

Meeting **World Food Needs** with **GM Rice?**

An Overview of Tanzania Rice
Economy and National Bio-Safety
Policy: Barriers to the Acceptance and
Use of GM Rice

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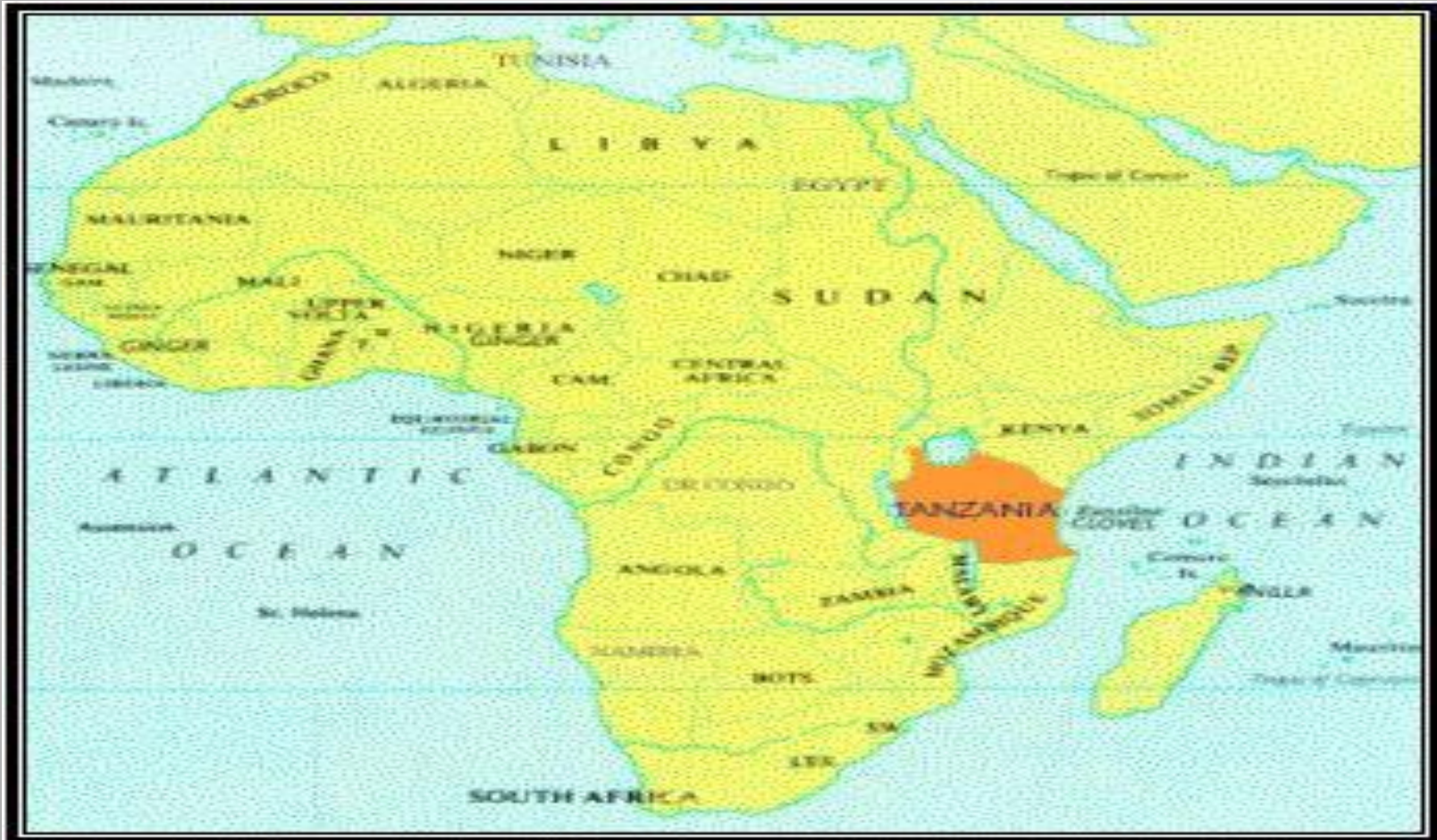
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Outline

- Background
- Rice production
- Consumption
- Gender dimension
- Policy environment
- Challenges
- Preliminary observations on GM food policy

Tanzania Geographical Position



Background

- Tanzania is an eastern African country of 93.4 million ha and a population of about 43 million with a growth rate of 2% pa (CIA, 2011)
- Only 11 per cent of the suitable land for agriculture (44 million hectares) is under cultivation, mostly by smallholder farmers.
- Out of 29.4 million hectares (31% of the total land area) with irrigation potential, only 227 490 hectares (less than 1%) are currently under irrigation.
- Usage of modern agricultural inputs and technology is very low such that only 15% of all farmers use fertilizers (Temu, 2006; Wolter, 2008).
- Tanzania could be a major food-exporting country if uptake of developed agricultural technologies increase (URT, 2006; World Bank, 2005).

Background

- Main food crops are maize, rice, wheat, sorghum/millet, cassava and beans.
- Despite the suitability and potential of the country for crop production, Tanzania remains to be a net food importing country.
- While the Government realizes the importance of promoting agriculture commercialization at the policy level, the implementation has been lagging behind.

Rice Production

- Country's overall agricultural GDP has grown at an average annual rate of 3.3% while the country's main food crops have been growing at 3.5% annually and its export crops at 5.4% annually.
- This performance falls short of the needed growth considered in the CAADAP and poverty reduction by 2015 is in the range of 6-7 % (Minot, 2005; Wolter, 2008).

Rice Production

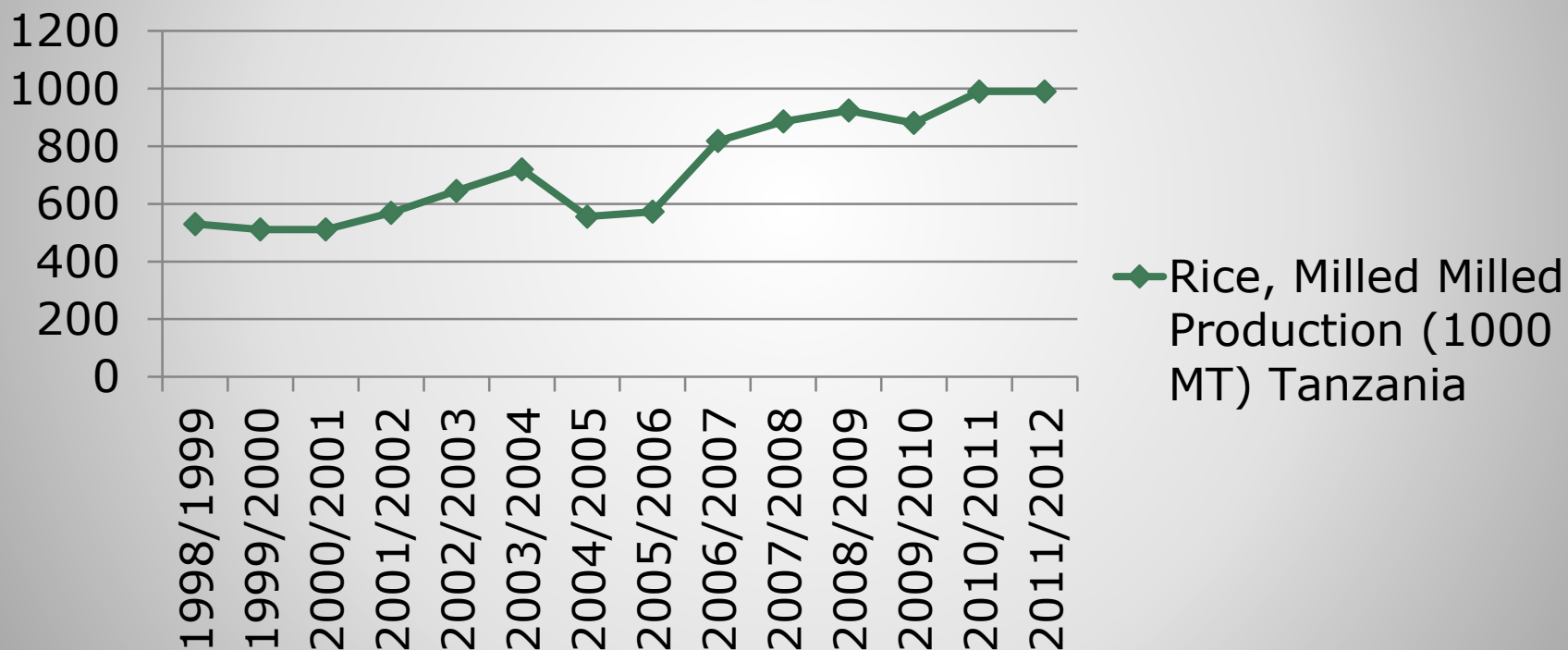
- Rice is the second most important food crop in terms of number of households, area planted and production volume.
- Rice sector is a major source of income and employment in rural areas.
- Production regions are Shinyanga, Tabora, Mwanza, Mbeya, Rukwa and Morogoro, Kilimanjaro, Arusha, Manyara, Iringa, Mara, Tanga and Kigoma.
- Mainly cultivated by small scale farmers and few large scale farms.

Production

- Rain-fed lowland, upland rice and irrigated.
- Land area increased from 490,000 hectares in 1998 to 665,000 hectares in 2007 (36% increase)
- Production trend has been increasing with a slight decline in 2004/2006.

Production

Rice, Milled Milled Production (1000 MT) Tanzania



Productivity

- Varied from 1.0 to 1.2 tons of milled rice per ha .
- Low yield is mainly caused among by low use of genetically yielding varieties, drought, low soil fertility, weed infestations, prevalence of insect pests and diseases and birds.

Consumption

- Self sufficiency ratio (SSR) is 84.5 percent (USDA 2009) against the standard level of 120 percent - country's sustainable food availability
- Rice needs gap is complimented through imports

Rice imports

- Tanzania imports rice to meet the unmet demands.
- Imports were high in 1999/2000 (250,000 MT), and started declining beginning from 2004
- Sources of imported rice are numerous, however, the major ones are Vietnam, China, Pakistan and Thailand.

Imports

Rice, Milled MY Imports (1000 MT) Tanzania



Gender dimension in Rice

- Majority of farmers are women (60%) and make a significant contribution to food production and to the processing and marketing of foodstuffs.
- Women play a major role in rice production.
- Highly involved in rice value chain particularly planting, weeding, bird scaring, harvesting, processing and trading, while men are mostly involved in the land preparation.
- Both men and women are engaged in rice harvesting and threshing.

Consumer preferences

- Tanzanians are very keen on the grain size, colour, taste/flavour and cooking attributes of rice.
- Many consumers prefer aromatic to non-aromatic rice. Example of aromatic rice is Super Kilombero and SARO 5 (TXD 306) and non aromatic is IR64.
- Consumers also prefer sticky white long grain rice to white broken and coloured long grain rice.
- Common grade standards of rice available in the local markets are premium grade one and standard.
- Premium prices are usually given to aromatic rice type e.g. Kyela brand and rice brand of premium or grade one in attractive package.

Policy Environment

- Tanzanian Government subscribes to the global World Food Summit Plan of Action contained in the 1996 Rome Declaration on World Food Security and the Millennium Development Goals (MDGs)
- The MDGs targets to halving poverty, malnutrition and hunger by the year 2015.
- National Strategy for Growth and Reduction of Poverty (NSGRP)
- National Agriculture Sector Development Strategy (ASDS) implemented by Agriculture Sector Development Programme

Policy Environment

- Regional committed to implement the African Union's (AU) Comprehensive Africa Agriculture Development Programme (CAADP).
 - Pillar 1: Land & water management
 - Pillar 2: Market access
 - Pillar 3: Food supply and hunger: with aims to increase food supply and reduce hunger across the region by raising smallholder productivity and improving responses to food emergencies
 - Pillar 4: Agricultural research: with aims to improve agricultural research and systems in order to disseminate appropriate new technologies (www.nepad.net)

National Strategy for Growth and Reduction of Poverty (NSGRP).

- Goal: agriculture sector growth from 5 percent in 2002/03 to 10 percent per annum by year 2010.
- Increase in agricultural productivity, higher added value and improved producer price incentives (Tanzania, United Republic of, 2006).
- Agricultural Sector Development Strategy (ASDS)
 - objective of ASDS is to create an enabling and conducive environment for improving productivity and profitability of the agricultural sector as the basis for ensuring household food security, improved farm incomes and rural poverty reduction in the medium and long-term.

New Prospects for Rice Economy

Commercial Rice Farming through the Southern Agricultural Growth Corridor of Tanzania (SAGCOT)

National Bio-Safety Policy

- National Biosafety Regulations cited under “Environmental Management ACT, 2009 Cap. 191

National Biosafety Regulatory Framework

National
Biosafety
Focal Point

- The Ministry responsible for environment; i.e The Vice Presidents' Office (VPO)

National
Biosafety
Committee

- Appointed experienced members from government departments, agencies, NGOs, and Private sector

Ministerial
Competent
Authority

- Ministerial Competent Authority

Functions



- Reviews and approves applications for research, confined release, pre-commercial release, or placing on market GMOs
- Oversees the implementation of Biosafety regulations
- Receives and forward applications to Competent authority committee



- Reviews applications on GMOs
- Advises on biosafety policies, legislation and other policy instruments



- Reviews applications or proposals for development, introduction, import, export, release, or placing on market GMOs
- Undertakes a risk assessment of GMOs
- Advises the National Biosafety Focal Point

Approval and Decision Process

Application for carrying out GMO activity

- A person intending to carry out GMOs research fills in Form No. 1
- A person intending to carry out GMOs field trial fills in Form No. 2
- A person intending to commercially release GMOs fills in Form No. 3

Public awareness and participation

- National Biosafety Focal Point (NBFP) makes the application known to the public
- Any person within Three months make comments on the application to the NBFP
- NBFP consults Expert bodies
- NBFP facilitates the transfer, handling, and use of GMOs

Risk assessment & Socio-economic assessment

- The applicant for GMOs conducts the risk assessment and submits the report to NBFP
- Prior to release of GMOs socio-economic assessment must be conducted

BioSafety Regulations

- Approval process of GMOs is in place
- Number of approved and released GMOs?
(unknown)

GM status in Tanzania

- Biotechnology and/or biosafety policy in place since 2010.
- Department of Environment under the Vice Presidents Office has developed the National Biosafety Framework that provides legal and institutional arrangements for safe application of biotechnology in the country.

Dominant Transgenic Crops in Tanzania

Crop	Area/ha	%
Soybean (herbicide tolerant)	32.5	62
Maize (Insect resistant and herbicide tolerant)	12.4	21
Cotton (Insect resistant and herbicide tolerant)	6.8	12
Canola / rapeseed	3.0	5
Total	58.7	100

Challenges

- Increasing food insecurity
- Non-availability of improved seeds that are tolerance to drought (only 10 percent of farmers use)
- Insect pests and diseases are major challenges
- Low yields from traditional rice varieties grown in the rain-fed lowland

Challenges

- Limited institutional capacity and inadequate financial resources and government support to develop and sustain biotechnology research
- Lack of public , technocrats, policymakers & awareness and clear understanding of both the potential promise and perils of GMOs

Barriers on GM Rice policy

- Adoption of biotechnologies to attain food security and eradicate poverty has fears of the unknown.
- The biotechnologies is not safe and contribute to non sustainable development
- Local institutions, scientists have not availed evidence to inform the general public about what is available for them to safely benefit from.
 - There is lack of evidence for evidence based policy decisions

Barriers on GM Rice policy

- Poor public perception on biotechnology
 - There is apparently poor public perception about the safety and efficacy of new and emerging technologies, including biotechnology.
- Lack of awareness on biotechnology
 - There is inadequate awareness and understanding among the public, policy makers, decision makers and researchers on practical applications, research and biosafety

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