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Securing Land and Water for Food Production through Sustainable Land Reform: A Nexus Planning Perspective

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Abstract: Land and water are vital resources for sustaining rural livelihoods and are critical for rural development as they form the basis of agriculture, the main economic activity for rural communities. Nevertheless, in most developing countries, land and water resources are unevenly distributed due to historical and socio-economic imbalances, hence the need for land reform policies to address these disparities. However, redistributing land without considering the interconnectedness of land and socio-ecological systems can compound existing food and water insecurity challenges. This study used a mixed research method, integrating both quantitative and qualitative data, to develop a framework to guide policy and decision-makers to formulate coherent strategies towards sustainable land redistribution programmes and achieve the desired outcomes. The approach was vital for integrating the broad and intricate interlinkages between water, land, and environmental resources. Therefore, the framework is based on transformative and circular models for informing strategic policy decisions towards sustainable land redistribution. The focus was on South Africa's land redistribution plans and the implications on water and food security and rural development. The developed framework is designed to ensure the sustainability of agrarian reform and rural economic development. It is framed to address land and water accessibility inequalities, promote water and food security, and enhance rural development. A sustainable land redistribution increases the adaptive capacity of rural communities to climate change, enhances their resilience, and provides pathways towards Sustainable Development Goals (SDGs).

Keywords: water and food security; land reform; sustainability; nexus planning; rural livelihoods



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1. Introduction

Rural poverty in many developing countries is mostly due to historical imbalances, including human displacement and inequitable distribution of land and water resources [1,2]. Historical imbalances are the major causes of serious tensions and conflicts in many parts of the world [3]. The challenges call for urgent policy interventions to guide the redistribution of land and water resources equitably, from current users to indigenous and previously disadvantaged groups, to reduce poverty and conflicts and share resources equally [4]. Land redistribution programmes are meant to address the many years of colonial and apartheid policies that gave preferential treatment to a specific group of people [5]. A classic example of such a policy is the Native Land Act of 1913 in South Africa, which displaced indigenous black people without compensation from productive lands to pave the way for white-owned farming and mining sectors [6]. The Act was formulated so that the disadvantaged remain docile, providing cheap labour and being in a vicious poverty cycle trap [6].

In Africa, colonial policies displaced more than 15 million native people by placing them in overcrowded former homelands where poverty is widespread due to a poor natural resource base [7]. Former homelands, also called Bantustans in South Africa, are poorly resourced areas where native black people were resettled during the apartheid era to pave the way for white settlers [7]. The poorly resourced former homelands have an average landholding of about 2 hectares per household [7,8], which does not allow development and economic growth. Estimates indicate that over 40% of people living in former homelands live below the poverty line as agricultural output is very low [7]. Agricultural production in these former homelands accounts for only 6% of the gross value of agricultural production [9]. This is quite the opposite within the large and well-resourced commercial agricultural sub-sector, where there are vast tracts of land per farmer, with a sufficient natural resource base [10]. Therefore, there are significant variations in former homelands' agricultural productivity due to inequalities in the distribution of natural resources, impacting household food security [11]. Thus, the need for equitable access to productive assets highlights the fact that without access to water and land resources, the poor will always have less economic flexibility and opportunities and will always remain vulnerable, not only to economic pressures but also to issues related to basic human rights [12,13].

The lack of access to water and land resources has caused the disadvantaged to be perpetually poor. The inequalities in resource distribution force the indigenous groups to accept low-paying jobs and therefore have always suffered from poor health and low levels of education and training [12]. This is evident in former homelands where smallholder farmers abandon farming to explore other alternative sources of income in urban areas. However, a key component of rural development in any society is access to land suitable for agriculture and water for irrigation by smallholder farmers who have always remained disadvantaged [10,13]. The consequence has seen the poor perpetually remain immersed in the poverty cycle, which prevents them from building the social capacity necessary to implement public participation in water resource management [14]. Apart from constraining progress towards Sustainable Development Goals (SDGs), land and water access inequalities could be dire. It may lead to undesired social ills and require urgent redress [15].

Despite the need for land reform in many developing countries, land redistribution programmes often result in unintended outcomes as they have failed to recognise the interconnectedness between land, water, socio-economic and environmental sectors, and the capacity of beneficiaries [16]. Lack of cross-sectoral intervention in land reform has often caused maladaptation, compounded rural poverty, and worsened water and food insecurity [16,17]. As much as there is a need to address these historical imbalances, land redistribution policies and programmes should consider the intricate interlinkages between land and water, and the capacity of smallholder farmers [18]. One of the main challenges facing developing countries is facilitating equitable distribution of land and water resources as a precondition for poverty reduction and widely shared economic growth [19]. In South Africa, for example, water and land reform policies have been embedded within a complex socio-political and socio-economic environment and yet have occurred largely independently [13,20]. The failure to integrate land redistribution policies with the linkages between water and land resources often causes challenges that impede the success of land and water reform programmes [20,21]. Concerted multi-stakeholder engagements and cross-sectoral interventions are a prerequisite at all levels, from the local to the national levels, and from both the public and private sectors for an integrated and successful land reform programme that results in desired outcomes [22–24]. South Africa has developed policy frameworks that acknowledge integrated and transformative approaches to achieve a sustainable land reform programme [5,13,25].

Therefore, land and water reform programmes must be aligned at both the policy and implementation levels, as both are the cornerstones of rural development strategies [26]. Addressing this integration requires policy and decision-makers in the land and water

sectors to formulate coherent and integrated strategies and policies that result in sustainable rural development and enhance water and food security. One such strategy to achieve sustainability in land redistribution programmes is to adapt transformative approaches such as nexus planning, strategic foresight, horizon scanning, just transition, sustainable food systems practices, circular economy, and scenario planning that guide the formulation of coherent strategies for sustainable rural development [23]. A fundamental question addressed in the study is related to the pathways needed to achieve desired outcomes during land redistribution. Based on this question, we developed a framework based on nexus planning to guide policy and support decision-making in developing coherent strategies that lead to sustainable implementation of land reforms without compromising national water and food security. Nexus planning was a preferred approach to develop the land redistribution framework as it can integrate distinct but interlinked sectors of land, water, environment and food [27,28]. The study focused on South Africa, a country where land and water inequalities remain contentious. The first step included developing the framework for a sustainable land redistribution process. The sections that follow this first step are dedicated to explaining and interpreting each theme that shapes the framework. Discussion and recommendations sections are articulated to further strengthen the framework. Although the framework is developed from the South African experience, the approach is easily adaptable to other countries or local contexts; the approach and the sustainable indicators are applicable anywhere and at any spatial scale [22].

2. Methods

2.1. Data Collection and Analysis

A mixed research method was applied, integrating quantitative and qualitative data to answer the research questions. The mixed research approach facilitated the integration of both inductive and deductive information, thereby enabling combining theory generation and hypothesis testing needed in transformative approaches. The first part involved a systematic review of selected public documents such as policies, strategies, and other relevant publications to comprehend the country's land reform roadmap. Other relevant documents from other countries were also reviewed to evaluate previous land redistribution exercises in other countries, focusing mainly on their failure or success. Reviewed documents relating to land reform in South Africa include the recommendations of the Presidential Advisory Panel on Land Reform and Agriculture (PAPLRA), the Constitution and the Vision 2030, and the National Development Plan (NDP).

The second part involved identifying innovative cross-sectoral and transformative approaches that consider the interconnected socio-economic and ecological systems that a land redistribution exercise could impact. Transformative approaches are critical for enhancing land redistribution initiatives as they guide policy on achieving the desired outcomes [29]. The advantage of adopting transformative approaches during land reform is that they allow cross-sectoral assessment, facilitate identifying trade-offs from an integrated perspective, and reduce uncertainty as they mirror the future [30,31]. As an integrated analysis that leads to a sustainable land reform involves different sectors, including land, water, socio-economic and environmental factors, the pillars for sustainable development, we identified sustainability indicators related to each of these sectors to qualitatively assess these distinct but related sectors simultaneously. Sustainability indicators are essential for establishing numerical relationships related to a programme's performance and quantifying the state or trend for evaluation and monitoring purposes [22]. As the indicators are based on distinct but interlinked sectors, a multi-criteria decision method (MCDM) was applied as part of the quantitative analysis to identify trade-offs and guide the implementation [22].

2.2. Developing a Framework for a Sustainable Land Distribution

A combination of the results derived from the quantitative and qualitative analysis was integrated to develop a framework to guide the sustainable operationalisation and implementation of land reform initiatives and achieve desired outcomes. The systematic

document and literature review, coupled with a cross-sectoral analysis of distinct but interlinked sectors that contribute to equitable resource distribution and rural development, facilitated the identification of interlined main themes that needed to be considered during a land reform initiative. Sustainability indicators and expert opinion were then used to derive components for each identified theme. The analysis was based on the recommendations of the PAPLRA of South Africa, which acknowledges the importance of adopting integrated and transformative interventions when implementing land reform policies, and that land and water are central to South Africa's quest for social justice and sustainable rural development [16].

This integrated approach resulted in developing a framework that guides strategic policy decisions that facilitate a sustainable land reform strategy as it enhances socio-ecological and economic stability. The most critical outcome of the framework is that it ensures water and land tenure security and promotes rural development. Therefore, the framework is designed to provide pathways toward sustainable land reform and steer rural development as it provides a detailed, practical, and integrated insight founded on a multidisciplinary analysis. The integrated analysis also linked the framework to climate change resilience and adaptation. Broadly, the framework aims to achieve sustainable rural development through informed climate-smart land reform programmes by enhancing the resilience of rural communities.

2.3. *The Constitution of the Republic of South Africa*

The Constitution of South Africa provides a framework for land reform, protection of property rights, and expropriation if it is in the public interest. To address the consequences of the legacy of apartheid concerning land, The Constitution includes the following three clauses [32]:

- A person or community dispossessed of property after 19 June 1913 because of past racially discriminatory laws or practices is entitled, to the extent provided by an Act of Parliament, either to restitution of that property or to equitable redress.
- The state must take reasonable legislative and other measures within its available resources to foster conditions that enable citizens to access land equitably.
- A person or community whose land tenure is legally insecure because of past racially discriminatory laws or practices is entitled, to the extent provided by an Act of Parliament, to secure tenure legally or comparable redress.

The Expropriation Act (Act 63 of 1975) provides for the expropriation of land and other property for public and certain other purposes. The three key elements of the comprehensive land reform programme in the White Paper on Land Reform include restitution, redistribution, and tenure reform, which address the constitutional imperatives.

2.4. *Vision 2030 and the National Development Plan*

The National Development Plan (NDP) states that land reform will unlock the potential for a dynamic, growing, and employment-creating agricultural sector. The NDP bases land reform on the following principles [33]:

- Enable more rapid transfer of agricultural land to black beneficiaries without distorting land markets or business confidence in the agri-business sector.
- Ensure sustainable production on transferred land by ensuring that human capabilities precede land transfer through incubators, leadership, mentoring, apprenticeships, and accelerated training in agricultural sciences.
- Establish monitoring institutions to protect land markets from opportunism, corruption, and speculation.
- Bring land-transfer targets in line with fiscal and economic realities to ensure land is successfully transferred.
- Offer white commercial farmers and organised industry bodies the opportunity to significantly contribute to the success of black farmers through mentorships, chain integration, preferential procurement, and meaningful skills development.

The importance of The Land Redistribution for Agricultural Development (LRAD) program provides grants to landless farm workers and labour tenants to purchase land [34]. The program does not order land redistribution from rich to poor people but prefers a market-oriented option of a willing buyer–willing seller basis. While the state assistance is open and clear, the market basis of the LRAD program makes it less antagonistic but more flexible to evaluation and clear analysis than forced redistributive reforms.

3. Results

3.1. A Framework for Sustainable Land Reform

The initial phase was to develop the framework (Figure 1), acknowledging the need to adopt integrated and transformative interventions when implementing land reform policies. This was based on the understanding that land and water are central to South Africa’s quest for social justice and sustainable rural development [16]. It is on this background that four interlinked themes were proposed as pillars of land reform as they are envisioned to provide pathways towards sustainable implementation of land redistribution policies and ensure rural development. The four identified themes envisaged to drive successful land redistribution policies include (i) the identification of the drivers of land reform (inequality and poverty), (ii) the need for land and rural reform, (iii) sustainable rural transformation, and (iv) sustainable rural development (Figure 1). The four themes catalyse a sustainable land reform that promotes equitable land and water distribution and rural development.

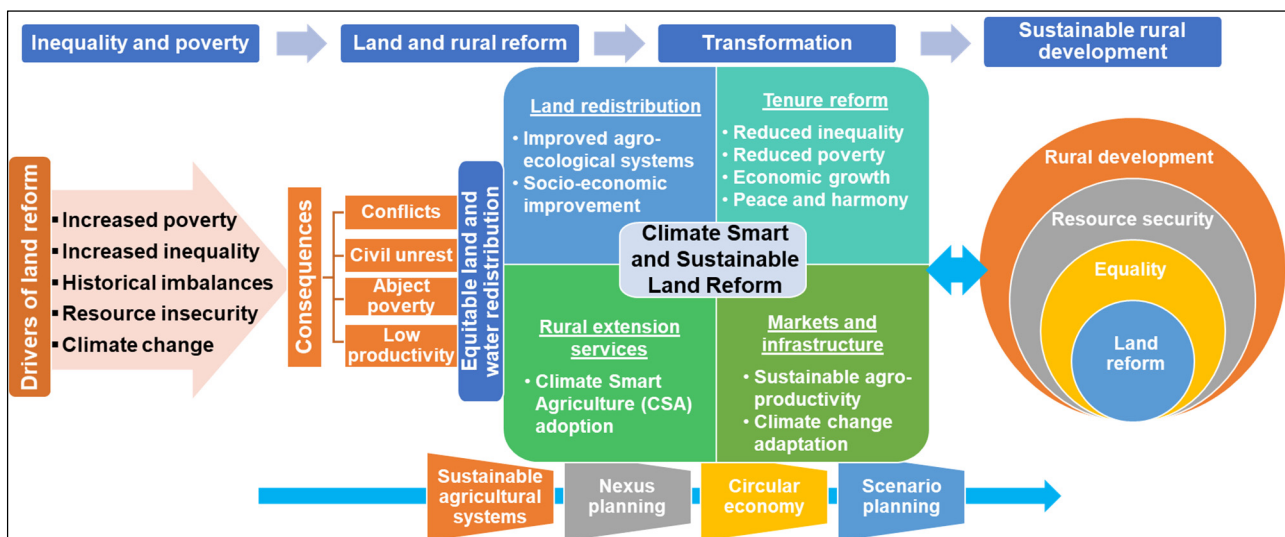


Figure 1. A nexus-based framework developed to drive the land reform and tenure agenda towards sustainable land redistribution and rural development.

Thus, the framework (Figure 1) addresses inequalities in land and water distribution, whose objectives include restoring dispossessed land rights (restitution), improving the rights of people with insecure land tenure (reform), and transforming the racially biased land ownership patterns (redistribution) [35]. It is a comprehensive, practical, and integrated vision based on a multidisciplinary analysis. The subsequent sections provide a stepwise description of each thematic area highlighted in the framework.

3.2. Drivers of Land Reform in South Africa

Land distribution imbalances, which are generally based on racial lines, and the need for redress in South Africa are the major drivers of the country’s urgent land redistribution programmes. The factors driving land reform in South Africa need to be addressed urgently to ensure rural development and build rural resilience, reduce vulnerability, and enhance climate change adaptation, but from a transformational change perspective. Rural poverty is strongly linked to the core features of the economic structure and the regulatory

environment. As already alluded to, South Africa has passed and established conducive legal frameworks and institutions favouring land reform and rural development. However, progress on the ground has been very slow [5]. The lack of integrated approaches to land reform and the failure to recognise the interlinkages between land, water, and environmental sectors will only compound the existing economic marginalisation, poverty, inequality, and unemployment challenges.

3.3. Transformative Processes towards a Sustainable Land Redistribution

The urgent need for equitable land and water resources redistribution is necessitated by unequal access to these resources, compounded by overcrowding in marginalised lands dominated by the indigenous majority and increasing global warming [5,13]. However, as already alluded to, to sustainably redistribute land and achieve the desired outcomes, there is a need to adopt innovative and effective transformative approaches that consider the cross-sectoral analysis of the interlinked socio-economic and ecological systems [22,35]. Central to sustainable land redistribution and rural development is Climate-Smart Agriculture (CSA), a sustainable agriculture practice that embraces climate change and its three objectives, which include (a) sustainable increases in agricultural productivity, (b) climate change adaptation, and (iii) climate change mitigation [36].

The framework (Figure 1) considers the uniqueness of each land's socio-economic and ecological context, and that land redistribution should not just be about ownership or land rights. Therefore, several factors must be considered for sustainable land and rural reform programmes. Sustainable land reform is possible when it is context-sensitive, localised, and not generalised; otherwise, the objectives will be futile. The implementation of land redistribution programmes should rely on expert advice and scientific evidence from a contextualised and localised perspective and the needs and capabilities of potential beneficiaries [35,36]. In South Africa, extension services, which have extensive knowledge of the land under their jurisdiction, can provide valuable information beyond agriculture.

The first part of the relational matrix of Figure 1 indicates that a climate-smart and sustainable land redistribution programme improves the agro-ecological and socio-economic systems. This results in sustainable agricultural systems that focus on producing long-term crops and livestock while having minimal effects on the environment and ensuring human and environmental health [37]. This is critical for reducing the risk of novel infectious diseases from wildlife due to the destruction of wildlife habitats owing to agriculture expansion [23]. This is possible by adopting transformative and integrated approaches in land redistribution initiatives and the whole food system. The outcome of the process is an informed land tenure reform that reduces inequality and poverty, promotes equitable social and economic growth, and cements peace and harmony. This promotes access to markets by small-scale farmers, improves infrastructure resulting in sustainable agricultural productivity, and enhances the resilience of rural communities to climate change. Thus, an informed land redistribution can be a climate change adaptation strategy and a catalyst for sustainable development.

Therefore, sustainable land and rural reform framework promote cross-sectoral development and an integrated reform process between agrarian reform, land reform, and rural development (Figure 2). These connections indicate the intricate relationships between the three sectors, whereby any transformation on any of the three should not be implemented independently of the other two.

Previous studies have also shown the broad interlinkages between socio-economic development and human and environmental health [27,38]. How humankind uses land directly impacts ecosystem services and has implications for future land use options [39]. Therefore, the broad interlinkages in the three sectors require a holistic approach to ensure sustainable rural development. However, these sectors are different and are quantified using distinct units of measurement, making their integration complex. One method that can be used to establish the relationship between the distinct sectors is through the

use of sustainability indicators and applying the Analytic Hierarchy Process (AHP), a multi-criteria decision method (MCDM) [22,40].

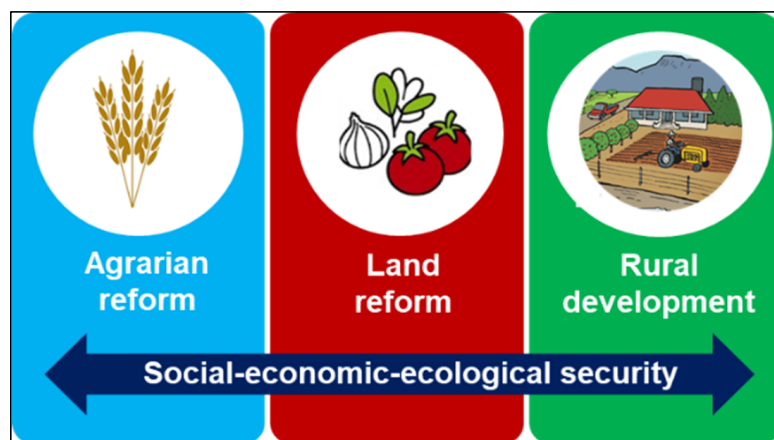


Figure 2. Interlinkages between land and agrarian reforms, and rural development for sustainable socio-economic and ecological security.

3.4. Sustainability Indicators Related to Land Reform

3.4.1. Linking Land Reform to Sustainable Development Goals

As already alluded to, a sustainable land reform promotes social justice, economic development, and environmental protection, the three pillars that anchor sustainable development. Thus, a sustainable land reform policy is directly linked to SDGs (Figure 3) as it reduces rural poverty by raising land productivity, improves rural livelihoods, creates employment, and enhances environmental quality. These land reform outcomes are amplified by synergistic effects in the urban economy [41]. Therefore, a land reform policy is a catalyst for achieving SDGs.



Figure 3. Categorized Sustainable Development Goals directly linked to land reform.

A lack of land rights results in unintended outcomes, including reduced investment, increased rural-to-urban migration, increased poverty, conflict, inequality, poor resource conservation, and undermines the principles of effective and democratic governance. Yet, a secure land tenure improves rural livelihoods, promotes the sustainable management and development of resources, and attracts investment that reduces poverty and food and insecurity in rural communities [17]. Therefore, land reform is directly linked to a host of SDGs grouped into four categories: (i) poverty goals, (ii) nutrition goals, (iii) social goals, and (iv) environmental goals (Figure 3). We derived the sustainability indicators from these linked SDGs described in the following section.

3.4.2. Proposed Indicators for Sustainable Land Redistribution

Indicators (Table 1) provide important tools to quantify relationships between distinct but interlinked drivers of a system [22,23,42]. In nexus planning, sustainability indicators provide the lens for informed intervention by establishing numerical relationships illustrated through a spider graph [23]. The relational indices are then used to provide contextualised interventions at a local scale to achieve the best results for a sustainable land reform initiative [22]. The interventions are established through scenario planning that eliminates decision-making uncertainty [43,44]. Although it is a complex process, it is critical for ensuring the sustainability of a land reform programme and catalysing rural development in the short and long term. Table 1 provides the proposed sustainability indicators integrated to guide, gauge, monitor, and evaluate land redistribution, promote rural development and ensure land and water security. The indicators are a yardstick for informing and measuring land and rural development sustainability and are a catalyst to achieving national, regional, and international goals.

Table 1. Sustainability indicators for assessing, monitoring, and evaluating land reform programmes.

| Sector | Indicator | Units | SDG Indicator |
|----------------|---|------------------------|---------------|
| Water | Proportion of available freshwater resources per capita | m ³ /capita | 6.4.2 |
| | Proportion of crops produced per unit of water used | USD/m ³ | 6.4.1 |
| Land | Proportion of agricultural land lost or gained | % | 2.4.1 |
| | Proportion of land that is degraded over total land area | % | 15.3.1 |
| Socio-economic | Proportion of population living below the national poverty line, by sex and age | % | 1.2.1 |
| | Proportion of total adult population with secure tenure rights to land | % | 1.4.2 |
| Environmental | Proportion of forested area over total land area | % | 15.1.1 |
| | Proportion of land that is degraded over total land area | % | 15.3.1 |

3.4.3. Definitions for the Proposed Land Reform Sustainability Indicators

The land reform sustainability indicators (Table 1) are adaptable to suit the peculiarities of an area or spatial scale. They are the same SDG indicators. However, this study addresses issues related to the sustainability of land reform programmes and ensuring resource security and socio-ecological health (<https://unstats.un.org/sdgs/metadata/>; accessed on 23 January 2021). Data for these indicators can be obtained from national statistical agents or other national data platforms at the local level. The land reform-related sustainability indicators (Table 1) are defined as follows:

- a. The proportion of available freshwater resources per capita (m³/capita). This is an estimate of the total available freshwater water resources per person, indicating pressure on renewable freshwater resources by all sectors [45,46]. The indicator is critical in informing policy and supporting decision-making on strategies aimed at agriculture expansion, but without exerting pressure on water resources.
- b. The proportion of crops produced per unit of water used (USD/m³). This indicator measures the output from an agricultural system concerning the water it consumes. It can also be referred to as water productivity [47]. The capability of land redistribution recipients to use water efficiently and produce more with little water is critical when allocating land for agriculture.
- c. The proportion of agricultural land lost or gained (%). The scope of this indicator is the agricultural farm holding, precisely the agricultural land area of the farm holding [48]. This refers to the land used primarily to cultivate crops and rear livestock. The indicator provides an assessment of progress towards sustainable agriculture, thus, supporting decision-makers with strategic knowledge for evidence-based policies and action toward a sustainable land reform programme.

- d. The proportion of land that is degraded over the total land area (%). This indicator refers to the reduction of the biological or economic productivity in agricultural land, pasture, forest, and shrubland resulting from a combination of pressures, including land use and management practices [49]. Land reform programmes should consider the programme's impact on exacerbating land degradation and destruction of ecosystems and wildlife habitats. This is meant to ensure sustainable socio-ecological interactions [50].
- e. The proportion of the population living below the national poverty line, by sex and age (%). Monitoring poverty levels is essential for guiding policy and supporting decision-makers to formulate specific development agendas [51]. The indicator guides decisions on qualifying beneficiaries, capability, and land size in land reform.
- f. The proportion of the total adult population with secure tenure rights to land (%). This indicator assesses and monitors the results of policies that aim to strengthen tenure security for all, including women and other vulnerable groups, thus aligning with land reform programmes [52]. As access to land is a basic human right, this is the starting point for the land reform programme [5].
- g. The forest area as a proportion of the total land area (%). Land redistribution should also consider the sustainability of the natural environment, particularly forests. The indicator ensures that land reforms provide policymakers with evidence that enhances equity, efficiency, and environmental sustainability [36].
- h. Proportion of degraded land over the total land area (%). This indicator refers to the amount of land area that is degraded. This indicator is critical in land reform programmes as it measures the role of agriculture in land degradation. It indicates how land redistribution can compound the challenge [53,54]. As poor agricultural methods contribute the most to land degradation, it is prudent to ensure that land redistribution does not exacerbate the challenge.

4. Discussion

Land distribution imbalances along racial lines and the need for its redress in South Africa are deeply rooted in the country's history, starting with the colonial era when the black majority was displaced to pave the way for the white minority [5]. The injustice was supported by the promulgation of the 1913 Natives Land Act, which supported the dispossession of prime land and displacement of local indigenous people in favour of a white minority [6]. These apartheid laws compounded rural poverty, exacerbated inequalities, aggravated resource insecurity, and increased the vulnerabilities of the black majority. These historical imbalances and apartheid legacies drive the land reform agenda in South Africa, and they require urgent redress to reduce social tension that could degenerate into conflict. These historical social imbalances have contributed to the wide gap between the poor and the rich, making South Africa one of the most unequal societies in the world [55].

The developed framework (Figure 1) recognises that land reform is not only about agricultural outcomes and transferred ownership of land but should also consider the associated socio-ecological aspects and beneficiary aspirations and capabilities. Therefore, a successful land reform programme should recognise the intricate relationship between water, land, and socio-ecological aspects; otherwise, the initiatives will only aggravate existing challenges, including water and food insecurity. This nexus between water, land, and socio-ecological aspects is evident through the intimate interlinkages between socio-economic development and human and environmental health [27]. How land is used today influences ecosystem functions, determining future land use options [56]. This brings the concept of sustainable agricultural systems linked to other transformative approaches like nexus planning, circular economy, and scenario planning, as illustrated in the framework [23,37]. Nexus planning addresses the challenges associated with the high density of indigenous people in areas of land insufficiently large and unsuitable for providing

land-based livelihoods. Overcrowding has forced the disadvantaged to adopt unorthodox livelihood strategies, exerting undue pressure on natural resources.

The current challenges related to the majority's lack of access to land and water resources, compounded by climate change and the emergence of novel infectious diseases such as the COVID-19 pandemic, have severely affected South Africa and other developing countries. The challenge could regenerate into civil unrest or political opportunism if not given priority on the national agenda. Food and water insecurity and poverty are irrefutably linked. While overall global food production is sufficient to meet the needs of the world's growing population, food insecurity continues to affect over 820 million people globally (most of which are in Africa) [57]. In line with this, and after decades of neglect and rural displacement, there is a need for transformational change and redress in the agriculture sector, to address food security and rural livelihoods. Agriculture is a sector that can potentially drive rural development in South Africa and Africa [58].

The ever-growing demand for food due to the increasing population, in the advent of climate change, requires transformative policies that ensure food and water security in the future [23]. However, food and water security are threatened by land access inequalities and the increasing agricultural land use for non-food crops such as biofuels [59,60]. Other challenges compounding resource insecurity include the degradation of agricultural land, the effects of climate change on agriculture and water resources, and the decline in the production of global fisheries and wild-harvested land species [18]. Present poverty and future food demand require massive investments in sustainably managed agriculture and fisheries. Still, the environmental impacts of these investments are often poorly understood, and without a direct link to nature's services, these investments stand to have highly destructive environmental impacts [61]. Integrating ecosystem services into the development agenda is essential in addressing the food and water insecurity challenge. As land is also critical in addressing these challenges, land redistribution should consider these intricately connected sectors to achieve sustainable rural development.

4.1. Expected Outcomes of a Sustainable Land Reform

The stacked Venn diagram of Figure 1 establishes the relational outcomes of a sustainable land redistribution programme. An informed land redistribution exercise culminates in broader outcomes such as equitable access to land, resource security, and sustainable rural development in the long term. An effective land reform programme (the innermost circle) is based on the informed implementation of the various steps around it (Figure 1), considering the uniqueness of each parcel of land. Thus, it is a context-based land redistribution framework. The framework emphasises identifying deserving beneficiaries with the capabilities to use the land earmarked for redistribution optimally. This is based on the knowledge that each land has peculiar and unique characteristics and that not all lands are meant for agriculture. Apart from achieving equitable access to land by all, the process also safeguards the continued supply of ecosystem services and ensures sound human and environmental health. Sustainability in land reform is achieved through transformative approaches such as nexus and scenario planning, providing insights for coherent strategic planning.

Adopting transformative approaches in land redistribution programmes facilitates coherent strategies that lead to sustainable rural development towards SDGs and ensures resource security. The general outcome of an informed land reform programme implemented through transformative approaches is sustainable rural development and equitable access to water, land, and food resources, culminating in job creation and economic development. Thus, sustainable land redistribution is important in achieving SDGs, particularly Goals 1 (no poverty), 2 (end hunger), 3 (good health and wellbeing), 6 (clean water and sanitation), 8 (decent work and economic development), 9 (industry, innovation, and infrastructure), 10 (reduced inequalities), 11 (sustainable cities and communities), 12 (responsible consumption and production), 13 (climate action), and 15 (life on land).

4.2. Social Justice: Addressing Inequality, Poverty, and Unemployment

Land and water-related inequalities are central to the wider societal inequalities inflicting communities worldwide [62]. These historical imbalances break the social fabric and impede socio-economic development. They directly determine the quality of life for billions of rural people who rely on land and water resources for their livelihoods [54]. Land and water inequalities aggravate poverty levels, increase social inequalities, and compound resource insecurity, with the potential to cause conflict and social unrest [16]. This is usually associated with the concentration of income and wealth to a minority, which results in numerous economic, social, and environmental consequences. The dire situation requires immediate and urgent redress through coherent land redistribution policies and strategies that lead to sustainable rural development before regenerating into civil unrest. These policies should not only focus on agriculture or accessing land. Still, they should also consider individual capabilities and the socio-economic and ecological factors and climate change as informed by science [35]. This is fundamental in that land redistribution is not only about farming and land ownership, but it should be noted that it cascades into other interlinked issues, including resource security, human and environmental health, and sustainability [35].

Apart from socio-economic and ecological factors, land and rural reform policies should consider the role played by women in rural agriculture and the eradication of hunger in rural communities. Rural women, particularly in developing countries, form most people who depend on agriculture for food and livelihoods and have been pivotal in job creation in the agro-processing industry [41]. In areas where land is equally distributed, it has contributed to forming more equal societies that promote sustained growth and development on more solid foundations [62]. South Africa has promulgated several legal frameworks that aim to redistribute land equitably. The legal frameworks also emphasise the intricate interrelationships between land, water, socio-economic, environmental, and human health [63].

Equitable access to land plays an important role in addressing challenges associated with gender inequality as rural agriculture in developing countries is predominantly women-led [62]. Land redistribution could be a catalyst for poverty eradication through job creation in the agriculture and agri-food processing industries, brought about by a flourishing agricultural sector and diversified landuse practices [64]. The question of land is complex as it touches all facets of human life as people are connected and identified to their lands through agricultural, spiritual, or cultural activities [16]. However, if not well-executed, and in the absence of scientific evidence, land redistribution may aggravate existing challenges of increasing poverty and inequality, resource insecurity, and social imbalances, particularly with the advent of climate change degrading water and land resources [2]. The challenge requires robust legal and institutional land reform frameworks that consider all the intricate connections between land, water, and socio-ecological factors. South Africa has promulgated important legal frameworks related to land and rural reform and aimed to drive the country towards sustainable development and meet national, regional, and international goals.

5. Recommendations

There is a need to envision transformative rural redress as a holistic process in which all components, including land, water, finance, extension, health, education, social grants, and local planning, are considered. This is derived from the cross-cutting national challenges and is closely linked [23]. The essence of nexus planning in land reform is to inform policy and support decision-making to formulate coherent policies that ensure sustainable socio-ecological interactions and drive sustainable food systems and the circular economy. These novel concepts drive the transformational change agenda in land reform and rural development. The following pathways are recommended to drive sustainable land reform and the transformational change in rural areas:

- a. **Improving rural livelihoods:** Although the main goal of land reform or distribution is to ensure land access to all, it should, however, be implemented in the context of rural economic development as a means to improve rural livelihoods [54]. Land reform should be implemented from a multicentric perspective to improve rural livelihoods, create employment, and attract the youth to agriculture [17]. In this regard, nexus planning can ensure multiple spin-off benefits with the potential to steer sustainable rural economic development [17].
- b. **Climate change adaptation and mitigation:** Land reform is intricately linked to agricultural systems, a climate-sensitive sector. Hence, land reform could be an important climate change adaptation strategy [26,27,65]. Of greater importance is acknowledging the contribution of agriculture to greenhouse gas (GHG) emissions, and land and environmental degradation, including the destruction of wildlife habitats and causing pollution [23,66]. Unsustainable land reform could aggravate the challenges associated with climate change. This complex cause-and-effect relationship between agriculture and climate change should be addressed in the context of nexus planning to mitigate the impacts on resources.
- c. **Water, energy, and food securities:** Sustainable land reform should not compound resource insecurities, especially on water, energy, and food. Present poverty and future food demand call for massive investments to sustainably manage agricultural systems, and thus, sustainable land reform programmes are a catalyst for sustainable natural resources management. Nexus planning provides the lens to policy and decision-making by identifying priority intervention areas and providing interventional pathways through scenario planning [22,23].
- d. **Sustainable food systems:** Integrating ecosystem services into land reform programmes is essential in addressing the sustainability of food systems. Thus, land reform should consider these intricately connected sectors to achieve sustainable rural development and natural resources management; otherwise, the agriculture sector will continue contributing to pollution, GHG emissions, and environmental degradation [23].
- e. **Sustainable natural resources management:** Agriculture is a sector that drives rural development in developing countries and is a lens toward sustainable food systems [58]. Therefore, sustainable land reform is supported by functional legal and institutional frameworks that support natural resources management and environmental protection [36].

6. Conclusions

This study has shown that land reform is not about undermining individual property rights but fulfilling the constitutional mandate to provide land as a corrective and restorative measure to address historical land injustices. Society should be aware of this constitutional right through public awareness to avoid tensions. We developed a framework to guide policy and decision-making on formulating coherent strategies that lead to sustainable land and water distribution and guide rural development. The framework is critical as this restorative justice by society is urgently needed to guide the change from a transactional to transformational land reform. The developed framework demonstrates that land reform should be informed by transformative and integrated approaches to guarantee the long-term viability of the agriculture sector and the sustainability of rural economic development. Focusing only on providing land without acknowledging the impacts on other sectors can transfer challenges to the whole spectrum of the economy, exacerbate poverty, and retard sustainable development. Integrated and transformative approaches facilitate cross-sectoral challenges that transcend equity, impacting livelihood assets. Adopting transformative approaches in land reform provides the lens for rural economic development and enhances rural resilience and adaptation. An important aspect of the developed framework is the need for stakeholder engagement and investment to support land reform policies. Present poverty and future food demand require massive

investments in sustainably managed agriculture and fisheries. Integrating ecosystem services into the development agenda is essential in addressing the challenge of resource insecurity. As land is also critical in addressing these challenges, land redistribution should consider these intricately connected sectors to achieve sustainable rural development and natural resources management. Thus, sustainable land reform is a catalyst for sustainable economic development. Nexus planning promotes simultaneous attainment of resource securities and enhances transformational change and redress in the agriculture sector to support sustainable livelihoods.

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