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**Report Name:** Biotechnology and Other New Production Technologies  
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**Report Highlights:**

Tanzania Government allows the importation of Genetic Engineered (GE) products from United States and other countries that meets national standards. However, there is no GE food in the Tanzanian market. The strict liability clause in the Bio-safety Regulations of 2009 continues to deter the commercialization of GE products for cultivation or import.

## EXECUTIVE SUMMARY

In 2017, the Tanzanian government relaxed the “strict liability” biosafety regime that had de-facto prevented plant scientists from testing GE crops outside the lab. Tanzania recognizes that biotechnology provides a set of novel and powerful tools with the potential to foster sustainable development in various sectors of the economy including agriculture, health and industry, as well as benefit the environment. The government’s commitment towards the promotion and application of biotechnology is articulated in the National Biosafety Framework of 2004, National Agricultural Policy of 2013 and National Biotechnology Policy of 2010.

While the Government has put in place all the necessary policies and legal and institutional frameworks for safe and responsible use of modern biotechnology, progress in research and utilization of GE technologies has been slow, mainly due to the lack of facilitative biosafety regulations and inadequate knowledge and understanding of biotechnology and biosafety issues by various stakeholders.

In light of the slow pace of adoption of biotechnology in the country and increasing activism, the science and technology stakeholders in Tanzania decided to form an independent association, the Biotechnology Society of Tanzania (BST) that assists the government of Tanzania in fostering socioeconomic development using biotechnology and other scientific advances. The Society is dedicated to promoting the advancement and use of biotechnology in the country. Membership in the Society is open to all scientists, academics, farmers, consumers, manufacturers, policy and decision makers, industry, media, non-government organizations (NGOs) and community-based organizations (CBOs) interested or involved in fostering, developing and supporting the application of biotechnology tools and information in various sectors of the economy to enhance the living standards of the people of Tanzania.

The Tanzanian government allows importation of GE products from the United States and other countries that meet national standards. However, there is no GE food in the Tanzanian market. The strict liability clause in the Biosafety Regulations of 2009 continues to deter the commercialization of GE products for cultivation or import. Regulation 56.-(1) “Any person or his agent who imports, transits, makes contained or confined use of, releases, carries out any activity in relation to GMOs or products thereof or places on the market a GMO shall be strictly liable for any harm, injury or loss caused directly or indirectly by such GMOs or their products or any activity in relation to GMOs.” (2) The harm, injury or loss includes personal injury, damage to property, financial loss and damage to the environment or to biological diversity and takes into account socio-economic, cultural and ethical concerns.

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## CHAPTER 1: PLANT BIOTECHNOLOGY

### PART A: PRODUCTION AND TRADE

#### a) PRODUCT DEVELOPMENT

The ongoing public debate on the biosafety legal regime in Tanzania has affected research on GE crops, despite the Parliamentary Committee for Agriculture, Livestock and Water's appreciation of GE research in Tanzania. Late 2018, the Government of Tanzania (GoT) threatened to destroy all Confined Field Trials (CFT) managed by the Tanzania Agricultural Research Institute (TARI). Activists claimed that TARI was disseminating and exhibiting GE research results without GoT consent. After a month of negotiation, GoT allowed TARI and the Commission for Science and Technology (COSTECH) to continue with the GE trial at Makutupora CFT under the condition that they will not disseminate any GE results without National Bureau of Statistics (NBS) and Ministry of Agriculture approvals. Presently, the GE crops researched in the country are cassava and maize presented in Table 1.

Table 1: GE Crop Research Project in Tanzania:

GE Plant	Trait	Developer	Stage	Number of trials
White maize/corn	Drought tolerant	Bayer	CFT	3
White maize/corn	Drought tolerant and insect resistant	Bayer	CFT	2
Cassava	Virus resistant (CBSD/CMD)	TARI	Lab	

The following are some of the main biotechnology applications in Tanzania:

#### 1. Tissue Culture and Micro propagation

The application of tissue culture techniques to address constraints of disease-free planting materials and rapid improvement in crop production is now routinely applied in several institutions in Tanzania. Institutes conducting tissue culture in Tanzania are: Mikocheni Agricultural Research Institute (MARI) in Dar es Salaam; Agricultural Research Institute (ARI) Mlingano in Tanga; ARI Uyole, Mbeya; Horticulture Research Institute-Tengeru (Arusha); Kizimbani Agriculture Research Station (Zanzibar); Tropical Pesticides Research Institute (TPRI), Arusha; Sokoine University of Agriculture (SUA); and Tanzania Coffee Research Institute (TACRI) through Crop Bioscience Solutions Ltd (CBS). CBS is the commercial crop biotech company dedicated to modern agricultural technologies. Through innovative Biotechnology, they deliver quality-planting materials that are affordable at a competitive price.

#### 2. DNA Markers and Marker Assisted Technologies

MARI, SUA- the Faculty of Veterinary Medicine, Central Veterinary Laboratory (CVL), Molecular Biology and Biotechnology Department (DMBB), University of Dar es Salaam (UDSM) and Ifakara Health Research Development Centre carry out the use of DNA marker technology that simplifies the genetic improvement and disease diagnostics.

#### 3. Developing Genomics and Bioinformatics capacity in Tanzania

SUA has established a state-of-the-art Genome Science Centre, which supports research and postgraduate training in the area of functional genomics and bioinformatics.

The Genome center has facilities for cDNA works, printing microarrays using a high throughput GENETIX microarray and 4-colour scanning of arrays.

#### 4. Genetic Engineering

- The first GE research is being conducted at ARI, Mikocheni on cassava in a contained environment.
- Confined Field Trial (CFT) on Water Efficient Maize (WEMA) at Makutopora in Dodoma.

#### b) COMMERCIAL PRODUCTION

There is no commercial production of GE crops or GE seeds.

#### c) EXPORTS

Tanzania does not export GE crops to the United States or any other country since there is no legal authorization for GE commercial production.

#### d) IMPORTS

Government of Tanzania (GOT) has never banned the importation of GE food or products. A GE food importer must follow existing food importation law plus the sections in the Environment Act, which governs the importation of GE Food. For more information, please visit the Tanzania Ministry of Environment website.

#### e) FOOD AID

Tanzania is not a food aid recipient country; movement of GE food aid products is permitted under the environmental regulations governing handling of GE products in transit.

#### f) TRADE BARRIERS

Not applicable

## **PART B: POLICY**

### **a) REGULATORY FRAMEWORK**

Tanzania developed its National Biosafety Framework (NBF) in February 2007. The Environment Division under the Vice President's Office is the National Biosafety Focal Point and the National Competent Authority (NCA); it provides the BCH with required data for the Cartagena Protocol. The NBF includes national policies related to biosafety and the regulatory regime; administrative, decision-making and monitoring; and mechanisms for public awareness, education, and participation. In 2010, the Ministry of Education Science and Technology established the National Biotechnology Policy (NBP) by the Environment Management Act of 2004. This policy ensures that Tanzania has the capacity and capability to capture the proven benefits arising from health, agriculture, industry and environmental applications of biotechnology while protecting and sustaining the safety of the community and the environment. Other legal framework consists of Plant Biosafety regulations, 2009, Biosafety Guidelines and Standard Operating Procedures.

The institutional framework consists of:

- National Biosafety Focal point (NBFP),
- National Biosafety Committee (NBC),
- National Biotechnology Advisory Committee (NBAC),
- Ministerial Competent Authorities,
- ABSAC, Plant Biosafety CoE, TPRI, and
- Institutional Biosafety Committees (IBC)

Despite the existing policies, legislation and enthusiasm for GE crops among some Tanzanians, the debate is not over. A section of the public continues to press the government to stop research on all Agricultural GE production activities in the country. Thus, it is important to ask what Tanzanians think about GE crops.

Figure 1: The institutional structure as per NBF:

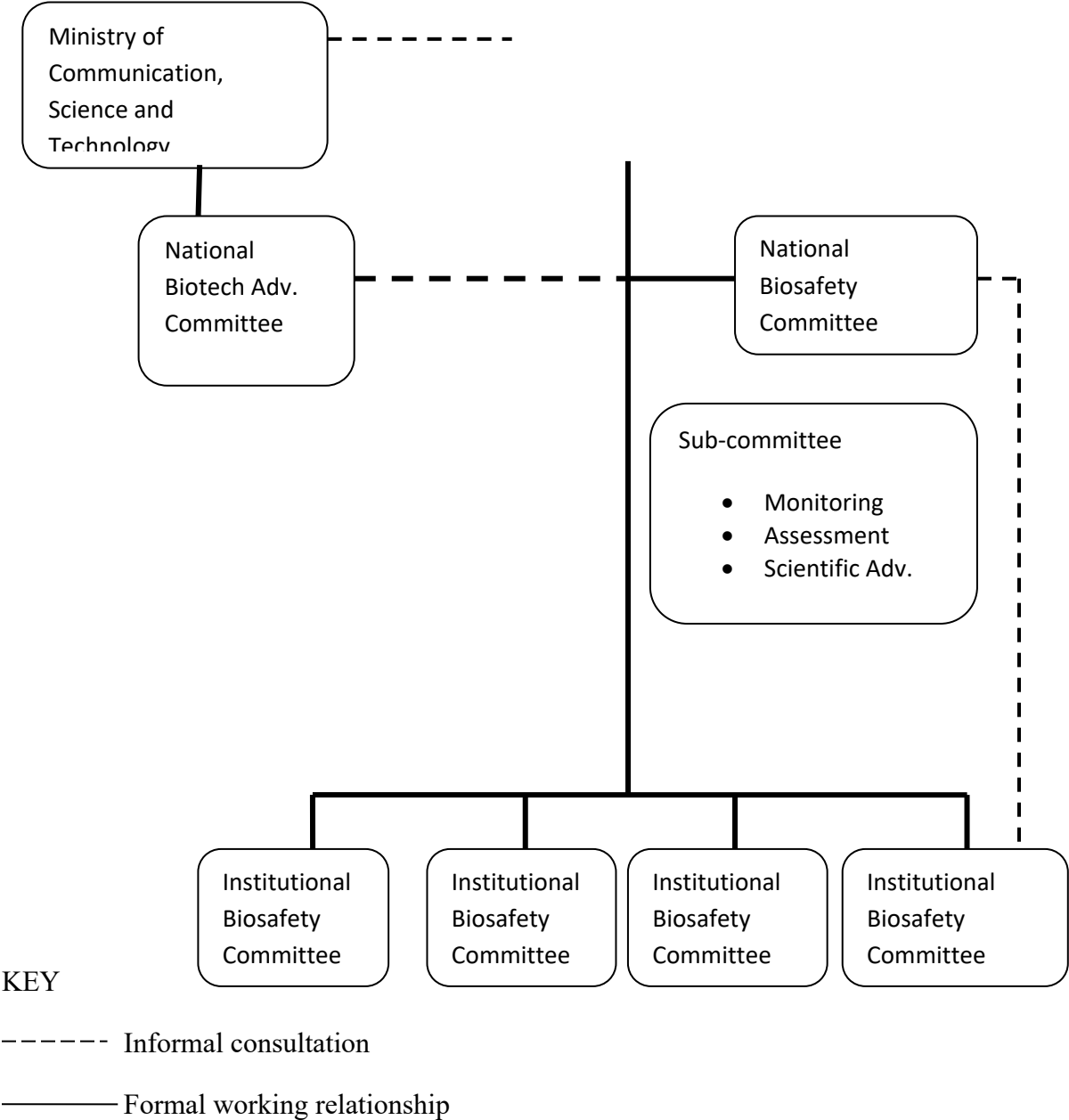
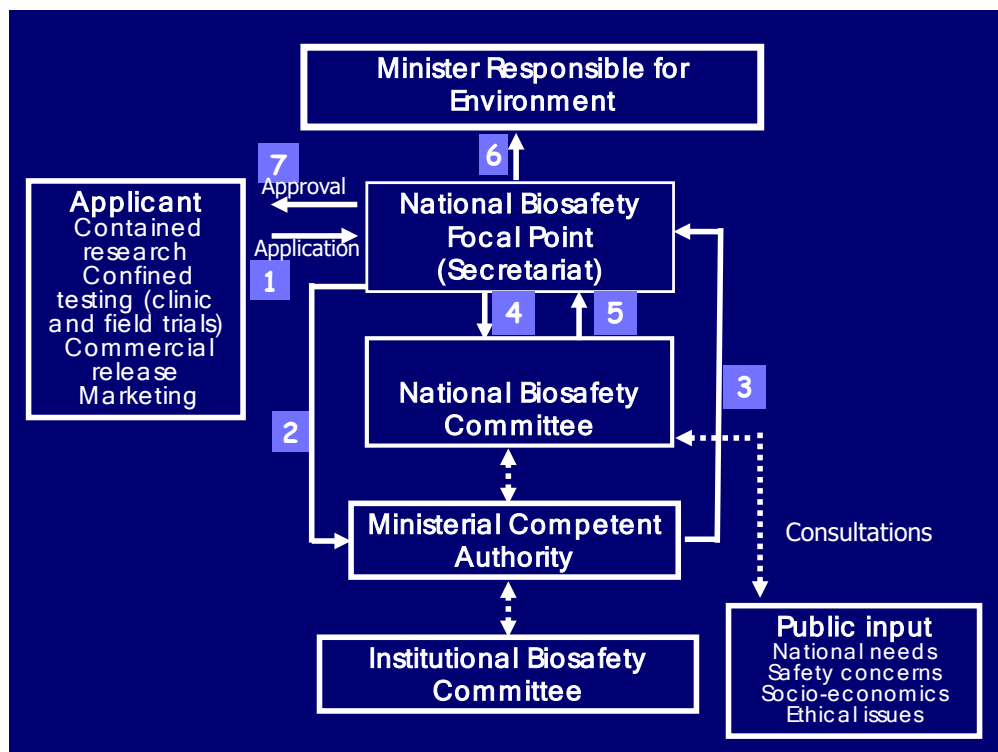


Figure 2: Decision making structure



#### a) APPROVALS

No plants are registered for cultivation, import or export in Tanzania.

#### b) STACKED EVENT APPROVALS

Biosafety regulations direct a case-by-case review. Depending on the character of the trait, the National Biosafety Committee may require extra information to make decision. TARI is on preparation to submitting GE maize for approval.

#### c) FIELD TESTING

Tanzania has allowed confined field trials (CFTs) for GE corn. The trial is on a two-hectare plot at Makutupora research station, Dodoma Tanzania. There are no GE crop trials in farmers' fields.

GE Plant	Trait	Developer	Stage	Number of trials
White maize/corn	Drought tolerant	Bayer	CFT	3
White maize/corn	Stack (Drought tolerant and insect resistant)	Bayer	CFT	2
Cassava	CBD/CMD resistant	TARI	Lab	



#### d) INNOVATIVE BIOTECHNOLOGIES

The application of biotechnology in Tanzania is considered in the context of the country's need for food for the nutrition and survival of its people. However, besides food, biotechnology has been applied in medicine and public health, industry and environment.

#### e) COEXISTENCE

The country has GE handling manuals that provides the guidelines on coexistence between GE and conventional crops. Once GE crops are released for commercialization, more capacity building is needed to smallholder farmers and technology developers to comply with the guidelines on coexistence.

#### f) LABELING and TRACEABILITY

Biosafety regulations require labeling for bulk shipments, raw material, packaged food or feeds, or other products derived from and/or containing ingredients from GE plants. The required information is skewed towards the consumer right to know. Currently, there are no legal GE products on the market.

#### g) MONITORING AND TESTING

GE products are monitored in supermarkets and at point of entry. NBFP is responsible for approving imports of GE products, while the Tanzania Food and Drugs Authority (TFDA) and Tanzania Bureau of Standards (TBS) monitor and test agricultural commodity and food product imports at ports of entry. However, the Tanzanian government has limited personnel and testing facilities for evaluating agricultural products for GE content.

#### LOW LEVEL PRESENCE POLICY

Tanzania has no low-level presence policy.

#### h) ADDITIONAL REGULATORY REQUIREMENTS

GE crops or products, after securing approval from Vice Presidents Office, Division of Environment, are subjected to other national laws. In the case of crops, the variety will be subject to legislation and regulations guiding variety release, while food products are further subject to the Tanzania Food and Drug Act and regulations.

i) INTELLECTUAL PROPERTY RIGHTS

Tanzania is a member of the Trade Related Intellectual Property (TRIPS) Agreement. Tanzania does not have a National Intellectual Policy (NIP). However, there are number of institutions that are currently dealing with and promoting IP issues. They include:

- ✓ Business Registrations and Licensing Agency (BRELA)
- ✓ Commission for Science and Technology (COSTECH)
- ✓ Copyright Society of Tanzania (COSOTA)
- ✓ Fair Competition Commission (FCC)
- ✓ Fair Competition Tribunal (FCT)
- ✓ Ministry of Agriculture (Plant Breeders Rights - PBR)
- ✓ Tanzania Bureau of Standards (TBS)
- ✓ Tanzania Food and Drugs Authority (TFDA)
- ✓ Tanzania Revenue Authority – Customs (TRA)
- ✓ Commercial Court (High court of Tanzania)
- ✓ University of Dar es Salaam (UDSM)
- ✓ Sokoine University of Agriculture, (SUA), and Nelson Mandela African Institution of Science and Technology (NM-AIST)
- ✓ National Institute of Medical Research (NIMR)
- ✓ Tropical Pests Research Institute (TPRI)

j) CARTAGENA PROTOCOL RATIFICATION

Tanzania acceded to the Cartagena Protocol on Biosafety (CBP) on March 16, 2003. It was adopted on January 29, 2000 as a supplementary agreement to the Convention on Biological Diversity and entered into force on September 1, 2003. NBFP is Tanzania's focal point of the CBP and shares data with the Biosafety Clearing House, a mechanism set by CPB to facilitate information exchange on GE product development and to assist member countries in complying with their obligations under the protocol.

#### k) INTERNATIONAL TREATIES and FORUMS

Tanzania is a member of several international organizations that deal with plant protection and plant health, including the International Plant Protection Convention (IPPC), International Treaty on Plant Genetic Resources for Food and Agriculture, Codex Alimentarius, World Trade Organization (WTO), WIPO, and ARIPO and has ratified the International Convention on Biological Diversity (CBD), Plant genetic Resources for Food and Agriculture (IT-PGRFA) and the aforementioned CPB.

#### l) RELATED ISSUES

The Government of Tanzania (GOT) has not banned importation of GE food. Any person who wishes to import, transit, or place on the market a “GMO” intended for direct use as food or feed, or for processing, shall submit an application in writing with a reference to the information on the item found in the BCP, to the NBFP for approval.

Tanzania adopted the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the CBP. It gives Tanzania flexibility to implement legislative, administrative, or judicial rules and procedures relevant to liability and redress.

### **PART C: MARKETING**

#### a) PUBLIC/PRIVATE OPINIONS

The debate on biotech crops and bioengineered foods remains contentious and political. Anti-“GMO” movements have exposed Tanzanian consumers to negative messaging, while the Commission for Science and Technology (COSTECH) and Vice President’s Office (VPO) and Biotech Society of Tanzania continue to provide balanced messaging.

#### b) MARKET ACCEPTANCE/STUDIES

Recent studies conducted by GOT (VPO), UNEP and GEF revealed limited understanding of genetic engineering, and products thereof, among Tanzanians except for a small section of elites with a tertiary level of education. Most Tanzanians see GMOs and modern biotechnology as disadvantageous and consider the health and agricultural sectors to be the most affected. The study was carried out in three out of seven designated agro-ecological zones in the country. Selected study areas were Central zone (Dodoma - arid land/ drought prone), Eastern zone (Morogoro - high rainfall and fertile soil with many high learning institutions) and Northern zone (Same - semi arid with lots of farming communities). Respondents in the Eastern zone were relatively more informed than the Central and Northern zones. Higher learning institutions are believed to have played a major role into such awareness.

## **CHAPTER 2: ANIMAL BIOTECHNOLOGY**

### **PART D: PRODUCTION AND TRADE**

#### a) PRODUCT DEVELOPMENT

Not applicable

#### b) COMMERCIAL PRODUCTION

Not applicable

#### c) EXPORTS

Not applicable

#### d) IMPORTS

Not applicable

#### e) TRADE BARRIERS

There are no trade barriers related to biotechnology in Tanzania.

### **PART E: POLICY**

#### a) REGULATORY FRAMEWORK

The National Biosafety Act covers both plants and livestock, but no regulations have been developed specifically for animal biotechnology.

#### b) INNOVATIVE BIOTECHNOLOGIES

Not applicable

#### c) LABELING and TRACEABILITY

Same as for Plant Biotechnology

#### d) INTELLECTUAL PROPERTY RIGHTS

Same as Plant Biotechnology

#### e) INTERNATIONAL TREATIES and FORUMS

Tanzania is a member of the World Organization for Animal Health (OIE) since December 14, 1961. OIE is an inter-governmental organization whose 181 Members have mandated it to improve animal health and welfare worldwide.

#### f) RELATED ISSUES

Not applicable

### **PART F: MARKETING**

#### a) PUBLIC/PRIVATE OPINIONS

Same as Plant Biotechnology

#### b) MARKET ACCEPTANCE/ STUDIES

Not Applicable

**Attachments:**

No Attachments