

Assessing the Opportunities for Agroecological Transition in Zimbabwe: A Review Current Policies



INITIATIVE ON
Agroecology

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Executive summary

The Zimbabwean economy depends on agriculture, which is at a crossroads with the environment, particularly under conventional agriculture practices. Transitioning to agroecology approaches has been identified as a means to transform food systems and address the challenges of climate change, biodiversity loss, environmental degradation, social inequities, and rising demand for food. While policies can support or hinder agroecological transitions, it appears that there is a dearth of knowledge on the extent to which the national policies contribute in Zimbabwe. We carried out an academic review and a desk review of policies in Zimbabwe and report on the outcomes in this report. We found that the literature on agroecology is consistent on the definitions of agroecology, but there is need for translating this into practice, and evaluating the practice which is characterized by transitions. There are many policies along the themes of agriculture, environment, natural resources and climate change that support agroecology, however, they are not well coordinated and thereby miss opportunities for synergies. There is a need to integrate the tools and design institutional arrangements that facilitate the implementation of the policies.

Introduction

Sustainable agriculture practices and land use management must support productivity while preserving and or enhancing the natural landscape and environment, to sustain agricultural and ecological functions into the future. Agriculture has traditionally been the mainstay of the Zimbabwean economy, with the majority of livelihoods directly dependent on it. Therefore, the agriculture policy environment directly affects the fate of the Zimbabwean economy.

Globally, agriculture and the environment are at a crossroads. As weather pattern changes and droughts become more frequent, agricultural productivity is on the decline. Household and national food and nutrition security are at risk today and in the future. Conventional practices in agriculture have been oriented towards industrial agriculture, based on heavy turning of soils, and high use of external inputs. Such practices exert negative pressures on the environment and require agroecological modifications to repair the environment, improve resilience to climate change and begin to reverse it. It is imperative to pivot towards agroecology, to maximize productivity while maintaining the integrity of the environment and preserve it for future generations, not least to ensure intergenerational justice and equity.

The government in Zimbabwe has taken steps to promote food systems that are more ecologically compatible with Zimbabwe's semi-arid areas by developing appropriate policies and programmes. Agricultural policy is key for the development of favourable and sustainable guidelines for the promotion of efficient agricultural practices that will improve food, promote nutrition security, provide employment for the citizens, raw material for agro-based industries as well as to earn foreign exchange. Policies are instituted to identify priorities and to guide processes in their specific sector. Therefore, policies can predict and/ or explain sector performance and the subsequent effect on livelihoods.

Macro and sectoral policies that focus or touch on agriculture, natural resources, climate change and environment themes have a bearing on the agroecological transition as their implementation has direct impacts on productivity, economic, environmental, human and social domains of communities. Primary outcome areas for Zimbabwean policies in agriculture, focusing on food, feed, fibre security, seek the attainment of food and nutrition security and the reduction of poverty, in resonance with international blueprints such as the sustainable development goals. Agroecology can be defined in several different ways, and we elect to define it in this report within an integration of agriculture, climate change, environment, natural resources, to serve productivity, economic, environmental, human and social needs.

Agriculture is practiced in the environment, and as such, the two are interdependent. Natural resources, such as land, soils and water, forests, can also be defined as subsets of the environment. Climate change has significant effects on these and is threatening agricultural productivity and hence livelihoods. To be effective and to achieve the intended result, agroecology interventions require integrated, collective action. The role of policies in the spheres of agriculture, environment, natural resources, and climate change in influencing an agroecological transition cannot be understated.

Policy can play a significant role in scaling innovations. There are different policy tools that governments can use to influence the behaviour of citizens. Policy tools have been described to take on the alternatives of carrots, sticks and sermons. Carrots are based on incentives that citizens get in return for following policy, such as the inputs farmers access if they prepare planting basins. Sticks depend on penalizing individuals who do not comply with policy while sermons depend on convincing people to follow policy but providing them with a moral or other motivating factor. Communities react in different ways to this, depending on their own environment and context. Government policy must align across different sectors and be congruent with the capacities of citizens to participate. For example, the gap between a government policy that promotes soil testing on one hand and a tax or fiscal regime that makes soil testing laboratories and equipment unaffordable will have the net effect of cancelling each other out. It may also not be enough to have several policies that promote different aspects of agroecology without one dedicated policy to guide an agroecology as this would then effectively guide the process. A combined review of academic literature in agroecology policy with a desk study of actual policies can contribute to characterizing a policy environment with respect to whether it promotes or hinders agroecology transition.

Background

Agroecology has gained momentum as a science, a set of field, farm or landscape practices and a social movement that can help transform food systems and address the concomitant challenges of climate change, biodiversity loss, environmental degradation, social inequities and rising demand for food (Wezel et al. 2020, Bezner Kerr et al. 2021, Barrios et al. 2020, Dumont, Wartenberg, and Baret 2021). Although defined differently, at minimum, there is consensus that it should encompass: recycling; input reduction; soil health; animal health; biodiversity; synergy; economic diversification; co-creation of knowledge; social values and diets; fairness; connectivity; land and natural resource governance and participation (Wezel et al. 2020, Barrios et al. 2020). In essence, agroecology as a science is the study of the ecological, economic and social dimensions of food systems (Francis et al. 2003). In the context of field, farm and landscape practices, agroecology is concerned with harnessing natural/ecological processes to improve environmental, social and public health outcomes and build synergies and biological interactions that benefit agroecosystems while minimising social ecological externalities such as erosion, degradation, greenhouse gas emissions and social inequities (Wezel et al. 2020, Bezner Kerr et al. 2021).

Because agroecology embraces several principles and elements, qualifying a system as agroecological is not trivial. Does a system qualify to be agroecological only when it applies all the 13 principles or half, four, five or 10? This difficulty has led to 'agroecological transitions' where the gist is to understand the extent to which a system is (i) oriented towards agroecology and (ii) the extent to which extant practices are aligned to agroecology principles (Dumont, Wartenberg, and Baret 2021). Others have proposed that this transition should be stepwise and start from the adoption of agroecology practices to complete transformation of food systems (Bezner Kerr et al. 2021). Agroecological transition measures the degree to which a system is oriented towards agroecology. This suggests there is no one agroecology but a spectrum of agroecology as suggested by Dumont et al (2021). More benefits are realised the more a system is oriented towards agroecology. For example, (Bezner Kerr et al. 2021) found that implementing several agroecology principles was associated with stronger food security and nutrition outcomes. Several practices used by farmers meet some aspects of agroecology. Part of the needs for future research will be help identify where systems that apply given practices are in the transition to agroecology.

Despite several studies documenting the genesis, evolution and partly, impacts of agroecology on the environment, welfare, and livelihoods (Barrios et al. 2020, Dumont, Wartenberg, and Baret 2021, Francis et al. 2003, Wezel et al. 2020, Bezner Kerr et al. 2021), not much has been done on agroecology policy. A search of peer reviewed publications indicates a dearth of work (i) on the extent to which current national policies facilitate or hinder agroecology transitions in the global south and (ii) on policy options or instruments to facilitate agroecological transitions. It is neither well understood how best agroecology can be translated or mainstreamed into policy nor how well policy makers understand, appreciate, and prefer agroecology. This review is an attempt to contribute towards improving our understanding of the status of agroecology policy in Zimbabwe and the global south. It also identifies research gaps and proposes important areas for future research.

Methods and approaches

This study was synthesized out of two approaches, viz an academic review based on publicly available peer reviewed and grey literature, as well as a desk study of the policy documents available in Zimbabwe.

The academic literature review is based on grey, and peer reviewed publications drawn from searching for key words in common data bases such as Web of science, Scopus, and Google scholar. Search words used include "agroecology policy in Zimbabwe", "agroecology policy in Africa", "agroecology policy", "agroecology and policy in Zimbabwe", "agroecology and policy in Africa", "impacts of agroecology" and "principles of agroecology". This yielded several papers that were reduced to 34 based on their focus on some aspects of agroecology in Zimbabwe, Africa or in general. These are grey and peer reviewed publications. The 34 papers were further screened by title; abstract and keywords and 20 papers were deemed suitable and reviewed in detail.

The policy literature desk review sought to understand the focus and thrust of the policy environment with respect to transitioning towards agroecology, giving specific actions points. The study was designed to review and summarize key policies relevant to agroecology transition. This report details the overall thrust, agroecological focus as well as specific actions points in the policy instruments. Documents related to agriculture, climate change, environment and natural resources were identified in a desk study. Policies, strategies and plans were obtained in the public space, online and from the ministries responsible for agriculture and for environment. Using a snowball approach, relevant additional documents discovered were added. Each document was reviewed with respect to relevance to agroecology. A shortlist of documents with high relevance to agroecology was selected. This report is based on the shortlist, unless stated otherwise.

Results

Status of research on agroecology (policy)

As agroecology gains prominence in academia and development circles, most extant studies on the subject are skewed towards documenting its evolution, describing its 10 or 13 principles and offering perspectives on how agroecology can be implemented in practice (Barrios et al. 2020, Dumont, Wartenberg, and Baret 2021, Francis et al. 2003, Wezel et al. 2020). Others have surveyed the literature and synthesize the impacts of agroecology on food security and nutrition outcomes (Bezner Kerr et al. 2021) and yet others suggest tools and frameworks for analysis (Mottet et al. 2020). Not much work has been done on understanding the policy context of agroecology. Exceptions are Ajates Gonzalez, Thomas, and Chang (2018) who study how agroecology was translated into policy in France and the UK and Valdivia-Díaz and Le Coq (2022) who document a roadmap for scaling agroecology in Peru. Several themes emerge from this literature. Here are four.

First, there is consensus on what agroecology encompasses as espoused in the 13 principles of agroecology and there is no debate on the importance of agroecology as a means to transform food systems. The 13 principles of agroecology give a broad framework that can guide any future work on agroecology in any part of the world. There will be differences in the specific practices that fit the agroecology principles depending on the local context. Identifying what fits where and the extent to which such practices align with agroecology principles should be an important part of future research.

Second, there is no global agreement on when a system qualifies to be agroecological, but higher benefits seem to accrue in systems that apply several agroecological principles. This highlights the importance of bundling agroecology principles for their multiple synergistic benefits. Given the weight of the available evidence, there is need for more rigorous impact assessments to evaluate the benefits of bundled agroecology across different scales and levels. It is understood that systems will be at various levels on the spectrum to agroecology. Untangling this 'definition' of agroecology is key to facilitate evaluation.

Third, evaluation of agroecology will benefit from the application of consistent tools and approaches across scales and levels. Existing tools such as the Tool for Agroecology Performance Evaluation (TAPE) - which can be used to assess the extent of agroecology transition, monitor and evaluate agroecology projects and evaluate drivers of changes in agriculture systems (Mottet et al. 2020) hold promise. These, however, need to be further vetted, validated, and accepted by the global community of practice. Because agroecology encompasses several aspects spanning ecology, social, economic, welfare, governance and environment make developing comprehensive, adaptable, and flexible evaluation tools a daunting task.

Fourth, the dearth of evidence on policy aspects of agroecology is glaring. Except for a few countries in Europe and South America, not much is known on (i) the extent to which current national policies facilitate or hinder agroecology transitions in the global south and (ii) on policy options or instruments to facilitate agroecological transitions. It is neither well understood how best agroecology can be translated or mainstreamed into policy nor how well policy makers understand, appreciate, and prefer agroecology. If unaddressed, this policy knowledge gap can hinder efforts to scale agroecology and to mainstream it into national policies. It also makes it difficult for policy makers to distinguish agroecology from common alternatives such as conservation agriculture, climate-smart agriculture, and sustainable intensification. And its use might be conflated in common parlance with other vogue terms and risk diminishing agroecology.

Policy instruments - general findings

A total of 49 documents that fall under the broad banner of policy instruments, including 14 policies, 6 strategies, 12 plans, 5 acts, 5 multilateral environmental agreements and 6 other policy related documents were found on the desk study. A shortlist of 20 documents was prioritized taken for deeper analysis, and classified according to themes, viz agriculture, natural resources, environment, natural resources and social inclusion.

In this study, the agriculture sector is supported by a family of instruments consisting of National agriculture policy framework covering a range of themes such as broad policy frames, food systems transformation, traditional grains, gender, etc., see table 1 for more details on the documents covering (among others) the regional agriculture policy framework, the Agriculture and food systems transformation strategy, the draft traditional grains commercialization strategy, the agriculture gender strategy, four plans and one programme. Analysis under the environment theme was informed by two instruments, namely the Zimbabwe national environmental policy and strategies as well as the Zimbabwe wetlands policy. These are closely related to the natural resources theme which was informed by the National water policy and the National biodiversity strategy and action plan. These four documents are related and support those informing the climate change theme, which are the Zimbabwe national climate

policy, the National climate change learning strategy, the Zimbabwe national climate change response strategy and the Revised national determined contributions. These are all hosted by the same Ministry of Environment, Climate, Tourism and Hospitality Industry. The National gender policy is a cross cutting policy hosted by the Ministry of Women Affairs, Gender and Community development while the Food and nutrition security policy is hosted by the Office of the President and Cabinet.

The documents were published between the year 2005 and 2022. Fourteen of the documents were developed for a specific lifetime, from 4 to 12 years. Most of the documents were designed for four to five-year lifetimes. However, four of these are past their end date, without a replacement yet.

Table 1: Policy instruments reviewed for Agro-ecology transition

Policy document	Parent ministry	Document lifetime
Regional agriculture policy (RAP)	Food Agriculture and Natural Resources Directorate, SADC Secretariat	
National agriculture policy framework (NAPF)	Ministry of lands, agriculture, fisheries, water and rural development	Draft 2018-2030
Agriculture and food systems transformation strategy (AFSTS)	Ministry of lands, agriculture, fisheries, water and rural development	2020-2030
Traditional grains commercialization strategy (TGCS)	Ministry of lands, agriculture, fisheries, water and rural development	Draft
Agriculture sector gender strategy (ASGS)	Ministry of Women's affairs...	2015-2019
Agriculture recovery plan (ARP)	Ministry of lands, agriculture, fisheries, water and rural development	2020-2025
Livestock growth plan (LGP)	Ministry of lands, agriculture, fisheries, water and rural development	2020-2025
Horticulture recovery and growth plan (HRGP)	Ministry of lands, agriculture, fisheries, water and rural development	2020-2025
Tobacco value chain transformation plan (TVCTP)	Ministry of lands, agriculture, fisheries, water and rural development	2021-2025
Zimbabwe agriculture investment programme (ZAIP)	Ministry of lands, agriculture, fisheries, water and rural development	2017-2021
Zimbabwe national environmental policy and strategies (ZNEPS)	Ministry of Environment, Climate, Tourism and Hospitality Industry	2005 (open ended)
Zimbabwe wetland policy	Ministry of Environment, Climate, Tourism and Hospitality Industry	
Zimbabwe water policy	Ministry of lands, agriculture, fisheries, water and rural development	2012 (open ended)
National biodiversity strategy and action plan (NBSAP)	Ministry of Environment, Climate, Tourism and Hospitality Industry	2013 -2018
Zimbabwe National Climate policy	Ministry of Environment, Climate, Tourism and Hospitality Industry	2018-2030

National climate change learning strategy	Ministry of Environment, Climate, Tourism and Hospitality Industry	2020-2030
Zimbabwe's national climate change response strategy	Ministry of Environment, Climate, Tourism and Hospitality Industry	2013 (open ended)
Zimbabwe revised Nationally Determined Contributions (NDC)	Ministry of Environment, Climate, Tourism and Hospitality Industry	2021-2025 2030

Summary by sector



Agriculture

This section summarises the findings from reviewing agriculture policies shaping the sector in Zimbabwe. It starts off with a presentation of the SADC Regional Agricultural Policy a then looks at the key agriculture policies and programmes in the country. All instruments reviewed as part of this section, except the tobacco value chain transformation plan were concerned with the production of food.

Regional agriculture policy (RAP)

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Some of the actions promoted by the RAP includes enhancing the sustainable utilization of plant and animal genetic resources through ex-situ and in-situ conservation of plant and animal genetic resources for food and agriculture; promoting crop variety and livestock breed development efforts for adaptation to climate change and variability; promoting access and benefit sharing; promoting collection and dissemination of information on genetic resources. Efforts towards both climate change adaptation and mitigation are supported. The policy provides for national interventions in effective soil fertility management systems, taking soil diversity into account, carbon sequestration and biodiversity preservation. Furthermore, the RAP also seeks to harmonize and standardize the proper use and disposal of agrochemicals, and to complement efforts to manage transboundary threats including pests and diseases; and support efforts to improve the management of water resources (including water conservation and efficient irrigation systems), smart (renewable) energy options, and forests. It is indicated that SADC shall support capacity building in carbon stock monitoring (including developing capacity for carbon trading and participating in this), promote sound environmental impact mitigation measures and support member states in achieving their climate policies. This would be part of regional research to develop context specific adaptation strategies for climate change and variability. Across all activities, gender issues that are relevant to food and nutrition security are to be mainstreamed.

National agriculture policy framework (NAPF) (draft)

The NAPF was designed to support recovery and growth of the agriculture sector, two decades after the fast-track land reform program. It is composed of several pillars to guide agriculture sector recovery and growth: (i) food and nutrition security, (ii) agriculture knowledge, technology and innovation system, (iii) production and supply of agriculture inputs, (iv) development of agriculture infrastructure, (v) agricultural marketing and trade development, (vi) agricultural finance and credit, (vii) access, tenure security and land administration, and (viii) sustainable (green agriculture).

The supporting strategies and plans of these nine pillars follow nine principles which are (i) evidence based, (ii) productivity and growth oriented, (iii) nutrition sensitive, (iv) market-based, (v) private sector led and public sector facilitated, (vi) collaborative and multisectoral, (vii) participatory and responsive to agroecological potential, (viii) sustainability, and (ix) gender, youth and other vulnerable groups mainstreamed. The NAPF is supported by a broad strategy, the Agriculture Food Systems Transformation Strategy (AFSTS), and five specific anchor plans: 1. agriculture recovery plan, 2. accelerated irrigation and rural development plan, 3. horticulture recovery and growth plan, 4. agriculture information management system plan and 5. livestock recovery and growth plan. While this draft has been in circulation, specified for 2018 to 2030, it has never been ratified.

The agroecological theme of agriculture, environment, natural resources, and climate change appear throughout the policy framework and most notably in the pillars on food and nutrition security (pillar 1) and sustainable agriculture production (pillar 8). The social dimensions of employment and income generation are also addressed. The principles of the document include

sustainability, participatory, responsive to agroecological potential as well as gender, youth and vulnerable groups mainstreamed.

There is a clear focus on intensification of production and diversification of the food production basket. The NAPF seeks to build resilience in the agriculture sector using sustainable agriculture intensification and sustainable natural resources management, and specifically calls for the adoption of climate smart agriculture, conservation agriculture with mechanization, water harvesting and irrigation development. Low cost technology investments such as irrigation (supply and services) and post-harvest management are promoted as modern approaches to raising productivity and adapting to climate change under smallholder conditions. Renewable energy is also cited as a strategic resource. The framework promotes grassroots nutrition education and utilization of biofortified seed or vines for improved access to nutrient dense food. There is a desire for development of early warning systems, coupled with rapid response. Concerns for sustainable natural resources management and environmentally friendly approaches in the wake of climate change are noted in the document, including biodiversity conservation and wetland management. Yet conventional input promotion remains a core tactic in these strategies as well.

Agriculture and food systems transformation strategy (AFSTS)

This strategy was developed to operationalize the NAPF. As detailed in the strategy document, its goals are to; raise agricultural productivity and improve contribution of the agriculture sector to the GDP; ensure household and national food security; secure agricultural industrial inputs; generate surplus foreign currency savings and earnings; improve the agriculture market access and competitiveness; and raise per capita income generation. The strategy document states that all the goals should be achieved using the agriculture resource base sustainably. The themes detected in this document are agriculture, climate change and natural resources.

Actions highlighted in the AFSTS include the presidential inputs scheme, whose details are not specified in the document. The presidential inputs scheme has evolved since it was introduced from a simple programme that provided inputs to farmers to one based on conservation agriculture, the pfupfudza programme. The pfupfudza program involves a conditional input program implemented through local extension staff and administrators who verify compliance with minimum tillage as a condition for receiving subsidized seed and fertilizer. There are plans to include subsidized machinery services in future rounds. In addition, there is a target to mechanize 1 million hectares by 2023. Digital and labour-saving technologies are promoted to improve efficiency and reduce costs of production. Government is prioritizing investments in dam construction, borehole drilling and irrigation infrastructure development across the country to conserve and sustainably utilize water for higher productivity and to respond to challenges from climate change and variability. Concerns for the environment are not specifically mentioned.

Traditional grains commercialization strategy (TGCS) (Draft)

The policy promotes traditional grains, recognizing them as typically underutilized crops with resilience under various biotic and abiotic stresses, including climate change. They are to be promoted as a resilience strategy, against crop failure, for diversification of diets and integration of highly nutritious diet options. The mission of the traditional grains (TG) strategy is *"to prevent and alleviate food and nutrition insecurity in the face of climate change by mobilizing the power of plant genetic resources and reversing non-communicable disease pandemics through increased consumption of TG products"*. The strategy aims to stimulate research to support a robust TG seed system; support higher production and productivity while reducing the drudgery currently associated with the production; and tap into strategic partnership and improve the value chain coordination and profitability. The strategy also seeks to stimulate consumption of the TG through differentiation of products.

The strategy promotes wider production of traditional grains, and research for the development of high yielding varieties and the reduction of drudgery associated with production and processing. This is promoted in part as a coping mechanism against maize monocropping (diversification) and climate change and variability. Training of farmers is one of the strategies proposed to achieve this. There is also a need to stimulate higher consumption.

Agriculture sector gender strategy (ASGS)

The agriculture sector gender strategy aims to direct gender mainstreaming in programming in the ministry, its departments, agencies and stakeholder institutions in line with regional and international policies and strategies, such as the Millennium development goals which were the United nations blue print at the time the strategy was formulated. The target is to institutionalize gender responsive systems that serve the strategic gender interests of both women and men farmers to achieve increased agricultural productivity and production. Some of this is done through the gender coordinating unit to facilitate reviews of policies and institutional frameworks with respect to gender mainstreaming, to train senior officials in the ministry and its parastatals, and to integrate gender, through a quota system into succession, promotion, appointment and staff development to

improve the contribution of women in decision making at all levels. The document has no mention of technical innovations in agroecological themes, it is however included because of importance of gender dynamics to rural agriculture and associated livelihoods. Gender disparities stand in the way of full participation of some members of society, while agroecology principles of social values and of participation call for social inclusion. The strategy document advocates for the reduction of gender disparities currently experienced in all components of the sector. A key action of the policy was the identification of gender focal persons at all nodes to facilitate mainstreaming in implementation of all agriculture policies and programmes.

Agriculture recovery plan (ARP)

The agriculture recovery plan (ARP) is the first and main plan of the AFSTS. It provides detailed guidance to implement the AFSTS. It focuses on the major crop value chains, maize, wheat and soybean to improve domestic food and nutrition security and to improve their contribution to GDP. The plan also integrates diverse alternatives of other value chains such as potatoes, cassava and sweet potatoes to facilitate adaptation to climate change and diversification of diets. Furthermore, the ARP provides various financing models, with an emphasis on private sector financing. Capacitation of extension services by improving mobility and access to information is identified as critical to improve productivity. The hub and spoke model is used to support increased productivity and support consolidation of value chains in localities, with specialization of production in respect of the agroecological suitability. The plan mentions a model where institutions of higher learning lead innovation, digitalization and modernization of agriculture.

A key action point addressed by the ARP involves increasing access to finance for Agriculture. It details loan support for irrigation of wheat, the development of a green belt in the lowveld to achieve two maize cycles per annum, under irrigation, adoption of sorghum, millets and sunflower instead of dryland maize and soybean. Conservation tillage is encouraged, while irrigation rehabilitation and development are promoted along with mechanization. Relevant to agroecology, the ARP incorporates a presidential input grant scheme, which is based on climate proofed conservation agriculture and good agriculture practice in general. Soil conditioning, soil testing and subsequent liming for soil health and improved production efficiency is encouraged.

Livestock growth plan (LGP)

The livestock growth plan (LGP) provides details to the AFSTS, with respect to livestock value chains¹, for food and nutrition security and income. The plan seeks to pivot smallholder farmers towards commercial livestock production orientation and to accelerate growth for the re-settled large scale commercial farmers ²(A2 farmers). It targets improvements in livestock feed, genetics and health of the national herds, and seeks to be responsive to climate change. Like the AFSTS, it has a Presidential input grant scheme component and has private sector involvement. The plan leans significantly on coordinated multi-stakeholder responses, including private sector and the donor community for financial support.

Key LGP actions include the establishment of irrigated pasture belts close to water bodies in public/private/community partnerships to supplement livestock feed in drier areas; adoption of climate smart crops such as cassava and cowpea, forage sorghum and prickly pear for silage; self-generating grasses such as catambora, kikuyu and star grass to contribute to resilience building against climate change; training of farmers in various animal husbandry practices that include feed formulations to contribute to improved nutrition and climate change adaptation; and breed improvement and adoption of appropriate breeds including native breeds; and adoption of small livestock for adaptation to Zimbabwean conditions and to climate change. Furthermore, the LGP promotes climate proofed dairy production and climate proofed animal husbandry. To protect smallholder farmers and promote sustainable agriculture in areas where there is conflict wildlife, erection of electric fences is planned around national parks such as Gonarezhou. This is expected to contribute to the reduction of disease transmission from wildlife to livestock and promote the one health approach. Together with electric fences the LGP will seek to increase the number of veterinary services, including dip tanks and associated boreholes, to contribute to maintenance of animal health. The LGP presents opportunities for additionality with other government policies and programmes. Examples include the mainstreaming of climate resilience and inclusion of women and youth. However, while water is required for drinking, dipping, irrigation, and fish farming, there was no explicit focus on its management in the document. The LGP is also noticeably hush on management of other natural resources.

¹ Including beef and dairy cattle, goats, sheep, poultry, pigs, fish and bee farming

² Resettled during land reform programme post 2000.

Horticulture recovery and growth plan (HRGP)

The horticulture recovery and growth plan (HRGP) targets the transformation of the horticulture sector in a two-pronged approach. Firstly, the revival of the conventional horticulture industry and secondly establishing a rural horticulture industry. This is to accelerate domestic and export horticulture production, productivity and profitability, to earn forex and substitute imports, contribute to food and nutrition security, employment creation and raising household incomes. With respect to financing, conventional horticulture is designed to lean on partners and private sector financing while rural horticulture is to be supported under the special the Presidential scheme grant support. The plan aims to use commodity specific strategies, projects and programs. The plan touches on agriculture, climate change, environment and natural resources.

The HRGP promotes the establishment of orchards, plantations and nutrition gardens by households, schools, villages, and youth groups is promoted and supported for food and nutrition security and income generation through production of exotic and indigenous vegetables and fruits, as well as improved sweet potato varieties. The nutrition density of these additional foods promote improved family nutrition. These interventions are supported by sinking of boreholes for watering crops with water, sanitation and hygiene (WASH) integrated for the benefit of the communities. Under the HRGP, rural aggregation centres are to be established for value addition and beneficiation of produce. Furthermore, the plan also promotes the improvement and conservation of indigenous vegetables and fruits, along with annual tree planting, research and development, market development and improved coordination. The plan promotes environmentally sustainable practices, however, not much detail is provided. This provides AEI with the opportunity to design interventions that provide clarity. The HRGP details the participation of women and youth.

Tobacco value chain transformation plan (TVCTP)

The plan focuses on the tobacco value chain, a major foreign currency earner (12.5% of export earnings) for the agriculture sector in Zimbabwe. However, it is dependent mainly on offshore financing, thereby reducing the net export benefits. The TVCTP aims to enhance tobacco contribution to GDP, forex earnings (raise to 70% of export earnings), employment creation and to raise household incomes by growing the tobacco value chain through localization of tobacco financing, sustainable intensification, increased production and productivity, value addition, beneficiation and export of cigarettes, including exploring new markets. This document focuses on the agricultural sector.

The TVCTP intends to promote sustainable environmental management as tobacco production is traditionally notorious for being harmful to the environment because of its reliance of wood or coal for curing and high use of chemicals. The strategy promotes afforestation, to replace and plant trees for future use, and supply of coal, for tobacco curing. This is a lesser evil to simply getting firewood from the forest one did not plant, but still agroecologically insensitive. If this sector is to continue, clean energy options should be explored. Tobacco production is generally not agroecological, with deforestation being one of the main offenses. There is also poor adherence to tobacco production regulations by farmers and poor policing by government departments. Consequently, the TVCTP include farmers awareness and education programmes to mitigate and move away from harmful practices. The plan promotes diversification of the cash crop portfolio, supported by farmer training in good agronomic practices. This will facilitate increased revenues for farmers, and enhance traceability of produce, while responding to climate change and the anti-tobacco campaign. There is a single mention in the document of the use of irrigation for tobacco production as adaptation to climate change.

Zimbabwe agriculture investment programme (ZAIP)

The ZAIP is designed to support the recovery of production, productivity and competitiveness of an agriculture sector that has been significantly reoriented by the 2000s land reform programme ³with respect to farm size, resulting in a larger number of smaller farms operating well below their potential. It was conceived in support of the draft agriculture policy framework of 2012, called for attainment of food and nutrition security, sustainable use of the natural resource base, income generation, employment creation, and economic growth. It identifies four result areas namely production and productivity through improved management and sustainable use of land, water, forestry and wildlife resources; increased farmer participation in fair trade in local, regional and international markets; food and nutrition security and agricultural innovation and scaling of improved technologies. The programme seeks to promote and facilitate investment in the agriculture sector, stimulated by initial financing from government, benefiting farmers and the agriculture sector, public and private. Some of this would be achieved through capacity building, partnerships, policy alignment and institutional arrangements. The programme promotes good agriculture practices, sustainable utilization of natural resources, environmentally friendly approaches, and responsiveness to climate change. Specific

³This refers to the land reform post 2000, also known as the third chimurenga. Zimbabwe has undergone a number of land reform programmes with latest reshaping the agriculture sector.

interventions include tax incentives for investors and agriculture sector stakeholders. This program expresses support for agroecological transitions through agriculture, climate change, environment and natural resources.

The ZAIP document calls for increasing area under conservation farming, mechanization for labour savings, water harvesting, sustainable irrigation technology ⁴and water efficiency in irrigation. This includes rehabilitation of existing irrigation infrastructure that was damaged during and after the land reform programme, dams, and boreholes, and raising the capacity of human resources to carry out the activities. The ZAIP encourages strengthening climate change adaption in the implementation of agriculture practices and allocates a budget to this. There is also a call for increasing the area under sustainable forestry, wildlife and environmental management. The programme promotes wholesome food for all by adoption of the farm to fork approach. The programme expressed a desire to advocate and facilitate the review of the land policy to influence the tenure farm tenure system towards more bankability.

⁴The ZAIP does not explicitly specify the technologies being promoted.

Environment

The summary findings from environmentally heavy policies are included in this section. Two environment sector policies were reviewed, the Zimbabwe national environmental policy and strategies and the Zimbabwe wetland policy. The policies reviewed in this section were concerned with the natural environment and how they interact with food systems.

Zimbabwe national environmental policy and strategies (ZNEPS)

The goal of the national environment policy and strategies is to preserve and utilize the environment sustainably for improvement of livelihoods for current and future generations, with concerns for environmental integrity, productivity, social and economic issues. The policy recognizes the variable potential land use portfolios and also addresses marginal areas. The need for inclusivity in access to environment benefits and development, as well as responsibility through public participation for preservation and sustainable utilization is highlighted. It promotes conservation agriculture and environmentally friendly agriculture management practices. Under environmental integrity, it singles out air (pollution), water, land and biodiversity. Other natural resources are covered under protected areas and transboundary and natural resources management. Under strategic directions on each entity, it specifies possible actions, but is not very explicit, such as "provide and improve the research and extension services needed to support optimal land-use by landholders". It is unclear who is going to do this and under what arrangements as it sounds like a ministry of agriculture mandate. The policy refers to the Environmental Management Act, enforced by the parent ministry, for some guidelines e.g. the identification, measurement and conservation of biological diversity, in line with the Convention on Biological Diversity (CBD). Financial and legal implications are considered under a separate section, also supported by guiding principles. The policy calls for the establishment of an effective institutional framework, committed to sustainable development and able to collate and manage environmental information. Research, environmental education and awareness are cited as useful towards attaining the ideal. There is a need to promote national interests by cooperating in drawing up and implementing international environmental agreements, and collaborating with neighbouring countries on transboundary environmental issues. Along with the main sector environment policy, the ZNEPS also addresses natural resources and agriculture albeit to a lesser extent. The policy has no stand-alone section on climate change and it is not mentioned in the vision, objectives or principles.

Specified action points, with respect to the agriculture, environment and natural resources, include the safeguards to water quality by setting and enforcing guidelines for water quality and effluent discharge. The ZNEPS supports the expansion of irrigation and water harvesting and provides training and capacity building in irrigation management so as to minimize the risk of both soil and water degradation. The policy promotes public awareness of natural resources issues, promotes conservation and encourages sustainable use of land, in line with the agroecological potential and other natural resources. The policy calls for the identification of endangered species for protection, including by use of protected areas. Degraded natural resources must be rehabilitated. The policy promotes the ecosystem approach to biodiversity utilization and conservation. The policy calls for improved research and extension to support sustainable land utilization.

Zimbabwe wetland policy

The Zimbabwe wetland policy defines several different types of wetlands, lists eight wetlands of international significance in Zimbabwe, including two lakes, two vleis, two underground pools (Chinhoyi caves and mana pools), a dam and a national park, and emphasizes the vulnerability of wetlands to degradation and the need to arrest further decline, and restore degraded ones. The policy has more than 30 policy statements, broken down by area of concern, including crop and livestock production, habitat services, research and education, tourism and recreation as well as religious and cultural significance. The policy seeks to establish effective frameworks for sustainable, participatory, and integrated management of wetlands; to enhance and maintain the value derived from wetlands for the conservation of biological diversity and improvement of livelihoods as well as to build the capacity of practitioners in wetland management, in line with Ramsar convention.

Actions points include the establishment of wetland education centres countrywide and the integration of indigenous knowledge in wetland management. Community participation in wetland management is encouraged through establishment of local management institutions, extraction and sustainable utilization of wetlands products is encouraged, while measures to respond to climate change are encouraged to be put in place. It is also suggested that there should be legislation put in place to protect wetland habitats. Some wetlands would be declared as ecologically sensitive ecosystems, thereby gazetting them for protection and preservation. Agriculture can only be practiced on wetlands under permit from the environmental management agency, and where practiced, must be environmentally friendly, supporting conservation measures for ecosystem health. Some agricultural production, such as rice production, is traditionally only carried out on wetlands. This is due to the perennial availability of water, which is what makes wetlands sensitive. The policy states that discharge of waste into wetlands would be forbidden and would attract a penalty, but it is unclear if this in response to rampant practice of waste disposal into wetlands. It also promotes

enforcement of relevant regulations and laws related to environmental pollution. There is need for development of climate change response strategies to safeguard wetlands and their functions. The policy document does not specifically mention gender, youth or other vulnerable groups.

Natural resources

The third set of policy documents reviewed related to management of natural resources policy. Two policies, the national water policy and the national biodiversity strategy and action plan II (NBSAP2), were reviewed. Natural resources include water, flora and fauna.

National water policy

The national water policy (NWP) was developed and hosted by the now abolished Ministry of water resources development, whose departments have been integrated into the Ministry of lands, agriculture, fisheries, water and rural development. The policy is a response to challenges in water supply, food insecurity (agricultural production), the underperforming economy and climate change which promotes increased evaporation, evapotranspiration, water shortages, floods and runoff. It shows significant concerns for equitable water distribution, but also a need to integrate principles of integrated water resources management as guided by regional and international agreements and blueprints concerning water resources management. Issues of water services pricing appear consistently. In the section on agriculture, there is concern for reduced revenue due to decline in agriculture water usage. The need for water for irrigation in agriculture and for water in other sectors such as mining is recognized and recycling of water is encouraged. The policy recognizes the need for climate change to be integrated into all water resources planning and design of activities.

The NWP interventions are not very specific. The policy states that water allocation between agriculture, industry and domestic among other uses would be reviewed and adjusted accordingly. It also specifies that climate change would be integrated into all water resources planning and designing of activities. There is an indication for investments into hydropower generation. The policy calls for efficient use of water, to reduce wastage, to recycle and reuse water as a principle of sustainability and multi stakeholder catchment management to safeguard water against siltation and other degradation pathways. Whilst the NWP alludes to zero tolerance to pollution of water bodies, enforcement, supposedly the prosecution of offenders, isn't apparent in practice. Polluters are required by the NWP to rehabilitate the affected area if they are found to have polluted. The requirements of water for irrigation and for environmental purposes, specified as riverine and aquatic eco systems, wildlife, wetlands, bird life etc. are noted, but there are no specific guidelines relating to this. Gender mainstreaming is called for, through the representation of women in council positions and boards and representatives as well as in gender sensitive programming.

National biodiversity strategy and action plan (NBSAP)

The NBSAP is the domestication of the United Nations convention on biological diversity (CBD), seeking to conserve and sustainably utilize biodiversity and ecosystems for current and future generations. It seeks to curb biodiversity loss, to safeguard ecosystems, species and genetic diversity by mainstreaming biodiversity across government and society, and this through enhanced participatory planning, knowledge management and capacity building, as well as gender mainstreaming. The strategy and action plan leans on research, innovations, technology as well as indigenous knowledge, and best practices for social, political, and economic development. Zimbabwe developed its first national biodiversity strategy and action plan (NBSAP) in 1998, covering the period 2000-2010. The NBSAP2 aligns with the UNCBD Strategic Plan 2011-2020.

Agricultural crops and livestock species are considered forms of biodiversity which requires conservation and sustainable use. The NBSAP proposes to mainstream biodiversity into all sectors, and incorporating it into national accounting and reporting systems. The first two targets of the NBSAP 2 to be achieved by 2020 were; having at least 75% of the population of Zimbabwe aware of the values of biodiversity and the steps they can take to conserve and use it sustainably; and having biodiversity mainstreamed into all seven sectors (mining, agriculture, health, manufacturing, transport, and education) and incorporated into national accounting and reporting systems. It speaks of broad-based research and technological innovations, community empowerment, participation and sharing of benefits. It promotes communication, education, public awareness, research, capacity building and development concerning biodiversity and includes water and wetlands. The document promotes and supports community based natural resources management. It promotes and lobbies for the development of renewable energy and energy saving alternatives. It advocates for pollution prevention in ecosystems, disaster risk reduction, conservation and protection of threatened species and enhancement of ecosystem resilience. The document targets adaptation and mitigation strategies to reduce the impact of climate change on vulnerable ecosystems and communities.

Climate change

The fourth group of policies and programmes reviewed was classified under climate change. A total of four policies and programmes are reviewed including; Zimbabwe National Climate policy; National climate change learning strategy; Zimbabwe's national climate change response strategy; and Zimbabwe revised Nationally Determined Contributions (NDC). There are a lot of statements in the climate change policy instruments that need to be implemented in agriculture but it is not clear what the coordination mechanisms to achieve this are.

Zimbabwe National Climate policy (ZNCP)

The Zimbabwe national climate policy seeks to create a pathway towards a climate resilient and low carbon economy in which people have enough adaptive capacity and continue to develop in harmony with the environment. The policy recognizes that there are several sectors with a stake in climate change. There is a thrust to improve adaptation and mitigation efforts as funds permit - from national/ domestic, bilateral and multilateral funding mechanisms. It also seeks to harmonize national climate responses with regional and international efforts. Policy statements include efforts to develop capacity in weather and climate research and modelling, technology transfer, capacity building and information sharing; strengthen adaptive capacity and accelerate mitigation measures by adopting and developing low carbon development pathways towards attainment of the nationally determined contributions (NDCs). The national climate policy is the main guide to climate change pathways, and also gives some insights for agriculture, environment and natural resources.

The ZNCP raises the need for a periodic review and update of the agroecological map of Zimbabwe in line with the changing climate, and the need for research on possible climate related shifts in viability of farming systems, including positive effects, such as carbon fertilization. It promotes adaptation and mitigation efforts such as irrigation and water use efficiency, the utilization of varieties with tolerance to climate change and variability and in the livestock sector, good grazing and feeding practices are to be encouraged to minimize greenhouse house emissions, and sustainable land-use systems in line with climate smart agriculture. To further reduce greenhouse gas emission, forest burning should be controlled and land use changes managed. It calls for strengthening of early warning systems for crops, rangeland, droughts, floods, diseases, pests and wildlife movement to enhance preparedness. Forestry resources are recognized as sinks and reservoirs of GHGs, which should be maintained and monitored for carbon stocks. Capacity for research to track and report emissions will be built. Afforestation is encouraged. There are also concerns for maintenance and sustainable use of biodiversity. Water is a climate sensitive resource and management is required, including water harvesting for domestic, animal, agriculture and industrial use. The policy shows concern for public awareness and participation concerning climate challenge and calls for the integration of knowledge into primary, secondary, and tertiary education curricula. The need for gender responsive programming is recognized. It is also indicated that indigenous knowledge should be used to complement scientific knowledge. The form of plans used to implement these statements and the coordination mechanisms in place actions stated that fall under other ministries are still under review.

National climate change learning strategy (NCLS)

The national climate change learning strategy (NCLS) was developed under the United Nations' Climate Change: Learn Southern Africa Initiative, and meant to guide capacity development, that is, learning and skills development for individuals, institutions and systems to improve capacity to cope with and to mitigate climate change. The strategy highlights the need for environmentally friendly approaches, and sustainable use of natural resources. The strategy promotes mainstreaming of climate change learning at all education levels, and across all sectors and support decision-making guided by science, research, education and communication, and the effective implementation of other climate related instruments such as the Nationally determined contributions and the National Adaptation Plans. The strategy promotes innovations for adaptation and mitigation of climate change, taking into consideration gender and the need for partnerships. Continuous learning and the implementation of climate smart agriculture for resilience building are promoted. The contribution of indigenous knowledge to climate change learning is promoted.

The policy mentions the need for research into climate smart agriculture, to strengthen the academic and colleges curricula on climate change, to promote proven climate smart agriculture and to improve access of farmers to information by increasing the extension to farmer ratio, assuming that increasing the supply will meet a demand. This would also contribute to increasing community awareness of climate smart practices, including crop choices. The policy calls for the development of communication and documentation protocols for climate change learning, creation of protocols for cataloguing and documentation of best practices for indigenous knowledge practices by communities, NGO's and CSO's. Gender and youth are mainstreamed in activities.

Zimbabwe's national climate change response strategy (ZNCCRS)

This strategy was designed to mainstream climate change adaptation and mitigation strategies along with disaster risk management in economic and social development at national and sectoral levels through multi-stakeholder engagement. It provides a framework for a comprehensive and strategic approach on aspects of adaptation, mitigation, technology, financing, public education, and awareness, assisting government to strengthen the climate and disaster risk management policies. The strategy emphasizes resource use efficiency, including natural resources, reduction of intensity in carbon pathways (and overall environmental integrity conscious approaches) and the development of climate change resilient systems (including agriculture production for food and nutrition security). Climate change learning supported by research is cited, supported by communication to support wholesome learning in all sectors of the economy and society, with considerations for gender, children and youth and people living with HIV and AIDS. The strategy also sought to develop and maintain an appropriate climate governance framework and institutional mechanisms aimed at coordinating climate change responses.

The ZNCCRS calls for monitoring of greenhouse gas emissions, supposedly by the department of climate change, strengthening the country's mechanisms for GHG emission reduction, strengthening the capacity of the National Meteorological and Hydrological Services to carry out research on climate change through improved data collection and management, and climate modelling. It also advocates the documentation of and tapping into indigenous knowledge systems to complement scientific knowledge for climate change forecasting and early warning systems, coupled with enhanced dissemination at all levels of education to raise awareness on climate change, mitigation and adaptation. The strategy calls for catchment protection, establishment of land use plans, building capacity for forest management in a changing climate and promotion of appropriate climate smart land-use options in the drier natural regions where cattle production and wildlife ranching are the most suitable land-use options. The strategy promotes biodiversity conservation and the integrity of natural ecosystems by using an ecosystem-based approach to adapt to climate change. There is a call for the development of frameworks for sustainable intensification and commercialization of agriculture at different scales across different agroecological zones. It is also proposed to strengthen early warning systems on cropping season quality, rangelands conditions, droughts, floods, disease/pest outbreaks and wildlife movement in order to enhance farmer preparedness. There is a need to align agriculture specialization according to agroecological regions and to integrate stress tolerant species of crops and livestock. Where climate change effects are pronounced to the extent of agricultural potential changing, the agriculture production profile must change in line with the changes.

Zimbabwe revised Nationally Determined Contributions (NDC)

The revised national NDC for Zimbabwe is the second Zimbabwe's NDC, and first to include targets from more than just the energy sector. This NDC is economy wide, and therefore includes agriculture, forestry and other land use sectors. Among the targets to reduce greenhouse gas emissions, it articulates strategies to build resilience to climate change in agriculture and in general, sustainable use of natural resources. Early warning and disaster risk reduction are some of the ambitions. The document enshrines ambitions for climate change mitigation and adaptation balanced with economic development. There is a desire to reduce the amount of GHG emissions from all sectors and to achieve net zero GHG emissions by the second half of the century. The five-yearly updates of countries' NDCs should increase ambition, expand sectoral scope and accelerate implementation of climate actions

Some of the strategies include for the environment and natural resources, to increase area of forest land, to increase area of forest plantation. There is also a plan to develop and promote resilient and sustainable water resources management. Under agriculture, the plan is to build resilience. This includes to reduce area burned in agricultural production landscapes, to develop, implement and scale-up climate smart agriculture solutions and strengthen agricultural value chains and markets. There is also a plan to enhance early warning and climate-related disaster risk reduction systems. With respect to climate change, the plan is to ensure climate resilient infrastructure designs and development and to enhance adaptation and mitigation efforts in all sectors.

Gender, social inclusion, food and nutrition security

The last group of instruments reviewed were classified cross cutting and include gender, social inclusion and food and nutrition security. These are included because they impact AEI outcomes. For example, gender inequity is a common challenge in rural communities in the global south. Women and other vulnerable groups have disproportionately less access to productive resources compared to men. At the same time, women are responsible for disproportionately higher responsibilities at the farm and for other duties such as caring nutrition for the family. Bringing women to the drawing board for agroecology transition will reflect on the real issues and contribute to the discourse leading to true transformation. Two instruments were reviewed, the national gender policy and the food and nutrition security policy.

National gender policy (NGP)

This is the country's second national gender policy, replacing that of 2004, which led to the establishment of a standalone Ministry of women affairs, and significant efforts towards institutionalization of gender issues country-wide. The national gender policy seeks to end gender discrimination and achieve equality between men and women in society, and allow their contributions to development as well as their benefiting thereof, in line with national, regional and international policy frameworks. It recognizes women as 86% of people involved in agriculture production, situating them as vulnerable to the pressures of climate change and environmental degradation. The policy includes a situational analysis of the gender dimension in specific areas such as governance, education and training, productive resources and employment, and environment and climate change among others. It lists eight policy statements with detailed strategies.

With regards to AEI, the NGP speaks to agroecology elements of social values and participation. Social values are embraced when AEI 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 (FAO, 2018). Whilst on the other hand, participation is about encouraging social organisation and greater involvement of disadvantaged or vulnerable groups in decision-making to support decentralised governance and local adaptive management of agricultural and food systems (FAO, 2018). Although rural women play a central role in food systems, they are often at the periphery of decision making.

The document lists strategies that include policy review and gender considerations audits in current policies in environment and natural resources management to identify gaps, recommend advocate for the incorporation of gender perspectives. It further details plans to conduct research and collect gender disaggregated data to highlight inequalities. It identifies a need to build capacity for gender mainstreaming in environment and climate change policies, programmes and national environmental action plans. Agriculture is mentioned within the environment and climate change section, and there are no additional specific points mentioned.

Food and nutrition security policy (FNSP)

The food and nutrition security policy seeks to promote and ensure food and nutrition security for all people at all times in Zimbabwe, particularly the most vulnerable, and in line with cultural norms and values and the concept of rebuilding and maintaining family dignity, to align with national, regional and international agreements such as the millennium development goals (MDGs), as it was developed before the era of the SDGs. A national task force chaired by the country's vice president (VP) is responsible for oversight, supported by an advisory group comprised of representatives from government, the United Nations (UN), donors, NGOs and academia. The policy lists eight principles for guidance and seven commitments to be implemented.

Under commitment one- of the FNSP, focusing on a conducive policy environment, there is a need to direct funds to agriculture and sustainability to "*avoid unplanned negative environmental changes*". While the second commitment is designed to ensure food security for all, including access to adequate, diverse and nutritious food by all people at all times, with strategies that mention the need for sustainable production practices that are responsive to climate change. Conservation agriculture is encouraged, along with other approaches that mitigate the effects of unreliable rainfall. Commitment three includes the need for input programs to be immediately impactful on production (effective). The need for drought tolerant agriculture production options, in particular traditional grains, are recognized as a strategic resource in this policy. However, there is limited mention of production methods. The policy promotes increased agriculture production and diversification responsive to agroecological zone suitability and potential. There is an emphasis on diversity for nutrition security, and advocacy for technologies for mitigation and adaptation to climate change and variability. Concern for the vulnerable runs through the document, with concerns for

gender, women of child-bearing age, children under 5, and people living with HIV/AIDS specifically mentioned. Women are recognized as significant contributors to agriculture sector and requiring that their participation in agriculture not impact negatively on their other roles, such as that of being care givers. The inclusion of the vulnerable groups and sensitivity to nutrition are tenets of agroecology as it is built on inclusivity.

Discussion: Implications for agroecological transition

In this section, we attempt to weave the whole picture, after reviewing instrument by instrument under each theme. We attempt to discuss the implications for the agroecological transition. This section will also provide the background to questions on what innovations can be put together to start or sustain an agroecology transition in Zimbabwe. Agriculture

The agriculture sector can be argued as the backbone for the Zimbabwean economy and is supported by a large family of instruments to guide stakeholders in their performance and interactions. These documents also serve the interests of a majority of the population, who reside in the rural areas and therefore directly depend on agriculture for their livelihoods. The documents suggest a variegated focus on agroecology, with many documents having the rhetoric but not all. We detect that in future a more concerted effort to coordinate and revise policies will be needed. Within agriculture, there is some within sector coordination, in pursuit for support from development partners and private sector to carry the financial burden to produce the agricultural raw materials for their businesses and for research and higher learning institutions to support innovation development. The policies spell out concerns for the social integrity of all through food and nutrition security as a primary basic requirement. With respect to agriculture practices, climate smart, sustainable intensification options are promoted. The pfumvudza program is a bold statement from government on the support for climate smart agriculture. More needs to be done to ensure all instruments are implemented and implemented well in a timely manner. The primary conduit for guidance for the grassroots is through a dense network of agriculture extension personnel, whose performance can directly affect outcomes in productivity. However, farmers are not always in a position to implement, due to financial and social constraints. The requisite budgets for implementation of the policies are usually insufficient, putting the performance of farmers who depend on public support in jeopardy.

Natural Resources

The natural resources (land, soil, water, and biodiversity) theme is supported by policy guidelines from the ministries responsible for agriculture and for environment. The policies recognise the vulnerability of the resources and call for different strategies for their protection. The concern for protection is balanced with the realization of the potential for the natural resources to support human and social needs and therefore there is promotion of sustainable utilization. Support for these messages in the communities is delivered by officers from the departments in the ministry responsible for environment but these are very thin on the ground, compromising performance. They require and receive significant support from the agriculture extension network due to the interdependence of their focus areas. However, it may be taken as a secondary, less mandatory duty. There is poor regulation and policing in this sector.

Environment

Environmental policies support agroecological transition by calling for humans to live in harmony with nature through environmental conservation and sustainable utilization. Awareness raising and policing in communities is carried out by officers from the ministry of environment. There needs to be a wide range of policy tools used and not to depend on policing or sticks in the environment sector. Effective transitioning will arise out of self-policing and ownership of the process by farmers. Officers from the ministry of environment need to be increased and mobility addressed to improve geographical reach. There is a wide gap in awareness and compliance, calling for new arrangements to address these.

Climate Change

The country has taken a stance to mainstream climate change into all sectors across the economy. This is in support of an agroecological transition. There are several documents with strategies for improving learning and for guiding adaptation and mitigation. There is need for awareness raising and for progressively increasing the content of messages to improve adaptation and mitigation results. There is a need for clear plans to implement these policies and monitoring and evaluation plans to verify the capacity development. There is need to implement closely the monitoring of resilience building and performance.

Gender, social inclusion, food security and nutrition security

The cross-cutting instruments on gender, social inclusion and food and nutrition security impact AEI outcomes. There are relationships, some causal, between the results of AEI and food and nutrition security. As an example, the reduction of the dependency on expensive external inputs, can contribute to reduced food insecurity especially for smallholder farmers when less money is spent on buying inputs and used to buy more nutritious food. A second example, agroecological practices can adversely household nutritional status, especially for children, when more labour is required and it is mainly provided by women and girls who typically have the role of preparing meals. In this scenario, gender instruments can contribute to ensuring AEI can achieve intended outcomes. The relationships are indeed complex and include many trade-offs in practice. Understanding these relationships and how instruments in this group can impact AEI and vice versa under specific contexts is critical to achieve intended outcomes. Most documents include the need for inclusivity. However, there remains a gap in acceptance and therefore implementation of these values in the communities. There is need for strategies to change perceptions and improve power dynamics.

Research gaps and future directions on agroecology policy

More research is needed to improve our understanding of how agroecology policy intentions be translated into food system changes delivering food and nutrition within planetary boundaries. . A good place to start is through desk review to understand the extent to which current national policies facilitate or hinder agroecology transition. There is also need for more research to assess awareness and understanding of, and preferences for agroecology among different actors in the food systems. Farmers, unlike processors or policy makers might prefer different elements of agroecology. Finding common ground requires rigorous ex-ante assessments using various tools and methods. One such tool is Best-Worst Scaling (BWS), which is a discrete choice experiment method that gives respondents an opportunity to choose the worst and best among items in a choice set. BWS enables respondents to consider trade-offs among policy options (e.g., money spent on translating agroecology into policy will not be available for other uses). It could also be used to identify the most locally relevant agroecology principles. By choosing the extremes - best and worst - from several short lists of options, BWS is not much of a cognitive burden. And the data from BWS allows computation of cardinal rankings, which indicate by how much a given policy option is preferred. Another important aspect for future research is identification of most policy instruments that can be leveraged to facilitate transition to agroecology.

Conclusions

The policy environment in Zimbabwe, taking into consideration policies, strategies, plans and other policy documents generally support an agroecological transition. The problem statements in the different documents illustrate consciousness of the current challenges threatening the planetary boundaries because of unsustainable production practices and interactions with the environment. Most documents have specific actions that can facilitate the agroecological transition. However, translating policies to communities and capacitating the communities to implement often present hurdles.

There is a realization that messages are fragmented and there is need to integrate the different sector focuses and provide integrated guidelines, and for this there is an agroecological policy currently being developed. There is scope for The Agroecological Initiative to contribute to the development of the national agroecology policy.

There is a need for some cross sectoral coordination so that the messages from the different themes can be coherently translated to the communities. The communities need to be capacitated to engage with the subject matter and contribute to co-creation.

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