ministries, the Green Economy Strategy provides an opportunity to promote sustainable development in Ethiopia. Currently it builds on an investment plan of over 60 initiatives that are, or can be, turned into financed projects.

While building a climate-resilient green economy, Ethiopia's vision is to achieve middle-income status by 2025. For this to happen there is a strong need to reform the economy. The CRGE is envisioned to be the main driver for this transformation. The CRGE has three complementary objectives: i) fostering economic development and growth, ii) Ensuring abatement and avoidance of future GHG emissions; and iii) Improving resilience to climate change. To achieve these objectives CRGE sets out to tap into international climate finance, seize opportunities for innovation and new technologies, and create competitive advantages via sustainable resource use and improving productivity. Thematically the investment plan (of +60 initiatives) covers four different areas of work: 1) Improving crop and livestock production practices for reduced emissions, and increasing food security and farmer income; 2) Protecting and re-establishing forests for their carbon stocks and other ecosystem services; 3) Expanding electricity generation from renewable sources of energy for domestic and regional markets; and 4) Moving quickly to modern and energy-efficient technologies in rural cooking, transport, industry, and buildings.

The Strategy is strongly focusing on reducing Ethiopia's emissions of greenhouse gases (GHGs). Internationally this is politically and financially attractive since there is a strong global need and commitments to mitigate climate change. Nationally this approach also produces many co-benefits such as reducing the use of locally polluting sources of energy (such as fuelwood and charcoal) Financial requirements for implementing CRGE's plans are estimated at \$150 billion over the next twenty years. Managed by MoFED, a CRGE Funding Facility is created, which centralizes the various sources of finance for implementing the priority projects.

Ethiopia's CRGE Strategy is clearly a very high-profile policy initiative, which has already attracted much attention internationally and mobilized actors across Ethiopia's government civil society stakeholders. It builds on earlier development strategies, which link economic growth, poverty reduction and sustainability, most prominently the Sustainable Development for Poverty Reduction Program (SDPRP, 2000-2004), the Plan for Accelerated and Sustained Development to End Poverty (PASDEP, 2005 to 2009), and the Growth and Transformation Plan (GTP, 2010-2014). The Strategy adds real value to these previous strategies by mapping out requirements to green Ethiopia's economy. It offers a clear policy commitment, with some

initial investments, but at present it is more a vision than an outcome and there is a long way to go before it can be realized. Obstacles to implementation include e.g. financing of all proposed investment projects and activities (public as well as private financing), administrative and analytical capacity to concretize the proposed projects, and sufficient technical capacity for implementation.

Arguably, the CRGE strategy offers a real opportunity and makes economic sense; it focuses on certain critical natural resource endowments, and addresses (socio-economically and environmentally) linked risks facing the country with a comprehensive approach. It identifies low-cost measures, and relies (to a large extent) on attracting international and private finance. Much of the work lies in the future, but already now Ethiopia pursues some green economy initiatives. Prominent examples include the National Clean Cook Stove Program Ethiopia (NCCSPE), the National Biogas Program for Ethiopia (NBPE), clean energy and wind power investments (e.g. the two wind turbines being built in Tigray and Oromiya which will generate some 170MW), ethanol production (supported by the Biofuels Development and Utilization Strategy), existing and planned dams (including Gibe III, with sufficient environmental mitigation and management as a strong caveat), in community forest and development (e.g. the Humbo Community-based Natural Regeneration Project), and the Sustainable Land Management (SLM) program.

The SLM program is an early initiative and was initiated in 2005. Until now it has achieved several tangible results: around 50,000 households have adopted sustainable land management practices, and about 77,000 hectares of land have been rehabilitated. 79,000 hectares of forest are subject to participatory forest management principles. The SLM program also represents a real case of how Green economy can be operationalized in practice by protecting natural assets (reverse land degradation), and increasing local development by improving agricultural productivity in Amhara, Oromiya and Tigray regions. Besides own funding it has been funded by e.g. the World Bank, Finland, EU and Germany.

While being a novel initiative with promising plans and investments, certain elements are subject to concerns and further improvement to ensure successful implementation and possible up-scaling. Consultation was not extensive; essentially it is a top down initiative, which built on the previous consultations of the GTP. It does not offer a fully comprehensive plan on all aspects of green growth, more sectors and areas of development needs to be taken on board (e.g. mainstreaming biodiversity in several sectors, address pollution across land, water and soils, reinforce soil and water conservation in agriculture). It does relatively little to address: i) specific poverty and inequality issues connected to natural assets and environmental hazards, ii) distributional implications of its recommendations (“who will be the winners and losers from the CRGE’s approach to green growth?”), and iii) opportunities for the poorest who are strongly dependent on environmental resources and amenities, iv) goal conflicts between e.g. hydro-power development and water supply in downstream, areas (and more generally the hydrological impacts in upstream as well as downstream areas), oil development and pollution; biofuel development, water and land rights.

Strengthening Rights:

Strongly linked with the CRGE Strategy is the opportunity to strengthen rights to enhance environmental management and welfare. Failure to strengthen rights implies a risk; weakened rights contribute to environmental degradation and reduced welfare, especially among the poorest and marginalized groups. CRGE focuses on climate change as the main problem driving green growth. It acknowledges the far-reaching and substantial risks people and the

country face as an effect of climate change, and its associated natural resource hazards. However, it misses – and it is important to identify and address – other problems that could also create strong demand for more inclusive and green growth. Most importantly this includes lack of rights to land and natural assets, resource scarcities and rapid food- and energy-price changes. Here it is key to strengthen rights regimes for natural assets, such as water, lands, trees/forest resources, carbon and other ecosystem services, ensure they are shared equitably, and support sustainable practices. Rights can be strengthened by stronger and clearer legislation, or enhanced implementation of existing rights. Ethiopia's land reform program is a good example of such strengthening of rights. Similar processes linked to strengthening and clarifying carbon rights (in soils and in trees/woody biomass) would be useful to prevent conflicts in the implementation of REDD schemes.

Strengthening rights and livelihoods are also important for slightly other reasons: Environmental problems, such as soil erosion, air pollution, and land and water scarcity, can cause social dislocation and conflict and drive demand for green responses. Green economy approaches thus represent a means to address environmental problems, but also address social issues such as resource rights. The Sustainable Land Management program and the land reform with its land certification and registration constitute important livelihood opportunities by strengthening rights – poor peoples' rights over land, soils and water and other ecosystem services.

Several legal, social as well as economic policy instruments exist to strengthen rights. For instance Payments for Ecosystem Services (PES) offer a market-based incentive to conserve critical ecosystem services while obtaining monetary compensation (from the service beneficiaries) from doing so. Entitling people or communities rights over ecosystem goods and services, linked with financial benefits from these goods and services, offer large potentials in Ethiopia, given its vast natural resource base and hitherto limited use of strengthening rights for environmental and economic purposes. However, for effective and efficient implementation, the benefits have to be weighed against the costs of producing them and in the case of very complex ecosystem services (e.g. biodiversity, hydrological balance via e.g. soil conservation) it might be very difficult to identify the costs as well as the benefits.

Some disadvantaged groups would benefit relatively more than others from strengthened rights. This applies in particular for poor (rural and urban) women who currently have very weak rights and entitlements to land, water and other private and public natural resources (commons).

Reflection:

Climate change, land degradation, deforestation, water pollution and lack of access to water pose significant risks to Ethiopia's possibility to attain sustainable development. In addition driving forces such as high population growth, rapid urbanization, and economic growth put additional pressures on the country's natural resources and environmental quality. However, rightly managed, Ethiopia's economic growth also constitutes an opportunity to reduce environmental pressures and a source of financing for much needed environmental investments. In this context Ethiopia's Climate Resilient Green Economy strategy constitutes a particularly promising and important initiative to promote resource efficient, low-polluting alternatives to business-as-usual economic growth, which entails significant environmental risks such as continued reliance on, and use of, polluting sources of energy, erosive agriculture, non-sustainable forestry, and depletion of natural capital in sectors like mining and construction.

Although Ethiopia's Climate Resilient Green Economy strategy offers a real opportunity to transform major sectors of the economy towards more environmentally sustainable practices and new sources of income, there is a need to: i) ensure large scale implementation of it during the years to come, ii) secure sufficient financing of its proposed investment projects, and iii) broad based distribution of incomes, to promote local buy-in and ownership. Hitherto the CRGE strategy has largely been a top-down process, which needs to be complemented with more bottom-up buy in and local community engagement, in order to offer a concrete pathway for large segments of Ethiopia's poor to increase their welfare without jeopardizing the natural capital base on which they depend. Ethiopia also faces significant challenges and potentials in its work to strengthen rights, especially among the poor and vulnerable and among small holders. Arguably, the land reform represents a particularly useful initiative to strengthen rights, and in so doing, obtaining several other benefits, such as more long-term investments in sustainable land use and maintenance of natural capital more broadly. This may be achieved by more long term initiatives such as tree plantations, investment in soil conservation structures, and other similar investments which favour the environment as well as economic and social development.

6. Other issues

6.1 Addressing MDG 7

The Sida Helpdesk for Environment and Climate Change has written a note regarding the Swedish approach to MDG7 which can be seen as a point of departure for how to operationalize MDG7 in result strategies. See separate document.

6.2 Addressing resilience

A safe and resilient community:

- ...is knowledgeable and healthy. It has the ability to assess, manage and monitor its risks. It can learn new skills and build on past experiences
- ...is organised. It has the capacity to identify problems, establish priorities and act.
- ...is connected. It has relationships with external actors who provide a wider supportive environment, and supply goods and services when needed.
- ...has infrastructure and services. It has strong housing, transport, power, water and sanitation systems. It has the ability to maintain, repair and renovate them.
- ...has economic opportunities. It has a diverse range of employment opportunities, income and financial services. It is flexible, resourceful and has the capacity to accept uncertainty and respond (proactively) to change.
- ...can manage its natural assets. It recognises their value and has the ability to protect, enhance and maintain them.¹

Benefits of building resilience can be seen in Ethiopia's Productive Safety Nets Programme (PSNP). The programme aims to provide households with enough income, in the form of either cash or food, to meet the food gap. The PSNP reaches more than 7 million people and operates with an annual budget of nearly 500 million U.S. dollars.⁶⁹ PSNP targets chronically food insecure households. The combination of cash and food transfers is based on season and need, with food given primarily in the lean season between June and August. Vulnerable households receive six months of assistance annually to protect them from acute food

⁶⁹ EPA, 2012

insecurity.⁷⁰ Studies have shown that PSNP has had a positive impact on the livelihoods of households. The 40,000 public works projects have increased food security by rehabilitating degraded land and creating productive community assets such as terraced fields, and small-scale irrigation systems.⁷¹ At the household level, families are experiencing improved food security, increased asset creation and protection, increased utilization of education and health services and improved agricultural productivity. Between 2008 and 2012 about 500 000 households graduated from PSNP.⁷² However, recent numbers show that fewer households graduated during 2012 than what was first planned which indicates that additional efforts are needed to reduce the number of beneficiaries to the target level of 1.3 million by 2015 (the end of the Growth and Transformation Plan GTP).⁷³

6.3 Land reform and transitions

Land certification and registration

Four regions in Ethiopia have increased tenure security by implementing the system of land certificates (Tigray, Amhara, Oromia and SNNPR). A land certification system guarantees farmers user rights to land and legalizes demarcation caused by heritage and divorce in rural areas.⁷⁴ Land degradation can be solved by long term investments e.g. building terraces for soil conservation. Tenure insecurity has great impact on farmers' willingness to invest.⁷⁵ This indicates that in the absence of secured property rights land- and natural resource degradation will accelerate.

Research shows that the land registration and certification reform in Ethiopia has been implemented at high speed, with low-costs, and with significant impacts on investment in land. It also shows that land certificates have had positive effects on land productivity and that land productivity has increased.⁷⁶ Furthermore, land certificates has been proven to maintain conservation technologies and enhance natural resources management activities e.g. tree planting.⁷⁷

There are some policy issues concerning land titling and rights. All adults in Ethiopia are entitled to land but at the same time further redistributions are practically prohibited. This is contradictory as land is not an endless resource. An effect of the increasing population pressure and that of the redistribution-proclamations have left a loophole and might be a threat towards the perceived tenure security and credibility of certificates.⁷⁸ With continued population growth there is a strong need for new off-farm employment otherwise poverty will get worse.⁷⁹

Furthermore, when communal land tenure systems are being replaced with state or private control over land through land tenure reforms tensions over land may arise. Communal tenure such as seasonal grazing systems practiced by pastoral groups in Ethiopian lowland areas is

⁷⁰ WFP, 2012

⁷¹ World Bank, 2013b

⁷² WFP, 2012

⁷³ MoFED, 2013

⁷⁴ Deininger et al., 2007

⁷⁵ Gebremedhin, 2006

⁷⁶ For example, a study by Holden et al, 2009 found that land productivity was 40% higher on plots where the farmer had received a land certificate compared to farmers without certificates

⁷⁷ Holden and Ghebru, 2011

⁷⁸ Bergfors and Dahlberg, 2007

⁷⁹ Holden and Ghebru, 2011

based on mobility and social networks between different areas. For example, in the Afar Regional State in Northeast Ethiopia access to dry-season grazing areas and water resources has traditionally been governed by kinship and clan systems with a strong cooperation between agro-pastoralists and pastoralist. In the lower Awash River Valley in this region tensions has recently intensified between customary land users and state and private land investments since large tracts of land along the river is under preparation for irrigated sugarcane plantations. When pastoralists loose access to former grazing areas there is further an enhanced risk of disputes over land with neighbouring groups such as peasants in highland areas.⁸⁰

Strengthening land tenure through the implementation of reformed land administration systems and certificates constitutes a principal effort to promote sustainable land use. However, a number of problems and challenges have been noted when implementing the land administration programs, mainly through policy and legislative gaps, lack of sufficient technology, weak institutional capacity and inadequate financial resources. During 2011/2012 land administration systems were only implemented in 10 out of 77 planned Woredas. Furthermore, considerably fewer certificates were distributed to households than planned (over half a million first level hand certificates and over one million second level hand certificates were not distributed as was first planned).⁸¹

Land investments

The Ethiopian government is leasing out millions of ha of land to domestic and foreign investors on terms that are favourable to both, but particularly to foreign investors.⁸² These large scale land investments are seen by the government as a means to create employment, facilitate technology transfers to small-holders, and provide infrastructure and basic services to local communities. On the one hand, large scale land investments may be seen as a means to boost the economy and reduce poverty. On the other hand, the land that is “grabbed” is often used in one way or another by peasant farmers, pastoralists and their communities (for grazing, burial of ancestors, water supply, access to medicinal plants etc.).

Displacement from farmland is widespread and most do not receive any (or insufficient) compensation. Furthermore, foreign land investments create both an environmental gain and a risk. Ethiopia could gain from foreign investments through new technologies and environmentally friendly agricultural production methods as well as reduction of soil erosion through agricultural production on formerly abandoned land. On the other hand foreign land investments pose a threat to the environment. According to FAO environmental concerns over large scale foreign investments include insufficient adaptation to climate change risks, soil erosion, water security and quality as well as loss of biodiversity.⁸³ As for all countries, agricultural mono production leads to damage on local ecosystems, wildlife and biodiversity. Moreover, access to water resources is an important factor for land investments. A study by the Oakland Institute shows that there are no restrictions on how water is being used. Furthermore, Environmental Impact Assessments (EIAs) are not being produced and there is a lack of control and regulations over environmental issues.⁸⁴

⁸⁰ Ölund, 2012; Ölund, 2011

⁸¹ MoFED, 2013

⁸² OI, 2011 and Rahmato, 2011

⁸³ FAO, 2013

⁸⁴ OI, 2011

Instead of large scale agricultural land investments some argue that alternatives to create economic and social benefits could be to preserve and support the rich wildlife resources in some areas (e.g. in Gambella) and focus on sustainable activities e.g. ecotourism, controlled hunting, fishing, and income from conservation-based schemes such as REDD.⁸⁵

6.4 Increasing population – waste disposal management and sustainability

In Addis Ababa, around 70% of the solid waste is collected out of which 90% is landfilled, 5% is recycled and 5% is composted.⁸⁶ This means that around 30% of all solid waste is disposed in open spaces e.g. rivers, ditches or is burned. The Ethiopian population is expected to be 120 million by 2030. That is an almost 50% increase from today's 84 million. The urbanization rate is high at 4.4%, as more and more people are moving from rural areas to urban cities, mainly to Addis Ababa. The daily waste generation in Addis is today 0.252 kg per capita per day. Compared to other countries this is not a very high number, but with increasing urbanization and an economic development with rising consumption the total solid waste generation will continue to grow.⁸⁷

The inefficient solid waste management by the municipality increase accumulation of waste on open lands and in the open drainage system causing environmental pollution through leaches from piles (water and soil) and the burning of waste (air pollution) which affects people's health.⁸⁸

6.5 The use of environmental impact assessment

An Environmental Impact Assessment (EIA) is a tool used for an environmental assessment of individual projects (e.g. dam, mining facility etc.) to ensure that the environmental implications are taken into account before decisions are made.⁸⁹ In Ethiopia, the EIA Proclamation of 2002 and the procedural guidelines developed by EPA sets the framework for EIA processes. Today, approximately 30 EIA's are produced at the Federal level annually.⁹⁰ The figure is relatively low, mainly due to the fact that only larger EIAs are carried out at the federal level. Most EIAs are conducted at the regional level. There the number has increased over the years, and is expecting to increase even further in the years to come. As an indication, in the Addis Abeba regional EIA jurisdiction between 360-400 EIAs are carried out annually, with a slight increase over the years.⁹¹

Sufficient EIA capacity in the government and among external EIA experts (mostly consultants) is a constraint. In addition implementation and follow-up of EIAs is still weak. To meet the legal requirement of EIA capacity both in terms of institutional capacity, human skills, and financial measurements needs to be strengthened. Moreover, there is a lack of awareness and widespread misconceptions about EIA in Ethiopia; some even consider EIA as an obstacle to development activities. Moreover, public participation is included in the EIA proclamation but in reality public participation in EIA processes is weak mainly due to lack of

⁸⁵ Rahmato, 2011

⁸⁶ Waste management world, 2013

⁸⁷ Kuma, 2004

⁸⁸ Mazhindu et al, 2012

⁸⁹ Strategic Environmental Assessment (SEA) is the tool for public plans, programmes and policies (e.g. urban, provincial or national spatial plans).

⁹⁰ NCEA, 2012

⁹¹ Personal communication, Dereje Bekele Balcha, Principal EIA Officer, Addis Ababa Environmental Protection Authority (2013-03-21)

clear guidelines and awareness (people seldom receive enough information regarding the process).⁹²

Strategic Environmental Assessment (SEA) is the tool for public plans, programmes and policies (e.g. urban, provincial or national spatial plans). The annual number of SEA is about two or three. There is currently no central SEA database established. Furthermore, no guidelines, governmental or non-governmental, have been developed on SEA.⁹³

6.6 Infrastructure development and energy

Infrastructure development:

Investment in infrastructure has been – and continues to be - very important for stimulating Ethiopia's economy. To maintain high growth rates, Ethiopia will need to continue to invest large amounts for infrastructure development during the coming years. Funding the investments required to support the projected growth will be a challenge. Currently large investments are made to expand the road and railway network, power infrastructure and construction of housing and industry in urban areas.⁹⁴ For example, it is estimated that the development of power infrastructure alone will require almost USD 38 billion over the next 2 years, and development of water supply and sanitation infrastructure will require USD 1.2 billion⁹⁵.

Ethiopia faces a large challenge to develop infrastructure that substantially reduces its GHG emissions, while simultaneously making these systems, and the societies they serve, more adaptable to extreme weather conditions which are expected to increase due to climate change.⁹⁶ In other words Ethiopia needs to invest much more in low carbon high resilient infrastructure to move towards a greener growth. Much investment will be required in green infrastructure (e.g. 10% growth rates will require 14% annual additions in hydroelectric power), and green infrastructure tends to have high direct costs and long pay-back periods.⁹⁷

The Agricultural Development Led Industrialization is the fundamental building block of industrial development in Ethiopia and the government is supporting the private sector in order to enhance contribution to economic growth. Performance within the private sector is improving. For example, export earnings from manufacturing are increasing (e.g. textile, leather, agro processing and pharmaceutical and chemical products) and many companies are commencing or expanding business (e.g. ceramic industry, pulp and paper industry, cement industry). Furthermore, the Ethiopian government has developed *industrial zone implementation plans* to promote the establishment of industries in regions and cities and facilitate growth in investments.⁹⁸

The expanding industrial activities are likely to increase the environmental pressure, e.g. due to increased emissions to water/soil/air. For example, the leather industries in Ethiopia discharge wastes into the environment prior to any proper treatment. Furthermore, chromium discharges by the tanning industry in Ethiopia pollutes rivers and soil, and as a consequence

⁹² Damtie and Bayou, 2008

⁹³ NCEA, 2012

⁹⁴ MoFED, 2013

⁹⁵ Government of Ethiopia, 2012

⁹⁶ Kennedy et al, 2012

⁹⁷ OECD, 2013

⁹⁸ MoFED, 2013

chromium has entered the food chain.⁹⁹ There is a lack of data for quality of water/soil/air and the environmental monitoring is inadequate or non-existent. This highlights the need for adequate institutional capacity for environmental monitoring and compliance enforcement.

Trends for alternative power sources (wind power, solar power, carbon rights)

Ethiopia's annual economic growth rate of more than 11% is associated with an increased demand for energy supply of over 24%.¹⁰⁰ Natural resources such as water, geothermal, solar and wind resources offer opportunities to meet the growing energy demand, and at the same time develop low greenhouse gas emission energy and shift towards a green growth path.¹⁰¹ However, developing the necessary power capacity from renewable energy will be an enormous challenge and requires a doubling of the current expenditure on renewables.¹⁰²

There are currently many on-going activities that focus on increasing access to renewable energy. However, only about 3% of the hydro power capacity is currently being exploited. Furthermore, Ethiopia also has a vast potential of other alternative energy resources, i.e., solar, wind and geothermal resource with large exploitable potential that are still underutilized. Solar energy potential could considerably relieve the country from a part of the burden of usage of biomass and fossil fuel.¹⁰³

The projections on power generated capacity for the Grand Millennium/ Renaissance Dam has been upgraded from 5250 MW to 6000 MW¹⁰⁴ due to improvements in constructions. In terms of progress, 9.7% of the dam is at the moment accomplished.¹⁰⁵ Hydropower dams provide substantial benefits in terms of supplying Ethiopia with low carbon energy which is a key issue in moving towards a greener growth. However, if poorly planned, designed or operated, they can also have serious consequences for the ecological health of rivers and the economic and social wellbeing of communities dependent upon the goods and services provided by healthy rivers. Dams may substantially modify river ecosystems downstream by changing the water flow which leads to changes in biodiversity and loss of ecosystem services which affect people's livelihoods¹⁰⁶. If environmental and social concerns are managed adequately, hydropower offers large potentials for Ethiopia's economy and opportunities to reduce poverty.

6.7 Links between environment and human rights, inequities and gender

Environmental degradation and natural resource depletion disproportionately hit the poor the hardest. Poor people are highly dependent on natural resources for their livelihoods and at the same time poor people are least able to protect themselves against and prevent environmental hazards. Furthermore, addressing the issues of climate change has important, poverty reduction, equality and human rights dimensions. Due to poverty, inequities and policy failures, rights to water and adequate housing are frequently violated, in the urban slums as well as in most of the rural areas. Only to some extent can environmental entitlements be solved by reducing inequities. The largest challenge and the key to the deprivation of rights are to reduce poverty and facilitation of pro-poor environmentally sustainable growth.

⁹⁹ Unido, 2012

¹⁰⁰ MoFED, 2013

¹⁰¹ EPA, 2012

¹⁰² Government of Ethiopia, 2012

¹⁰³ Gebreegziabher, Z, 2011

¹⁰⁴ This number can be compared to the current power generating capacity of the country which is 2177 MW.

¹⁰⁵ MoFED, 2013

¹⁰⁶ World Bank, 2009

Women and children are particularly vulnerable groups in Ethiopia. Women are disadvantaged in several ways regarding land use and access to land in the rural areas. While the constitution guarantees gender equality and supports affirmative action, traditional attitudes significantly impede women empowerment. On average, women have fewer years of schooling and heavier workloads than men. Women also suffer disproportionately from environmental degradation as they have to walk long distances to collect water and firewood. Women and girls are also highly vulnerable to natural resource depletion due to the heavy burden of fetching water and biomass on a daily basis. They are also vulnerable to environment-related diseases due to their increased exposure to in-door air pollution. Consequently, girls are deprived of their right to schooling due to their responsibilities to do household chores.

Moreover, women and women's education play an important role for the environment. Research shows that sustainable agricultural practices in Sub-Saharan Africa are linked to improvements in women's education.¹⁰⁷

Although the poor and vulnerable people are hardest hit by environmental degradation and natural resource depletion, several articles in the federal Constitution of 1995 provides for certain environment-related rights. For instance, Article 44 of the Constitution guarantees the right to live in a "clean and healthy environment"; and Article 92 requires that the design and implementation of programs and projects of development shall not damage or destroy the environment. These articles thus offer important legal provisions for poor people to claim their environmental rights. In a way, environmental degradation which hits the poor can thus be claimed to be a deprivation of their rights.

6.8 Khat - health and environmental issues

Khat as a drug may have serious health and economic consequences. A survey made in 2012 shows that 11% of women and 28% of men reported that they had ever chewed khat.¹⁰⁸ However, the survey does not mention anything regarding the health or other social conditions of these women and men. Estimates show that khat is produced by around 2 million farmers on 1.3% of the total area of cultivated land.¹⁰⁹ Hence, 1.3% of possible food productive land is lost in a country where many people suffer from malnutrition and food insecurity. On the other hand production has proven beneficial for farmers growing khat. For example, khat generates the highest return per hectare of cultivated land, compared to other crops grown in the Harer highlands. Households that earn more income from khat cultivation have reduced their dependence on selling fuel wood which a major driver of deforestation. Studies on khat and its environmental consequence are limited. For more information regarding the social and environmental impacts of khat further analysis is needed.

7. Conclusions

Environmental problems in Ethiopia are a constraining factor for sustainable development and improvement of people's livelihoods. Key environmental problems include climate change, soil degradation and deforestation. Agricultural production is severely affected by land degradation and both land degradation and deforestation have serious effects on biodiversity and ecosystem services. Continued climate change is expected to increase climate variability and the incidence of extreme weather events (e.g. droughts, floods) which will further degrade the country's ecosystems. Although Ethiopia has made some improvements concerning

¹⁰⁷ Teklewold, 2012

¹⁰⁸ CSA, 2012

¹⁰⁹ Teffesse et al, 2011

environmental health during the last years it is still among the countries in the world with the lowest performance regarding indoor air pollution and water quality in terms of effects on human health. Poverty-environment linkages are apparent and major concerns include poor environmental health related to malnutrition, polluted water and indoor air pollution; vulnerability to natural disasters and climate change; tenure insecurity for land and other natural resources; and unreliable access to food and water.

The main drivers behind Ethiopia's environmental degradation include the high population growth, high urbanisation rates as well as a rapid economic growth that is largely driven by agricultural production, infrastructure expansion and increasing energy demand. Furthermore, institutions have insufficient capacity to prevent and manage the major environmental issues, and there are gaps between political environmental commitments and actual implementation to improve environmental outcomes.

Although capacity is still limited, the Ethiopian government has shown considerable political will regarding its environmental problems, by e.g. establishing environmental protection agencies at federal level and in all regional states, as well as formulating various environmental proclamations and ratifying important environmental conventions, and promoting environmental investments. Benefits of building resilience can be seen in Ethiopia's Productive Safety Nets Programme (PSNP). Furthermore, the land registration and certification process in four regions have increased tenure security and investments in land. It has also promoted sustainable land management by pursuing various soil and water conservation technologies in agricultural lands, and natural resources management more generally.

Ethiopia's high ambitions and efforts to promote sustainable development are also manifested by the establishment of the national strategy Climate Resilient Green Economy (CRGE). The strategy constitutes a particularly promising and important initiative to promote resource efficient, low-polluting alternatives to business-as-usual economic growth, which entails significant environmental risks such as continued reliance on, and use of, polluting sources of energy, erosive agriculture, non-sustainable forestry, and depletion of natural capital in sectors like mining and construction. However, Ethiopia faces many challenges in terms of lack of human and financial capacity, green technology know-how and proliferation. Environmental governance needs to be improved at all levels. Weak capacity in environmental management, and insufficient law enforcement and monitoring are key challenges that need to be addressed in order to meet MDG targets (in particular MDG 7 on environmental sustainability) and move towards a greener economy.

8. Issues for Sida to consider

This study is based on assessment reports, progress reports and scientific evidence. Providing realistic and feasible suggestions of possible Sida-financed support would require a stronger sense of the circumstances, opportunities and particularities in the country. Therefore, the ideas presented in this section should be seen as a basis for a discussion with Sida, particularly the field staff, on possible ways that the Swedish support could be designed in order to enhance the environmental agenda.

Strengthened land tenure: Support to land administration programmes including land registration and certification of land would continue the strengthening of land rights, which have multiple co-benefits. Land registration and certification progress strengthens tenure security and increases land investments. Investments in land reduce degradation and increases

agricultural productivity making households more resilient to external shocks. Furthermore, land certification processes empower women and women's right to land. Hence, support to land administration programmes is strongly linked to all three thematic priorities of the Swedish government as well as to several of the MDGs (MDG1 – Eradicate extreme poverty and hunger, MDG3 – Promote gender equality and empower women, and MDG7 - Ensure environmental sustainability).

Social safety nets: Continued support to the PSNP increases resilience and enables rural poor facing chronic food insecurity to resist shocks e.g. drought. Food security is strongly linked to health issues and children's education. Furthermore, social safety nets like PSNP have proven to have positive impacts of the adoption of sustainable agricultural practices.¹¹⁰

Climate resilient and inclusive economic development: in view of the rapid economic transition and growth in Ethiopia it is essential that incomes are shared broadly and that it is environmentally sustainable. The Climate Resilient Green Economy (CRGE) Strategy offers a promising attempt at ensuring an economic development which mitigates greenhouse gas emissions, adjust to climate change and promote projects and investments which prevent/minimize environmental impacts. It represents a slightly different development path from business as usual; its visions, objectives and plans are attractive from a sustainable development point of view, and may be considered for support. It is strategic in the sense that it focuses on certain *critical* natural resource endowments and challenges (climate change, agriculture/food security, energy etc.), and addresses the principal socio-economic and environmental risks facing the country in a comprehensive approach. Although promising, there are certain issues which need to be given more attention in the development and implementation of CRGE, most importantly to involve the public and the poor to a much larger extent, ensure broad-based income distribution, and thematic expansion into issues (which are not yet fully covered) such as climate change *adaptation*, biodiversity conservation and sustainable ecosystem management.

¹¹⁰ Teklewold et al, 2013

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Annex I Ethiopia – GDP growth rate per sector

Below follows a tables with information about GDP per sector and export for Ethiopia. The statistics is collected from African Statistical Yearbook 2011 by UNECA which includes more statistics than what is presented below e.g. imports, annual inflation rates etc.

Ethiopia	2003	2011	2011
GDP by sector at current prices (million Birr)			Growth rate for 2010 at constant prices (%)
Agriculture ¹	28 578	220 088	9.0
Mining and quarrying ²	454	7 852 ¹¹¹	57.7
Manufacturing	3867	16 869	12.1
Electricity, gas & water	1574	5233	19.1
Construction	3693	20 051	12.8
Wholesale & retail trade, restaurants, hotels	10 059	86 634	10.0
Exports (US \$ millions) Main destinations: Germany, United States, Japan, Italy, China			
Coffee	186	402 (2009)	
Sesamum seeds	49	326 (2009)	
Cut flowers	5	141 (2009)	
Gold (in unwrought forms nonmonetary)	n\a	74 (2008)	
Waste&scrap of gold	n\a	53 (2008)	
Imports (US \$ millions) Main destinations: China, United States, Italy, Germany, India			
Electrical apparatus for line telephony/telegraphy	8	595	
Wheat nes and meslin	140	343	

1) Agricultural production: Wheat, Barley, Maize, Sorghum, Teff

2) Mining production: gold, silver and abrasive (natural)

¹¹¹ Note: Also a notable increase compared to 2 475 in 2010

Annex II Ethiopian policies, laws and regulations

Below follows a list of Ethiopian policies, strategies and legal instruments that are closely related to the implementation of the Ethiopian government's sustainable development agenda¹¹²:

1. The Conservation Strategy of Ethiopia (April 1997) including 9 Regional States' Conservation Strategies;
2. Agricultural Development Led Industrialization
3. The Environment Policy of Ethiopia (April 1997)
4. National Policy on Ethiopian Women (1993)
5. The National Population Policy of Ethiopia (April 1993);
6. The National Agricultural Research Policy and Strategy (October 1993);
7. The National Science and Technology Policy (December 1993); which is now replaced with the National Science and Technology Innovation Policy (2012)
8. The Health Policy (1993),
9. The Energy Policy (1993),
10. Education and Training Policy (1994)
11. The National Health, Science and Technology Policy (June 1994);
12. The National Drug Policy (September 1994);
13. The National Policy on Disaster Prevention and Management (1997);
14. The National Policy on Biodiversity Conservation and Research (1998);
15. The Ethiopian Water Resources Management Policy (1999); and
16. The National Fertilizer Policy (1999).
17. Rural Development Policy and Strategies (MoFED, 2003).
18. National Biodiversity Strategy and Action Plan (2005)
19. Radiation Protection: Proclamation No 571/2008
20. Development, Conservation and Utilization of Wildlife: Proclamation No 541/2007
21. Ethiopian Wildlife Development and Conservation Authority Establishment: Proclamation No 575/2008
22. Urban Planning: Proclamation No 574/2008
23. Forest Development, Conservation and Utilization Policy (2007)
24. Forest Development, Conservation and Utilization Proclamation No 542/2007
25. Environmental Impact Assessment Proclamation 299/2002
26. Pollution Control Proclamation 300/2002
27. Prevention of Industrial Pollution: Council of Ministers Regulation No 159/2008
28. Environmental Organs Establishment Proclamation;
29. Guidelines on Technology Selection and Transfer;
30. Guidelines on Enforcement and Compliance in Industrial Pollution;
31. Guidelines on the Procurement of Environment Friendly Goods;
32. Guidelines on Integrated Pollution Prevention and Control;
33. Guidelines on Pollution Release and Transfer Registry
34. Guidelines on Industrial Waste Handling and land filling and Management
35. Guidelines for undertaking sector specific Environmental Impact Assessment on development projects in 21 sectors.

¹¹² This list is based on the list presented in the EPA, 2012, Ethiopia National Report for Rio+20,