



**REPUBLIC OF ZAMBIA**  
**MINISTRY OF AGRICULTURE**



**THIRD NATIONAL RICE  
DEVELOPMENT STRATEGY**

2022 - 2026



**REPUBLIC OF ZAMBIA  
THE MINISTRY OF AGRICULTURE  
MULUNGUSHI HOUSE, INDEPENDENCE AVENUE  
THIRD NATIONAL RICE DEVELOPMENT  
STRATEGY 2022-2026**

December 2022



## FOREWORD

The Government of the Republic of Zambia has developed the Third-National Rice Development Strategy (T-NRDS) as a follow up to the Second National Rice Development Strategy that was derived from Second National Agricultural Policy and the Seventh National Development Plan. The Third National Rice Development Strategy provides strategic objectives for the period 2022 to 2026 that will facilitate growth and development of the rice sub sector amid climate change and the Government's aspirations of promoting crop diversification in the Eighth National Development Plan.

The Ministry of Agriculture recognizes rice as one of the priority crops with potential to transform the agriculture sector into a viable driver towards poverty reduction through wealth creation. It is envisaged that increased rice production can not only contribute tremendously in enhancing the livelihood of households but also work as a viable alternative crop for the farmers.

However, the ability to enhance the rice value chain depends on various investments that are vital for the growth of the subsector including among others, correct agronomic practices, increased investment in water management including irrigation, increased research in rice production and processing, accessibility of inputs, soil suitability, land and market availability and an enabling policy environment.

In order to create a suitable environment to enhance the rice value chain, this Strategy promotes the creation of an effective system that taps into the huge potential for increased production and productivity, increased processing and access to the market. I'm optimistic that the interventions outlined in this Strategy will achieve the intended results of improving the livelihoods of most of our people and diversify our economy.

**I wish to call upon all the Rice stakeholders including the private sector, our farmers and development partners to take ownership of this Strategy and actively participate in supporting the government in its implementation.** It is my sincere hope that this Third National Rice Development Strategy will meet the expectations of all our players.

Reuben R Phiri Mtolo (MP)  
**MINISTER OF AGRICULTURE**



## **ACKNOWLEDGMENT**

The Third National Rice Development Strategy 2022 - 2026 is a product of the Ministry of Agriculture, which has been developed with the participation of several stakeholders. I would like to thank all stakeholders who were involved in the development of this important document.

I would also like in a special way, to acknowledge the guidance and technical support provided by Cabinet Office during the development of this Strategy. I also wish to recognise the valuable contributions made by the Task Force on Rice that was constituted from the various Departments of the Ministry of Agriculture, The Zambia Rice Federation, the Zambia Bureau of Standards and the Agricultural Consultative Forum to spearhead the development of this Strategy.

Finally, the Government is grateful to the Japan International Cooperation Agency (JICA) for the financial and technical support that has been rendered towards the development process of the Third National Rice Development Strategy 2022 - 2026

Green Mbozi  
Permanent Secretary  
**MINISTRY OF AGRICULTURE**



## LIST OF ACRONYMS

<b>APMEP</b>	Agriculture and Marketing Enhancement Project
<b>APPSA</b>	Agriculture Productivity Programme for Southern Africa
<b>CAADP</b>	Comprehensive Africa Agriculture Development Programme
<b>CARD</b>	Coalition for African Rice Development
<b>DACO</b>	District Agriculture Coordinating Officer
<b>ESAPP</b>	Enhanced Smallholder Agribusiness Promotion Programme
<b>FISP</b>	Farmer Input Support Programme
<b>FAO</b>	Food Agricultural Organization
<b>FRA</b>	Food Reserve Agency
<b>F-NRDS</b>	First National Rice Development Strategy
<b>GAFSP</b>	Global Alliance for Food Security Programme
<b>GRiP</b>	Good Rice Practice
<b>GRZ</b>	Government of the Republic of Zambia
<b>IAPRI</b>	Indaba Agricultural Policy Research Institute
<b>JICA</b>	Japan International Cooperation Agency
<b>MDSP</b>	Multiplication and Distribution of Seed and Planting Materials
<b>MOA</b>	Ministry of Agriculture
<b>MOREDEP</b>	Market Oriented Rice Development Project
<b>MT</b>	Metric Tonne
<b>ZMW</b>	Zambian Kwacha
<b>MDG</b>	Millennium development Goal
<b>NAIP</b>	National Agricultural Investment Plan
<b>NRDS</b>	National Rice Development Strategy
<b>PACO</b>	Provincial Agricultural Coordinating Officer
<b>PRS</b>	Poverty Reduction Strategy
<b>RSNDP</b>	Revised Second National Rice Development Plan
<b>SCCI</b>	Seed Control and Certification Institute
<b>SDG</b>	Sustainable Development Goals
<b>SNAP</b>	Second National Agricultural Policy
<b>S-NRDS</b>	Second National Rice Development Strategy
<b>SWOT</b>	Strengths, Weaknesses, Opportunities and Threats
<b>T-NRDS</b>	Third National Rice Development Strategy
<b>WB</b>	World Bank
<b>ZARI</b>	Zambia Agriculture Research Institute
<b>ZCARD</b>	Zambia Consortium for Accelerated Rice Development



# TABLE OF CONTENTS

<b>FOREWORD</b>	<b>iii</b>
<b>ACKNOWLEDGEMENT</b>	<b>iv</b>
<b>LIST OF ACRONYMS</b>	<b>v</b>
<b>LIST OF TABLES</b>	<b>viii</b>
<b>LIST OF FIGURES</b>	<b>viii</b>
<b>1.0 Introduction</b>	
<b>2.0 Review of the National Rice Sub-Sector and the Result of S-NRDS</b>	<b>1</b>
2.1 Background	1
2.2 Status and trends of Agriculture Sector	2
2.3 Rice Marketing	4
2.4 Cross cutting Issues	5
2.5 Characteristics of Rice Production in the different Agro Ecological Zones	6
<b>3.0 Strengths, Weakness, Opportunity and Threats for the Rice sub-sector</b>	
<b>Development</b>	<b>8</b>
3.1 Overall summary for the SWOT analysis of the rice sub-sector	8
3.2 Strength of the rice sub-sector	9
3.3 Weakness of the Rice sub-sector	9
3.4 Opportunities of the rice sub-sector	11
3.5 Threats to the rice sub-sector	11
<b>4.0 Framework for the Third National Rice Development Strategy</b>	<b>11</b>
4.1 Vision	11
4.2 Scope	12
4.3 Goal	12
4.4 Strategic Objectives	12
4.5 Targets	12
4.6 Strategic Principles	13
<b>5.0 Strategic Approaches and Priority Interventions for Achieving the Goal And Objectives</b>	<b>14</b>
5.1 Input supply & Use	14
5.2 Research and Development	15
5.3 Crop management	15
5.4 Extension	15
5.5 Marketing	16
5.6 Irrigation and Water Management	16
5.7 Mechanization	16
5.8 Harvesting and Post harvest Handling	17
5.9 Processing and Quality Management	17



5.10	Knowledge and Capacities of Value chain actors and Supporters	17
5.11	Finance	18
5.12.	Enabling Environment (Policies & Institutions)	18
5.13.	Cross-cutting Agendas (Gender, Youth, etc. as applicable)	18
<b>6.0</b>	<b>Implementation Of T-NRDS</b>	<b>19</b>
6.1	Governance Structure	19
6.2	Financing	20
6.3	Monitoring, Evaluation, Learning and Adaptation	21
<b>7.0</b>	<b>References</b>	<b>22</b>
<b>8.0</b>	<b>Annexe</b>	<b>23</b>
	Annex 1: Strategic Framework	23





## **LIST OF TABLES**

Table 1: Production and consumption of paddy rice in the last five years	3
Table 2: Targets in each agro-ecological zone by 2026 (paddy rice)	12
Table 3: M&E Indicators of RICE Approach	14
Table 4: Estimated budget (USD) of proposed project titles	21

## **LIST OF FIGURES**

Figure 1: Agro-ecological Zone of Zambia	6
Figure 2 SWOT Analysis of the Rice Value Chain	8





## 1.0 Introduction

The Third National Rice Development Strategy (T-NRDS) 2022-2026 replaces the Second National Rice Development Strategy (S-NRDS) 2016-2020, that was developed as part of the Coalition for African Rice Development (CARD) initiative, with the aim of doubling rice production by 2030 across African countries.

Zambia seeks to promote agriculture to diversify the economy away from an overreliance on copper. In this regard, the government is working towards increased agriculture production and productivity, enhance value addition, maintain food and nutrition security and increase agriculture exports. In order to achieve this, the Government has planned to increase investments in agriculture including agriculture infrastructure, research & development, mechanisation and technology, water management and irrigation to mention but a few.

Zambia's total land area is 75 Million hectares (752, 614 sq. km), of which 58 percent (42 Million hectares) is classified as medium to high potential for agriculture, with rainfall ranging between 800 mm to 1, 400 mm annually. This is suitable for production of a broad range of crops, fish and livestock. It is also estimated that, the country has about 40 percent of the underground and surface water in the Southern African Development Community (SADC). This offers huge potential for fish farming, livestock production and irrigated agriculture.

Agriculture generates approximately 3 percent of the Gross Domestic Product (GDP) and provides livelihoods for more than 70 percent of the population. The sector absorbs about 67 percent of the labour force and remains the main source of income and employment for both females and males (www.trade.gov. 2021). Agriculture has marginally led to an increase in rural incomes, contributed marginally to poverty reduction, and increased food and nutrition security (CSO, Living Conditions Monitoring Survey, 2006 and 2010).

The Government has identified Rice production as one of the interventions to promote crop diversification. According to the Second National Agriculture Policy 2016, rice production and consumption is reported to have started in the 17th century with the coming of European explorers. Over the past two decades, despite rice production being undertaken in some parts of the country, Zambia has been importing rice mainly from Tanzania, Asia and South Africa to help meet the growing demand for rice, which has been more than what the local market can supply.

Both the First and Second National Rice Development Strategies were developed to enhance the rice value chain. However, due to challenges that have been identified in the sub sector, production and productivity of rice remains low. The T-NRDS therefore, aims to accelerate the development of the sub-sector by putting up a system that will drive the achievement of goals and objectives of increasing rice production and productivity to improve the share of locally produced rice on the market.

## 2.0 Review of the National Rice Sub-Sector and the Result of S-NRDS

### 2.1 Background

The rice development strategies have been aligned to national policies and programmes such as the Country's Vision 2030, the Seventh National Development Plan (7NDP), the Second National Agricultural Policy (S-NAP) and the National Agricultural Investment Plan (NAIP) under the Comprehensive Africa Agriculture Development Programme (CAADP). The 7-NDP and NAIP have expired. The follow up policy documents such as the NAIP is still undergoing the formulation process and is expected to be launched soon while the 8NDP has been launched. The T-NRDS is aligned to the country's Second National Agriculture Policy and is meant to support its objectives of attaining household food security, nutrition and crop diversification.



Almost all rice is grown in rain fed lowland systems, as very few irrigation schemes exist and rice is not grown in the uplands. The vision of S-NRDS was to stimulate a competitive rice sub-sector based on best practices and sustainable use of natural resources to deliver benefits to all actors in the value chain. The driving goal was to contribute to improved food security, wealth and employment creation in Zambia. The overall objective of the S-NRDS was to increase local rice production by at least 50% and enhance its competitiveness on the market by 2020.

The review of the S-NRDS was prompted by the fact that it ended in 2020. Further, the sub-sector consultative processes identified weaknesses that needed to be addressed through a follow up strategy to the S-NRDS. This process included consultations within the Agriculture Consultative Forum (ACF) and the Task force on the rice sub-sector, which raised concerns and highlighted emerging issues that the strategy should address.

## **2.2 Status and trends of Agriculture Sector**

### **2.2.1 Status and Trends of Agriculture Sector**

The Zambian agriculture sector is characterized by immense untapped potential. One of the major shocks threatening Zambia's agriculture sector is climate change and variability, with the smallholder sub-sector being more affected. The sector comprises crops, livestock and fisheries. There are three broad categories of farmers: Small-scale, medium and large scale. Small-scale farmers are generally subsistence producers of staple foods with occasional marketable surplus. Medium-scale farmers produce maize and a few other cash crops for the market. Large-scale farmers produce various crops for the local and export markets.

MoA's Crop Diversification Programme also recognizes rice as one of the strategic commodities that contributes to food security, and has potential to significantly increase incomes and employment among rural producers. Government included rice as one of the nine crops supported by the Farmer Input Support Programme (FISP). The nine crops are; maize, rice, sorghum, groundnuts, soya beans, beans, sun flower, cotton and orange maize. Rice has a supply deficit that has been increasing.

### **2.2.2 Status and trends of the rice sub-sector**

Demand for rice consumption in Africa has outstripped the current production. As a result, African markets have become heavily dependent on importation. During the COVID-19 pandemic, rice production in Asia and Africa is likely to be reduced. This is based on lessons learnt from Ebola and Severe Acute Respiratory Syndrome (SARS) epidemics and food crisis; African nations need to moderate the impact of such a crisis through appropriate policy actions.

In the last 5 years, the crop has seen a steady increase in demand and its growing importance is evidenced by its status in government pronouncements (The Eighth National Development Plan, FISP, and the National Agricultural Policy). The demand for rice exceeds production and the deficit is met through imports mainly from Tanzania, Asia and South Africa.



Table 1 Production and consumption of paddy rice in the last five years

Year	Production (MT)	Consumption (MT)	Deficit/Surplus (MT)
2016	26,675	66,787	-40,112
2017	38,423	78,776	-40,353
2018	43,064	88,706	-45,642
2019	29,584	75,226	-45,642
2020	24,630	79,634	-55,004

Source: MoA, Policy and Planning Department, Agriculture Statistics and Early Warning Unit.

The sub-sector is characterized by the following:

1. Low yields averaging around 1.028 mt/ha below the industry breakeven point of 2.218 mt/ha. Low yields are mostly attributed to the following causes:
  - i. **Limited Access to quality seeds:** Access to quality seeds is limited. There are no agro dealers stocking quality rice seed (certified or quality declared seed) in rice growing areas. Few seed companies have stocked rice seed. Seed production chain remains a preserve of the public sector. Private sector participation is by demand or order. There is therefore need to sensitize farmers about the value of good seed (demerits of using contaminated seed and benefits of planting certified seed).
  - ii. **Farming practices:** a) **Land preparation**-Farmers are using simple tools to prepare their pieces of land. Using simple tools (hoes, rotary weeders etc.) limits the size of their fields to small scale; b) **Planting Method**-There are several methods of planting rice. The commonly used method is broadcasting. Transplanting is not common; c) **Fertilizer Utilization**-The use of chemical fertilizer is not common among rice growers in Zambia; d) **Water management**-Depending on the variety and area (cumulative temperature), most common variety called Supa-MG takes 150 days in Western Province (average 700 m.a.s.l.) and 170 days in Luapula province (average 1,200 m.a.s.l.).
  - iii. **Labour:** Rice has remained a labour-intensive crop throughout the value chain. In most of the rice growing areas, there is shortage of labour thereby creating a constraint on both managing the crop and expanding area under cultivation (competition for labour).
  - iv. **Farm power mechanization:** Every stage of rice production requires some form of mechanization. There are some Cooperating Partners that are working with government to promote Mechanization in rice farming but more still needs to be done to make a bigger impact and improve productivity.
  - v. **Irrigated rice production:** Rice in Zambia is grown as a rain fed crop in lowland flood plains and in upland dambos. Varieties that are photo sensitive and suitable for irrigated production are limited.
  - vi. **Rice research:** Most of the staff working as rice researchers are actually breeders. Consequently, Capacity development on researchers in other areas such as agronomy, pathology, irrigation etc. has been insufficient.



- vii. Rice extension:** Subject matter specialists in extension services are limited. However, some capacity has been developed where there is a running project/scheme.
- viii. Agronomic practices:** There are diverse interpretations and applications of agronomic practices among MoA technical staff. For instance, there is a difference in the technical information given to farmers on land preparation, planting method, seed rate, fertilizer application etc.

### 2.3 Rice Marketing:

1. One of the aspirations of the T-NRDS is to work towards increasing market participation for small-scale rice growers. The strategy for increasing market access is through commercializing of the rice value chain. The rice marketing is characterized by:
  - i. **Output quality:** Improved rice quality begins with good seed (certified/quality declared). Contaminated rice seed will yield poor quality grain. The use of poor-quality seed by small-scale farmers has resulted in poor grain quality.
  - ii. **Output pricing:** The price paid to farmers by traders and processors is deemed too low for farmers to make a profit.
  - iii. **Marketing infrastructure:** marketing infrastructure is limited in most rice growing areas. This hinders most small-scale farmers from participating fully in the value chain.
  - iv. **Market information:** The poor marketing infrastructure (access roads, bridges, trading stands etc.) has hindered the development of a reliable market information system.
  - v. **Value addition:** Small-scale farmers have limited access to value adding equipment such as dehulers, limiting earnings from rice cultivation.
  - vi. **Status of national rice demand:** The demand for rice has steadily increased providing investment opportunity in the rice sector.
  - vii. **Levels of marketed rice:** The level of Imports has followed the size of the deficit. In seasons when production is good, rice imports are low and vice versa.
  - viii. **Taste preferences:** In urban areas, consumption of rice has increased. It is no longer unusual to find households eating rice as breakfast, lunch or dinner unlike in the past when rice was served as a special meal during occasions.
  - ix. **Standards:** Farmers pay little attention to standards because they sell unmilled rice. According to the Practical Handbook, RiceSHEP (May 2021), 98% of rice farmers sell unmilled rice.
  - x. **Processors, Retailers and Traders:** a) Processors- Both large and small millers buy rice from farmers directly or through agents. Large-scale processors open buying points in major rice growing areas in May of each year when the marketing season opens; b) Retailers Major chain stores, small and medium retailers keep a wide range of both local and imported rice



brands; c) Traders are one of the major channels for rice marketing because they go to buy the crop from the production areas. Generally, traders pre-absorb the cost of logistics. The traders buy direct from farmers as individuals or through contacts in rice growing areas.

2. The sector priorities and needs have been sufficiently defined in both the First and Second National Rice Development Strategies. However, the sub-sector has been characterized by low implementation of development strategies due to low funding and inadequate commitment by value chain actors. That is why this T-NRDS has retained the value chain objectives and vision of the S-NRDS.
3. The government funding to the sub-sector has been characterized by unclear allocations. Funding to the sub-sector has not been stated in the yellow book. Unstated rice allocations make it difficult to assess government commitment to develop the rice sub-sector.
4. Inadequate funding to Research and Extension. Funding to research and extension has mainly been through project support. There is insufficient funding from government to research and extension.
5. Value Chain Stakeholder coordination is characterized by irregular meetings, resulting in less effective subsector coordination and dialogue.
6. The sub-sector is characterized by limited capacity to champion the value chain needs. There is no nominated value chain champion or organization with a responsibility to ensure that actions from the sector dialogue processes are followed up and implemented. The M&E framework is unclear and inadequate to provide feedback on the performance of the sub-sector. The T-NRDS should be anchored on a strong and clear M&E framework to enable timely monitoring.
7. The sub-sector has had limited studies essential to provide benchmarks to judge progression in the sub-sector development. For example:
  - i. Local rice market share,
  - ii. National seed requirements versus current demand,
  - iii. Gender mainstreaming in the sub-sector,
  - iv. The status of farmer group development in the rice growing areas,
  - v. Environment and safeguards in rice production,
  - vi. Potential of Irrigated rice, and
  - vii. Comparative studies on productivity in various rice growing areas
8. Extension handbooks and reference materials have not been widely disseminated. Some handbooks require updating.
9. In the last ten years, several projects that aimed at developing rice technologies (seed varieties and agronomic practices) have been implemented, generating a number of technological outputs. These have not been packaged into reference materials for wider distribution to extension staff and small-scale farmers.

## **2.4 Cross cutting Issues**

### **2.4.1 Women and Youth**

According to a baseline report by SNV (2008), about 31% of the farmers growing rice in Western, Northern, North-Western and Muchinga provinces are women. This trend may be similar to the other rice growing areas in the





country. The same report indicates that 90% of the small-scale processors in these provinces are men while 10% are women. Both men and women also undertake trading of rice although the proportions they handle are not known. Women, however, dominate the local retail rice businesses.

The adoption rate of improved agricultural technologies has been associated with gender related issues. Few women attend training sessions on rice production though they are key players in the production of the commodity. This is likely to have some adverse effects on the adoption and up scaling of rice technologies. Therefore, deliberate targeting of women for capacity building and technology transfer could enhance production and productivity of rice in the country.

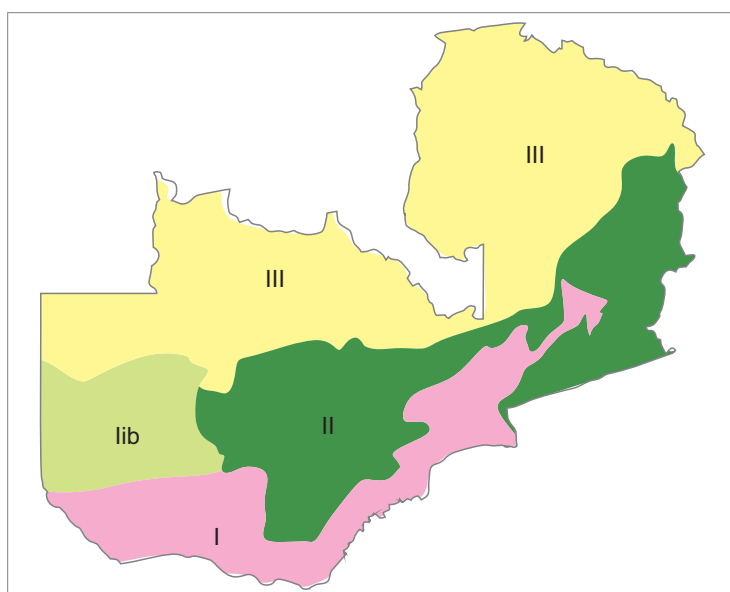
#### 2.4.2 Environment and Safeguards

According to foodprint. Org., growing rice in flooded conditions causes up to 12 percent of global emissions of methane, a gas blamed for about one quarter of global warming caused by humans. Microbes in flooded rice paddies produce methane, some of which is emitted into the atmosphere. Methane is such a powerful greenhouse gas; experts say reducing those emissions is important. Shifting rice production to a set of practices that cut methane could have significant impacts. In addition to reducing tillage and breeding rice varieties that emit less methane, the most effective methods for reducing methane emissions include various practices that reduce the amount of time fields are flooded, including furrow irrigation and alternate wetting and drying

### 2.5 Characteristics of Rice Production in the different Agro Ecological Zones

Most agricultural production on the continent is rain dependent. Zambia is divided into three major agro-ecological regions (Region I, II and III), which are primarily based on rainfall amount but also incorporate soils and other climatic characteristics. A particular agro-ecological region represents a fairly; even agro climate, soils and terrain conditions and would support a particular farming system with a certain range of crops and farming practices, including forage cultivation and livestock farming.

**Figure 1: Agro-ecological Zone of Zambia**



Most of the rice grown in Zambia is lowland rain-fed with a small amounts being up-land and only very limited amount is irrigated. Each of these ecologies has its own limitations to production and productivity of rice.

Rice in Zambia has traditionally been grown in lowland flooded or semi-flooded environments. These environments are unfortunately only a small portion of Zambia occupying 1% of total land (repository.ruforum.org). The increase in food demand in the country requires that other rice production environments be sought

Source: S-NRDS





to expand the cultivation of the crop beyond the traditional flooded plains

### **2.5.1 Rain-fed Upland**

Upland rice is grown in rain-fed, naturally well-drained soils with bunded or unbunded fields without surface water accumulation. The general perception about the upland environment is that it is drought prone, usually sloping land with erosion problems, and soils with both poor physical and chemical properties.

Upland rice is grown in rain-fed fields that are prepared and seeded under dry conditions, much like those for wheat or maize. The upland rice ecosystem differs from others because the plants grow in well-drained soils. Rice growing in this ecology is relatively new in Zambia and production has been comparatively low. The promotion of rice growing in this ecology has been emphasized in recent years, mainly due to their ability to hold water and the introduction of up-land rice varieties.

Rice plant water management is based on ecosystems under which it is cultivated. When it is grown as an upland crop under rain-fed conditions, it needs 100 mm monthly rainfall and when grown as lowland crop it requires 200 mm rainfall per month. Rice can also be grown as lowland crop with standing water.

Up-land rice cultivation is best suited to areas receiving adequate rainfall throughout the growing period. Such conditions are more likely to be found in certain parts of Central, Copperbelt and North-western provinces. Upland rice cultivation is also possible anywhere in the country as long as irrigation systems are in place. However, this requires a detailed feasibility study to ascertain the cost benefit of irrigated rice.

The ecology has a challenge of stress due to low moisture because of unreliable rainfall but has an opportunity for availability of large potential areas for expanding rice cultivation. The areas covered are Northern, Muchinga, Luapula, North-Western, Lusaka, Central, Eastern and Copperbelt provinces.

### **2.5.2 Rain-fed Lowland**

The predominant rice producing areas in Zambia are found in the rain –fed lowland ecologies which are characterized by flooding during growing period in the rainy season. The extent to which flooding occurs varies depending on the amount and distribution patterns of rainfall and the characteristics of the lowland.

Agriculture in the lowlands takes place on small peasant farms that produce annual food crops for subsistence and markets. Rice and vegetables are the first and second most important food crops produced. On the same plot, rice is grown during the rainy season while vegetables are cultivated in the dry season.

Major rice growing areas in Northern Province are Kasama, Mungwi and Nsama Districts. In Muchinga Province, the major growing areas are Chama, Chinsali, Chitambo, and Nakonde. In Luapula Province rice is mainly grown in Chiengi, Mansa and Mwense Districts. The major rice producing districts of Western Province are Kalabo, Lukulu, Mitete, Mongu, Senanga and Sikongo while that of Eastern Province are Lundazi and Mambwe Districts.



Some of the challenges that are prevalent in this eco-system are; Unpredictable flooding patterns, differences in controlling water-levels, difficult of accessibility, low soil fertility, high water infiltration. However, it also has opportunities such as availability of water in the rainy season and sustainable land potential for integrated rice production system with aquaculture.

### 2.5.3 Irrigated Low-land

Irrigated low-land rice is grown in bundled fields with assured water supply for one or two crops per year. In arid and semi-arid zones of tropical climates, rice is planted under irrigated conditions only, but in humid and sub-humid zones, rainfall supplement irrigation water during the rainy season.

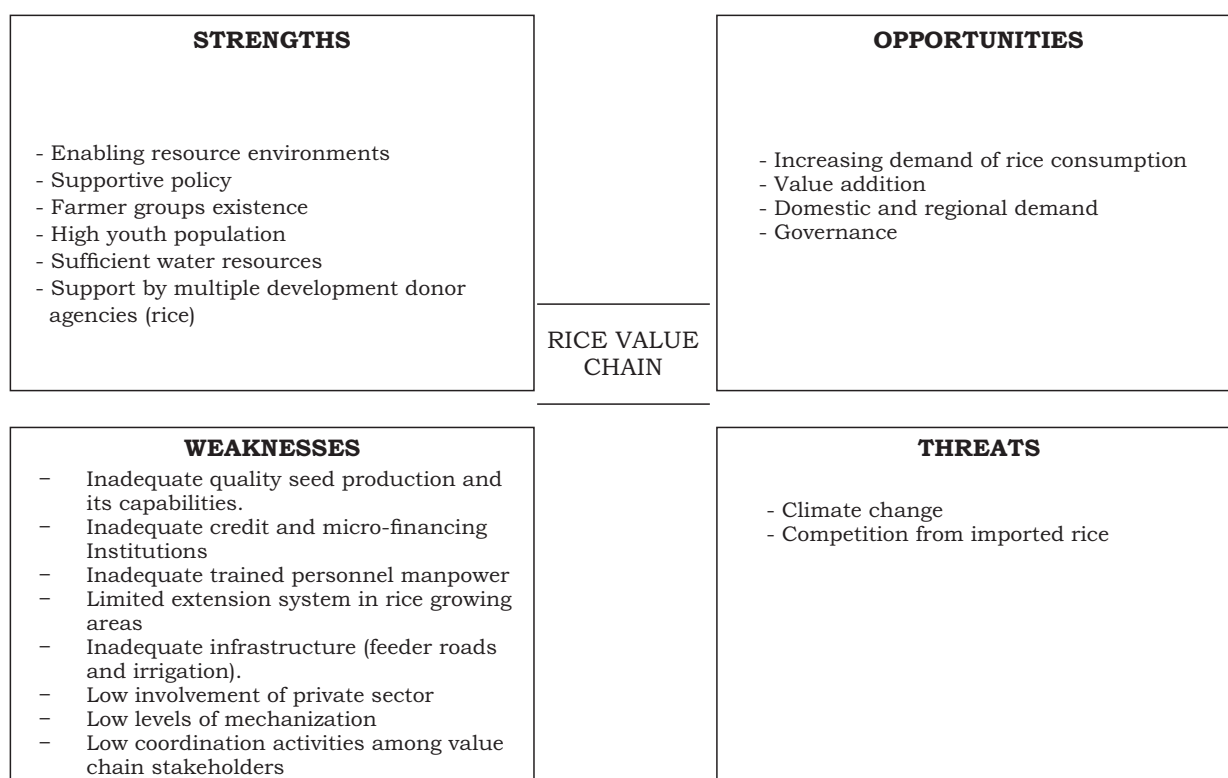
Production of rice in this ecology is, however, limited and underdeveloped in Zambia. It is only in Sefula in Mongu District and Chanyanya in Kafue District where irrigated rice schemes were piloted for rice production. Given their high potential, lowland ecologies, which are widely found in the country, they offer great potential for irrigated rice production. Lack of irrigation infrastructure, inadequate maintenance skills and high investment cost stand out as some of the challenges in this ecology. However, availability of large potential areas for expanding rice cultivation has the potential to increase productivity and production.

## 3.0 Strengths, Weakness, Opportunity and Threats for the Rice sub-sector Development

### 3.1 Overall summary of the SWOT analysis of the rice sub-sector

As a way of contextualizing the main observations of the review, a SWOT analysis is shown in Figure 2 below:

Figure 2. SWOT Analysis of the Rice Sub-Sector



## **3.2 Strengths of the rice sub-sector**

### **3.2.1 Enabling resource environments:**

A wide range of environments such as irrigated lowland, rain-fed lowland and upland suitable for rice production exist across the country. Limited efforts in developing lowlands in the past did not produce expected results. Off- season rice production has not been prioritized in the S-NRDS.

### **3.2.2 Supportive policy:**

Rice has social, economic and political significance in Zambia. The S-NRDS has laid down emphasis on the development, production and dissemination of rice technologies to promote crop diversification, income and employment generation.

### **3.2.3 Farmer groups existence:**

Farmers cited marketing as a key constraint to rice production. The existing groups need to be strengthened and better organized as many groups have emerged out of need to receive FISP, government programs and NGO support that requires farmers to be organized in groups. This also allows them to negotiate better deals along the commodity value chain.

### **3.2.4 High Youth Population:**

As at 2021, there were 4.8 million young people aged between 15-35 in Zambia representing 36.7% of the total population (Zambia Unfpa.Org). In the same year, the youth unemployment rate stood at 23.37%. Targeting the youth population in the rice value chain development provides an opportunity for government and its partners to address youth unemployment.

### **3.2.5 Sufficient Water Resources:**

It is reported that around 40% of water resource of Southern Africa region is concentrated in Zambia. Since water is essential to cultivate rice, Zambia has huge potential to increase rice production. The rice value chain development should therefore give sufficient attention to irrigated rice production.

### **3.2.6 Rice Development Projects Supported by Various Donor Agencies and Private Sector:**

There are several rice projects supported by development partners such as World Bank, JICA, FAO, GiZ (which funds COMACO), SNV, Agritera, and AFDB (APMEP). Private sector organizations such as ZAMSEED, SEEDCO, NMC and COMACO also have their presence in the rice sub-sector in Zambia and they have various connections with value chain stakeholders. MoA can mobilize financial and technical resources provided by such organizations to promote rice development in line with the NRDS.

## **3.3 Weaknesses of the Rice sub-sector**

### **3.3.1 Adaptive research capacities:**



Besides limited research activities mainly on GRZ/JICA schemes, there is inadequate funding from government. The research teams are inadequately staffed and ill motivated because of poor funding.

### **3.3.2 Inadequate quality seed production systems:**

National seed services for seed certification and for ensuring seed quality standards exist in Zambia. It is decentralized in rice producing regions. Although the ZARI and SCCI try to improve production of quality seed by collaborating with development partners, the amount of quality seed is not enough for distribution to rice growers.

### **3.3.3 Inadequate credit and micro-finance institutions:**

There seems to be no interest by functional credit and micro-finance Institutions to offer financial services to value chain actors. Thus, short-term credit for seasonal inputs is not available. Farmers are constrained by lack of working capital. Financing for rice value addition processes is difficult to obtain.

### **3.3.4 Inadequate trained manpower:**

The available labor along the rice value chain is insufficient. There are limited trained agriculturists, water management and irrigation specialists as well as researchers and extension officers.

### **3.3.5 Limited extension system in rice growing areas:**

A functional extension system exists only in GRZ/Donor supported rice cultivation areas. The extension training focuses on the maize crop and not on rice. According to MoA staff, the extension to farmer ratio varies widely depending on the population size of the camp. For example, the provincial ratio for Luapula and Western is around 1:1000. For the rice value chain in Luapula, the ratio is expected to be around 1:420 from the current 1:150 as the number of farmers under the project will be 12,700 against 30 camp extension officers by the end of the project in 2024. This demonstrates that the ratio on coverage is decreasing.

### **3.3.6 Inadequate infrastructures (feeder roads and Irrigation):**

Inadequate feeder road network, farm machinery, transport systems, irrigation systems, stores and equipment were impediments to effective implementation of S-NRDS.

### **3.3.7 Low Involvement of Private Sector:**

The private sector is not well developed and fragmented along the rice value chain. There are not so many private sector operators involved in marketing of farm inputs and outputs in rice processing.

### **3.3.8 Low Level of Mechanization:**

Rice cultivation is labour intensive; with low levels of mechanization. This might be a hindrance to expand rice production area in Zambia.

### **3.3.9 Low Coordination activities among value chain Stakeholders:**

As pointed out in the previous chapter, regular meetings among various rice value chain stakeholders was planned in the S-NRDS although it was not implemented as planned. Considering the current resource



which MoA has, mobilization of resources from such organizations can be one of the important issues to attain the rice promotion in Zambia. This challenge should be addressed in the implementation of the T-NRDS.

#### **3.3.10 Governance:**

Developed and stable governance systems at all levels (National, Sector and Sub-Sector) would propel value chain growth. Whereas instability is likely to threaten the sub-sector.

### **3.4 Opportunities of the rice sub-sector**

#### **3.4.1 Increasing demand of rice consumption:**

There has been a noticeable shift in consumer preferences in urban areas towards rice as a source of starch/carbohydrate. Zambia imports an average of 20,000MT of milled rice per year, increasing an opportunity for rice production.

#### **3.4.2 Value addition:**

Based on economic principles, consumers indicate their preference by making informed choices about targeting best quality products among substitutes in the market. Value addition shall therefore render local rice production competitive in domestic and international markets.

#### **3.4.3 Domestic and regional demand:**

Even if rice growers grow it as a cash crop, consumption of rice in urban areas is constantly rising in Zambia. Given the consumer acceptance of rice, there is a strong market for rice across the country and in neighbouring countries. This expands the scope for private sector participation along the value chain of rice.

### **3.5 Threats to the rice sub-sector**

Opportunities for enhanced rice production and marketing are threatened by constraints to the Zambian rice sector. They include the following:

#### **3.5.1 Climate change:**

It is affecting rice yields in upland and lowland environments due to extreme weather conditions of drought or flooding.

#### **3.5.2 Competition from foreign markets:**

Maturing rice market in foreign countries with better quality and affordable price may affect the rice production in Zambia.

## **4.0 Framework for the Third National Rice Development Strategy**

### **4.1 Vision**

A resilient and competitive rice sub-sector based on best practices and sustainable use of natural resources to deliver benefits to all actors in the value chain.



## 4.2 Scope

To enhance capacities of various aspects of rice value chain in Zambia such as production, harvesting, processing, and marketing.

## 4.3 Goal

To produce enough rice to meet national demand as a way of contributing to food security, wealth and employment creation.

## 4.4 Strategic Objectives

The overall objective of the T-NRDS is to increase local rice production by at least 50% and enhance its competitiveness on the market by 2026. The Strategic Framework for the T-NRDS is summarized in Annex 1. The T-NRDS will be achieved through the following specific objectives:

- i) To increase yields by at least 25% over a five-year period;
- ii) To expand the area under cultivation by at least 20% by 2026;
- iii) To improve quality of local rice;
- iv) To promote stakeholder innovation capacity and knowledge management across the value chain;
- v) To increase the market share of locally produced rice; and
- vi) To hold regular meetings which invite rice value chain stakeholders to develop and improve mechanisms for linking value chain players and coordinating the rice subsector.

## 4.5 Targets

Target of T-NRDS is to increase the rice production in Zambia up to 93,420 MT (paddy rice) by 2026. This will be achieved by improving the yield from 1.33 MT/ha to 1.66 MT/ha, and expanding the production area from 46,971 ha to 56,365 ha.

Table 2 Targets in each agro-ecological zone by 2026 (paddy rice)

	Rainfed (both upland and lowland)			Irrigated			Total		
	Area(ha)	Yield (MT/ha)	Production(MT)	Area(ha)	Yield (MT/ha)	Production(MT)	Area(ha)	Yield (MT/ha)	Production(MT)
2022	46,971	1.33	62,280	nil	nil	nil	46,971	1.33	62,280
2024	51,628	1.46	74,672	40	1.59	64	51,668	1.45	74,736
2026	56,285	1.66	93,274	80	1.82	146	56,365	1.66	93,420





## 4.6 Strategic Principles

Countries under the CARD initiative are supposed to set strategic approaches in line with the RICE Approach. RICE stands for the abbreviation of four key guiding principles for the rice promotion in Africa such as Resilience (R), Industrialization (I), Competitiveness (C), and Empowerment (E), respectively. Definition and indicators of each component is as follows.

### 4.6.1. Resilience of production and marketing systems

“Resilience” is defined as making rice production and supply systems more stable and sustainable to cope with any kind of shocks, in particular climate change, market crisis, and population increase. Following two indicators are used for the monitoring and evaluation (M&E);

- i) Rice cultivated (and harvested) area under irrigation
- ii) Quantity of resilient variety seeds produced in Zambia each year

### 4.6.2. Industrialization of rice value chain

“Industrialization” is defined as promoting scale of economy through industrialization in all categories of the rice value chain through working with the private sector. Following indicators are used for the M&E;

- i) Level of milling sector upgrading
- ii) Level of mechanization in rice production, harvesting and postharvest handling in Zambia
- iii) Level of other industrial related activities/business taking place (ex. Development of industries deal with rice bran and husk, Development of one stop centre, any other service providers)

### 4.6.3. Competitiveness of locally produced rice

“Competitiveness” is defined as strengthening market competitiveness of locally produced rice in terms of accessibility, quality and price against imported rice. Following indicators are used for the M&E;

- i) Trend of share of local rice in the market
- ii) Quantity of high-yielding variety seeds produced annually

### 4.6.4. Empowerment of stakeholders

“Empowerment” refers to enabling of stakeholders and the policy environment that would allow value chain actors to understand and address the challenges faced by the rice sector Following indicators are used for the M&E;

- i) Smallholder farmers’ accessibility to financial services
- ii) Smallholder farmers’ accessibility to rice-related technical training and/or services
- iii) Smallholder farmers’ accessibility to machinery and other advanced technologies.



#### 4.6.5. Summary of M&E Indicators of RICE Approach

M&E Indicators for tracking overall progress in implementation of T-NRDS are summarized below. MoA, rice sub-sector related agencies, and donor agencies such as FAO will collect data through statistics. ZCARD TF members, toward the successful implementation of the set target by 2026, review the achievement annually to confirm the progress.

Table 3: M&E Indicators of RICE Approach

Aspect	M&E Indicators
Overall	<ol style="list-style-type: none"> <li>1. Quantity of paddy production</li> <li>2. Total area harvested</li> <li>3. Yield per unit area</li> <li>4. Rate of rice self-sufficiency</li> </ol>
Resilience	<ol style="list-style-type: none"> <li>1. Area under irrigation</li> <li>2. Quantity of resilient variety seeds</li> </ol>
Industrialization	<ol style="list-style-type: none"> <li>1. Level of milling sector upgrading</li> <li>2. Level of mechanization in production</li> </ol>
Competitiveness	<ol style="list-style-type: none"> <li>1. Share of local rice in the market</li> <li>2. Quantity of high-yielding variety seeds</li> </ol>
Empowerment	<ol style="list-style-type: none"> <li>1. Smallholder farmers' accessibility to financial services</li> <li>2. Smallholder farmers' accessibility to technical training or services</li> </ol>

## 5.0 Strategic Approaches and Priority Interventions for Achieving the Goal and Objectives

### 5.1 Input supply & Use

Increased and efficient use of modern inputs (fertilizers, agrochemicals, seeds, farm implements, etc.) is a pre-requisite for achieving sustainable agricultural productivity, and food security.

The efforts for increasing agricultural productivity and production would be a futile attempt without the availability of certified seeds. The low rate of quality seed utilisation in the country is mainly associated with unavailability of reliable supply of breeder and foundation seeds. In addition, the bias of seed companies to produce some crop varieties and neglect others is one of the limiting factors in seed availability and accessibility to farmers. At present most seed companies have a wide range of maize crop varieties as compared to crops such as rice, millet, cowpeas, and sorghum despite the existing high demand for these types of seeds.





In view of this, the strategy would focus on:

- i) Strengthening the agribusiness management skills of agro-dealers to enable them to access finances;
- ii) Enhancing seed maintenance and purification of existing cultivars;
- iii) Identify and evaluate comprehensively high-performance local varieties;
- iv) Improving seed supplying structure from research to farmers.
- v) Enhancing farmers' seed production ;
- vi) Strengthening rice seed supply chain in the country;
- vii) Strengthening the capacity of seed companies;
- viii) Developing appropriate technologies on the use of farm inputs for each rice ecology.

## **5.2 Research and Development**

The current low rice production in the country is mainly due to low yields obtained by most rice growers and this is largely a consequence of inadequate availability and adoption of improved rice technologies.

The strategy will focus on the following:

- i) Registering suitable rice varieties by development and identification;
- ii) Improving and adapting agronomic management practices;
- iii) Strengthening regional and international collaborations and partnerships with regional and international research organisations;
- iv) Strengthening capacity of rice research and technology development through making improvements to existing facilities at centres such as Mt. Makulu and Mansa research stations;

Encouraging research activities of national research organisations such as ZARI, UNZA etc. in collaboration with international organisations

## **5.3 Crop management**

There is high potential for the Zambian rice sub-sector to improve rice productivity by adopting appropriate agronomic practices.

This would include:

- i) Developing appropriate cultivation manuals, which focus on key elements to improve rice productivity for each agro-ecology such as lowland, rain fed, upland, and irrigated land.
- ii) Shifting from broadcasting of seed to nursery establishment and transplanting of seedlings;
- iii) Enhancing application of better and appropriate planting methods.
- iv) Promoting the use of simple tools to ease agronomic practices such as line marker and rotary weeder;
- v) Improving soil fertility management;

## **5.4 Extension**

Delivering appropriate technologies to farmers through extension service is a key to improve productivity and production. There is a huge potential to improve its delivery in the country using the existing extension structure. The strategy will focus on the following:

- i) Developing technical package for both extension staff and



- farmers;
- ii) Promoting efficient and effective extension approaches/methodologies
- iii) Strengthening farmer exchange visits where necessary;
- iv) Strengthening rice extension capacity in rice growing areas, including through specialized training provision for extension staff and farmers;
- v) Promoting budget allocation to extension activities such as transportation allowance and motorcycles for extension officers

## **5.5 Marketing**

There is limited coordinated market system for local rice in the country and therefore the strategy will focus on the following:

- i) Establishing strong, self-supporting groups in which members support each other to produce, process, package and market their rice;
- ii) Advocating and promoting the use of the warehouse receipt system or related service in the marketing of rice;
- iii) Promoting collective marketing through establishment of community-level bulking centres;
- iv) Developing system to encourage coordination between farmers and value chain actors to strengthen the linkage among them.
- vi) Developing and disseminating effective marketing approaches for rice farmers to promote rice production as a business

## **5.6 Irrigation and Water Management**

The Government and its cooperating partners, through various projects have increased its support to the development of irrigation infrastructure to support crop production. However, there is limited support for irrigation infrastructure for rice production in the country.

The strategy will be directed at:

- i) Encouraging farmers to develop water users association;
- ii) Rehabilitation and construction of irrigation schemes;
- iii) Improving water management skills among farmers;
- iv) Developing and adapting appropriate water management technologies;
- v) Conducting capacity development for extension officers and staff of irrigation scheme.
- vi) Implementing rice production trainings at existing irrigation schemes

## **5.7 Mechanization**

Mechanisation of rice farming can be adopted in land preparation, field management, harvesting, drying, processing and transportation. In this respect, the strategy would focus on:

- i) Setting policy for accelerating promotion of rice mechanisation;
- ii) Promoting the use of appropriate equipment;
- iii) Building the capacity of selected agro-entrepreneurs to provide technical services;
- iv) Establishing community-based Agribusiness Service Centres;
- v) Examining the sustainable use of agriculture machinery systems at community level;



- vi) Encouraging Agriculture Training Institutes and Trades Schools to invent machines/tools that can be used by rice farmers and sold at lower prices than imported one.

## **5.8 Harvesting and Post harvest Handling**

Post-harvest losses cause decreases in quantity and quality that occurs from the time of harvest until the product reaches the final consumer. It happens during harvesting, drying, threshing transportation, storage and marketing. Post-harvest handling also influences the quality of rice.

In order to minimise the post-harvest losses, the strategy will focus on the following:

- i) Developing appropriate technologies of harvest and post-harvest handling.
- ii) Training rice value chain actors on appropriate harvest and post-harvest technologies;
- iii) Facilitating access to appropriate post-harvest equipment and machinery;
- iv) Facilitating private sector investment in storage and processing facilities through providing incentives for the establishment of storage and processing plants via CEEC.

## **5.9 Processing and Quality Management**

The way of processing and the quality of milled rice is closely related, and the quality affects the selling price of rice. There is more room to improve the quality of products by tackling the processing issue.

The synergy with the approach 5.7 Mechanization is significant for the successful implementation. The output of marketing, which is described as the approach 5.5 also depends on the quality of rice. The strategy will focus on the following:

- i) Reviewing rice quality standard in collaboration with ZBOS if necessary
- ii) Promoting stakeholder workshops between rice retailers and farmers
- iii) Sensitizing farmers on developing appropriate selling channels rather than selling paddy rice (ex, sensitize off-season sales, the advantage of selling milled rice).
- iv) Strengthening information sharing between private and government sectors

## **5.10 Knowledge and Capacities of Value chain actors and Supporters**

Cooperation and collaboration among stakeholders under the rice sub-sector is essential to vitalize the sub-sector in Zambia. Value chain actors includes private sector such as processors, retailers, and traders, NGOs, Zambia National Services, and development donors. TF members from MOA will be in charge of the overall management among such stakeholders. The strategy would focus on:

- i) Disseminating improved technologies by providing training opportunities for value chain actors;
- ii) Securing necessary budget for managing meeting and activities among value chain stakeholders
- iii) Holding stakeholder meeting regularly to share the progress and discuss the budget allocation for the future activities;



- iv) Enhancing the collaboration project among rice sub-sector stakeholders;

### **5.11 Finance**

There is limited access to agricultural enterprise development finance both in terms of seasonal credit as well as long-term finance in Zambia due to a number of factors, including the culture of non-repayment of loans, lack of collateral and the high interest rates. The strategy will focus on the following:

- i) Improving farmers' access to group-based savings and credit programmes by facilitating farmers to form groups and associations in order to strengthen their bargaining power and access;
- ii) Facilitating public/private sector partnerships through the warehouse receipt system and related services;
- iii) Lobbying for specially designed financial products with favourable lending terms appropriate for the agricultural enterprises.

### **5.12. Enabling Environment (Policies & Institutions)**

Planning activities which are in line with the national policy are important to promote the rice sub-sector efficiently. Capacities of related institutions are directly linked with the implementation of planned activities. To achieve the target set in T-NRDS, following points are focused;

- i) Reviewing the latest national policy such as National Agriculture Investment Plan and flexibly address activities of T-NRDS;
- ii) Conducting training and workshop toward MOA staffs such as ZARI and DoA to enhance their capacity of policy making;
- iii) Lobbying for prioritizing of rice production as an important industry in the national policy schemes.

### **5.13. Cross-cutting Agendas (Gender, Youth, etc. as applicable)**

The role of women in agriculture is important both economically and socially. Raising the awareness of gender equality seems emerging issue in Zambia to increase the agriculture productivity. In addition to this, decreasing the proportion of young ages that live in the countryside may affect the future development of agriculture sector, including rice sub-sector. The strategy will focus on the following:

- i) Providing training opportunities for farmers about the importance of gender issues in rice production;
- ii) Incorporating gender topics into the existing farmer training plans;
- iii) Promoting farming as a business to attract youths in rural areas;



## 6.0 Implementation of T-NRDS

### 6.1 Governance Structure

The Government of the Republic of Zambia (GRZ) through MOA will oversee the NRDS implementation process. However, to achieve effective implementation of the T-NRDS there is need to establish a public-private sector coordinating body and/or forum that will be referred to as the Zambia Consortium for Accelerated Rice Development (ZCARD). The ZCARD will constitute a national steering/coordinating body whose membership will be drawn from a cross-section of stakeholder organisations.

The operations of ZCARD would need to be guided by terms of reference along the lines suggested below.

#### i) Functions

The ZCARD will be mainly responsible for:

- a) Coordinating the implementation and review of strategies;
- b) Lobbying for resources and policy support;
- c) Monitoring and evaluating interventions;
- d) Fostering local partnerships; and,
- e) Promoting collaboration with other regional and international rice stakeholders and partners.

#### ii) Composition

The membership of ZCARD shall be drawn from the following institutions:

- a) Ministry of Agriculture
  - Department of Policy and Planning
  - Department of Agriculture
  - Zambia Agriculture Research Institute
  - Seed Control and Certification Institute
  - Department of Agribusiness and Marketing
- b) Ministry of Commerce, Trade and Industry
- c) Ministry of Finance
- d) Zambia Rice Federation
- e) The University of Zambia Department of Agriculture
- f) Agro related NGO's representative
- g) Financial Institutions (Bankers Association of Zambia)
- h) Zambia National Farmers Union
- i) National Union for Small Scale Farmers of Zambia
- j) International Development Organisations

Members of the ZCARD shall be appointed by the Permanent Secretary in the Ministry of Agriculture. The committee shall identify an individual/s as champion/s of the NRDS who will promote the strategic interests of the rice sub-sector in order to enhance the implementation of the NRDS. To ensure effective coordination in the implementation of the NRDS, the Department of Agriculture will lead the implementation of the strategy.

#### iii) Roles and responsibilities of departments under MoA

MoA through its various departments will play a major role in the implementation of the NRDS by committing required human and financial resources. Current efforts by MoA aimed



at supporting the development of rice sub-sector include the following:

- a) Department of Agriculture – with the mandate of promoting and disseminating agriculture technologies to farmers. Apart from the regular programmes and activities, the department has been implementing projects to support general extension activities which include rice. These include African Development Bank supported project APMEP, APPSA which is under World Bank, ESAPP supported by International Fund for Agricultural Development, and MOREDeP which is implemented together with JICA.
- b) Zambia Agriculture Research Institute (ZARI) – is mandated to conduct research in rice, which includes variety development, agronomic practices, and soil and water management. Apart from the regular programmes and activities ZARI has been implementing projects to support rice research, which includes APPSA, ESAPP and MOREDeP.
- c) Seed Control and Certification Institute (SCCI) – has the mandate to promote and regulate the seed industry. Apart from the regular programmes and activities, SCCI is implementing specific activities which include strengthening of the rice seed system under APPSA and MOREDeP.
- d) Department of Agribusiness and Marketing – apart from the activities related to agribusiness and marketing, the department has the mandate of implementing FISP, under which subsidized inputs are provided to small-scale farmers to promote production of major crops. Apart from this, they have implemented projects which relate to promote value chain development together with ESAPP and MOREDeP.
- e) Department of Policy and Planning – is responsible for coordinating policy formulation, programme implementation, monitoring and evaluation.

## 6.2 Financing

Based on the Strategic Framework (Annex 1), the proposed interventions under the various sub components across the rice value chain on the strategies outlined in this document, nine (9) proposed project titles and budget estimates were developed. A summary of the estimated budget requirements to operationalize this strategy is shown in Table 6 above.





Table 4: Estimated budget (USD) of proposed project titles

SI. No.	Project Title	Estimated Budget (USD) Millions
CN 1	Enhancing access to domestic and regional rice markets	1.600
CN 2	Development of improved rice varieties	0.850
CN 3	Multiplication and distribution of seed of improved rice varieties	1.000
CN 4	Multiplication and distribution of seed of improved rice varieties	3.000
CN 5	Strengthening extension services for increased rice production	2.150
CN 6	Strengthening the coordination among stakeholders in the rice industry	0.900
CN 7	Development and rehabilitation of irrigation infrastructure for increased rice production	10.000
CN 8	Development of cultivation and management practices for rice	1.500
<b>Total</b>		<b>21.000</b>

For effective and sustainable implementation of the NRDS, there is need for continued mobilisation of investment by the private and public sectors together with the development partners. In this regard, relevant departments under MoA should create budget lines dedicated to the financing of the NRDS as a commitment to rice promotion. Additionally, government should provide tax incentives to promote investments in the rice sub-sector. This includes reduction of duty on farm implements that are used in the rice value chain.

### 6.3 Monitoring, Evaluation, Learning and Adaptation

To track progress during implementation and to take corrective measures when needs arise; effective monitoring, evaluation, learning and adaptation mechanism should be implemented.

Outcome of each activity is monitored and evaluated based on the target set in the T-NRDS and M&E indicators under the RICE Approach. Progress made under the period should be reviewed once in a year at stakeholder meetings. At the same time, discussions will be held among them for better project implementation. The suggestions will be considered and reflected in the activities from the next fiscal year. MOA members will take actions to secure budget on prioritized activities, based on discussions from the stakeholders meeting.



## 7.0 References

FAO. 2020b. Gendered Impacts of COVID-19 Pandemic. Rome. (<http://fao.org/3/a-I 2330 e.pdf>)

FAO. 2020c. Food outlook – June 2020 (also available <http://fao.org/3/ca 9509 en.pdf>)

IAPRI (2021), Rural Agricultural Livelihoods Survey Report.

Ministry of Agriculture (2016) Annual Report

Ministry of Agriculture (2017) Annual Report

Ministry of Agriculture (2018) Annual Report

Ministry of Agriculture (2019) Annual Report

Ministry of Agriculture (2021) Department of Advisory Services

Ministry of Agriculture (2021) Marketing Department

Ministry of Agriculture (2021) Crop Survey/Physical Planning Department

Ministry of Agriculture (2011) National Rice Development Strategy (2011-2016)

Ministry of Agriculture (2011) Second National Rice Development Strategy (2016-2020)

SCCI (2021) Seed Production & Crop Research

SNV (2008) Zambia Rice Baseline Study Report)

USDA-FAS (2020) Updates on Agriculture, Trade, Production and COVID-19 Impacts

ZARI (2021) Rice Research

Zambia Statistics Agency (2020) Crop Forecasting Survey Data





## 8.0 Annex

### Annex 1: Strategic Framework (Approaches and major activities correspond to chapter 5 )

Objectives	Approaches	Major Activities
1. Increase yields by at least 25%	KPI: 25% increase in yield	
	5.1 Input supply & Use	<ul style="list-style-type: none"> <li>i) Strengthening the agribusiness management skills of agro-dealers to enable them to access finances;</li> <li>ii) Enhancing seed maintenance and purification of existing cultivars.;</li> <li>iii) identify and evaluate comprehensively high-performance local varieties;</li> <li>iv) Improving seed supplying structure from research to farmers.;</li> <li>v) Enhancing farmers' seed production;</li> <li>vi) Strengthening rice seed supply chain in the country;</li> <li>vii) Strengthening the capacity of seed companies;</li> <li>viii) Developing appropriate technologies on the use of farm inputs for each rice ecology.</li> </ul>
	5.2 Research and Development	<ul style="list-style-type: none"> <li>i) Registering suitable rice varieties by development and identification;</li> <li>ii) Improving and adapting agronomic management practices;</li> <li>iii) Strengthening regional and international collaborations and partnerships with regional and international research organisations;</li> <li>iv) Strengthening capacity of rice research and technology development through making improvements to existing facilities at centres such as Mt. Makulu and Mansa research stations.</li> </ul>
	5.3 Crop Management	<ul style="list-style-type: none"> <li>i) Developing appropriate cultivation manuals which focus on key elements to improve rice productivity for each agro-ecology such as lowland, rain fed, upland, and irrigated land;</li> <li>ii) Shifting from broadcasting of seed to nursery establishment and transplanting of seedlings;</li> <li>iii) Enhancing application of better and appropriate planting methods;</li> <li>iv) Promoting the use of simple tools to ease agronomic practices such as line marker and rotary weeder;</li> <li>v) Improving soil fertility management.</li> </ul>
	5.4 Extension	<ul style="list-style-type: none"> <li>i) Developing technical packages for both extension staff and farmers;</li> <li>ii) Promoting efficient and effective extension approaches/methodologies;</li> <li>iii) Strengthening farmer exchange visits where necessary;</li> <li>iv) Strengthening rice extension capacity in rice growing areas, including through specialized training provision for extension staff and farmers;</li> <li>v) Promoting budget allocation to extension activities such as transportation allowance and motorcycles for extension officers.</li> </ul>



Objectives	Approaches	Major Activities
	5.6 Irrigation and Water Management	<ul style="list-style-type: none"> <li>i) Encouraging farmers to develop water users association; Implementing rehabilitation and construction of irrigation schemes;</li> <li>ii) Improving water management skills among farmers;</li> <li>iii) Developing and adapting appropriate water management technologies;</li> <li>iv) Conducting capacity development for extension officers and staff of irrigation scheme;</li> <li>v) Implementing rice production trainings at existing irrigation schemes.</li> </ul>
2. Expand the area under cultivation by at least 20%	KPI: 20% increase in area under cultivation	
	5.1 Input supply & Use	<ul style="list-style-type: none"> <li>i) Strengthening the agribusiness management skills of agro-dealers to enable them to access finances;</li> <li>ii) Enhancing seed maintenance and purification of existing cultivars.;</li> <li>iii) Identify and evaluate comprehensively high-performance local varieties;</li> <li>iv) Improving seed supplying structure from research to farmers.;</li> <li>v) Enhancing farmers' seed production ;</li> <li>vi) Strengthening rice seed supply chain in the country;</li> <li>vii) Strengthening the capacity of seed companies;</li> <li>viii) Developing appropriate technologies on the use of farm inputs for each rice ecology.</li> </ul>
	5.4 Extension	<ul style="list-style-type: none"> <li>i) Developing technical package for both extension staff and farmers;</li> <li>ii) Promoting efficient and effective extension approaches/methodologies;</li> <li>iii) Strengthening farmer exchange visits where necessary;</li> <li>iv) Strengthening rice extension capacity in rice growing areas, including through specialized training provision for extension staff and farmers;</li> <li>v) Promoting budget allocation to extension activities such as transportation allowance and motorcycles for extension officers.</li> </ul>
	5.5 Marketing	<ul style="list-style-type: none"> <li>i) Establishing strong, self-supporting groups in which members support each other to produce, process, package and market their rice;</li> <li>ii) Advocating and promoting the use of the warehouse receipt system or related service in the marketing of rice;</li> <li>iii) Promoting collective marketing through establishment of community-level bulking centres;</li> <li>iv) Developing system to encourage coordination between farmers and value chain actors to strengthen the linkage among them;</li> <li>v) Developing and disseminating effective marketing approaches for rice farmers to promote rice production as a business.</li> </ul>



Objectives	Approaches	Major Activities
	5.6 Irrigation and Water Management	<ul style="list-style-type: none"> <li>i) Encouraging farmers to develop water users association; Implementing rehabilitation and construction of irrigation schemes;</li> <li>ii) Improving water management skills among farmers;</li> <li>iii) Developing and adapting appropriate water management technologies;</li> <li>iv) Conducting capacity development for extension officers and staff of irrigation scheme;</li> <li>v) Implementing rice production trainings at existing irrigation schemes.</li> </ul>
	5.7 Mechanization	<ul style="list-style-type: none"> <li>i) Setting policy for accelerating promotion of rice mechanisation; Promoting the use of appropriate equipment;</li> <li>ii) Building the capacity of selected agro-entrepreneurs to provide technical services;</li> <li>iii) Establishing community-based Agribusiness Service Centres;</li> <li>iv) Examining the sustainable use of agriculture machinery systems at community level;</li> <li>v) Encouraging Agriculture Training Institutes and Trades Schools to invent machines/tools that can be used by rice farmers and sold at lower prices than imported one.</li> </ul>
	5.11 Finance	<ul style="list-style-type: none"> <li>i) Improving farmers' access to group-based savings and credit programmes by facilitating farmers to form groups and associations in order to strengthen their bargaining power and access;</li> <li>ii) Facilitating public/private sector partnerships through the warehouse receipt system and related services;</li> <li>iii) Lobbying for specially designed financial products with favourable lending terms appropriate for the agricultural enterprises.</li> </ul>
3. Improve quality of local rice	KPI : % farmers access to appropriate inputs KPI : % farmers using improved seed KPI : % increase in improved quality of rice	
	5.1 Input supply & Use	<ul style="list-style-type: none"> <li>i) Strengthening the agribusiness management skills of agro-dealers to enable them to access finances;</li> <li>ii) Enhancing seed maintenance and purification of existing cultivars;</li> <li>iii) Identify and evaluate comprehensively high-performance local varieties;</li> <li>iv) Improving seed supplying structure from research to farmers.;</li> <li>v) Enhancing farmers' seed production;</li> <li>vi) Strengthening rice seed supply chain in the country;</li> <li>vii) Strengthening the capacity of seed companies;</li> <li>viii) Developing appropriate technologies on the use of farm inputs for each rice ecology.</li> </ul>
	5.2 Research and Development	<ul style="list-style-type: none"> <li>i) Registering suitable rice varieties by development and identification;</li> <li>ii) Improving and adapting agronomic management practices;</li> <li>iii) Strengthening regional and international collaborations and partnerships with regional and international research organisations;</li> <li>iv) Strengthening capacity of rice research and technology development through making improvements to existing facilities at centres such as Mt. Makulu and Mansa research stations.</li> </ul>



Objectives	Approaches	Major Activities
	5.8 Harvesting and Postharvest Handling	<ul style="list-style-type: none"> <li>i) Developing appropriate technologies of harvest and post-harvest handling;</li> <li>ii) Training rice value chain actors on appropriate harvest and post-harvest technologies;</li> <li>iii) Facilitating access to appropriate post-harvest equipment and machinery;</li> <li>iv) Facilitating private sector investment in storage and processing facilities through providing incentives for the establishment of storage and processing plants via CEEC.</li> </ul>
	5.9 Processing and Quality Management	<ul style="list-style-type: none"> <li>i) Reviewing rice quality standard in collaboration with ZBOS if necessary;</li> <li>ii) Promoting stakeholder workshops between rice retailers and farmers;</li> <li>iii) Sensitizing farmers on developing appropriate selling channels rather than selling paddy rice (ex, sensitize off-season sales, the advantage of selling milled rice);</li> <li>iv) Strengthening information sharing between private and government sectors.</li> </ul>
4. Promote stakeholder innovation capacity and knowledge management across the value chain	KPI : % increase in area under mechanization KPI : % stakeholders adopting recommended harvesting and postharvest technologies	
	5.2 Research and Development	<ul style="list-style-type: none"> <li>i) Registering suitable rice varieties by development and identification;</li> <li>ii) Improving and adapting agronomic management practices;</li> <li>iii) Strengthening regional and international collaborations and partnerships with regional and international research organisations;</li> <li>iv) Strengthening capacity of rice research and technology development through making improvements to existing facilities at centres such as Mt. Makulu and Mansa research stations.</li> </ul>
	5.7 Mechanization	<ul style="list-style-type: none"> <li>i) Setting policy for accelerating promotion of rice mechanisation; Promoting the use of appropriate equipment;</li> <li>ii) Building the capacity of selected agro-entrepreneurs to provide technical services;</li> <li>iii) Establishing community-based Agribusiness Service Centres;</li> <li>iv) Examining the sustainable use of agriculture machinery systems at community level;</li> <li>v) Encouraging Agriculture Training Institutes and Trades Schools to invent machines/tools that can be used by rice farmers and sold at lower prices than imported one.</li> </ul>
	5.8 Harvesting and Postharvest Handling	<ul style="list-style-type: none"> <li>i) Developing appropriate technologies of harvest and post-harvest handling;</li> <li>ii) Training rice value chain actors on appropriate harvest and post-harvest technologies;</li> <li>iii) Facilitating access to appropriate post-harvest equipment and machinery;</li> <li>iv) Facilitating private sector investment in storage and processing facilities through providing incentives for the establishment of storage and processing plants via CEEC.</li> </ul>



Objectives	Approaches	Major Activities
	5.9 Processing and Quality Management	<ul style="list-style-type: none"> <li>i) Reviewing rice quality standard in collaboration with ZBOS if necessary;</li> <li>ii) Promoting stakeholder workshops between rice retailers and farmers;</li> <li>iii) Sensitizing farmers on developing appropriate selling channels rather than selling paddy rice (ex, sensitize off-season sales, the advantage of selling milled rice);</li> <li>iv) Strengthening information sharing between private and government sectors.</li> </ul>
	5.10 Knowledge and Capacities of Value chain actors and Supporters	<ul style="list-style-type: none"> <li>i) Disseminating improved technologies by providing training opportunities for value chain actors;</li> <li>ii) Securing necessary budget for managing meeting and activities among value chain stakeholders;</li> <li>iii) Holding stakeholder meeting regularly to share the progress and discuss the budget allocation for the future activities;</li> <li>iv) Enhancing the collaboration project among rice sub-sector stakeholders.</li> </ul>
	5.12 Enabling Environment (Policies & Institutions)	<ul style="list-style-type: none"> <li>i) Reviewing the latest national policy such as National Agriculture Investment Plan and flexibly address activities of T-NRDS;</li> <li>ii) Conducting training and workshop toward MOA staffs such as ZARI and DoA to enhance their capacity of policy making;</li> <li>iii) Lobbying for prioritizing of rice production as important industry in the national policy schemes.</li> </ul>
5. Increase the market share of locally produced rice	KPI: % farmers and/trader adopting recommended marketing methods. KPI: % increase in milling outturns (whole grain: broken grain ratio) KPI: % increase in capacity utilisation of processing equipments	
	5.5 Marketing	<ul style="list-style-type: none"> <li>i) Establishing strong, self-supporting groups in which members support each other to produce, process, package and market their rice;</li> <li>ii) Advocating and promoting the use of the warehouse receipt system or related service in the marketing of rice;</li> <li>iii) Promoting collective marketing through establishment of community-level bulking centres;</li> <li>iv) Developing system to encourage coordination between farmers and value chain actors to strengthen the linkage among them;</li> <li>v) Developing and disseminating effective marketing approaches for rice farmers to promote rice production as a business.</li> </ul>
	5.8 Harvesting and Postharvest Handling	<ul style="list-style-type: none"> <li>i) Developing appropriate technologies of harvest and post-harvest handling;</li> <li>ii) Training rice value chain actors on appropriate harvest and post-harvest technologies;</li> <li>iii) Facilitating access to appropriate post-harvest equipment and machinery;</li> <li>iv) Facilitating private sector investment in storage and processing facilities through providing incentives for the establishment of storage and processing plants via CEEC.</li> </ul>



Objectives	Approaches	Major Activities
	5.9 Processing and Quality Management	<ul style="list-style-type: none"> <li>i) Reviewing rice quality standard in collaboration with ZBOS if necessary;</li> <li>ii) Promoting stakeholder workshops between rice retailers and farmers;</li> <li>iii) Sensitizing farmers on developing appropriate selling channels rather than selling paddy rice (ex, sensitize off-season sales, the advantage of selling milled rice);</li> <li>iv) Strengthening information sharing between private and government sectors.</li> </ul>
	5.10 Knowledge and Capacities of Value chain actors and Supporters	<ul style="list-style-type: none"> <li>i) Disseminating improved technologies by providing training opportunities for value chain actors;</li> <li>ii) Securing necessary budget for managing meeting and activities among value chain stakeholders;</li> <li>iii) Holding stakeholder meeting regularly to share the progress and discuss the budget allocation for the future activities;</li> <li>iv) Enhancing the collaboration project among rice sub-sector stakeholders.</li> </ul>
6. Hold meetings which invite rice value chain stakeholders to develop and improve mechanisms for linking value chain and rice sub-sector	KPI: No. of related platform operational at district, province and national levels KPI: Number of key policy issues discussed at district, provincial and national levels	
	5.10 Knowledge and Capacities of Value chain actors and Supporters	<ul style="list-style-type: none"> <li>i) Disseminating improved technologies by providing training opportunities for value chain actors;</li> <li>ii) Securing necessary budget for managing meeting and activities among value chain stakeholders;</li> <li>iii) Holding stakeholder meeting regularly to share the progress and discuss the budget allocation for the future activities;</li> <li>iv) Enhancing the collaboration project among rice sub-sector stakeholders.</li> </ul>
	5.12 Enabling Environment (Policies & Institutions)	<ul style="list-style-type: none"> <li>i) Reviewing the latest national policy such as National Agriculture Investment Plan and flexibly address activities of T-NRDS</li> <li>ii) Conducting training and workshop toward MOA staffs such as ZARI and DoA to enhance their capacity of policy making;</li> <li>iii) Lobbying for prioritizing of rice production as important industry in the national policy schemes.</li> </ul>



