







## Article

# Opportunities to Improve Eco-Agriculture through Transboundary Governance in Transfrontier Conservation Areas

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**Abstract:** Transfrontier Conservation Areas (TFCAs) are critical biodiversity areas for the conservation and sustainable use of biological and cultural resources while promoting regional peace, cooperation, and socio-economic development. Sustainable management of TFCAs is dependent on the availability of an eco-agriculture framework that promotes integrated management of conservation mosaics in terms of food production, environmental protection or the conservation of natural resources, and improved human livelihoods. As a developmental framework, eco-agriculture is significantly influenced by existing legal and governance structures at all levels; this study assessed the impact of existing legal and governance frameworks on eco-agriculture implementation in the Lubombo TFCA that cuts across the borders between Mozambique, Eswatini, and South Africa. The assessment used a mixed research method, including a document review, key informant interviews, and focus group discussions. Although the three countries have no eco-agriculture policies, biodiversity practices are directly or indirectly affected by some policies related to environmental protection, agriculture improvement, and rural development. The assessment found that South Africa has the most comprehensive policies related to eco-agriculture; Mozambican policies mainly focus on equity and involvement of disadvantaged social groups, while Eswatini is conspicuous for explicitly making it the responsibility of each citizen to protect and safeguard the environment. The protection of conservation areas is critical to preserving natural habitats and ensuring the continued provision of ecosystem services. The lack of transboundary governance structures results in the Lubombo TFCA existing as a treaty on paper, as there are no clear processes for transboundary cooperation and collaboration.

**Keywords:** biodiversity conservation; ecosystems; sustainable development; resource conservation; poverty alleviation; sustainable livelihoods

## 1. Introduction

Current global environmental changes are being driven by anthropogenic factors that result in climate change, biodiversity loss, depletion and degradation of natural resources, and loss of ecosystem services, among other grand challenges [1,2]. Coupled with population increase, these changes have witnessed unsustainable extraction and the use of water, energy, and food resources, which promoted the enactment of the Sustainable Development Goals (SDGs) in 2015 by the United Nations General Council (UNGA) [3–5]. The increased demand for resources at a time when they are depleting requires transformative and circular approaches that promote circularity in their use [6]; these approaches include a circular economy, scenario planning, nexus planning, one health, strategic foresight, sustainable food systems, and integrated landscape models that inform sustainable resource development and management [7,8].

Integrated landscape approaches are particularly vital for the management of production systems and natural resources in a conservation area that is managed by local communities to produce important ecosystem services [9–11]; it involves long-term collaboration among different communities in neighbouring countries, land managers, and other stakeholders to attain maximum benefits and multiple objectives and expectations within the landscape for local livelihoods, health, and wellbeing [9,12]. Therefore, a landscape approach considers large-scale practices in a holistic and multidisciplinary manner that includes merging natural resource management with socio-ecological and livelihood aspects [12,13]. The approach also considers human activities and their institutions, treating them as integral components of the system rather than as external agents [10,14]. The landscape approach thus acknowledges that sustainable development and resource management require multistakeholder interventions to holistically negotiate and implement actions [12]; this change from the norm is based on sectoral approaches to land management that have generally failed to fully integrate the interlinked fields of forestry, agriculture, health, infrastructure development, and education in resources management [9].

The cohesive attributes of the integrated landscape approach are essential for achieving multiple SDGs as it reconciles synergies and trade-offs at all levels and allows multistakeholder involvement [15]. The establishment of Transfrontier Conservation Areas (TFCAs) in southern Africa in the late 1990s was a response to environmental challenges such as the threats posed by climate change, depletion and degradation of natural resources and incorrect agricultural practices, and at the same time enhancing rural livelihoods that are dependent on these natural resources [16]; this was following the World Summit on Sustainable Development in Rio de Janeiro, Brazil in 1992 where the need for joint management of shared natural resources across international boundaries gained prominence was highlighted. Establishing TFCAs in southern Africa is particularly important considering the transboundary nature of natural resources and river basins [17,18]. Since 2015, TFCAs have been viewed as pathways to achieving SDGs, mainly Goals 1 (no poverty), 2 (zero hunger), and 3 (good health and wellbeing), with synergies with a host of others such as 12 (responsible consumption and production) and 13 (climate action) [19]. The formation of TFCAs was a policy shift from top-down exclusionary conservation approaches that restrict human use of natural resources to those that regard utilisation as an integral aspect of conservation [20]; they are transnational landscapes comprising formal conservation areas that transcend political boundaries that are inhabited by local communities that have common cultures [16], and thus, TFCAs serve the purpose of conservation and sustainable use of biological and cultural resources whilst promoting regional peace, cooperation, and socio-economic development, as they reflect the multifunctional nature of conservation areas [16]. TFCAs, therefore, align with the application of the integrated landscape approach, as they are suitable for climate-smart landscape management. Supporting food production, conservation of ecosystems, and rural livelihoods [21]. Significantly, they promote eco-agriculture, including organic farming, agroforestry, improved water, pasture, and grassland management [22].

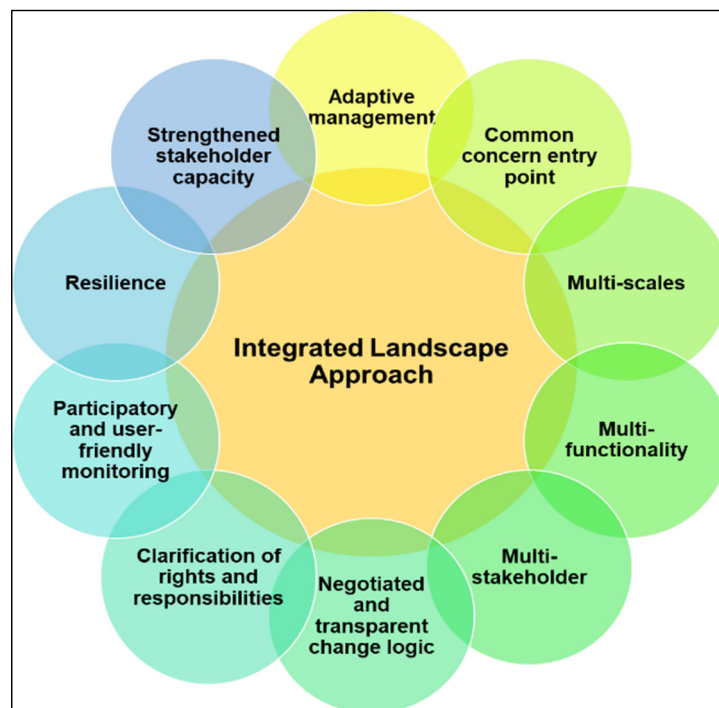
As already alluded to, sectoral or linear approaches that have been used for a long time have failed people and nature due to their limitations in providing integrated solutions for sustainable development. Recent studies acknowledge that contemporary challenges cut-across sectors and, therefore, require transformative approaches in natural resources management instead of “business as usual” [7,14,23,24]; however, successful operationalisation of the integrated landscape approach and the concept of climate-smart landscapes is possible only in the presence of coherent policies, institutional arrangements, and funding mechanisms [14,25]. Collective management of natural resources in the TFCAs is particularly important for adaptation and community resilience to climate change [26] but requires strategic policies and governance structures to account for the specificities and needs of pastoral systems and indigenous peoples [27]; this is critical for the management of natural resources, and for meeting the specific needs of local communities towards building resilience and adaptive capacity to climate change. Enhancing land use and management or adapting farming systems provides pathways toward long-term adaptation and resilience benefits [28]. As this transition often implies an immense commitment of financial resources, either in inputs or labour, and/or reduced income, it requires policies and governance instruments to guide and facilitate the transition [27,28].

According to globally accepted conservation norms and practices (global environmental governance practices), the regulation and management of locally held resources are associated with challenges posed by complex networks of actors [29,30]; this applies to TFCAs, as they are a model of global environmental governance characterised by diverse players at the global, regional, national, and local levels, including international financial institutions, non-governmental conservation agencies, private investors, national governments, and indigenous communities [29]. Most TFCAs in southern Africa were established through a top-down approach, spearheaded by high-level non-local actors, while communities were mere recipients rather than full partners in the process [31]. The State tends to play a dominant role, and there is a high potential to exclude local communities in decision-making, which may further marginalise and isolate the border communities and create tensions [31]. In some instances, the establishment of TFCAs worsened land disputes with communities when new national parks were gazetted, e.g., the Limpopo National Park in Mozambique [16,20]. Due to such experiences, it is argued that the establishment and management of TFCAs are practically not characterised by bottom-up development, as is often claimed in theory [20].

An area or resource straddling the borders of more than one country is associated with governance dilemmas unique to itself and general conflicts such as radical bioregionalism versus scientific eco-regionalism, eco-regionalism versus neoliberalism, TFCAs planning versus national sovereignty and top-down versus bottom-up managerial processes [20]. Bioregionalism promotes political autonomy, decentralised governance, grassroots empowerment, social equity, and self-sufficiency and rejects any centralised authority [32]. On the contrary, eco-regionalism upholds top-down approaches and advocates for power for scientists and technocrats [32]. As a large-scale regional planning and investment initiative involving different institutions and varying degrees of collaboration, TFCAs are extremely complex systems [16]. Given these observations, it becomes prudent to establish coherent strategies and policies that drive effective environmental governance within the TFCAs. Effective legal and institutional frameworks that govern TFCAs should be the interlinked ten principles for integrated landscape approaches (Figure 1) [10].

Considering the importance of dedicated legal and governance structures in operationalising the integrated landscape approach, this study sets to assess the impact of existing policies and related institutions on integrated landscape management in the Lubombo TFCAs, a transboundary conservation area shared by Mozambique, Eswatini, and South Africa. The assessment includes the impact of the existing legal and governance structures in enhancing eco-agriculture planning, an integrated agriculture-conservation landscape approach intended to simultaneously develop sustainable food production systems, biodiversity conservation, enhancement of ecosystem services, and poverty alleviation [33,34].

Therefore, this study addresses the impact of existing policy and governance structures on agriculture–biodiversity integration and identifies the priority requirements for adaptation and resilience building.



**Figure 1.** The ten interlinked components of an integrated landscape approach. Adapted from Sayer et al. [10].

## 2. Materials and Methods

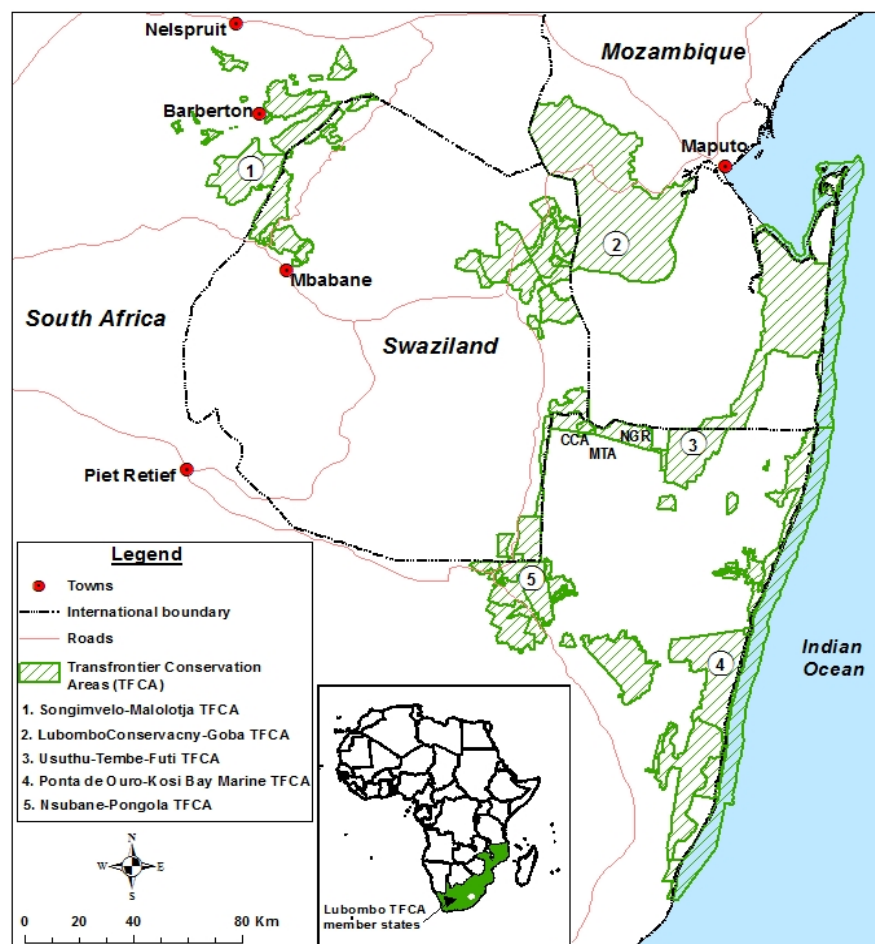
### 2.1. Description of the Study Area

The Lubombo TFCA (Figure 2) spans an area of 4195 km<sup>2</sup> distributed over South Africa (66%), Mozambique (26%), and Eswatini (8%); it is a complex trilateral conservation area comprising five separate units, namely, Ponta do Ouro–Kosi Bay (South Africa and Mozambique), Usuthu–Tembe–Futi (Eswatini, South Africa and Mozambique), Lubombo Conservancy–Goba (Eswatini and Mozambique), Nsubane–Pongola (Eswatini and South Africa), and Songimvelo Malolotja (South Africa and Eswatini) (Figure 2).

This study focused on the Usuthu–Tembe–Futi unit, the largest of the conservation areas comprising the Tembe Elephant Park, Ndumo Game Reserve, and Tshaneni and Usuthu Gorge Community Conservation Areas in South Africa, and the Usuthu area in Eswatini, the Maputo Special Reserve (Reserve Especial de Maputo) and the Futi-corridor in Mozambique. The Futi-corridor is a swamp system that links the Maputo Special Reserve to Tembe Elephant Park, restoring ancient elephant foraging routes and reuniting the population that used to move freely between Mozambique and South Africa before being separated by game reserves and international fences and the community areas between these different reserves [35].

Adjacent to Ndumo Game Reserve and the Usuthu Gorge Community Conservation Area (UGCCA) is the Mathenjwa Tribal Authority (MTA), a smallholder farming community in the northern part of South Africa’s KwaZulu-Natal province. The community falls within the Maputaland region, which is recognised for its large numbers of endemic plant species and endangered vegetation types [36]. For this study, the MTA was divided into three zones based on topographical and agroecological conditions: (i) lower zone—a low-lying gently sloping coastal plain, around 150 m ASL; (ii) middle zone—a rugged and mountainous area of around 350 m ASL, transitional between lower and upper zones; and (iii) upper

zone—a dissected plateau, around 550 m ASL [37]. Annual rainfall ranges between 500 and 800 mm, and increases from the lower to the upper zone. The zoning was intended to reveal possible variations in socio-economic and biophysical aspects of the landscape.



**Figure 2.** Location of Usuthu–Tembe–Futi TFCA within the Lubombo TFCA. MTA = Mathenjwa Tribal Authority; CCA = Usuthu Gorge Community Conservation Area; NGR = Ndumo Game Reserve.

## 2.2. Data and Information Collection

The study used a qualitative approach that included a document review, key informant interviews, and focused group discussions. Being multidisciplinary research, the study drew experts from different fields. The document review focused mainly on searching for policies and related frameworks for managing conservation areas at national, transboundary, and regional levels. The following qualitative data and information collection methods were used to identify the opportunities to improve eco-agriculture through transboundary governance in the Lubombo TFCA:

- i. Review of public policy and legislative documents. The document review answered the following questions:
  - a. What are the existing legal and governance structures within each of the riparian countries sharing the Lubombo TFCA and at the tripartite and regional levels?
  - b. What are the integrated landscape approaches implemented in the Lubombo TFCA, and how effective are those approaches?

The documents consulted were selected purposively based on relevance to the subject under study and availability. The documents included the General (Lubombo) TFCA Protocol; the Usuthu–Tembe–Futi (formally the Ndumo–Tembe–Futi) Transfrontier Conservation and Resource Area Protocol; (Governments of South Africa, Mozam-

bique, and Eswatini, 2000, 2000a) and policy and legislative instruments relating to environmental, social or economic issues for the three Lubombo TFCA countries. The documents were mainly at the national level, but in the case of South Africa, some policies formulated at the provincial level were accessed and analysed. We also consulted policies at the Southern Africa Development Community (SADC) regional level, such as the Southern African Development Community SADC Programme for Transfrontier Conservation Areas. To get more insights on the subject and help interpret the findings of the documents under review, the study conducted key informant (KI) interviews and Focus Group Discussions (FGD).

- ii. Key informant (KI) interviews. Ten semi-structured KI interviews were conducted in South Africa and seven in Mozambique to gather opinions from experts and practitioners on policy and governance issues impacting agriculture–biodiversity integration initiatives. The interviewees were managers or representatives of key stakeholder organisations identified in a preceding stakeholder analysis study [22] and local traditional leadership. Interviewees were selected to include, where possible, various tiers of government, that is, tribal and traditional, local municipal, provincial, national, and TFCA at the inter-governmental levels.
- iii. Focus Group Discussions (FGD) were conducted in the MTA to investigate community perceptions regarding who should formulate laws governing access to natural resources in their communities. Six FGD, two from each zone, were organised for the local communal farmers. Each group had an average of 12 participants of mixed gender and age. The KIs and FGD participants were selected purposively based on their availability and knowledge about the study area.

### 3. Results and Discussion

#### 3.1. Governance Structures Impacting Eco-Agriculture

Due to the multi-sectoral nature of the integrated landscape approach in promoting eco-agriculture, diverse policies and legislative instruments were found to directly or indirectly impact eco-agriculture implementation in the Lubombo TFCA. Examples include legislation relating to agriculture, forestry, wildlife management, biodiversity conservation, rural development, tourism, and trade. Policies relating to poverty alleviation, sustainable farming, sustainable natural resources utilisation, stakeholder participation, gender equity, and reward for biodiversity conservation apply to eco-agriculture since these issues fall within the goals of eco-agriculture.

##### 3.1.1. SADC Regional Level

At the SADC regional level, several protocols and strategies have been developed to provide an enabling environment for the establishment and development of TFCAs. These include the SADC Protocol on Wildlife Conservation and Law Enforcement (1999), the SADC Protocol on Forestry (2002), the SADC Protocol on Shared Water Courses (2002), and the SADC Regional Biodiversity Strategy (2006). These policies and legal frameworks guide and complement the SADC TFCA Programme, whose mission is to transform SADC into a functional and integrated network of transfrontier conservation areas where shared natural resources are sustainably co-managed and conserved to foster socio-economic development, and regional integration for the benefit of people living within and around TFCAs, the SADC region, and the world. The programme has seven key components with specific objectives, activities, and outputs carried out at the regional, sub-regional, and national levels, including (a) advocacy and harmonisation, (b) enhancement of financing mechanisms for TFCAs, (c) capacity building for TFCA stakeholders, (d) establishment of data and knowledge management systems, (e) enhancement of local livelihoods, (f) reducing the vulnerability of ecosystems and people to the effects of climate change, and (g) development of TFCAs into marketable regional tourism products.

### 3.1.2. South Africa

South Africa developed various tools for working in different production sectors that are also relevant to managing integrated farming and biodiversity conservation landscapes. The tools include best practice guidelines, biodiversity stewardship agreements, extension services, agricultural extension to promote sustainable farming, guidelines for sustainable harvesting of resources, training, eco-labelling, and certification; however, the tools are scarcely implemented, and their existence on paper does not reflect reality. Three key pieces of legislation collectively define the principles and procedures governing biodiversity management in the country: the National Environmental Management Act (NEMA) of 1998, the Protected Areas Act of 2003, and the Biodiversity Act of 2004.

Several other legal and governance instruments relating to water, forests, marine resources, and coastal management also potentially impact agriculture–biodiversity integration in the TFCA. For instance, the Constitution of the Republic of South Africa outlines basic environmental rights and assigns powers and functions for environmental management [38]. The NEMA is the overarching framework setting out principles and procedures for environmental management, assessment, and governance. The National Environmental Management: Protected Areas Act (NEMPA) of 2003 provides for the establishment and management of protected areas (PAs), while the National Environmental Management: Biodiversity Act (NEMBA) of 2004 brings out the tools for biodiversity planning and the management of biodiversity outside of PAs. The adoption of the NEMBA was a significant milestone in South Africa’s legislative reform process since this was the first time the systems approach to environmental management was incorporated into national legislation [39]. South Africa also developed a Climate Change Response Strategy in 2004, which focuses largely on building resilience and considers the threats to biodiversity posed by climate change [40]. Key informant interviews in this study confirmed that these and other modern environmental legislation were very sound but barely enforced. Reasons for the lack of enforcement include the unavailability of human or financial resources and a lack of political commitment.

### 3.1.3. Mozambique

The Constitution of the Republic of Mozambique addresses matters relating to the environment and quality of life. Concerning economic, social, and cultural rights and duties, the Constitution accords people the right to live in a balanced environment; it commits the State and local authorities, in collaboration with other appropriate partners, to adopt policies for environmental protection and care for the rational utilisation of all-natural resources. The Environment Law (*Lei do Ambiente*, Law number 20/97) is the basis for all legal instruments relating to environmental conservation in Mozambique. Article 4 of the law establishes basic principles for environmental management, including (a) Rational utilisation and management of the environment aimed to promote improved quality of life of citizens and the maintenance of biodiversity and ecosystems, and (b) Recognition of traditions and local knowledge, which might contribute to the conservation and preservation of natural resources and the environment.

This law recognises the interdependence between conservation and livelihood improvement and upholds indigenous knowledge systems compatible with biodiversity, thus promoting the achievement of TFCA objectives. Mozambique’s land and all-natural resources are state property and cannot be sold or otherwise alienated, mortgaged, or encumbered. The fact that the land cannot be privately owned might discourage long-term investment in the land; however, since national individuals or corporate persons can obtain the right of land use and benefit, including passing on to descendants, a lack of title deeds might not necessarily prevent investment in agriculture–biodiversity integration by the citizens.

Mozambique’s policies and legal frameworks provide a firm basis for improving environmental planning and natural resource management in the country. The policies encourage awareness campaigns in communities. For example, meetings were held along

the Futi corridor to discuss and seek the consent of the local communities on several issues. For example, issues about proclaiming the land a protected area proposed compensation mechanisms and involvement of local communities in the management of the area. Key informants interviewed in Mozambique indicated that there were sound environmental and livelihood policies in the country, but these were barely implemented. The interviews revealed that policy implementation was a challenge due to the inaccessibility of many rural communities, reluctance to comply with perceived 'imposed' public legislation, and lack of capacity on the part of the Government departments concerned.

#### 3.1.4. Eswatini

The Constitution of the Kingdom of Eswatini of 2005 provides for environmental management activities in the country. The Environmental Management Act, Act Number 5 of 2002, is central to the environmental laws. It establishes a framework for environmental protection and the integrated management of natural resources on a sustainable basis. The Act promotes the enhancement, protection, and conservation of the environment, and it provides for the sustainable management of natural resources. The concept of agriculture–biodiversity integration or biodiversity protection in agricultural areas is neither mentioned nor implied in the laws relating to agriculture (i.e., production of crops, fruits, and animals) evaluated in this study. The acts include the Plant Control Act of 1981, the Land Agricultural Loan Fund Act of 1929, the Cattle Routes Act of 1918, the Great Stock Brands Act of 1937, and the Seeds and Plant Varieties Act of 2000; it was observed that the agriculture and related laws of the country were generally old and missed current topical aspects such as biodiversity conservation and ecosystem management.

The Constitution recognises gender equity in terms of access to land and environmental resources. It assigns every citizen the duty to protect and safeguard the environment for the present and future generations. The means for communities can use to protect the environment are not suggested in the legislation; this leaves room for citizens to be proactive and identify strategies appropriate to local circumstances. Improving the policies to empower the citizens to protect the environment and be explicit on the benefits entitled to the citizens in this regard could encourage investment in agriculture–biodiversity integration.

#### 3.1.5. Country-Level Comparison

There are no explicit eco-agriculture or sustainable agriculture policies in South Africa, Eswatini, or Mozambique, and the study did not establish any plans to formulate such policies. Each country has made considerable efforts toward integrating environmental laws. The countries are at different levels in terms of agriculture–biodiversity integration. In particular, South Africa's Conservation of Agricultural Resources Act (CARA) of 1983 explicitly provides for agriculture–biodiversity integration. Eswatini and Mozambique do not have laws similar to CARA. The development of similar legislation could enhance agriculture–biodiversity integration in the TFCA. Comparing legislation applicable to environmental protection, farming, and livelihoods in the three nations reveals South Africa's legislation as the broadest and most detailed in its scope. Eswatini's legislation is the least comprehensive, but it is prominent for emphasising environmental protection as a responsibility for every citizen more explicitly than in South Africa or Mozambique. Policies in all three countries recognise social matters of global concern, such as gender equity. The Mozambican Constitution is the most explicit in emphasising equity and involvement of disadvantaged social groups, including women, youth, and local communities. However, a common phenomenon emerging in these three countries is a general lack of implementation of the existing environmental policies and acts.

The policies relating to the environment and livelihoods in the three countries support the provision of assistance to local communities by the central or local governments, such as the development of basic infrastructure, service provision, and technical support. For instance, Sections 36 and 37 of Chapter 10 of the South African Communal Land Rights Act of 2004, Articles 88 to 91 of the Mozambican Constitution, and Chapter V Section 60 of



the Constitution of Eswatini. Giving support to communities can empower them to play their role along with other stakeholders in the TFCA. The Mozambican legislation is very explicit in encouraging stakeholder cooperation, particularly involving local communities, the State, and private investors. The Mozambican Law on Forestry and Wildlife, Law No. 10/99 Article 3b, for instance, states that economic and social development policies on the preservation and conservation of biodiversity should involve local communities, the private sector, and civil society in general, to achieve sustainable development in the present and for generations to come. The policies do not facilitate collective stakeholder action by making it attractive or mandatory. Enhancing collaborative work among government departments, development partners, and research institutions, and encouraging sharing of experiences and approaches to agriculture and natural resources management could promote balanced landscape management and the realisation of synergies.

Policies need to promote multistakeholder processes to involve local communities as part of a broader network toward managing sustainable ecosystems. Conservationists, agriculturalists, and social workers operating in an eco-agriculture landscape could be the vehicles driving multistakeholder activities. Respectively, these groups can promote biodiversity conservation, agricultural production, and livelihood improvement. Collectively, they can offer a wide range of support to local farmers, such as advocating for lowering marketing costs, assistance in transportation of inputs or produce, and giving guidance regarding access to loans or technologies required.

Overall, it has been observed that existing policies provide for the ecosystem management concept, which recognises that ecosystems must be managed as a whole, which is central to eco-agriculture. An example is Article 2(2) of the General TFCA Protocol and Article 2(1b) of the Usuthu–Tembe–Futi TFCA and Resource Area Protocol. Where agricultural lands occur in proximity to protected areas, pro-eco-agriculture policies can provide for the full integration of conservation areas and cultivated lands within participatory planning frameworks [41]. Practitioners, local communities, and other stakeholders need to maximise the effort to apply the ecosystem approach in these areas and to enable the management of local communal areas as part of ecological matrices, including surrounding protected areas.

Observations from KI interviews showed that a practical effort is needed in transnational planning and development of infrastructure (water supply and roads), conservation development, poaching management, tourism development, agricultural development, and law enforcement [14]. The opening up of the Futi Corridor as an extension of the Maputo Special Reserve in 2011, the translocation of wildlife from South Africa to Maputo Special Reserve, and the approval of an integrated development plan and joint operational strategy by the TFCA's joint management board are significant moves towards TFCA goals [9]. There is no consistent application of policy relating to biodiversity conservation within the TFCA, particularly the conservation of endangered wildlife, such as rhinoceros; thus, more needs to be done to achieve the long-term goals of the TFCA. There tend to be more talks and proposals (of joint management frameworks) than implementation. The lack of policy implementation makes the TFCA concept exist more on paper than on the ground.

### *3.2. Sector-Based Agricultural Development Initiatives and Conservation Policies*

The KI interviews with stakeholders showed a lack of coordination between conservationists and agricultural extension workers as a stumbling block against harmonising conservation and production objectives in the Lubombo TFCA. South Africa's CARA opened the way for the integration of agriculture and natural resources conservation; however, if the integration becomes practical and effective, conservation agents require training in agriculture while agriculture extension officers require training in conservation. Empowering field and extension workers would enable them to appreciate the integration of sectors and assist farmers in integrating production and conservation activities [42]; this would signify a departure from the traditional policies that promote sector-based management and development of conservation and agriculture initiatives.

Appointing experts with an environmental science background in key positions in the agriculture sector could foster the harmonisation of agricultural development and biodiversity conservation policies. Traditional laws need to be practically recognised and applied in regulating access to natural resources and landscape management per Article 24(2) of the Land Law of Mozambique or Chapter 12 Section 211(3) of the Constitution of South Africa. In Eswatini, the application of traditional law is sanctioned by section 252(1) (c) and subsection (3) of the Constitution. These make provision for the principles that allow the recognition, adoption, and enforcement of both the modern Eswatini governance structures with traditional laws as part of the legal framework of Eswatini, provided that they are consistent with the provisions of the Constitution or other regulatory frameworks of the country.

### 3.3. Community Participation in the Policy-Making Process

During FGD, local communities gave their opinion about who should formulate laws governing access to natural resources in their area. The following are typical of the responses:

- “The local municipal officers must make rules for their respective departments because they work closely with the communities; moreover, the *Inkosi* (king) with his tribal council since they know, in detail, the way of life in the communities.”
- “Since the *Inkosi* is a link between the central government and local communities, he should take up locally generated policies to higher forums.”
- “The National Government must recognise the local communities’ wishes. We are the Government and must be responsible for making our laws.”
- “Community members should form a committee that formulates laws through consultation with the *Inkosi*; we have many educated people in the community and can make our own laws.”

These opinions and sentiments generally reflect a desire to exercise the right to make policies on access to natural resources in the locality or to determine the governance mechanisms; they provide clues on who should be engaged in the formulation of sustainable agriculture–biodiversity policies within a TFCA.

## 4. Recommendations

The provision of secure land tenure arrangements to communal farmers (to ensure the security of investment) can enhance environmental management and possibly encourage smallholder farmers to make long-term investments which are important for sustainable landscape management. Coordinated regional development policies, such as those relating to the development of transport, tourism, or agriculture–biodiversity integration, need to be developed and implemented. As it stands, the legal and policy frameworks remain on paper without proper implementation mechanisms; this calls for effective transboundary coordination among all stakeholders involved. Some priority needs for adaptation and enabling mechanisms required to promote a in TFCAs include:

- Policy and legislative adjustments. The analysis of existing governance structures impedes initiatives to adopt, implement and operationalise integrated landscape approaches in TFCAs. In the wake of global change, policy and institutional frameworks should be updated to integrate conservation, agricultural production, and rural livelihoods; and explicitly provide for adaptation and resilience strategies. Local, national, and international policies and institutions should promote the adoption of transformative initiatives needed for scaling up agriculture–biodiversity and their integration in the TFCAs.
- Transboundary coordination should be scaled up. The structures established for implementing the TFCA project (the Trilateral Ministerial Committee, the Trilateral Commission, and TFCA Task Groups) must step up coordination and cooperation between the several players involved. Such coordination is important for achieving combined efforts toward TFCA goals.

- Enhancing infrastructure in the communities within the TFCA could help resolve the inaccessibility challenge; however, the new infrastructure will need to be designed thoughtfully to ensure that it does not threaten biodiversity and ecosystem services but rather support them. On the national scale, addressing the prevailing low literacy levels could improve the communities' appreciation of public legislation and sustainable development principles. Improved infrastructure, literacy rates, and environmental awareness could significantly promote agricultural production and biodiversity conservation.
- Harmonisation of policy and governance mechanisms. Gaps in policies and legal and institutional frameworks exist between Mozambique, South Africa, and Eswatini, and these derail the successful functioning of the Lubombo TFCA. The process of harmonising policies of more than two countries is quite complex, considering that the sovereignty of each country must be considered and respected. Key policy areas requiring harmonisation and coordination include land tenure regimes, land-use planning, and biodiversity conservation and management. The local traditional governance and access regimes need harmonisation and integration of national governance structures to facilitate sustainable resource utilisation.
- Creation of conditions conducive to the involvement of local communities. The case study of the MTA has confirmed the importance of a bottom-up approach in policy development; this motivates communities to implement the policies and take the initiative to sustainably manage natural resources. The TFCA administrative structures should engage rural communities and other stakeholders in harmonising policies, governance mechanisms, and decision-making. Stakeholder participation is essential for getting support, especially from local communities, to enhance the sustainable management of resources in conservation areas.

#### *4.1. Eco-Agriculture Policy Development Considerations*

The development of national eco-agriculture policies is a matter of public interest in eco-agriculture development, as it includes biodiversity conservation, agriculture development, ecosystem services, and livelihood improvement. The objectives of eco-agriculture are complex and relate to the mandates, effort, and expertise of various stakeholders; it might be a challenge to get the different stakeholders (including public, private, local, and international institutions) whose interests may conflict, to work together. Indeed this challenge could be why no country has developed an explicit eco-agriculture policy so far despite the widespread recognition of the eco-agriculture framework [42,43].

It may be argued that an explicit eco-agriculture policy is not a prerequisite but a set of governance measures (from the local to the international level) that have the effect of encouraging eco-agriculture [44]; however, it should also be noted that effective landscape planning and rural development require integrated coordination of environmental and agricultural policies. Current legal and institutional frameworks in South Africa, Eswatini, and Mozambique tend to separate action on conservation, agricultural production, and rural livelihoods. Local, national, and international stakeholders need to work together and promote a coordinated scaling up of eco-agriculture initiatives in the TFCAs.

As agriculture–biodiversity policies should address gender issues; this requires that gender be engaged in policy formulation. In a survey of the MTA, it was found that 47% of the households were headed by women. Women ran a quarter of the households headed by men in the absence of their husbands, who lived and worked in cities; thus, two-thirds of the households in the community were practically women-headed. Literature shows that women continue to make essential and enormous contributions to the environment at the household, local, and community levels. Still, their benefits are not commensurate with their contributions [45]. Therefore, policy should be gender-sensitive by incorporating gender issues and benefit a greater proportion of women-headed households as they form most of the households. Current global environmental and food production systems need to develop innovative approaches to transform human-inhabited landscapes and

improve overall performance and sustainability [46,47]. As eco-agriculture gains increasing recognition worldwide, many countries are likely to consider developing national eco-agriculture policies.

There is a general lack of implementation of existing policies in the three countries under focus. A potential challenge for eco-agriculture policy in these countries is the lack of a dedicated global and national implementation policy framework. A suggested strategy is to integrate and harmonise existing sector-based policy frameworks that promote sectoral goals without considering the impact on the other sectors [23]. Cross-sectoral interventions promote stakeholder participation during policymaking and guide the implementation processes [18]. Eco-agriculture policies should consider ensuring equity, the integration of traditional norms, and devolution towards empowerment of local communities to appeal to rural farming communities. Greater political will is required to achieve extensive and effective implementation of regulations that harmonize traditional and statutory instruments [48]. Mozambique, South Africa, and Eswatini are expected to facilitate the enjoyment of appropriate rights by the local communities, per Article 2(9) of the General Transfrontier Conservation and Resource Area Protocol. Human rights and the environment are inextricably linked, such that recognition of the rights is not only important for sustainable community-based resource management but is fundamental to effective enforcement of environmental protection [48].

#### *4.2. Significance of Integrated Landscape Approaches in Conservation Areas*

The potential of integrated production and conservation systems to improve food security, reduce poverty and protect biodiversity is hampered by policy and institutional frameworks that were historically designed to separate conservation from production land uses and to emphasise short-term productivity goals for agricultural systems [48]; these policy barriers hamper the implementation of eco-agriculture or other landscape management approaches [9,49].

Further research is required to establish the policy and institutional changes needed to allow a sustainable transition to integrated production, management, and conservation of natural landscapes. Eco-agriculture can contribute to achieving TFCA objectives, national goals, and SDGs, but the success of eco-agriculture in a TFCA is dependent on the effective functioning of the TFCA. Eco-agriculture is a pathway to stimulate rural development, create job opportunities to curb rural to urban migration, and sustain rural livelihoods that depend on natural resources [17]; it enhances resilience and provides pathways toward climate change adaptation [50,51]. The focus area in the present study constitutes a mosaic of unplanned eco-agriculture involving spontaneous practices (such as traditional tree-crop combinations, grass strip contours, and hedgerows) but whose sustainability may not be guaranteed given the increasing human population densities [22]. These practices create a conducive environment for local communities' involvement in decision-making. Effective promotion of eco-agriculture and sustainable regional development, as foreseen by the establishment of TFCAs, is needed to understand the inherent problem areas in governance. Given the growing recognition of TFCAs' contribution to solving the environmental and social challenges facing the world, research towards improving the efficiency of these systems is essential.

## **5. Conclusions**

This study evaluated public governance and institutions that impact eco-agriculture planning and implementation in the Lubombo TFCA, a transboundary FFCA shared by Eswatini, Mozambique, and South Africa. A wide range of policies and legal frameworks were identified as having either a supportive or suppressive effect on agriculture–biodiversity integration. Although the findings discussed in this paper are specifically about the Lubombo TFCA, the results apply to other TFCAs in southern Africa. The literature review has indicated that the widely acknowledged benefits of TFCAs, such as their contribution to biodiversity conservation, rural livelihoods improvement, and economic

development, may not be realised unless there is an integrated and holistic approach that includes multistakeholder participation in formulating governance structures. An integrated approach, such as the landscape approach, is critical for achieving the maximum benefits from transboundary conservation areas. Adopting systematic approaches to inform resource management, utilisation, and sharing is critical for enhancing rural livelihoods and resource security and achieving SDGs. An important finding from this study is the need for an integrated and transformative environmental policy that embraces the potential and rights of rural communities in the conservation of biodiversity. Rural communities can successfully direct eco-agriculture landscape management with the support of dedicated legal and institutional frameworks. Policy provides pathways to build farming communities' landscape management capacity, including land use planning and rural development. An important recommendation is to engage stakeholders in developing coherent strategies that lead to sustainable land and rural development through transboundary conservation areas.

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