Tanzania: Food Security and Ecosystem Resilience

Introduction

The Ministry of Agriculture was created in 2017 having been separated from the Livestock and Fisheries docket. Policy direction is provided by the Agricultural Sector Development Strategy II of 2015/2016 – 2024/2025. The aim of the Strategy is to modernise agriculture, increase productivity, increase incomes and food security. Other relevant guidance is provided by the Agricultural Sector Development Programme 2016.

TANZANIA	2018
Total population (million)	59,091
Total area (km ²)	947,303
Population density	66.7
(persons/ km ⁻)	
Per capita income	

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

Relevant SDG 2 indicators

- **2.1.2** Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)
- **2.4.1** Proportion of agricultural area under productive and sustainable agriculture

Agriculture in the Tanzanian Economy

There were 59 million people in Tanzania by 2018 growing at a rate of 3.1 per cent per annum. In the same year about 66.2 per cent of the population lived in the rural areas and most of them carrying out mainly agricultural activities for livelihood support. About 45 per cent of Tanzania's total land area is agricultural land and the contribution of agriculture to GDP was 31.2 per cent in 2018 (Figure 1 and Table 1) (UNDESA, 2018) (World Bank, 2017).



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

Food Security Situation

The impacts of food insecurity are visible amongst the population and the statistics are not good. For instance, the prevalence of stunting in children under-5 years of age in 2017 was 34.4 per cent. This hardly changed from 5 years earlier in 2012 as shown in **Error! Reference source not found.** Table 2. There is also a challenge with the other end of malnutrition - 4.4 per cent of children and 28 per cent of women suffer from overweight and obesity (USAID, 2018) (FAO, IFAD, UNICEF, WFP and WHO, 2018).

The Food Security Act, 1991 aims to establish a sustainable food security system in the country. Other relevant policies and laws include the Draft National Food and Nutrition Policy 2016, Tanzania Agriculture and Food Security Investment Plan 2011-2020, Meat Industry Act 2006, Dairy Industry Act 2004 and the Cereals and Other Produce Act 2009. Tanzania also joined the New Alliance for Food Security and Nutrition in 2012.

Location	Prevale undernour the total ۲ (۶	ence of ishment in 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 less than 5 years of age (%)		Prevalence of overweight in children under 5 years of age (%)	
	2004- 2006	2015- 2017	%	%	2012	2017	2012	2017
Tanzania	34.4	32.0	-	4.5	34.8	34.4	5.5	3.6
Eastern Africa	34.4	31.2	29.2	6.0	38.5	35.6	4.5	4.4

Table 2: Food insecurity trends in Tanzania (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)	Prevale stuntin childre than 5 y age (nce of ng in n less ears of %)	Prevalence of overweight in children under 5 years of age (%)	
	2004- 2006	2015- 2017	%	%	2012	2017	2012	2017
Africa	21.3	19.6	25.9	7.1	32.6	30.3	5.0	5.0



Figure 2: Tanzania livelihood zones fews.net

Ending Hunger

Genetic Diversity

Tanzania ratified the Convention on Biological Diversity in 1996 and acceded to the Cartagena Protocol and Nagoya Protocol in 2003 and 2018 respectively. Biodiversity is well recognized for its

contribution to livelihoods and food security and as such is integrated into the National Strategy for Growth and Reduction of Poverty. Biodiversity degradation is of concern because it may lead to the reduction of agrobiodiversity or genetic erosion.

Some of the areas for attention include halting and reversing deforestation, conserving threatened crops, controlling pests and diseases, climate change and

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

prioritizing research on indigenous crops. It is estimated that between 90 and 98 per cent of livestock are indigenous, which though they are well adapted to local conditions, pests and diseases, are not very productive (Mruttu, Ndomba, Nandonde, & Brook, 2016). So there is urgent need to focus on breeding and conservation of both plants and animal species for food security.

Some of the guiding policies include Environmental Management Act No. 20 of 2004, the Zanzibar Environmental Management Act No. 3 of 2015, Animal Genetics Strategy and Vision for Tanzania 2016 and the Seeds Act No. 18 of 2003. The International Treaty on Plant Genetic Resources for Food and Agriculture entered into force in Tanzania in 2004.

Renewable Energy

Almost all of the country's electricity is from renewable sources. In 2016, the renewable energy share of the total final energy consumption was estimated at 86.13 per cent but this has been declining over the years as shown in Figure 3 (UN Stats, 2019).

Relevant SDG 7 indicators7.2.1 Renewable energy share in the total final energy consumption



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

Clean water and the Marine Environment

Water Quality

Water withdrawals as a proportion of available freshwater resources was estimated at 13 per cent in 2000 (above 25 per cent which is considered the threshold of initial water stress) (UN Stats, 2019).

Open defeacation is on the increase at the national level. It has increased from 9.58 per cent in 2000 to 11.26 per

Relevant SDG 6 indicators

- 6.3.1 Proportion of wastewater safely treated6.3.2 Proportion of bodies of water with good ambient water guality
- **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

cent in 2015. The population without access to sanitation is a concern as the wastewater from households is then disposed of directly in the environment contaminating soils and food crops

ultimately posing a public health risk. In 2012, the volume of waste water collected in formal sewer systems was 28 million m³ (FAO, 2018). Figure 4Error! Reference source not found. shows the trends in open defecation in Tanzania between 2000 and 2015.

Some of the guiding policies include the Environmental Management (Soil Quality Standards) Regulations 2007, National Water Policy 2002 and the Water Supply and Sanitation Act, 2009.



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

Sustainable Management of Coastal Zones and Fisheries

Fish in Tanzania plays an important role in food security and contributed 20.7 per cent of total

animal protein intake in 2009. This was above the African average of 19.1 per cent (Breuil & Grima, Baseline Report Tanzania. SmartFish Programme of the Indian Ocean Commission, 2014). In 2015, total fisheries production was at 383,000 metric tonnes. Between 2000 and 2015, the capture fisheries sector grew by 0.9 per cent while the growth in aquaculture averaged 15.7 per cent over the same time period (World Bank, 2017).

There is an active artisanal sector both inland and in the marine areas. Over time, they have been growing in terms of capacity and effort. Postharvest losses are estimated to be around 20 per

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 smallscale fisheries

cent due to lack of storage, poor processing and marketing facilities (Breuil & Grima, Baseline Report Tanzania. SmartFish Programme of the Indian Ocean Commission, 2014). Reducing post-harvest losses will contribute a lot towards food security.

Illegal Fishing

This is a growing problem of illegal fishing exacerbated by corruption, open access regime on some water bodies such as Lake Victoria and the trespass of non-licensed European and Asian tuna fleets into the Tanzania Economic Exclusive Zone. As a result, freshwater fish stocks in Tanzania are

considered fully or almost overfished by 16.4 per cent (SDGCA and SDSN, 2018). In fact, on Lake Tanganyika there are signs of reduced catches, changes to catch composition, and in some areas fish stocks have already collapsed.

The policy and legal framework include the National Fisheries Policy of 2015, Fisheries Act 2003, Tanzania Fisheries Research Institute Act 2016, Fisheries Regulations 2009, Deep Sea Fishing Authority Act 1998 and the Deep Sea Fishing Authority Regulations 2009 among others. Tanzania has not yet signed up to the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing.

Terrestrial Ecosystems: Land, Biodiversity and Forests

Tree and Forest Cover

Trees and forests in Tanzania in 2015 covered an estimated 52 per cent of the total land cover, but this has been on the decline (World Bank, 2017) Deforestation between 2000 and 2015 occurred at an average annual rate of 0.7 per cent as shown in Table 5, Figure 5 and Figure 6 (UN Stats, 2019).

Tab	le 3:	Fore	st area	as a	proportio	n of total	land	area 2	000-2015	(UN Stats,	2019)

Year	2000	2005	2010	2015
%	58.61	56.35	54.09	51.99
На	51,920	49,920	47,920	46,060



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



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

Encouraging Sustainable Forest Management

The environmental value of forests as measured by above-ground biomass remained stable at 202.6

tonnes/ha between 2000 and 2015 (UN Stats, 2019). The legal guidance for forests management include the Forest Act 2002 and Forest Regulations 2004.

Protected Areas

Tanzania's Red List Index, a measure of extinction risk has been declining from 0.78 in 2000 to 0.68 in 2019 was estimated at 0.84 as shown in Table 6 (UN Stats, 2019). The index value of 1.0 means there is no species expected to become extinct in the near future, however a value of 0 means all species have become extinct. Tanzania's Red List

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

Index of 0.68 is thus major cause for concern. Country data indicates that 41 mammal species, 49 birds, 179 fish and 644 species of higher plants are threatened (World Bank, 2017).

The proportion of freshwater biodiversity covered by protected areas was estimated at 43.13 per cent in 2018 and this has increased from 33.51 in 2000. The proportion of terrestrial biodiversity covered by protected areas was estimated at 63.95 in 2018, which was an increase from 53.96 in 2000 (UN Stats, 2019). This is highlighted in Figure 7 and Figure 8.



Figure 7: Average proportion of freshwater and terrestrial Key Biodiversity Areas covered by protected areas 2000-2018 (UN Stats, 2019)



Figure 8: From left to right–Tanzania with a 10%+ tree canopy cover (2010), then with hotspots (2016) and then protected areas (2018) Data source: Global Forest Watch

Relevant SDG 12 indicators

12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment12.5.1 National recycling rate, tons of material recycled

Emerging Environmental

Challenges

Waste Production and

Management

This is a serious problem in the urban centres in this country. Piles of rubbish, foul odour, pests and blocked drains are some of the impacts

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

of poor solid waste management. Data from 2017 indicates that municipal solid waste generation in

cities in Tanzania is about 0.3 kg per capita per day and e-waste generated is 0.5 kg per capita (SDGCA and SDSN, 2018).

The Environment (Solid Waste Management) Regulations 2009, the Environment Management Act 2004 and the Healthcare Waste Management Policy, Guidelines and Monitoring Plan 2006 provide guidance on management solid waste from different sources.

Climate Change

Tanzania has ratified the United Nations Framework Convention on Climate Change and the Kyoto Protocol. It has actively worked to localize these international obligations. Policies and strategies include the National Adaptation Programme of Action (NAPA) 2007, National Clean Development Mechanism (CDM) Investor's Guide 2004, National Climate Change Communication Strategy, 2012, the National REDD+ Strategy and Action Plan 2013 and the Zanzibar Climate Change Strategy 2014.

The institutional framework for climate change in the country is guided by the Environment Management Act 2004 and National Climate Change Strategy 2012.

There is work ongoing to integrate climate change into the formal education sector – at secondary and tertiary school level. But there is still much to be done. Recommendations include the need to update curricula, to educate teachers and thus reach the students with adequate and correct information (Carr, 2016).

Relevant SDG 15 indicators

15.a.1 and 15.b.1 Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems
15.c.1 and 15.7.1 Proportion of traded wildlife that was poached or illicitly

Financing Natural Resources Management

Official development assistance has been fluctuating as shown in Figure 9 reaching a high of US \$164.96 in 2015 (UN Stats, 2019).



Figure 9: Total official development assistance for biodiversity (millions of constant 2016 US \$) 2002-2016 (UN Stats, 2019)

Supporting Actions to End Hunger

Sustainable Management of Mountain Ecosystems

Mountainous areas are some of the landscape forms in Tanzania. Some of the highlands and

mountains include the Usambara and Pare Mountain ranges, Southern Highlands, Mt. Meru and Mt. Kilimanjaro. Mountainous areas are well liked for their soils that perform key ecosystem services ensuring food security and nutrition to those that live in the highland areas or downstream.

Policy guidance for wise use of mountainous areas include the National Biodiversity Strategy and Action Plan 2001 and the Strategy on Urgent Actions on Land degradation and water catchments 2006 which specifically addresses environmental degradation on fragile ecosystems such as hilly and mountainous areas.

Sustainable Management of Biodiversity

The Ministry of Environment is in charge of managing biodiversity in Tanzania. Other relevant institutions include the National Environmental Advisory Committee, the National Environment Management Council.

There are about 88 alien invasive species in Tanzania including the bird (*Passer domesticus*) a serious agricultural pest found in agricultural, urban and peri-urban areas; and *Setaria verticillata*, a grass that invades agricultural fields (GISD, 2005). The National Biodiversity Strategy and Action Plan 2015-2020 has integrated the Aichi Biodiversity Targets.

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

Integrated Water Resources Management

On a scale of 0-100, the degree at which Integrated Water Resources Management is undertaken is 50 (UN Stats, 2019). There are 9 river basins in the country and the relevant basin authorities have led the preparation of the basin IWRM plans. To date, seven IWRM plans have been prepared but only one has been approved. Although the target of the Water Sector Development Programme target is to implement 30 per cent of IWRM plans by 2019, this may not be possible (MWIT, n.d).

IWRM is integrated into the National Water Policy which is implemented by the Ministry of Water and Irrigation. The legal framework includes the Water Resources Management Act, 2009.

Transboundary Water Resources Management

The important transboundary water bodies include the Lake Victoria Basin, Lake Tanganyika Basin, Lake Nyasa Basin, Pangani River Basin, Internal drainage, Ruvuma River Basin and Lake Rukwa Basin. Tanzania is also an active member of the Nile Basin Initiative, Lake Victoria Basin Commission and the Southern African Development Community Shared Water Course Systems Protocol among others.

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

Relevant SDG 15 indicators 15.4.1 Coverage by protected areas of important sites for mountain biodiversity Mechanisms are in place for information sharing and joint management of the transboundary water resources. Examples include the Zambezi Water Resources Information System of the Zambezi Watercourse Commission.

Bibliography

- Breuil, C., & Grima, D. (2014). *Baseline Report Tanzania*. *SmartFish Programme of the Indian Ocean Commission*. Ebene, Mauritius: Fisheries Management FAO component. Consulté le July 4, 2019, sur http://www.fao.org/3/a-br799e.pdf
- Carr, P. (2016). Climate change awareness amongst secondary level students and teachers in a Dar es Salaam University College of Education (DUCE) affiliated school in urban Tanzania. Dublin: Trinity College, University College Dublin.
- FAO. (2018). Aquastat. Rome: Food and Agriculture Organisation of the United Nations (FAO). Récupéré sur

http://www.fao.org/nr/water/aquastat/data/query/results.html?regionQuery=true&yearGr ouping=SURVEY&showCodes=false&yearRange.fromYear=1958&yearRange.toYear=2017&v arGrpIds=4157%2C4182%2C4188%2C4190%2C4192®Ids=9805%2C9806%2C9807%2C980 8%2C9809&newestOnly=t

- FAO, IFAD, UNICEF, WFP and WHO. (2018). The State of Food Security and Nutrition in the World 2018. Building climate resilience for food security and nutrition. Rome: Food and Agriculture Organisation of the United Nations (FAO), IFAD, UNICEF, WFP and WHO. Récupéré sur http://www.fao.org/3/I9553EN/i9553en.pdf
- GISD. (2005, May 10). *Global Invasive Species Database (GISD)*. Récupéré sur Ghana: http://www.issg.org/database
- Mruttu, H., Ndomba, C., Nandonde, S., & Brook, K. N. (2016). *Animal genetics strategy and vision for Tanzania*. Nairobi, Kenya, Tanzania: Tanzania Ministry of Agriculture, International Livestock Research Institute (ILRI). Récupéré sur

https://cgspace.cgiar.org/bitstream/handle/10568/81326/LMP_genetics.pdf?sequence=1

- MWIT. (n.d). *Tanzania filled questionnaire for indicator 6.5.1: Degree of integrated water resources management implementation (0-100).* Ministry of Water Resources. Dar es Salaam: Ministry of Water and Irrigation of Tanzania (MWIT) GEMI Initiative, UN-Water.
- SDGCA and SDSN. (2018). Africa SDG Index and Dashboards Report 2018. Kigali and. Kigali and New York: The Sustainable Development Goals Center for Africa (SDGCA) and Sustainable Development Solutions Network (SDSN). Récupéré sur http://unsdsn.org/wpcontent/uploads/2018/07/AFRICA-SDGS-2018-Complete-Report-WEB.pdf
- UN Stats. (2019). *Sustainable Development Goals*. Récupéré sur SDG Indicators: UN Global SDG Indicator Database: https://unstats.un.org/sdgs/indicators/database/
- UNDESA. (2018). *World Statistics Pocketbook 2018 Edition.* New York: United Nations Department of Economic and Social Affairs (UNDESA).
- USAID. (2018). *Tanzania Nutrition Profile.* Dar es Salaam: United States Agency for International Development (USAID). Récupéré sur https://www.usaid.gov/sites/default/files/documents/1864/Tanzania-Nutrition-Profile-Mar2018.pdf
- World Bank. (2017). The little green data book 2017 (English). World development indicators. Washington, D.C.: World Bank. Récupéré sur http://documents.worldbank.org/curated/en/239271500275879803/The-little-green-databook-2017