



East African Community Rice Development Strategy



Contents

Acronyms	3
Executive Summary.....	4
1. Introduction	6
2. Trends and Challenges in rice sector development in the EAC region	8
2.1. Rice production	8
2.2. Rice Trade.....	11
2.3. Rice Consumption	13
3. Methodology and strategy formulation	15
3.1. Strengths, Weaknesses, Opportunities and Threats (SWOT) of regional rice sector development.....	16
3.2. TOWS Analysis.....	19
3.3. Approaches	19
3.4. Data Sources	20
4. Framework of EAC Rice Development Strategy (ERDS)	21
4.1. Vision.....	21
4.2. Goal	21
4.3. Purpose	21
4.4. Scope of ERDS actions.....	21
4.5. Guiding Principles	21
4.6. Targets	21
4.7. Strategic Objectives (SO).....	22
SO-1: Increase total rice production and on-farm productivity in the EAC region.....	22
SO-2: Improve market competitiveness of locally produced rice in the EAC region	23
SO-3: Enhance EAC intraregional rice trade.....	25
SO-4: Create an enabling environment for mutual benefits of all the stakeholders in the EAC region..	26
SO-5: Build up ecological and socio-economic sustainability of rice industry in the region	27
5. Implementation Mechanisms	28
5.1. ERDS Implementation Plan (ERDSIP)	29
6. Monitoring and Evaluation	30
Annexures	31
Annexure. 1: Country SWOTs.....	31
Annexure 2: Sample VIEM matrix for SO-1	31
Annexure 3: ERDS Implementation Plan (ERDSIP).....	32

Acronyms

AU	African Union
BDI	Republic of Burundi
CAADP	Comprehensive African Agriculture Development Program
CAMARTEC	Center for Agricultural Mechanization and Rural Technologies in Tanzania
CARD	Coalition for African Rice Development
CARI	Competitive African Rice Initiative
CET	Common External Tariff
COVID-19	Corona Virus Disease 2019
DRC	Democratic Republic of Congo
EAC	East African Community
EAS	East African Standards
ECOWAS	Economic Community of Western African States
ERDS	EAC Rice Development Strategy
ERP	EAC Rice Platform
FAO	Food and Agriculture Organization of the United Nations
FNSAP	EAC Food and Nutrition Security Action Plan
GIZ	Gesellschaft für Internationale Zusammenarbeit
IPR	Intellectual Property Rights
ITC	International Trade Center
KEN	Republic of Kenya
KT	Kilimo Trust
M&E	Monitoring and Evaluation
NAIP	National Agriculture Investment Plans
NRDS	National Rice Development Strategy
NTB	Non-Tariff Barriers
OSBP	One Stop Border Post
PRA	Pest Risk Analyses
RAIP	Regional Agriculture Investment Plan
R.I.C.E	Resilience. Industrialization. Competitiveness. Empowerment
RSS	Republic of South Sudan
RWA	Republic of Rwanda
RYMV	Rice Yellow Mottle Virus
SCAFS	EAC's Sectoral Council on Agriculture and Food Security
SGR	Standard Gauge Railway
SO	Strategic Objective
SOP	Standard Operating Procedures
SPS	Sanitary and Phyto-sanitary Standards
SWOT	Strengths, Weaknesses, Opportunities and Threats
TOWS	Threats Opportunities Weaknesses and Strengths
TZA	United Republic of Tanzania
UN	United Nations
USDA	United States Department of Agriculture
VIEM	Value chain Intervention Element Matrix
USD	US dollars

Executive Summary

Rice has become the second most important cereal crop after maize, for the East African Community (EAC) region. Yet short falls in regional production against a fast-growing consumer demand average about 21.4% for the period 2014-2020. The deficit prompts the markets in the EAC region to import rice from elsewhere, largely Asia. With only 8.5% of the total rice imports being sourced locally from within the EAC region, the EAC markets had to spend about 423.35 million USD on importing rice from the global supply chain in 2020.

Snarls and shortages in regional and global rice supply chains often tend to cause volatility in accessibility and affordability of rice to consumers, as evidenced during food price crisis (2007-2008) and COVID-19 pandemic. Since the over-reliance on imports and global volatility in supply volumes and prices can affect both the farmers and consumers; ramping up the scales of local rice production and trading becomes paramount for establishing sustainable food systems in the EAC region.

Besides a few but growing number of commercial rice farms, rice is mostly cultivated by smallholder farmers under diversified environments – uplands, rainfed lowlands and irrigated lands at different altitudes. While a growing demographic pressure on land is swiftly diminishing scopes for expansion of area under the rice cultivation; fighting climate change has emerged as a key challenge to the sustainability of rice production in all the EAC Partner States.

Rice value chain in the region remains largely under-developed with several issues on both the supply- and demand sides of the necessary inputs and technologies. Average on-farm rice yield for the period 2014-2020 stands at 1.653 t/Ha; much lower than the world average of 4.57 t/Ha. Inadequate qualities, insufficient and inconsistent quantities, and rising costs of local rice production profoundly weaken market competitiveness of the locally produced rice over the imported rice from Asia.

Recognizing the pressing need for advancements in rice sector, the individual EAC Partner States have either already formulated or in the process of formulating their own National Rice Development Strategy (NRDS). Given the growing interconnectivity of markets for inputs and outputs of rice farms in the region however, coherence and coordination of policies and interventions among the EAC Partner States have become imperative for a sustainable integration and development of rice sector in the region. This forms the purpose of this document (EAC Rice Development Strategy; ERDS).

With a goal of **doubling the rice production** in the EAC region by 2030, the ERDS provides a framework for deepening integration of the rice value chains and stakeholders among the EAC Partner States. **Mutualism** among the Partner States and **complementarity** to implementation of the NRDSs' ambitions in the Partner States are the two guiding principles for the proposed approaches and interventions under the ERDS.

Strategic interventions will be structured under the following strategic pillars/objectives viz., (i) increasing rice productivity and production through improved access to technologies, (ii) improving market competitiveness through enhancement of quality standards, (iii) enhancing intraregional rice imports through trade-creation, (iv) creating an enabling environment for all the stakeholders, and (v) improving sustainability of rice production and supply.

Interventions under increasing rice productivity and production will focus on regional research and extension services, regional policies on promoting investments in farming and trading of input

technologies (varieties, seeds, machineries, fertilizers). Market competitiveness of the locally produced rice will be improved mainly through enhanced adoption of grain quality standards, market information and profitability. Intra-regional trading of rice farm inputs and outputs will be promoted by reducing non-tariff barriers, improving horizontal- and vertical integration of policies on movements of rice-farm inputs and outputs, and addressing gaps in accessibility to materials and services.

Environment for integrating rice value chains of the Partner States will be enabled through transparent regulatory frameworks, policy adaptation, policy coherence, vertical and horizontal policy integration, and policy coordination. Socio-economic sustainability, ecological sustainability, and circularity of rice production in the region will be improved by promoting inclusiveness of women and youth, mitigating the climate change, and reducing the negative impacts of global shocks.

Key interventions that could effectively translate into implementation of the ERDS are proposed through a logical framework matrix (Annexure 3). It is estimated that the implementation of ERDS will require about **27.2 million USD over a period of 7 years**. Under the guidance of the EAC Secretariat, the EAC Rice Platform (ERP) will spearhead the implementation of the ERDS by analyzing existing gaps in investments, prioritizing needs, designing bankable projects, and sourcing funds from national governments, development partners, private sector, and other stakeholders.

Activities under the projects will be implemented mainly through national/regional agricultural research and development institutions and line Ministries. The EAC Secretariat will be responsible for coordinating execution of interventions of regional nature that require convening of Partner States in order to complement actions taken at the national level. To institutionalize the coordination of the various proposed activities and the M&E process, an 'EAC rice desk' is proposed under the EAC Secretariat.

Expected outcomes of the above-mentioned ERDS objectives include building of improved resilience (R) in regional rice production and supply through global and climate adversities, increased industrialization (I) of value chain activities by stimulating commercialization, invigorated competitiveness (C) of local rice over the imported rice, and wider empowerment (E) of the rice value chain stakeholders, especially women and youth. Key outcome indicators under this R.I.C.E. approach will be tracked at both the national and regional levels.

ERP members will facilitate and coordinate regional linkages amongst various rice-related project activities and policies in the EAC Partner States, and organize monitoring and evaluation (M&E) of the ERDS implementation process. While monitoring will focus on routine tracking of progress and collection of data along the entire rice value chain in the region; the evaluation of impacts will be used to adaptively manage the effectiveness of approaches and interventions under the optics of the ERDS.

1. Introduction

Carbon dating and genomic findings suggest that African rice species, *Oryza glabberima*, evolved independently and was domesticated along Niger delta and across Western Africa over 3,500 years ago¹. In Eastern Africa however; the predominant Asian species of rice, *Oryza sativa*, was introduced much more recently in the 19th century through various missions from Asia and Europe. Rice cultivation in both Western and Eastern Africa has since spread sporadically and protractedly over time, but has found a systematic momentum in the recent decades. Since 1970s, the total rice production in Africa has increased by almost 4-fold (Table 1). In the past decade; Western and Eastern Africa alone contributed to 54.1% and 24.4% of Africa's total rice production respectively, signifying the growing importance of rice as a food crop in the current era.

Table 1: Production of rice (total milled equivalent over 10 years; tons) in various regions of Africa² since 1970s

Decades	World	Africa	Eastern Africa	Middle Africa	Western Africa	Southern Africa	Northern Africa
1970s	2,296,372,933	51,752,907	16,431,012	2,059,740	16,996,595	53,854	16,211,706
1980s	3,029,789,561	65,626,747	18,969,092	2,837,407	27,821,398	39,208	15,959,643
1990s	3,679,237,515	99,897,541	23,432,631	3,619,041	42,753,158	27,690	30,065,023
2000s	4,173,950,406	133,447,742	33,063,435	3,681,555	54,699,098	23,594	41,980,062
2010s	4,886,367,130	204,981,811	49,936,625	10,222,124	110,843,566	26,130	33,953,365

Despite a pronounced impact of climate change on rice production³, cumulative volumes of rice traded in global markets have increased by over 4-fold in the past five decades (Table 2). Owing to substantial growth in Africa's middle income population and their dispensable incomes, the many ways in which rice grains can be cooked with less fuel, its satiating calorific value⁴, compact storability, and relatively long shelf-life of rice grains when compared to some of the traditional staples such as potato, cassava and other tubers; market demand for consumption of rice and hence rice importation has increased significantly (over 4-fold in the past five decades; Table 2) across Africa.

Table 2: Importation of rice (milled equivalent; tons) by Africa's regions²

Decades	World	Africa	Eastern Africa	Middle Africa	Western Africa	Southern Africa	Northern Africa
1970s	90,090,908	12,310,035	2,844,971	808,482	7,162,113	956,870	537,597
1980s	122,490,603	29,278,958	5,787,609	1,897,549	18,033,636	2,068,874	1,491,292
1990s	183,856,229	40,332,047	5,356,338	3,225,690	24,989,874	4,607,928	2,152,220
2000s	276,567,668	80,576,146	11,550,589	8,124,598	49,878,083	7,960,895	3,061,987
2010s	398,829,438	137,788,862	27,552,969	13,032,137	82,035,551	10,610,114	4,558,089

Since most of the rice produced in Asian countries are consumed domestically, only a thin proportion of total world's rice production (about 5.9% on an average; tables 1 and 2) is traded in global markets. The share of rice imports by Africa nevertheless has increased from 13.7% in the 1970s to 34.5% (more than one-third of the global trade) by 2010s (Table 2). Driven largely by a fast-growing demand for consumption; Africa's mounting rice importation aggravates volatility in global market prices, especially when global supplies are tightened by major

¹ Nayar NM (2012) Evolution of the African Rice: A historical and biological perspective. Crop Science 52(2): 505-516

² FAO Statistics, <https://www.fao.org/faostat>, accessed 30-June-2022

³ Nguyen NV (2012) Global climate changes and rice food security, IRC Report 24-31

⁴ Juliano BO (1993) Rice in human nutrition, IRRI-FAO Publication, Rome

rice producers and when snags occur along rice supply chain networks, such as during food price crisis (2007-2008) and COVID-19 pandemic⁵.

Following liberalization of international trade and tariffs in the early 1990s⁶; Eastern Africa has witnessed a sharper growth in rice importation (8.2-fold increment in volumes, between 1990s and 2010s) when compared to other regions in Africa (Fig. 1). Besides threatening sovereignty and sustainability of rice-based food systems, the over-reliance on imports and the associated vulnerability have made significant overtures on political economy of domestic rice production and trade in the region.

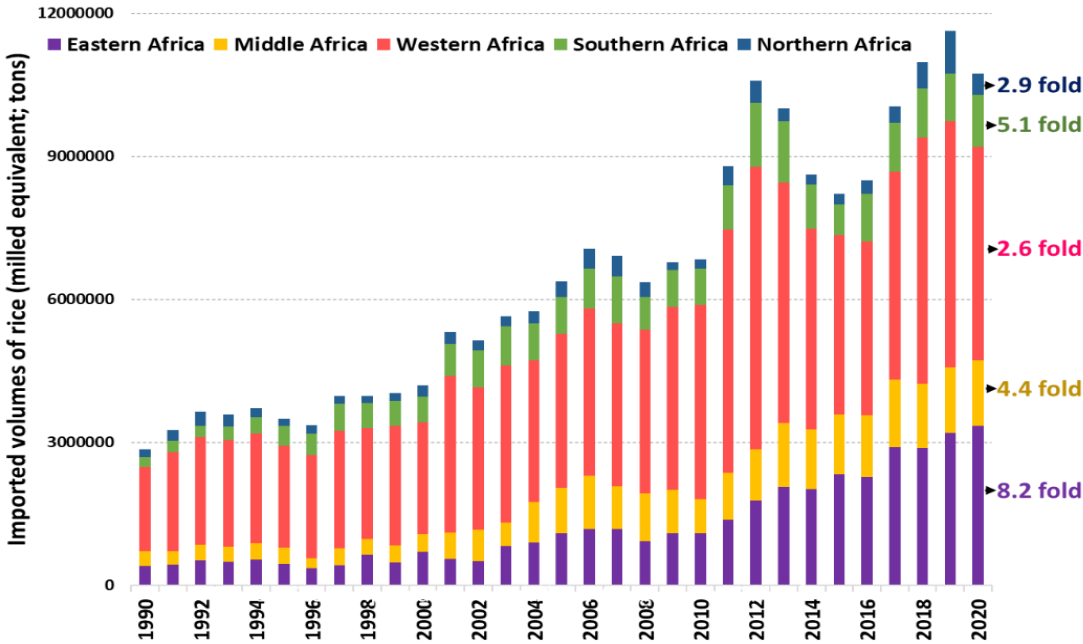


Fig. 1: Trends in rice importation by different regions of Africa². Increments in volumes (between 1990 and 2020) are indicated to the right of respective bars.

East African Community (EAC), a regional intergovernmental organization of the Republics of Burundi, Kenya, Rwanda, South Sudan, Tanzania, and Uganda, guides free movement of goods, people, labor, services, and capital amongst Partner States through its customs union and common market mechanisms. Recently Democratic Republic of Congo (DRC) has been admitted into the EAC as the seventh partner state⁷. With a mission to widen and deepen economic, political, social, and cultural integration amongst the Partner States; the EAC intends to improve the quality of life of the people in East Africa through increased competitiveness, value added production, trade, and investments.

Rice has been prioritized as an important food crop under overarching agriculture sector development strategies of almost all EAC Partner States. With support from Coalition for African Rice Development (CARD), a consultative group of international development partners, these Partner States (except RSS) have individually formulated National Rice Development Strategy (NRDS) for increasing rice production and supply, and to reduce the negative impacts of import reliance. Commonly emphasized pathways in the NRDSs of all the Partner States involve (a)

⁵ Kathiresan A, Nagai T, Haneishi Y (2020) Policy options for galvanizing Africa’s rice sector against impacts of COVID-19, World Development 136: 105126

⁶ General Agreement on Trades and Tariffs (GATT), April 15, 1994

⁷ EAC Press Release dated -11-July-2022, <https://www.eac.int/press-releases>

intensification of local rice production through increased use of productivity-enhancing inputs such as seeds, fertilizers, water, and machineries, and (b) sharpening of market competitiveness of the locally produced rice through improved processing and marketing.

Since the EAC offers preferential trade access to each other Partner States’ markets; the interconnectivity of supply chains of both the inputs and outputs of rice farms in the region requires an integrated approach for holistic and sustainable development of rice sector. While the NRDSs of the individual Partner States articulate their desired strategic and policy interventions for national rice sector in isolation; there emerges a strong need to also improve the coherence and coordination of rice value chain related policies for an effective regional integration. It is in this context that this document (EAC Rice Development Strategy; ERDS) sets out strategies for catalyzing integration and synergizing rice value chain development in the EAC region.

2. Trends and Challenges in rice sector development in the EAC region

2.1. Rice production

In the EAC region, rice is grown under diverse ecosystems such as uplands, rain fed lowlands, irrigated lowlands, shallow wetlands (dambos) and marshlands at different altitudes (up to 1500 m above mean sea level). Rice is produced largely by smallholder farmers as a food and cash crop. Average size of rice farms in the EAC region ranges from 0.1 Ha in Rwanda⁸ to 1.25 Ha in Tanzania⁹. Since harvested paddy cannot be consumed directly, a vast majority of the smallholder (<2 Ha) farmers take the harvest to mills, retain a portion of milled rice for their own household consumption (subsistence) and sell the surplus (if any). Although not predominant in the EAC region; medium (2-6 Ha) and large (>6 Ha) commercial scale rice farming have been on the rise, especially in Kenya, Tanzania, and Uganda. Rice produced in such commercial farms is mostly sold in mainstream domestic markets and/or cross-border markets within the EAC region.

Ranges of area under rice cultivation are highly variable amongst the EAC Partner States (Fig. 2), due to varying demographic pressure on land, suitability of land for rice production, and number of times the crop can be grown in a year. While in Burundi (BDI), Kenya (KEN), Rwanda (RWA) and Uganda (UGA), the area under rice cultivation is in the range of few thousand hectares (primary axis on the left of fig. 2A), that in DRC and Tanzania (TZA) is in the range of millions of hectares (secondary axis in fig. 2B).

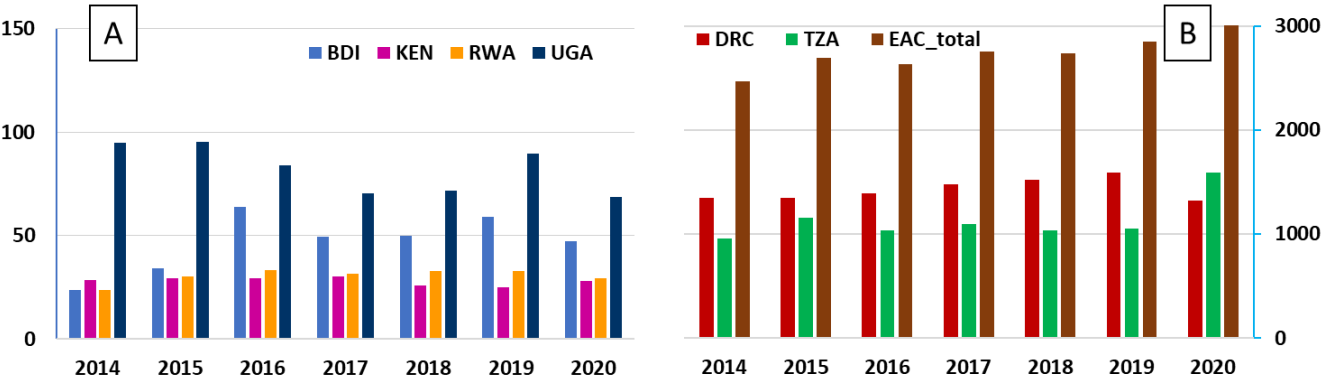


Fig. 2: Area (in '000 Ha) under rice cultivation in the EAC region. Depending on the range, countries are grouped and their areas are scaled either on primary axis (A) or secondary axis (B).

⁸ National Rice Development Strategy I (2011), Ministry of Agriculture and Animal Resources, Republic of Rwanda

⁹ National Rice Development Strategy II (2019), Ministry of Agriculture, United Republic of Tanzania

Ranges of paddy rice (before milling) production volumes also vary amongst the EAC Partner States (Fig. 3) in accordance with their harvested area. While in Burundi, Kenya, Rwanda and Uganda, the paddy production is in the range of few hundred thousand tons, that in DRC and Tanzania is in the range of millions. By contributing an average of over 61.4% of the total rice production in the EAC region between 2014 and 2020, Tanzania has been the largest rice producer in the EAC region (Fig. 3).

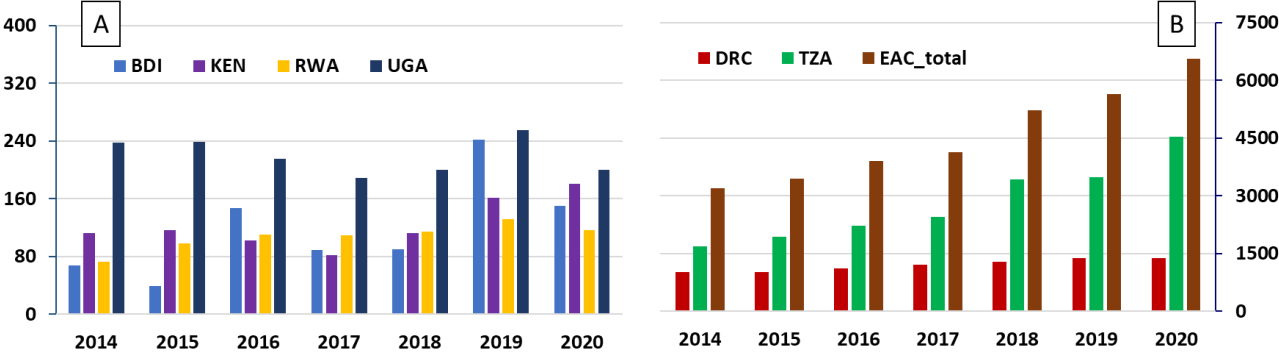


Fig. 3: Volumes of paddy (rough rice (before milling), in '000 tons) production in EAC Partner States. Based on the range, countries are grouped and their production is scaled either on primary axis (A) or secondary axis (B).

Although the total rice production in the EAC region has by and large steadily doubled from 3.2 million tons in 2014 to 6.6 million tons by 2020 (Fig. 3); progress (year-on-year) in total rice production in individual Partner States show large fluctuations, implying that climate vagaries have affected the growth in production over time (Fig. 4). Since rice is produced under climatically diverse environments within the EAC region, total rice production in most of the Partner States has become highly vulnerable to climate change. The frequency and/or severity of climate extremities such as drought, prolonged dry spells, flash floods, minimum and maximum temperature extremes, especially during critical stages of crop growth affect sustainability in rice production. As temperatures are projected to continue rising and rainfall patterns are expected to shift further^{10,11}; investments in irrigation infrastructures and climate adaptation, and the ability of the smallholder farmers to adopt climate-smart rice farming and to mitigate the impacts of the adversaries are crucial for sustaining rice production in the EAC region.

¹⁰ Waithaka M, Nelson GC, Thomas TS, Kyotalimye M (2013) East African agriculture and climate change: A comprehensive analysis. International Food Policy and Research Institute, Research Monograph.

¹¹ McKinsey Global Institute (2020) How will African farmers adjust to changing patterns of precipitation – A case study

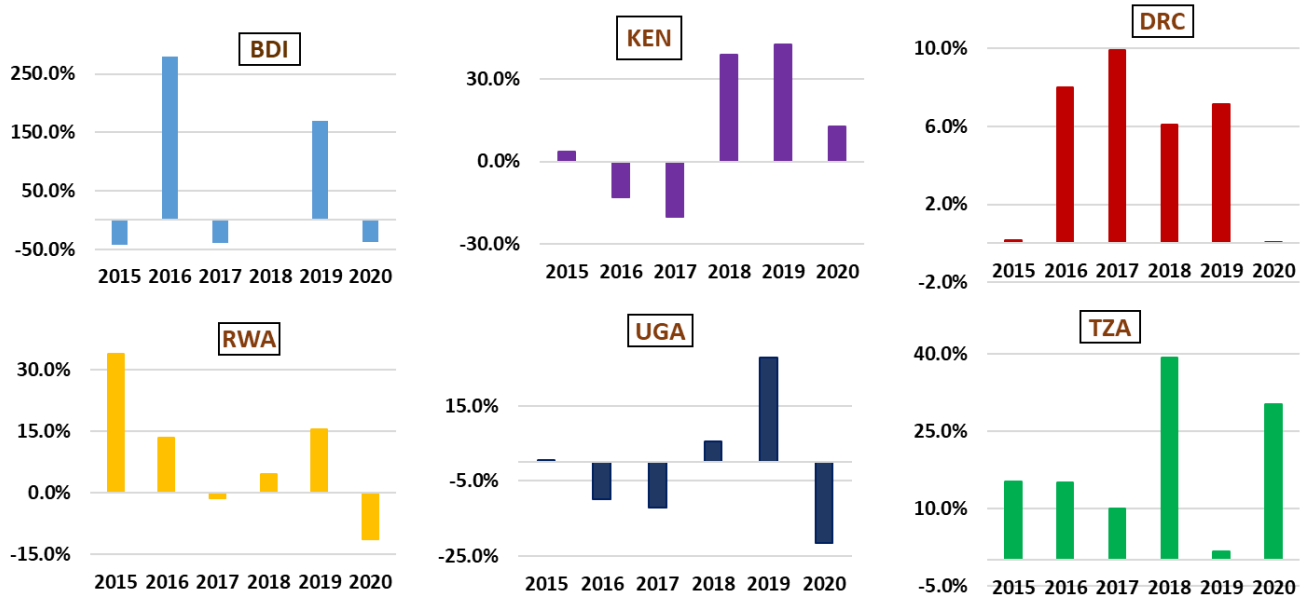


Fig. 4: Annual fluctuations in total rice production in EAC Partner States, expressed as changes (in percentage) over the previous year in production.

National average of on-farm rice yields (t/Ha) vary in accordance with the ecosystems in which majority of rice is produced in each partner state. Since FAO calculates on-farm average yield from the cumulative total area harvested; it includes the performance of rice crop in one or more seasons and from across the different rice ecosystems (Fig. 5). With an average of 6.4 t/Ha in the recent years, rice yields in Kenya are above the global average (4.57 ± 0.04 t/Ha). This is mainly due to its superior productivity levels in irrigated areas. With an average of 4 t/Ha, Rwanda's marshlands are the second most productive rice-growing areas in the EAC region. On-farm rice yield levels in Burundi, Tanzania and Uganda are in the range of 3.0 ± 0.2 t/Ha due to relatively more climate-prone and lower water regimes, and diversified environments (rainfed and/or upland) in which rice is produced. While data on rice yields in South Sudan is not yet available, DRC has recorded the lowest average productivity level (1 t/Ha) amongst the Partner States.

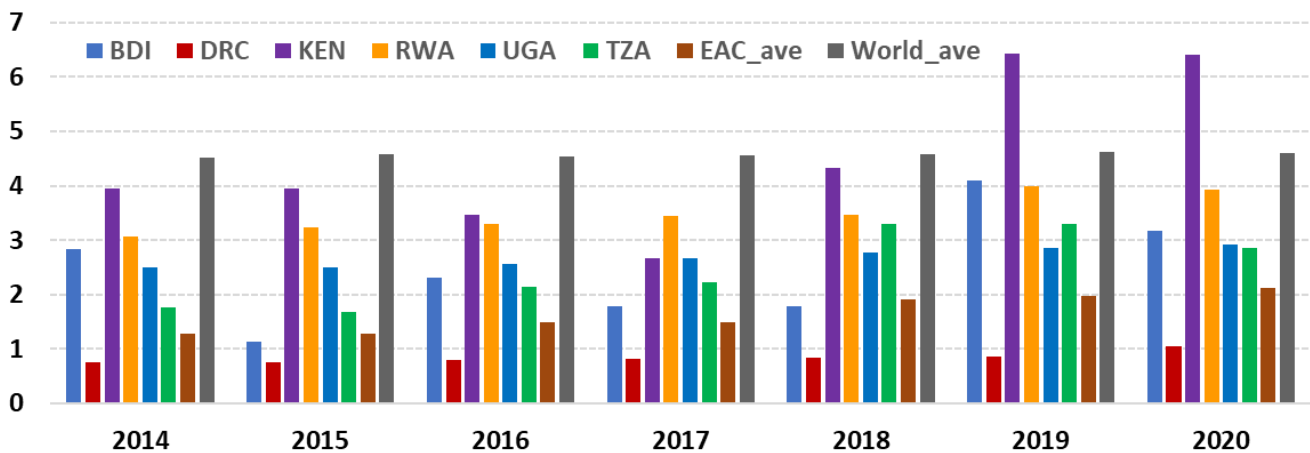


Fig. 5: Average rice yields (t/Ha) recorded in the EAC Partner States between 2014 and 2020.

Although on-farm productivity level in the EAC region has generally been rising in the recent years (Fig. 4); the rice yields obtained by farmers in the EAC region for the period of 2014-2020 averages at 1.653 ± 0.321 t/Ha, a difference of 2.917 t/Ha with the world average (4.57 t/Ha). This yield gap, often referred to as Gap-2 (Box. 1)¹² is due to weak access to input markets and differences in management practices at farm levels such as sub-optimal

usage of inputs and weaker adoption of good agronomic practices. Lack of adequate irrigation infrastructure and their management in meeting the water demand of rice crop at critical stages and mitigating the climate vagaries in smallholder farms also contribute to the yawning yield gaps. Furthermore, yield gap between technical demonstration plots and farmers' fields has also been widely reported in several Partner States^{13,14}. This could imply that institutional inefficiencies in transferring economically optimal

Simulated potential 'research station' yield	Yield limiting/reducing factors not controlled at the research station		Yield Gap-0	
	Experimental maximum yield at research stations	<ul style="list-style-type: none"> • Non-transferrable technologies • Environment and management constraints 		Yield Gap-1
		Technical on-farm ceiling (Potential farm yield)	<ul style="list-style-type: none"> • Market access • Prices • Diminishing returns 	
	Economic on-farm ceiling		<ul style="list-style-type: none"> • Lack of inputs • Farmers' risk-aversion 	
		Actual on-farm yield	This level may differ between plots	

Box. 1: Classification of yield gaps (based on de Bie, 2000)

productivity-enhancing technologies and in creating conducive market environments limit the smallholder farmers from realizing potential rice yields.

2.2. Rice Trade

In general, the locally produced rice is preferred in national markets, especially by price-sensitive consumers in both rural and urban markets of all the Partner States¹⁵. Traditionally grown local varieties such as SUPA (in Tanzania, Uganda, and the region at large), Pishori (in Kenya), TOX (in Burundi), and Kigori (in Rwanda) have consistently gained traction in their respective national markets for their price and/or taste and/or appearance. However, since the volumes of demand for rice consumption have been rising much faster than what the local production could supply to the markets, wholesale rice traders in the EAC region import 'milled rice' (semi-milled or wholly milled) from elsewhere to fill the gaps in local supply. FAO data² on food balance sheets suggests that traders and millers also import paddy grains (non-milled), though the sources of origin of paddy rice are not always clear. Trade data on importation of milled rice by the EAC Partner States (except RSS) are available with FAO, International Trade Center (ITC; trademap.org) and United Nations' COMTRADE (comtrade.un.org) databases. Statistics from these sources reveal that although volumes and countries of origin of milled rice importation by the EAC Partner States vary considerably over the years, most of the imported rice originated from Asia (Table 3).

¹² Based on de Bie CAJM (2000) Comparative performance analysis of agro-ecosystem. Wageningen University and Research Centre, ITC, Enshede, Netherlands

¹³ Nhamo N et al (2014) Narrowing the rice yield gaps in Eastern and Southern Africa: Using and adapting existing technologies. *Agricultural Systems*, 131:45-55

¹⁴ Senthilkumar K et al (2020) Quantifying rice yield gaps and their causes in Eastern and Southern Africa. *J Agro Crop Sci* 206: 478-490

¹⁵ Kilimo Trust (2014) Expanding markets for rice in the East African Community (EAC). Report.

Table 3: Major sources of imported rice (milled; in descending order of volumes) amongst the EAC Partner States¹⁶

Partner state	Major countries of origin of imported rice (2016-2020)
Burundi	Tanzania, UAE, Italy, India
Democratic Republic of Congo	Thailand, China, India, Pakistan, USA, Uganda, Italy, Tanzania
Kenya	Pakistan, India, Thailand, Tanzania, Myanmar, Korea, Vietnam, China, Uganda
Rwanda	Pakistan, Tanzania, Thailand, India
Tanzania	Pakistan, India, USA
Uganda	Tanzania, Pakistan, India, Thailand, China, UAE, Kenya

FAO data on volumes of milled rice importation in the recent years show that Burundi, DRC, Rwanda, South Sudan, Tanzania, and Uganda import less than three hundred thousand tons of milled rice (Fig. 6A). Kenya is the largest importer in the EAC region, with several hundred thousand tons of milled rice (Fig. 6B). However, while the annual import volumes of Kenya have become stable and do not show increase in the recent 5 years, the rice import volumes show a steady increase amongst the low-volume importers (Fig. 6A). Despite quantitative demand, this trend implies that consumers in EAC Partner States find imported milled rice from Asia qualitatively and economically more appealing.

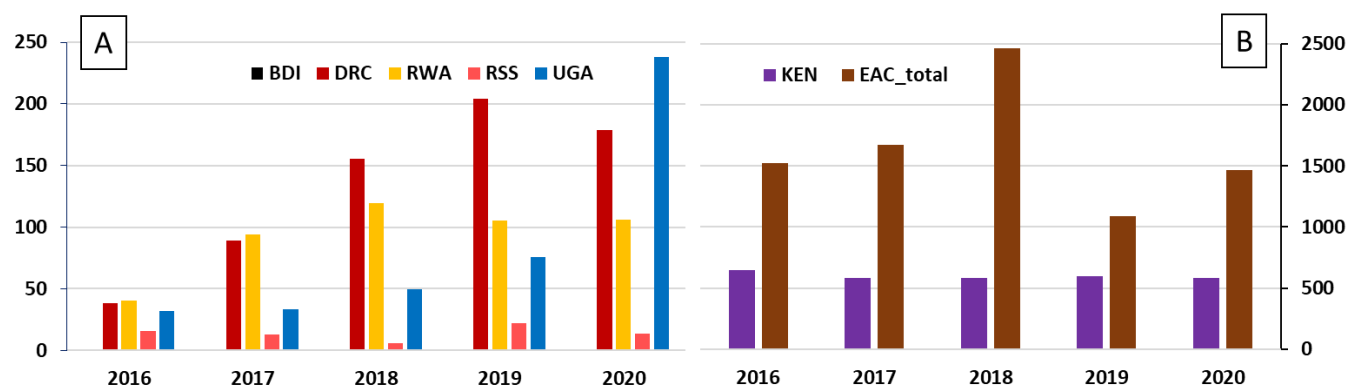


Fig. 6: Quantities of milled rice imported by the EAC Partner States (in '000 tons). Figures of Burundi, DRC, Rwanda, South Sudan, and Uganda are scaled on the left axis (A) and that of Kenya, Tanzania and EAC's total on right axis (B).

EAC's trade integration policies are aimed at harmonizing standards and reducing trade costs, complexities, and barriers within the region. Given the economic importance of rice in the region, the EAC has declared rice as a sensitive good and applies zero tariff on rice that is produced and traded within the region. To buffer the competition from imported rice, it applies Common External Tariff (CET) which represents a mix of import duty and ad valorem (tax based on assessed value of imported rice). EAC nevertheless allows its Partner States to seek 'stays on the CET' and apply higher or lower CET rates to protect their national stakeholders. In addition, the EAC also allows Partner States to apply for 'duty remission scheme' under which lower CET rates is applied to those imported rice that are meant for re-exports to other EAC Partner States (while the receiving country will apply their applicable CET rates). EAC currently applies CET at a rate of 75% or \$345/ton (whichever is higher) for both

¹⁶ Data accessed from International Trade Center (ITC; trademap.org) on 1-Jun-2022. Import data for South Sudan not available. Share of rice traded

paddy rice and milled rice¹⁷. However, Rwanda and Kenya have obtained stays and apply lower rates at 45% (or \$345/ton, whichever is higher) for paddy grains (before milling) and milled rice, and 35% (or \$200/ton, whichever is higher) for milled rice, respectively¹⁸.

In partnership with East African Grain Council (EAGC), EAC has established quality standards¹⁹ for trading paddy rice (East African Standards, EAS 764:2011) and milled rice (EAS 128:2017) in the region. These standards have made the trading seamless and reduced the cost and time of transactions. Data^{Error! Bookmark not defined.} on trade volumes for the years 2016-2020 suggests that on an average, 89,036.40 tons of milled rice is traded annually within the EAC region officially through EAC's Customs Union. With an annual average of 836,607 tons of total imported milled rice (global), intraregional trade alone contributes to 10.64% of total rice trade in the region. Of the 89,036.40 tons of intraregional rice trade, about 99.41% (88,513 tons) originates from Tanzania. Volumes of intraregional trade and annual share of intraregional trade in total global imports of milled rice (averaged over the 5 most recent years for which data is available) amongst the EAC Partner States are shown in table 4.

Table 4: Intraregional rice trade volume averages for 2016-2020 (tons; in purple font)²⁰, their share in total global rice importation by destination countries (%; in black font), and their share of originating country's total rice exports (%; in red font).

Country of Origin	Trade Destination						Average annual rice exports (tons)
	BDI	DRC	KEN	RWA	TZA	UGA	
BDI	0	0	0	0	0	0	0
DRC	0	0	0	(0.0013%) 1 (100%)	0	0	1
KEN	0	0	0	0	0	(0.0077%) 6.6 (100%)	6.6
RWA	0	0	0	0	0	0	0
TZA	(5.83%) 9.6 (0.01%)	(0.05%) 49.4 (0.06%)	(2.22%) 12,498.8 (14.12%)	(10.58%) 8,393.4 (9.48%)	0	(79.07%) 67,571.4 (76.33%)	88,513.06
UGA	0	(0.0021) 229.2 (45.28%)	(0.044%) 249.4 (49.27%)	(0.035%) 27.6 (5.45%)	0	0	506.2
Total	(5.83%) 9.6	(0.26%) 278.6	(2.27%) 12,748.2	(10.61%) 8,422.0	(0%) 0	(0.01%) 67,578	(10.64%) 89,036.40

2.3. Rice Consumption

Household and/or market survey data on rice consumption is not available for the EAC region. However, volumes of annual local rice production (milled equivalent) and the importation of milled rice shall provide an estimate on the availability (supply) of rice in national markets of the individual Partner States. Although stock inventories of rice in Partner States are supposedly small and not officially available; the import and production volumes, and population figures for the year 2020 show that Tanzania ranks the highest per capita rice consumption in the EAC

¹⁷ Legal Notice No. EAC/117/2022, EAC Customs Union - Common external tariff, 2022 version

¹⁸ EAC Gazette dated 30-June-2021, Vol. AT 1 – No. 14

¹⁹ Gazetted under EAC Legal Notice Number EAC/149/2017

²⁰ Data accessed from International Trade Center (trademap.org)

region (Fig. 7), followed by Rwanda, Kenya, Congo, Burundi, and Uganda in descending order. On an average (excluding South Sudan, for which data on local rice production is not available), the per capita consumption in the EAC region has been steadily rising from 12.64 Kg in 2014 to 19.274 Kg in 2020 at a nominalized rate of 1.296 Kg/person/year (Fig. 6). Although milled rice production in the region increased at a rate of 1.123 Kg/person/year during this period, the per capita milled rice production falls short at 15.976 Kg, a deficit of 3.3 Kg/person in the EAC region.

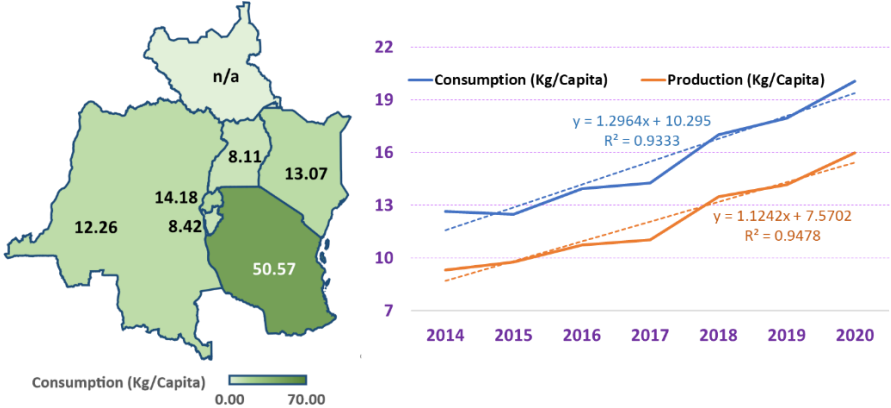
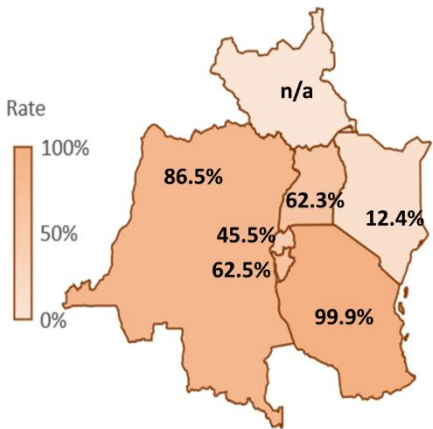


Fig. 7: Heat map showing relative values of per capita rice consumption in EAC Partner States. Graph (right) shows changes in average per capita rice consumption and per capita local production (milled rice) during the period 2014-2020 (excluding RSS, data not available) for the EAC region.

Volumes of rice importation by the individual EAC Partner States inevitably depend on the local demand for consumption in their respective national markets. The share of importation in total supply of rice available in the national markets therefore reflects deficits or surplus in local rice production and hence the rate of rice self-sufficiency (Box 2). Local rice production in Tanzania is almost sufficient (>99%) for domestic consumption. While domestic production in Kenya is highly insufficient (12.4%); quantities of local rice are also falling short of national market expectations in DRC (86.5%), Rwanda (45.4%) and Uganda (62.3%). Despite lower quantities of importation, Burundi has reported a deficit of 37.5% in domestic rice production²¹. Although most of the imported rice lack the flavor and freshness that the locally grown rice provides, the imported grains generally tend to possess other marketable qualitative features such as uniformity, polish, and wholesomeness (with very few broken) of grains. Furthermore, with more cushion on its retail price margins²², the imported rice generally provides stiff challenges to the marketability of EAC’s locally produced rice.

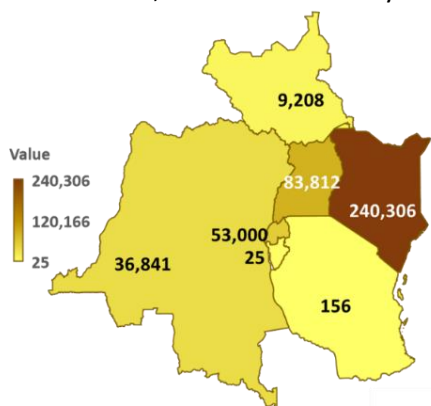


Box 2. Heat map of rate of self sufficiency in rice production in the EAC region

²¹ Republic of Burundi (2022) National Rice Development Strategy

²² Coalition for African Rice Development (2018) Job creation and competitiveness of rice value chain in Rwanda. Report submitted to Alliance for Green Revolution in Africa

Nevertheless, since food security in rice-based food systems requires stability in availability and accessibility to rice in consumer markets; the national markets' ability to import rice from global rice markets to fill the gaps in local supply becomes imperative from a national food security perspective in the EAC Partner States. Besides their market competitiveness, the importation of rice has been increasingly putting pressure on precious foreign exchange and trade balance of the Partner States. Total import value of milled rice in the EAC region has increased by 51% in the past 5 years, from 280.04 million USD in 2016 to 423.35 million USD in 2020. Five-year average values (2016-2020) of the imported rice (milled) reveal that Kenya was the largest spender on rice importation (62% of the total regional spending on imported rice); followed by DRC (15%), Rwanda (12%), Uganda (9%) and South Sudan (2%). Since Burundi and Tanzania are nearly self-sufficient, their spending on importation has been less significant when compared to other Partner States (Box. 3). Over reliance of rice importation increases vulnerability of EAC Partner States to global market price fluctuations (Fig. 8).



Box 3: Heat map of values (in '000 USD) spent by EAC partner states on importation of milled rice

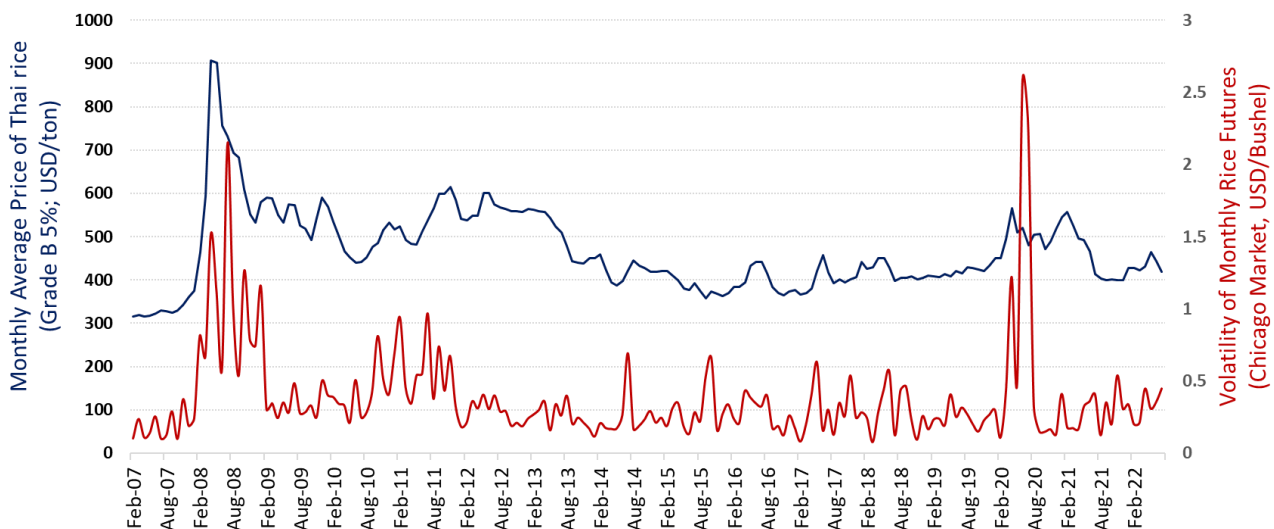


Fig. 8: Movements in spot prices²³ (blue line) for Thailand's grade B (global benchmark) and rice futures²⁴ (red line) for paddy grains in Chicago market.

3. Methodology and strategy formulation

In 2018, based on recommendations of a regional rice forum organized by Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) under Competitive African Rice Initiative (CARI) program; the 12th meeting of the EAC's Sectoral Council on Agriculture and Food Security (SCAFS) directed the EAC Secretariat to establish an EAC Rice Platform (ERP). Established in 2020, the ERP consists of two nominated members, one each from public sector (focal person) and private sector, from each partner state. ERP members elect a chairperson and a secretary, on a rotational basis, to strategically steer and coordinate the ERP activities. A key mandate for the ERP was to coordinate rice sector development in the EAC region. With technical and financial support from Coalition

²³ Rice price index; <https://www.indexmundi.com/commodities/?commodity=rice>

²⁴ Rough Rice: Futures and Options. <http://tradingeconomics.com>

for African Rice Development (CARD) and Kilimo Trust (KT), the ERP members designed and formulated the ERDS outlined in the document.

Technical discussions amongst the ERP members and key representatives from rice industry in the region were organized in Nairobi during the weeks of May 2-6 and June 13-17. During the various stages of discussions on the formulation of the ERDS, the ERP members engaged several resource persons from private sector, development partners and NRDS focal points of their respective Partner States in order to comprehensively capture progresses, issues, and actions along the entire rice value chain in the region. Rice value chain spans from primary production in the farms to consumption by households. Although complexity of operations along the value chain slightly differs between EAC Partner States and in some cases between administrative regions within a given partner state; the context and structure of the pathways and issues are strikingly similar, especially amongst the smallholder rice farmers in the region.

Despite an overall similarity however, the dimensions and magnitude of the issues require both regional and country-based approaches. NRDS documents of the Partner States have adequately articulated such challenges faced by their domestic rice value chain segments such as seeds, fertilizers, pest control products, water management, mechanization, harvesting and postharvest handling, and have further elaborated strategic interventions that are needed to address the constraints. Yet the integrated macroeconomic environment of the Partner States requires an assessment of where the EAC region currently stands collectively, in terms of rice sector development. Hence attempts were made to identify and address only the common challenges and priorities of mutual benefit for the EAC region through the following steps: -

3.1. Strengths, Weaknesses, Opportunities and Threats (SWOT) of regional rice sector development

SWOT analysis was one of the key tools used for setting the directions and designing the strategic components of this ERDS document. Strengths and weaknesses refer to 'internal' factors that influence rice sector development in the Partner States. While strengths involve favorable factors (e.g., land resources) that positively influence rice sector development, weaknesses portend negative factors (e.g., capacity constraints) that are under the control of national systems, but need improvement in order to effectively see a positive change in rice sector development. Opportunities and threats refer to 'external' factors that are not under the direct control of national systems. While opportunities focus on positive factors that are open and available for the stakeholders in the country to benefit from (e.g., market demand for local rice), threats are factors that negatively impacts rice sector development (e.g., climate change) and requires contingency plans to avoid or mitigate.

The ERP members of each Partner State (except for DRC, which joined the ERDS formulation process at later stages) first independently conducted SWOT analyses for their national rice sector. Through structured discussions along the rice value chain, each Partner State then shared their outputs with the rest of the ERP members on the various factors affecting rice sector development in their national systems and weighed the key strengths (S), major weaknesses (W), prevailing opportunities (O), and looming threats (T). Based on their importance, the ERP members assigned weightage to each country-SWOT elements by assigning scores on a scale of 1 to 3²⁵. The ERP members then shared the outputs from their SWOT analyses (country-SWOT) with a wider spectrum of national rice value chain stakeholders, peer-reviewed the contents, and officially validated in their respective Partner States.

²⁵ Scoring scales: 1 = soft/tolerable/assumptive, 2 = critical and evidently emerging , and 3 = very critical that requires immediate attention

Based on such internally validated country-SWOTs, the ERP members then built a mutual consensus on common sets of SWOTs that influence rice value chain integration and rice sector development in the EAC region at large (EAC-SWOT). In cases where the factors that were not prioritized by all the Partner States; consensus was built based on ranking of the scores. The common sets of SWOTs shown in box 5 reveal that vast majority of challenges in the region arise from both production and supply sides of the value chain (Box 4).

Box 4: Common strengths, weaknesses, opportunities, and threats (SWOT) of rice sector in the EAC region

<p>REGIONAL STRENGTHS (internal, positive)</p> <ul style="list-style-type: none"> • Strong commitment from governments of EAC Partner States on rice development • NRDS is aligned to Partner States’ overarching agriculture strategy and investment plans, and EAC’s Food and Nutrition Security Strategy and Action Plan • Profitability and strong comparative livelihood advantages of rice farming over other food crops • Favorable rice production environments (weather, climate and soils) and resources (land and limited irrigation infrastructures) • National agricultural institutions increasingly allocate more human, technical and financial resources on rice research and extension • National seed laws, regulations and policies cover rice seed production, inspection and certification processes • Water resource and/or irrigation maps and masterplans on management are available in several Partner States • Public and private spending in irrigation infrastructures are on the rise • Marketable local rice varieties and consumer preference for such local varieties • Rice processing capacities are generally adequate 	<p>REGIONAL WEAKNESSES (internal, negative)</p> <ul style="list-style-type: none"> • Low levels of on-farm rice crop productivity • Rising costs of rice production, processing and marketing logistics • Quality and market appeal of finished local rice is less competitive to imported rice from Asia • Sub-optimal institutional budget allocation for research and extension programs on rice • Inadequate human capacities and technical skills on rice-related research and extension • Farmer cooperatives/groups are institutionally weak and lack strong linkages with other value chain actors • Inadequate engagement of private sector along rice value chain, especially on input and output marketing • Inadequacies and inefficiencies in accessibility, quality and usage of farm inputs (seeds, fertilizers, pesticides, water, labor, machineries, finance), irrigation infrastructures, output market structures and data • Weak enforcement of EAC standards & regulations on farm inputs and outputs (rice grains) • Poor regional coordination of rice value chain actors • Inadequate awareness and implementation of EAC regional trade policies on rice farm inputs and outputs • Promotional activities on rice value addition and by-product management are inadequate
<p>REGIONAL OPPORTUNITIES (external, positive)</p> <ul style="list-style-type: none"> • Robust demand for rice consumption in the EAC region • Strong consumer preference for local and regional rice • Growing numbers and strengths of rice farmer cooperatives/groups in the Partner States • Budding regional and international networking for rice research and development activities • Rising involvement of women and youth in on-farm production, processing, value addition and marketing • Increasing technical and financial support for rice sector development from development partners • Accredited rice seed certification institutions available • Emerging scopes for local manufacturing and/or assembling rice farm machineries in the region • Underutilized capacities of rice mills in the EAC region • Harmonized standards and regulations (rice seed, water, fertilizers and rice grains) for regional trade • New prospects for fertilizer manufacturing and blending in the region • Burgeoning logistics and infrastructures for regional trade through Standard Gauge Railway (SGR) and the one stop border posts (OSBP) • EAC’s Food and Nutrition Security Strategy and Action Plan has prioritized rice 	<p>REGIONAL THREATS (external, negative)</p> <ul style="list-style-type: none"> • Climate vagaries and their impacts on local rice farm productivity and market price volatility • Outbreaks of new pests • Global shocks such as COVID-19 pandemic, wars and border conflicts • Non-tariff barriers on regional rice trade, and services and investments on rice production • Bilateral agreements with Asian countries by the Partner States (outside EAC) • Competitiveness (price, quality and quantity) of global rice supply chain in the EAC markets • Evasion of Rules of Origin and hence CET through adulteration (blending of non-EAC rice with local rice) • Lack of control over informal rice grain trade through porous borders • Vacillation in regional spirits and implementation of the regional policies and regulations on rice seed and grain standards

3.2. TOWS Analysis

Regional SWOT (Box 4) provides information about resources, capabilities, challenges, and the competitive environment in which the rice industry operates in the EAC region. Regional rice sector development strategies should therefore aim to build further on the strengths, eliminate the identified weaknesses, explore the potential opportunities, and mitigate the effects of the looming threats. While attempting these, it is also important that the rice sector in the region deepens integration through mutualistic and holistic approaches that will set the enabling environment for the rice sector development. For this purpose, the ERP members collectively identified strategic actions that need to be taken by using TOWS (Threats, Opportunities, Weaknesses and Strengths) matrix as a tool.

TOWS matrix enables matching the external opportunities and threats with internal strengths and weaknesses of the EAC region. For each of the following combinations of internal and external environmental factors, the ERP members considered how they can use the regional SWOT to generate good strategic options under the ERDS as follows: -

- Strengths and Opportunities (SO) – Strategic actions that could use EAC region’s internal strengths to take advantage of the existing opportunities
- Strengths and Threats (ST) – Strategic actions that will help minimize and avoid real and potential threats by taking advantages of regional strengths
- Weaknesses and Opportunities (WO) – Strategic actions that will effectively utilize the existing opportunities to overcome the weaknesses in the region
- Weaknesses and Threats (WT) – Strategic actions that will help eliminate or minimize the weaknesses in order to avoid the impending threats

Strategic actions identified by the ERP members through the TOWS exercise revealed that the actions could be assorted into the following five categories (strategic pillars of the ERDS) viz.,

1. On-farm production and productivity
2. Market competitiveness of rice produced in the region
3. Regional rice trading and marketing
4. Enabling policy environment for the rice industry
5. Sustainability of rice production and consumption in the region

3.3. Approaches

The ERP members took a value chain approach for identifying key interventions under each of the above-mentioned strategic pillar. Using a value chain intervention element matrix (VIEM); critical ERDS activities needed from across the rice value chain were identified under the aspects (elements) of regional research, regional extension, regional infrastructures, regional capacity building, regional institutions, and regional policies. Annexure 2 shows a sample matrix, used by the ERP members for identifying the interventions.

For improving the on-farm production and productivity (strategic pillar #1), the ERP members assessed current status of land management and irrigation infrastructures in each EAC partner states, and identified activities for improving value chain segments such as seeds, soil and crop nutrition, water management. Activities under postharvest handling and processing were identified for improving the market competitiveness of rice (strategic pillar #2). Interventions that are required for removing market barriers and improving market efficiency and market information were identified under the strategic pillar #3. Policy actions (policy integration, policy coherence, and policy coordination) that will help improve rice-related trading environment and overall development were identified under the strategic pillar #4.

After enlisting the putative actions from across the rice value chain (VIEM); the ERP members further infused sustainability in the outcomes of the strategic interventions, using a R.I.C.E approach. R.I.C.E approach, recommended by CARD, involves measures that will ensure;

- resilience (R) in local rice production and supply against climate change and thin global rice supplies,
- expand industrialization (I) of rice value chain support and services,
- sharpen competitiveness (C) of local rice in consumer markets, and
- reinforce empowerment (E) of smallholder farmers, women, and youth along the entire rice value chain

Activities identified through the above-mentioned R.I.C.E approach are intended to substantially endure domestic rice production and consumption (strategic pillar #5) by improving the participation and financial viability of all stakeholders, ecological sustainability, and circularity along the entire rice value chain.

3.4. Data Sources

Quantitative information on area under rice cultivation, total paddy (non-milled) production, and average national on-farm productivity of the EAC Partner States presented in this document were sourced from data portals of Food and Agriculture Organization of the United Nations (FAO; <https://www.fao.org/faostat/en/#data>). FAO's data on importation of milled rice (volumes and value) have two variants viz., (a) milled rice (HS²⁶ 1000630; semi-milled or wholly milled, whether polished or glazed) and (b) milled rice equivalent.

While the data on milled rice represent actual recorded quantities of importation by customs units of the EAC Partner States; the data on milled rice equivalent include both the official data on milled rice imports and unofficial estimated head rice recovered from the data on imported paddy grains (non-milled). For conversion of data on the local paddy grain (non-milled) production to local rice (milled) production, an average milling recovery rate of 65% was applied. Since regional trading of paddy grains is uncommon and not generally endorsed by the EAC Partner States, FAO data on 'milled rice equivalent' could not be cross-verified with other portals on trading data such as ITC (www.trademap.org) and UN COMTRADE (comtrade.un.org); only data on 'milled rice' sourced from ITC is used in this document.

Data on rice consumption assumes that annual local rice production and imported milled rice are entirely consumed by the population in a given marketing year. Inventories on stocks of rice either unsold or retained by the traders, wholesale distributors, retailers and consumers are not officially available from the EAC Partner States, and hence not included in the estimation of per capita rice consumption. For calculating per capita rice consumption, data on population estimates and projections were sourced from World bank (databank.worldbank.org). Graphical representations and regression analyses of the data (where applicable) were made using Microsoft Excel.

²⁶ Harmonized System (HS), a six-digit code system of United Nations for commodity description and coding (<https://unstats.un.org>)

4. Framework of EAC Rice Development Strategy (ERDS)

4.1. Vision

A vibrant and sustainable rice sector for food, nutrition, and income security in the EAC region

4.2. Goal

Double rice production in the EAC region by 2030, enhance market competitiveness and improve intra-regional trade

4.3. Purpose

As rice is fast becoming an integral part of the food systems; the NRDS of most Partner States aim to boost local rice production towards self-sufficiency. It is conceivable that reducing reliance on rice imports and producing adequate quantities of rice for domestic consumption are symbolic of sustainable food systems and important for national food security. However, since the economies of the Partner States in the region are becoming more integrated; rising domestic rice production and market competitiveness at national level requires that the impacts of value chain interventions are synergistic, coherent, and well balanced.

The purpose of the ERDS is hence to **facilitate rice value chain integration, free movement of rice and rice-related services, technologies (such as varieties, seeds, fertilizers, machineries), and investments** within the EAC region.

4.4. Scope of ERDS actions

Domains covered by the ERDS interventions shall be limited to **rice value chain and rice-based socio-economic integration activities in the EAC region**. Within the sphere of rice sector, the scope shall encompass dimensions of smallholder rice farmers, seed producers, consumers, suppliers of farm inputs, grains and by-products, farm service providers, traders, millers, private and public investors, and other rice value chain actors and supporters in the EAC region.

4.5. Guiding Principles

Designing and implementing the ERDS framework involve the following two core values which shall be adhered to under all circumstances regardless of how challenging and changing the circumstances may become.

1. **Mutualism:** All Partner States are complacent with the expected outcomes of ERDS-based strategic interventions through mutual understanding, consensus, and cooperation, and
2. **Complementarity:** Interventions under the ERDS should reinforce and complement implementation of the NRDS of all the Partner States

4.6. Targets

EAC Partner States have already set medium-term (2025) and long term (2030) targets under their NRDSs. ERDS therefore will adopt the collective targets aimed by the individual EAC Partner States (Table 5). Based on current trends in per capita rice consumption and projected population figures, quantities of rice required for the EAC region for the next 9 years (2022-2030) is shown in table 5. Sum of the medium- and long term NRDS targets of the Partner States on total paddy rice (before milling) production show that about 13,653,000 tons shall be expected against a required volume of about 18,166,000 tons (about 75% regional self-sufficiency) by 2030. The target of the ERDS is to **double the regional rice production** from 6,554,394 tons paddy rice in 2020²⁷ to

²⁷ Base year for which official data is available (faostat.org) for the EAC Partner States, at the time of preparation of this document

13,653,000 tons by 2030. At mid-term in the year 2025, 7,393,000 tons of paddy is expected to be produced. These targets however do not include the RSS as shown in Table 5.

Table 5: Targets on rice production and productivity under the ERDS

Year	Projected average per capita consumption for the EAC region (Kg)	Volume of milled rice required ('000 tons)	Equivalent volume of paddy rice production ('000 tons)	Cumulative targets set under the NRDSs of EAC Partner States		
				Area for paddy rice production ('000 Ha)	Estimated average paddy rice yield (t/Ha)	Paddy rice Production ('000 tons)
2022	21.785	6,558	10,089	2,520	2.934	7,393
2023	23.041	7,126	10,963			
2024	24.297	7,717	11,873			
2025	25.553	8,334	12,821			
2026	26.808	8,976	13,809	3,667	3.723	13,653
2027	28.064	9,644	14,837			
2028	29.320	10,339	15,905			
2029	30.576	11,060	17,015			
2030	31.832	11,808	18,166			

4.7. Strategic Objectives (SO)

Pathways to achieve the above set goal under the ERDS are structured through the following five strategic objectives (SO; reflecting the five strategic pillars described under section 3.2): -

- SO-1:** To increase rice production and on-farm productivity in the EAC region
- SO-2:** To improve market competitiveness of locally produced rice in the EAC region
- SO-3:** To enhance the EAC intraregional rice trade
- SO-4:** To create an enabling environment for the mutual benefits of all rice stakeholders in the EAC region
- SO-5:** To build up ecological and socio-economic sustainability of rice industry in the EAC region

SO-1: Increase total rice production and on-farm productivity in the EAC region

Total rice production in EAC Partner States shall be increased through expansion of land area under rice cultivation and by increasing on-farm productivity. Extending rice cultivation to new and suitable areas however is subject to availability of land and national land policies, and is elaborated in NRDSs of the individual partner state. Hence, the ERDS shall focus on improving on-farm productivity for catalyzing increase in total rice production in the region. Raising on-farm productivity of smallholdings requires climate-smart rice farming and optimal use of appropriate inputs, including high yielding resilient varieties, quality seeds, fertilizers, water, and machineries by smallholder rice farmers. In this context, the EAC Partner States generally find shortages in research and extension capacities, engagement of private actors along input supply chains, and regulation of standards of the inputs. Priority areas of strategic actions under this objective will hence focus on regional interventions on varietal development, seed supply, soil fertility management, water management and accessibility to cost efficient machineries. Since several of the challenges faced by the Partner States in raising on-farm rice productivity are common, the following regional interventions under the ERDS shall complement and reinforce national efforts by the EAC Partner States: -

- Fast track selection, evaluation, registration, and dissemination of varieties with key genetic gains on resilience to drought, salinity, rice blast and Rice Yellow Mottle Virus (RYMV), high yields, and grain quality in similar rice growing environments in the EAC region, through regional platforms and/or proven mechanisms such as that under seeds without border initiative²⁸ in South Asia
- Harmonize and facilitate production and access to quality rice seed (free movement of seeds and germplasm without borders within the EAC region)
- Harmonize Intellectual Property Rights (IPR) regimes, material transfer agreements, rice seed classes, farm input policies (including subsidies), and legislations among the EAC Partner States
- Establish EAC Regional Seed Bank at the Regional Center of Excellence in Uganda, that will catalogue, stock and periodically renew nucleus seeds (and other early generation seeds, as appropriate) of all registered rice varieties in the region
- Public-Private Partnerships on hybrid rice research, hybrid seed multiplication and distribution at regional level
- Promote private sector investments in irrigation, storage and rural infrastructures in rice growing areas, and rice processing
- Facilitate identification of suitable areas for rice cultivation consolidate the existing ones and validate new and suitable areas for rice cultivation in the EAC region
- Facilitate documentation and sharing of Good Agricultural Practices among partner states
- Establish and implement regional knowledge and skills development program for rice for;-
 - strengthening technical capacities of national rice research institutions in all Partner States through collaborative research, training, knowledge exchange and regional workshops on rice
 - identifying and disseminating appropriate water harvesting technologies in rainfed environments and water conservation technologies in irrigated environments of the Partner States
 - strengthening human, technical and organizational capacities of research Institutions, extension agents, farmer organisations, and water user associations on water saving and water management technologies
 - building capacities of rice farm machinery operators, artisans and fabricators through vocational training
- Promote knowledge sharing initiatives such as intra partner state exchange programs

Key Outcome Indicators

- Total rice production and average on-farm yield in the EAC region
- Area under irrigated rice production
- Quantities of seeds of high yielding and resilient varieties produced in the region
- EAC Regional Rice Seed Bank

SO-2: Improve market competitiveness of locally produced rice in the EAC region

Inherent differences in marketable quality attributes (purity, uniformity, flavor, and aroma) and physical features (slender, long, and translucent grains) of imported rice incite price differential over the local rice in consumer markets across the region. Depending on the exchange rate and price volatility, the price spread between local rice and imported rice vary amongst the Partner States. While the CET rate of 75% on imported rice acts as a deterrent factor for the supply chain of non-EAC rice; the CET by default also props up the price of the local rice. While such increased prices of the imported rice grains play to the advantages of the local rice farmers, it prematurely narrows the price dimension of market competitiveness of the local rice. In a vicious cycle, this could

²⁸ Gauchan D, Joshi BK (2019) Seeds without borders initiative for enhanced food and nutrition security in South Asia, SAARC Agriculture Center

also stimulate more rice imports from Asia (trade diversion) in the future. Furthermore, since price transmission is slow in regional markets²⁹, when the global price falls (even slightly), it increases the traders' margin on imported rice than the local rice.

Value for money hence becomes a critical decision-making factor even amongst the most price-sensitive consumers.¹⁹ Improving market competitiveness therefore impinges upon improving both the price- and quality competitiveness of the locally produced rice. This requires concerted efforts from the EAC Partner States on reducing costs of local rice production, postharvest handling and processing and yet also raising the quality of the local rice by virtues of optimization of inputs, improved postharvest handling and enforcement of implementation of the EAC grain standards. ERDS shall focus on cost efficiency, enhancing marketability and market information on the locally produced rice in the region through the following interventions: -

- Facilitate research, testing, accreditation and recommendation of farm machineries (energy efficient, low-cost and women-friendly) sold in the EAC region through institutions such as Center for Agricultural Mechanisation and Rural Technologies (CAMARTEC) in Arusha, Tanzania
- Facilitate regional research on fabrication of appropriate (energy efficient, low-cost and women-friendly) and affordable machinery prototypes for harvesting, winnowing, cleaning, drying, packaging and storing
- Establish an e-extension platform/knowledge bank for sharing information on best practices from the region and elsewhere on good rice production practices, postharvest handling and quality management through the use of low-cost and locally available resources
- Promote rice farmer cooperatives and other organizations in Partner States and build technical and organizational capacities according to their needs
- Stimulate private sector investments in commercial rice farming, processing, storage, financing, and regional trading of seeds, fertilizers, pesticides and machineries
- Promote digitalization (e-commerce) in rice farm input- and output marketing, bulk ordering, cost-cutting measures and improve bargaining power of farmer groups/cooperatives, millers, regional importers, wholesale distributors and key nodal points/players along the supply chains
- Facilitate diversification of rice based products and by products in the EAC region
- Awareness creation and capacity building of rice seed quality inspectors, rice grain aggregators, millers and bureaus of standards in the Partner States on EAC standards (EAS 764:2011 and EAS 128:2017) on grades of rice grains
- Promote cross-border rice value chain investments by private sector as a way to improve competitiveness - with greater regional integration; economies of scale in input usage, on-farm production, processing and marketing of rice that are not generally available to many Asian rice producing countries (from where rice is imported) may become feasible for the EAC region as a whole

Key Outcome Indicators

- Level of mechanization in on-farm rice production
- Level of industrial milling capacity
- Quantities of seeds of high yielding varieties produced in the region
- Price differential between local rice and imported Asian rice

²⁹ Ceballos et al (2016) Transmission of Food Price Volatility from International to Domestic Markets: Evidence from Africa, Latin America, and South Asia. In M. Kalkuhl, J. von Braun, & M. Torero (Eds.), Food Price Volatility and Its Implications for Food Security and Policy. Springer.

SO-3: Enhance EAC intraregional rice trade

More than for the rice grains, the markets for rice farm inputs in the EAC region are more interdependent. While demand side challenges on adoption of inputs persist due to farmers' risk aversion, inadequate knowledge, higher prices, and lack of finance; supply side constraints such as weak regulatory enforcement on quality and non-tariff barriers (NTB) that negatively affect accessibility to seeds, fertilizers, pesticides, and machineries in the region could be overcome through further integration and streamlining of policies, supply chains and markets. Furthermore, poor road infrastructures in rice growing areas and high cost of finance for importation of fertilizers and machineries, which ultimately reduce the profitability of suppliers and smallholder farmers in the EAC region. Even in highly productive areas such as irrigation schemes and marshlands, stakeholders lack adequate and timely market information on availability, costs, and policy facilitation in the region for sourcing and/or supplying the productivity-enhancing rice farm inputs. Farmers and traders in Partner States also have limited information, access, and facilitations to niche markets for locally produced rice as well as by-products such as straw, husk, and bran, across the borders. By engaging public and private actors along the supply chain; ERDS will focus on addressing barriers to input and output markets, inefficiencies in movements of inputs, outputs and associated services at optimal cost and time, and gaps in information on markets and associated services through the following interventions: -

- Monitoring and forecasting movements in prices, quality and volumes of inputs (seeds, fertilizers, agro-chemicals, machineries) and outputs (paddy rice and milled rice of popular varieties, by-products) in the region
- Sharing and Sensitization of regional stakeholders on existing tariff and non-tariff barriers for smooth trade and input access
- Facilitation for upgrading of One Stop Border Post (OSBP) and streamlining the implementation of OSBP Act of 2016
- Organize technical reviews and streamline national policies for assessing finance and market efficiency on trading rice farm inputs (including seeds, fertilizers, agro-chemicals, machineries) and outputs (paddy rice, milled rice, straw, husk and bran) every year
- Build skills and knowledge of upstream supply chain actors (importers, distributors) and supporters (customs and revenue authorities) on SPS protocols, Standard Operating Procedures (SOPs), Pest Risk Analyses (PRA), East African Standards (EAS), and regional policy environment (tariff and non-tariff barriers) on input and output marketing
- Improve institutional capacities on provision of value chain financing, crop/yield insurance and microfinance to smallholder rice farming communities in all the Partner States
- Review policy instruments (CET rates, stays, duty remission) and facilitate implementation of zero tariff rates on rice-related farm inputs, investments, financial services and outputs
- Assess regional financing and trading options for locally produced paddy and promote microfinancing for input suppliers and smallholder farmers, where applicable
- Organize sharing of rice market intelligence and improve market information systems in the region

Key Outcome Indicators

- Level of uniformity and conformity to CET rates in the EAC region
- Share of EAC's Intraregional rice trade flow volumes in total imports of rice and farm inputs
- Smallholder rice farmers' accessibility to finance

SO-4: Create an enabling environment for mutual benefits of all the stakeholders in the EAC region

Trading of rice farm inputs and outputs will be the key driver of regional integration envisaged through the ERDS. An enabling environment for the rice stakeholders in the EAC region will therefore require a set of interrelated conditions such as policies, investment plans, institutions, support services and political will, that individually and collectively could allow rice-based socioeconomic integration in a sustained manner. NRDS of Partner States demonstrates the political and strategic will of the governments at national level. Convergence of objectives of the NRDSs in improving local production and productivity, reducing costs of production, and enhancing market competitiveness bode well for coordination through regional approaches. However, in order to integrate their rice value chain at regional level, the interplay among their individual strategic actions, institutions and regional policy measures should become broad-based so that the impacts are mutually beneficial. Hence, the enabling environment for regional integration of rice value chain development under the ERDS will focus on building transparent regulatory frameworks, policy adaptation, policy coherence and policy coordination through the following interventions: -

- Facilitate investments in local production and marketing of agro-inputs and machineries in all EAC Partner States
- Identify, harmonize and recommend policy incentives for prioritizing (EAC Region First), sourcing, or supplying rice grains and productivity-enhancing rice farm inputs through regional supply chains (trade creation)
- Facilitate establishment of regional stakeholder platforms along the rice value chain
- Promote good governance of farm service markets (e.g. machinery hiring, microfinance) and future contracts (between smallholder farmers/groups/cooperatives and other value chain actors) in order to render national regulatory frameworks more transparency, simplicity, predictability, and conduciveness to business activities (especially small and medium enterprises) along the rice value chain
- Establish appropriate and transparent mechanisms for reporting and responding to enquiries from smallholder rice farmers and other stakeholders on regional trading of rice, farm inputs and services
- Publish and make the information on rice grain quality compliance, Customs' requirements and procedures for authorization through electronic means
- Improve coordination between and within national departments of relevant line Ministries of Partner States and promoting/speeding up adaptation and implementation of regional policies on rice trade and services at national level
- Improve policy coherence within the region by minimizing the negative impacts that EAC policies in other sub-sectors (maize, for example) can have on policies on rice sector development, through consultations with ERP and assessment of evidences under different policy options
- Promote vertical policy integration by assisting institutions, ministries and governments align their policy decisions on trade relations with non-EAC countries, by taking into account that their synergies and trade-offs do not impinge upon rice-related policy objectives of the EAC Partner States – for example, bilateral rice trade between Kenya and Pakistan
- Promote horizontal policy integration by engaging civil societies, academia and other stakeholders that are involved in consultations and implementation of EAC's rice-related policies at national and regional levels through conferences/workshops and communications

Key Outcome Indicators

- Absence of non-tariff barriers for rice-related farm inputs and outputs
- Annual regional rice stakeholders' conference/workshop
- Regional reporting mechanisms for stakeholders on policy implementation

SO-5: Build up ecological and socio-economic sustainability of rice industry in the region

A sustainable rice food system in the EAC region would require ensuring of stability in availability and accessibility to rice that the consumers in the region need. While the EAC Partner States pursue a state of self-sufficiency wherein the domestic production satisfies the market demand; given the relatively faster pace at which consumer demand is growing, the EAC region will have to inevitably depend on imports until self-sufficiency is reached. However, since rice is a thinly traded commodity in international markets; the reliance on importation makes the region's rice-based food systems highly vulnerable to global trade disruptions. Sustainability of rice sector development hence demands that smallholder rice production is ecologically enduring and renewable (circularity) and yet financially viable to all the stakeholders engaged in the value chain. With a focus on inclusiveness, mitigating the climate change, and reducing the negative impacts of global shocks; the ERDS will pursue the following interventions: -

- Encourage investments in- and promote water pumping systems, drying and storage facilities and machineries that use power generated from renewable energy sources such as solar/photovoltaic systems and wind mills in rice growing areas through incentive policies for investors and users
- Promote regional research and training on appropriate rice production practices for mitigating climate change, greenhouse gas reduction (methane emission), and economic efficiency of the use of inputs
- Encourage and promote cooperative rice farming in smallholdings
- Organize meteorological data and seasonal forecast and early warning systems for risk of climate hazards on rice production rainfall patterns, minimum and maximum temperatures
- Facilitate training on managerial and organizational skills for farmer groups/cooperatives on finance, contractual agreements with suppliers and buyers, and natural resource management
- Improve smallholder farmers' access to solidarity lending and microfinance schemes that are tailored to effectively strengthen their investment capacity and farm management decisions through technical backstopping
- Empower youth and women on entrepreneurship skills in rice value chain activities such as seed and grain production, agro-dealerships, machinery services (sales, hiring and repair/maintenance), microfinance (including solidarity lending) for smallholder farmers, grain trading, processing, packaging, value addition and marketing
- Disseminate knowledge and training on the use of sustainable rice production (SRP) standards, crop rotation, circularity system for nutrient recovery by composting rice crop and grain residues (straw, husk, bran), briquetting, ratooning, and integrated rice-fish farming, where appropriate
- Organize exploratory and/or pre-feasibility studies on scopes for private investments in establishing and/or managing climate resilient infrastructures for water management (rainwater harvesting structures, micro-irrigation, flood/drainage management), bio-fertilizer production (Azolla, vermicompost), grain and byproduct management (silos, warehouses), and climate/weather related advisory and/or emergency services on rice production in the region
- Promote knowledge on safe usage of agro-chemicals (pesticides, herbicides) and their potential environmental hazards and risks to human health amongst rice farmers and farming communities on natural resources, environment and livelihoods
- Support and promote regional early warning systems for disease and pest control and mitigation e.g., desert locusts, Fall army worm

Key Outcome Indicators

- Preparedness of smallholder rice farmers in mitigating climate-related risks
- Entrepreneurship levels of women and youth in rice industry
- Smallholder rice farmers' accessibility to technical training and services

5. Implementation Mechanisms

With a spirit of regional integration, the ERDS will be implemented through specialized and relevant institutions in the EAC Partner States. These could include but not limited to; national agricultural research and extension institutes/agencies, line ministries (including agriculture, water/irrigation, land, trade, commerce, finance, investments, EAC affairs), bureaus of customs, standards, health and sanitary. Under the guidance from Security Council for Agriculture and Food Security (SCAFS) of the EAC Secretariat, the EAC Rice Platform (ERP) will spearhead and oversee the implementation of the ERDS.

Wherever appropriate, the ERP will engage the focal points and other taskforce members of the NRDSs of the EAC Partner States, for technical consultations on prioritizing key emerging issues and the needs (technological interventions and policy instruments) for attaining the proposed strategic objectives (SO-1 to SO-5) under the ERDS. The ERP members will profile current areas and levels of interventions and investments from the stakeholders (including government, development partners, civil societies, private sector, and farmer cooperatives/groups) along the rice value chain in the region. Existing gaps and synergies in addressing the prioritized needs of the ERDS will be analyzed for their extent of technical depth (vertical) and geographical coverage (horizontal).

Based on these analyses; bankable project concepts for additional or fresh interventions at regional levels will be formulated, by applying the ERDS's guiding principles of mutualism amongst Partner States and complementarity with the NRDSs of the Partner States. Project concepts will be customized by aligning with EAC Food and Nutrition Security Action Plan (FNSAP), Regional Agriculture Investment Plan (RAIP) under African Union's Comprehensive African Agriculture Development Program (AU-CAADP) and National CAADP Agriculture Investment Plans (NAIP) of the EAC Partner States.

ERP members, with logistical and/or technical assistance from EAC and CARD Secretariats, will then lobby for funding for such interventions by matching with the interests and regional/country portfolios of potential stakeholders/sponsors (including governments, development partners, private sector, and other potential stakeholders). Concepts that are acceptable to the sponsors will then be elaborated into regional projects and implemented through appropriate/relevant national and/or regional institution(s). ERP members, in association with NRDS taskforce members of the Partner States, will coordinate such interventions and periodically track progress and outputs and outcomes against the indicators of the ERDS. In collaboration with other regional rice initiatives such as CARI and ECOWAS' Rice Offensive; synergies in policy integration and other interventions will be tapped for maximizing the impacts of the ERDS implementation.

To facilitate the functions and interactions amongst the ERP members and focal points of the NRDS taskforce in EAC Partner States seamless, an 'EAC rice desk' shall be established (Box. 6). Affiliated with the EAC Secretariat, the daily operations of EAC rice desk shall be managed by an EAC Rice Advisor. Besides providing technical assistance on existing and any emerging challenges along the rice value chain in the region to the ERP members, the EAC rice desk shall liaise with the EAC- and CARD Secretariats, development partners, line Ministries and NRDS taskforce members of the Partner States in governing the coordination of the ERDS implementation. The advisor shall also organize communications, events such as regular meetings of ERP and stakeholders' workshop/conference, and assist in lobbying for funds for project concepts from governments, development partners and other potential stakeholders.

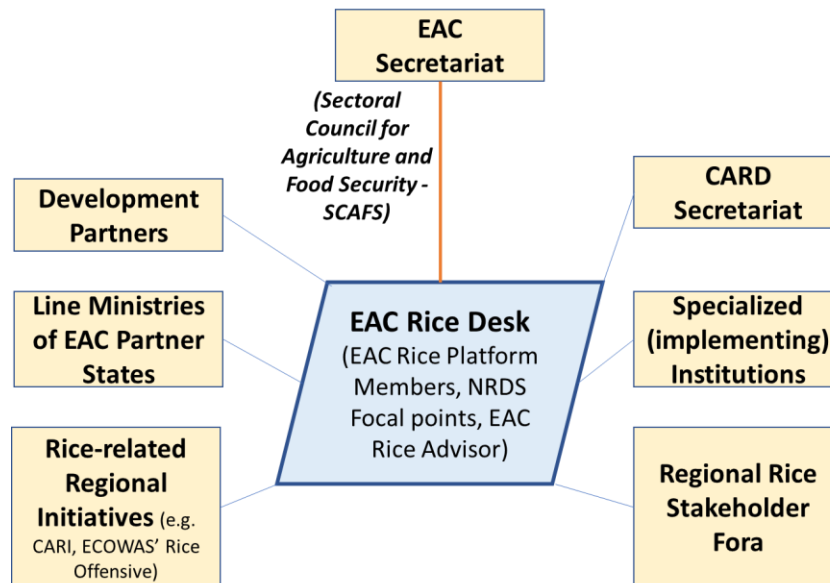


Fig. 8: A proposed institutional set up for implementation of the ERDS

5.1. ERDS Implementation Plan (ERDSIP)

A logical framework matrix showing key actions that are required under each of the strategic objectives of the ERDS is shown under Annexure 3. Thematic areas of interventions that will help achieve the strategic objectives and hence the overall goal of the ERDS was identified by the ERP members from across the entire rice value chain (Land, seeds, crop nutrition, water management, crop management, postharvest handling, processing, value addition, marketing, and trading). Based on the lessons learnt by the EAC Partner States, cross-cutting themes (or enablers) such as policy, infrastructure, research, extension, capacity building, finance, quality of goods/services, institutions, gender, and youth were identified as tools for interventions. Expected outputs of the proposed activities, purpose, time frame, geographic locations, risks, mitigation measures, approximate budget, responsible institutions, and objectively verifiable indicators (OVIs) for each of the proposed activities are illustrated in the annexure 3. OVIs of the action plan are aligned to the strategic outcome indicators of the ERDS. Execution of the proposed action plan should lead to concrete implementation of the ERDS. Cost estimates for the proposed activities have been provided in the matrix (Annexure 3). Total costs for the various activities under each strategic objective and the whole ERDS are given in the table below.

Table 6: Budget estimations for implementation of the proposed activities (detailed in Annexure 3) under each of the 5 strategic objectives under the ERDS

Strategic Objective (SO)	Estimated Budget (USD)
SO. 1. Increase total rice production and on-farm productivity	17,688,000
SO. 2. Improve market competitiveness of locally produced rice	1,968,000
SO. 3. Enhance the EAC intraregional rice trade	3,290,000
SO. 4. Create an enabling environment for the mutual benefits of all rice stakeholders	460,000
SO. 5. Buildup ecological and socio-economic sustainability of rice industry	3,808,200
TOTAL	27,214,200

6. Monitoring and Evaluation

Because regional rice value chain integration is a complex process, there is need to constantly enrich the understanding through monitoring and evaluation (M&E) of how the implementation process works so that the stakeholders (including the governments of Partner States) are better informed of its outcomes. Periodic M&E of the significance of impacts also become important for adaptive management of the regional strategic processes. Focused mostly on the outcome level indicators, the monitoring and evaluation activities under the ERDS will assess the effectiveness of on-going rice-related projects, policy instruments along the rice value chain, stakeholder engagements, communications, and collaborations with relevant national, regional, and international institutions/organizations engaged in rice-related research and development.

While monitoring and evaluating the extent and efficiencies of the proposed interventions, the exercise will periodically look to 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 region;
- apprising the rice-related policies and impacts, in close cooperation with governments of the Partner States, with the objective of improving socio-economic integration;
- assessing the resilience of rice production and supply systems to external shocks (climatic and global) and emergencies;
- identifying appropriate technologies (in production, aggregation, post-harvest handling, processing, value addition, marketing, and information) that could be scaled up through commercialization (industrialization);
- analyzing the ability of rice stakeholders in the EAC region to compete with other regional and global rice production and marketing systems (competitiveness); and
- scrutinizing the extent to which rice-related project interventions are effectively reaching and impacting smallholder rice farmers especially women and youth (empowerment)

With support from EAC Secretariat, CARD Secretariat, development partners, national governments of the Partner States, and private sector; the ERP members will monitor and review the progress under the ERDS by:

- (a) organizing annual review meetings with NRDS taskforce members and other regional stakeholders in the EAC Partner States;
- (b) deploying technical analysts and/or enumerators for collecting relevant data and activities (as and when required) to assess the outputs, outcomes and impacts of rice-related interventions in the region;
- (c) participating in technical/general meetings of regional initiatives such as CARD and CARI that review the progress of rice sector development in the Partner States; and
- (d) tracking statistics on key indicators on rice production and marketing that are available in public domains such as FAOSTAT, EAC data portal (eac.opendataforafrica.org), UN COMTRADE, ITC trade center and USDA (fas.usda.gov/data) and national bureau of statistics of the EAC Partner States

Annexures

Annexure. 1: Country SWOTs

-official validated files from the Partner States (Attached)-

Annexure 2: Sample VIEM matrix for SO-1

INTERVENTIONS (only)		<u>SO-1:</u> To increase total rice production and on-farm productivity in the region through improved access to technologies and irrigation mechanisms			
		Varieties and Seeds	Soil Fertility	Water Management	Mechanization
Regional Research					
Regional Extension					
Regional Infrastructure					
Regional Capacity building					
Regional Institutions, Policy					
Sustainability (SO-5)	Inclusion				
	Economic				
	Ecological				
	Circularity				

Annexure 3: ERDS Implementation Plan (ERDSIP)

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
Strategic Objective 1: Increase total rice production and on-farm productivity									
1.1. Seeds of varieties with traits such as market preferred, high yielding, resilient to common diseases (Rice Yellow Mottle Virus, rice blast), and pests, and salinity tolerance made available in irrigated and upland ecologies	1.1.1. Establish 'Seeds Without Borders'	To accelerate access to good quality seeds	2023-2030	Burundi (Irrigated ecology and biotic stresses), Uganda and South Sudan (Upland ecology)	Lack of harmonized SPS, IPR, seed regulations	Review and harmonize seed trade (Activity 1.1.2)	700,000	- All Partner States - NARS	- Quantities of certified seeds of high yielding and resilient varieties produced in EAC region
	1.1.2. Harmonize rice seed trade related policies	To streamline dissemination of seeds from activity	2023-2025	EAC Secretariat			120,000	- Line Ministries - EAC Secretariat	- Number of newly released varieties
	1.1.3. Train rice researchers, technicians, and extension service providers on thematic areas	To enhance technical skills	2023-2030	EAC secretariat, Regional Center of excellence	Limited number of rice experts	South-South cooperation sharing and exchanges	660,000	- EAC Secretariat - Development Partners - Line Ministries	Number of trained rice researchers, extension agents and technicians
	1.1.4. NARS equipped with required research infrastructures for selection of breeding lines, pest and disease evaluation, seed testing, and soil testing	To facilitate development of improved varieties, quality seeds and enhance soil health	2023-2030	All Partner States	- Limited financial support for research - Low prioritization of research	Advocate for financial support and prioritization	7,000,000	- EAC secretariat - Line Ministries	Number of research laboratories equipped
1.2. Access to good quality rice seeds improved	1.2.1. A regional seed bank at the Centre of Excellence in Uganda established	Conservation of rice germ plasm	2023-2030	NaCRRRI in Uganda	Inadequate harmonization and implementatio	Activity 1.1.4.	6,000,000	All Partner States	Operational repository of germplasm in place

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
					n of IPR regulations				
	1.2.2. Public-Private sector (seed producer) led rice seed trade and other rice agro-inputs distribution system within the EAC region established	To improve availability of quality rice production inputs	2023-2025	All Partner States			210,000	EAC Secretariat	Functional seed distribution system in place
1.3. Adoption of improved and sustainable rice production technologies increased	1.3.1. Build capacity of NARS and extension in identifying and disseminating cost efficient rice production technologies on land preparation, planting, weeding, soil fertility management and harvesting	To upskill human resources	2023-2030	- NaCRRI, Namulonge in Uganda - Kilimanjaro Training Centre, Tanzania			142,000	All Partner States	Number of NARS and extension staff trained
	1.3.2. Train and strengthen producers to work in groups and legally recognized associations.	To improve access to quality inputs and aggregation services	2023-2030	All partner states	Lack of cohesion	Establish a policy framework for producer associations	82,000	- EAC Secretariat - Line Ministries - East African Grain Council	Number of viable producer groups
	1.3.3. Profile and share best practices on efficient water management technologies in irrigated and rain-fed ecologies	To scale up sustainable rice production	2023-2030	All partner states			93,000	- NARS - Regional Centers of Excellence - ASARECA	Number and type of best practices documented and shared

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
	1.3.4. Build capacity of local government, technicians, engineers, Water Users Associations in efficient water management	To enhance skills in water management	2023-2030	Kenya	Conflicts with other competing users of water	- Mainstream conflict management in the training program - Sensitize trainees	156,000	- All Partners States - EAC Secretariat - CGIAR International Water Management Institute	1. Number trainees in the various categories 2. Number of regional training manuals developed
	1.3.5. Promote water harvesting in rainfed and irrigated rice production areas through exchange visits and extension dissemination	To increase water availability	2023-2030	All Partner States	Insufficient rainfall, prolonged drought	Medium to long term climate change initiatives	211,000	- CGIAR International Water Management Institute - Line Ministries - EAC Secretariat	Number and types water harvesting technologies promoted
	1.3.6. Expand sustainable rice production through Public and Private sector participation in infrastructure development	To increase area under rice production	2023-2030	All Partner States	- Inadequate expertise - Lack of favorable environment for investment	- Develop capacity - Harmonize policies to promote new investments	57,000	- EAC Secretariat - All Partner States - Development Partners	- Number and types of infrastructure developed - Number of projects designed for area expansion
	1.3.7. Establish and operationalize a regional mechanization center of excellence for developing appropriate technologies for the region	To build self-reliance and improve appropriation of machineries	2023-2030	Tanzania	Limited expertise	Develop capacity	2,000,000	- EAC Secretariat - All Partner States - Development Partners	- Functional regional mechanization centre - Number of experts trained

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
1.4 Access to finance for rice value chain actors in the region improved	1.4.1. Build capacity of value chain actors in financial literacy	To enhance skills on financial management	2023-2030	All Partner States			82,000	- EAC Secretariat - All Partner States	Number of value chain actors trained
	1.4.2. Lobby financial institutions to develop affordable financial solutions for rice value chain activities	To reduce the cost of borrowing	2023-2030	All Partner States	Lack of favorable agricultural financing policy	Develop a rice value chain financing policy	175,000	- EAC Secretariat - All Partner States	- Number of actors accessing credit - Number and types of rice value chain businesses financed
1.5 Area under rice cultivation expanded in the region	1.5.1. Map suitable rice cultivation areas for small, medium, and largescale investment	To establish suitable new areas for rice production	2023-2025	All Partner States	Conflicting land use policies in the region	Build capacity	93,000	- EAC Secretariat - All PS - Development Partners	Total area mapped
	1.5.2. Organize EAC rice investor conferences	To share experiences and attract investments in the rice value chain	2023-2030	- EAC Secretariat - All Partner States (Rotational)			Included under activity 1.3.6	- EAC secretariat - East African Grain Council	Number of conferences held
Strategic Objective 2: Improve market competitiveness of locally produced rice									
2.1. Quality of locally milled rice improved	2.1.1. Build capacity of millers and machine operators	To upskill the actors involved	2023-2030	All Partner States			118,000	- EAC secretariat - Development Partners	Number of millers and machine operators trained
	2.1.2. Upgrade milling technology in the region through tax regulations	To improve milling efficiency by encouraging	2023-2030	All Partner States	- Fabrication of single pass machines in some of the	- Develop policy to discourage use and		- EAC secretariat - Line Ministries	- Number and category of milling

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
		multiple pass mills and accessories			Partner States - Limited information best milling technologies	manufacturing of single pass mills - Encourage grain aggregation		- All Partner States	machines upgraded - Milling efficiency of upgraded machines - Milling capacity of upgraded machines
	2.1.3. Build technical capacity to attract investments in local manufacturing of improved machineries	To increase the number of skilled technicians in manufacturing and maintenance of machineries	2023-2026	Tanzania	Limited curriculum in training of technicians in manufacture of machinery	Recommend joint review of curriculum	220,000	- EAC secretariat - Training centers - Universities, Technical Vocational Education and Training (TVETs)	- Number of trained technicians - Reviewed curriculum in place
	2.1.4. Capacity building of value chain actors on postharvest management	To reduce postharvest losses	2023-2030	Training centers in Kilimanjaro and Namulonge			420,000	- EAC Secretariat - All Partner States - Development Partners	- Number of trainings conducted - Number of value chain actors trained
	2.1.5. Create awareness and operationalize the EAC rice standards	To encourage structured trading of rice grains in the EAC	2023-2030	All Partner States	Weak enforcement of standards	Improve enforcement of standards	420,000	- EAC Secretariat - EAGC - Regulatory Authorities in Partner States	- Number of awareness campaigns carried out

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
2.2. Cost of rice production and processing lowered	2.2.1. Train value chain actors on Good Manufacturing (processing) Practices	To fill gaps in skills along the value chain	2023-2030	All Partner States			125,000	- Line Ministries - EAC Secretariat	Number of trained persons
	2.2.2. Fast-track the regional initiatives on investments in local manufacturing and blending of fertilizers	To reduce importation costs	2023-2026	- Tanzania - Democratic Republic of Congo - Burundi	Geopolitical challenges	Sensitization and negotiations	100,000	- EAC Secretariat - Line Ministries	Number of local fertilizer manufacturing/blending plants established
	2.2.3. Upscale bulk procurement of inputs	To reduce cost of inputs	2023-2030	All Partner States	Inadequate group cohesion	Training on group dynamics and collective bargaining	100,000	- All Partner States - EAC Secretariat	Number of farmer groups undertaking bulk procurement
	2.2.4. Lobby for reduction of energy tariffs	To reduce operational costs in processing	2023-2026	All Partner States	Reluctance to implement	Continuous lobbying	25,000	- EAC Secretariat - Line Ministries	Reduced energy tariff
	2.2.5. Promote adoption of mechanization	To improve operational efficiency	2023-2030	All Partner States	Limited availability of appropriate machinery	Fast-track operationalization of the regional mechanization Centre of excellence	265,000	- EAC Secretariat - Regional Mechanization Centre of excellence	Number and type of appropriate machineries produced and deployed
2.3. Diversified rice products developed	2.3.1. Profile the existing rice products in regional markets	Establish the potential for new rice businesses	2023-2025	All Partner States	- Non-tariff barriers - Inaccessibility to information	Enhance cooperation	75,000	- EAC Secretariat - Development Partners	List of existing rice products in the market

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
	2.3.2. Identify and promote commercialization of new rice products and by-products	- Increase profitability of RVC - Expand investments in the rice value chain	2023-2030	All Partner States	- Limited expertise - Market acceptability - Policy limitation on commercialization - Competition from other products	- Build capacity in rice product and by-product development - Publicity/promotion of the new products	100,000	- EAC Secretariat - NARS	- Number and types of products developed and promoted
Strategic Objective 3: Enhance the EAC intraregional rice trade									
3.1. OSBP Act 2016 operationalized	3.1.1. Upgrading 3 OSBP infrastructures per country	To ease clearance of produce	2023-2025	EAC Partner States' borders	Lack of willingness to implement by Partner States; possibility of increased non-tariff barriers	- Sensitizing the Partner States on the importance of the OSBP; enhance digital measures	2,000,000	- EAC Secretariat - Line Ministries in Partner States - Development Partners	Three operational OSBP per Partner State
	3.1.2. Facilitate Implementation of OSBP Act 2016	To increase cross-border trade							- EAC reports - Regional rice trade volumes and pattern
	3.1.3. Create awareness among the cross-border traders on OSBP usage.	To minimize challenges due to new law and allow smooth running at the border	2023-2027	All Partner States			620,000		Number of awareness creation events

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
	3.1.4. Amend the OSBP Act 2016 Part(x)51 (2) to include DRC and RSS	To promote inclusivity of all partner states	2023-2025	All Partner States					EAC Gazette
3.2 Improved access to market information in the EAC region	3.2.1. Create and implement a market information and knowledge portal on rice on market prices, quality features, production levels, custom protocols, weather forecast, early warning system, safe use of agro-chemicals, inputs, and outputs etc.	To give access to relevant information	2023-2026	Digital hub in Rwanda and branches in Partner States	Lack of prioritization by PS; Lack of funds for capacity building and maintenance	Sensitization of PS policy makers on importance of the system	250,000	- EAC Secretariat - Line Ministries in Partner States	EAC Rice Portal in place
	3.2.2. Share market intelligence using a periodical newsletter	To disseminate information on intra-regional trade	2023-2030				50,000		Periodical newsletters
	3.2.3. Sensitization of the market system to the traders & farmers and rice actors	To encourage use of the market information system by the rice actors	2023-2030				420,000		Number of participants in the market information system
	3.2.4. Recruit two personnel in each Partner State and train on data analytics	To improve efficiency in rice grain trading system	2023-2030				1,500,000		Number of trained staffs from PS
3.3. Improved regulatory environment	3.3.1. Review current policy instruments (CET rates, stays and duty	Identify the gaps for proper integration	2023-2027	- EAC secretariat - Line Ministries in	- Loopholes and misuse of policy tools (stays, duty	Clear definition of the inputs	50,000	- EAC Secretariat - Line Ministries	Report on policy recommendations

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
for rice marketing and trading in the EAC region	remission) and the impacts to rice sector	and cohesion of policy tools among Partner States		Partner States	remission, etc.) - Unwillingness to implement the policies	and tariff rates			
	3.3.2. Sensitization of the stakeholders on the negative impacts of policy misalignment	Improve policy integration, coordination, and cohesion	2023-2025	EAC Secretariat			120,000	- EAC Secretariat	- Number of meetings - Policy reports
	3.3.3. Facilitate implementation of zero tariff rates on rice related farm inputs (fertilizers, agro-chemicals, machinery, and farm implements)	To ease regional trading of required farm inputs			Lack of policy coherence & policy integration	Sensitization of stakeholders (3.3.2)	65,000	- EAC Secretariat	Action Plan submitted to the EAC Council of Ministers
	3.3.4. Capacity building on rice marketing (packaging, branding, standards) in each PS for private actors and rice traders (youth & women)	To improve marketability of locally grown rice	2023-2030	Partner States	Weak implementation of EAC Standards by Partner States	Sensitization on standards and policies coherence (3.3.2)	215,000	- EAC Secretariat - All Partner States	- Number of training sessions organized and participants - Reports

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
Strategic Objective 4: Create an enabling environment for the mutual benefits of all rice stakeholders									
4.1. Increased investments in local production of agro-inputs and machinery	4.1.1. Create policy & financial incentives for local production of agro-inputs and machinery	To encourage local production of customized inputs and machinery in the region	2023-2030	- EAC secretariat - All Partner States	- Lack of appropriate and affordable prototypes and other rice technologies suited for the region	Identify cost efficient and appropriate rice technologies suited for local ecosystem	60,000	- ERP through EAC secretariat, MEACA - National line ministries	- Approved policy - At least 7 working associations in the region
	4.1.2. Advocacy for the formation of associations of fabricators, manufacturers in Partner States	To promote public-private policy dialogues on issues and solutions	2023-2030	- EAC secretariat - All Partner States	Weak implementation of EAC Standards by PS	Sensitization on standards and policies coherence (3.3.2)	105,000	- ERP through EAC secretariat, MEACA - National line ministries	- Number of facilitation meetings - Number of associations - Reports
4.2. Improved regional policy coherence on rice sector development	4.2.1. Facilitate creation of national (incl. federal and provincial) apex organization body for rice value chain actors in PS	To generate synergy amongst various stakeholders at both national and regional level	2023-2025	Partner States	- Mis-alignment of priorities and interests of stakeholders in the region	Create awareness on the objectives and benefits of the policies to the stakeholders (3.3.2 and 4.2.2)	35,000	- Partner States	1 approved and working apex body in each Partner State
	4.2.2. Create awareness on the objectives and benefits of the policies and apex body to the stakeholders	To sensitize stakeholders on the benefits of associations in policy dialogues	2023-2025	Partner States			160,000	- EAC Secretariat - Line ministries	Number of sensitization meetings

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
	4.2.3. Create EAC regional rice stakeholders' forum	To promote regional dialogues on common issues and solutions	2025-2030	EAC secretariat			70,000	- EAC Secretariat	Functional forum established
4.3. Policy coordination at national and regional level amongst various line ministries	4.3.1. Organization of multi-sectoral policy coordination meetings at ministerial level in all Partner States	To improve policy orientation among the line ministries in Partner States	2023-2024	Partner States			30,000	- MEACA - EAC Secretariat - NRDS taskforce	Communique regarding agreed upon policy actions
Strategic Objective 5: Buildup ecological and socio-economic sustainability of rice industry									
5.1. Generation and adoption of climate resilience and mitigation measures driven by private sector	5.1.1. Incentivize private sector to create and provide services on climate-smart technologies that will conserve natural resources (time, water, renewable energy, etc.)	To increase private investments in climate-smart technologies in the Partner States and in the region	2023-2030	Partner States	Mindset, cultural and financial issues for stakeholders	Participatory approach in technology identification and adoption of user friendly and gender sensitive technologies	100,000	- Partner States - Line Ministries - EAC Secretariat	At least 3 new Climate smart technologies disseminated and adopted by 2030
	5.1.2. Identify and promote applied research from emerging practices related to CSA (including Sustainable Rice Production) in other regions and customize for the EAC	- To introduce the most beneficial technologies in the region	2025-2030	Partner States			50,000		- Reports - Publications

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
	5.1.3. Create awareness on new and appropriate climate-smart rice technologies among extension workers in the region through ToT approach	To improve dissemination and adoption of the new technologies up to farm level	2023-2030				1,624,000	- EAC Secretariat - Line Ministries in Partner States	Number of Trainer of Trainees trained
5.2. Trained on entrepreneurship skills with rice actors including women and youth	5.2.1. Advocate for affordable financing facilities targeting youth and women in the rice value chain through collaboration with financial institutions and PS (including guarantee funds)	To increase participation of youth and women in rice value chain	2023-2030	Partner States	- Lack of collateral and credit rating to access finance - Inadequate entrepreneurial skills amongst women and youths	Guarantee fund and capacity building built into activities	240,800	- Line ministries of finance, trade, EAC, agriculture, financial institutions - EAC Secretariat	- Number of newly registered and enterprises led by youths and women - Amount of funds dedicated/disseminated to youth and women enterprises
	5.2.2. Capacity building on entrepreneurship skills targeting youths and women along the rice value chain in the region		2023-2030				1,270,000	- EAC Secretariat - Line ministries	Number of youth and women trained on entrepreneurship skills
5.3. Enhanced regenerative agriculture and circularity in rice	5.3.1. Capacity building on sustainable rice production and circular economy (recycling and use of by-products)	To fill skills gaps by recycling by-products	2023-2030	Partner States			207,900	- Line Ministries - EAC Secretariat - Development Partners	Number of youth & women in each Partner State by 2030

Strategic Outcomes	Proposed Activities	Purpose	Time frame	Locations	Risks	Mitigation Measures	Budget (USD)	Responsible Institutions/ Implementors	Objectively Verifiable Indicators
production in the region	5.3.2. Organize exchange visits/ programs in the Partner States and in the region	To learn best practices within the region	2023-2030	Partner States			170,500	- Partner States - EAC Secretariat	- Number of exchange visits and participants - Reports
	5.3.3. Organize rice trade fair annually in the Partner States	To stimulate competitions in usage of best practices	2023-2030	Partner States			145,000	- EAC Secretariat - Line Ministries in Partner States - Development Partners	Number of rice trade fairs