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Research Article

Agriculture, Land Reform, and Rural Development Strategic Plan in Somalia

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ABSTRACT

Somalia is undergoing profound socio-economic and ecological transformations, necessitating strategic optimization of urban-rural spatial structures to address land-related challenges such as imbalanced growth, land degradation, and rural marginalization. Global climate change and evolving agricultural patterns demand strategic land use policies focused on coordinated development, sustainable resource management, and resilience to environmental pressures. This strategic plan highlights the critical role of land reform and rural development in Somalia's economic growth. It prioritizes land consolidation, enhanced land governance, and rural economic empowerment to unlock agricultural potential and ensure food security. Strengthening infrastructure and land rights are also emphasized to encourage investment and improve rural livelihoods, reducing disparities between urban and rural areas. Harnessing Somalia's agricultural capabilities through structured land policies is vital for promoting inclusive economic growth, ecological conservation, and long-term resilience. Collaborative government-led initiatives and community-driven projects are essential for sustainable land utilization, balanced territorial management, and urban-rural harmony. Effective implementation of these strategies aims to secure a prosperous, resilient, and ecologically sustainable Somalia that aligns with global development goals.

Keywords: Agriculture development; Land reform; Somalia; Rural development; Food security; Land tenure security

Introduction

Somalia's economy relies heavily on agriculture, a central part of its livelihood and economic activities. Agriculture, particularly livestock farming, accounts for about 65% of the country's Gross Domestic Product (GDP) and over 80% of its export earnings[1]. The sector provides food, employment, and income for many. Livestock (mainly camels, sheep, goats, and cattle) is the dominant agricultural activity, with pastoralism and nomadic herding playing a significant role. Although less developed, crop production includes staples such as sorghum, maize, millet, and some fruits and vegetables[2]. Despite its potential, Somalia's agricultural sector faces numerous challenges, including recurrent droughts, limited access to modern farming techniques, inadequate infrastructure, and ongoing political instability. These factors have hindered agricultural productivity and contributed to food insecurity in the country[3]. However, with stability improvements, investments in agriculture could play a crucial role in Somalia's economic recovery and development. In Somalia's case, where pastoralism and small-scale farming are key livelihoods, land reform and rural development are essential for addressing underlying economic inequalities and achieving lasting peace and growth[4] **(Table 1)**.

Table 1: Somalia's GDP and Agriculture Sector Contribution (2019–2024).

Year	Nominal GDP (USD billion)	Agri. Sector (% of GDP)	Agricultural GDP (USD billion)
2019	7.5	62%	4.65
2020	7.8	63%	4.91
2021	8	64%	5.12
2022	8.3	63%	5.23
2023	8.7	63%	5.48
2024	9.1	63%	5.73

Table 1 presents the contribution of agriculture to Somalia's Gross Domestic Product. Throughout the years, agriculture has consistently contributed around 63% of the economy. This highlights the strategic importance of investments in crop and livestock productivity. Modest GDP growth over time indicates the sector's resilience despite external shocks. Strengthening agricultural value chains and ensuring land reform could further drive sustainable growth[5].

Land reform and rural development are crucial for national stability and economic growth, particularly in countries where agriculture is a key sector, such as Somalia[6]. Land reform typically involves restructuring the ownership, use, and access to land in ways that promote equitable distribution and efficient use, which can significantly reduce poverty and social tensions[7]. By redistributing land more equitably and supporting smallholder farmers, land reform can boost agricultural productivity, ensuring more efficient land use. This leads to higher food production, increased rural incomes, and overall economic growth[8]. Unequal land ownership and rural poverty often fuel social unrest and conflict. Addressing these issues through land reform can reduce grievances, promoting political stability. When farmers have secure land rights, they are more likely to invest in the land, fostering long-term stability[9]. Along with land reform, investments in rural infrastructure, education, and healthcare are vital. Improved roads, irrigation systems, and market access empower rural communities to participate more fully in the economy[10]. This helps reduce rural-urban migration, as better opportunities in rural areas encourage people to stay, fostering balanced development across the country[11]. Land reform can promote sustainable land use practices. When farmers have secure tenure, they are more likely to engage in sustainable agriculture, which is crucial for long-term food security and environmental protection[12]. Enhancing Agricultural Productivity involves improving agricultural productivity through better farming practices, technological innovations, and improved infrastructure[13]. The strategic plan would aim to improve domestic food production, reduce reliance on imports, and increase the resilience of rural communities to food crises[14]. Rural infrastructure helps bridge the gap between rural and urban areas by providing equitable access to resources, markets, and opportunities. This reduces rural-urban migration by making rural areas more liveable and economically viable[15]. Rural infrastructure is crucial for agriculture, agro-industries, and the overall economic development of rural areas. Rural sanitation infrastructure, including toilets, sewage systems, and waste management facilities, improves public health by reducing the spread of diseases[16]. Sorghum is one of the most important staple crops, especially in rain-fed areas. It is drought-resistant, making it ideal for Somalia's semi-arid climate[17]. Maize is another staple crop grown in irrigated areas, primarily along the rivers in southern Somalia. Maize or corn (Zea Mays L) is one of the world's most significant crops for food security **(Figure 1)**, cultivated for human consumption and animal feeding, and in recent years, is progressively playing an essential role as a source of biofuel **(Table 2)**. Sesame is a key cash crop that Somalia exports to international markets, especially to the Middle East. Sesame (Sesamum indicum L.; Pedaliaceae family) is an annual plant considered one of the foremost important and oldest oil crops[18].

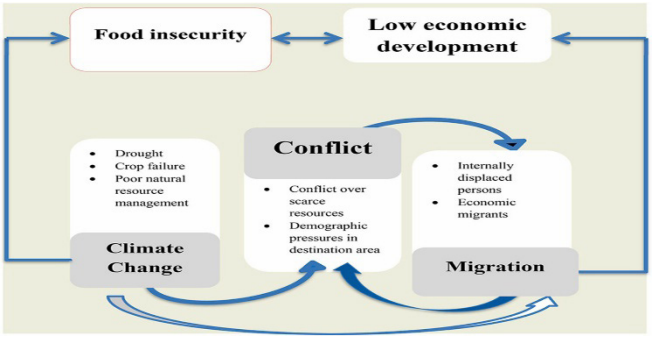

Figure 1: Food insecurity, climate change impact, violence conflict, and low-income development[19].

Table 2: Estimated Annual Crop Production in Somalia (2018–2022).

Crop (MTs)	2018	2019	2020	2021	2022
Sorghum	95,000	132,000	125,000	94,000	59,000
Maize	85,000	58,000	66,000	41,000	90,207
Sesame	24,647	12,907	19,779	7,233	20,170

Source: USDA 2023, FSNAU Data 2023 September

Table 2 illustrates Somalia's major crop outputs across a five-year period from 2018 to 2022. Sorghum and maize remain the most cultivated staples, reflecting their resilience and adaptability to the semi-arid and arid climates typical of Somali agro-ecological zones. However, production figures show a significant decline in both sorghum and maize during drought-prone years, particularly 2021 and 2022. Sesame, a high-value cash crop and key contributor to Somalia's agricultural exports, also experienced fluctuations due to erratic rainfall and market disruptions. Despite these challenges, there is potential for recovery supported by development partners' investments in climate-smart agricultural practices, irrigation schemes, and seed systems. Strengthened rural infrastructure and stable policy implementation are expected to bolster yields for staple and cash crops.

Historically, a major export crop, banana production has declined but remains important for domestic consumption and local markets. Bananas in Somalia are cultivated particularly in the favorable climatic conditions of the Lower and Middle Shabelle regions. Tomatoes, watermelon, onions, and citrus fruits are also grown, mostly in small-scale farms near urban centers[20]. Cattle are commonly raised in southern Somalia, especially in areas with better water and pasture availability. Sheep and Goats are highly adaptable to arid conditions and are essential for both subsistence and export, especially to Gulf countries[21]. Camels are known for their camel herding, as camels are resilient in arid environments. Camel milk is a significant part of the diet in rural areas, and camels are also used for transport. Livestock, especially camels, sheep, and goats, form a critical part of Somalia's export economy, with the Gulf states being major buyers[21]. Many rural and pastoral communities in Somalia have limited access to veterinary services due to the remoteness of these areas and poor infrastructure. Regular vaccination

campaigns are not consistently implemented due to logistical challenges and a lack of resources[22]. Livestock diseases such as Rift Valley Fever, Foot-and-Mouth Disease, and contagious bovine pleuropneumonia pose serious risks to livestock health, threatening both domestic food security and export potential[23]. Establishing mobile veterinary units and decentralized clinics in rural areas can help overcome the access barrier. Mobile clinics can reach remote pastoralist communities, offering preventive care and emergency treatments[5]. Establishing disease surveillance networks within pastoralist communities can help detect and respond to outbreaks quickly. Integrating this with national and regional systems ensures a coordinated approach[24]. Governments need to prioritize veterinary services and pastoral support in national development plans. Policies should promote sustainable livestock practices and incentivize private sector involvement in veterinary care[25]. Drought is a recurring issue in Somalia, and it heavily impacts pastoralists. Developing drought-resilient infrastructure, such as water points and fodder storage facilities, can help mitigate the impact of dry spells[26]. Somalia is a country of vast rangelands, pockets of cultivated agricultural land, and growing urban areas. Today, the legal framework for Somalia's land tenure system is a mix of secular, sharia, and customary xeer law[27]. The land ownership and tenure systems in Somalia are complex and vary across regions due to the country's fragmented governance, historical influences, and ongoing conflict[28]. In rural areas, especially among nomadic and pastoral communities, land is traditionally governed by Xeer, a customary law system that emphasizes communal ownership. Access to grazing land and water resources is typically shared among clans, with rights based on customary agreements rather than formal titles[29]. Traditional methods of land use and farming are eroded due to displacement, conflict, and changing environmental conditions. With agriculture being a key source of livelihood, ongoing land disputes contribute to Somalia's chronic food insecurity[30]. Conflict disrupts farming activities and exacerbates hunger, particularly in times of drought or famine. The uncertainty of land tenure discourages long-term agricultural planning and sustainable practices[31]. Recent efforts by the Somali government and international organizations aim to restore land registration systems and resolve disputes through formal legal channels. Still, these efforts face challenges due to ongoing instability[32]. Somalia needs a modern and accessible land registration system to formalize land ownership. This system should account for previous ownership rights, displaced persons, and new claims[33]. Updating and harmonizing land tenure laws to clearly define property rights and clarify the legal status of different types of ownership (individual, communal, and state land) will provide greater security to landholders[34]. Focusing on smallholder farmers, who constitute the majority of agricultural producers, is critical for strengthening land security[35]. Programs to assist with land access, tenure security, and farming inputs (such as seeds, tools, and finance) will help small farmers improve productivity and long-term sustainability[36]. Land restitution programs can help displaced persons reclaim their agricultural land, while negotiated settlements can help those unable to return to their original homes[37]. In rural Somalia, communities are deeply connected to the land, and their participation in agricultural decision-making is essential for both social cohesion and sustainable development[38].

Land use and its characteristics for agricultural development in somalia

Agriculture's critical role in driving Somalia's economic growth has drawn significant academic focus; however, agricultural employment saw minimal increase in the 1990s, with declines in sub-sectors such as livestock, forestry, and fishing[5]. Somalia's northern and central rangelands, characterized by low rainfall and scarce permanent springs, have long fueled conflicts over water between agro-pastoralists and nomadic pastoralists[39]. Land is increasingly acknowledged as a critical governance issue amid global challenges such as climate change, rapid urbanization, resource scarcity, food and water insecurity, energy crises, natural disasters, and violent conflicts[40]. In developing nations, where subsistence agriculture underpins rural survival, land is a vital asset, with women producing over half of global food and 60–80% in these regions, forming the backbone of rural livelihoods[41]. Transforming Africa's agriculture necessitates addressing land tenure challenges, particularly enhancing tenure security to incentivize long-term investments, boost productivity, and drive agricultural commercialization[42]. The accelerated poverty reduction stems largely from employment-driven technological advancements in food production and transformative land reforms, often achieved indirectly through collectivization in regions like Mexico, the USSR, China, and parts of Asia, Africa, and Latin America during 1910-1980. This was often disastrous and seldom achieved the main goal of land reform[43]. Key reforms involved dismantling socialist cooperatives, allocating land-use rights to former members **(Figure 2)**, establishing a national land law, and ensuring tenure security with gender-equitable inheritable land-use certificates[44].

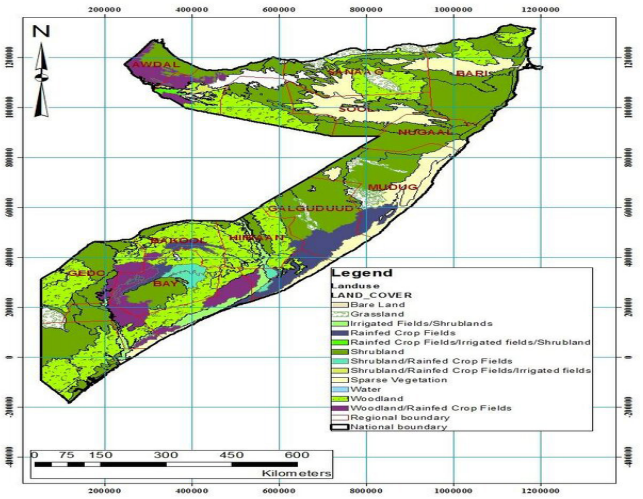

Figure 2: Agricultural Land Use Characterization for Somalia[45].

Land allocation processes differed across districts, prioritizing household equity by factoring in land quality and labor equivalents, resulting in varied plot distributions of differing land quality per household[46]. Agriculture is central to natural resource management in rural areas, with agricultural policy increasingly viewed by regional stakeholders as integral to rural development, complementing other sectoral strategies[47]. Southern Somalia, Fertile alluvial soils and access to the Shabelle and Juba rivers; main area for irrigated and rain-fed agriculture[48]. Arid to semi-arid zones are dominated by rangelands, suitable mostly for livestock and drought-resistant crops[49]. Recurrent droughts, floods, and erratic rainfall patterns diminish land reliability for farming[50]. Conflict Over Land **(Figure 3)**, especially in post-conflict zones, land disputes between clans and returnees are common[51].

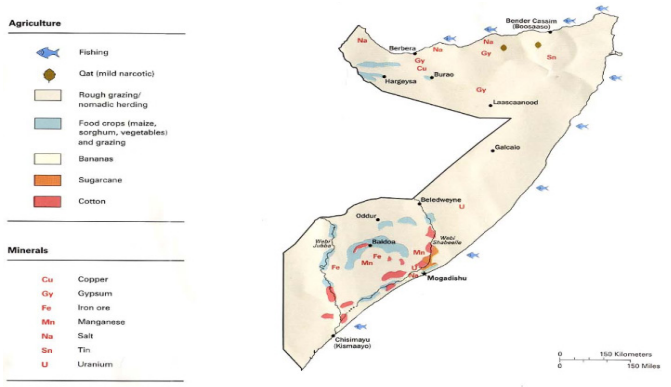

Figure 3: Somalia Agricultural Land Use and Natural Resources[52].

Traditional land tenure Systems, based on customary (Xeer) and clan-based ownership, often lack formal documentation, which complicates land investment and management[53]. Rain-fed farming, mainly cereal production (sorghum, maize), is vulnerable to climate variability[54]. Pastoralism in the country is mostly widespread land use (over 60% of the land), especially in arid and semi-arid regions[55]. Land use in Somalia is shaped by a mix of environmental constraints, traditional practices, and socio-political factors. While much of the country's land remains underutilized or degraded[56]. There is no significant potential for agricultural development through improved land governance, infrastructure investment, and sustainable practices tailored to Somalia's diverse agro-ecological zones[57].

Insufficient land use efficiency and investment gaps in somali agricultural development

However, Somali farmers continue to face significant challenges, including inadequate infrastructure, limited access to electricity, and extreme weather conditions such as flash floods and prolonged droughts[58]. Pollutant emissions originate from a variety of sources, including the agricultural sector. Key contributors to increased greenhouse gas (GHG) emissions include deforestation, overgrazing, coal consumption, and the conversion of grasslands into croplands[59]. The country faces severe and multifaceted challenges from climate change, worsened by conflict and institutional weaknesses. Limited international support hampers effective climate adaptation and resilience efforts[60]. Intensive agricultural practices include deforestation, soil cultivation, fertilizer use, and livestock digestion. They are major sources of greenhouse gas emissions. Converting forests into farmland releases stored carbon and reduces the Earth's ability to absorb CO□, intensifying climate change[61]. The Horn of Africa, marked by arid and semi-arid climates, is highly vulnerable to recurring droughts and land degradation. These conditions lead to severe food and water shortages, undermining food security, economic growth, and political stability, especially in rapidly growing, less developed areas[62]. Many Somali farmers rely on outdated, subsistence-oriented practices that produce low crop yields and poor land productivity[63]. Rain-fed agriculture dominates, making production highly vulnerable to droughts and seasonal variability[64]. Rapid urbanization without proper land-use planning reduces the availability of arable land[65]. Overgrazing, deforestation, and inappropriate land management have led to soil erosion, desertification, and reduced fertility[66]. Unclear or insecure land rights discourage long-term investments and sustainable land use planning[67]. Agriculture contributes roughly 60-70% of employment and 30% of GDP, yet vast areas of arable land remain underutilized or degraded[68]. Smallholder farming dominates, often without land tenure security, proper zoning, or mechanization, leading to inefficient use of fertile land[69]. Limited access to modern tools, improved seed varieties, irrigation infrastructure, and soil management techniques results in poor yields per hectare[70]. Disputes over land ownership and lack of formal titles discourage long-term investment in land improvements[71]. Deforestation, overgrazing, and repeated droughts have contributed to soil erosion and fertility loss, further reducing land productivity[72]. There is a chronic lack of financial support from both the government and investors in critical areas such as irrigation systems, agricultural research, and rural infrastructure (e.g., storage, transport)[73]. Farmers often lack access to affordable loans or insurance, making it difficult to invest in equipment, fertilizers, or risk management[74]. Political instability and lack of coordinated agricultural policy discourage domestic and foreign investment in the sector[75]. Somalia remains food insecure, frequently relying on humanitarian aid[76]. The agricultural sector could drive economic growth and export diversification if land use and investment challenges are addressed[76]. Poor land use practices and underinvestment increase the sector's vulnerability to climate shocks like droughts and floods[77]. Poor coordination and limited capacity among agricultural extension services limit farmer training and technology transfer[78]. Farmers, especially smallholders, lack access to financial services for purchasing inputs like quality seeds, fertilizers, and machinery[59].

Land use dynamics and policy challenges in somali agriculture

Agriculture is the most vital sector of Somalia's economy. In 2012, it contributed more than 40% to the country's GDP, with the livestock sub-sector accounting for 29.5%. Livestock production in Somalia is primarily based on extensive pastoral systems that depend on fragile natural resources[79]. Agriculture is the backbone of the Somali economy, employing more than 70% of the population and contributing significantly to livelihoods and food security[80]. The sector is dominated by pastoralism, agro-pastoralism, and riverine farming, each shaped by specific land use practices and challenges[81]. Somalia's rural communities heavily depend on livestock for income and food security. Pastoralism (nomadic herding) and agro-pastoralism (mixed farming and herding) account for the majority of land use[82]. Traditional pastoralism is based on seasonal migration, with herders moving their livestock to different grazing areas depending on rainfall patterns. This mobility helps manage scarce water and grazing Resources. Recurrent droughts, desertification, and erratic rainfall severely impact grazing lands, leading to livestock losses and food insecurity. Overgrazing and deforestation also contribute to soil degradation[83]. Land ownership and usage rights are often based on customary law, lacking formal documentation. This creates disputes and insecurity among farmers and pastoralists[84]. Competing claims between pastoralists, agro-pastoralists, and farmers frequently lead to conflicts, particularly during droughts when resources are scarce[85]. Women often face barriers in land ownership, despite being key contributors to agricultural labor[86]. Urban sprawl reduces the availability of productive farmland and disrupts traditional farming communities[87]. Cities like Mogadishu, Hargeisa, and Garowe are expanding, leading to the conversion of agricultural land for housing and commercial development[88]. Lack of market regulation leads to unpredictable prices, making it difficult for farmers to plan Production. Farmers

struggle to transport produce to markets due to inadequate road infrastructure[89].

Traditional vs. emerging land use patterns in somalia: Historical practices, environmental conditions, socio-economic factors, and emerging global trends influence land use patterns in Somalia. Understanding the shift from traditional to emerging land use patterns is crucial for sustainable agricultural development and resilience against climate change[90]. Pastoralism has been the backbone of Somali rural life for centuries. Nearly 60% of the population relies on livestock rearing for livelihoods[91]. Herders move across vast rangelands based on seasonal rains, seeking pasture and water for their animals[27]. Traditional knowledge systems are used to manage grazing lands, control herd sizes, and prevent overgrazing. Elders and community leaders play key roles in resolving disputes over water and grazing rights[92]. Agro-pastoralism combines livestock rearing with crop production. Farmers grow crops like maize, sorghum, and millet during rainy seasons while keeping livestock[93]. Riverine farming is practiced primarily along the Juba and Shabelle rivers, where water availability supports crop Production[94]. Communal grazing lands are shared among clans, allowing for flexible movement of herds during dry and wet seasons[95]. Access to grazing land is often regulated through clan-based rights, with elders negotiating access during droughts or conflicts. Government initiatives and international aid are promoting small-scale irrigation projects, particularly in the riverine regions[96]. Drip irrigation, sprinkler systems, and solar-powered pumps are being introduced to increase water Efficiency[97]. Strengthening land tenure security, clear land ownership rights can protect pastoral and farming communities from displacement[98]. Support for sedentarized pastoralists provides technical training, access to markets, and micro-finance options to enhance livelihoods[99]. Promote climate-smart agriculture, introduce drought-resistant crops, water-saving technologies, and sustainable grazing practices[100]. Protect communal grazing lands, establish protected grazing zones, and promote rotational grazing to prevent degradation[101]. Integrate renewable energy with agriculture: Promote sustainable land-use practices that accommodate both energy and food production[102].

Policy gaps and institutional weaknesses in land governance: Somalia lacks a unified national land policy defining land ownership, rights, and usage regulations. This gap leads to inconsistencies across different regions, particularly between federal and state authorities[40]. Land ownership is often governed by customary laws managed by clan elders, which conflict with statutory laws. This dual system creates confusion and legal uncertainty[103]. Farmers and pastoralists often lack formal land titles, making it difficult to secure property rights. This insecurity discourages long-term investments in sustainable agriculture[104]. Conflicts and political instability have led to widespread displacement, with many internally displaced persons (IDPs) losing their traditional land rights[105]. Women face significant barriers to land ownership due to customary practices, even though they are heavily involved in agriculture[106]. Land disputes are often settled through clan-based negotiations rather than formal legal channels, resulting in inconsistent outcomes[107]. Government institutions responsible for land administration are under-resourced and lack technical capacity for effective land management[108]. Disputes over land governance authority between the Federal Government and regional administrations hinder cohesive land policies[109]. Overlapping mandates between traditional leaders, local governments, and federal institutions create confusion[110]. Many communities are unaware of land policies and their legal rights, making them vulnerable to exploitation[111]. Overgrazing, deforestation, and land degradation are accelerated by the lack of sustainable land management policies[112]. Insecure land tenure and legal uncertainty deter both local and foreign investments in agriculture and infrastructure[113]. Inefficient land use and lack of policy support limit agricultural productivity, increasing vulnerability to food shortages[114].

Impact of land tenure insecurity on agricultural productivity: Farmers and pastoralists are less likely to invest in land improvements, such as irrigation, soil conservation, or sustainable farming practices, if they are unsure about land ownership[115]. Soil conservation, crop rotation, and sustainable land management require long-term planning, which is often avoided under insecure tenure conditions[37]. Banks and financial institutions hesitate to offer loans for agricultural development without proof of land ownership, limiting farmers' ability to invest in seeds, machinery, and modern technologies[116]. Overlapping claims on land, particularly between pastoralists and farmers, lead to disputes, sometimes escalating into violence[117]. Disputes over land ownership force communities off their land, disrupting food production and causing displacement[118]. Land inherited through customary laws often gets divided among family members, resulting in fragmented plots that are less productive[119]. Fragmented lands make it difficult to practice modern farming techniques, irrigation, or mechanized agriculture, reducing overall yields[120]. Farmers are less willing to invest in modern inputs like fertilizers, improved seeds, or machinery if their land rights are uncertain[121]. Insecure land tenure discourages investments in necessary infrastructure, such as irrigation systems, farm roads, and storage facilities[122]. Agricultural extension programs are less effective in regions with land disputes or unclear tenure[123]. Implement nationwide land registration to provide farmers and pastoralists with formal land titles. Introduce community-based land mapping to document customary ownership and usage rights[124]. Promote community-based conflict resolution, involving clan elders, local authorities, and government representatives. Create legal frameworks that integrate customary and statutory laws to address land disputes effectively[125]. Encourage climate-smart agricultural practices, such as conservation tillage, reforestation, and rotational grazing. Provide training and technical support for sustainable land use[115].

Conclusion

A well-coordinated urban-rural spatial structure is essential to addressing Somalia's land-related challenges, including excessive land conversion, underutilization of agricultural spaces, and rural marginalization. Imbalanced land distribution has led to abandoned farmlands, rural poverty, weakened agricultural productivity, and growing disparities between urban and rural regions. Concurrently, urban areas struggle with congestion, housing shortages, and unsustainable expansion, highlighting the need for strategic land use policies. Land reform and rural development are pivotal for Somalia's sustainable economic transformation. This strategic plan emphasizes optimizing urban and rural land use through targeted consolidation, agricultural revitalization, and rural economic empowerment. It also advocates for better land governance, enhanced infrastructure, and stronger land rights to stimulate investment and secure rural livelihoods. Unlocking Somalia's agricultural potential

and restructuring land policies will enhance food security, drive economic resilience, and bridge the urban-rural divide. A harmonized approach to urbanization and rural development, backed by government reforms and community-driven initiatives, is key to fostering sustainability, environmental conservation, and social equity. Effective implementation of these strategies promises a prosperous, balanced, and resilient Somalia.

Conflicts of Interest

The authors declare no conflict of interest.

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