



**AF SA**

ALLIANCE FOR FOOD SOVEREIGNTY IN AFRICA

# **Agroecology for Climate Action**

**National Climate and Agriculture Policy Studies**

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# Executive Summary

In a context of a changing climate and growing concerns for more healthy food systems, agroecology is gaining momentum as a scientific discipline, sustainable farming approach and social movement across the globe. There is growing anecdotal and case study evidence of its multiple benefits, from climate resilience to farm productivity. Despite the fact that agroecological practices can bring resilience and broad-based productivity to rural communities and provide important ecosystem services across the landscape; average crop yield increase, environmental benefits such as carbon sequestration, reduction in pesticide use and soil restoration, they are still not being widely promoted in agricultural policies and strategies.

Africa is the continent hardest hit by climate change while contributing the least to its cause, warming 1.5 times faster than the global average yet contributing less than 4% of the world's annual GreenHouse Gas (GHG) emissions. With around 70% of the population dependant on rain fed farming, Africa does not have the safety net of wealthier, industrailised nations.

Alliance for Food Sovereignty in Africa (AFSA) is running a continental campaign on Agroecology for Climate Action in 12 African countries (Cote d'Ivoire, Cameroon, Ghana, Ethiopia, Kenya, Rwanda, Senegal, South Africa, Nigeria, Togo, Uganda, Zambia and Zimbabwe). The overall goal of the campaign is "Agroecology recognized in national, regional and international policy spaces and frameworks as a strategy for climate change adaptation and mitigation in Africa."

At national level the objective of the campaign is to influence national climate policy frameworks, plans and strategies to reflect agroecology as an adaptation and mitigation measure for climate change. Accordingly therefore, RCCDN with support from AFSA commissioned a study of the national policy environment for purposes of identifying entry points for inclusion of Agroecology.

The study aims at creating an understanding of existing climate change related policies, plans, strategies, regulations and frameworks at national level; identifying critical entry points for mainstreaming agroecology within the identified policy frameworks; and proposing approaches to guide the integration of agroecology in the national legislation and frameworks identified.

The methodology for this study included desk studies and an iterative process of interviews that were conducted to critically analyze the current national climate change related policies and strategies. The interviews targeted key policy stakeholders and actors from both Environmental and natural Resources (ENR), Agriculture and other related sectors that have direct nexus with climate change.

The agriculture, environment and climate change, land use and fertilizer policies, alongside the national strategy for transformation, strategic plan for agriculture transformation, green growth and climate resilience strategy, and national determined contributions among other national strategies were critically analysed to assess agroecology integration in the national policy and strategy framework.

Almost all the Agriculture and environment related policies and strategies analysed are recent and were developed in the same period (2017-2019). They were all approved in the same period. They all build on vision 2020 and look beyond with ambitions of building a low-carbon economy by 2050. Most of them focus on being private sector led to enhance productivity in an environmental friendly manner.

Pillar 3 of the National Agriculture Policy which covers productivity and sustainability, puts into consideration environment and climate change challenges. The entire pillar mainstreams the E&CCP and all the policy actions under this pillar are environmental friendly and climate change responsive in terms of both adaptation and mitigation. This confirms its coherence with agroecology practices. However, both the National Agriculture Policy and Strategic Plan for Agriculture Transformation do not mention agroecology in the entire documents. They however promote its practices in their respective action points.

The Environment and Climate Change Policy (E&CCP) is broad in its policy actions which gives room to fit in various activities that may contribute to the policy action, strategically giving enough space for agroecology implementation arrangements. The National Environment and Climate Change Policy makes no single reference to agroecology. The policy actions are such broad that agroecology practices could filter into policy implementation, but alternatively other production and social-economic systems may override agroecology since no emphasis has been put on it.

The Rwanda Green Growth and Climate Resilience Strategy recognise the important role agroecology can play in building community resilience to climate change shocks and acquiring sustainable food and nutrition security. The strategy focuses on guiding policy and planning in an integrated manner and mainstreaming of climate change into all sectors of the economy including agriculture. This means that only agriculture practices with high propensity to climate change resilience should be accepted to ensure that communities build up the capacities to adapt to climate change effects. Agroecology is clearly mentioned in this strategy that is supposed to guide Rwanda through a Green growth Pathway and this could be another entry point for its promotion.

In the National Determined Contributions (NDCs), the country has committed to reducing the population working in the agriculture sector by increasing productivity per hectare and promoting the recycling of organic waste and use of manure to improve soil fertility. The NDCs also recognize that Agro-forestry helps combat soil erosion, provides fodder, improves soil fertility and contributes to social well-being and green economic growth. According to the same NDCs, within agriculture, soil conservation measures – which include terracing, conservation tillage, multi-cropping and crop rotation practices – account for around half of the sector's mitigation potential. All these and many more are pointers to agroecology and the NDCs therefore is another entry point of engagement for agroecology promotion.

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# 1

## Introduction and Background

### 1.1 Introduction

Today's food and agricultural systems have succeeded in supplying large volumes of food to global markets. However, high-external input, resource-intensive agricultural systems have caused massive deforestation, water scarcities, biodiversity loss, soil depletion and high levels of greenhouse gas emissions. Despite significant progress in recent times, hunger and extreme poverty persist as critical global challenges. Even where poverty has been reduced, pervasive inequalities remain, hindering poverty eradication.

The concern that many agricultural practices are not intrinsically sustainable can be attributed to their ignoring, or violating, ecological relationships existing between cultured crops and the environment in which they grow. The economic need to maximize production in intensive agricultural operations has caused many natural mechanisms which aid production to be bypassed and replaced by new (and artificial) technologies. Thus, quick-release, synthetic fertilizers introduced to drive the higher production of crops, have often replaced manures and rotations designed to recharge soil fertility more slowly. Synthetic pesticides may effectively control animal competitors, but also impact upon non-target species, including useful and neutral species of symbiosis

Climate Change is recognized as one of the major economic, environmental and social challenges of our times. Africa is the continent hardest hit by climate change while contributing the least to its cause, warming 1.5 times faster than the global average yet contributing less than 4% of the world's annual Green House Gas (GHG) emissions. With around 70% of the population dependant on rain fed farming,

Africa does not have the safety net of wealthier, industrialised nations. Women and young people are often the first to suffer with less access and control of productive resources.

Various actors have come up with solutions to the current crisis with many African countries opting to push for adaptation through increased industry focused agriculture initiatives such as Climate Smart Agriculture which supports the use of chemical inputs, fossil fuel dependant mechanization, use of GMOs and hybrid seeds with a focus on increasing production at all costs.

This form of agriculture releases carbon stored in the soil while increasing the burden of GHGs in the atmosphere polluting precious water resources. AFSA sees these and others as false solutions and hence brings to the table agroecology as a solution. This is in recognition of the fact that agroecology promotes regeneration, communal ownership of resources and use of local inputs while improving overall productivity of agricultural ecosystems. Agroecology works to minimize greenhouse gas emissions by keeping carbon in the soil as one of the ecosystem service.

The growing recognition of agro ecology by key bodies such as the UN FAO presents an opportunity for AFSA and other likeminded actors to push for agroecology in climate change spaces and the mainstreaming of agroecology in climate change and mitigation frameworks. This is also in recognition that Agriculture is the most affected sector by the negative impacts of climate change but also the leading contributor to green house gas emission.

The overall goal of the campaign is **“Agroecology recognized in national, regional and international policy spaces and frameworks as a strategy for climate change adaptation and mitigation in Africa.”**



## **1.2 Background and context**

Alliance for Food Sovereignty in Africa (AFSA) is running a continental campaign on Agroecology for Climate Action in 12 African countries including Rwanda.

At national level the objective of the campaign is to influence national climate policy frameworks, plans and strategies to reflect agroecology as an adaptation and mitigation measure for climate change. As part of the campaign strategy, the members in the 12 countries have agreed on undertaking a study of the national policy environment for purposes of identifying entry points for inclusion of Agroecology. Rwanda Climate Change and Development Network is leading on this campaign in Rwanda.

The Government of Rwanda in the recent past has been reviewing its policies. The environment



policy 2003 and the agriculture policy 2004 were both reviewed and updated. The current National agriculture Policy (NAP) was adopted in July 2018 whereas the National Environment and Climate Change Policy was adopted in June 2019.

The policy scenarios considered may have different implications for the coping capacity of farmers. This may indicate national variations in coping capacity, improved at the local level in some areas but decreasing in areas of lower economic growth. For example, the environment and climate change policy scenario may result in implications of the higher priority for the protection of natural ecosystems, whereas the national agriculture policy scenario may imply capacity to confront national food security; these differences should have been equally considered while developing the two policies.

It is against this background that the Rwanda Climate Change and Development Network (RCCDN) with the financial support from Alliance for Food Sovereignty in Africa (AFSA) hired the services of a competent consultant to conduct National climate policy studies related to a campaign on agroecology for climate action.

## 1.3 Purpose and Objectives of the study

### 1.3.1 Purpose of the study

The study aimed at understanding the climate change policy environment in Rwanda, the extent of development, and the entry points for the inclusion of agroecology in the national climate change and agriculture related policies and regulations. The study also looks at the opportunities for the country campaign team to engage within various policy spaces.



### 1.3.2 Objectives of the study

- Create an understanding of existing climate change related policies, plans, strategies, regulations and frameworks at national level.
- Identify critical entry points for mainstreaming agroecology within the identified policy frameworks.
- Propose approaches to guide the integration of agroecology in the national legislation and frameworks identified.

# 2

## Methodology and Analytical Framework of the Study

### 2.1 Approach and Methodology

The methodology for this study included desk studies and an iterative process of interviews that were conducted to critically analyze the current national climate change related policies and strategies. The interviews targeted key policy stakeholders and actors from both Environmental and natural Resources (ENR), Agriculture and other related sectors that have direct nexus with climate change.

The desk review primarily focused on different policies, strategies and regulatory frameworks related to agriculture and environment in a critical manner so as to highlight possible incoherencies, mismatch and gaps found in the National Agriculture Policy in comparison with the environment and climate change policy framework.

In close collaboration with RCCDN, the consultant identified key policy stakeholders and actors and these included among others; The Ministry of Agriculture(MINAGRI) and Ministry of Environment (MoE), and their affiliated agencies, Rwanda Agriculture Board (RAB), Rwanda Environmental Management Authority (REMA), The Rwanda Green Fund (FONERWA), Rwanda Water and Forestry Authority (RWFA), Rwanda Lands Management and Use Authority (RLMUA) and Rwanda Meteorology Agency (RMA) and selected

CSOs intervening in both ENR and agricultural sectors. The consultant worked closely with these key policy stakeholders through interviews with key identified informants to understand the missing link with agroecology and identify entry points to the current policy framework. The interviews as well helped to identify possible mismatch, challenges and/or opportunities and lessons from the implementation as far as agroecology is concerned.

The study mainly focused on Literature and desk reviews. The following documents were consulted.

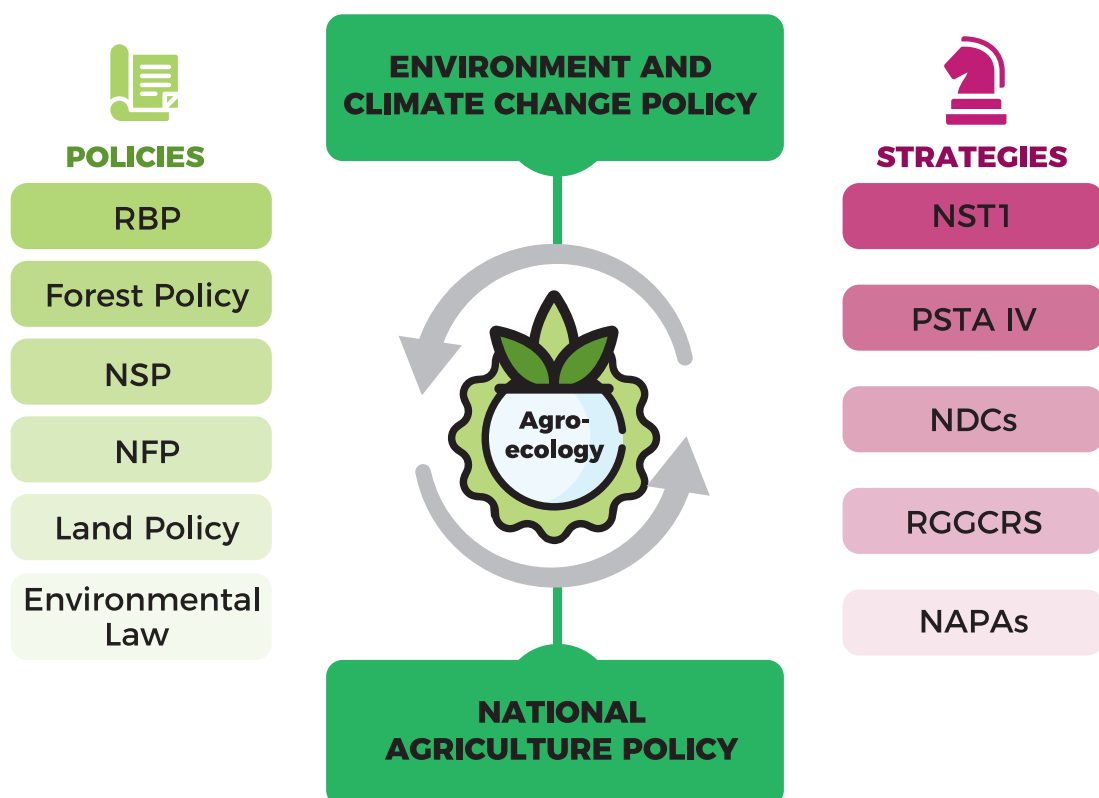
1. The National Environment and Climate Change Policy
2. The National Agriculture Policy
3. The National Seed Policy
4. The National Fertilizer Policy
5. The National forest Policy
6. The Rwanda Bio-diversity policy
7. The National Land Policy
8. Environmental Law
9. National Strategy for Transformation (NST1)
10. Strategic Plan for Agricultural transformation ( PSTA IV)
11. Nationally Determined Contributions (NDCs),
12. National Adaptation Plan
13. Rwanda Green Growth and Carbon Reduction Strategy

Targeted interviews with experts from the Ministry in charge of environment, the Rwanda Environment Management Authority (REMA), FONERWA, MINAGRI and RAB were conducted to supplement the desk reviews.

## 2.2 Analytical Framework

Agroecology is central to this study and it is the consultant's role to analyse each related policies and strategies within the framework of identifying agroecology considerations in them.

Since this study focuses on agroecology for climate action, the two major policies are the environment and climate change policy and the agriculture policy. All the other policies that are linked to agroecology in one way or the other were also reviewed. These included the Rwanda Biodiversity Policy (RBP), forest policy, seed policy (NSP), fertilizer policy (NFP), land policy and environmental law. Alongside the mentioned policies, different strategies including the first national strategy for transformation (NST1), the fourth strategic plan for agriculture transformation (PSTA IV), national determined contributions (NDCs), Rwanda green growth and carbon reduction strategy (RGGCRS) and the national adaptation plan of action (NAPAs) were also analysed.



# 3

## Understanding Agroecology and Challenges Associated with Industrial Agriculture

### 3.1 Definition



Agroecology has been defined in many ways, in many places, and by many different stakeholders. Since the 1920s, scientist and researchers have used the term agro ecology to refer to the application of ecological principles to agriculture. However, it was not until the early-1980s that the discipline of “agro ecology” was named by ecologists, agronomists and ethno botanists (V.G. Thomas et al, 1993).

Agroecology is a scientific discipline, a set of practices and a social movement. As a science, it studies how different components of the agro ecosystem interact. As a set of practices, it seeks sustainable farming systems that optimize and stabilize yields. As a social movement, it pursues multifunctional roles for agriculture, promotes social justice, nurtures identity and culture, and strengthens the economic viability of rural areas.

Agroecology has also been defined as an integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems. It seeks to optimize the interactions between plants, animals, humans and the environment while taking into consideration the social aspects that need to be addressed for a sustainable and fair food system (FAO, 2018).

### 3.2 Agroecology and Sustainable Agriculture

Evidence is mounting of the role of agroecology in addressing the food and climate crises. Efforts to scale up agroecology have not yet reached the urgently needed breadth and depth

across different levels Contradictions and conflicts are emerging between industrial agriculture, sustainable agriculture and agroecology. A quick and effective adoption of agroecology is important if we are to ensure:

- i. Food and nutrition security,
- ii. Adaptation and mitigation of climate change,
- iii. Sustainable land management and
- iv. Soil health.



By supporting healthy, diversified and culturally appropriate diets, agroecology contributes to food and nutrition security while maintaining the health of ecosystems. Sustainable food and agriculture requires responsible and effective governance mechanisms at different scales and at all levels.

### 3.3 Challenges associated with industrial agriculture

The general trend has been the expansion of cultivated land by converting natural ecosystems. The industrial agriculture and the urgent need for ensuring food security, has resulted into massive and drastic reduction of the forest cover and replacement through agroforestry is moving at a low pace. Another challenge is the increasing conversion of natural wetlands into cultivated lands in a bid to increase agricultural land for improved food production especially rice and vegetables. The conversion of wetlands into cultivable land has greatly affected the wetland ecosystem.

The studies show that the converted wetlands are no longer productive as before and farmers are obliged to apply more and more chemical fertilizers in order to increase production and productivity and this is resulting into high levels of pollution. In addition to the application of chemical fertilizers, these crops also require certain amount of pesticides for plants protection with all the negative impacts to aquatic biodiversity and human health. In this case, diversification is key to agro-ecological transitions to ensure food security and nutrition while conserving, protecting and enhancing natural resources.

In economic terms, industrialization allows capital and technology to be substituted for workers and managers. In other words, it allows raw materials or natural resources to be transformed into more valuable products while employing fewer, lower-skilled workers in both labor and management positions. In a world with an abundance of natural resources and a scarcity of workers, industrialization seemed a logical strategy for economic development. With increases in populations and depletion of natural resources, the economic benefits of industrialization have declined while the negative consequences for unemployment and environmental degradation have grown.

Agricultural industrialization has had a devastating effect on the quality of rural life. Industrial agriculture has replaced independent family farmers with a far smaller number of farm workers, most of whom are paid poorly. Rural communities have suffered both economically and socially from this loss of traditional family farms. More than 50 years of research demonstrates that communities supported by small to mid-size family farms are better places to live, both economically and socially, than are communities dependent on large farming enterprises.

For agriculture, the benefits of industrialization have been fewer and the costs have been greater. The reality of agriculture is in conflict with the worldview that supports industrialization. Industrialization is rooted in a mechanistic worldview: the industrial world works like a big, complex machine that can be manipulated by humans to extract natural resources and use them to meet peoples needs and wants. In reality, the world is an extremely complex living ecosystem, of which we humans are a part. Our well-being ultimately depends on working and living in harmony with nature rather than conquering nature. We are currently seeing the disastrous consequences of treating living ecosystems as if they were

inanimate mechanisms.

Furthermore, the industrial food system is linked to a new kind of food insecurity: unhealthy foods. A recent global report by 500 scientists from 50 countries suggested that “obesity is [now] a bigger health crisis than hunger.” There is growing evidence that diet-related health problems are not limited to poor consumer food choices or processed “junk foods” but begin with a lack of essential nutrients in food crops produced on industrial farms.

In most countries including Rwanda, there is high potential for Bio-fertilizer (organic) production using human waste, livestock manure, crop residues and sediments. However, due to low levels of technology and its application recycling is not widely practiced. There is an urgent need for a massive campaign on recycling. More recycling means agricultural production with lower economic and environmental costs.



# 4

## Overview of Policies and Strategies and their Linkage to Agroecology

The tables presented below analyses agriculture, environment and climate change related policies and strategies and their linkage with agroecology.

### 4.1 NATIONAL AGRICULTURE POLICY

#### 4.1.1 Vision

A nation that enjoys food security, nutritional health, and sustainable agricultural growth from a productive, green, and market-led agricultural sector.

#### 4.1.2 Mission

To ensure food and nutrition security of Rwandans by using modern agribusiness technologies, professionalizing farmers in terms of production, commercialisation of the outputs, and the creation of a competitive agricultural sector.

#### 4.1.3 Policy Objectives

1. Increased contribution to wealth creation: Rwanda is committed to halving poverty by 2025 through inclusive agriculture and growth transformation and increasing value addition and technological upgrading.
2. Economic opportunities and prosperity - jobs and poverty alleviation: Committed to generating jobs and ensuring the participation of women and youth in the work force and boosting intra-African trade in agricultural commodities with better functioning national and regional markets.
3. Improved food security and nutrition: Committed to ending hunger in Africa by 2025 through increased agricultural production and productivity while decreasing dietary gaps to fight childhood wasting and stunting.
4. Increased resilience and sustainability: Committed to enhancing reliance of livelihoods & production systems and climate variability through an increased access of productive safety nets and efficient management of natural resources.



#### 4.1.4 National Agriculture Policy Pillars

This policy overview summarises both the Environment and Climate Change Policy (2019) and the National Agriculture policy (2018). It focuses on their vision, mission, objectives, thematic pillars and policy stakeholders.

Based on identified challenges and opportunities and the policy objectives, the NAP is structured as follows:

**Pillar 1:** Enabling Environment & Responsive Institutions. Institutions, the regulatory framework, and finance are considered to be foundation for efficient and effective investment in the agriculture sector. At its core, the NAP presents a vision to have a productive, green, and market-led agricultural sector. This implies a larger role for the private sector, hence the role of the government from a market actor to a market enabler.

To make this shift, the NAP presents an agenda for institutional and regulatory reforms which defines the principles of public investment, lays out a framework for attracting private investment to the agricultural sector, while enhancing access to finance for farmers, and enhancing the responsiveness of institutions.

**Pillar 2:** Technological Upgrading and Skills Development. This section presents a research agenda for closing Rwanda's agriculture technology and skills gap, thus making more people employable and creating jobs. To implement the agenda, the research capacity must be upgraded, while introducing feedback mechanisms from the producers to ensure research and extension services are demand-driven. To effectively adopt technologies developed through research, it is crucial to create an environment that facilitates innovation and skills development in the sector. Therefore, the policy emphasizes support to innovative projects developed with partners, and the importance of skills development in the sector – especially for youth and women.

**Pillar 3:** Productivity and Sustainability. With Rwanda's growing population, the pressure on land resources is mounting. Agricultural production must increase accordingly in order to meet socio-economic and food security needs. At the same time, the adverse effects of climate change, soil erosion, and urbanisation, are unrelentingly undermining the quantity and quality of agricultural land resources. This calls for continued efforts toward productivity growth: through increased inputs and sustainable climate smart practices; protecting agricultural land against fragmentation, erosion, and degradation; and shifting production toward higher-value products while introducing land-saving technologies. Animal resources production has seen growth in recent years. To increase production further, sustained effort is required toward introducing improved breeds, sourcing animal feed, and fighting animal diseases. Farmers tend to be vulnerable to risk. It is therefore required to build resilience and response mechanisms against adverse events in farming communities and provide social protection for vulnerable groups.

**Pillar 4:** Inclusive markets and off-farm opportunities: Efficient value chains are a decisive factor for a competitive sector that ensures nation-wide food safety and food security. This includes key input markets such as fertilisers, insurance, and finance as well as upstream activities such as aggregation, value addition, food availability, and export readiness. Agricultural products must not only follow high standards for local consumer markets, providing a steady stream of healthy food, but also be able to compete in international export markets. Post-harvest management and contract farming will help aggregation on a wider level, promoting economies of scale. Off-farm opportunities, especially for women and youth are important for income diversification in rural areas while establishing forward linkages to urban and foreign.

**Table 1: National Agriculture Policy**

Policy Actions for Agroecology	Policy Actions Against Agroecology
<ol style="list-style-type: none"> <li>1. Research on bio-fertilizers technologies and organic fertilizer use among farmers;</li> <li>2. Concentrate research efforts on tree/crop/soil interfaces and develop suitable models and technologies to increase agroforestry;</li> <li>3. Promote urban agriculture through introduce production technologies that are specific to urban agriculture</li> <li>4. Focus on domestic production and multiplication of quality planting materials in order to increase seedlings for agroforestry trees;</li> <li>5. Conduct research on appropriate irrigation technologies.</li> <li>6. Improving local breed development to enable drought survival and disease resistance.</li> <li>7. Support community breeding practices and animal selection to improve animal genotype, as well as genetic diversity to achieve resilience through maintenance of local varieties and breeds</li> <li>8. Support community breeding practices and animal selection to improve animal genotype, as well as genetic diversity to achieve resilience through maintenance of local varieties and breeds.</li> <li>9. Promote the adoption of integrated soil fertility management which combines agri-environmental practices, resource recovery and reuse of fertilizer-enriched products through incorporating manure, crop residues and composting in current farming systems;</li> <li>10. Support the increase in organic fertilizer production and utilization training as part of ISFM practices in conjunction with the gradual liberalization of fertilizer supply</li> <li>11. Promote Integrated Pest Management technologies to control pests and diseases. Natural pest control mechanisms are promoted to the extent possible, with the least possible disruption to the agro ecosystem, and train farmers in safe pesticide handling and risks associated with pesticide use;</li> <li>12. Support production and use of soil specific fertilizer blends (organic/biofertilizer);</li> <li>13. Promote sustainable land husbandry practices to address soil erosion and degradation</li> <li>14. Encourage use of a wide range of cost-effective erosion control solutions such as structures: check dams, soils/water detention trenches, cut off drains, waterways; erosion control measures: tree belts, contour belts, grass strips, contour bunds, planting of fodder grasses on bunds/ridges, use of permanent, perennial vegetation on contours, etc.; and agro-forestry: intercropping, integration of trees on farm plots, tree belts, protective forests, food production and nitrogen fixing, erosion control, etc.</li> <li>15. Support farmers to engage in mixed farming systems to enhance nutrient recycling and to reinforce pest and disease management;</li> </ol>	<ol style="list-style-type: none"> <li>1. Scale up the availability of bio-fortified foods;</li> <li>2. Promote research on nutrient-rich crops through bio-fortification, to position Rwanda as a trusted source of bio-fortified food for the region</li> <li>3. Modern biotechnology that involves the use of genetic engineering techniques to transfer useful</li> <li>4. characteristics creates enormous opportunities for agriculture development</li> <li>5. Prioritize Fish feed formulation and production technology development</li> <li>6. Allocate funds to acquire patents and licenses through research networks. In that way, technologies developed in other countries will be availed in Rwanda easily for the good of sector beneficiaries;</li> <li>7. Promote mechanization at the farm-level and across the value chains.</li> <li>8. 'Horizontal zoning' of crops and livestock based on their comparative advantage and on an evidence-based understanding of local conditions (soil, climate etc.);</li> <li>9. Facilitate access to inputs by promotion of use of seed and fertilizers by increasing agro-dealership networks;</li> <li>10. Support production and use of soil specific fertilizer blends</li> <li>11. (inorganic/chemical fertilizers);</li> <li>12. Encourage consolidation of smaller plots to increase scope for service delivery and mechanisation.</li> <li>13. Strengthen artificial insemination (AI) in livestock by capacity building of farmers, community animal health workers, and extension workers;</li> </ol>

The national agriculture policy has no single reference to agroecology. What has been picked from the policy actions are those that have been found to relate to agroecology in one way or the other.

## 4.2 STRATEGIC PLAN FOR AGRICULTURE TRANSFORMATION (PSTA IV, 2018-2024).

Rwanda's Strategic Plan for Agriculture Transformation phase 4 (PSTA 4) outlines priority investments in agriculture and estimates required resources for the agriculture sector for the period 2018-2024. It is the implementation plan of the National Agricultural Policy (NAP) and represents the agriculture sector's strategic document under Rwanda's National Strategy for Transformation. It emphasises a stronger role of the private sector, including farmers, with the government becoming a market enabler rather than a market actor.

PSTA 4 focuses on facilitating private sector investment in fruit and vegetable production through upgrading provision of SPS/quality standards as well as supporting demonstration of better technologies such as green houses, hydroponics, and other small-scale irrigation solutions as changes in weather and climate patterns are becoming more acute.

The strategic plan also emphasises alternative land management to complement terracing with comprehensive climate smart soil and integrated watershed management. It introduces better weather and climate information and early warning, and seeks to ensure all investments are climate smart.

### 4.2.1 PAPSTA 4 Priority Areas

To achieve the envisioned impact, PSTA 4 is structured around 4 Priority Areas.

**Priority Area 1:** Innovation and Extension provides the knowledge base for priority Area 2 and the focus is on improving agronomic knowledge and technology in terms of basic research and innovation, especially aimed at developing improved varieties and breeds. Innovative projects will be promoted through PPPP and developing innovative networks and beneficial partnerships with research institutions and the private sector.

**Priority Area 2:** Productivity and Resilience focuses on promoting sustainable and resilient production systems for crops and animal resources. The outcome of priority area 2 is increased productivity, nutritional value and resilience through sustainable, diversified, and integrated crop, livestock, and fish production systems. This will be achieved through investment in sustainable and climate-resilient development of infrastructure and technologies needed to boost production and productivity (land, water, mechanisation), production and improved quality, availability and application of agriculture production factors adapted to different categories of farms, the promotion of agricultural diversification and integrated production systems, specific actions to ensure food and nutrition security and the promotion of more resilient and sustainable farm systems at ecosystem and household level.

Rapid increase in productivity also require more mechanization, higher use of inorganic fertilizers and improved seeds, and improved access to financing.

This component of the strategy contains heavy investment in improving land productivity and animal production. Significant investment will go into irrigation with plans to increase the irrigated areas from 48,508 ha to 102,284 ha. Fighting land erosion with radical terracing going from 110,906 ha to 142,500 ha and progressive terraces from 923,604 ha to 1,007,624 ha. Finally, biological soil control measures will be promoted to protect another 150,000 ha by 2024. Fertilizer usage is planned to go from 39 kg/ha providing access to improved seed utilization to 75% of farmers.

Weather variability affects productivity in Rwanda. Inter-annual variability and periodic shocks have a major impact on the sector. This is recognised in the NST, which identifies the need for increased climate resilience and vulnerability management to avoid losses from weather or climate risks. There is a need to ensure that productivity increases are resilient, with sustainable soil and water management, and to start preparing for future climate change. Rwanda has 589,711 ha of irrigation potential out of which 47

per cent is on marshlands and 63 per cent is on hillsides. To promote the development of affordable and sustainable irrigation technologies, the Government of Rwanda introduced the Small-Scale Irrigation Technology (SSIT) project for improved productivity and commercial farming. There is great potential and demand for investment in small-scale irrigation systems to complement the large-scale irrigation investments undertaken to date. As Rwanda is implementing an Integrated Water Resource Management (IWRM) policy to ensure efficient, effective, and sustainable agricultural development, irrigation projects need to align with it.

**Priority Area 3:** Inclusive markets and value addition seeks to improve markets and linkages between production and processing. This includes key input markets such as fertilisers, insurance, and finance as well as upstream activities such as aggregation, promotion of value addition, market infrastructure and export readiness.

**Priority Area 4:** Enabling Environment and Responsive Institutions provides the regulatory framework by defining and coordinating public sector involvement. PSTA 4 aims to improve evidence-based policymaking through better collection and handling of information and enhanced capacity for analysis and policy development.

**Table 2: PSTA IV**

Strategy Actions for Agroecology	Strategy Actions Against Agroecology
1. The promotion of agricultural diversification and integrated production systems, specific actions to ensure food and nutrition security and the promotion of more resilient and sustainable farm systems at ecosystem and household level.	1. Training will also be provided on the efficient and sustainable use, and disposal, of pesticides and other agro-chemicals.
2. Once farmers are organized in strong cooperatives, they will be able to benefit from support to invest in hi-tech equipment like green houses and hydroponics.	2. Fertilizer application should increase significantly from 4700MT to 18,750MT through government support
3. Promote a sustainable intensification of agriculture and strengthen its resilience are needed to counter environmental degradation and mitigate risks associated with the impact of climate and other shocks.	3. Crop fortification especially iron-fortified beans
4. Combining good agricultural and conservation practices and focusing on agricultural commodities that offer a good return and good market opportunities, a sustained increase in agricultural production and productivity can be achieved.	
5. Reducing soil erosion, improving soil water infiltration, and holding capacity, enhancing nutrient supply, and increasing soil biodiversity	
6. Considering that the most successful approaches are those involving local communities, especially in reconciling the use of crop, livestock, and trees	

In the entire PSTA IV document, agroecology is not mentioned. Some actions as presented in the table above have been found to have direct or indirect link with agroecology. Most actions are in support of agroecology, while others are against it.

### 4.3 NATIONAL STRATEGY FOR TRANSFORMATION 2017-2024

Basing on planning data used, economic growth was solid, averaging 6.1% over (2013-2016) against the target of 11.5% over the period 2013-2020. Growth in all sectors while positive and resilient in the face of a slowing global economy, did not meet targets. Agriculture averaged 4.1% compared to (8.5% targeted), industry averaged 6.5% compared to (14% targeted), and services grew by 7.5% compared to (13.5% targeted) over the same period. Agriculture growth was mainly affected by crop diseases and climate change effects. Other constraints included small holding sizes of land, challenges in accessing credit due to risk perception, low value chain development, market connectivity and low farmer professionalization. External factors such as global market price fluctuations also affected performance of the economy.

The Economic Transformation Pillar presents a strategy to accelerate private-sector-led economic growth and increased productivity. This pillar entails the following priorities:

- Create 1,500,000 (214,000 annually) decent and productive jobs.
- Accelerate sustainable urbanization from 18.4% (2016/17) to 35% by 2024.
- Establish Rwanda as a globally competitive knowledge-based economy.
- Promote industrialization and attain a structural shift in the export base to high-value goods and services with the aim of growing exports by 17% annually.
- Increase domestic savings and position Rwanda as a hub for financial services to promote investments.
- Modernise and increase the productivity of agriculture and livestock.
- Promote sustainable management of the environment and natural resources to transition Rwanda towards a Green Economy.

**Table 3: National Strategy for Transformation NST1**

Strategy Actions for Agroecology	Strategy Actions Against Agroecology
1. Support activities of forestation and reforestation in line with National and District Forest Management Plans.	1. Scaling up marshlands mechanized farm operations
1. Acquisition and pass on of small livestock for poor families	2. Increase fertilizers application (kg/ha/annum) from 32 kg/Ha (2016/17) to 75kg/ha by 2024.

The First National Strategy for Transformation(NST1) does not refer to agroecology in the entire text. What we tried to figure out was that which appeared to be of essence to agroecology. In both NST1 priority area 6 and 7 that emphasize on modernizing and increasing productivity of agriculture and livestock and sustainable management of natural resources and environment to transition rwanda towards a green economy respectively, agroecology could have been referred to as a means to achieving both priorities. We therefore note a huge gap that requires to be addressed if these priorities are to be attained.



## 4.4 The Rwanda National Environment and Climate Change Policy (2019)

The Rwanda National Environment and Climate Change Policy provides strategic direction and responses to the emerging issues and critical challenges in environmental management and climate change adaptation and mitigation. The following key issues and challenges guided and informed the development of the policy;

- high population density,
- water, air and soil pollution,
- land degradation,
- fossil-fuel dependency,
- high-carbon transport systems,
- irrational exploitation of natural ecosystems,
- lack of low-carbon materials for housing and green infrastructure development,
- inadequate waste treatment for both solid and liquid waste,
- increase of electronic, hazardous chemicals and materials waste, among others.

The policy was also designed within the context of national, regional and global development commitments (e.g. Vision 2050 aspirations, National Strategy for Transformation (NST1), Green Growth and Climate Resilience Strategy (GGCRS), Nationally Determined Contributions (NDCs), Sustainable Development Goals (SDGs), Agenda 2063, East African Community - EAC Vision 2050, etc.). It also provides a policy framework to tap into opportunities of a green growth led and climate resilient economy.

### 4.4.1 Guiding Principles of the Policy.

The formulation of this Environment and Climate Change Policy was guided by the following considerations:

- i. **Inclusiveness:** Effective involvement of women and youth in environmental management and climate change intervention decision-making is essential and should be encouraged.
- ii. **Economic Value:** Integration of Natural Capital Accounting (NCA) and Payment of Ecosystem Services (PES) in national economic planning and finance.
- iii. **Ecosystem** Approach to conserving environmental resources will be adopted and enhanced to ensure that all ecosystems are managed in an integrated manner.
- iv. **Assessment of environmental risks** and impacts for development projects and strategic environmental and social assessment for national policies, plans, programmes and strategies.
- v. **Precautionary Principle** seeks to minimise activities that have the potential to negatively affect the integrity of the natural environment.
- vi. **The principle of sustainability** of environment and equal opportunities across generations: Human beings are central to sustainable development. They are also entitled to the right of a healthy and productive life in harmony with nature.
- vii. **Mitigation and Adaptation:** The country is committed to addressing global warming and taking steps to cope with the effects of global warming.
- viii. **Polluter Pays Principle:** Those responsible for environmental damage must be held liable for the repair caused to both the physical and human environments. They must also be held responsible for the costs of preventive measures to reduce or prevent further pollution and environmental damage.

- ix. **The Pollution Prevention Principle** anticipates problems and prevents negative impacts on the environment and people's environmental rights.
- x. Extended Producer Responsibility (EPR) is a policy approach under which producers are given a significant responsibility - financial and/or physical - for the treatment or disposal of wastes. Assigning such responsibility provides incentives to prevent and reduce waste at the source, promote waste reuse and recycling.
- xi. **The principle of information dissemination and community awareness** raising in the conservation and protection of the environment: Every person has the right to be informed of the state of the weather, climate, and environment and to take part in the decisions to protect the environment.
- xii. **Principle of Cooperation:** Public institutions, international institutions, associations and private individuals are required to protect the environment at all possible levels. Multilateral Environmental Agreements (MEAs) and regional instruments will be 25 | Page domesticated and implemented cooperatively for better environmental and climate change management.
- xiii. **Endeavour to promote Circular Economy and industrial symbiosis:** Industries are brought together in innovative collaborations, finding new ways to efficient.

The development and elaboration of this was in line with other sectoral policies that are related to climate change, the environment and natural resources. These include but not limited to:

- i. **Forestry Policy:** recognises the need to manage forest resources to support the country's development goals for sustainable, low-carbon and climate resilient growth to improve livelihoods of present and future generations
- ii. **Biodiversity Policy:** considers the rehabilitation of degraded ecosystems in Rwanda as an urgent and major task that requires the commitment of significant resources from both national budgets and other sources.
- iii. **Wildlife Policy:** acknowledges that Rwanda's wildlife protected areas significantly contribute to the production of global public goods and services, such as protection of biodiversity, climate stabilisation, carbon sequestration and global waters. It also stresses that any adverse impacts on the ecosystems can dramatically and negatively alter humans' capacity to survive.
- iv. **Energy Policy:** recognises the need to shift consumption from biomass-based energies to clean energies like electricity and Liquefied Petroleum Gas (LPG) to reduce pressure on forest resources. It also focuses on renewable energy infrastructure as one strategy to fight global warming through reductions in greenhouse gas emissions.
- v. **Water Supply Policy:** aims to ensure sustainable, equitable, reliable and affordable access to safe drinking water for all Rwandans, as a contribution to improving public health and socio-economic development.
- vi. **Sanitation Policy:** aims to ensure sustainable, equitable and affordable access to safe sanitation and waste management services for all Rwandans as a contribution to poverty reduction, public health, economic development and environmental protection.
- vii. **National Industrial Policy:** stresses that waste produced by industrial processes is harmful to the environment and needs proper management and disposal strategy.
- viii. **Agriculture Policy:** seeks to make agriculture and livestock more productive and at the same time ensure proper utilisation of natural resources and sustainability for future generations.
- ix. **Land Policy:** stresses that agroforestry should be part of the agricultural landscape on hills, given its contribution to soil protection.
- x. **Water Resource Management Policy:** considers to manage and develop water resources in an integrated and sustainable manner to secure and provide water of adequate quantity and quality for all social and economic needs of the present and future generations.



## The Goal of the Policy

The policy goal is for **“Rwanda to have a clean and healthy environment resilient to climate variability and change that supports a high quality of life for its society.”** The policy was developed with seven (7) policy objectives and to implement these policies, 22 policy statements with their corresponding 127 policy actions were elaborated.

**Table 4: National Environment and Climate Change Policy**

Policy Actions for Agroecology	Policy Actions Against Agroecology
1. Reinforce strategies to implement circular economy concepts for sustainable development to enhance climate resilience and adaptive capacity to protect natural capital	
2. Mainstream the sustainable use and conservation of critical ecosystems in the daily operations of production sectors	
3. Identify all polluted wetlands, develop and implement their decontamination plan.	
4. Ensure teaching of ecological agriculture at all educational levels and in relevant research institutes	

The National Environment and Climate Change Policy makes no single reference to agroecology. The policy actions are such broad that agroecology practices could filter into policy implementation, but alternatively other production and social-economic systems may override agroecology since no emphasis has been put on it.

## 4.5 RWANDA GREEN GROWTH AND CLIMATE RESILIENCE STRATEGY (GGCRS)

The Republic of Rwanda released its Green Growth and Climate Resilience National Strategy for Climate Change and Low Carbon Development in October 2011. The strategy sets a framework for mainstreaming climate change and the green growth approach in national socio-economic planning. The Environment and Natural Resources sector development is guided by GGCRS. This strategy looks beyond 2020 to 2050, and recommends actions that Rwanda can take in the short to medium term to ensure its future stability and prosperity in a changing climate and uncertain energy future. It also provides for mechanisms to mobilize funding to finance programs identified in the process.

In a context of high vulnerability to climate change, strong reliance on rain-fed agriculture, dependency on hydropower for half of national electricity generation, and endeavours to preserve our natural ecosystems and biodiversity, integrating adaptation to the effects of climate change with green growth emerged as a major barrier in developing the strategy. The purpose of the Strategy is threefold:

- To guide national policy and planning in an integrated way
- To mainstream climate change into all sectors of the economy including agriculture
- To position Rwanda to access international funding to achieve climate resilience and low carbon development.

The focus of the Strategy is therefore firmly on climate resilience and low carbon development, addressing both adaptation and mitigation, whilst focusing on economic growth and poverty reduction. The Strategy is guided by five principles that relate to Rwanda's broader development strategy to reach middle income status by 2020 and achieve the Sustainable Development Goals:

- i. economic growth and poverty reduction;
- ii. welfare and wellness of all citizens in a growing population;
- iii. gender equality and equity;
- iv. sustainability of the environment and natural resources; and
- v. good regional and global citizenship.

Building on its vision for 2020, the Strategy includes a long-term vision for Rwanda to be a developed, climate-resilient, low-carbon economy by 2050. To achieve this, there are three key strategic objectives set:

- i. To achieve Energy Security and a Low Carbon Energy Supply that supports the development of Green Industry and Services and avoids deforestation
- ii. To achieve Sustainable Land Use and Water Resource Management that results in Food Security, appropriate Urban Development and preservation of Biodiversity and Ecosystem Services
- iii. To ensure Social Protection, Improved Health and Disaster Risk Reduction that reduces vulnerability to climate change impacts.

The 14 programmes of action include diversifying energy sources with low-carbon energy grid and promoting green technology and resource-efficient industries throughout all production levels from the primary stages such as agricultural production and mining to manufacturing industries in the secondary to tertiary public and private sector industrial activities as well as transport and urban development. These 14 programmes of action also aim to promote sustainable land and natural resources use, food security, preservation of biodiversity, social protection, improved health and disaster risk reduction.

**Programme 1:** Sustainable Intensification of Agriculture Responsible Stakeholders (lead in bold) MINAGRI, MININFRA, Municipal Authorities, ISAR, Private Sector, NGOs, REMA Summary of Programmes and Actions In Rwanda, average farm size is small at 0.7 of a hectare. The sustainable intensification of small-scale agriculture is a key component in building a low carbon and climate resilient agricultural sector. Adaptation, mitigation and agricultural development options can be designed and implemented to counter the negative impacts from climate change and reduce the sectors dependency on fossil-fuels, thus building resilience into agricultural ecosystems. When small-scale production is intensified through agroecology techniques including agroforestry, kitchen gardens, nutrient recycling and water conservation to maximise sustainable food production, the aggregate benefit of small-holdings can be considerable and substantially contribute to national food security. Additional aggregate benefits include improved environmental sanitation, and disaster risk reduction (slope stabilization/flood mitigation) all leading to climate compatible development.

**Action 1:** Mainstreaming of Agroecology Rwanda will mainstream agroecology in the agriculture intensification programme and other natural resource-based livelihood programmers. This action will focus particularly on the Land husbandry, Water harvesting and Hillside irrigation Project (LWH); Integrated Water Resource Management (IWRM) (irrigated rice production); and the One Cow Program to maximise adaptation and mitigation capacity, and build agricultural diversity in current farming systems though an integrated approach to farm design.

**Action 2:** Resource Recovery and Reuse Rwanda will promote recovery and reuse of both organic waste and wastewater. Recycling organic waste is a critical adaptation and mitigation strategy. It improves soil fertility and structure, as compost increases soil water retention and nutrition supply to crops; and it diverts organic waste from waste dumps and landfill sites reducing methane emissions. Wastewater irrigation allows increased food production in urban and peri-urban agriculture during periods of rainfall scarcity. Consequently, urban-regional planning is required to ensure suitable peri-urban areas are identified and maintained as potential agricultural sites for implementation of wastewater irrigation during possible periods of food insecurity due to rainfall scarcity.

**Action 3:** Fertiliser Enriched Compost The agricultural intensification programme in Rwanda is currently dependent on the application of inorganic fertiliser to increase crop yields, although these external inputs produce GHG emissions through the fertiliser manufacturing process and the transportation of fertiliser products. However demand for inorganic fertilisers can be reduced by applying an integrated approach to soil fertility and nutrient management, which employs agroecology, resource recovery and reuse, and fertiliser enriched composts. An integrated approach can significantly lower inorganic fertiliser demand, reduce GHG emissions and increase farm profitability due to reduced input costs for farmers. Such approaches also improve soil structure and the water retention capacity of soils leading to resilient agricultural ecosystems and sustainable food security. Rwanda will promote the use of fertiliser enriched compost. This technique will ensure a more efficient use of inorganic fertilisers, and will add valuable organic matter to soils, which also maximises terrestrial carbon in farm soils.

**Action 4:** Mainstreaming of “Push-Pull” Strategies (IPM) “Push-pull” strategy is a sustainable pest management technique that incorporates a cropping system based on producing multiple crop and fodder yields but which is also designed to control plant parasites and pathogens such as stemborers and striga weed. Rwanda will implement a push-pull system using Napier grass and desmodium legume to manage pests in fields of maize, sorghum, millets and rain-fed rice. “Push-pull” strategies increase maize yield, fix nitrogen into farm soils and provide a continuous supply of cattle fodder from the harvest of Napier grass and desmodium, which improves milk yields of cattle while also reducing methane emission due to improved fodder regimes.

**Table 5: Rwanda Green Growth and Climate Resilience Strategy (GGCRS)**

Strategy Actions for Agroecology	Strategy Actions Against Agroecology
1. Demand for inorganic fertilisers can be reduced by applying an integrated approach to soil fertility and nutrient management, which employs agroecology, resource recovery and reuse, and fertiliser enriched composts	
2. Agroforestry will provide wood for fuel and social protection while avoiding deforestation.	
3. Mainstream agroecology techniques using spatial plant stacking as in agroforestry, kitchen gardens, nutrient recycling, and water conservation to maximise sustainable food production; Utilise resource recovery and reuse through organic waste composting and wastewater irrigation; Use fertiliser enriched compost; and mainstream sustainable pest management techniques to control plant parasites and pathogens	
4. Production per hectare can be increased through more sustainable means and organic waste can be recycled and reused to improve soil fertility, thus reducing dependency on external inputs.	
5. The WDA will be supported and TVET courses expanded to develop skills in energy and water efficiency, renewable energy, agroforestry, passive housing, organic agriculture, waste recycling and drip irrigation.	

The Rwanda Green Growth and Climate Resilience Strategy recognise the important role agroecology can play in building community resilience to climate change shocks and acquiring sustainable food and nutrition security. Agroecology is clearly mentioned in this strategy that is supposed to guide Rwanda through a Green growth Pathway.



## 4.6 RWANDA NATIONAL DETERMINED CONTRIBUTIONS

Rwanda's National Determined contributions (NDC) is built on the Green Growth and Climate Resilience Strategy (GGCRS) and focuses on adaptation and mitigation. The key sectors identified and prioritised under NDCs include agriculture, forestry, tourism, water, land use, disaster management, climate data and projections, energy, transport, industry and waste. The NDC for Rwanda reflect the national ambition by 2030 to join global efforts toward curbing global temperature rise below 2°C by 2050, with an aspirational target of 1.5.

**Table 6: Rwanda National Determined Contributions**

Strategy Actions for Agroecology	Strategy Actions Against Agroecology
Agro-ecology technologies must be mainstreamed in the agriculture intensification programme and other natural resource-based livelihood programmes.	Fertilizer blending plant being developed under Moroccan Cooperation
Mainstreaming agro ecology techniques using spatial plant stacking as in agro forestry, kitchen gardens, nutrient recycling, and water conservation to maximize sustainable food production	
Utilizing resource recovery and reuse through organic waste composting and wastewater irrigation	
Using fertilizer enriched compost	
Mainstreaming sustainable pest management techniques to control plant parasites and pathogens	
Soil conservation and land husbandry	
Irrigation and water management Programme	

Rwanda National Determined Contributions are in full support of agroecology and its mainstreaming in the food production systems. It also recognises that imported inorganic fertilizers can increase production at the expense of the adverse effects of contributing to GHGs and consequent climate change effects. The benefits may not be worth the losses, though it requires in-depth research to ascertain cost-benefit analysis of inorganic fertilizer application. In case the fertilizer blending plant under development is going to produce inorganic fertilizers, this would totally be against agroecology principles.

## 4.7 NATIONAL FERTILIZER POLICY (2014).

The development of the fertilizer policy in 2014 was as a result of persistent challenges associated with the development of a fertilizer importation and distribution system.

These are;

- a) Low fertilizer use (compared to other countries), resulting in: a. Low yields; b. Low farm incomes;
- b) Inadequate economic returns to fertilizer use due to narrow range of formulations
- c) Nutrient use inefficiency at the farm level
- d) Lack of sustainable availability and access to fertilizers
- e) Lack of an effective quality control and regulation in fertilizer marketing and use
- f) Government led input programs expensive and not easy for private companies a. Government cost per ton too high to support expanded use and require heavy subsidies b. Subsidies directed to few companies, products c. Strengthen quality control to accommodate more importers, products
- g) Lack of utilization of locally available raw materials for fertilizer production

To address these challenges a comprehensive fertilizer policy that covers the following aspects was developed.

- a) Fertilizer Production
- b) Imports and Exports
- c) Fertilizer Trade and Marketing
- d) Promotion of fertilizer use; extension; subsidies; agriculture and rural finance
- e) Research and Development Updating recommendations,
- f) Regulation and Quality Control (standards etc.)
- g) Environmental Considerations Increase fertilizer use efficiency (briquettes etc.)
- h) Gender focus
- i) Governance and Institutional linkages.

**Vision of the Policy:** To have a functional and efficient private sector led fertilizer sector that is responsive of farmers' needs and the environment.

**Mission of the Policy:** To have a competitive and profitable fertilizer sector that ensures fertilizer access and affordability at farm gate in a timely manner creating acceptable fertilizer use by farmers for increased and sustainable agricultural productivity and farm incomes.

**Overall Objective of the Policy:** The objective of the policy is to contribute to increased agricultural productivity, economic returns and incomes through increased and sustainable access and use of fertilizers.



**Table 7. National Fertilizer Policy (2014).**

Policy Directions for Agroecology	Policy Directions Against Agroecology
The use of Lime, organic and bio-fertilizers to compliment inorganic fertilizer use shall be encouraged to achieve an integrated approach to soil fertility management	The government of Rwanda encouraging the development of local fertilizer production capacity, through promoting the exploration of available natural resources to manufacture fertilizers
The use of organic and bio-fertilizers together with inorganic fertilizers shall be popularised and an integrated approach to plant nutrient management that counters soil degradation and maintains soil fertility	Government's encouragement to all private companies to freely import fertilizer in the country and subsidizing the private importation and use of fertilizers
The law governing the use of Agrochemicals and the Ministerial Instructions Regulating the control of Agro chemicals, agro dealers and premises provide the legal and regulatory framework by which the fertilizer sub-sector is regulated and quality is controlled.	The government shall introduce support mechanisms for the private sector to invest in fertilizer trade and marketing, partnering with financial institutions and stakeholders to provide finance and reduce risk associated with access to finance

## 4.8 THE NATIONAL LAND POLICY (2019)

This policy comes at a very important stage when Rwanda is embarking into a shift towards becoming an upper-middle income country by 2035 and a high-income country by 2050. In this respect, the country has already designed its National Strategy for Transformation (NST1) that will serve as the implementation plan and strategy for the remainder of Vision 2020 (2019-2020) and the first four years (2021-2024) of the Vision 2050. This revised land policy builds on the achievements of the 2004 land policy and ensures continuity of the unfinished agenda in different land thematic areas such as land use planning, land use management and land administration. The 2004 land policy focused mainly on land administration (e.g. Land law reform, securing land rights and tenure, administration of land fees and taxes, land registration and decentralization of land services), but left important gaps on new emerging issues related to efficient land management for sustainable development.

The revised land policy focuses on efficient use and management of land to support the national transformation goals without compromising the benefits of future generations. For this purpose, actions proposed to be implemented in the course of this policy are organized around three main pillars:

- 1) land use planning,
- 2) surveying and mapping; land use management;
- 3) land administration

The three pillars are subdivided in eight thematic areas:

- a) land use planning, surveying, and mapping,
- b) land utilization by various sectors,
- c) efficient land use management,
- d) land for private sector investment,
- e) land registration,
- f) administration of land lease fees, real property taxes, and land markets,
- g) securing land rights and management of land disputes,
- h) institutional and coordination framework of the land sub-sector.

**Table 7: The National Land Policy**

Policy Actions for Agroecology	Policy Actions Against Agroecology
Promote locally produced and environment-friendly construction materials	Allow administrative subdivision of all agriculture plots of land while enforcing land use consolidation
Enforce the implementation of planned settlements in rural areas, densification in urban areas in accordance with the condominium law and propose appropriate housing models that ensure economic use of residential land	To devise the modalities of land lease in marshlands
Identify which buffer zones to be used for environment-friendly economic activities without compromising the preservation of the protected area.	
Enforce existing policies and strategies on land reclamation, rehabilitation (vertical and horizontal) and soil conservation measures including trans- boundary catchment protection initiatives.	

# 5

## Agroecology and Institutional Arrangements

To ensure the conservation of environment and addressing the issues of climate change, the government of Rwanda has put in place different policies, strategies, laws, instructions and orders and institutions for implementation and regulation purposes.

The Ministry in charge of Environment coordinates and supervises other affiliated institutions that include;

- Rwanda Environmental Management Authority (REMA)
- The Rwanda Green Fund (FONERWA)
- Rwanda Water and Forestry Authority (RWFA)
- Rwanda Lands Management and Use Authority (RLMUA)
- Rwanda Meteorology Agency (RMA).

**Table 8: Institutional Mandate**

Institution	Main Roles and Responsibilities
<b>Ministry of Environment</b>	<ol style="list-style-type: none"> <li>1. To develop and disseminate the environment and climate change policies, strategies and programs</li> <li>2. To monitor and evaluate the implementation and mainstreaming of environment and climate change policies, strategies and programs across all sectors, especially productive sector;</li> <li>3. To oversee and evaluate institutions under its supervision by providing guidance on the implementation of specific programs to be realised by the institutions under its supervision and local government;</li> <li>4. To mobilise the necessary resources for the development, protection and conservation of the environment for the climate change adaptation and mitigation.</li> </ol>
<b>Rwanda Environmental Management Authority (REMA)</b>	<ol style="list-style-type: none"> <li>1. To implement Government environmental policy;</li> <li>2. To advise the Government on policies, strategies and legislation related to the management of the environment as well as the implementation of environment related international conventions, whenever deemed necessary;</li> <li>3. To conduct thorough inspection of environmental management in order to prepare a report on the status of environment in Rwanda that shall be published every two (2) years;</li> <li>4. To put in place measures designed to prevent climate change and cope with its impacts;</li> <li>5. To conduct studies, research, investigations and other relevant activities in the field of environment and publish the findings;</li> <li>6. To closely monitor and assess development programs to ensure compliance with the laws on environment during their preparation and implementation;</li> <li>7. To participate in the preparation of activities strategies designed to prevent risks and other phenomena which may cause environmental degradation and propose remedial measures;</li> <li>8. To provide, where it is necessary, advice and technical support to individuals or entities engaged in natural resources management and environmental conservation;</li> <li>9. To prepare, publish and disseminate education materials relating to guidelines and laws relating to environmental management and protection and reduce environmental degradation risks;</li> <li>10. To monitor and supervise impact assessment, environmental audit, strategic environmental assessment and any other environmental study. REMA may authorize in writing, any other person to analyze and approve these studies</li> </ol>
<b>Rwanda Lands Management and Use Authority (RLMUA)</b>	<ol style="list-style-type: none"> <li>1. to implement national policies, laws, strategies, regulations and Government resolutions related to the management and use of land;</li> <li>2. to provide advice to the Government, monitor and coordinate the implementation of strategies related to the management and use of land;</li> <li>3. to promote activities relating to investment and value addition in the activities related to the use and exploitation of land resources in Rwanda;</li> <li>4. to register land, issue and keep land authentic deeds and any other information relating to land of Rwanda;</li> <li>5. to supervise all land-related matters and represent the State for supervision and monitoring of land management and use;</li> <li>6. to execute or cause to be executed geodetic, topographic, hydrographic and cadastral surveys in relation to land resources;</li> <li>7. to initiate research and study on land, publish the results of the research and disseminate them;</li> <li>8. to prepare, disseminate and publish various maps and master plans relating to land management using the most appropriate scales;</li> <li>9. to carry out an inventory of all land resources in the country, their quality and their use, and act as the keeper and custodian of all national maps, aerial photomaps collections and their database;</li> <li>10. to establish cooperation and collaboration with other regional and international institutions with an aim of harmonising the performance and relations on matters relating to management of land;</li> </ol>

<b>Rwanda Water and Forestry Authority (RWFA)</b>	<ol style="list-style-type: none"> <li>1. To implement policies, laws, strategies and Government decisions related to the management of forests and natural water resources;</li> <li>2. To advise Government, monitor and coordinate the implementation of strategies related to the management of forests and natural water resources;</li> <li>3. To assist public and private institutions in charge of management of forests and natural water resources in a bid to fight erosion;</li> <li>4. To establish programmes and strategies for production of tree seeds;</li> <li>5. To prepare programmes of reforestation, forest promotion and appropriate management and support districts in the management of forests and natural water resources;</li> <li>6. To undertake research, studies and other relevant activities with regard to the importance of forests in the national economy and to the exploitation of trees and wood based products and disseminate the findings;</li> <li>7. To assist in the establishment of standards and regulations relating to the management of forests and natural water resources;</li> <li>8. To receive, check and advise on applications for permission for the use of water resources;</li> <li>9. To monitor the respect of conditions to get permission for water use;</li> <li>10. To provide advice on determining fees to be paid for the use of natural water resources;</li> <li>11. To monitor the execution of agreements related to natural water resources management and distribution at the regional and international level;</li> <li>12. To cooperate with other institutions and international organizations whose mission is related to forests and natural water activities</li> </ol>
<b>Rwanda Meteorology Agency</b>	<p><b>Mission.</b> To provide accurate, timely weather and climate information and products for the general welfare of the peoples of Rwanda</p> <p><b>Main Mandate;</b></p> <ol style="list-style-type: none"> <li>1. To establish meteorological stations across the country to identify each climatic zone, monitor such characteristics of and use them towards national development.</li> <li>2. To collect, gather and access data of meteorological elements from around the country, and exchange related information to ensure the security of people and the property in accordance with international agreements to which Rwanda is signatory.</li> <li>3. To publish and disseminate meteorological data for short and long term weather forecasts towards national development activities.</li> <li>4. To provide advance information on unusual weather conditions that may cause disasters, provide advice and educational information through the media and provide meteorological information to any interested person.</li> <li>5. To monitor, analyze and advise on global climate change..</li> <li>6. To collect and analyse meteorological data to preserve the meteorological nature.</li> <li>7. To ensure the implementation of international agreements that are ratified by Rwanda and relating to meteorology.</li> <li>8. To make meteorological study and research and implement the outcome of the research.</li> <li>9. To make a partnership with other regional or international agencies that have the same mission in relation to the meteorology in accordance with International Agreements on Meteorology.</li> <li>10. To advise the Government on Meteorological policy.</li> <li>11. To monitor and develop science, training and advocacy on Meteorology.</li> </ol>
<b>The Rwanda Green Fund</b>	<p>The Rwanda Green Fund (FONERWA) is a ground-breaking environment and climate change fund. It was established with the purpose of being the engine of green growth in Rwanda. Its strategy is to provide unheralded technical and financial support to the best public and private projects that align with Rwanda's commitment to a green economy.</p> <p>It has the vision of responding to Rwanda's current and future financing needs for environment, climate change, and green growth to accelerate goals of national sustainable economic development.</p> <p>Its investment priorities include among others;</p> <ol style="list-style-type: none"> <li>1. Conservation and Sustainable Management of Natural Resources</li> <li>2. Environment and Climate Change mainstreaming</li> <li>3. Research and Development and technology transfer and implementation.</li> <li>4. Environmental Impact Assessment Monitoring and Enforcement.</li> </ol>



# 6

## Analytical Observations and Key Entry Points for Advocacy

Almost all the Agriculture and environment related policies and strategies analysed are recent and were developed in the same period (2017-2019). They were all approved by parliament in the same period. They all build on vision 2020 and look beyond with ambitions of building a low-carbon economy by 2050. Most of them focus on being private sector led to enhance productivity in an environmentally friendly manner.

The National Agriculture Policy (NAP) and the Strategic Plan for Agriculture Transformation (2018-2024) cover a broad range of issues to be tackled in its policy actions, which seem to be more detailed with clear set of clustered activities. The Pillar 3 of the NAP which covers productivity and sustainability, puts into consideration environment and climate change challenges. The entire pillar mainstreams the E&CCP and all the policy actions under this pillar are environmentally friendly and climate change responsive in terms of both adaptation and mitigation. This confirms its coherence with agroecology practices. However, both the National Agriculture Policy and Strategic Plan for Agriculture Transformation do not mention agroecology in the entire documents. They however promote its practices in their respective action points.

The Agriculture policy framework aspires to improve agricultural growth and commercialisation which the policy identified as key drivers of economic expansion. The policy identified and promotes the use of agriculture inputs including fertilizers. To use crop production inputs efficiently and sustainably, farmers must be prepared to adopting climate smart agriculture practices, which enhance productivity and resilience. For example, soil protection is recognised as an important measure for sustainable agriculture for long run land productivity and is maintained by use of inputs with high efficiency (output/cost-ratio) without adverse effects on natural resources`

The Agriculture policy framework points out that fertilizer use is indispensable input to crop production, but puts emphasis on organic fertilizers, promotes the adoption of integrated soil fertility management which combines agri-environmental practices, resource recovery and reuse of fertilizer-enriched products through incorporating manure, crop residues and composting in current farming systems. This provides an entry point for organising agroecology advocacy work while effectively engaging with institutions put in place to implement both the policy and strategy.

The Environment and Climate Change Policy (E&CCP) is broad in its policy actions which gives room to fit in various activities that may contribute to the policy action, strategically giving enough space for agroecology implementation arrangements. The National Environment and Climate Change Policy makes no single reference to agroecology. The policy actions are such broad that agroecology practices could filter into policy implementation, but alternatively other production and social-economic systems may override agroecology since no emphasis has been put on it.

While added chemical fertilizers are required to achieve higher crop yields, the new environment and climate change policy framework as well as science urge that the use of chemical fertilizers lead to several problems such as decrease in food quality, resistance development in different weeds, diseases, insects, soil degradation, micronutrient deficiency in soil, toxicity to different beneficial living organism present above and below the soil surface which inconsistently contravenes the environment and climate change policy objectives and thus posing potential conflicts in its implementation.

Part of the risk of the application of inorganic fertilizers is that they lead to nitrous oxide N<sub>2</sub>O emissions (another powerful greenhouse gas emission) thereby offsetting some of their benefits. Recent studies from REMA and her development partners have indicated that greenhouse gas emissions are associated with fertilizer use as indicated in the Rwanda Nationally Determined Contributions (INDCs, 2015) towards mitigation under the United Nations Framework Convention on Climate Change (UNFCCC).

The other common risk of inorganic fertilizer use is soil and water contamination. Excessive applications of synthetic nutrients can accumulate in and acidify soils, and / or as runoff of the excess nutrients accumulate in water bodies such as rivers and lakes and leach into groundwater. Studies estimate that the problem is expected to grow as use of inorganic fertilizers intensifies. This could be another entry point for agroecology promotion and advocacy work.

The Rwanda Green Growth and Climate Resilience Strategy recognise the important role agroecology can play in building community resilience to climate change shocks and acquiring sustainable food and nutrition security. The strategy focuses on guiding policy and planning in an integrated manner and mainstreaming of climate change into all sectors of the economy including agriculture. This means that only agriculture practices with high propensity to climate change resilience should be accepted to ensure that communities build up the capacities to adapt to climate change effects. Agroecology is clearly mentioned in this strategy that is supposed to guide Rwanda through a Green growth Pathway and this could be another entry point for its promotion.

In the National Determined Contributions (NDCs), the country has committed to reducing the population working in the agriculture sector by increasing productivity per hectare and promoting the recycling of organic waste and use of manure to improve soil fertility. The NDCs also recognize that Agro-forestry helps combat soil erosion, provides fodder, improves soil fertility and contributes to social well-being and green economic growth. According to the same NDCs, within agriculture, soil conservation measures – which include terracing, conservation tillage, multi-cropping and crop rotation practices – account for around half of the sector's mitigation potential. All these and many more are pointers to agroecology and the NDCs therefore is another entry point of engagement for agroecology promotion.

# 7

## Agroecology Advocacy Platforms

Given the importance of agroecology and the need to strengthen its advocacy, there is need for the establishment and strengthening of the advocacy platforms and spaces. These platforms may also be used as channels for agroecology mainstreaming in other sectors of the economy. The following are the proposed platforms;

On the part of Civil Society organizations, RCCDN can establish a national forum for Agroecologists to mobilize other members and carry out a strong advocacy for agro ecology starting with the members of RCCDN. RCCDN could do this at national level as they draw advocacy issues from members supporting grassroots small scale farmers.

RCCDN member organisations establish district agroecology alliances. This can start with RCCDN members working in the same district and identifying allies at district level including other CSOs, individual farmer leaders and local government authorities

Advocate for establishment of high level inter-institutional agroecology platform at national level where concerned ministries, high level private sector practitioners and CSOs would meet to discuss on underlying issues in food systems

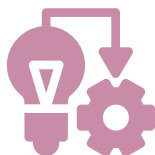
Establishment of agroecology clubs at decentralized levels that can play a big role in the community mobilization on the importance of agroecology. This forum can bring together among others; the Community Agriculture advisors (Abajyanama b'Ubuhinzi) and agriculture extensionists. It would be advisable to start with the few who understand the concept, establish demonstration farms, develop case studies and cascade the principles consistently and sustainably with successful examples.

# 8

## Conclusion And Recommendations

A growing body of evidence reveals agroecology's multiple advantages over conventional high-external input farming. It is a multi-functional approach to farming, capable of meeting environmental, economic and social needs; greater environmental sustainability and resilience, especially in marginal areas subject to environmental degradation and extreme climatic events, and higher agrobiodiversity. It can help to enhance the ability to support farmers' food sovereignty, reducing their dependence on costly and sometimes difficult-to-access chemical inputs; and higher overall productivity (at farm rather than crop level) achieved through a diverse range of agricultural products and environmental services, which reduce risks of crop failure in the long term.

The current public health crisis has shed light on one of food systems' most pressing challenges: reaching sustainable food security for all in a way that meets environmental and socio- economic sustainability. It has further confirmed that the logic of industrial agriculture has led our food systems down an unsustainable path, and that countries must urgently change course. Agroecology is increasingly offered as the transformative and comprehensive solution that delivers benefits across all dimensions of sustainability. Yet, proponents of "business-as-usual" approaches continue to insist that producing higher will only be possible with conventional industrial systems which are as well pointed to as contributing to high human health risks. Time is now that Rwanda gets off the "business-as-usual" trend and reinforce



the agroecology transformative pathway.

**Now that Rwanda has defined its green growth pathway and that it is a signatory to and has ratified the Paris Agreement, where it is called to both reduce its emissions and support its communities to adapt to climate change challenges, there is no better alternative left than adopting agroecology as a climate resilience solution.**

This study makes a couple of recommendations to different institutions:

#### **Government**

- Government should harmonise its policies and strategies to institutionalise agroecology for climate resilience, sustainable food security and improved environmental and human health
- The ministry of agriculture should vulgarize agroecology as a food production system
- There should be a budget allocated to promotion of agroecology
- Agroecology should be reflected in the planning documents of districts as implementing agencies
- Should establish agroecology discussion platforms

#### **Civil Society Organisations**

- Should train to acquire agroecology knowledge and skills
- Should train the communities they work with and help them to adopt agroecology
- Should fundraise to support agroecology practices
- Should form agroecology alliances for effective advocacy

#### **Development partners**

- Should integrate agroecology into their respective country strategies
- Should provide funding for promotion of agroecology
- Should advocate for agroecology supportive policies

#### **Communities**

- Should be ready to learn and adopt agroecology practices
- Should practically demonstrate agroecology benefits
- Should together advocate for agroecology promotion.



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