Eswatini: Food Security and Ecosystem Resilience

Introduction

The Ministry of Agriculture comprises the following departments: Agriculture and extension, agricultural research, veterinary and livestock services, land use planning and fisheries development among others. The vision of the ministry is to develop '….*an efficient and sustainable agricultural sector that will ensure national and household food security*… ' (MOA, 2019)

Table 1: Key indicators. Source: (World Bank, 2017) (UNDESA, 2018)

ESWATINI	2018
Total population (million)	1.39
Total area (km^2)	17,363
Population density (persons/km^2)	80.9
Per capita income, 2015 (US $)	3,280

The sector is guided by the National Vision 2022 more recently the National Agriculture Investment Plan (SNAIP) 2015-2025. Other relevant policies include the Comprehensive Agriculture Sector Development Program 2005, National Irrigation Policy 2005, National Food Security Policy 2005 and the National Program for Food Security (Sectorial Development Plan for Agriculture 2008/09-2010/11 (FAO, 2015b).

Agriculture in the Eswatini Economy

By 2018, about 76.2 per cent of the Eswatini people lived in the rural areas. Many are subsistence farmers – 69.1 per cent of people are employed in the agriculture sector. Agriculture contributed 10 per cent to the economy in 2018, down from 10.4 per cent in 2010 and 11.3 per cent in 2005 (UNDESA, 2018). Eswatini covers a total land area of 17,363 km^2 and 49 per cent of this is agricultural land (World Bank, 2017). See **Error! Reference source not found.** and **Error! Reference source not found.**.

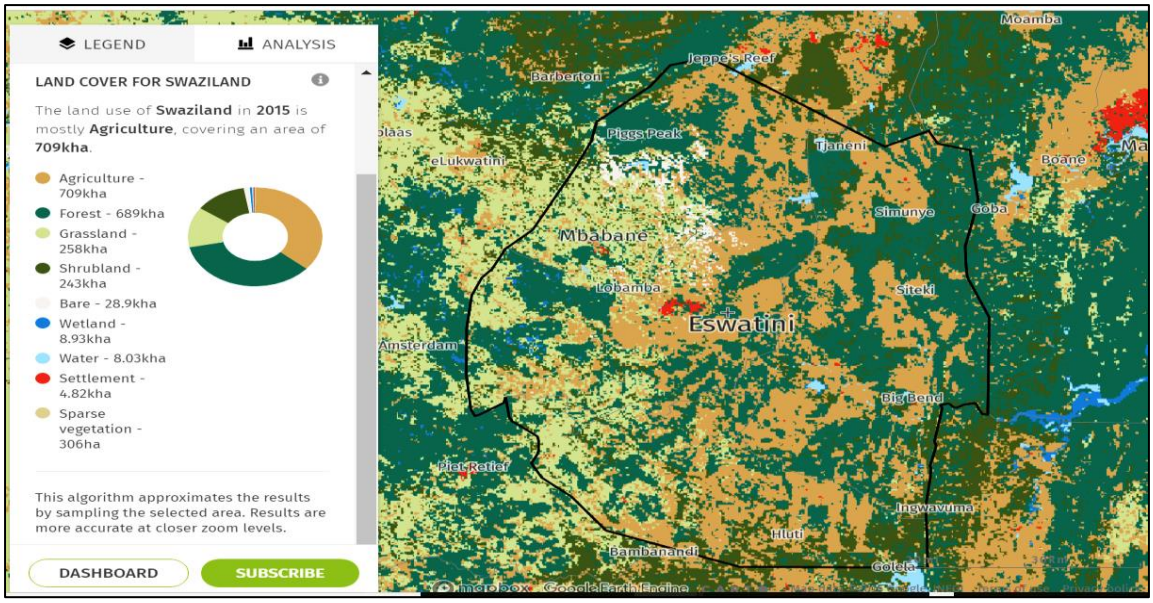

Figure 1: Eswatini's land cover (2015). Data source: Global Forest Watch

Food Security Situation

El Niño associated drought is a major cause of food insecurity in Eswatini. Between 2015 and 2017, one fifth of the population was or 278,000 people were severely food insecure meaning that food security is a major problem as shown in **Error! Reference source not found.** (FAO, IFAD, UNICEF, WFP and WHO, 2018). Food insecurity contributes to undernutrition and children who are undernourished are at a higher risk of mortality, poor health, growth and development. Undernourished people were estimated to be 300,000 (20.7 per cent of the total population) in 2016 up from 200,000 in 2000 (UN Stats, 2019). Further analysis on food insecurity is highlighted in the livelihood zones map in

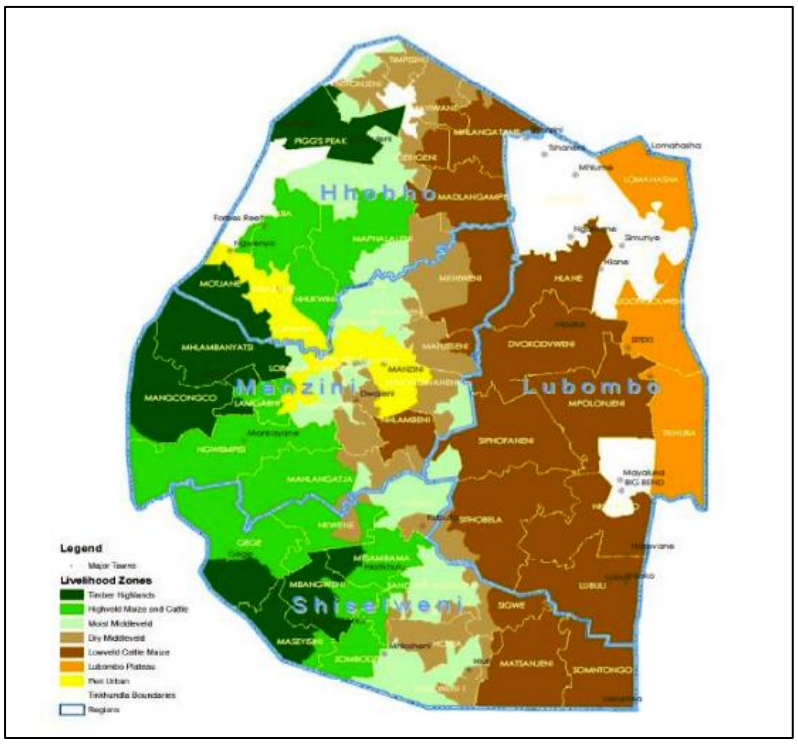

Figure 1.

Table 2: Food insecurity trends in Eswatini (FAO, IFAD, UNICEF, WFP and WHO, 2018)

Location	Prevalence of undernourishment in the total population (%)		Prevalence of severe food insecurity in the total population (2015-2017)	Prevalence of wasting in children under 5 (2017)	Prevalence of stunting in children under 5 years of age (%)		Prevalence of overweight in children under 5 years of age (%)	
	2004-2006	2015-2017	%	%	2012	2017	2012	2017
Eswatini	17.0	20.7	-	2.0	31.0	25.5	10.7	9.0
Southern Africa	6.5	8.1	27.3	4.0	30.2	29.1	12.6	13.7
Africa	21.3	19.6	25.9	7.1	32.6	30.3	5.0	5.0

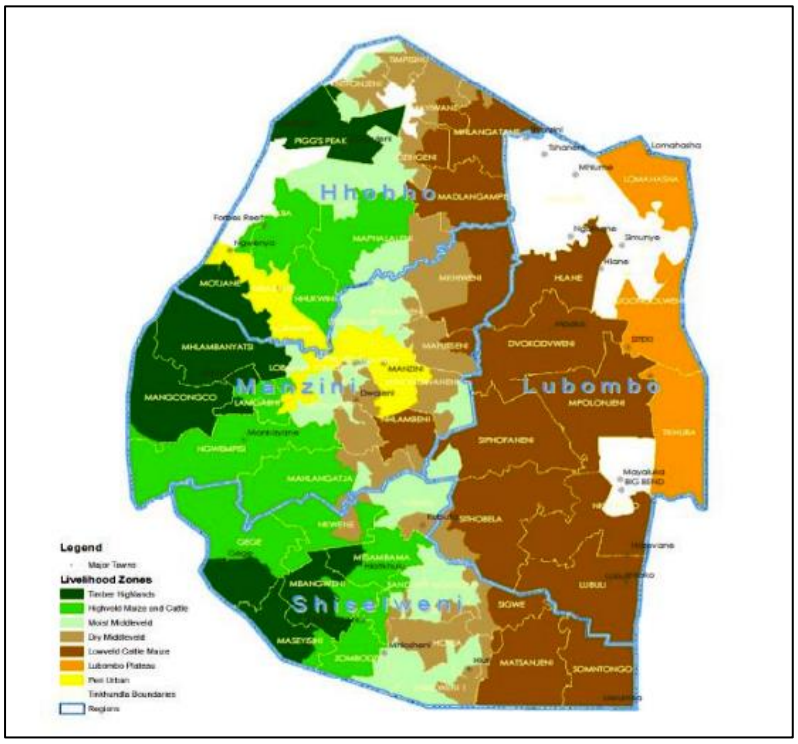

Figure 1: Swaziland (Eswatini) Rural Livelihood zones. Source: (FAO and WFP, 2015).

Ending Hunger

Genetic Diversity

Relevant SDG 2 indicators
2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities
2.5.2 Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction
15.5.1 Red List Index

Genetic, species and ecosystem diversity are key ingredients upon which food production largely depends. By 2018, there were 15 local breeds kept in the country. The number of plant breeds with sufficiently stored genetic resources has been increasing from 577 in 2000 to 694 in 2005, 737 in 2010, 740 in 2012, 742, in 2014, 746 in 2016 (UN Stats, 2019).

The number of local breeds at an unknown level of extinction was 9 in 2000, increasing to 12 in 2003, and 15 in 2008 where it has stagnated to date (UN Stats, 2019).

Renewable Energy

Relevant SDG 7 indicators
7.2.1 Renewable energy share in the total final energy consumption

The main renewable sources of energy in Eswatini are biomass and hydroelectric. However, at the moment 76 per cent the country's annual electricity consumption generation comes from coal. Only 13 per cent is generated from hydropower. The share of renewable energy in the total final energy consumption fluctuates between 59.95 and 68.15 per cent over the 16-year period between 2000 and 2016 as shown in **Error! Reference source not found.** (UN Stats, 2019) (AfDB, 2018).

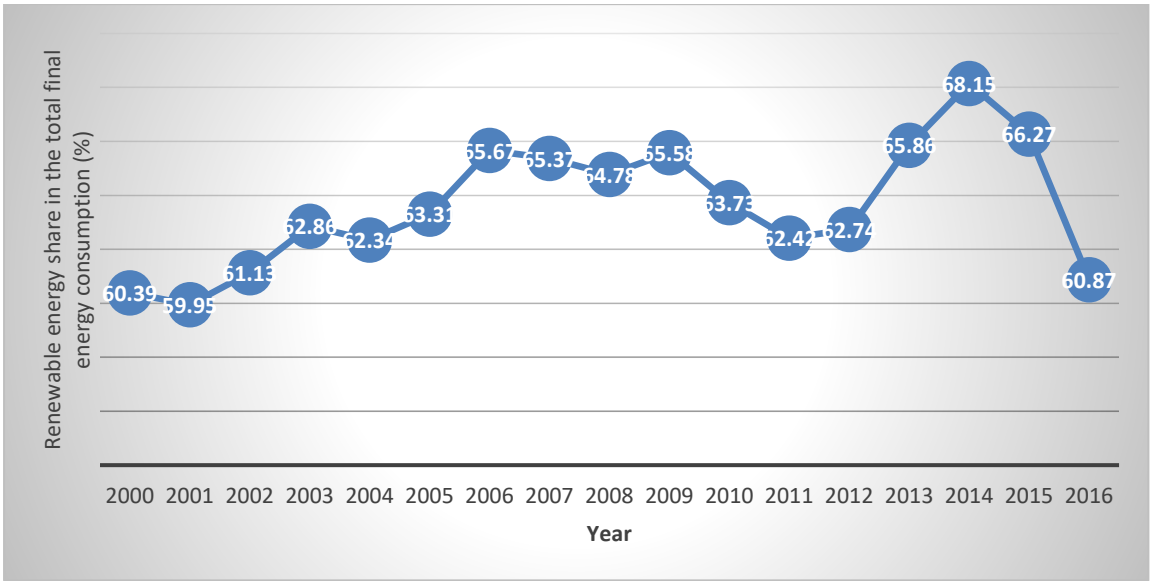

Figure 3: Trends in renewable energy share in the total final energy consumption (%) 2000-2016 (UN Stats, 2019)

Clean Water and Fisheries

Water Quality

Access to clean water and by extension adequate sanitation is necessary for food security. Water is needed for agriculture, and if contaminated, can impact human health. Open defecation is quite prevalent with 11 per cent nationally using the practice in 2015 (**Error! Reference source not found.**) (UN Stats, 2019).

Relevant SDG 6 indicators

6.3.1 Proportion of wastewater safely treated

6.3.2 Proportion of bodies of water with good ambient water quality

6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources.

6.6.1 Change in the extent of water-related ecosystems over time

Permanent water bodies covered 0.32 per cent of the total land area in 2016. Withdrawals as a proportion of available freshwater resources was estimated at 75.7 per cent in 2000 (above 25 per cent which is considered the threshold of initial water stress) (UN Stats, 2019).

The Swaziland Environment Authority is the institution in charge of water pollution control. The legal framework includes the Water Pollution Control Regulations 1999. Other relevant laws include the Water Act 2003, Pollution Control Regulation 2010, Environmental Management Act 2002, and Solid Waste Management Regulation.

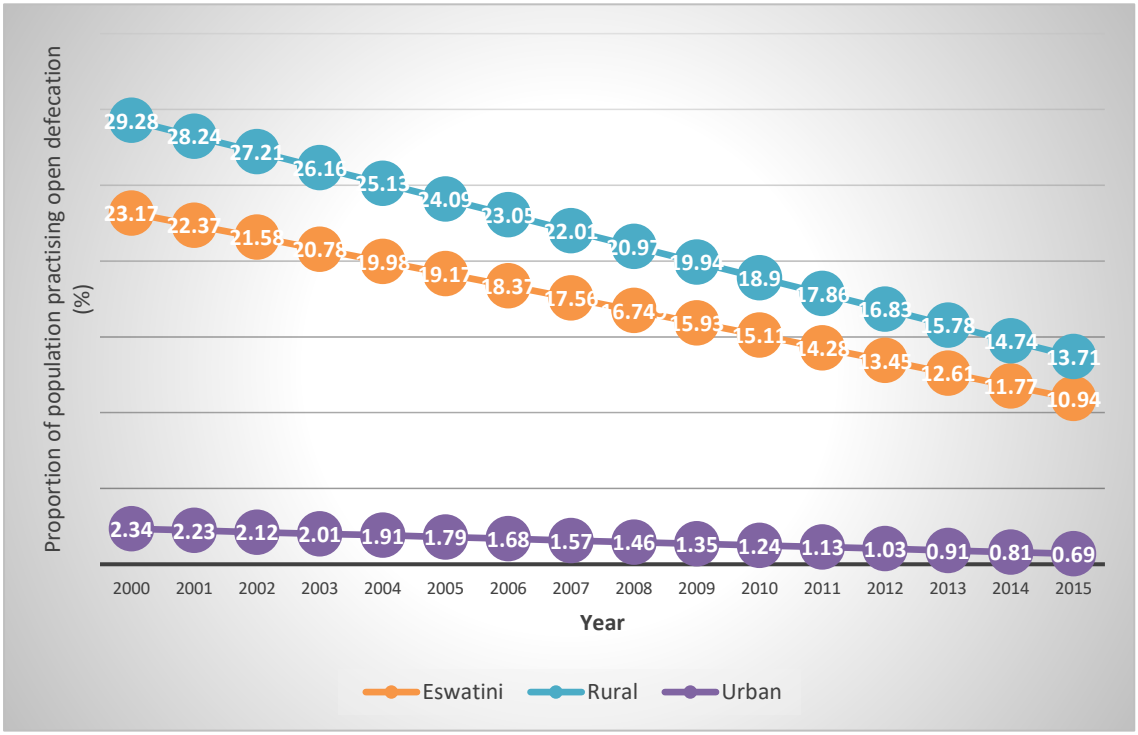

Figure 4: Trends in open defecation in Eswatini 2000-2015 (%) (UN Stats, 2019)

Sustainable Management of Fisheries

Total fisheries production in 2015 was 170 metric tonnes most of which is consumed in-country. Growth in capture fisheries between 2000 and 2015 was 1.8 per cent. The aquaculture sector is still in its infancy but there is potential for growth; as shown by the growth spurt between 2000 and 2015, when the sector grew by 2.5 per cent (World Bank, 2017).

Subsistence fishery exists, but the sector is quite disorganized. Some of the challenges faced include lack of regulation and participatory management systems. Indeed, on a scale of 1 to 5, Eswatini scored a 2 implying 'low' in terms of instruments for access to resources and markets for small-scale fisheries (UN Stats, 2019).

Relevant SDG 14 indicators

14.2.1: Proportion of national exclusive economic zones managed using ecosystem-based approaches

14.4.1: Proportion of fish stocks within biologically sustainable levels

14.5.1: Coverage of protected areas in relation to marine areas.

14.6.1: Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing.

14.b.1: Progress by countries in the degree of application of a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries

The value of fishing and aquaculture is recognized in the Food Security strategy 2005. But the contribution of fish to food security is low. For instance, in 2009, fish and fish products accounted for 4.4 per cent of total animal protein intake compared to the African average of 19.1 per cent (Breuil & Grima, 2014).

Illegal Fishing

Illegal fishing is an issue in this country due to weak enforcement and supervision. For instance, despite the Fresh Water Fisheries Regulations 1973 specifying that seine nets are not allowed, they continue to be used (Breuil & Grima, 2014). There are calls for the legal framework to be strengthened to deal with the issues in this sector.

Terrestrial Ecosystems: Land, Biodiversity and Forests

Tree and Forest Cover

Over a third of the country is covered with trees and forests - an area of 586,000 ha in 2015. Forests are key in providing economic, livelihood and other household benefits. For example, commercial forestry contributed about 1.3 per cent of GDP and about 1.4 per cent of total exports between 2002 and 2015 (FAO, 2015a). Forest cover has increased by 13 per cent between 2000 and 2015 as shown in

,
and
. The forest net area change was 0.87 per cent in 2005 and 0.8 per cent in both 2010 and 2015 (UN Stats, 2019).

Table 3: Forest area as a proportion of total land area 2000-2015 (UN Stats, 2019)

Year	2000	2005	2010	2015
%	30.11	31.45	32.73	34.06
'000 ha	518	541	563	586

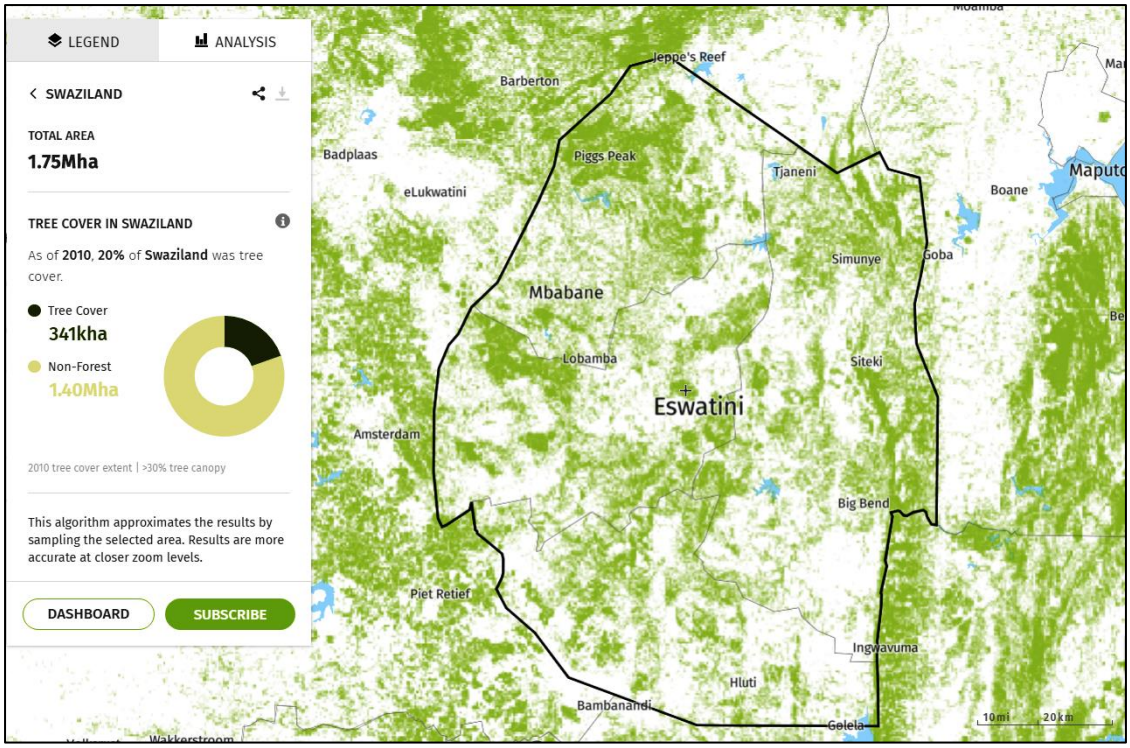

Figure 5: Eswatini with a 30%+ tree canopy (2010). Data source: Global Forest Watch

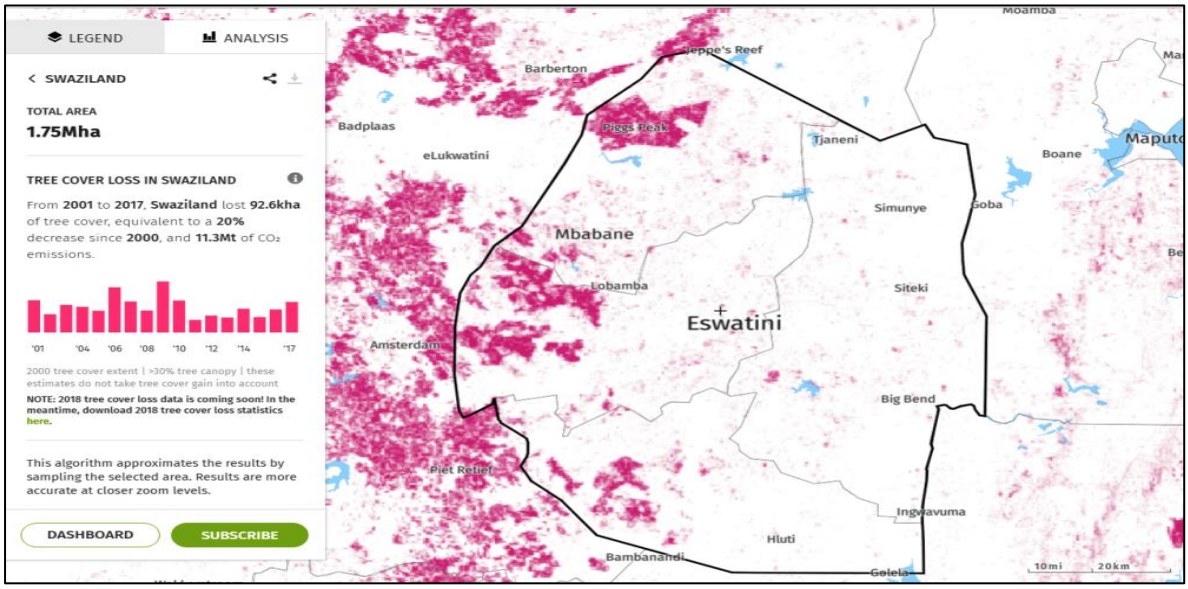

Figure 6: Tree cover loss in Eswatini 2001-2017. Data source: Global Forest Watch

Encouraging Sustainable Forest Management

Most of the forest legislation is old and needs updating. Current legal and policy framework includes the Forest Policy 2002 and a new Forest Act that is in process.

Although the data indicates that forest cover is increasing, other indicators suggest otherwise. For example, the environmental value of forests as measured by above-ground biomass provides a good means of assessing the productivity and sustainability of the forest; and this has been on the decline. In 2000, above-ground biomass was 73.94 tonnes/ha dropping to 70.06 tonnes/ha in 2005, 66.96 tonnes/ha in 2010 and finally to 63.99 tonnes/ha in 2015 (UN Stats, 2019). This is a clear indication of persistent and long-term forest degradation and could be partly explained by losses due to fire, pests or disease.

Relevant SDG 15 indicators

15.1.1 Forest area as a proportion of total land area

15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type

15.2.1 Progress towards sustainable forest management

15.3.1 Proportion of land that is degraded over total land area

15.5.1 Red List Index

Fire is indeed a major threat to the forest stock. It is frequently used as a tool in agricultural and forest land management to encourage regeneration of pasture or to clear land, but has social and environmental impacts. Some of these impacts include greater carbon dioxide emissions, health effects associated with inhalation of smoke particles, the loss of genetic resources and increased runoff from exposed soil surfaces, soil erosion and soil nutrient loss with impacts on food security (Dlamini, 2010).

Protection

The number of threatened species among the mammals, birds, fish and higher plants in Eswatini stands at 9, 13, 5 and 13 respectively (World Bank, 2017). Eswatini's Red List Index, a measure of extinction risk has been 0.82 since 2000 till 2019 (UN Stats, 2019). The IUCN Red List of Threatened Species index is a measure of extinction risk ranging from 0 to 1 and the value of 0.82 implies that most species are not expected to become extinct in the near future however, there is some level of loss of biodiversity.

The setting aside of protected areas is a means to ensure the protection and maintenance of biodiversity by reducing forest clearing and degradation. The proportion of terrestrial biodiversity covered by protected areas was estimated at 29.98 between 2000 and 2013 and then increased to 30.56 between 2013 and 2018. (UN Stats, 2019). At ecosystem level, the proportion of forest within legally established protected zones has been stable at 7.74 per cent between 2000 and 2015 and the proportion of forest with a long term management plan was 23.35 per cent in 2000, 21.07 per cent in 2005 and 19.01 per cent in 2010 (see **Error! Reference source not found.**) (UN Stats, 2019).

Figure 7: From left to right – Eswatini with a 10%+ tree canopy cover (2010), then with hotspots (2016) and then protected areas (2018) Data source: Global Forest Watch

The endangered understory Cycad (*Encephalartos umbeluziensis*) is endemic to Mozambique and Eswatini. Photo credit Linda Lofler

Relevant SDG 12 indicators

12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment

12.5.1 National recycling rate, tons of material recycled

Emerging Environmental Challenges

Waste Production and Management

Solid waste generation per capita is estimated at 0.5 kg/year. With urban populations growing at a rate of 2.6 per cent per annum, there is an urgent need to improve waste management in these areas. The waste streams for which management are most important include household, commercial and medical waste.

The Waste Regulations 2000 govern the management of waste in Eswatini. Other relevant policies include the National Solid Waste Management Strategy, which has adopted an integrated waste

management approach. The Municipal Council of Mbabane Waste Byelaw 2018 (draft) aims to minimize waste by encouraging segregation and recycling of solid waste.

Eswatini ratified the Basel on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention on Persistent Organic Pollutants in 2003. In terms of compliance, the country is estimated to be compliant with the required process obligations under the treaties as follows: 83.3 per cent with the Basel Convention, 9.8 per cent with the Rotterdam Convention and 50 per cent for the Stockholm convention (UN Stats, 2019).

Relevant SDG 13 indicators

13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other

13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula

13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions

Climate Change

The effects of climate change are already visible in the agriculture sector with impacts on food security. For example, the data shows that the crops and livestock productivity under rain-fed conditions have declined by over 30 per cent due to recurrent droughts and prolonged dry spells over the last five years (MTEA, 2016).

Eswatini is among the countries that have ratified and signed the United Nation Framework Convention on Climate Change and the Kyoto Protocol. The country has also put in place a National Climate Change Policy 2016 which is in line with the national development strategy but there is need for a climate change law. The Ministry of Tourism and Environmental Affairs is the institution mandated to handle climate change issues through the National Climate Change Committee which was established in 2010.

Financing Natural Resources Management

Official development assistance has been fluctuating as shown in **Error! Reference source not found.** ranging from a low of US $0.001 million in 2015 to a high of US $1.37 million in 2002 (UN Stats, 2019).

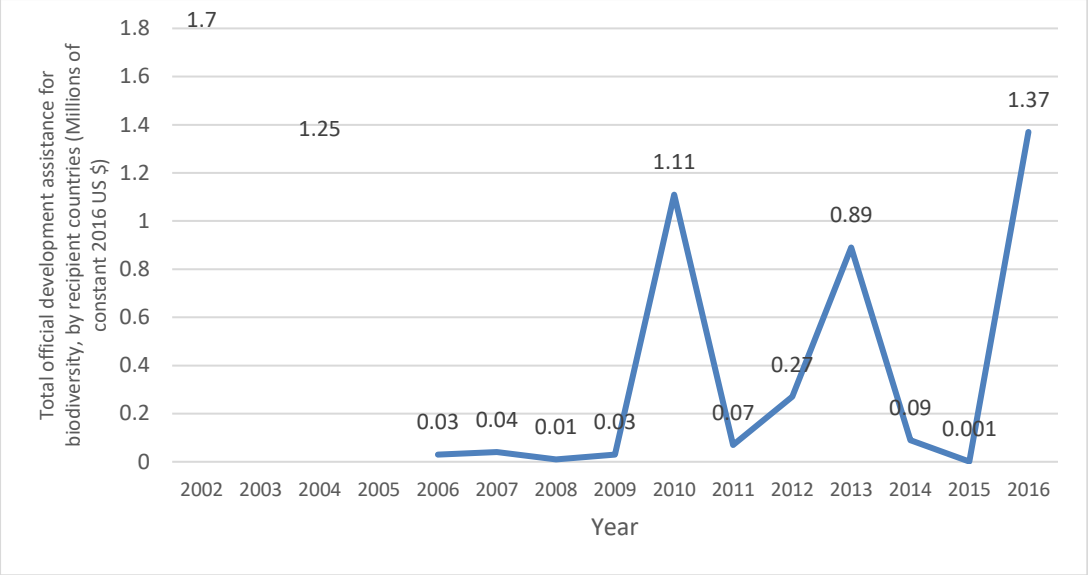

Figure 8: Total official development assistance for biodiversity (millions of constant 2016 US $) 2002-2016 (UN Stats, 2019)

Supporting Actions to End Hunger

Sustainable Fisheries Management

The institutional, legal and policy framework for the fisheries sector requires strengthening. Although there have been attempts to update the law and policy, there is still much to be done. The policies include the Freshwater Fisheries and Aquaculture Bill 2017 and the Freshwater Fisheries and Aquaculture Policy 2011.

Internationally, Eswatini belongs to the Committee on Inland Fisheries and Aquaculture of Africa (CIFAA). It has not signed up to the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. At a regional level, the country is a member of the Southern African Development Community (SADC) Protocol on Fisheries 2001, the Abuja Declaration on Sustainable Fisheries and Aquaculture in Africa 2005 and the FAO Code on Responsible Fisheries 1995.

Relevant SDG 15 indicators

15.4.1 Coverage by protected areas of important sites for mountain biodiversity

Sustainable Management of Mountain Ecosystems

Mountains cover 10.96 km^2 of land in Eswatini. The coverage by protected area of mountainous biodiversity has been increasing over the years. In 2000 the proportion of mountain key biodiversity areas covered by protected areas was estimated at 29.98 per cent increasing to 30.56 per cent in 2018 (UN Stats, 2019).

Relevant SDG 15 indicators

15.6.1 Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits

15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species

15.9.1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011-2020

Sustainable Management of Biodiversity

The National Plant Genetic Resources Centre was established in 1989 to protect wild and cultivated crop genetic biodiversity. Eswatini signed the International Treaty on Plant Genetic Resources in 2002 and ratified it in 2012.

The National Biodiversity Strategy and Action Plan 2016-2022 has linked its national targets with the Aichi

Biodiversity Targets. A major priority is to mainstream biodiversity at all levels. Other policies to support conservation and wise use of biodiversity include the National Environmental Policy, National Water Policy and the Biotechnology and Biosafety Policy.

The Global Invasive Species Database indicates the country has 66 invasive species (GISD, 2005). According to (MOA, 2017) invasive species are found in 80 per cent of the country with the most important species including *Lantana camara* and *Chromolaena odorata* among others. The country has developed a National Alien Invasive Plant Species Control and Management Strategy to address these issues.

Conserving Agricultural Biodiversity

There is a rich resource of agricultural biodiversity including commercial crops such as cotton, sugar cane, citrus and maize among others. The Agricultural Research and Specialists Service Division under the Ministry of Agriculture was established in 1959. Its primary functions include the development and identification of technologies that enhance agricultural production in support of food security and agro-business sector at a household and national level.

Sustainable Water Resources Management

Relevant SDG 6 indicators
6.5.1 Degree of integrated water resources management implementation (0-100)
6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation

On a scale of 0-100, the degree at which Integrated Water Resources Management is undertaken is 53 (UN Stats, 2019). There is a legal and policy framework which guides the sector. IWRM Master Plan was developed in 2015 and IWRM plans have been developed the five transboundary river basins namely: Lomati, Komati, Usuthu, Mbuluzi and Ngwavuma. Athough the river basin authorities are in place, there is need for capacity development to implement programmes.

Transboundary Water Resources Management

The policy framework to support this collaboration includes the Piggs Peak treaty of 1991 which established the Komati Basin Water Authority in 1993, the Tripartite Interim Agreement on Water Sharing of the Maputo and Incomati Rivers and the Transboundary water agreement of Imbuluzi of 1976. Other relevant legal frameworks include the Treaty on the Establishment and Functioning of the Joint Water Commission between Eswatini and South Africa 1992; and the Treaty on the development and utilisation of the water resources of the Komati River Basin between Eswatini and South African 1992.

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