

NATIONAL POLICY RELATED TO A CAMPAIGN ON AGROECOLOGY FOR CLIMATE ACTION

ZAMBIA COUNTRY REPORT

Commissioned by **Alliance for Food Sovereignty in** Africa (AFSA) - in partnership with

ZAMBIA ALLIANCE FOR AGROECOLOGY AND BIODIVERSITY (ZAAB)

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ALLIANCE FOR FOOD SOVEREIGNTY IN AFRICA

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1. INTRODUCTION

1.1Background and context

The Alliance for Food Sovereignty in Africa (AFSA) which is a continental grouping of civil society actors, has been concerned with food sovereignty and Agroecology and has since embarked on a campaign to position Agroecology as a key policy response to the climate crisis. The AFSA through its continental national networks sought the development of strategic country reports to inform its campaign and influence national climate policy frameworks, plans and strategies to reflect agroecology. Overall objective of the campaign is that Agroecology is recognized in national, regional and international policy spaces and frameworks as a strategy for climate change adaptation and mitigation in Africa. Zambia is amongst the 12 countries that have accepted to undertake this study.

The study was undertaken by the Zambia Climate Change Network (ZCCN) supported by the ZAAB, the AFSA national network in Zambia. The aim of the AFSA/ZAAB/ ZCCN collaboration is to guide the Zambia Agroecology for Climate Action Campaign as part of the continental wide campaign. This study was aimed at conducting background research to guide collective work on agroecology and sustainability of agriculture to ensure food sovereignty in Zambia and focused on:

- i) Creating an understanding of existing climate change related policies, plans, strategies, regulations and frameworks at national level; and
- ii) Identifying critical entry points for mainstreaming agroecology within the identified policy frameworks

In accordance with the ToRs the study's specific objectives were expected to:

- i) Analyse existing climate related legislation, policies, frameworks and strategies as related to agroecology and agriculture in general and in relations to this analysis present their:
- a. Current state of development/implementation; the relevant related authorities and stakeholders, including their level of power (power analysis maybe useful);
- b. Level of relevance (how much impact will they have, what is the level of public awareness, level of government support, etc.);
 - i) Identify gaps and possible entry points for national level advocacy for the inclusion of agroecology;
 - ii) Present proposals/ recommendations on possible spaces/platforms for agroecology advocacy.



1.2 Study methodology

The analytical approach to the study depended on qualitative data collection mainly from secondary sources. This data was further complemented by observations from key informants from government institutions overseeing the agriculture, environment, natural resources and civil society actors active in these sectors. Key data collections methods therefore included:

Table 1: Study objectives and methods

STUDY OBJECTIVE/KEY DELIVERABLE	METHODS USED/TO BE USED	SOURCE OF INFORMATION
 i) Analyse existing climate related legislation, policies, frameworks and strategies as related to agroecology and agriculture in general; Current state of development/ implementation; the relevant related authorities and stakeholders, including their level of power (power analysis maybe useful); Level of relevance (how much impact will they have, what is the level of public awareness, level of government support, etc. 	Literature review	Vision 2030; current National Development Plan/Sustainable Development Goals framework; Agriculture policy and Investment Plans; National Communication to the UNFCCC on Greenhouse Gas Emission; Climate policy and adaptation and mitigation plans; national climate response strategy; Policies for forests, water and land management; bio- diversity strategy and action plan, Forestry Action Plan; National REDD Strategy; ¹
ii) Identify gaps and possible entry points for national level advocacy for the inclusion of Agroecology	Literature review Key Informant Interviews (see interview schedule) Stakeholder identification/power/ influence analysis	Key informants from relevant: Ministries/departments/agencies for agriculture; food; land, water, natural resources and environmental management; seed and genetic management. ZCCN member organisations and other civil society organisations; community based organisations; Higher institutions of learning/ research institutions; Commercial seed companies Parliamentarians and other elected officials; The media. Donors and cooperating partners
ii) Presentation of proposals/ recommendations on possible spaces/platforms for agroecology advocacy.	☐ Literature review ☐ KIIs (see interview schedule) ☐ Validation workshop	Results from i) and ii) Discussions in the validation workshop

2.0 DEFINITION OF TERMS

2.1 Agroecology

The most commonly used definition of agroecology is 'the application of ecological concepts and principles to the design and management of sustainable agroecosystems'1. As a conceptual framework agroecology is based on a set of core principles and a range of practices that may be used to enhance the resilience and sustainability of farming systems.



Agroecology principles encompass -planning (adoption of a holistic approach to farming and the need for harmony between the productive potential and the physical limits of the surrounding landscape); resource use (optimization of organic matter decomposition and nutrient cycling and water use over time) and field and landscape management to enhance key ecological processes and services.

Agroecological practices are inspired by core principles and have the immediate objective of building soil structure, improving soil health and recycling nutrients; conserving and using water efficiently; and sustaining and improving functional diversity over space and time. In existence are Some common practices which include: no or minimum tillage to improve soil structure and organic matter; mixed cropping; crop rotation; agroforestry; water harvesting; waste recycling and others.

Agroecology emerged as a result of the negative impacts of industrial agricultural production whose basis is the artificial control of natural processes, extensive use of synthetic inputs and genetic uniformity. In contrast to industrial agriculture, the adoption of an agroecological approach offers resilience to climatic changes, (fewer greenhouse gas emissions due to greater carbon sequestration by the soil and less reliance on fossil fuel-based inputs and machinery). Equally important benefits are the potential positive impacts on farmers' livelihoods-food security, diversity in the diet and by enhancing crops' nutritional value.

The transformative potential of agroecology stems from the argument that our current food production system is largely responsible for the for climate emissions. Current agriculture production makes up makes up 50% of anthropogenic methane (CH₁) emissions². This occurs through use of commercial seeds, use of chemicals, high water consumption, energyintensive giant agricultural equipment and associated transport systems based on fossil fuels and downstream activities. Food processing, packaging, longdistance refrigeration and mass transport infrastructure systems contribute to the use of fossil fuels. Soils treated with chemical fertilizers and devoid of organic matter lose their ability to retain water, making agricultural areas more vulnerable to drought and flooding. All these factors make agriculture most vulnerable to climate change and significantly contribute to this phenomenon.

Thus agriculture production, especially the way food is produced, can play a key role in reducing greenhouse gas emissions and climate change mitigation. Agroecological agriculture is observed as urgent and necessary, and represents a solution to the interconnected crises, not only in the agricultural sector, but also in the economic and social spheres, particularly in the face of climate change.

2.2 The principles of agroecology

As a conceptual framework, agroecology is based on a set of guiding principles. The thirteen (13) principles³ as expressed in United Nations documentation are a guide or analytical tool of interlinked and interdependent attributes that may help countries to operationalise agroecology are detailed below.

Table 2: The principles of agroecology

ELEMENT	SHORT DESCRIPTION
1.Recycling	Use of local renewable resources and close as far as possible resource cycles of nutrients and biomass.
2.Input reduction	Reduce or eliminate dependency on purchased inputs.
3. Soil health	Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and by enhancing soil biological activity.
4.Animal health	Ensure animal health and welfare.
5Biodiversity	Maintain and enhance diversity of species, functional diversity and genetic resources and maintain biodiversity in the agroecosystems over time and space at field, farm and landscape scales
6.Synergy	Enhance positive ecological interaction, synergy, integration, and complementarity amongst the elements of agroecosystems (plants, animals, trees, soil, water)
7.Economic diversification	Diversify on-farm incomes by ensuring small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers
8Co-creation of knowledge	Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange
9Social values and diets	Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.
10Fairness	Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.
11Connectivity	Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies.
12Land and natural resource governance	Recognize and support the needs and interests of family farmers, smallholders and peasant food producers as sustainable managers and guardians of natural and genetic resources
13.Participation	Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems.

2.3 Climate Change

Under Article 1.2 of the United Nations Framework Convention on Climate Change (UNFCCC), climate change is defined as the change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.⁴ Associated with the climate change process are emissions of greenhouse gases, the gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation⁵. Climate actions fall into one of two strategies: mitigation efforts to lower or remove greenhouse gas emissions from the atmosphere, and adaptation efforts to adjust systems and societies or communities to withstand the impacts of climate change.

Climate change has negative impacts on livelihoods and food systems in the country, with future projections, seriously undermining current efforts to improve the state of food security and nutrition. Impacts are expected to be in various ways and the effects will be sector- and agro-ecoregion specific Taking crop production in the country as an example, climate change will result in yield reductions in maize for example, but with some regional differences.

Mitigation and adaptation solutions to negative climate impacts may take many shapes and forms, but include strategies such as setting up early warning weather systems, agroforestry, switching to drought-resistant crops, crop diversification, water conservation and harvesting to redesigning government policies. This has been referred to as the diversity of agroecological systems, important to reducing vulnerabilities to climate variability and thus key to addressing climate change.

In view of the above discussion resilience will be a key outcome of agroecological systems, achieved by a continued process of adapting and learning to cope with changes and uncertainties brought about by climate change. To achieve this for the agriculture systems a whole systems change may need to strengthen three aspects- its absorptive capacity, which is the ability to cope with and absorb effects of shocks and stress; adaptive capacity – the ability to adjust and adapt to shocks and stresses and transformative capacity which is the ability to change in order to assume the new function.

As mentioned in section 2 unsustainable global food systems drive climate change. Transformation to agroecology may mitigate climate change, plus also enabling adaption particularly in Africa where it is needed most, where climate change effects already being felt.

3. ZAMBIA-PHYSICAL AND SOCIO-ECONOMIC CHARACTERISTICS

3.1. Physical characteristics

3.1.1 Physical characteristics

The Republic of Zambia is a landlocked country in Southern Africa that covers 752 614 km2. The geography of Zambia stretches from 8 to 18 degrees south and 22 to 34 degrees east. The country shares boundaries with the Democratic Republic of Congo to the north (2,332 km), Tanzania to the north-east (353 km), Malawi to the east (847 km), Mozambique (439 km), Zimbabwe (797km), Botswana (0.15 km); and Namibia (244 km) to the south and Angola to the west (1,065 km).

A large portion of the country is a flat high plateau of central Africa undulated by hills formed due to erosion of crystalline rock and intersected by tributaries of the Zambezi, Kafue, Luangwa and Luapula, the main rivers of the country.

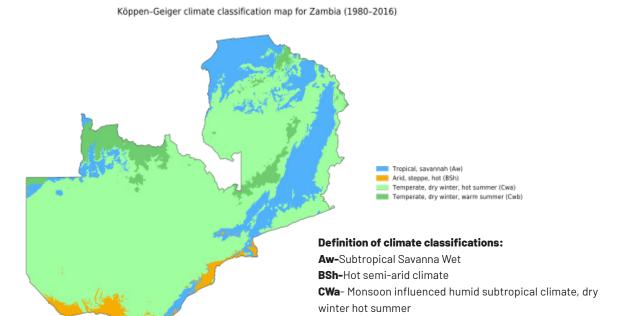
The plateau rises eastward from 915 metres to the Nyika Plateau with an occasional peak above 2,134 meters in the Muchinga Hills. Approximately 40% of Zambia's total surface area is covered by protected areas which include national forests, national parks, game management areas and wetlands.

3.1.2 Climate characteristics and climate change

In the Köppen climate classification, most of the country is classified as humid subtropical or tropical wet and dry. Zambia's subtropical climate is moderated by elevation and latitude and is characterized by three distinct seasons, namely a hot and dry season (mid-August to mid-November), a wet rainy season (mid-November to April) and a cool dry season (May to mid-August). Rainfall is strongly influenced by the movement of the Inter-Tropical Convergence Zone (ITCZ) as well as the El Nino/Southern Oscillation (ENSO) phenomenon. The average highest temperatures over Zambia occurs in October, recordings of mean daily day-temperatures of $28-31^{\circ}c$. The temperatures drop during the rainy season from November to March from $20-26^{\circ}c$ further falling to a minimum of $8^{\circ}c-9^{\circ}c$ at dawn in June and July.



Figure 1: Climate classifications for Zambia



CWb-Subtropical highland climate dry winter, hot summer

Source: Beck et al.: Present and future Köppen-Geiger climate-classification maps at 1-km resolution, Scientific Data 5:180214, doi:10.1038/sdata.2018.214 (2018)

Recent climate trends based on records from 1960 to 2003 indicate that mean annual temperature has increased by 1.3° C, since 1960, an average rate of 0.34° C per decade. On the other hand, the mean rainfall over Zambia has decreased by an average rate of 1.9 mm/month (2.3%) per decade since 1960° .

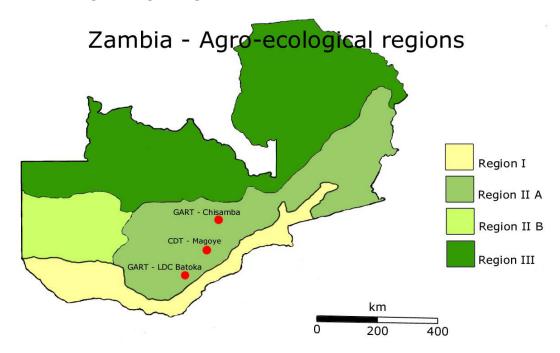
The future trends in the country are towards a higher average temperature, a possible decrease in total rainfall, and some indication of heavy events of rainfall. Temperatures are projected to increase between 2°c to 5.5°c by the 2090s^{7,8}. Projections of mean rainfall do not indicate large changes in amount of annual rainfall but variations over the season with decreases in September-October-November rainfall and increases in December-January-February rainfall.

There is likelihood of increase in extreme events in terms of total rainfall that falls in heavy events annually and substantial increases in the frequency of days and nights that are considered 'hot' in the current climate.

3.1.3 Agroecological regions

A combination of latitude, climatic characteristics (temperature and precipitation) and topography/soils have resulted into three main agroecological regions (Regions I, II and III) (see figure II below).





Semi-arid Region I includes areas of southern, eastern and western Zambia: Zambia's valleys at 300-800m altitude mostly lie in Region I. Mean annual rainfall in Region I ranges from 600 to 800 mm. The growing season is relatively short (80-120 days) and risky for crop production, as poorly distributed rains result in crops enduring frequent dry spells. Region I contains a variety of soil types, ranging from slightly acidic loamy and clayey soils with loam topsoil, to acidic sandy soils. Characteristics of these soils which have significant constraints for crop production, include: erosion, limited soil depth in hilly and escarpment areas, poor physical properties that make it difficult to till especially on cracking clay soils, crusting, and low water holding capacities in sandy soils.

Region II includes much of central Zambia, with most of Central, Southern, Eastern and Lusaka provinces. It contains the most fertile soils and most of the country's commercial farms. Annual rainfall in Region II averages 800-1000 mm, and the growing season is 100-140 days long. Distribution of rainfall is not as erratic as in Region I, but dry spells are common and reduce crop yields, especially on the sandier soils. The most common soils in Region II are red to brown clayey to loamy soil types that are moderately to strongly leached. Physical characteristics of the soils that affect crop production, include low water holding capacity, shallow rooting depth, and top soils prone to rapid deterioration and erosion. These soils also have low nutrient reserves and retention capacity, are acidic, have low organic matter and nitrogen content, and are phosphorus-deficient.

Region III, the high-rainfall area, lies in a band across northern Zambia, including the Northern, Luapula Copperbelt, Northwestern provinces and some parts of the Central province. This region receives over 1000 mm of precipitation each year, and the growing season ranges from 120-150 days. Soils in Region III are highly weathered and leached, and characterized by extreme acidity. Consequently, the soils have few nutrients available for plant growth, and

are high in exchangeable aluminum and manganese, both of which are toxic to most crops unless soils are limed to increase pH.

A recognised threat to sustainable development in Zambia is climate variability and change. Over the last three decades more frequent and intense climate induced hazards which include drought and dry spells, seasonal and flash floods and extreme temperatures have impacted adversely food and water security, water quality threatening livelihoods of the population, especially in rural communities⁹. An assessment of potential climate impacts shows that they will continue to undermine the efforts to improve the livelihoods of Zambians if left unaddressed¹⁰. Threatened key economic sectors include agriculture, water, forestry, wildlife, tourism, mining, energy, infrastructure and health

3.2 Social-Economic characteristics

3.2.1 Population and population growth

Spatially Zambia covers 752,618 square kilometers. Total estimated population in 2020 stood at 17.9 million while the population density is 24.09 people per square kilometer making it the 160th most densely populated country in the world¹¹ According to current projections, Zambia will continue to experience rapid population growth throughout the rest of the century. Zambia's current population is expected to guadruple to 80.7 million people in 2099¹².

From 2019 to 2020, Zambia experienced a population growth rate of 2.93%. Although Zambia has some negative net migration, its fertility rate of 4.66 births per woman helps boost the population. Zambia's rapid population growth poses serious problems for poverty levels and resources. Additionally, public health programs are challenged with adaptation to the quickly changing population, which is already a challenge within itself.

3.2.2 Structure of the Zambian economy and growth

The primary sector comprises of crop farming, livestock rearing and fisheries, and the staple crop in the country is maize. The agricultural sector is the backbone of the Zambian economy as it contributes to the growth of the economy and also to exports, even though it contributes the least gross domestic product (GDP). Mining, construction, manufacturing and service make up the other key sectors.

For ten years up to 2014 Zambia had one of the world's fastest growing economies with real GDP growth averaging roughly 6.7 percent per annum¹³. In 2015 to 2017 GDP growth slowed down to 3.1 percent due mainly to falling copper prices and declines in agricultural output and hydro-electric power generation due to insufficient rains¹⁴. Gross



TOTAL
ESTIMATED
POPULATION
IN 2020
STOOD AT

17.9m



WHILE THE POPULATION DENSITY IS

24.09

PEOPLE PER SO.

Domestic Product declined further in 2019 from 4% (2018) to $1.4\%^{15}$. The services sector remained the country's key driver of growth, growing by 3.5% in 2019, but primary and secondary sectors decreased significantly.

In 2020 COVID 19 measures though very necessary have contracted supply and value chains, dampened demand for goods and commodities and generally resulted in low economic performance. In the 2020 budget address on the 25th September 2020, the Minister of Finance projected a negative 4.2 real GDP growth, the first recession since 1998¹⁶. Execution of the budget (revenues and grants) in 2020 fell by 7.7 percent as a result of under performance of the economy. Similarly total expenditure by Government was 27.2 percent below the target due to curtailed revenues and lower disbursements on foreign financed projects¹⁷.

The agricultural sector however registered positive growth in view of the favourable weather conditions and early distribution of farming inputs in the 2019/2020 agriculture season which boosted crop production. Other sectors which showed growth were the information and communications technology sectors driven by demand for data services and mobile money transactions in the wake the COVID19 pandemic

Despite recent strong economic growth and its status as a lower middle-income country, widespread and extreme rural poverty and high unemployment levels remain significant problems. Zambia's lack of economic diversification and dependency on copper as its sole major export makes it vulnerable to fluctuations in the world commodities market and prices.

3.2.3 Role of agriculture in the economy

Services are the highest contributor to GDP with contribution averaging around 40 percent. The sector provides 22.3 percent of employment opportunities in the country, with 4.3 percent in the formal sector and 18 percent in the informal sector . For many years the Zambian economy previously depended on the mining sector, which was not properly managed and hugely affected by economic shocks, such as declining copper prices, as occurred in the mid-1970s. In terms of agriculture, Zambia has an estimated nine million hectares of land (12% of its total land area) suitable for cultivation and 16 million hectares suitable for rangeland grazing . The agricultural sector in Zambia supports livelihoods of 85% of the population with maize as the principal cash crop (>65% of cropped land) and main staple crop . An analysis of share of economic sectors in the gross domestic product (GDP) from 2009 to 2019 shows a down trend in terms of the sectors contribution to GDP from 11.55% in 2009 to 9.3% in 2012 to



MINISTER OF FINANCE PROJECTED A NEGATIVE

4.2

REAL GDP GROWTH SINCE 1988



EXECUTION OF THE BUDGET IN 2020 FELL

BY

7.7%





THE SECTOR PROVIDES

22.3%

OF EMPLOYMENT OPPORTUNITIES IN THE COUNTRY

4.98 in 2015 and 2.74% in 2019 . The decrease in sector productivity and contribution to GDP has largely been attributed to worsening and erratic climatic conditions.

Zambia has potential for significant increases in agricultural output. This includes broader food, fibre and energy functions found in functioning ecosystems. In the confined perspective of industrial production two-thirds may be viewed "underutilized". So called underutilized land might not be physically/visibly occupied. These are the commons belonging to the communities held in trust through traditional leaders. As far as government priorities are concerned, at least 60% of public spending towards agriculture is spent on maize, which is cultivated by 98% of smallholder households, residing on the commons.

Three agroecological regions as mentioned earlier, with rainfall as the dominant distinguishing climatic factor, support patterns of 21 livelihoods zones. A livelihood zone is an area within which people share broadly the same pattern of livelihood, including options for obtaining food and income and market opportunities. It is an indication of food security status including hazards and the relative capacity of different types of households in the zone to withstand them as illustrated in Figure IV below.

A critique of the livelihoods zonation is that they may not communicate the broader understanding of the range of productions and benefits from agroecology focusing of narrowly of industrial crops and governments economic modelling for zoning for big commercial business.

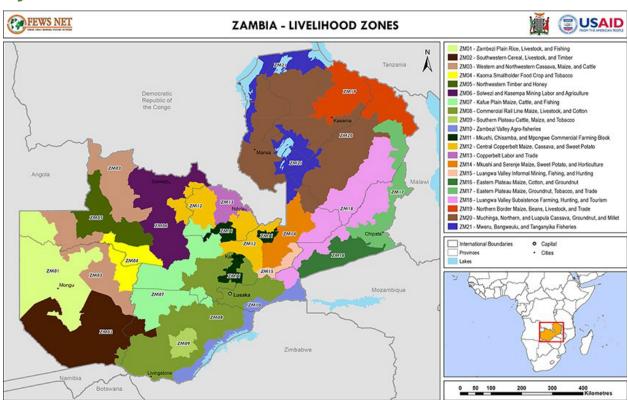


Figure 3: Zambia livelihood zones

Source: FEWS NET

3.2.4 Significance of smallholder farmers

Approximately 1.6 million smallholder farmers representing 60 percent of total Zambian households dominate both the agriculture sector and the rural economy^{18,19}. Most smallholders use simple technologies and cultivation practices to produce staple foods such as maize, groundnuts, roots and tubers), mostly for own consumption. Constraints to smallholder production have generally been grouped as follows^{20,21}: tenure insecurity-resulting in underinvestment (i) weak business orientation; (ii) poor market infrastructure and support mechanisms which impedes private sector provision of goods and services to smallholders; (iii) incomplete implementation of public policies which lead to under-provision of public goods and services, such as extension and research, and (iv) weak capacity to manage risks (e.g., climatic, market, and health).

Smallholder agriculture has however demonstrated significant potential given the odds stacked again them. They produce the majority of cotton, tobacco, honey, and paprika exports and contribute to the increasing share of sugar exports. Smallholder farmers produce to feed the Zambia despite limited effective support from government, unfair trade policies economic equalities, volatile prices and very limited market predictions or support for to lobby for better prices. In addition lack of government investment and support for education, public infrastructure (infrastructure government actually does fund subsidizes corporate/and big business) training and finances.

Smallholder producers have also started to make inroads into the domestic dairy sector and they are growing to link up with domestic supermarket chains (for some horticultural products). Smallholder commercialization can have important poverty reduction impacts in rural Zambia. However, the majority of smallholders will not be able to independently access increasingly sophisticated global value chains without the support of agribusinesses.

However perhaps a more worthwhile entry point for discussion about Zambian farmers from the perspective of supporting agroecological transformation of the food system is from the angle of food sovereignty. A food sovereignty and nutrition study conducted in southern Africa including Zambia²² found that many agriculture and nutrition programmes narrowly focus on food security to the detriment of food sovereignty.

Food sovereignty includes not only prioritizing local food production, offering fair prices for farmers, protecting farmers' access to seeds, land, water and other resources; and recognizing and promoting the role of women in food production but also embracing agroecological approaches that focus on local communities, builds knowledge and skills, methods that build ecosystem resilience.

3.2.5 Impact of climate change on the economy and agriculture

Thurlow et al. (2012) found that climate change will reduce GDP and increase the poverty incidence in Zambia, especially those in rural areas that depend on rain-fed agriculture for their livelihoods. Impacts at both national and regional levels are expected to become progressively worse as the impacts of climate change are increasingly felt and likely to reduce total the GDP and household expenditure. In the absence of mitigation polices climate change would reduce Zambia's GDP by about 6% by 2045–50²³. Zambian agriculture highly vulnerable to climate change and climate variability because of its dependence rainfall. Climate change and variability have led to crop failure, livelihood losses, increased incidents of food insecurity, and reduced contribution of agriculture to GDP. For instance excessive rain in 2001 and dry spells during the 2001/02 growing season led to a major shortfall in maize production, a decrease of 42% compared with the average yearly production. Droughts, floods, low rain fall are contributing to food and nutrition security. In the absence of measures to reduce the vulnerability of farmers to these events, significant negative impacts on food security are expected (FAO, 2010).

An economy wide assessment of the impact of climate change²⁴ found that the impact of climate change on food security and nutrition in Zambia will be high because of high poverty levels and low diversification in food production. Scenarios indicate that climate change may significantly reduce maize yields in Southern and Eastern Provinces especially, marginally reduce maize in the Copperbelt, Eastern, Luapula, North-Western and Southern Provinces^{25,26}. Heavy reliance on maize compromises the country's efforts to build climate resilience and ensure sustainable food and nutrition security²⁷. Public funding to the sector has largely ignored agricultural diversification into more nutritious crops, and livestock and fisheries while, research and extension have been underfunded. Scenarios on the impact of climate change and climate variability are limited, but it is suggested that marginal temperature increases will impact will productivity of beans especially in agroecological I and II²⁸.

Thus adaptation measures may need to focus mostly in the Copperbelt, Eastern and Southern parts of Zambia. Adaption actions are estimated to cost USD86.52 million in the agriculture sector alone²⁹. The main actions include-climate resilient crops (cereals, tubers, and horticultural crops) and early maturing varieties; sustainable and climate smart programmes for crops, fisheries and livestock; promotion of alternative livelihoods e.g. beekeeping, small livestock, fish farming; use of technologies for fertility improvement and moisture storage (including soil conservation measures); and crop diversification

EXCESSIVE RAIN IN 2001
AND DRY SPELLS DURING
THE 2001/02 GROWING
SEASON LED TO A MAJOR
SHORTFALL IN MAIZE
PRODUCTION







4.0 ANALYSIS OF EXISTING CLIMATE RELATED POLICIES, PLANS AND STRATEGIES

The study identified key policies, plans and strategies that are cardinal in advancing agroecology and the climate change agenda in the country. These are highlighted below:

4.1 Policies

4.1.1 Second National Agriculture Policy of 2016-2021

The Second National Agricultural Policy (NAP) focuses on ten strategic objectives that include promoting productivity, promoting research and development (R&D) strengthening training, promoting markets (inputs and outputs), private sector participation, and nutrition and food security ostensibly to be viewed as problematic areas in the first NAP. The NAP recognizes the facilitator role of the Government in a private led agriculture sector and that profitability and competitiveness and the promotion of agriculture as a business will drive the sector.

The key objectives include increasing Agricultural Production and Productivity; increasing the effectiveness and efficiency in Agricultural Research and Development; strengthening the capacities of Agricultural Training Institutions (ATI); improving the efficiency of Agricultural Markets for inputs and outputs; promoting availability of and accessibility; To increase private sector participation in agricultural development; improving food and nutrition security; mainstreaming environment and Climate Change in the Agriculture sector; promoting the mainstreaming of Gender, HIV&AIDS and governance issues in agriculture to finance credit facilities and insurance. The objectives seek to improve efficiency of agriculture while increasing outputs. Objectives 1, 7, 8 and 9 in principle support agroecology and climate change, however ensuring adequate technical and financial resources for their realisation are anticipated challenges.

4.1.2 National Policy on the Environment

The policy's overall objective is to support the Government's development priority to eradicate poverty and improve the quality of life of the people of Zambia. This underscores the importance of environment as the basis of Zambia's economic growth and general development.

The policy recognizes the failures in the agriculture, fisheries, tourism, forestry, wildlife, mining, water, energy, heritage sectors of the country. All these sectors and associated natural resources have the potential for increasing economic growth, but only if they would be managed sustainably.

Strategic measures therefore include- raising the effectiveness of the institutions by strengthening legal and administrative capacities; mainstreaming environment into development planning; monitoring, and evaluating and mitigation of adverse environmental impacts; increasing public and political awareness and understanding of the need for environmental protection and sustainable natural resource utilisation. A

The Policy emphasises an integrated approach where matters of policy, planning, regulation and control relating to ecosystems, natural landscapes and natural resources, together with issues relating to natural resource management may not be fully addressed through sector-based management alone. The Ministry recognises the leadership for this Policy's implementation. The Policy also recognises the role of civil society in maintaining a healthy environment through public awareness campaigns and information, education and communication strategies.

4.1.3 National Policy on Climate Change 2016

Zambia pledged to fight the effects of climate change by signing the Paris Agreement on Climate Change in 2016. The National Policy on Climate Change (NPCC) aims at stemming the impact of climate change on production sectors and subsequent reduction of the country's annual economic growth. The policy is driven by the Ministry of National Development and Planning but whose implementation is driven by the participation of many stakeholders i.e. the public and private sectors as well as civil society. The multi-sectoral approach is an important ingredient for success in implementing projects and programmes because it hinges on coordination through an established institutional framework facilitated by a National Climate Change Technical Committee. This is critical to achieving developmental goals through adaptation and mitigation interventions

The Policy seeks to promote/strengthen

- Implementation of adaptation and disaster risk reduction measures.
- Implementation of sustainable land-use management practices.
- Mainstreaming of climate change into policies, plans and strategies.
- Institutional and human resource (HR) capacity.
- Communication and dissemination of climate change information.
- Investments in climate resilient and low carbon development pathways.
- Research and development.
- Inclusion of gender equality and equity in the implementation climate change programs.
- Appropriate technologies to build national capacity to benefit from climate change technological transfer

This analysis notes that the Policy presents the country with a structured opportunity to respond more effectively to the adverse effects of climate change. The policy strives to promote stronger collaboration between various ministries and institutions including civil society organisations that have a critical role to play in climate mitigation. Civil society can exploit this to advance agroecology.

4.1.4 Land Policy 2017 (Draft)

This Policy is intended to be Zambia's first comprehensive policy on land. The lack of a coherent national policy and the ad hoc guidance of land management and administration presents challenges in land management. The draft policy exposes problems which related to unclear sections of the country's international boundary and boundaries between villages, wards, chiefdoms, constituencies, districts and provinces; the inadequacy of the current land tenure categories; problems in access to land and ownership of land, especially vulnerable groups of people; issues of citizen empowerment and the inadequacies of land

administration.

Under land management, the draft Policy highlights the importance of land use plans, which are largely non-existent on customary land. Furthermore agricultural lands are challenged with shortened of fallow cycles and rotations, which imply declining soil quality and fertility and potentially land productivity.

Contentions over public participation in consultations, land tenure, land delivery, ownership, use and management, and perceptions of over inequality and too much state control in decision-making from traditional leaders and civil society have stalled adoption of the Policy for several years.

However there appears to be opportunity for integrating agroecological issues with civil society push when consultations are revived again but the timeline when this may materialize is unclear at the moment. Consultations may likely resume after the 2021 elections.

4.1.5 Zambia National Forest Policy (2014)

The policy vision is to ensure the sustainable forest management of all types of forests. It is designed to address deforestation and forest degradation, while ensuring increased forest cover and enhanced carbon stocks through integrated participatory forest management, improved law enforcement and private sector investment. The aim is to transform the forestry sector into a thriving economic subsector for the benefit of local communities. Additional new categories of protected areas beyond National and Local forests are expected to enhance user rights, improved investment and improved forest cover resulting in reduced deforestation.

The main policy objectives are-sustainable forest resources and ecosystem management; local community empowerment; ecosystem services and climate change; investments in forestry and forest based industries development, production, processing and marketing of forest products and carbon trading; forestry research and development, extension and capacity building; mainstreaming the gender interests in sustainable forest management and the domestication of international environmental agreements. A national Forestry Master Plan is to provide clear targets. This is however yet to be developed.

4.1.6 National Water Policy 2010

The policy makes reference to the necessity of water for crop productions which in turn contributes to the growth of the economy. However, the Policy also recognizes the importance of water in the environment. It embraces social and environmental safeguards by emphasizing the important role of integrated land and water resources management at catchment level in order to enhance sustainable land use.

4.1.7 National Industrial Policy 2018

The policy is intended to facilitate sustainable economic growth through industrialization and designed to guide the accelerated growth of the manufacturing sector in addition increasing efficiency in utilisation of natural resources. The emphasis on industrialization promotes commercial, infrastructure and trade actions that have led to the current climate change situation and impacts in agriculture. This Policy focuses on eight (8) manufacturing sub-sectors as priority drivers of industrialization- processed foods; textiles and garments; engineering products; wood and wood products; leather and leather products; mineral (metallic and non-metallic) processing and products (beneficiation); pharmaceuticals; and the Blue Economy (based on the aquatic environment). These priorities are seemingly aligned to economic models that promote industrial type agriculture and access of foreign markets.

4.1.8 National Trade Policy 2018

The thrust of the policy is economic diversification and etching a market share in the global economy. It promotes trade in goods and provides policy guidance on safeguarding the local economy from the adverse effects of unfair trading practices; mainly by external sources. The policy recommends a strategic trade policy attuned to support industrial sector interests. In this regard non-traditional exports—textile and engineering, floricultural and food products expected to bolster export diversification and economic growth. With relevant support smallholder's farmers could participate in value chains for commercial crops through trade-off exists between cash crops and food crops by adopting practices that support agroecology-rotation and exploitation soil moisture and rainfall, which in Zambia are usually sufficient. Commercial crops also provide much-needed cash to invest in physical capital.

4.2 Strategies, plans and programmes

4.2.1 Overall development plans

4.2.1.1 The 2030 Vision: A Prosperous Middle-Income Nation By 2030

The Vision 2030 for Zambia aims to propel the country into middle income status 2030. It outlines the long-term national and sector goals for attaining desirable socio-economic indicators, to fulfil the Zambian people's aspirations. When successfully implemented, the Vision is expected to make the Zambian economy competitive, self-sustaining, dynamic and resilient to any external shocks, support stability and protection of biological and physical systems and free it from donor dependence³⁰. Ten attributes listed below form the complete vision for the country.

Table 2: Vision 2030 key targeted attributes

A diversified, private sector-driven competitive economy providing equal opportunities for employment, entrepreneurship and investment;
☐ A country free from hunger, poverty and other forms of deprivation
An educated society with a youthful, economically productive and innovative population as a major asset for the country's productive base;
☐ A healthy society with a low disease burden and low mortality rate
☐ A peaceful, tolerant, resilient and cohesive society with positive aspirations;
A modern country with cities, towns and provincial areas that are secure, well-planned, providing basic amenities and linked by good roads and accessible by other types of transport systems;
A thriving democracy based on political diversity, respect for human rights and freedoms and the rule of law
☐ A country served by a modern, productive, efficient and performance-oriented public service;
A country of culturally diverse, friendly, neighbourly people well-integrated into the African and international community.
☐ A country with rich bio-diversity where humans and the natural habitat mutually co-exist.

In terms of expected performance the Visions embraces nine Key Result Areas/outcomes with expected transformations or indicators as presented below:

Table 3: Vision 2030 Key result areas

LONG TERM OUTCOME	EXPECTED TRANSFORMATIONS
☐A Nation with Peace and Unity	Safe and secure country universally embracing principles and practices of equal access to justice, peaceful co-existence, common and shared destiny, unity in diversity, patriotism and ethnic integration.
☐A Nation with Improved Governance	Strengthened governance mechanisms and institutional capacities necessary to promote the Vision 2030, provide an enabling macroeconomic and sustainable development environment and promote public-private partnerships to drive development.
☐A Nation without Hunger and Poverty	Significantly reduced hunger and extreme poverty and have institutionalized measures to provide socioeconomic opportunities for poor women, men, youths and children.
☐A Nation with Diversified and Sustainable Growth	Have attained the status of a dynamic, regionally and internationally integrated and environmentally-friendly upper middle-income country with a diversified, balanced and strong industrial sector, a modern agriculture sector and an efficient and productive services sector that provides decent work opportunities for all citizens
□A Nation with Equality and Rights	Firm provision of livelihood and empowerment through social protection schemes, mainstreamed women's participation and access to economic resources and enforced rights protection of the vulnerable, especially children and people with disabilities, at a level achieved by exemplary upper-middle income countries.
□ A Nation with Improved Human Capital	A healthy and skilled working population that can meet the demands and challenges of upper middle income development; that is, a technology-proficient, fully adaptive, innovative and productive labour force that also adopts exemplary work ethics, honesty, human and ethical values, quality consciousness and a quest for excellence.
☐A Nation with Social Wellbeing	Citizens provided with social wellbeing benefits derived from access to key public services based on the principle of peoplecentered development, in which citizens participate and benefit from the development process.
□A Nation with a Competitive Economy and Innovative People	A developed and efficient economy capable of producing quality products competing favourably at international level and substantially lowered costs of setting up and sustaining a business; attraction of more local and foreign investments to drive the growth of the economy; new products and innovations entering the local and foreign markets thereby promoting efficiency and innovativeness in the economy
□A Nation Existing in a Sustainable Environment	Improved its laws and regulations and institutions to promote and encourage sustainable use of environmental resources and adoption of environmentally-friendly practices to support the wellbeing of the population.

4.2.1.2 The Seventh National Development Plan (2017-2021)

The Vision 2030 is implemented through 5-Year National Development Plans the current being the Seventh National Development Plan (2017-2021). Several strategies areas are planned to achieve the envisaged socio-economic transformation during the Plan period. Those closely associated with agroecological values include:

Economic diversification and Job creation:

A diversified and export-oriented agriculture sector- Each of the National Development Plans to date prioritized the agriculture sector as one of engines of growth for economy. The agriculture sector is the fourth largest contributor to GDP and the largest contributor to employment especially for the rural population and will retain this central role in rural livelihoods and employment over the next decades. In the current plan two major leverages effects are considered as ways of increasing agricultural development-increasing farmer incomes and increasing agricultural outputs. The Plan recognizes the opportunity for exploiting organic advantages including the low use of chemical fertilizer and integrating climate smart techniques to buffer against natural shocks, such as droughts and the weakening of seed and animal varieties due to the impact of climate change.

Improved water resources development and management-Water resources infrastructure is recognised as an important component in the provision of sustainable water resources management and services for food security. Government aim is to ensure that water resources are properly harnessed, developed and managed as an engine and catalyst for socio-economic development. Increasing water resources availability through increased storage is the long run is expected to mitigate the impact of climate change and help to build resilience. These initiatives will also serve rural communities, thus supporting productive use of water and livelihoods and increasing resilience to the adverse effects of climate change, such as floods and droughts. Regarding the management of water government will be concerned with:

- · Water resources assessment and quantification enhancement;
- · Catchment delineation and protection;
- · Water resources infrastructure development;
- · Early warning systems development; and
- Rain water harvesting promotion.

Enhancing human development:

Improved health and health-related services-In Governments quest to build a healthy and productive nation enhancing food security and nutrition is recognised. In this regard key interventions include:

- Nutritious foods and household food security promotion;
- Food and nutrition legislation reforms;
- Research and development promotion;
- Food and nutrition research promotion;
- · Health and nutrition advocacy; and
- · Nutrition information system development.

The Plan recognizes that good governance is imperative for creating conditions to accelerate Zambia's diversification and inclusive growth. It is Governments therefore to implement a conducive and stable policy environment. Key interventions in this regard include:

Reform and re-establish inclusive consultative structures which provide

- Cluster Advisory Groups establishment and operationalisation; and
- Legal and administrative framework formulation and implementation.

4.2.2 Environmental strategies and plans

4.2.2.1 The Nationally Determined Contributions (NDC)

Nationally Determined Contributions (NDCs) are a key aspect of the Paris Agreement and the achievement of the long-term goal on reducing greenhouse gas emissions, building resilience and maintaining the 1.5°C global temperature. The Zambian NDC represent the country's commitment to the Paris Agreement to reduce its national emissions and adapt to the impacts of climate change. Zambia ratified the Paris Agreement in 2016 as a party to the Paris Agreement Zambia is required to prepare, communicate and maintain successive NDCs that it intends to achieve. The successful implementation of Zambia's NDC will result in an estimated total emission reduction of 38,000GgC02eq which translates to 47% (internationally supported efforts) against 2010 as a base year³¹,

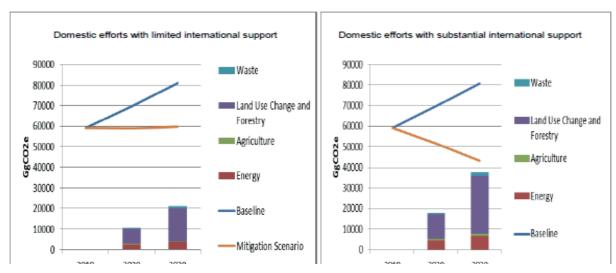
The emissions reduction is conditional and subject to the availability of international support in form of finance, technology and capacity building meaning this target may not be achieved if the international support is not forthcoming.

The Agriculture, Forestry and other Land Use sector (AFOLU) sector (through unsustainable resource use and ecosystem degradation, as alluded to in previous sections) contributes at least 95 percent of total emissions, particularly in the land category. To date Zambia has submitted three (3) national reports.

Zambia intends to reduce its CO2eq emissions by implementing programs driven by the country's National Policy on Climate Change (2017) and the National Climate Response Strategy (2007) and supported by national development policies. Figure 4 below shows Zambia's GHG reduction scenarios.

Sustainable agriculture is a key mitigation and adaptation programme in the NDC, in this regard point to the need for a full system agriculture transformation to tackle climate change genuinely. Under mitigation the long term programme relates to the promotion of conservation/smart agriculture activities leading to adaptation benefits and enhancing climate resilience, especially in rural areas, and generation of electricity from agriculture waste. The extent and magnitude of contribution of Zambia's GHG reduction with scenarios for limited and substantial international support is shown below.

Figure 4: Zambia GHG's reduction scenarios



Source: GRZ, Zambia's NDC 2015

diversification and promotion of Climate Smart Agricultural (CSA) practices for crop, livestock and fisheries production including conservation of germ plasm for land races and their wild relatives. The recognized benefits would include- poverty reduction especially in the rural areas; increased food security resulting from to improved agricultural production and diversification; increased rural household incomes from diversified production systems; increased soil fertility and conservation leading to improved crop productivity; improved agro-biodiversity conservation and improved health impacts as a result of food security and nutrition.

The second is the protection and conservation of water catchment areas and enhanced investment in water capture, storage and transfer linked to agriculture where benefits would include- improved water security for ecological purposes. Other benefits include increased hydrological systems resilience; reduced vulnerability to climate change impacts; improved water quality.

The third area relates to enhanced capacity building, research, technology transfer and finance for adaptation. Here the benefits would include- increased adaptation knowledge and skills among target groups; increased resilience and adaptive capacities among target groups; increased public awareness on CSA and economic resilience, poverty reduction, ecosystem and biodiversity conservation as a result of mainstreaming climate change adaptation into the country's development strategies.

4.2.2.2 National Adaptation Programme of Action (2007)

The National Adaptation Programme of Action (NAPA) is an evaluation of the impacts of climate change on key sector of the economy and on the basis of this offers priority activities that address Zambia's most needs for adapting to the adverse impacts of climate change. The impacts of climate hazards on communities are summarized as drought, floods, extreme heat, and short rainy seasons. The NAPA then discusses mitigation and adaptation interventions to address the hazards in key sectors of the economy.

The agriculture and food security (livestock, fisheries and crops) is prioritized along with energy and water, human health, natural resources and wildlife sectors. Drought (seasonal and periodic), floods – water logging, shortened growing season, and delayed on-set of the rains or a shortage of water are seen as the greatest hazard for agriculture (crops and livestock). Regions I and II are the most vulnerable especially Central, Western and Southern provinces. Interventions that offer opportunity for advancing agroecology are listed below.

- Adaptation of crops (cereals, legumes, root and tuber crops, and horticultural crops) to climate change/ variability including promotion of early maturing/drought resistance crops:
- Develop sustainable and appropriate programmes for both crops and livestock in the face of climate change;
- · Water harvesting and promotion of irrigation and efficient use of water resources;
- Use of technologies for fertility improvement and moisture storage (including soil conservation measures);
- Improve post-harvest storage and marketing of produce;
- Strengthening of early warning systems and preparedness;
- Promotion of Improved crop and livestock management practices;
- Application of GIS/remote sensing in mapping of drought and flood prone areas;
- Fish breeding to restock the lakes, rivers and dams;
- Promotion of aquaculture;
- Using species suitable for aquaculture in vulnerable areas.

Though showing promise and good entry points for pushing agroecology the material value of these interventions lies with how they are ultimately developed and rolled out in reality as some of them can also be used to offer silver bullet solutions by big business in order to carry on business as usual – e.g. use of technologies, fish breeding – of 'improved' genetics, that displace local genetics, as the same with crop genetics, and in the long run undermine resilience rather than building it. It is also to consider the wider system and economic/trade relations within which the interventions exist.

4.2.2.3 National Climate Change Response Strategy (2010)

This National Climate Change Response Strategy (NCCRS) was developed as an open ended set of interventions to support and facilitate a coordinated response to climate change issues in the country. The NCCRS' vision is for Zambia to attain a prosperous climate change resilient economy where as the mission is to ensure that the most vulnerable sectors of the economy are climate proofed, and sustainable development achieved through the promotion of low carbon development pathways³². This in turn will ensure that climate risks are addressed in the national development plans to minimize the adverse on development effectiveness. "Climate proofing" is not entirely possible-resilience may be enhanced or improved. This because the

"proofing" depends on various factors e.g. which partners can assist; planning processes; national decision making and budgetary processes.

The Strategies core pillars include- Adaptation and Disaster Risk Reduction; Mitigation and Low Carbon Development; Cross- Cutting Issues; Governance of Climate Change; and Finance and Investment Framework.

From an agroecological perspective the Strategy argues for the following interventions in the crop and livestock subsectors and water and forests management:

- Enhancing farming systems that encourage crop diversification including the cultivation and consumption of indigenous and more drought tolerant food crops like cassava, millet, sorghum and sweet potatoes;
- ii) Addressing soil and land degradation by promoting improved soil and land management practices/techniques/technologies such as conservation agriculture (CA) and agroforestry;
- iii) Enhanced support to extension services, e.g. for the dissemination of crop varieties able to withstand adverse weather conditions:
- iv) Enhanced support pest and disease surveillance and control programmes;
- v) Enhanced investment in water harvesting storage infrastructure for agricultural purposes;
- vi) Enhanced support to extension services, e.g. for the dissemination of livestock species able to withstand adverse weather conditions;
- vii) Promoting integrated crop-livestock systems;
- viii) Promoting the use of indigenous livestock breeds;
- ix) Increased awareness campaigns to underscore the importance of sustainable use of water resources;
- x) Protection of wetlands ("dambos");
- xi) Promoting agroforestry as a way of meeting both food/subsistence and fuel-wood needs
- xii) Application of improved and time-tested forest management practices that can enhance the resiliency of forests and forest products

Points i-xii emphasize the wider links to the call for agroecology and food system overhaul – that climate chance also relates to elements of governance, low carbon development, finance and investment. An added argument is that agroecology offers solutions to some of the wider development issues we face including greater economic equity, social cohesion, local economic benefits and job creation. The above points offer useful to identify the entry points for agroecology in production, but are there aspects from the other pillars that can be used to support the wider system transformation aspects of agroecology and food sovereignty e.g. g opting for low carbon pathways for transport, capacity building and promoting gender and unlocking the financial resources needed for its implementation.

These interventions, may be summed up to support climate change resilient production systems and promoting a low carbon economy, both crucial to future socio-economic development of Zambia. These interventions present opportunities for promoting agroecological principles among national level actors and local small scale farmers.

4.2.2.4 Zambia Forestry Action Programme (1997)

Zambia Forestry Action Programme (ZFAP) is a strategic plan aimed at managing the forest resources on sustainable basis. The plan identifies methodologies and technologies for sustainable forest management. Rational utilisation of non-wood forest products represents an opportunity for sustaining the forest resources. Agriculture-forest linkages are recognised in terms of the forests' soil protection as part of overall land management. The Plan further recognises that forests and trees also contribute to household food security and appropriate nutrition through provision of food, fuelwood, income and medicine in addition to assisting communities coping up with drought.

At farmer level farm forestry/agroforestry technologies including-homestead tree planting; farm woodlots; farm boundary tree planting; improved fallows; hedgerow intercropping; fodder banks and windbreaks are recognised.

4.2.2.5 Zambia National Strategy to Reduce Emissions from Deforestation and Forest Degradation (REDD+)

Zambia's REDD+ process commenced in 2010 with an initial consultative process to develop a national strategy. This phase also prioritized three other elements- development of reference levels; development of a National Forest Monitoring System; and development of a Safeguards Information System as per requirement of the Cancun Agreements (2010) and the Warsaw Framework (2013).

Among others, the Strategy recognizes agricultural expansion, wood fuel, timber extraction, bush fires, land use as the direct drivers of deforestation and forest degradation with the underlying causes underpinned by demographic, economic, technological, policy and institutional as well as cultural factors.

Poor agricultural soils and forest management practices are responsible for degraded forests or outward removal of forest cover. This is a result of industrial unsustainable farming practices that degrade soils and drive forest destruction and encroachment when new lands are opened up. Watershed degradation resulting from expanding agricultural development has been identified as a serious threat in many locations. Pressure to find more fertile soils has pushed farmers away from depleted, exhausted farmland into more sensitive, hilly landscapes where soil and water run-off is contributing to thousands of tons of soil loss annually. This is why the shift to agroecology is imperative as it offers both mitigation and adaptation opportunities by halting unsustainable farming practices that creating the drivers of climate change.

Intensification as a theme for agriculture is strongly linked to reducing the need for expansion of agricultural areas to improve productivity while at the same time capturing the synergies among food security, adaptation and mitigation of emissions from agricultural practices. The opportunities for advancing agroecology lie in the promotion of climate smart agricultural practices; provision of performance based incentives for climate smart agricultural practices that mitigate carbon emissions and, the promotion of good agricultural practices related to reduced emissions from agro-processing dependent on use of wood fuel from indigenous forests. Under land management the Strategy recognizes that developing integrated land use plans that are compatible with sustainable management of forests to developing mechanisms that ensure long term ownership and user rights to local communities.

A landscape approach offers opportunity under REDD+ to address the drivers of deforestation and forest degradation in a much more comprehensive and coordinated way forcing harmonization at both policy and ground implementation levels through functional partnerships across all the relevant sectors. The Strategy vision therefore is a prosperous climate change resilient economy by 2030 anchored upon sustainable management and utilization of Zambia's

natural resources towards improved livelihoods while the goal is a reduction in GHG by way of land and forests management and equitable sharing of the benefits thereof.

A key principle in the landscape approach is that the integrity and resilience of ecological systems are essential components of the landscape approach. For example, carbon emission reduction initiatives in selected forest landscapes must contribute to enhancing the ecological integrity of land resources, water resources, wildlife resources, agricultural productivity and biodiversity to which the forest is intricately linked at the ecological level, another opportunity for strengthening agroecological principles.

4.2.2.6 National Investment Plan to Reduce Deforestation and Forest Degradation (2018-2022)

This is plan provides details for how the National REDD+ Strategy might be financed and implemented on the ground. It recognizes and contributes to achieving the goal of the national REDD+ Strategy. The promotion of resilient landscapes, sustainable agriculture and activities for creating an enabling environment for successful implementation of the investment plan in terms of policies and institutions is one of the core investment priorities of the Investment Plan.

The implementation of the strategy requires the mobilization of multiple sources of funding (public and private, multilateral and bilateral). The preliminary funding target over five years is estimated at US\$404.67 million and aims to shift from a project based approach to a more integrated and inclusive approach. The priority focal landscapes will be Zambezi, Kafue and Luangwa watersheds

A cross-sectoral, integrated land use and geographic approach that points locations of need is adopted for implementations. A multi-stakeholder approach which includes GRZ Ministries and respective departments, especially those directly related to the proximate drivers of deforestation and forest degradation, as identified in the Strategy are key stakeholders, as are relevant statutory bodies, international and national NGOs and Civil Society Organizations, the Private sector and local community institutions is planned for on the ground implementation.

4.2.2.7 National Environmental Action Plan (1994)

As a successor to the National Conservation Strategy of 1985, the National Environmental Action Plan (NEAP) was the first comprehensive attempt by Government to mainstream environmental concern into the social and economic development planning process. The justification for the NEAP was the maintenance of ecosystems, ecological processes and the country's biodiversity.

The document analyses the Zambia's biophysical environment, the human population and the economy. Natural resources discussed include land, water, trees and wildlife. Land is discussed from the perspective of land rights and constraints stated in terms of land conservation structures or tree planting. Agriculture is cast only in terms of the policy, institutional and legal reforms required to improve its management. The closest reference to agroecology in the document is the discouragement of maize mono-cropping which results in the risk of disease, weed infestation and soil nutrients loss. However, a comprehensive way forward is not offered.

This document seems "redundant" in terms of agroecology in view of more current and innovative agriculture and natural resource management strategies. This document would be valuable in the historical demonstration of natural resources planning.

4.2.2.8 National Biodiversity Strategy and Action Plan (2015-2025)

This Strategy aims at ensuring that Zambia's biodiversity is valued, conserved, restored and used sustainably. Its approach is transformative emphasizing evidence-based interventions, fully participatory processes, important role of protected areas, and incorporation of climate change resilience principles, restoration activities, need for diverse financing mechanisms and supportive policy, legal and regulatory framework.

The vision is that by 2025, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy environment and delivering benefits essential for all Zambians and the Zambian economy." The eighteen (18) targets of the Strategy incorporate the Aichi Biodiversity targets of the Convention on Biological Diversity. Table xx below shows the Strategy's goals and the organisations to lead in the achievement of specific targets.

Table 5: The NBSAP goals and targets

GOALS AND TARGETS	LEAD GRZ AGENCIES & OTHER
Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society	Ministry of Lands and Natural Resources, Ministry of Information; Media & Ministry of National Planning, Ministry of Finance, Civil Society Organisations Ministry of Tourism & Arts, Ministry of Agriculture and Livestock Department of Water Resource Development; Water Resources Management Authority, Ministry of Fisheries & Livestock
Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use.	Ministry of Lands and Natural Resources/ Forestry Department)/National Heritage Conservation Commission; Ministry of Agriculture/Ministry of Water and Environmental Protection Ministry of Fisheries & Livestock; Ministry of Tourism and Arts; Ministry of Agriculture; Zambia Environment Management Agency
Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.	Ministry of Tourism and Arts/Ministry of Lands and Natural Resources; National Heritage Conservation Commission/ Ministry of Fisheries & Livestock; Ministry of Chiefs & Traditional Affairs; National Science and Technology Council; Ministry of Agriculture; Zambia Agriculture Research Institute; National Biosafety Agency.
Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services	Ministry of Lands and Natural Resources; Ministry of Chiefs & Traditional Affairs; Ministry of Local Government and Housing; Ministry of Finance; Ministry of National Planning;
Strategic Goal E: Enhance implementation of NBSAP2 through participatory planning, knowledge management and capacity building	Ministry of Lands and Natural Resources; Ministry of Chiefs & Traditional Affairs; Ministry of Local Government and Housing; Ministry of Finance; Ministry of National Planning; Ministry of General Education; National Science and Technology Council

The documents discuss the status and management of biodiversity resources at length focusing on ecosystem diversity and trends (including agroecological regions); species diversity and trends, (including agro-biodiversity -crops and livestock genetic resources), the values of biodiversity in Zambia and threats to biodiversity. Threats to biodiversity include habitat transformation, encroachment, genetically modified organisms (GMOs), uncontrolled fires, climate change, invasive species, unsustainable utilization, pollution, and diseases;

This strategy offers multiple opportunities for advancing agroecology by way of planned intervention under each of the strategic goals. Those most relevant are listed below in Table XX.

Table: NBSAP strategic interventions and key activities

STRATEGIC INTERVENTION	KEY ACTIVITIES	
Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.		
Raise public awareness of the value of conserving biodiversity and using it sustainably	Develop a Communication, Education and Public Awareness (CEPA) strategy for NBSAP2 Conduct public awareness and education campaigns on value of conserving biodiversity and using it sustainably	
Mainstream biodiversity into the district, provincial, SeNDP and national accounting system	Mainstreaming of the identified biodiversity conservation actions in the sector, provincial and district SeNDP programmes and budgets based on the screening results	
Promote sustainable agricultural practices	Develop and promote farming systems compatible with sustainable agricultural practices in the selected landscapes.	
Institutionalize integrated land use planning across sectors	Develop/improve on existing guidelines for integrated land use planning with a biodiversity conservation lens.	
Goal B: Reduce the direct pressures o	n biodiversity and promote sustainable use	
Goal C: Improve the status of biodiver diversity	sity by safeguarding ecosystems, species and genetic	
Promote the cultivation of land races known to be resilient to pests, diseases and drought.	Mainstream and upscale the Micro propagation studies into the National Agricultural Research Systems (NARS) Promote the use of land races especially among the most vulnerable small scale farmers (e.g. as part of the package for the Food Security Pack subsidy for the most vulnerable farmers);	

Increase accessions of crop (including wild relatives) genetic resources in the national gene bank holding.	Mobilize resources for the collection characterization accessions of key crop genetic resources	
Increase germ plasm genetic resources and crop wild relatives	Mobilize resources for the collection, maintenance of indigenous livestock genetic resources	
Develop and implement conservation and sustainable utilization strategies for the conservation of crop wild relatives.	Mainstream the ongoing domestication initiative into the National Agricultural Research System (NARS).	
Goal D: Enhance the benefits to all from biodiversity and ecosystem services		
Develop and formalize a generic national benefit sharing framework for conservation of genetic resources	Assess the scope of key elements necessary for a generic national benefit sharing framework	
Domesticate the national benefit sharing framework into Benefit Distribution System (BDS) by relevant sectors	Develop sectoral BDSs for forestry, fisheries, wildlife, water, agriculture, mining and infrastructure development	
Enforce sectoral BDSs	Legislate sectoral BDSs	

4.2.2.9 Zambia National Action Programme for Combating Desertification & Mitigating Serious Effects of Drought 2002

The document recognizes land degradation, a problem a caused by environmental, social and economic issues (including policy institutional, and legal factors). The programme is purposed on the identification of factors contributing to desertification and instituting practical measures to combat desertification and mitigate the effects of drought. Thus reducing the destruction of land resources, promoting sustainable use of land resources, increasing public awareness, information dissemination and providing a suitable policy and legislative framework are seen as key interventions for reducing/controlling land degradation and increasing food security.

Relevant actions include -Early Warning and Preparedness; Forestry, Ecosystems and Species Conservation; Water Catchment and Energy Conservation; Collaboration and Networking, Extension, Public Awareness, and Information Dissemination; Land Degradation Assessments, Monitoring and Reporting; Livelihood Improvement; Human Settlement Management, and Legal and Policy Reviews.

This analysis notes that the programme is intended to support varied actions (projects/programmes) in support of the National Policy on the Environment and others.

4.2.3 Agriculture focused strategies and plans

4.2.3.1 Zambia National Agriculture Investment Plan (2014-2018)

The National Agricultural Investment Plan (NAIP) was formulated under the Comprehensive Africa Agriculture Development Programme (CAADP) of the African Union that the country signed on 18th January 2011 under the New Partnership for Africa's Development (NEPAD) to accelerate the country's realization of the Vision 2030 through the medium term five year National Development Plans.

The NAIP seeks to operationalize the National Agriculture Policy. Its overall objective is "to facilitate and support the development of a sustainable, dynamic, diversified and a competitive agricultural sector that assures food security at household and national levels and maximizes the sector's contribution to GDP. The four (4) interrelated NAIP programmes and include -Sustainable natural resources management; Agricultural production and productivity improvement; Market access and services development, and Food and nutrition security and disaster risk management as shown in table XX below.

Table 4: National Agriculture Investment Plan key programmes

PROGRAMMES	COMPONENT
Sustainable Natural Resources Management	(i) Land-use Planning, Administration and Management; (ii) Ensure efficient water-use and irrigation; (iii) Forestry Management; (iv) Energy Efficiency Promotion, and; (v) Capture fisheries Management
Agricultural Production and Productivity Improvement (Crops, Livestock and Aquaculture)	Crops: Improved crops productivity; Access to inputs; Good Agricultural Practices; Mechanization Livestock: Increased livestock production and productivity; Animal Health and Disease Control; Applied Livestock Research Aquaculture: Aquaculture Production and productivity; Enabling environment for Aquaculture development
Market Access and Services Development	Institutional market arrangements and performance; Increasing access to rural and market infrastructure; Increasing access to rural finance; Promote value chain integration
Food and Nutrition Security and Disaster Risk Management	Food security; Nutrition security; Disaster risk management and mitigation
Key support services	
Knowledge support systems	Research; Seed; Extension; Agricultural education and training institutions
Institutional Strengthening	Policy dialogue; Planning, M&E Financial Management (and Procurement); Human resources management
Cross-cutting issues	

Gender; Environment; Other sector policies & on-going plans; decentralization;

These are not stand-alone hence have no budgets of their own. They are fully integrated into the 4 programmes and Key Support Services

The first opportunity for advancing agroecology under the Sustainable Natural Resources Management Programme is under the sustained increased agricultural production, productivity and value addition of major crops, livestock, forest and fisheries by the comparative advantage of each agroecological region. The second is under the creation and enhancement of sustainable use and maintenance of the existing agricultural resource base to support vibrant and resilient agricultural production systems. An additional opportunity is under the Crops component with the objective of increasing sustainable crop production, productivity and value addition for a diversified range of competitive crops apart from maize.

Constraints identified in the agriculture sector and for which the NIAP was found necessary are many. Where food security and nutrition is concerned, terms of food security Energy intake (the best proxy indicator for food insecurity) is low. The average daily requirement for men and women (FAO) is 2,750 and 2,600 respectively compared to a daily caloric intake that are below 1,750³³ (average for all age groups)³⁴. Stunting remains the most common nutritional disorder affecting under five year children. In terms of cropping characteristics, small-scale farming systems are overwhelmingly dominated by a single crop, maize. This presents a nutrition challenge where maize accounts for 57% of daily caloric consumption. The persistence of poor coordination among key players dealing with food and nutrition compounds solutions to malnutrition. Other constraints include poor food storage at household level; inadequate nutrition education; inadequate mechanisms to deal with disaster risk management

Effective management of the natural resource base is constrained by a fragmented system governing land administration, forestry and environmental management in the country. The Plan flags fragmentation has contributed to inadequate collaboration, coordination among government institutions as well as stakeholders that deal with land administration. There is evidence that large areas of the croplands, grasslands, woodlands and forests are already seriously degraded³⁵. The fact small scale farmers are dogged with soil nutrient depletion problems due to soil erosion, leaching and removal in harvested products makes an agroecological approach more compelling.

The plan highlights frequent and disastrous droughts as which lead to the failure of rain-fed crops as a serious challenge to agriculture and that available surface water resources are not being used effectively. For small scale farmers simple but cost effective irrigation solutions could be an influencing factor in increasing and diversifying production.

The NAIP strongly prescribes that well managed natural resources are the foundation for the development and growth of crops, livestock productions and aquaculture. Solutions therefore lie in sustainable resource use-especially the promotion of good agriculture practices an integral part of land management; promote national and household food/nutrition; ensuring risk management and disaster mitigation capabilities; regulations and policy reforms; strengthening existing knowledge systems- which include seed systems; research systems, extension systems and agriculture education, as well as developing new knowledge support systems.

The NAIP also recommends for the strengthening of institutions in terms of awareness creation; sector policy dialogue, analysis and planning systems; public financial management, procurement and audit systems, and improved human resources management.

Though the NAIP period ended in 2018, its ideals continue to be relevant to the agriculture sector and a revised version of this document would support the achievement of national development goals. The document needs to pay more attention to the climate impacts of agriculture, seeing that this sector is for now and in the medium term weather dependent. This presents an opportunity for integrating agroecology principles in the revised document. Government is desirous of developing a new NAIP though it is unclear whether Government has the resources to undertake this and when the process may actually start.

4.2.3.2 Climate-Smart Agriculture Investment Plan, Zambia 2019

The Climate Smart Agriculture Investment Plan (CSAIP)³⁶ and outcome of a partnership between Zambia's Ministry of Agriculture and the World Bank, aims to produce evidence of climate-smart agriculture (CSA) technologies that offer the greatest potential as Zambia seeks to sustainably increase productivity, enhance household and agro-ecosystem resilience, and reduce or remove its greenhouse gas emissions. Going forward, it will be critical to have an understanding of how best to address the trade-offs and synergies between achieving agricultural and economic goals on one hand, and preparing for emerging climate challenges on the other. The CSAIP builds on existing strategy documents, including Zambia's 7th National Development Plan and its National Agricultural Investment Plan.

The plan makes reference to Climate Smart Agriculture (CSA) strategies closely linked to agroecological practices. It clearly offers opportunity for advancing CSA practices such as –crop diversification, commercial horticulture, agroforestry and reducing post–harvest loss—which show the greatest promise to reducing GHG emissions to society. The plan recommends adoption of business partnerships with rural communities which build on environmental sustainability and farmer field schools to enhance community-based learning and technology dissemination, and participatory integrated landscape management approaches as ways of developing a productive, resilient and low-emission agriculture sector.

The Plan is was developed with wide consultation involving participation from sections of the Ministry of Agriculture, Multilateral organisations, donors and cooperating partners; international organisations, academic and research institutions, international and local non-governmental organisations and yet to be publicized widely, especially among civil society and other grassroots organisations as well as representation from the National Union of Smallholder Farmers. The extent to which this document may be useful depends on its integration in planned agriculture programmes especially those focused at smallholder farmers.

4.2.3.3 Farmer Input Support Programme

The Government of the Republic of Zambia (GRZ) initiated the programme in 2002, with the aim of subsidizing small-scale farmers with a limited amount of commercial maize seed and inorganic fertilizer through the Ministry of Agriculture. Initially known as the Fertilizer Support Programme, it is today known as the Farmer Input Support Program (FISP). The Zambian Government has been funding this programme since then. The allocation of the budgetary support to the FISP from the central treasury has been steadily increasing from the inception of the programme.

Apart from achieving crop diversification a major aim of FISP is also to increase household food security, increase nutrition and the income status of small scale famers. Under FISP smallholder farmers are expected to be supported with the following inputs- chemical

fertilizers, maize, rice, sorghum, groundnuts, orange maize, soya bean, cotton, beans and sunflower seeds.

The specific objectives of FISP are:

- i) To expand markets for private sector input suppliers/dealers and increase their involvement in the distribution of agricultural inputs in rural areas, thereby reducing direct role of Government;
- ii) To ensure timely, effective and adequate supply of agricultural inputs to targeted small-scale farmers.
- iii) To improve access of small-scale farmers to agricultural inputs.
- iv) To ensure competitiveness and transparency in the supply and distribution of inputs.
- v) To serve as a risk-sharing mechanism for small farmers to cover part of the costs for improving agricultural productivity.
- vi) To facilitate the process of farmers' organization, dissemination of knowledge and creation of other rural institutions that will contribute to the development of the agricultural sector.

Each year the government allocates huge sums of financial resources to supply farming inputs to farmers. An analysis of trends in the national agriculture budget agriculture budget allocations indicates that between 60% and 70% of the allocated funds and expenditure are used on the Farmer Input Support Programme (FISP) to subsidize small-scale farmers' access to inputs and the Food Reserve Agency (ZRA) for purchases of mostly maize for national food security. Not all farmers eligible to receive the subsidy actually get to receive the inputs. Many cannot afford to pay cooperatives membership fees and the top up fee on the subsidy pack, while other are just simplify left out because of the high number of beneficiaries in some cooperatives³⁷.

For all its well-intended aims, this farmer subsidy approach supports the production of chemical intensive mono-culture cash crops, proven to be ecologically damaging through removal of indigenous forests to make way for large scale plantations and burning³⁸. The Zambia Alliance for Agroecology and Biodiversity consultative work in several districts-Mongu, Western Province; Pemba in Southern Province³⁹; Shibuyunji⁴⁰, Central Province and Kalulushi in the Copperbelt Province⁴¹, deduced that FISP resulted in the destruction of solid organic matter, natural forests and associated goods and services leading to biodiversity loss, deforestation and ultimate soil degradation⁴². The huge resources allocated to this programme could be shifted to finance the transitions to agroecology.

4.3 Laws, treaties, conventions and other commitments

Zambia has signed, ratified and domesticated international agreements and implemented national legislation that address global and national environmental issues but which also contributes to sustainable development. Through this international cooperation, the country has developed and implemented a number of projects/programmes to address environmental issues and poverty reduction and subsequently contributing to sustainable development. Below is an account of the agreements that Zambia is a party to:

4.3.1 International conventions and agreements

Zambia is signatory to the following international environmental conventions

- The RAMSAR Convention on Wetlands of International Importance especially as Waterfowl Habitat-
- The Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES), also known as the Washington Convention
- The Convention on Biological Diversity- The main objective of the Convention is to promote the conservation of biological diversity, sustainable use of its components and the fair and equitable sharing arising out of the utilization of genetic resources; signed on 5th June 1992 and ratified it on May 28, 1993. Zambia also ratified the Cartagena Protocol on Biosafety to the Convention on Biological Diversity;
- The United Nations Framework Convention on Climate Change and its Kyoto Protocol-The Kyoto Protocol, which is basically an amendment to and reinforces provisions of the UNFCCC was opened for signature on March 16, 1998 and came into force on February 16, 2005. Zambia ratified Kyoto on 07 July 2006 and came into force on 5 October 2006;
- Paris Agreement on Climate Change, 2016
- International Treaty on Plant Genetic Resources for Food and Agriculture
- The United Nations Convention to Combat Desertification Zambia signed and ratified the United Nations Convention to Combat Desertification (UNCCD) on 15th October 1994 and 19th September 1996 respectively. The convention aims at combating desertification and mitigating

4.3.2 Sustainable Development Goals (SDGs)

Zambia has shown commitment to the international convention SDGs by endorsing the 2030 Agenda agreement and domesticating SDGs into its national development frameworks. The implementation of SDGs in Zambia is anchored on the National Vision 2030, which aims at transforming the country into a middle income nation by 2030. At the international level, the country is expected to carry out periodic reviews of the progress being made toward attainment of SDGs through Voluntary National Review (VNR).

The VNR reports on the extent to which the SDGS have been domesticated /integrated in the national planning framework and the institutional arrangements put in place for coordination, monitoring and implemented. Agriculture and climate vulnerability are mainstreamed in Pillar 2 (Poverty and Vulnerability Reduction) of the 7th National development plan where SGD goals 1, 2, 3, 4, 5, 6, 10, 11, 12, 13 and 15 feature. Support pillars are Pillar 1 on Economic Activity and diversification and Pillar 5 for creating a Conducive Governance Environment for a Diversified and Inclusive Economy.

4.3.3 United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROPS)

United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas, which protect the rights of farmers and other peasants. It recognizes that peasants and people working in rural areas, including youth and the ageing, are migrating to urban areas due to a lack of incentives and the drudgery of rural life, due to insecure land tenure, discrimination and the lack of access to productive resources, financial services and information. The Declaration is based on a concern that peasants and rural workers are burdened with environmental degradation and climate change and suffer disproportionately from poverty, hunger and malnutrition.

The agency of peasants, indigenous and forest peoples is at the heart of this declaration, which Zambia assented to. The focus of the Declaration is that "peasants and other people

working in rural areas" have the same rights as the rest of the world's citizenry and that they have a critical role in managing natural resources for food and agriculture and for ensuring food security toward 2050.

4.3.4 Africa Agenda 2063

The Africa Agenda 2063 has also taken on board with 7 aspirations of which the first focused on Agriculture and climate change. Zambia is a party to the continental goal of "A prosperous Africa based on inclusive growth and sustainable development" and the goal which is determined to eradicate poverty in one generation and build shared prosperity through social and economic transformation of the continent. It emphasizes environmentally sustainable climate and resilient economies and communities by putting in place measures to sustainably manage the continent's rich biodiversity, forests, land and waters and using mainly adaptive measures to address climate change risks

4.3.5 Plant Variety Protection instruments

The International Union for the Protection of New Varieties of Plants (UPOV) promotes plant variety protection globally, with the aim of encouraging the development of new varieties of plants, for the benefit of society. Regional instruments developed from UPOV of interest to Zambia include African Regional Intellectual Property Organization (ARIPO) and the Southern Africa Development Conference Plant Variety Plant (SDC PVP) Protocol. Both instruments provide for the granting and protection of breeders rights.

The ownership and development of seed varieties in Africa has become heavily contested. Africa has seen a constant and determined attack on seed sovereignty. In the case of Zambia as ZAAB observes, Zambia has revised its seed legislative frameworks and policies to align with regional frameworks with regulations now following the Common Market for Eastern and Southern Africa's harmonized regulations for seed movements in the region⁴³. Particular concerns are the lack of a seed policy; the release of inappropriate seed for Zambia with no redress mechanisms for the failure of imported varieties;, the sale of uncertified seed will become illegal criminalizing, a blow to informal seed exchange among smallholder farmers; encouragement of the adoption of uniform, commercial seed with known negative effects on Agrobiodiversity; seed certification standards that may disadvantage farmer managed seed system's curtailing farmer rights but generally impacting on the farmer ability to maintain local biodiversity⁴⁴.

4.3.5 Southern African Development Community (SADC) protocols

Managing climate change requires a twofold approach -adapting to its effects and striving to slow its progress. As Southern Africa is particularly vulnerable to the impacts of climate change, SADC has enacted policies aimed at climate change adaptation, and also participating in efforts to turn back the effects of rising global temperatures and reducing their potential harm to the region.

In addition to the above, there has been a sustained process of enacting SADC Regional Agriculture Policy and Climate Change Strategy in several countries in SADC including Zambia. These laws aim to protect farmers, biodiversity and climate resilience.

4.3.6 National environmental legislation

Table 6: Key environmental legal provisions

Legal Instrument	Endorse- ment / Ap- proval date	Ministry / Agency	Focus in relation to agro-ecology/Cli- mate Change
Forest Act	2015	Department of Forests	Incorporates agroecology and climate change issues; States the importance of community participation in climate change and adaptation through conservation and sustainable management of various categories of forests;
Environmental Management Act	2011	Zambia Environ- mental Manage- ment Agency	Integrated management; environmental protection and pollution control; plays a key role in coordinating the National Communications to the UNFCCC
Environmental Impact Assessment (EIA) regulations	1997	Zambia Environ- mental Manage- ment Agency	Prepares for all investments that have a major impact on the environment
Land (Conversion of Title) and Land Acquisition Acts No's of 1995	1995	Ministry of Lands and Natural Re- sources	Procedures for land acquisition and alienation for proposed investments (including agriculture
Agriculture Lands Act		Ministry of Agricul- ture	Management and administration of all agricultural lands in Zambia, including conversion, transfer and operation.
Protection of Traditional Knowl- edge, Genetic Resources and Expressions of Folklore Act	2916	Ministry of Agricul- ture	Concerns the protection of traditional knowledge (including knowledge relating to sustainable agriculture and biodiversity-related knowledge) and cultural expressions in Zambia
Urban and Regional Planning Act	2015	Ministry of Local Government and Housing	National and sub- national physical, integrated development, and land use planning. It is critical for management of development at all levels of administration in Zambia
Water Resources Management Act	2011	Water Resources Management Au- thority	Regulation and management of water resource
Disaster Manage- ment Act	2010	Disaster Manage- ment and Mitigation Unit-0VP	Disaster management and preparedness

5.0 Identifying institutional interests and influence

The identification of various national key stakeholders in the climate change and Agroecology discourse to inform actions for effective advocacy in order to influence policy development and implementation at various levels, was undertaken with an analysis of interests as well as their levels of influence.

Table 7: Stakeholder type and roles

STAKEHOLDER TYPES	INTERESTS AND ROLES	INFLUENCE
International		
Multilateral organisations e.g. Global Environmen- tal Facility; Green Climate Fund, World Bank, UNDP, FAO etc.	Support capacity development for agroecology/mitigations and adaptation where this is a na- tional priority; Support adapta- tion projects agreed under NAPA, NAMA and NAP	Ensuring national level accountability and transparent Decision-making; Global dissemination of results. Very influential
National		
Ministry of National Development Planning	Honours international agreements and participate in international negotiations; Climate change and adaptation integrated into national and sectoral economic development and poverty reduction strategies.	Important duty bearer as the mandated institution for national economic development planning. Very influential
Ministry of Finance	Honour international agreements and participate in international negotiations; Main mission is to finance service provision for all citizens.	Very influential and an important duty bearer in financing the implementation of Government agricultural and climate change and adaptation policy
Ministry of Agriculture and Cooperatives	Implement agriculture sectoral policies, programmes and plans; Reduce risk of climate change of agriculture; Honour international agreements and participate in international negotiations	Very influential and an important duty bearer given that over 70% of the country is employed directly or indirectly by climate dependent agriculture with implications for food security and sustainability
Ministry of Fisheries and Livestock	Implement fisheries and livestock policies and ensure sustainability in resources use especially at community level; Honour international agreements and participate in international negotiations	Important duty bearer, implements and provide information to smallholder livestock owners has medium influence
Ministry of Water Sanitation and Environmental Protec- tion	Main interest is to implement water sanitation, environment climate change policies; Coordination of climate change policy implementation; Honour international agreements and participate in international negotiations	High influence in CC policy implementation and reduction in water risk; promotes IWRM

Ministry of Local Govern- ment	Service provision; Building capacity and develop effective mechanisms to solve local problems Reduce the risk of local, climate-related damage	Is very influential and a strong duty bearer as it will oversee implementation of the decentralisation policy; plays key role in district level capacity building for integrated planning
Local authorities	Solving local problems; develop- ing local capacity; financing local plans and programmes; strength- ening local institutions	Very influential and strong duty bearers; will implement and regulate local level NRM as part of implementation of decentralisation policy.
Water Resources Management Authority (WARMA)	Responsible for managing water resources (including efficient water allocation and monitoring); establishing water user associations	An important duty bearer with low but growing in- fluence; Will rely on local stakeholders to protect and manage water catchment areas; legal frame- work provides political space for stakeholder en- gagement and feedback through local level insti- tutions
Zambia Environmental Management Agency	Ensuring citizens' rights to a clean and healthy environment; Sustainable environmental management	The primary environmental watch dog; ZEMA is influential and important as a duty; operational and legal framework provides political space for stakeholder engagement and feedback
Parliament – The Parliamentary Committee	Creating an enabling environ- ment for sustainable NRM and cli- mate change adaptation. Making Government accountable to the citizens	Very influential; Can invite any stakeholder to make submissions on specific topics including climate change policy and adaptation.
Others		
Traditional Authorities	Custodians of local culture, heritage, values and natural resources	Influential in allocation of land (customary) in Zambia and ensuring customary lands are well managed
Private sector	Development of value chains, financing economic development, developing markets and natural resource exploitation; generates services for the population	Low influence in adaptation processes; Stronger public-private partnerships are an important vehicle to enhancing climate resilience and while creating business opportunities
Civil Society Organisations	Facilitate the organisation of local people and identify action to fulfil local needs; Finance local development programmes and projects; Develop capacity (e.g., technical, financial, human, institutional); Strengthen local institutions	Relatively low influence when working as individual organisations, but more strategic and influential working through organised platforms/networks.
Media (Public, private and social)	Dissemination of information on Climate change and adaptation processes and events	Important for raising awareness and sensitisation as well as an agenda setting
Local communities/citizens affected by climate risks and damages	Improve or preserve health, education, housing, land and aquatic productivity; Decrease local vulnerability to climatic risks; Improve or preserve adaptive capacity for coping with climatic risks	Low influence working as individuals; Depending on situation individuals influential as early adopters for agro-technology and in agenda setting.

6. GAPS AND POSSIBLE ENTRY POINTS FOR NATIONAL LEVEL ADVOCACY

6.1 Introduction



In its 2013 report of the International Panel for Climate Change, it states authoritatively that climate change and variability will impact food and fibre production around the world due to the effects on plant growth and yield by elevated CO², higher temperatures, altered precipitation and transpiration regimes, and increased frequency of extreme events among other pressures. Clearly current agriculture production systems will need to adapt to meet these changing pressures.

The major and most durable benefits will likely result from essential agroecological measures which include the diversification of agroecological systems in the form of poly-cultures, agroforestry systems, and croplivestock mixed systems accompanied by organic soil management, water conservation and harvesting, and general improvement of agrobiodiversity.

The critical question here therefore is-can agroecology foster climate change adaptation, mitigation and resilience through the current environmental and agricultural policies, strategies and plan. This section will therefore analyze the policy potential of agroecology in the national setting in addition to highlighting gaps in existing policy while drawing out areas of possible policy strengthening and points of entry.

6.2 Gap analysis

6.2.1 Aligning national agriculture and climate change-related policies with agroecological principles

Section 4.0 identified key policies of relevance to climate change. This list is not exhaustive as the policy environment is dynamic. The analysis checks whether the policies recognize agroecology (principles) in the measures as a means of achieving their intended objectives. The results of this first step in the analysis are presented in Table xx below.

Regarding the alignment of existing environmentally related policies, with agroecological principles, the analysis (in Table 8) found that most policies present opportunity for promoting agroecology as a climate change strategy because of their broad based approach. The policies analyzed generally support transforming agriculture productivity to deliver on food security and nutrition, build resilience to the impacts of climate change, eliminate social inequality and minimizing biodiversity loss. This recognition is embodied in the various policies, strategies and plans ambition to transition Zambia into a sustainable food and agriculture system led by the current National Agricultural Policy.

The overarching goal of the policy is to contribute to improvements in food and nutrition security and income generation through the promotion of improved management of natural resources and practices compatible with sustainable and climate-resilient agricultural production. Of concern in the Agriculture policy is the emphasis on increased production premised more on increased hybrid seed and chemical fertilizers. Reference to more sustainable ways of increasing food production are subdued.

The goals of two key climate change related policies—the National Policy on the Environment and National Policy on Climate Change, aim to enhance adaptive capacity and resilience while promoting low carbon development. However their weakest areas seem to be related to building up appropriate food systems that are cognizant of healthy, diversified, seasonally and culturally appropriate diets. A lot more could be embedded in the two policies and also in others—the draft Land policy, National Forests Policy and the National Water Policy. The draft Land policies is somewhat vague on issues of recycling; reduce or elimination of dependency on purchased inputs; securing and enhancing soil health and functioning for improved plant growth, particularly by managing organic matter and by enhancing soil biological activity; and ensuring animal health and welfare.

The agroecology principle associated with recycling is not directly mentioned in the National Water Policy. Of all policies this is where it should be discussed most in terms of public awareness on water conservation as well as an efficient water use practice. Accordingly, there is potential to further streamline these practices in this policy and in other policies.

The agroecological principle of connectivity which is intended to ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies, is not directly mentioned in National Forests and Water policies. Accordingly, there is potential to further streamline this principle in these and other policies.

Table 8: Alignment of existing environmentally related policies with agroecological principles

			Policies					
Agroecological principles	Second National Agriculture Policy	National Policy on the Environment	National Policy on Climate Change	Land policy (draft)	National Forest Policy	National Water Policy	National Industrial Policy	National Trade Policy
1. Recycling: Use of local renewable resources and close as far as possible resource cycles of nutrients and biomass.				×		×	×	×
2. Input reduction: Reduce or eliminate dependency on purchased inputs.	×			×	×	×	×	×
3.Soil health: Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and by enhancing soil biological activity				×		×	×	×
4.Animal health: Ensure animal health and welfare				×	×	×	×	×
5. Biodiversity: Maintain and enhance diversity of species, functional diversity and genetic resources and maintain biodiversity in the agroecosystems over time and space at field, farm and landscape scales							×	×
6. Synergy: Enhance positive ecological interaction, synergy, integration, and complementarity amongst the elements of agroecosystems (plants, animals, trees, soil, water)								×
7. Economic diversification: Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange								
8.Co-creation of knowledge: Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange								
9. Social values and diets: Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.		×	×	×	×	×	×	×
10. Fairness: Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.							×	
11.Connectivity: Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies				×	×	×	×	
12. Land and natural resource governance: Recognize and support the needs and interests of family farmers, smallholders and peasant food producers as sustainable managers and guardians of natural and genetic resources							×	×
13. Participation: Encourage social organization and greater participation in decisionmaking by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems					×	×	×	×

6.2.2 Extent of inclusion and consolidation of agroecology in existing strategies and plans

Under this analysis the study qualitatively examined the degree to which agroecology approaches are already addressed in the strategies and plans and could they support the uptake and upscale of agroecology. Results of the analysis were very much similar to the results of the analysis of the policy potential for agroecology in Section 6.1.1.

Agroecology principles are addressed in some of the strategies and plans analyzed and not so emphatically in others. A case in point is the Visions 2030 where agriculture is recognized as a key sector of growth. Many agroecological principles are inferred or not specifically acknowledged. These relate to input reduction; soil health, animal, the maintenance of biodiversity or reinforcing synergies between objectives of food security, poverty reduction, and adaptation and mitigation actions in the agricultural sector.

The forest related programmes (ZFAP, National REDD+ Strategy and Investment Plan, and NBSAP) have the potential to provide this synergy and to offer resilience benefits and reduce emissions in agricultural systems as part of the overall Vision 2030.

The Zambia Climate Smart Agriculture Investment Plan (ZCSAIP) developed in 2019 complements the Zambia Agriculture Investment Plan (ZAIP) which came to an end in 2018. The two documents have together identified challenges and opportunities for expanding CSA to hedge against climate impacts in the agriculture sector in Zambia. However the NAIP which could be said to offer an opportunity for advancing agroecology and climate change because of its strong alignment with the CAADP Compact came to close in 2018.

Its revision is pending and leaves a vacuum in providing guidance on priorities in national budget allocation. Both the NAIP and ZCSAIP are depicted to have addressed the agroecological principles the best on paper. However studies and reviews undertaken⁴⁵ shows gaps in investment in crop diversification and the use sustainable land and natural resource management to the agriculture sector to support the promotion of sustainable agriculture.

This analysis noted that though the strategies and plans have embraced many agroecology-related practices such as climate smart, agroforestry, sustainable land management, cultivation of drought-tolerant indigenous crops, water harvesting, and livestock management, the concept of agroecology is relatively known perhaps because the principles/elements have not yet been well understood among the policymakers including those that design climate programmes.

Table 9: Alignment of existing strategies and plans with agroecological principles

			Strategies and plans	and plans									
Agroecological principles	Vision 2030	7thNDP	NDC	NAPA	NCCR	ZFAP	REDD+ Strategy	REDD+ Investment Plan	NEAP	NBSAP	ZNAIP	CSA Investment	FISP
Recycling: Use of local renewable resources and close as far as possible resource cycles of nutrients and biomass.		-			×	×			Inferred				×
2. Input reduction: Reduce or eliminate dependency on purchased inputs.	×		Inferred	Inferred	×	×					×		×
3.Soil health: Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and by enhancing soil biological activity	Not spe- cific	Inferred						Inferred					×
4.Animal health: Ensure animal health and welfare	Not spe- cific					Not spe- cific	×	×					×
5.Biodiversity: Maintain and enhance diversity of species, functional diversity and genetic resources and maintain biodiversity in the agroecosystems over time and space at field, farm and landscape scales	Inferred					Not spe- cific							×
6.Synergy: Enhance positive ecological interaction, synergy, integration, and complementarity amongst the elements of agroecosystems (plants, animals, trees, soil, water)	Not specific	Inferred											×
7.Economic diversification: Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange													
8.Co-creation of knowledge: Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange	Not specific			Inferred									×
9. Social values and diets: Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.				Not spe- cific	Not specific	×	×	×	Inferred			Inferred	×
10. Fairness: Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.	×		Not specific	×		Not spe- cific					Inferred	Inferred	×
11. Connectivity: Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies			Not specific	×		×	×	×					Inferred
12.Land and natural resource governance: Recognize and support the needs and interests of family farmers, smallholders and peasant food producers as sustainable managers and guardians of natural and genetic resources	Inferred			Inferred									×
13. Participation: Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems													

6.3 Possible entry points

Given the deficits identified in section 6.1 there exist opportunity to leverage more specific approaches on the agenda of policy and decision makers to facilitate the up scaling of agroecology. The study found that agroecology scaling up and out is generally limited by the following factors:

- i) Low awareness about the potential of the approach
- ii) The knowledge-intensive nature of agroecology,
- iii) Absence of supporting political frameworks, as demonstrated in the analysis

One promising entry point identified in systemic approaches that may build on agroecological practices in the Climate Smart Agriculture narrative. This increasingly being accepted in Zambia referred to in many instances in its different forms in the policies, strategies, and plans.

In this regard the study identified several entry points for promoting agroecology as follows:

6.3.1 Environment and climate change policy reform

Medium term policies in Zambia normally have a life span of five years after which revision is necessary. Policy. The opportunity in this regard would be to participate in the review of existing policies and develop guidelines on agroecology. Policies which may come up for review include

- i) The National Policy on the Environment (2008)
- ii) Draft Land Policy (2007)
- iii) Review the current Climate Change policy and preparation of a revised version
- iv) National Water Policy of 2010
- v) Review of the 2nd National Agriculture Policy and preparation of the 3rd National Agriculture Policy

6.3.2 Revision of implementation strategies or plans

Some strategies, plans and programmes have seemingly run their course and are soon due for revision. Opportunity exists to engage relevant institutions/departments for the revision of the following strategies:

- i) Zambia Agriculture Investment Plan (ended 2018) -Engagement of COMESA Climate Change Unit and the Ministry of Agriculture for review and development of the 2nd NAIP provides an opportunity to campaign for the explicit inclusion of Agroecology.
- ii) Nationally Determined Contributions (First submitted as Intended Nationally Determined contributions before the Paris Agreement)-Engage with Ministry of Lands and Natural Resources in the review of the NDC this UNFCCC process approached the 2020 mark.
- iii) 7th National Development Plan ending (2021)-engage with the Ministry of Development Planning at the preparation for the 8th National Development Plan kicks off in the next few months.
- iv) Reform of the Farmer Input Support Programme-engage with Ministry of Agriculture on an ongoing arrangement
- v) Zambia is commencing preparation of its National Adaptation Plan (NAP) as part of resilience building

6.3.3 Clear opportunities for lobbying and advocacy

- i) Climate Smart Agriculture, Investment Plan, provide an opportunity to lobby for more funding to support Agroecology in the absence of the NAIP
- ii) Zambia Launched the Leaders Pledge for the future to combat biodiversity loss and climate change being championed by WWF. The campaign provides space for promoting agroecology and an alternative to combating climate change and biodiversity loss

6.3.4 Working platforms

Several working platforms offer space for engaging with instructions and participation in policy processes and ongoing programmes:

- i) National Technical Committee on Climate Change- At national level the ZCCN has been identified as an important stakeholder within the core structure of the climate change processes and it takes an active role in undertaking mobilisation, awareness, education and advocacy programmes. The ZCCN is a member of the NTCCC, which is a grouping of CC stakeholders. The Technical Committee is hosted by the Ministry of Lands and Natural Resources; UNFCCC Focal Point. The Committee has three thematic groups; ZCCN is active in the Means of Implementation subcommittee in view of its link to communities. The committee provides space for policy influence, monitoring, evaluation as well as ensuring inclusion of agroecology practices;
- ii) Zambia Vulnerability Assessment Committee hosted by Disaster Management & Mitigations Unit;
- iii) Excellent rapport with the Ministry of National Development Planning on GCF issues and GCF bound national concepts and proposals;
- iv) Excellent rapport with Parliamentary Committees on Estimates of Expenditure and Agriculture, Lands and Natural Resources which provides additional space for engagement agroecology for climate change adaptation and mitigation;
- v) Civil Society alliances which include-the Zambia Alliance for Agroecology and Biodiversity and the Zambia Climate Smart Alliance both which offer opportunity for developing positions on agroecology and strengthened voice;
- vi) Membership in the United Nations Climate Change learning alliance (ZCCN, Ministry of Lands and Natural Resources and the Zambia Environmental Management Agency) offers further space for engaging relevant institutions;

7. Conclusions proposals and recommendations

Space in ongoing programmes and existing platforms	
Funding/resources mobilisations for agroecology(priorities and support to th	٦e
sector); for the campaign	

This study concludes that a conducive policy and legislative framework exists in Zambia despite the fact that agroecology is not explicitly mentioned in all the documents that were analyzed. The policies, legislation, strategies and implementation plans that were analyzed indicate close interrelations in that they include agroecology approaches such, as agroforestry, low tillage, use of organic/ animal manure based on sustainable management of resources for improved food security and climate change adaptation.

It is noted that participation of CSOs in national development processes provides for in many policy processes and are guaranteed by the relevant legislation thereby creating room for promoting agroecology as a part of the climate change adaptation agenda. Any campaign, lobby or advocacy process must therefore take advantage of planned review of national legislation and policy processes to ensure that agroecology begins to gain momentum and prominence.

Climate change has received attention at the highest level. In his State of the Nation speech's for 2019 and 2020 the Zambian President H.E Edgar Chagwa Lungu called for the concerted efforts of all stakeholders in fighting climate change. For Zambia, adaptation efforts in the agriculture sector is a matter of importance because of the impact climate change has on food security. That Zambia actively engages in the COP agenda item on the Koronivia Joint Work Programme (KJWA) that will feed into the forthcoming COP discussions on Agriculture, the IPCC Special Report on Climate Change and Land, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) reports, the 2019 High Level Panel of Experts on food Security and nutrition (HLPE) report of the Committee on World Food Security (CFS) and such programmes is critical to advancing agroecology for climate change.

The following actions are therefore recommended:

- In order for the campaign to have impact, the holistic nature of agroecology and especially its socio-economic and political elements need to be well framed to garner political will for transformation of food systems and for climate change adaption and mitigation
- ii) The campaign should weigh in on popularizing the co-benefits of agroecology in addressing adaptation/ mitigation and reducing vulnerability to climate change
- iii) Apart from aligning agroecology to climate change, food security and nutrition is an area that currently is in the shadows and needs special attention.

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