



MALAWI GOVERNMENT

MALAWI'S NATIONAL RICE DEVELOPMENT STRATEGY - 2 (NRDS-2)

2024 - 2030



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Ministry of Agriculture
P.O. Box 30134
Lilongwe 3
Malawi

Table of Contents

Acronyms	vi
Executive Summary	vii
1.0 Introduction	1
2.0 Review of Rice Sector Development in Malawi	4
2.1. Policy Context	4
2.2. Rice Ecologies	10
2.3. Trends in local rice production	11
2.4. Rice Value Chain Analyses	12
2.4.1. Land	12
2.4.2. Seed	13
2.4.3. Soil Management	15
2.4.4. Irrigation and Water Management	16
2.4.5. Mechanization	18
2.4.6. Crop Management	19
2.4.7. Postharvest Handling and Processing	20
2.4.8. Marketing, Trading and Value addition	21
3.0 Strategic Framework	24
3.1. Vision	24
3.2. Goal	24
3.3. Strategic Approaches	25
3.4. Strategic Objectives	26
3.5. Targets	26
4.0 Strategic Interventions	27
SO-1: Increase rice production and productivity by improving efficiency along the entire rice value chain	27
SO-2: Improve market orientation and competitiveness of smallholder rice farmers in rainfed and irrigated production systems	29
SO-3: Enhance ecological, social, and economic sustainability of rice farming	31
SO-4: Strengthen human and institutional capacities along the rice value chain	33
5.0 Implementation Mechanisms	35
6.0 Monitoring & Evaluation	38
7.0 Costs And Resource Mobilization	40
Annex 1: NRDS II ACTIVITY PLAN AND BDGET ESTIMATES	41

Acronyms

AICC	African Institute of Corporate Citizenship
ASFNS	Agriculture Sector Food and Nutrition Strategy
AfCTA	African Continental Free Trade Area
CARD	Coalition for African Rice Development
CET	Common External Tariff
COMESA	Common Market for Eastern and Southern Africa
DAES	Department of Agricultural Extension Services
DAP	Draught Animal Power
FAO	Food and Agriculture Organization
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GHG	Greenhouse gases
GoM	Government of Malawi
ICT	Information and Communication Technologies
MGDS	Malawi Growth and Development Strategy
M&E	Monitoring and Evaluation
NAP	National Agriculture Policy
NAIP	National Agriculture Investment Plan
NCCCLS	National Climate Change Learning Strategy
NIP	National Irrigation Policy
NSP	National Seed Policy
NORAD	Norwegian Agency for Development Cooperation
R.I.C.E.	Resilience, Industrialization, Competitiveness, Empowerment
SADC	Southern Africa Development Community
SCA	Special Crops Act (1963)
SDG	UN Sustainable Development Goals
SO	Strategic Objective
SRI	System of Rice Intensification
SWOT	Strengths, Weaknesses, Opportunities and Threats
WUA	Water User Association

Executive Summary

Rice cultivation provides a sustainable pathway to crop diversification, poverty reduction and economic growth in Malawi. Although not a traditional crop, rice production has steadily been increasing in Malawi in the recent decades. Growth in both domestic and regional market demand for rice consumption serves as a 'major driver' for the recent increase in rice production. Satiating calorific value, long shelf-life, and the many ways in which the grains can be cooked with relatively less fuel energy have made rice as an important component of food basket among rural and urban population. Being a labor-intensive crop; rice cultivation, processing, value addition, and marketing holds immense potential for creating jobs both on-farm and off-farm, especially for women and youth in rural areas.

Recent increments in Malawi's rice production stem mainly from expansion of area under the rice cultivation, rather than on-farm productivity. Produced largely by subsistence farmers in small and fragmented holdings in rain-fed upland, rain-fed lowland and irrigated ecosystems; the average national rice yield levels remain low and stagnant at around 1.75 t/Ha over the past two decades; much lower than the world average of 4.57 t/Ha. This is mainly due to low-risk and low-return nature of smallholder rice farming, several technical and economic inefficiencies along the rice value chain, and weak institutional capacities.

Recognizing the importance of rice crop in Malawi's overarching 2063 vision, Sustainable Development Goals (SDG), and national food security and economic development; Government of Malawi established National Rice Development Strategy (NRDS; 2014-2018). However, owing to its cooperative business model, implementation of the NRDS-1 had often been scanty and the impacts were very limited. To reinvigorate the developments in rice sector; this document (NRDS-2; 2024-2030) assesses the current situation of the rice value chain development and sets out a new strategic roadmap for advancements in the rice value chain.

NRDS-2 envisions rice industry in Malawi to become regionally more competitive and socio-economically sustainable. It aims to contribute to Malawi's overall economic growth and food security through rice sector development. It targets at doubling of domestic rice production from 155,433 tons in 2022 to 330,000 tons by 2030. NRDS-2 will achieve its goal through four strategic objectives (SO) viz., (SO-1) increasing smallholder rice production and productivity, (SO-2) improving market alignment and competitiveness of smallholders in rain-fed and irrigated ecosystems; (SO-3) enhancing ecological, social, and economic sustainability of rice farming, and (SO-4) strengthening human and institutional capacities along the rice value chain.

Strategic approaches used in designing the framework for the NRDS-2 involve: building market- and climate-resilience (R), supporting industrialization (I) through small-, medium-, and large-scale enterprises, sharpening market competitiveness (C) of locally produced rice, and empowering (E) stakeholders, especially women and youth. Through a mix of policy reforms, research and development, capacity building, extension services, infrastructure revamp, and financial reinforcement; the R.I.C.E approach will render the expected outcomes under the NRDS-2.

For increasing total rice production and on-farm productivity (SO-1); improvements in technical and economic efficiencies of usage of inputs (especially seeds, fertilizers, and water) in smallholder farms will be sought through targeted research, extension services, and facilitation of access. Total area under rice cultivation will be increased from 76,962 Ha in 2021 to 110,000 Ha by 2030. Mitigation of climate change will be facilitated through rehabilitation-, maintenance-, and expansion of irrigation infrastructures; and dissemination of improved water harvesting and water management practices. Small tools and machineries that can increase productivity, reduce drudgery of women, and stimulate engagement of youth in rice farming will be identified and promoted through public-private partnerships.

Given a growing demand for Malawi rice in domestic and regional markets; NRDS-2 prioritizes orienting smallholders' production to consumers and improving their market (quality and price) competitiveness (SO-2). Linkages between production, processing, marketing, and trading segments will be emboldened through institutional arrangements, and improved policies and practices of the various actors along the supply chain. Interventions that will improve flow of information on domestic and regional markets, infrastructures for storage of inputs and outputs, and digital information and communication technologies (ICT) will be focused.

Ecological sustainability and socio-economic viability of the rice sector will be bolstered (SO-3) by promoting integrated management of environmental bases (especially the soil and water) and augmenting the socio-economic rewards of rice farming amongst stakeholders. Emphasis will be made on adaptive research and dissemination of climate-smart technologies and good agricultural practices (GAP) that will reduce greenhouse gas (GHG) emission, soil degradation, and pest outbreaks, and improve circular economy of farm inputs and outputs including byproducts such as straw, husk, and bran.

Building human- and institutional capacities (SO-4) is a fundamental facet of the NRDS-2. Based on an assessment of human capacity gaps, up-skilling of rice value chain actors (farmers, farmer groups/cooperatives, input suppliers, service providers, millers, traders, and value adders); and fresh recruitment and up-skilling of rice value chain supporters (researchers, policy analysts, socio-economists, quality inspectors, extension agents, and local government authorities) will be undertaken. NRDS-2 will improve institutional infrastructures and the required logistics for executing the proposed activities in rice growing areas across the country.

In alignment with overarching national agriculture strategies, national agriculture investment goals, and other sub-sectoral and cross-sectoral policies of Malawi; the NRDS-2 will implement the interventions through existing institutional set up under relevant line Ministries. Implementation will be coordinated by a 3-tier structure, involving Secretary of Ministry of Agriculture, and focal point and members of the NRDS taskforce. Funds for executing the NRDS-2 will be generated by formulating bankable project concepts and sourcing budget from government, development partners, private sector, and other stakeholders.

Monitoring and evaluation (M&E) of progress under the NRDS-2 will be tracked against overall indicators and key indicators set under each of the R.I.C.E components. M&E will be conducted through continuous observations and engagement of the stakeholders by the NRDS taskforce, and technical assessments of the indicators by mid-term (2026) and end-of-term (2030) by specialists. Based on the lessons that will be learnt from the M&E; adaptive management of the strategic approaches and interventions under the NRDS-2 will be carried out.



1.0

Introduction

Agriculture sector is one of the important foundation pillars of Malawi's economic growth and development. Although share of Gross Domestic Product (GDP) value added from agriculture, forestry and fishing has been hovering around 20% of the country's total GDP (Fig. 1), the absolute value has more than doubled from 1,237.4 million USD in 2000 to 2,965.34 million USD in 2020¹. With about 80% of the population being directly dependent on the sector for their livelihoods however, growth in agriculture sector bears enormous significance in food security, nutrition security, poverty reduction and socio-economic advancements in Malawi.

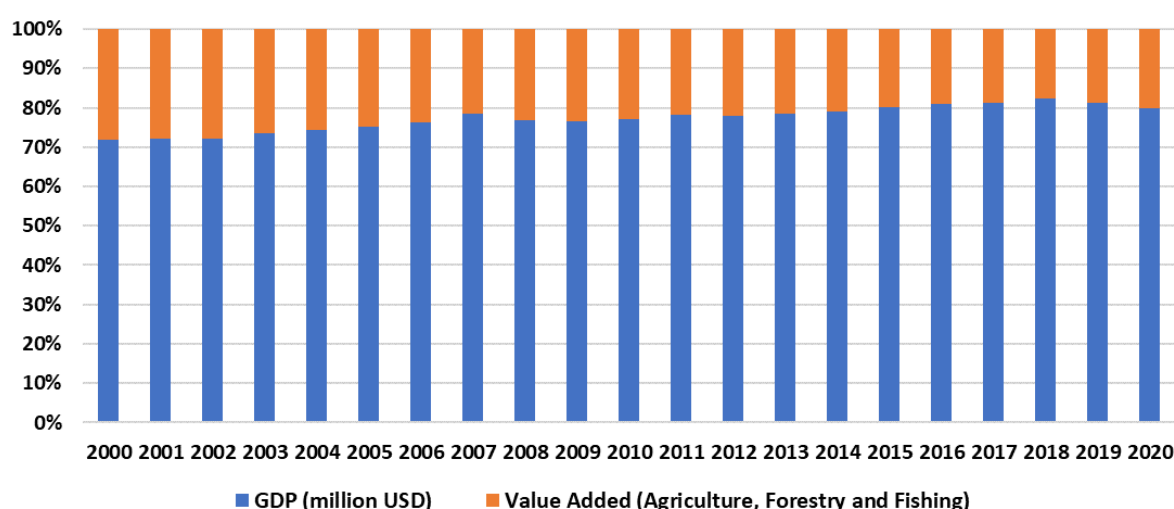


Fig. 1: Contribution from Agriculture, Forestry, and Fishing sector to Malawi total GDP since 2020

Malawi's agriculture sector is composed of subsistence and commercial farming. While commercial farming focuses on high value cash crops for exportation such as tobacco, tea, sugar, coffee, and macadamia; about 90% of all agricultural land in Malawi is under rain-fed subsistence farming. Subsistence farming is generally carried out by smallholder farmers who cultivate small (less than 1 Ha) and often fragmented land holdings². They predominantly cultivate crops such as maize, cassava, groundnut, legumes, sorghum, and sweet potato to meet household food security.

Lack of diversification in both the subsistent and commercial farming systems has brought increasing challenges from land degradation, declining soil fertility, market price volatility and climatic vagaries; and thus, also exerting pressure

¹ <https://www.fao.org/faostat/en/#data/MK>; Macro indicators at 2014-16 constant prices, accessed 31-Mar-2023
² Roux AL, Yeboua K (2023) Malawi's agricultural sector needs urgent climate adaptation. Institute for Security Studies - African Futures

on ecological- and economic sustainability aspects of Malawi's national food security and economic growth and development. Among the food crops, maize is widely recognized as the major staple crop for Malawi's national food security and hence has long been under the focus of government's policy agenda. Despite a large spatial variability in population and agro-ecological conditions; about 36% of the farmers grow maize as a monocrop and only about 28% of the farmers grow maize along with other crops such as ground nut and legumes³. Furthermore, the commercial farming has also largely been focused on production of a few crops as tobacco, tea, and sugar.

Owing to climate change and market price volatility, fluctuations in production and productivity of maize crop have become common⁴. Market availability of maize has also recently been hampered by the presence of aflatoxin. Quantitative losses before, during and after harvest⁵ further threatens safety and nutritional viability of maize-based food system in Malawi. Government of Malawi has hence widened its policy framework for increasing the share of agriculture-GDP from non-maize commodities by promoting crop diversification. However, inadequate advocacies on appropriate alternatives and inherent socio-economic risk aversion nature prevent smallholder farmers from diversifying away from traditional crops.

Rice (*Oryza sativa L.*) shall be an attractive alternate food-and-cash crop for both smallholder and commercial farming that can enrich household and national food security and nutrition in Malawi. Conducive agro-ecological conditions for cultivation, relatively higher calorific value⁶, compact storability, long shelf-life, and the many ways in which rice grains can be cooked with less fuel energy have in the recent years steadily increased market acceptance of rice over other staple food crops in Malawi and across Africa⁷. Market demand for rice consumption has been growing rapidly at a rate of 6% per annum in Sub-Saharan Africa (SSA) due to population growth, urbanization and changing dietary habits⁸. Projections suggest that it will further accelerate to 10% per annum with an estimated total demand of 52.83 million tons of milled rice by 2030⁹.

Other comparative advantages of growing rice over other crops in Malawi include diverse environments in which rice can be grown (upland, rain-fed and irrigated ecosystems), profitability in smallholder farms^{10,11}, scopes for further improvement in economic efficiency¹², steady growth in demand for

3 FAO (2019) Policy brief: Cropping systems diversification to enhance productivity and adaptation to climate change in Malawi

4 Msowoya K et al. (2016) Climate change impacts on maize production in the warm heart of Africa. *Water Resour Manage* 30:5299–5312

5 Warnatzsch EA et al. (2020) Climate Change Impact on Aflatoxin Contamination Risk in Malawi's Maize Crops. *Front. Sustain. Food Syst.* 4:1-13

6 Juliano BO (1993) Rice in human nutrition, IRRI-FAO Publication, Rome

7 Kathiresan A, Nagai T, Haneishi Y (2020) Policy options for galvanizing Africa's rice sector against impacts of COVID-19, *World Development* 136: 105126

8 Arouna A et al. (2021) Moving toward rice self-sufficiency in sub-Saharan Africa by 2030: Lessons learned from 10 years of the Coalition for African Rice Development. *World Development Perspectives* 21: 100291

9 Durand-Morat A, Bairagi S (2021) International Rice Outlook: International Rice Baseline Projections 2020-2030. Research Reports and Research Bulletins. Retrieved from <https://scholarworks.uark.edu/aaesrb/49>

10 Chitika R (2015) Rice – smallholder farmers in Malawi can be profitably included. In: *Commercial and Inclusive Value Chains* (pp.89-95), Research Gate Publications

11 Magombo et al (2017) Seasonality and Profitability of rice value chains for smallholder farmers at Nkhate Irrigation Scheme in Southern Malawi. https://www.future-agricultures.org/wp-content/uploads/pdf-archive/I1_Seasonality%20and%20Profitability%20of%20rice%20value%20chains.pdf

12 Magreta R et al (2019) Economic efficiency of rice production in smallholder irrigation schemes in Southern

consumption in national and cross-border regional markets, and nutritional dietary diversity. Rice was found to be the most economical food crop during inter-war period in colonial Malawi¹³. The labor-intensive nature of rice crop and the handling processing and management of raw rice grains and byproducts also hold immense potential for creating several on-farm and off-farm jobs, and trigger economic development around rice growing rural areas.

Government of Malawi, with support from Norwegian Agency for Development Cooperation (NORAD) and African Institute of Corporate Citizenship (AICC), formulated first National Rice Development Strategy (NRDS-1; 2014-2018) with a goal of increasing total rice production in Malawi. Since implementation plan of the NRDS-1 was based on a business model in which smallholder farmers and other value chain actors were expected to contribute annual membership fee and other service fees; the NRDS-1 could not be successfully executed and the objectives could not be adequately met.

Malawi recently joined Coalition for African Rice Development (CARD)¹⁴, a consultative group of development partners and international research and development institutions, as a new member. Subsequently GoM has constituted a national taskforce for formulating second National Rice Development Strategy (NRDS-2) with technical and financial support from CARD and Japan International Cooperation Agency (JICA). This document (NRDS-2; 2024-2030) assesses the current situation of the rice sector development in Malawi and sets out a roadmap for sustainably advancing the sector by facilitating farmers and other stakeholders along the rice value chain in Malawi through public and private investments and partnerships.

Malawi. RUFORUM Working Document Series (ISSN 1607-9345) No. 14 (3): 305-310

13 Kalinga OJM (1990) Rice production and marketing in colonial Malawi in the inter-war period *Transafrican Journal of History* 19: 61-72

14 <http://riceforafrica.net>

2.0**Review of Rice Sector****2.1. Policy Context**

It is imperative that strategies for development of rice value chain are aligned to national legislations and national, regional, and continental policy frameworks and strategic directions. In the following sections, the overarching laws and policy frameworks of Government of Malawi (GoM) that informed the proposed strategies in this document are briefly discussed. By positioning itself within the current development dogma, the NRDS-2 intends to provide a policy narrative for accelerated advancements in rice sector in Malawi.

Statutory Laws

Agricultural sector in Malawi is primarily regulated by two legislations viz., Special Crops Act of 1963 (SCA) and Agriculture (General Purposes) Act of 1987 (AGPA). While the SCA governs production and marketing of major commercial crops that are declared as 'special' such as cashew, coffee, cotton, groundnuts, macadamia, tea, tobacco, and tung; the AGPA regulates the production and marketing of all crops that are not declared as special under the SCA.

The SCA and the AGPA are expected to be replaced by Crops Act. When passed by legislators, it will establish a Malawi Crops Regulatory Authority, the special crops will be replaced by a new set of 'scheduled crops', which will include 'rice'. Other crops under this category will include banana, barley, beans, cashew, coconut, coffee, groundnuts, macadamia, maize, pigeon peas, rice, sesame, soybean, sugarcane, sunflower, tea, and wheat. When enacted, the impending law will allow the Ministry of Agriculture to prescribe the minimum price at which they should be traded, and to license markets in which they may be traded.

Malawi 2063 Vision

Malawi 2063 Vision, launched by GoM in January 2021, aims to transform Malawi into a wealthy, self-reliant, industrialized upper-middle-income country, through a focus on agriculture commercialization, industrialization, and urbanization. By defining country's long-term development goals, the Malawi 2063 vision calls for a shift from low productivity, subsistence agriculture to a highly productive commercial form of agriculture. It identifies limited crop diversification and a lack of disaster-risk management systems as major challenges to be overcome in order to ensure food and nutrition

security.

Under its industrialization pillar, the Malawi 2063 vision promotes diversification and value addition in export products and competitiveness. Alignment of national strategies to diversification and value addition agenda of the vision is necessary to promote exports. The proposed strategies in this NRDS-2 document could therefore serve as important policy instruments for realizing the envisaged food and nutrition security, agriculture commercialization, value addition and export diversification.

Sustainable Development Goals (SDG)

Malawi's SDGs under United Nations' (UN) Agenda 2030 commits to end poverty in all its forms, inclusively and irreversibly. GoM aims to achieve food security (SDG 2) by increasing agricultural productivity sustainable ecosystems and natural resource management (SDG 15) and gender equality (SDG 5). UN Agenda 2030 highlights that an inclusive and sustainable agriculture is key to achieve poverty reduction (SDG 1) and economic growth (SDG 8) in Malawi. Furthermore, GoM has emphasized that climate smart approaches (SDG 13) to agriculture helps close the poverty and gender gap and promote societal resilience to shocks.

Malawi Growth and Development Strategy (MGDS)

MGDS is a medium-term national development strategy that is aligned to the country's long term development vision. The recently concluded MGDS III (2017-2022) is expected to be replaced by fourth MGDS. Under the MGDS III, Agriculture, Water Development and Climate Change Management represented a key priority area. With an objective of achieving sustainable agricultural transformation and water development that is adaptive to climate change and enhances ecosystem services; investments have been focused on national food security, nutrition enhancement, environmental management, agro-processing, value addition, rural development, manufacturing, and trade. It intended to overcome challenges that undermine agriculture sector's productive capacity such as climate change, postharvest losses, lack of agriculture diversification, low irrigation development, small landholding sizes, land degradation, under-use of meteorological information and underdeveloped market systems.

National Agricultural Policy (NAP)

By taking an integrated approach to agricultural development, the NAP aims to achieve sustainable agricultural transformation that will result in significant growth of the agricultural sector, expansion of incomes for farming households, improved food- and nutrition security, and increased agricultural exports. The policy guides transition of farming communities from subsistence production to non-traditional high-value agricultural value chains that would ultimately result in wealth creation. NAP promotes investments in climate-smart agriculture and sustainable land and water management, including integrated soil fertility management, irrigation, and sustainable use of agrobiodiversity. NAP promotes access to ownership and control of productive and financial resources and enhanced opportunities for entrepreneurship and participation in agriculture value addition. NAP

emphasizes on sustainable commercialization of the agriculture sector.

Priority actions identified by NAP for agricultural transformation includes sustainable agricultural production and productivity; sustainable irrigation development; mechanization of agriculture; agricultural market development, agro-processing, and value addition. The policy has a strong focus on empowering the youth, women, and vulnerable groups in agriculture. Other priority areas include institutional development, coordination and capacity strengthening. As an overarching policy, the NAP has reconciled previous sub-sectoral policies and promotes forward and backward linkages between the agriculture sector and other sectors in order to ensure even better value is added to the economy's growth through agriculture.

Agriculture Sector Food and Nutrition Strategy (ASFNS)

The agriculture sector contributes to some of the underlying determinants of nutrition, including access to safe sufficient quality food, adequate care, and a healthy and hygienic environment. To achieve a well-nourished population that effectively contributes to national growth and development through sustainable and diverse food systems; ASFNS (2020-2024) provides guidance in the implementation of nutrition-sensitive agriculture interventions for improved food and nutrition security.

AFSNS intends to (i) ensure stable availability of food through sustainable and diversified production, (ii) ensure stable access to safe and nutritious foods, (iii) promote social behavior change for improved dietary practices, (iv) promote gender integration, women and community empowerment and participation for improved food and nutrition security, and (v) create and strengthen an enabling environment for effective delivery of food and nutrition programs.

In order to realize synergy between agriculture and nutrition, AFSNS proposes strengthening of coordination and collaboration among key agriculture and nutrition stakeholders and fostering of efficient use of resources to complement each other's activities. Further, ASFNS identifies additional nutrition resources and lists specific activities that need support to enable the agriculture sector to contribute to the national aspiration of a well-nourished population.

National Agriculture Investment Plan (NAIP)

NAIP is the main implementation vehicle for the National Agriculture Policy. NAIP provides a framework for coordinating and prioritizing investments by various government agencies, Development Partners (DPs) and Non-State Actors (NSA) in the sector. NAIP has four programs (Policies, institutions, and coordination; Resilient livelihoods and agricultural systems; Production and productivity; and Markets, value addition, trade, and finance) and 16 interventions areas, which include: Policy, Program and Stakeholder Coordination; Farmer Organizations; Public agricultural services delivery; Food and Nutrition Security; Investments in agribusiness; Access to financial services, among others.

NAIP enables more inclusive and efficient agricultural and food systems by linking smallholder farmers to markets by providing inputs and services and bulking production within out grower arrangements. It takes a holistic approach to make smallholder and commercial segments of the agri-food system grow in parallel to meet evolving market demands while competing with imports. It intends to close gender gap in agriculture, support youth employment and entrepreneurship. In these contexts, NAIP has identified 8 priority areas for execution. They include Sustainable Agricultural Production and Productivity; Sustainable Irrigation Development; Mechanization of Agriculture; Agricultural Market Development; Agro-processing and Value Addition; Food and Nutrition Security; Agricultural Risk Management; Empowerment of Youth, Women and Vulnerable Groups in Agriculture; and Institutional Development, Coordination, and Capacity Strengthening.

For increasing resilience of livelihoods to climate change, NAIP suggests stakeholders to (i) train farmers on climate-resilient practices; (ii) disseminate new agricultural technologies and climate-smart approaches; (iii) reduce agriculture's carbon footprint; (iv) enhance resilience of production systems and promote sustainable management of natural resources through such actions as improved land use planning based on zoning and protected areas, sustainable management of water resources through catchment management approaches, conservation of genetic resources, up-scaling of organic manure production and use, inter-cropping with legumes, and enhancement of community and household resilience; and (iv) improve rainwater harvesting capacities at individual smallholder and community levels.

National Seed Policy (NSP)

The national seed policy of 2018 provides for regulation and control of all seed-related issues, protects farmers and dealers, promotes a responsible and productive seed industry, and defines regulatory roles of the government. The major focus of the revised seed policy is availability of adequate high-quality seed and planting materials to the farming community. It intends to address the challenges in the seed industry, especially in areas of seed research, production and quality control, imports and exports, marketing, and distribution. It outlines roles for both the public and private sectors in accelerating agricultural transformation through the seed industry.

The policy seeks to enhance appropriate and effective seed regulatory framework, enhance seed quality assurance for better performance of agriculture sector, and establish reliable and internationally acceptable seed certification system. In order to smoothen seed trade across borders, Malawi's seed regulations of 2018 are aligned to regional Seed harmonized regulations. The seed Act of 2022 establishes a Variety Release Committee (VRC) which will have the sole responsibility of releasing varieties in Malawi, the Seed Act of 2022 provides for distinctiveness, uniformity, and stability (DUS) as well as the Value for Cultivation and Use (VCU) of varieties' tests. Malawi's national seed policy thus allows harmonization of seed laws and intellectual property rights (IPR) for all registered varieties in the region.

National Irrigation Policy (NIP)

NIP aims at sustainable national economic growth and development through enhanced irrigated agriculture, production, and productivity. It addresses critical issues such as spatial and temporal water shortages; customary land tenure disputes; and, poor operation and maintenance of infrastructure. It also provides solutions to these challenges by addressing through three priority areas viz., sustainable irrigation development, management, and capacity development. The policy acknowledges climate change, public private partnerships, improved governance reforms in water and land management, and increasing interest by stakeholders as opportunities under the irrigation sector.

Focused on increasing agriculture production and enhancing food security through irrigation; the policy intends to ensure agricultural production during droughts, and the dry season. The policy endorses creation of enabling environment for irrigated agriculture by facilitating and encouraging the private sector to invest in irrigation development, and encouraging rural communities to manage irrigation projects in order to fully utilize irrigable land in Malawi. NIP paves way for assisting individual small holder farmers, farmer groups and farming communities in developing and managing new and existing irrigation schemes through establishment of local organizations such as Water User Associations (WUA) that can assume full ownership of existing irrigation schemes and new pilot schemes.

In conformity with Malawi's vision and the overall development agenda; the irrigation policy emphasizes that irrigation development and management should also serve human needs such as food, nutrition, and income. It further strives to ensure that the environment is given due consideration in all irrigation developmental activities. It also describes institutional arrangements and defines key roles and responsibilities for stakeholders in operationalizing the policy. NIP acknowledges that technical competence within the public and private sectors including training institutions and beneficiary communities is critical for sustainable irrigation development and management.

Cross-cutting policies

Malawi's National Multi-Sectoral Nutrition Policy (NMNP) identifies the high degree of dependence on rain-fed subsistence agriculture and promotes dietary diversification through production of cereals other than maize. National Export Strategy II (2021-2026) aims to make Malawi a competitive, diversified, and sustainable supplier of goods and services for regional and global markets. It encourages shift in focus towards high-value products and grain trading as key export sector.

Malawi's National Gender Policy (2011) focuses on gender mainstreaming in agriculture, food and nutrition security, natural resources, and climate change management. The policy seeks to reduce nutrition disorders among women, men, and children. It strongly promotes access of women and other vulnerable groups to agricultural productive resources and technologies for food and nutrition security. Where appropriate, it also encourages ownership and control over these resources by women.

National Youth Policy (2013) aims to create an enabling environment for all young people to develop to their full potential in order to contribute significantly to personal and sustainable national development. It encourages formulation of sub-sectoral strategies that help establishing, promoting, and supporting agricultural youth clubs and cooperatives linked to the private sector. Where possible, it endorses incentives such as tax exemptions on agricultural tools and machinery, and incorporation of digital information and communication technologies (ICT) for youth.

Malawi's National Resilience Strategy (NRS; 2018-2030) intends to break the cycle of food insecurity by reducing the dependence on maize. It endorses smallholder farming interventions; access to inputs, training, and asset creation; diversification in the production and marketing of crops in order to improve resilient agricultural growth. The NRS intends to reduce negative effects of climate change related disasters (floods, drought/dry spells) through improvement of irrigation systems to increase the agriculture production; and build demand and support systems for nutritious foods; promote knowledge and services.

National Climate Change Learning Strategy (NCCLS; 2021) outlines an institutional framework for climate literacy, climate change adaptation, mitigation, technology transfer and capacity-building. By strengthening human resources and skills development for the advancement of green, low emission and climate resilient development through individual capacity building and institutional capacity building; it addresses knowledge gaps that are pivotal for formulating informed policies and climate change interventions. Malawi has recently ratified the Paris Agreement on climate change and submitted its updated nationally determined contribution.

REGIONAL INTEGRATION

SADC Regional Indicative Strategic Development Plan

At the regional level, Malawi is a member of the Southern Africa Development Community (SADC), a group of 15 countries working together to enhance regional integration and cooperation in matters of trade, finance, and investment; socioeconomic development; and politics, peace, and security. Under SADC, member states have formulated the revised Regional Indicative Strategic Development Plan (RISDP) intended to deepen regional cooperation and integration. Indicative in nature, it is intended to outline the conditions necessary to achieve the regional development goals.

COMESA Treaty

Common Market for Eastern and Southern Africa (COMESA) was established primarily as a tool for sustaining growth and development by expanding the size of the market as most eastern and southern African countries have small domestic markets. It is the largest African common market. The Treaty has been in existence since 1994. The protocols to which Malawi is a member and signatory are aimed at generating inclusive and sustained growth by increasing production, productivity, and competitiveness of its member states.

2.2. Rice Ecologies

Rice is largely grown by smallholder farmers as food-and-cash crop under diversified ecosystems viz., rain-fed lowland, rain-fed upland and irrigated. With an average farm size of 0.2 Ha; it is estimated that about 300,000 farmers grow rice over a total area of 60,000 Ha¹⁵. Rain-fed lowland rice is mainly produced along the western shore of Lake Malawi, around Lake Chilwa and along Lower Shire River in the south. Rain-fed upland rice is grown during the rainy season along the smaller rivers flowing eastwards into Lake Malawi. Survey estimates¹⁶ show that 86.3% of the total rice production comes from either rain fed upland or rain fed lowland environments (Table 1). The remaining 13.70% is produced under irrigated ecosystem. Most of the rice farmers under irrigated environments have a slightly larger land holding size, averaging 0.5 ha¹⁷. Notable irrigation schemes in Malawi include Limphasa, Wovwe and Hara in the Northern region, Bua and, Bwanje and Lifuwu in the Central Region and Domasi, Likangala, Muona, and Nkhate in the Southern region¹⁸.

Table 1: Rice production estimates (in metric tons) for 2019 under different ecologies in different areas¹⁹

Agriculture Development Division (ADD)	Rain fed (Lowland and Upland)	Irrigated	Total production
Karonga	31,916	6,873	38,789
Mzuzu	5,066	1,689	6,755
Kasungu	1,088	0	1,088
Salima	15,156	1,185	1,6341
Lilongwe	2,341	3,588	5,929
Machinga	15,341	287	15,628
Blantyre	16,386	0	16,386
Shire Valley	9,597	1,800	11,397
Total production	96,891	15,422	112,313
Share of total (%)	86.3	13.7	100

¹⁵ African Institute of Corporate Citizenship (2016) Malawi Rice Outlook

¹⁶ Ministry of Agriculture (2022) Agricultural Production Estimates Survey - 2019

¹⁷ FAO (2018) Smallholders data portrait. Family Farming Knowledge Platform

¹⁸ Ministry of Agriculture and Food Security (2012) Guide to crop production and natural resource management in Malawi. Lilongwe: Agricultural Communications Branch.

¹⁹ Ministry of Agriculture, Irrigation and Water Development (2013) Baseline Study Report – Monitoring, Formulation, and Implementation of National Rice Development Strategy (NRDS) in Malawi

2.3. Trends in local rice production

Rice was introduced in Malawi by the end of 19th century and was initially cultivated by Swahili-Arab traders and later migrant labors from Tanganyika in small scales¹¹. Rice cultivation then slowly picked up by local farmers and spread across Malawi. However, the total area under rice cultivation increased more rapidly only during the recent decades. FAO20 data show that average total area under rice cultivation gradually increased by about 3-fold between 1980s and 2010s; from 22,062 Ha in 1980s to 34,855 Ha in 1990s, to 53,282 Ha in 2000s, and to 63,233 Ha in 2010s. Latest estimates show that rice was cultivated over an area of 76,962 Ha in 2021 (Fig. 2).

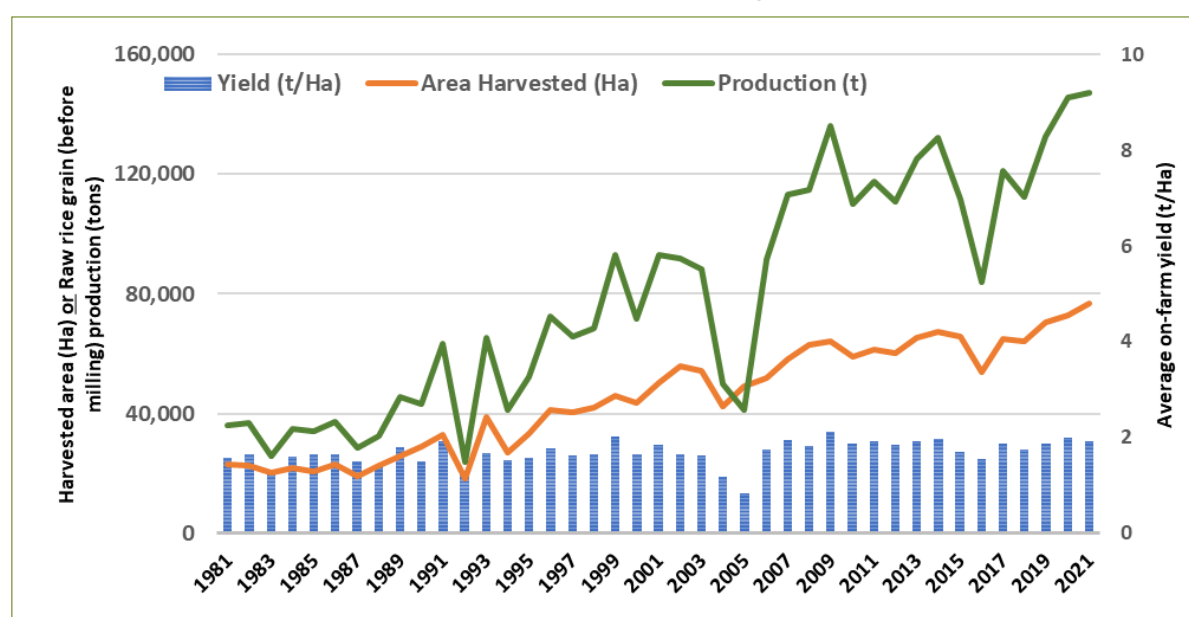


Fig. 2: Trends in area under rice cultivation (orange line), total raw rice (before milling) production (green line) and average on-farm yield (blue bars) in Malawi

Raw rice grain (before milling) production generally followed the trends in area under rice cultivation; tripling from about 36,000 tons in 1981 to about 147,100 tons in 2021 (Fig. 2). The positive correlation between area and production reveals that rice grain production in Malawi has been largely dependent on expansion of area under rice cultivation, and that on-farm productivity levels did not increase significantly over the decades. National on-farm rice crop yield averaged about 1.91 t/Ha; which is lower than the global average of 4.57 t/Ha (a gap of 2.66 t/Ha).

²⁰ <https://www.fao.org/faostat/en/#data>, accessed 10-April-2023

2.4. Rice Value Chain Analyses

Several socio-economic factors and institutional factors influence the development of rice value chain in Malawi. An analysis of strengths, weaknesses, opportunities, and threats (SWOT analyses) was made on various rice value chain segments by assessing their interplays with key elements such as policy, research and development, extension, infrastructure, finance, quality management, institutions, gender, and youth. Since strengths and weakness are internally influenced, but opportunities and threats cannot be internally controlled; the SWOT analysis of rice value chain in the following sections provides a comprehensive view of the challenges and scopes for rice sector development.

2.4.1. Land

Malawi has 600,000 Ha of land that can be used for rice production²¹. However, only 76,962 Ha (12.8% of the potential area) had been deployed in 2021. Optimal utilization of land available for rice cultivation faces several challenges and provides futuristic prospects for increasing local rice production in Malawi.

Challenges

- a. Amendments made to Land act (2022) is not encouraging adequate private investments
- b. Land policy however is not aligned well to the Land Act
- c. Zoning of crops have minimized rice cultivation in otherwise potential areas
- d. Inadequate information on land use and planning, land policy, and Land Act
- e. Lack of collateral to access finance from banks/institutions for land acquisition by smallholder farmers
- f. Haphazard use of land by stakeholders
- g. Lack of extension services on land use and expansion of rice cultivation
- h. Poor management of land areas under rice schemes
- i. Land degradation due to poor soil and land management practices
- j. Inadequate dissemination of knowledge on land management (including soil amendment, soil reclamation)
- k. Decentralized land registry is not yet fully functional
- l. Over dependence on foreign equipment and technologies for land reclamation slows progress in land expansion
- m. Natural calamities (cyclones, flash floods) and climate change pauses progress in land reclamation
 - Land degradation due to excessive siltation, soil erosion, salinity causes permanent loss of land suitable for rice production

²¹ Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA) Report (2018) <https://www.ccardesa.org/farmers-benefit-improved-rice-varieties-malawi>

Scopes

- a. Land policy empowers local population to own land for rice cultivation
- b. Adequate national, regional, and international human expertise and technical assistance are available for land reclamation
- c. Willingness of development partners and other stakeholders to support development and expansion of rice schemes
- d. Decentralized land registries are available and accessible at district level
- e. Adequate interest from local government on utilizing available land space under new rice schemes and for rehabilitating existing rice schemes
- f. Banks and insurance companies are willing to provide new financial solutions and crop insurance services
- g. Support for establishment of land related institution (registry, tribunals)
- h. Youth and women are increasingly involved in the use of land

2.4.2. Seed

Seeds represent an important facet of rice production and on-farm productivity level. A limited number of rice varieties that are suited to local production environments are available. They include traditional varieties such as Kilombero, Singano, Kalulu and Mwasungu; for which pure lines and hence quality seeds are not generally available. However, certified seeds of recently improved varieties such as Faya (14M69), Senga (IET 4094), Changu (IRI 1561- 250- 22), Nunkile (PUSA 33), Vyawo (ITA 302), Mtupatupa (Taichung Sen 10), Kayanjamalo, Katete, Mpheta, Lifuwu and Mpatsa are also available. Yet, inefficient seed production systems and inadequate access to quality seed by smallholder farmers are major bottlenecks to adoption of improved rice varieties in Malawi. Varietal improvement together with seed access can substantially increase total production and on-farm productivity, and reduce yield gaps.

Challenges

- a. Current national seed policy is very generic and hence there is a need to tailor the rice-related policy aspects so that 'Quality Declared System' and seed packaging modalities become more suited to local rice seed production and supply chain
- b. Weak enforcement/Implementation of seed regulations due to lack of resources (financial, human, logistics)
- c. Awareness on seed grades, standards and regulations amongst stakeholders is low
- d. Inadequate research and development (R&D) on seed technologies due to inadequate funding, insufficient expertise (for example, seed pathologists, breeders), and lack of succession plans and incentives to researchers (promotions, recognition)

- e. Lack of rice-specialized extension staff to support seed multiplication and awareness creation amongst smallholder rice growers
- f. Conflicting information from pluralistic extension service providers on rice seeds, varieties, and seed production technologies
- g. Higher costs of certified rice seed production arising from pumping of irrigation water, erratic power supply and expensiveness and logistics for a relatively higher number of inspection visits
- h. Limited access to financing services to produce and/or purchase certified rice seeds
- i. Inadequate knowledge on variety descriptors (Distinctness, Uniformity and Stability) among seed inspectors and seed users (farmers)
- j. Inadequate number of specialized rice seed inspectors and seed testing infrastructure (storage space, laboratories, offices) in rice growing areas
 - Lack of focus on interventions that could lead to behavioral change amongst smallholder farmers in reducing recycling of seeds, improving techniques of sowing/transplanting, reducing number of seedlings/hill, and improving seed storage/conservation methods

Scopes

- a. National seed policy is aligned to that of regional economic blocs (SADC or COMESA) and hence allows rice seed export/trading with other rice growing countries in the region such as Zambia, Mozambique, and Tanzania
- b. Linkages between national, regional, and international rice research institutions/initiatives on germplasm and varietal development
- c. A catalogue of all released rice varieties is available for stakeholders
- d. Local seed companies are increasingly involved in rice seed production and extension services
- e. National seed testing lab service is available for rice schemes and private seed producers in rice growing areas
- f. Seed inspection and certification processes by Seed Services Unit (SSU) aligned to that of external institutions such as International Seed Testing Agency and regional bodies such as SADC and COMESA
- g. Growing demand for rice seeds and increasing participation of women and youth in rice seed production and dissemination
- h. Proliferation of agro-dealers aiding good seed distribution systems across the country.

2.4.3. Soil Management

Soil fertility is inherently linked to rice crop yield levels and hence becomes a major factor in improving profitability of rice production in smallholder farms. Blanket recommendation for rice production under both rain-fed and irrigated ecosystems in Malawi includes 85 Kg Nitrogen (N), 25 Kg Phosphorus (P), and 4.8 Kg Sulphur (S) per Ha²². Among the major soil nutrient elements, N is the most limiting factor in rice growing soils of Malawi²³. Evidences indicate that there is scope to increase N fertilizer efficiency by providing appropriate micronutrients on site-specific basis^{24,25}. Malawian fertilizer market presently remains oligopolyistic, with the government playing an active role-from importation to final delivery through a public tender to receive private sector bids to procure subsidized fertilizers. Players include international companies with country offices (Yara Malawi, Export Trading Co), importer producers (Optichem, Farmers World, Agora), and independent traders (Sealand Investment, Agricultural Trading Company, Simama General Dealers Company).

Challenges

- a. Lack of expansive R&D on rice fertilizer use and applications due to inadequate funding and expertise
- b. Limited private investments in local production and/or blending of fertilizers and manures
- c. Inadequate storage warehouses in rice producing areas and poor feeder roads from Beira port
- d. Limited access to financing services to purchase fertilizers and manures by suppliers and end-users
- e. Price volatility due to external events such as Russia- Ukraine war
- f. Adulteration and malpractices are widespread in fertilizer markets
- g. Inadequate implementation of regulatory standards and quality inspection
- h. Lack of accreditation of fertilizer testing facilities in Malawi
- i. Weak institutional coordination on production, procurement, and distribution
- j. Youth and women have little access to trainings and demonstrations
- k. Erratic flow of market information and high volatility in domestic and global fertilizer prices

22 Mutegei J et al (2015) The Status of Fertilizer Recommendation in Malawi: Gaps, Challenges and Opportunities. The Malawi Soil Health Consortium. p56

23 Kanyika WA et al (2007) Response of Nunkile rice variety to Nitrogen application and plant spacing under irrigated conditions in Malawi. Malawi J Agri Sci 3: 58-69

24 Wendt JW et al. (1994). An integrated approach to soil fertility improvement in Malawi, including agroforestry. In: Craswell ET and Simpson J (eds.), Soil Fertility and Climatic Constraints in Dryland Agriculture. p 74-79

25 Kamanga B et al (2014) Improving the efficiency of use of small amounts of nitrogen and phosphorus fertilizer on smallholder maize in Central Malawi. Experimental Agriculture 50:229-249

Scopes

- a. Strong promotion of soil nutrient analysis for efficient fertilizer application and use
- b. Willingness of development partners to fund the redevelopment of the policy
- c. Regional harmonization of fertilizer regulatory frameworks with SADC and African Regional Standards Organization (ARSO)
- d. Availability of local expertise and knowledge on soil diagnosis and fertilizer blending
- e. Emerging local enterprises on organic fertilizers and manures e.g., in Mbeya
- f. Extension service personnel have capacities on promotion of soil fertility management
- g. Adequate storage facilities, rail routes, and corridor for facilitating transport logistics for easier transportation of fertilizers in several ADDs
- h. Subsidy support from Government and involvement of lending institutions for fertilizer supply chain
- i. Efficient stakeholder coordination through Fertilizer Association of Malawi (FAM)
- j. Network of 58 Smallholder Farmers Fertilizer Revolving Fund (SFFRFM) depots and more than 600 Agricultural Development and Marketing Corporation (ADMARC) market units
- k. Steady growth in effective demand for fertilizers and retail marketing network across the country

2.4.4. Irrigation and Water Management

Rice production in Malawi relies primarily on rain-fed environment. Only 4% of the total farming land available in Malawi is under irrigation. It is estimated that about 72,000 Ha of total farming land is under irrigation. However, presently about 48,000 ha is under commercial estates from which the major crops such as sugar cane, tea and coffee are produced²⁶. The remaining 24,000 Ha are under different forms of smallholder irrigation. In addition to these figures, an estimated 62,000 Ha is classified as being under informal water management mainly conducted in wetlands and informal self-help schemes. Opportunities to expand and support surface irrigation systems that deliver water to rice using a gravity-fed, overland flow of water irrigation exists in Malawi.

Challenges

- a. Lack of institutional coordination and resources to adequately implement national irrigation policies related to water management
- b. Frequent occurrence of natural disasters and climate vagaries such as cyclones, floods, drought, and erratic precipitation in potential rice growing areas
- c. Inadequate expertise for R&D on irrigated rice ecosystem and capacity to nurture innovation amongst smallholder farmers under rice and water initiatives
- d. Lack of harmonized approaches on provision of extension services on water management and irrigated rice production
- e. Inadequate maintenance and management of irrigation infrastructures
- f. Lack of knowledge on water harvesting technologies by small holder farmers and communities
- g. Unchecked deforestation and poor maintenance of water catchment areas lead to siltation of water bodies, and rice fields
- h. Growing demand for water for non-agricultural uses due to population growth
- i. Limited capacity and resources of WUAs for management and maintenance operations lead to disputes and conflicts
- j. Over dependence on development partners for creating new irrigation infrastructures and rice schemes

Scopes

- a. Policies on irrigation, climate change and disaster management are consistent and provides clear institutional framework on deploying suitable and irrigable land for rice production
- b. Linkages between local and international water management institutions and other rice research institutions
- c. Coordination between extension service providers and WUA is improving
- d. Availability of National Construction Industry Council for construction of irrigation infrastructures
- e. Established Water Standards for irrigation and overseeing institutions such as National Water Resource Authority
- f. Existence of Rice Water Users Associations in most irrigation schemes
- g. Increasing participation of youths in tree planting and other climate mitigation activities in catchment areas
- h. Technical training and courses on water management from institutions in LUANAR, MZUNI, MUST, MUBAS and MWICA.

2.4.5. Mechanization

Smallholder rice farming activities such as weeding, harvesting, and winnowing are predominantly done through human muscle power, often women. Land preparation and ploughing are carried out generally using hand held hoe. Other tools used for farm chores include axes, machetes, and knapsack sprayers for applying agro-chemicals. Only about 13% of the smallholder farmers have access to draught animal power (DAP) that generally includes a mold board plough and a cart²⁷. Large-scale rice farmers however often have access to motorized equipment such as power tillers and tractors.

Mechanization in smallholdings can help perform the labor-intensive and ergonomically arduous tasks in rice farming more efficiently and timely. It can also relieve the growing seasonal labor constraints that are experienced by farmers in several parts of the country. It also helps compensate for the emigration of rural youth who are disenchanted with the drudgery involved in agriculture. Mechanization thus, contrary to the restricted opinion on labor displacement, stands to compliment human labor in rising on-farm productivity and profitability.

It in view of the above that the NRDS II will deliberately endeavor to promote mechanization in rice cultivation by ensuring availability, access and utilization of mechanization equipment such as cono weeders to facilitate timely weed management; power tillers to facilitate timely land preparation and easy transplanting; pre-calibrated manual and motorized planters for timely and uniform transplanting pattern; simple motorized harvesters and mini combine harvesters for quick and timely harvesting and reduced workload associated with rice harvesting.

Challenges

- a. Lack of policy guidelines and strategies for farm mechanization
- b. Overdependence on imports for farm machineries, equipment, and related spare parts
- c. Inadequate R&D on designing, testing for rice farm machineries that could lead to appropriation of machineries and local manufacturing and assembling
- d. Lack of vocational training and technical support services for users/operators, artisans and other service providers in rice growing areas
- e. Lack of machinery testing facilities for testing and approving introduced/imported machineries
- f. Inadequate network for sales and after sales services for farm equipment in rice growing areas

²⁷ Milner J (2014) Agricultural and Rural Development in Malawi: The Role of Policies and Policy Processes. In: Agricultural and Rural Development in Malawi: Macro and Micro Perspectives. Japan International Cooperation Agency

- g. Higher costs of procuring and maintaining farm machineries prohibit smallholder farmers' access
- h. Scarcity of forex to purchase machines and associated components for suppliers
- i. Inadequate availability of women-friendly small tools such as rotatory weeders, winnowing machines and small mills for processing and grading rice grains

Scopes

- a. National Agriculture Policy has identified mechanization of agriculture as one of the priority areas, paving way for introduction of machineries along the rice value chain
- b. Tax exemptions for importation of farm machineries and equipment
- c. Universities and private operators have started working on modifications of models designed elsewhere that can be improved and adapted to local rice farming conditions
- d. Training institutions that provide training on general mechanical engineering (LUANAR, MUBAS, MUST, TEVETA) are available
- e. Project support from development partners on introduction, extension, and training services on farm mechanization
- f. Availability of artisans and ironsmiths for attending to repairs, modifications, and small-scale manufacturing of tailored spare parts across the country
- g. Availability of financial institutions that can support investments on mechanization in rice production
- h. Youths are often receptive to farm mechanization related activities and entrepreneurship

2.4.6. Crop Management

Climate change and increasing pressure from pests and diseases constantly challenge sustainability of rice production, especially in smallholder farms. Innovative climate smart rice production technologies that can improve tolerance to pests and diseases, and increase resilience from extreme weather and climate change are needed. Integrating public sector, private sector, and smallholder farmers into developing sustainable Good Agricultural Practices (GAPs) based on simple and affordable technologies will be important for rising productivity and profitability of rice farming.

Challenges

- a. Insufficient funding of R&D on climate-smart rice crop production and management techniques
- b. Weak capacity building support for researchers, technicians, and extension staff
- c. Inadequate extension personnel on rice production technologies and farm management

- d. Lack of coordination of extension messages from pluralistic extension service channels often conflict and confuse smallholder rice farmers
- e. Low access to financing among small scale farmers (6.5%) limit smallholder farmers from accessing crop insurance schemes
- f. Lack of forecasting for pests and diseases, and weather adversaries (rainfall, flash floods, dry spell) that could inform smallholder farmers on sowing, transplanting, and harvesting operations

Scopes

- g. Policy support from government and development partners on tackling impacts of pests and climate change on crop productivity
- h. Linkages between national agriculture institutions and international R&D institutions such as International Rice Research Institute (IRRI), AfricaRice on enhancing rice productivity
- i. Willingness of rice value chain actors (farmers, input suppliers, millers, banks) to work closely on tackling challenges related to crop management
- j. Growing participation of women and youth in rice crop management and value addition activities

2.4.7. Post-harvest Handling and Processing

Quantity and quality of harvested grains crucially depend on postharvest handling and processing segments of the rice value chain. Access to the required infrastructures for postharvest handling and knowledge on physiological conditions (such as moisture, chaff, and debris) of grains before storage and packaging and their impact on market prices of grains amongst smallholder farmers and rural traders are low. Rice grains are generally processed (milled) for domestic consumption and local markets, by largely single-pass mills where in both husk (outer layer of grains) and bran (thin layer surrounding the white rice grain) are removed in one cycle. However, mainstream markets face competition from Asian rice which are milled through several stages where by husk and bran are removed in separate passes after de-stoning, polished, sorted, graded, and packaged according to broken percentage of the finished white rice grains.

Challenges

- a. Inadequate awareness creation and training on modern postharvest management technologies for small holders, traders, and millers
- b. Insufficient knowledge on impacts of postharvest handling methods on farm gate prices and market competitiveness of locally produced rice
- c. Lack of research efforts on testing and sourcing women-friendly, low-cost, and locally available resources for drying, cleaning, grading, and packaging of grains
- d. Lack of access to infrastructure, technologies for drying grains, cleaning, and packaging, and transport logistics in rice growing areas

- e. Inadequate and dilapidated storage warehouses which could protect harvested grains from unhygienic elements (rats, insect pests and diseases) and climate change related natural disasters such as flash floods and cyclones
- f. Inadequate implementation of regulatory standards and quality control measures on rural trading and processing of rice grains
- g. Lack of financial incentives for smallholder rice farmers and farmer cooperatives to supply good quality grains to traders and millers
- h. Inadequate linkages between smallholder farmers, input suppliers, grain traders and millers

Scopes

- a. Certified warehouses and warehouse receipts are operational under a government regulated Warehouse Receipt System (WRS)
- b. Infrastructures for R&D and capacity building at National research institute for rice post-harvest handling
- c. Availability of projects/programs that provide financial assistance to organized farmer groups in construction of warehouses
- d. Active participation of government, development partners, financial institutions, and private sector in grain trading
- e. Growing interest from rural women and youth on warehouse receipt system and grain trading

2.4.8. Marketing, Trading and Value addition

The fragmented and smallholding nature of rice farming reduces efficiency of marketing of both the farm inputs and farm outputs. Given the regional demand for Malawi rice and Malawi's dependence on regional and global supply chains for farm inputs; trading between actors along the commodity chains also suffers from inefficiencies. Addition of value to rice and its byproducts (such as straw, bran, husk) shall provide several opportunities for the smallholder farmers to increase their incomes and create several jobs for rural women and youth. Although value addition activities in Malawi are presently at an embryonic stage, the potential for growth in enterprises that could add value to rice production is immense.

Challenges

- a. Informal marketing and trading of rice grains and farm inputs through porous borders and uncharted routes are on the rise
- b. Multiplicity of regional policies and non-overlapping trading partners under SADC and COMESA lead to non-coherence and weak integration of cross-border trading policies
- c. Traders in some of the neighboring countries under SADC and COMESA (for example, Tanzania) re-route Malawi rice to non-partner states of SADC and COMESA through other regional economic blocs such East African Community (EAC) with which Malawi is not regionally affiliated (for example, South Sudan) under different brands and trade names

- d. Insufficient human resources and monitoring capacities for implementing cross-border trade policies
- e. Lack of structured market platforms for national and regional marketing and trading of rice grains and farm inputs
- f. Small and fragmented rice production and inadequate number of functional aggregation points and/or farmer cooperatives reduce bargaining power of individual rice producers
- g. Rural rice trading networks lack transparency in prices and are often fraught with imperfections
- h. Inadequate feeder roads, intermittent electricity, and inadequate storage infrastructures in rice growing areas for grains and byproducts which affect price and quality competitiveness of Malawi rice
- i. Inflationary pressures, insufficient accessibility to foreign exchange, and volatility of currency value reduce stability of existing supply chain networks
- j. Non-tariff barriers of rice trading and insufficient awareness on regional trading regulations causes delay and adds extra costs
- k. Limited knowledge on market price information and lack of skills in market price analyses, price forecasting and market intelligence on rice grains
- l. Inadequate compliance to packaging and marketing standards for rice grains, which could improve market competitiveness of locally produced rice
- m. Lack of accredited laboratories in Malawi for testing and grading of rice grains which lead to dumping of adulterated rice stocks at cheaper prices from elsewhere
- n. Lack of policy and financial incentives for value addition of rice and by products ,
- o. Lack of research and extension on circularity nature and economic benefits of rice byproducts (such as straws, rice husk and rice bran)
- p. Low awareness among consumers on alternative ways of consuming rice grains which could increase nutritional value
- q. Low awareness amongst smallholder producers on the alternate ways in which byproducts could be used for energy, soil fertility management and animal feed; which could serve as additional revenue for smallholders
- r. Lack of awareness creation amongst youth and women on entrepreneurship opportunities on value addition of rice grains and by products

Scopes

- a. Growing demand for Malawi rice in cross-border regional markets such as in Tanzania, South Africa, Angola, Zambia, and Mozambique
- b. Malawi 2063 and National Export Strategy encourages sustained exportation of Malawi rice for regional food security
- c. Availability of electronic trading platforms such as Agricultural Commodity Exchange (ACE) and Auction Holdings Commodity Exchange (AHCX) Ltd.
- d. Warehouse receipt is recognized as a security and are recognized for collateral loans and other lending instruments by financial institutions
- e. Regional integration and harmonization of Malawi's rice grain standards and grades, customs and trading regulations COMESA and SADC
- f. Operationalization of African Continental Free Trade Area (AfCFTA) in Malawi shall present a continent-wide market and related agreements with other trade blocs
- g. Slow but steady mainstreaming and transformation of informal rice markets are taking place in Malawi
- h. Growing private engagement in rice marketing and trading across the border
- i. Presence of women business groups and national associations such as Grain Traders and Processors Association of Malawi serve as a driving force for marketing and trading of rice produced in Malawi.

3.0

Strategic Framework

The SWOT analyses of Malawi's rice value chain (section 2.4) informed a framework for further advancement of the rice sector through NRDS-2. Strategic actions that could help build further on the strengths (S), eliminate the weaknesses (W), exploit available opportunities (O), and mitigate the effect of the threats (T) were analyzed by reflecting on the following:

- which of the Malawi's strengths rice value chain can be used to maximize the opportunities for rice sector development,
- what actions shall be taken to minimize the internal weaknesses using the opportunities
- which of the Malawi's strengths can be used to minimize the impacts of external threats
- how internal weaknesses can be minimized to avoid the threats

3.1. Vision

A sustainable, competitive, and commercially vibrant rice sector is envisaged through the proposed NRDS-2. In alignment with overarching Malawi 2063 vision, the NRDS-2 shall facilitate a shift from low-productive subsistent rice farming to a highly-productive, market-oriented, and sustainable rice industry.

3.2. Goal

Overall objective of the NRDS-2 is to **drive Malawi's economic growth and food security through rice sector development**. It is conceivable that a highly productive rice farming by smallholders will render self-reliance in rice production, create more jobs along an efficient and profitable rice value chain, and increase rice exports to meet the rapidly rising demand in regional markets.

3.3. Strategic Approaches

In view of the various evolving contexts of rice sector development in Malawi and across the globe; the following four concepts were applied while designing the strategic framework. It is expected these principles will inspire and guide the implementation of NRDS-2:

- i. Resilience (**R**): Rice value chain development processes in Malawi shall inculcate abilities to withstand climate change-related challenges on production, and avert any negative impacts from global shocks such as COVID-19 pandemic and Ukraine-Russia war on local, regional and global supply chains of rice farm inputs and outputs.
- ii. Industrialization (**I**): Rice sector in Malawi shall constantly strive to modernize and increase economies of scale of input supply, on-farm rice production, processing, value addition, marketing, and regional trading. This will involve proactive engagement of small-, medium-, and large enterprises in both rural- and urban areas.
- iii. Competitiveness (**C**): Given the influx of imported rice in local and regional markets, market competitiveness of Malawi rice becomes crucial for social and economic sustainability of rice sector development. Emphasis will be made on improving market orientation and reducing costs of local rice production, and improving quality features of locally produced rice; to substitute importation and widen the scopes for exportation in the region.
- iv. Empowerment (**E**): Inclusion and continuous engagement of women, youth, and other marginal sections of the society along the rice value chain will enable equitable sharing of socio-economic rewards in rice sector development. Constant engagement of private sector and facilitation of public-private policy dialogues will play an important role in learning, adaptation, and coordination of the implementation of NRDS-2.

The above-mentioned R.I.C.E approach will cut across all the proposed strategic interventions under the NRDS-2. By improving the cultural, social-, and economic sustainability of rice value chain development, this strategic approach will entice and nurture investments through public-private partnerships, development partners, bilateral partners, private sector, and other national, regional and global stakeholders.

3.4. Strategic Objectives

The following specific objectives stipulate the means by which the goal of the NRDS-2 will be achieved, and will serve as main strategic axes or strategic pillars:

- i. Increase rice production and productivity by improving efficiency along the entire rice value chain;
- ii. Improve market orientation and competitiveness of smallholder rice farmers in rain-fed and irrigated production systems;
- iii. Enhance ecological, social, and economic sustainability of rice farming; and
- iv. Strengthen human and institutional capacities along the rice value chain.

3.5. Targets

The goal of NRDS-2 will be achieved by **doubling rice production in Malawi** from 147,100 tons (raw rice; before milling) in 2021 to 330,000 tons by 2030. While this serves as a primary target for the NRDS-2, a set of secondary targets that can help achieve the doubling of rice production through the R.I.C.E approach (section 3.3) is shown in table 2.

Table 2: NRDS-2 targets for overall performance of rice sector development and its R.I.C.E approach

Indices	Baseline	2030
Total quantity of raw rice (before milling) production	147,100 tons in 2021	330,000 tons
Total rice area harvested (includes 2 seasons)	76,962 Ha in 2021	110,000 Ha
National average on-farm yield (all ecosystems)	1.91 tons/Ha in 2021	3.0 tons/Ha
Rate of Rice Self Sufficiency	98% in 2019	100%
Area under Irrigation	4, 306 Ha in 2019	5,000 Ha
Quantity of high-yielding seeds produced and sold	37.4 tons in 2019	600 tons
Utilization capacity of industrial mills	50% in 2022	75%
Mechanization (Number of farm machineries in smallholder rice farms)	Tractors: 28 Cono Weeders: 63 Power Tillers: 52 in 2019 Manual planters: 0 in 2022 Motorized planters: 0 in 2022 Simple motorized harvesters: 0 in 2022 Mini Combine Harvesters: 0 in 2022	Tractors: 50 Cono Weeders: 500 Power Tillers: 100 in 2030 Manual planters: 50 in 2030 Motorized planters: 20 in 2030 Simple motorized harvesters: 30 in 2030 Mini Combine Harvesters: 10 in 2030
Market share of local rice	87% in 2022	90%
Smallholder farmers' accessibility to financial services	6.5% in 2022	20%
Smallholder farmers' accessibility to technical services	36% in 2022	50%

4.0**Strategic Interventions**

Outputs from the SWOT analyses of rice value chain (section 2.4) revealed various challenges across the entire rice value chain – land, seed, soil fertility management, irrigation and water management, crop management, postharvest handling, processing, marketing, trading, and value addition. Depending on the complexity of the challenge and its impacts; the type(s) of strategic interventions shall involve policy and legal reforms, research for development, extension of research outputs, infrastructure establishment and maintenance, facilitation of finance for value chain actors, capacity building for value chain supporters, institutional reforms, deployment of ICT tools, improvement in quality of goods and services, marketing efficiency, and inclusiveness of women and youth.

Expected major outcomes of these strategic interventions include increased production and marketing of Malawi rice, and improved institutional capacities for implementation. By setting smallholder rice farmers on a path of continuous improvement in profitability and sustainability, the proposed strategic interventions will facilitate the envisaged shift from subsistence rice farming, increase incomes, and improve national food security. This serves as theory of change under the NRDS-2. The following sections enlist crucial interventions that are required under each of the four strategic objectives.

Despite the emphasis on uplifting the smallholder farmers who face a lot of risks in their day-to-day farming, the Strategy will be inclusive by taking on board both the upcoming and the commercial rice farming in its programming and roll out strategy.

SO-1: Increase rice production and productivity by improving efficiency along the entire rice value chain

As one of the major functions of the total rice production; on-farm productivity has profound implications in smallholder rice farming. Interventions under this SO will aim to usher smallholder rice farmers away from low-risk and low-input farming. Under this strategic objective, interventions that can make Malawi's rice value chain responsive to emerging market demand and climate change will gain focus. Emphasis will be made on improving the usage of good quality rice seeds by facilitating a shift from informal seed system to a semi-formal seed system (QDS) and then eventually a formal seed system which could potentially improve trust, lower costs, timely availability, and therefore adoption. Economic efficiency and technical usage effectiveness of other farm inputs such as fertilizers, agrochemicals, and machineries in smallholdings will need to be substantially increased.

Yield losses due to pests and climate vagaries such as flash floods, prolonged dry spells, and cyclones will be mitigated through integrated pest management techniques, climate-smart technologies and promotion of GAPs and System of Rice Intensification (SRI). Infrastructure and management capacities on water harvesting, water distribution and water usage especially at critical stages of crop growth will be enhanced in both rain-fed and irrigated ecosystems. Use of small tools and appropriate machineries for smallholder land preparation, weeding, harvesting, and threshing that could increase productivity and reduce drudgery will be promoted. Activities that could help achieve these priority areas are proposed below:

- a. Develop and validate a rice-specific seed policy note that will reflect full harmonization of rice seed classes and standards with regional blocs (COMESA and SADC)
- b. Pilot and evaluate impacts of QDS system on seed usage of market-demanded rice varieties in rain-fed rice growing areas through public-private partnerships
- c. Strengthen technical and institutional capacities for R&D for developing rice hybrids and high yielding, climate resilient, consumer-preferred rice inbred through increased funding, up-skilling, linkages with regional and international institutions, and public-private partnerships
- d. Using various extension approaches such as multi-media, demonstrations, farmer field schools, and visits in rice producing areas; increase effective demand of market-demanded rice seeds, small tools and machineries, and adoption of GAPs, SRI, and integrated pest management
- e. Provide policy and financial incentives for promoting uptake of certified seeds such as through subsidy for small packs of improved rice seeds in rain-fed areas
- f. Improve varietal choices, timeliness, quantity, and quality of certified seeds available by broadening seed distribution network in rain-fed- and irrigated rice growing areas
- g. Harmonize and synchronize policy and strategic actions on fertilizer industry (standards, regulations and pricing mechanisms) in line with NAP, COMESA, SADC and ARSO.
- h. Build institutional and R&D capacities in soil analyses, amelioration of problem soils, and site-specific appropriation of fertilizers, including organic- and inorganic fertilizer combinations and application methods
- i. Develop soil maps/profiles for current and potential rice production areas
- j. Promote soil diagnosis, local manufacturing and blending of fertilizers through financial and policy incentives for private investments

- k. Build ICT infrastructure, institutional and human capacities on extension services on integrated approaches for soil and water management, water conservation, and mitigation measures against water and other climate stresses
- l. Improve transportation logistics (feeder roads, rural storage facilities, electricity) for efficient distribution of farm inputs such as seeds, fertilizers, and agro-chemicals
- m. Establish an Integrated Water Resources Management (IWRM) and Community Based Management (CBM) mechanisms to provide access and conserve water resources that are responsive to water related climate change and disasters
- n. Develop guidelines for constructing resilient irrigation and water harvesting structures for rice to minimize water losses due to poor structures
- o. Enhance capacity building of smallholder farmers, WUAs, and extension agents with skills and knowledge in water harvesting, water conservation and water use efficiency
- p. Empower WUAs, farmer groups, rural women groups, and cooperatives with ownership and legal responsibilities for managing and maintaining irrigation infrastructures and water resources
- q. Promote public-private partnerships in appropriating (type, cost, and quality) and disseminating tools and machineries for smallholder rice farm operations
- r. Provide policy and financial incentives for local manufacturing of durable small tools (such as rotary weeder), and implements and accessories for farm machineries
- s. Up-skill operators, local artisans, rural technicians, engineers on design, repair and adaptation of tools, spare parts, implements, and machineries

SO-2: Improve market orientation and competitiveness of smallholder rice farmers in rain-fed and irrigated production systems

Socio-economic transformation through agriculture sector in Malawi requires smallholder rice farmers move from subsistence to market-oriented rice farming. Furthermore, export potential of Malawi rice could be realized by the stakeholders better, when the local production meets the market expectations on price, quality, and quantity. Improving market- and trade competitiveness of Malawi rice hence requires significant upgrading of production and processing systems. Since the small and fragmented volumes of rice production often put the smallholder farmers in an unfavorable bargaining position, the NRDS-2 proposes to facilitate smallholder farmers collectively pool and organize their farm inputs and local resources for production, and aggregate, market and trade the grains and byproducts.

In synchronization with dynamics of national and regional rice markets, emphasis will be made on producing market-preferred varieties, reducing costs of production, enhancing grain quality through improved postharvest handling, and improving market structures and functions. Farmers and farmer groups/cooperatives will be encouraged to establish strong linkages with millers, traders, and input suppliers. Evidence-based policy advocacies on improving the obligations under forward contracts between farmers and traders, input suppliers, millers, and financial institutions including **Anchor Farming approach** will be facilitated. Through active engagement of private sector, improved access to finance for value chain actors and continuous capacity building for value chain supporters; market orientation and competitiveness of locally produced rice will be improved.

There is also need for strong linkages with Ministry of Trade and Malawi Investment and Trade Centre (MITC) for provision of more clear information on export market demands, varietal preference, minimum safety standards and specifications way in advance before production including timely feedback from International Trade Expos.

The following activities are proposed for improving market orientation and market competitiveness under the NRDS-2:

- a. Guide smallholder rice farmers in rice growing areas organize into farmer groups or cooperatives and collectively procure inputs, sell rice to traders and millers at better prices, and exchange knowledge and experience on rice farming
- b. Train farmer groups and cooperatives on organizational and financial capabilities to improve cohesion of smallholder farmers, mutual trust, and profitability of their operations
- c. Promote direct linkages between farmers, farmer groups with input suppliers, service providers, grain traders, millers, and consumer markets
- d. Clarity on policies on contract-related dispute resolutions between farmers/farmer groups/cooperatives and other value chain actors will be disseminated to the stakeholders
- e. Expand human capacities (number and skills) and budget for ICT infrastructures, extension services and inspection services for regulatory standards of marketing of rice seeds, agro-chemicals, and rice grains (both raw rice and milled rice)
- f. Promote research collaborations between national and international institutions and private sector on identifying and designing new cost-cutting technologies in rice farming
- g. Provide policy and financial incentives for farm mechanization sales and service providers in rice growing areas
- h. Scale out warehouse receipt system and improve regulatory monitoring and inspection mechanisms in rice growing areas

- i. Enhance capacity building of value chain actors and supporters on postharvest handling, processing, and value addition
- j. Promote continuous research on consumer market preferences, value addition, utilization of rice byproducts (straw, husk, bran), and profitability on the use of various inputs and technologies in rice farming
- k. Strengthen capacity of Malawi Bureau Standards (MBS) for enforcement of minimum food safety standards for local, regional and international markets
- l. Establish appropriate ICT infrastructures, market intelligence and market information systems for analyzing and disseminating information on availability (types, sources, and prices) of seeds, fertilizers, organic manures, agro-chemicals, tools, and machineries in rice producing areas
- m. Decentralize and enable transparency in flow of information on demand and supply quantities and sales prices of seeds, grains, fertilizers, agro-chemicals, and machineries at local level so that data can be captured by Department of Agriculture Planning Services
- n. Review national and regional policy instruments such as Common External Tariff (CET) and duty remissions, and recommend new evidence-based policy options for improving trading competitiveness of Malawi rice

SO-3: Enhance ecological, social, and economic sustainability of rice farming

Ensuring consistent and continuous rice production for meeting the national food security, without compromising the opportunities of future generations is an important facet of the NRDS-2. Emphasis will be made on promoting a sustainable rice-based food system that will efficiently use natural resource bases without affecting the profitability, environmental quality, and yet enhance the quality of life of rice farmers and the associated rural communities, and improve the economic viability of rice farming. Rice by-products have been and remain highly associated with environmental pollution especially when just dumped and not properly managed. However, these by-products could be used in feed making (bran and straw) as well as production of briquettes (husks) thereby providing additional income to the farmers or the investors while contributing to reduced environmental pollution. NRDS-2 will therefore promote adoption of sustainable rice cultivation practices by mobilizing the stakeholders.

Paddy fields are notoriously known for emitting greenhouse gases (GHGs) such as methane, nitrous oxide, and carbon dioxide. However recent progresses in research reveal that although rice is a water-loving crop; continuous inundation of rice fields with water is not a requisite for the crop performance²⁸. Effective management of limited water resources such as through rainwater harvesting, groundwater recharge, and synchronization of timing of seeding and transplanting with the actual onset of seasonal rainfall can greatly contribute towards sustainability of rice production. Furthermore, NRDS-2 will emphasize on maintenance of irrigation infrastructures and water canal and drainage systems that could reduce seepage losses. Major activities under this objective will include the following:

- a. Collaborations on adaptive research on best practices of integrated farm (pests, soil, and water) management for smallholdings in Malawi
- b. Encourage crop rotation, ratooning, fallow-cropping, and intercropping with nitrogen-fixing legumes that can provide additional income and household nutrition, use of bio fertilizers, and rice byproduct management through demonstration and training
- c. Disseminate knowledge and benefits of circular economy in rice-based food systems through concepts such as reduce, reuse, and recycle natural resources, and rice farm products and byproducts amongst farmers and other stakeholders
- d. Promote adoption of proven climate-smart, sustainable rice cultivation practices that minimize emissions of GHGs, such as alternate wetting and drying of paddy fields and dry seeding will be promoted in irrigated and rain-fed lowland ecosystems
- e. Designing and planning of aggregated and consolidated rice cultivation land for enabling mechanized enabling operations
- f. Capacity building of farmers, farmer groups, cooperatives, WUAs and local government officials on maintenance of irrigation infrastructures, water canals, and drainage systems in rice growing areas
- g. Promote research in effective management, utilization and value addition of rice by-products for increased adoption and investment
- h. Disseminate principles and policies on ecological, social and economic sustainability of rice production to all rice stakeholders through open days, workshops and multi-media

28 Singh B et al. (2021) Growing Rice with Less Water: Improving Productivity by Decreasing Water Demand. In: Rice Improvement. pp147-170

SO-4: Strengthen human and institutional capacities along the rice value chain

Under this objective, the NRDS-2 will build on human and technical capacities of existing institutional structures and reinforce its ability to engage strategic partners from public- and private sector and civil society organizations. Emphasis will be made on enabling multi-stakeholder platforms where public research institutions, businesses in input and output markets, rice farmers, farmer groups, cooperatives, women and youth, extension services, and microfinance agencies will collectively strive towards achieving the objectives of the NRDS-2. Efforts will focus on building technical capabilities of the current and next generation of rice value chain supporters, through both degree and non-degree training programs such as vocational training, regional/international workshops, online/distance learning, short-term group courses and exchange visits.

Capacities for creating and implementing action plans, for scaling-up and scaling-out promising technologies, performing village-level facilitation skills using new and modern extension tools (including ICT applications), scaling of appropriate mechanization and business development, and monitoring and evaluation (M&E) of the impacts of the NRDS-2 will be strengthened. Technical areas for up-skilling include policy analyses, policy formulation, research, extension, infrastructure design and maintenance, ICT, farm machinery design and repair, processing machinery operations and management, market information analyses, and technologies that add value to rice grains and byproducts. Besides up-skilling, effectiveness of research systems in developing and delivering new technologies and management practices to small-scale producers will also be strengthened under the NRDS-2. The following major interventions are proposed under this objective:

- a. Conduct assessment on capacity gaps across institutions and organizations along the impact path of rice value chain development, taking account of both human- and institutional needs
- b. Develop capacity enhancement plan to address needs (as identified under capacity needs assessment and intervention design) of human resources
- c. Up-skill existing staff through in-country, regional and overseas training, and short courses on research for development in areas prioritized in this document
- d. Provide in-country training for extension staff on key aspects of production, mechanization, farm management, processing, marketing standards, ICT, and trading regulations

- e. Through a gender-sensitive approach, train farmers and actors in the rice value chain on climate-smart rice farming, crop management, byproduct management, postharvest handling and processing, and access to finance, market information on inputs (including machineries) and outputs
- f. Develop capacities of local and national institutions to establish, maintain, and expand partnerships with major scaling partners from the public and private sector and to scale-out proven technologies and services
- g. Strengthen institutional infrastructures for conservation, breeding, and selection of rice germplasm for desired traits (including pest tolerance/resistance), and testing quality of seeds, soils, fertilizers, agro-chemicals, and grains
- h. Identify appropriate institutional policy options to reduce staff attrition, provide performance-based rewards/incentives, fill gaps created by retirement of existing staff, and recruit additional staff based on the findings from needs assessment

5.0

Implementation Mechanisms

Ministry of Agriculture will spearhead the implementation of NRDS-2. Interventions under public and public-private partnerships will be executed through existing institutional structures under Ministry of Agriculture, in collaboration with institutions under the other line Ministries such as Ministry of Finance, Ministry of Natural Resources and Climate Change, Ministry of Water and Sanitation, Ministry of Lands, Ministry of Local Government, Unity and Culture, and Ministry of Trade and Industry.

Financing for the implementation will be sourced from Government, Development Partners, private sector, and other stakeholders. In this context, NRDS taskforce will first conduct analyses of gaps (horizontal and vertical) on interventions across the rice value chain. While horizontal gaps will reveal the spaces for intervention elements such as policy, infrastructures, research, extension, skills, gender, and youth; the vertical gaps will reveal lapses in coverage of interventions across different geographical rice producing areas. The NRDS taskforce will then prioritize the identified gaps, based on urgency and potential impacts on the strategic objectives of NRDS-2.

Project concept notes that will address the priorities will be formulated by the NRDS taskforce in consultations with national and regional stakeholders. Under the guidance of Secretary for Agriculture, funding for implementing project concepts will be sourced from government, development partners, private entrepreneurs, investors, and other national and regional agencies.

Project activities will be carried out by Public Institutions (such as Line Ministries, relevant Departments and Agencies, National/Regional research institutions and the Academia, local government system), Private Sector (input suppliers, seed companies, manufacturers, financial institutions, farmers, processors, traders, and other value chain actors) and Development Partners (bilateral and multilateral agencies), Non-Government Organizations, and Civil Societies) under the coordination of the Ministry of Agriculture. As a satellite office of the Ministry of Agriculture, Agricultural Development Divisions (ADDs) will play a pivotal role in supervising, backstopping and monitoring the implementation of district activities under the Strategy on behalf of the Ministry for timely feedback from the field to the Ministry and vice versa.

Implementation of the NRDS-2 will be coordinated and monitored through a 3-tier structure. (1) The Secretary of the Ministry of Agriculture will oversee and steer the overall implementation process. (2) **The focal point of the NRDS Taskforce**, under the guidance of the Secretary, will liaise with various stakeholders of the rice value chain, and lead (3) **the NRDS Taskforce** on technical discussions on the various issues and solutions. Specific roles of the three coordination positions are as follows:

1. Secretary of Ministry of Agriculture:

- a. High level coordination with line Ministers, other Secretary for the line Ministries, and development partners
- b. Providing high level strategic guidance to national stakeholders on NRDS 2 implementation

2. NRDS Focal Point: Under the guidance of Secretary of Ministry of Agriculture the focal point will lead and coordinate the NRDS 2 implementation. Major roles of the NRDS focal point include:

- a. Overseeing the various stakeholders' interventions across the rice value chain
- b. Leading technical discussions amongst NRDS taskforce members on rice sector development
- c. Communications with Secretary and stakeholders on issues and possible solutions on rice sector development
- d. Mobilization of funds, in consultation with Secretary, for rice related programs/projects
- e. Engaging and coordinating public- and private stakeholders from across the rice value chain
- f. Monitoring and evaluation of progress under the NRDS-2
- g. Organizing Annual Review Meeting of rice stakeholders
- h. Representing NRDS taskforce in national and regional fora/initiatives on rice sector development

3. NRDS Taskforce: The taskforce, appointed by the Secretary, shall include representatives from relevant line Ministries, rice-related R&D institutions/universities, extension agencies, non-governmental organizations, private sector representatives, development partners, farmer groups/cooperatives/unions, and other stakeholders' representatives. The roles of NRDS task force include:

- a. Providing advice Ministry of Agriculture through NRDS focal point and Secretary on all technical matters related to rice value chain development in Malawi
- b. Designing of mid-term (2024-2027) and long-term (2024-2030) implementation plan under the NRDS-2
- c. Formulation of project concept notes and lobby for funds from stakeholders
- d. Collection of data on key indicators of NRDS-2 implementation
- e. Holding periodical consultations with national and regional stakeholders (public and private) on their priorities and interests
- f. Generating evidence-based policy options and solutions to key issues

- g. Monitoring and evaluation of progress on the implementation of the NRDS-2, by tracking changes in performance of key indicators
- h. Preparation of annual reports on the progress of NRDS-2 implementation
- i. Formulation of rice-specific policies and strategies for advancing rice value chain segments, such as seeds, fertilizers, etc.

6.0

Monitoring & Evaluation

Given the complexity in individual and additive effects of the various interventions along the rice value chain on beneficiaries and their livelihoods across different rice production environments; monitoring and evaluation (M&E) becomes paramount for learning and adaptive management of the strategies for rice sector development. The M&E process of the NRDS-2 will hence mainly focus on outcome-level indicators of the R.I.C.E. approaches and overall indicators on rice production, listed in table 3. Performance of these indicators will be tracked and evaluated against the targets set out under the NRDS-2 (table 2).

Table 3. Key M&E indicators for assessing progress on NRDS-2 implementation

Assessment Categories	Key Representative Indicators	Pointer
Overall performance of Malawi's rice sector	O.1: Total rice production	Output capacity of Malawi's rice sector
	O.2: Area under rice production	Competitive advantage of growing rice over other crops in different ecologies
	O.3: National on-farm average yield	Adoption of productivity-enhancing technologies
	O.4: Rice self-sufficiency rate	Degree of import substitution
Resilience (R) of rice sector	R.1: Area under Irrigation	Preparedness against climate vagaries
	R.2: Quantity of formal seeds of resilient rice variety produced	Adoption of climate-smart rice farming
Industrialization (I) of rice value chain	I.1: Level of industrial mills	Capacity utilization of rice mills
	I.2: Mechanization ratio	Extent of machinery use in rice-producing areas
Competitiveness (C) of rice industry	C.1: Market share of local rice	Consumer preference on local rice
	C.2: Quantity of high-yielding seeds	Adoption of quality varieties
Empowerment (E) of stakeholders	E.1: Farmers' accessibility to financial services	Economic viability of rice production
	E.2: Farmers' accessibility to technical services	Technical capacity of rice producers

Monitoring will be a continuous process whereby the NRDS taskforce will constantly keep track of the effectiveness of on-going rice-related projects, policy instruments along the rice value chain, stakeholder engagements at national and regional levels, stakeholder communications, and collaborations with relevant national, regional, and international institutions/organizations engaged in rice-related research and development. The NRDS taskforce will collect annual data on overall indicators (O.1- O.4), organize technical review meetings with various stakeholders of the rice value chain, and engage technical analysts and/or enumerators collecting data on other R.I.C.E indicators (table. 3) to assess progress under the NRDS-2 in 2026 (mid-term) and by 2030 (end of term).

Technical evaluation of the progress and impacts of the NRDS-2 (in 2026 and 2030) will be carried out by deploying specialized technical consultancy services for collecting data on the indices from appropriate and relevant sources. Based on the lessons learnt through the assessments; the NRDS taskforce will undertake course corrections (adaptation) by:

- recognizing new opportunities for the stakeholders and beneficiaries in national, regional, and international input- and output markets;
- reviewing functional partnerships, coherence, and coordination efforts of various rice-related projects in the country;
- gauging the rice-related policies and their impacts on the efficiency of rice value chain;
- appraising the ability of local rice production and supply systems to withstand/mitigate external shocks (climatic and global) and emergencies; and
- exploring appropriate new technologies (in production, aggregation, post-harvest handling, processing, value addition, marketing, and information) that could be scaled-out and/or scaled-up.

7.0**Costs And Resource Mobilization**

The Strategy is for five (6) years from 2024/25 to 2029/30 and it is estimated that it will require a total cost of about MK 16,622,778,000.00 to implement over the whole period. Detailed costs are presented in Appendix 1.

As indicated above, resources for implementing project concepts under the Strategy will be sourced from Government, Development Partners, private entrepreneurs, investors and other national and regional agencies. Project concept notes for specific priority areas will be formulated by the NRDS Taskforce in consultations with national and regional stakeholders.

Annex 1: NRDS II ACTIVITY PLAN AND BUDGET ESTIMATES

Strategic Intervention Areas	Planned Activity	Output	Output Indicator	Target	Responsibility	Budget Estimates (MK)	Budget Estimates (US\$) US\$1=MK1750
Increase rice production and productivity by improving efficiency along the entire rice value chain	a. Develop and validate a rice-specific seed policy note fully harmonized with regional blocs (COMESA and SADC) standards	Rice specific policy developed and validated	number of policy documents	1	NRDS Taskforce	180,000,000.00	102,857.14
	b. Pilot and evaluate impacts of QDS system	QDS system piloted and evaluated	number of reports	1	NRDS Taskforce	74,992,500.00	42,852.86
	c. Strengthen technical and institutional capacities for R&D for developing rice hybrids and high yielding, climate resilient, consumer-preferred rice inbred through increased funding, up-skilling, linkages with regional and international institutions, and public-private partnerships	R&D technical and institutional capacities strengthened	yearly reports	6	NRDS Taskforce	100,000,000.00	57,142.86
	d. Popularise market-demanded rice seeds, small tools and machineries, and adoption of GAPs, SRI, and IPDM using various extension approaches	technologies popularised	number of technologies / evaluation reports	various	NRDS Taskforce	50,000,000.00	28,571.43
	e. Provide policy and financial incentives for promoting uptake of certified seeds such as through subsidy for small packs of improved rice seeds in rain-fed areas	policy and financial incentives developed	policy documents	2	NRDS Taskforce	2,000,000,000.00	1,142,857.14
	f. Improve varietal choices, timeliness, quantity, and quality of certified seeds available by broadening seed distribution network in rain-fed and irrigated rice growing areas	seed system developed	seed systems yearly reports	6	NRDS Taskforce	100,000,000.00	57,142.86

	g. Harmonize and synchronize policy and strategic actions on fertilizer industry (standards, regulations and pricing mechanisms) in line with NAP, COMESA, SADC and ARSO.	policy and strategic actions on fertilizer industry harmonize and synchronized	number of policy reports	1	NRDS Taskforce	200,000,000.00	114,285.71
	h. Build institutional and R&D capacities in soil analyses, amelioration of problem soils, and site-specific appropriation of fertilizers, including organic- and inorganic fertilizer combinations and application methods	institutional and R&D capacities built	number of specific areas	various	NRDS Taskforce	100,000,000.00	57,142.86
	i. Develop soil maps/profiles for current and potential rice production areas	soil maps/profiles developed	number of soil maps/profiles	various	NRDS Taskforce	175,000,000.00	100,000.00
	j. Promote soil diagnosis, local manufacturing and blending of fertilizers through financial and policy incentives for private investments	soil diagnosis, local manufacturing and blending of fertilizers promoted	policy documents	2	NRDS Taskforce	100,000,000.00	57,142.86
	k. Build ICT infrastructure, institutional and human capacities on extension services on integrated approaches for soil and water management, water conservation, and mitigation measures against water and other climate stresses	ICT infrastructure, institutional and human capacities built	number/type of capacity	various	NRDS Taskforce	200,000,000.00	114,285.71
	l. Improve transportation logistics (feeder roads, rural storage facilities, electricity) for efficient distribution of farm inputs such as seeds, fertilizers, and agro-chemicals				NRDS Taskforce	-	-
	m. m. Establish an Integrated Water Resources Management (IWRM) and Community Based Management (CBM) mechanisms to provide access and conserve water resources that are responsive to water related climate change and disasters	mechanisms developed and established	number of mechanisms	2	NRDS Taskforce	100,000,000.00	57,142.86

n. Develop guidelines for constructing resilient irrigation and water harvesting structures for rice to minimize water losses due to poor structures	guidelines developed	number of documents	2	NRDS Taskforce	50,000,000.00	28,571.43
o. Enhance capacity building of smallholder farmers, WUAs, and extension agents with skills and knowledge in water harvesting, water conservation and water use efficiency	capacity enhanced	number of farmers/WUAs/ Extension agents	200000 /100 / 100	NRDS Taskforce	100,000,000.00	57,142.86
p. Empower WUAs, farmer groups, rural women groups, and cooperatives with ownership and legal responsibilities for managing and maintaining irrigation infrastructures and water resources	farmer organizations empowered	number of farmer organizations	200	NRDS Taskforce	100,000,000.00	57,142.86
q. Promote public-private partnerships in appropriating (type, cost, and quality) and disseminating tools and machineries for smallholder rice farm operations	PPP promoted	number of PPP agreements reached	15	NRDS Taskforce	100,000,000.00	57,142.86
r. Provide policy and financial incentives for local manufacturing of durable small tools (such as rotary weeder), and implements and accessories for farm machineries	policy and financial incentives developed	policy documents	2	NRDS Taskforce	100,000,000.00	57,142.86
s. Up-skill operators, local artisans, rural technicians, engineers on design, repair and adaptation of tools, spare parts, implements, and machineries	operators, local artisans, rural technicians, engineers skills enhanced	number of people	200	NRDS Taskforce	500,000,000.00	285,714.29
t. Facilitate seed production of all categories	Quality seed produced	tonnes	600	NRDS Taskforce	500,000,000.00	285,714.29

	u. Procure farm machinery and equipment					NRDS Taskforce			-
	• Tractors	Tractors procured	number	22		NRDS Taskforce	2,200,000,000.00		1,257,142.86
	• Cono weeders	cono weeders procured	number	437		NRDS Taskforce	87,400,000.00		49,942.86
	• Power tillers	Power tillers procured	number	48		NRDS Taskforce	240,000,000.00		137,142.86
	• Manual planters	Manual planters procured	number	50		NRDS Taskforce	100,000,000.00		57,142.86
	• Motorized planters	Motorized planters procured	number	20		NRDS Taskforce	200,000,000.00		114,285.71
	• Simple motorized harvesters	Simple motorized harvesters procured	number	30		NRDS Taskforce	150,000,000.00		85,714.29
	• Mini Combine Harvesters	Mini Combine Harvesters procured	number	10		NRDS Taskforce	2,000,000,000.00		1,142,857.14

Improve market orientation and competitiveness of smallholder rice farmers in rainfed and irrigated production systems	a. Guide smallholder rice farmers in rice growing areas organize into farmer groups or cooperatives and collectively procure inputs, sell rice to traders and millers at better prices, and exchange knowledge and experience on rice farming	farmer organizations formed	number of FOs	100		NRDS Taskforce	50,000,000.00		28,571.43
	b. Train farmer groups and cooperatives on organizational and financial capabilities to improve cohesion of smallholder farmers, mutual trust, and profitability of their operations	farmer organizations trained	number of FOs	100		NRDS Taskforce	200,000,000.00		114,285.71
	c. Promote direct linkages between farmers, farmer groups with input suppliers, service providers, grain traders, millers, and consumer markets	farmer linkages promoted	number of FOs linked	100		NRDS Taskforce	253,260,000.00		144,720.00
	d. Clarity on policies on contract-related dispute resolutions between farmers/farmer groups/cooperatives and other value chain actors will be disseminated to the stakeholders	contract farming enhanced	number of contract agreements	100		NRDS Taskforce	100,000,000.00		57,142.86

e. Expand human capacities (number and skills) and budget for ICT infrastructures, extension services and inspection standards for regulatory standards of marketing of rice seeds, agro-chemicals, and rice grains (both raw rice and milled rice)	human capacities expanded	number of staff	100	NRDS Taskforce	200,000,000.00	114,285.71
f. Promote research collaborations between national and international institutions and private sector on identifying and designing new cost-cutting technologies in rice farming	research collaboration promoted	number of collaboration meetings	6	NRDS Taskforce	250,000,000.00	142,857.14
g. Provide policy and financial incentives for farm mechanization sales and service providers in rice growing areas	policy and financial incentives developed	policy documents	2	NRDS Taskforce	100,000,000.00	57,142.86
h. Scale out warehouse receipt system and improve regulatory monitoring and inspection mechanisms in rice growing areas	warehouse receipt system and improve regulatory monitoring and inspection mechanisms scaled out	number of monitoring and inspection visits	24	NRDS Taskforce	150,000,000.00	85,714.29
i. Enhance capacity building of value chain actors and supporters on postharvest handling, processing, and value addition	capacity enhanced	number of actors	200	NRDS Taskforce	100,000,000.00	57,142.86
j. Promote continuous research on consumer market preferences, value addition, utilization of rice byproducts (straw, husk, bran), and profitability on the use of various inputs and technologies in rice farming	research promoted	number of research outcome reports	5	NRDS Taskforce	150,000,000.00	85,714.29
k. Strengthen capacity of Malawi Bureau Standards (MBS) for enforcement of minimum food safety standards for local, regional and international markets	capacity strengthened	number of inspection visits	24	NRDS Taskforce	300,000,000.00	171,428.57

	I. Establish appropriate ICT infrastructures, market intelligence and market information systems for analyzing and disseminating information on availability (types, sources, and prices) of seeds, fertilizers, organic manures, agro-chemicals, tools, and machineries in rice producing areas	ICT infrastructures, market intelligence and market information systems established	number of ICT infrastructures and systems developed	various	NRDS Taskforce	200,000,000.00	14,285.71
	m. Decentralize and enable transparency in flow of information on demand and supply quantities and sales prices of seeds, grains, fertilizers, agro-chemicals, and machineries at local level so that data can be captured by Department of Agriculture Planning Services	information flow decentralized	system developed	1	NRDS Taskforce	50,000,000.00	28,571.43
	n. Review national and regional policy instruments such as Common External Tariff (CET) and duty remissions, and recommend new evidence-based policy options for improving trading competitiveness of Malawi rice	national and regional policy instruments reviewed	number of meetings	1	NRDS Taskforce	52,125,500.00	29,786.00
Enhance ecological, social, and economic sustainability of rice farming	a. Collaborations on adaptive research on best practices of integrated farm (pests, soil, and water) management for smallholdings in Malawi	adaptive research collaboration enhanced	number of meetings	3	NRDS Taskforce	100,000,000.00	57,142.86
	b. Encourage crop rotation, ratooning, fallow-cropping, and intercropping with nitrogen-fixing legumes that can provide additional income and household nutrition, use of bio fertilizers, and rice byproduct management through demonstration and training	adoption of modern GAPs demonstrated	number of demonstrations	various	NRDS Taskforce	200,000,000.00	114,285.71
	c. Disseminate knowledge and benefits of circular economy in rice-based food systems through concepts such as reduce, reuse, and recycle natural resources, and rice farm products and byproducts amongst farmers and other stakeholders	farmer knowledge enhanced	number of farmers reached	200000	NRDS Taskforce	150,000,000.00	85,714.29

	d. Promote adoption of proven climate-smart, sustainable rice cultivation practices that minimize emissions of GHGs, such as alternate wetting and drying of paddy fields and dry seeding will be promoted in irrigated and rain-fed lowland ecosystems	climate friendly cultivation practices promoted	number of practices	various	NRDS Taskforce	210,000,000.00	120,000.00
	e. Designing and planning of aggregated and consolidated rice cultivation land for enabling mechanized enabling operations	aggregated and consolidated rice cultivation promoted	number of sites	15	NRDS Taskforce	100,000,000.00	57,142.86
	f. Capacity building of farmers, farmer groups, cooperatives, WUAs and local government officials on maintenance of irrigation infrastructures, water canals, and drainage systems in rice growing areas	farmer capacity enhanced	number of FOs	100	NRDS Taskforce	200,000,000.00	114,285.71
	g. Promote research in effective management, utilization and value addition of rice by-products for increased adoption and investment	research promoted	number of research outcome reports	3	NRDS Taskforce	150,000,000.00	85,714.29
	h. Disseminate principles and policies on ecological, social and economic sustainability of rice production to all rice stakeholders through open days, workshops and multi-media	principles and policies on ecological, social and economic sustainability of rice production disseminated	number of dissemination meetings	2	NRDS Taskforce	100,000,000.00	57,142.86
	i. Conduct assessment on capacity gaps across institutions and organizations along the impact path of rice value chain development, taking account of both human- and institutional needs	capacity gaps assessment conducted	number of reports	2	NRDS Taskforce	100,000,000.00	57,142.86
	j. Develop capacity enhancement plan to address needs (as identified under capacity needs assessment and intervention design) of human resources	capacity enhancement plan developed	number of assessments / reports developed	1	NRDS Taskforce	100,000,000.00	57,142.86
	Strengthen human and institutional capacities along the rice value chain						

k. Up-skill existing staff through in-country, regional and overseas training, and short courses on research for development in areas prioritized in this document	staff capacity enhanced	number staff	100	NRDS Taskforce	1,500,000,000.00	857,142.86
l. d. Provide in-country training for extension staff on key aspects of production, mechanization, farm management, processing, marketing standards, ICT, and trading regulations	staff capacity enhanced	number staff	101	NRDS Taskforce	500,000,000.00	285,714.29
m. Through a gender-sensitive approach, train farmers and actors in the rice value chain on climate-smart rice farming, crop management, byproduct management, postharvest handling and processing, and access to finance, market information on inputs (including machineries) and outputs	farmers trained	number of farmers	200000	NRDS Taskforce	100,000,000.00	57,142.86
n. Develop capacities of local and national institutions to establish, maintain, and expand partnerships with major scaling partners from the public and private sector and to scale-out proven technologies and services	capacities of local and national institutions enhanced	number of institutions	100	NRDS Taskforce	500,000,000.00	285,714.29
o. Strengthen institutional infrastructures for conservation, breeding, and selection of rice germplasm for desired traits (including pest tolerance/resistance), and testing quality of seeds, soils, fertilizers, agro-chemicals, and grains	institutional infrastructures strengthened	number of institutions	3	NRDS Taskforce	600,000,000.00	342,857.14
p. W>?Identify appropriate institutional policy options to reduce staff attrition, provide performance-based rewards/incentives, fill gaps created by retirement of existing staff, and recruit additional staff based on the findings from needs assessment	appropriate institutional policy options identified	number of policy documents	1	NRDS Taskforce	50,000,000.00	28,571.43
TOTAL					16,622,778,000.00	9,498,730.29



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Agriculture Communication Branch
P.O. Box 594
Lilongwe