



# NATIONAL BIOTECHNOLOGY AUTHORITY STRATEGIC PLAN

2019-2023





# NATIONAL BIOTECHNOLOGY AUTHORITY

## STRATEGIC PLAN

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- Mr. E. Moyo (Vice NBA Board Chair).
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- Ms G. N. Mhlangu (NBA Board Member).
- Dr. F. Chatiza (NBA Board Member).
- Mr. Z. Dhlamini (NBA Board Member).

**2019-2023**

## **FOREWORD**

I am pleased to present to you this National Biotechnology Authority strategic plan for 2019-2023. The strategic plan, developed after wide consultations with the NBA Board, Management, staff and stakeholders, is designed to transform the NBA into an effective, efficient and relevant organisation geared to deliver on its mandate of regulating, monitoring and commercialising biotechnology in Zimbabwe. The pillars of the strategy are as follows:



1. Active biotechnology Research and Development that leads to the production of marketable goods and services.
2. The establishment of a vibrant bio-economy through the development of biotechnology business enterprises.
3. Good Corporate Governance and transparency.
4. Increased coverage and strengthened regulatory function of the authority.
5. Increased resource use efficiency and a green economy.

This Strategic Plan aims to restructure the NBA and bring in a strong team of leaders that work together for the successful implementation of the organisation's vision. New support departments namely; the Internal Audit, the Procurement Management Unit and the Corporate and Legal Affairs will be established to strengthen good corporate governance. This strategic plan will ensure that through the functions of NBA, biotechnology will contribute meaningfully to national economic development by leading to the establishment of biotechnology industries that produces goods and services for the nation and beyond. Biotechnology will lead the industrialisation and modernisation of Zimbabwe. This strategic plan dovetails with the national vision 2030.

Board Chairperson \_\_\_\_\_

**Prof. Florence Mtambanengwe**

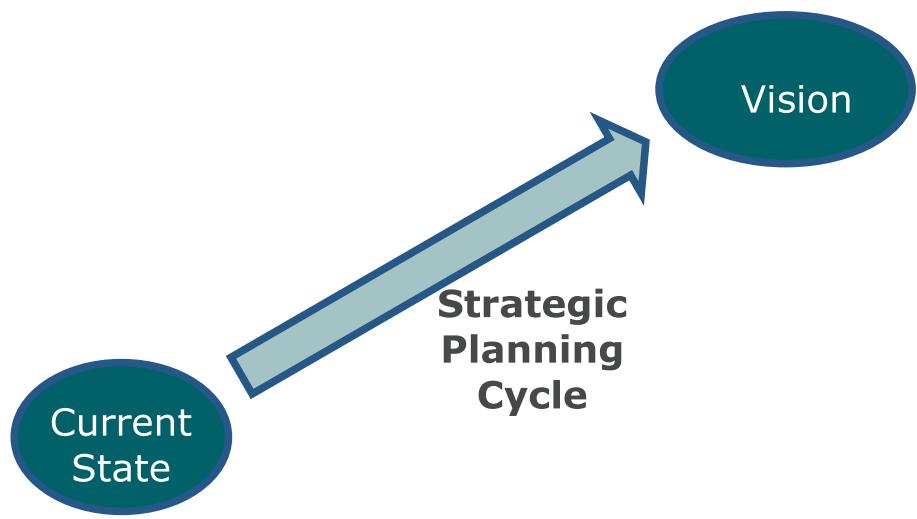
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# Aiming for our Vision



## **List of Acronyms**

ABNE - African Biosafety Network of Expertise

AiBST- African Institute of Biomedical Science and Technology

BBI - Bio-Bridge Initiative

BCH - Biosafety Clearing House

COMESA - Common Market for Eastern and Southern Africa

EMA - Environmental Management Agency

EU - European Union

HRI - Horticulture Research Institute

ICGEB - International Centre for Genetic Engineering and Biotechnology

ISAAA - International Service for the Acquisition of Agri-biotech Applications

SANBio - Southern African Network for Biosciences

SAZ - Standards Association of Zimbabwe

TSPRA - Transitional Stabilization Programme Reforms Agenda

ZEF- Zim Earthworm Farms

ZOPPA - Zimbabwe Organic Promoters and Producers Association of Zimbabwe Trust

## EXECUTIVE SUMMARY

This strategy document makes reference to the African Union (AU) Africa Agenda 2063; Southern Africa Development Community (SADC) 2008 Science Protocol: SADC Industrialization Strategy and Roadmap 2015 - 2063; United Nations (UN) Multilateral Environmental Agreement, Social Development Goals (SDGs) and SADC/COMESA industrialization strategy. His Excellency, President E.D. Mnangagwa's inaugural statement in 2017, stressed the importance of industrialization and modernization of Zimbabwe's economy by embracing advanced technologies. In the context of the industrialization and modernization strategy, biotechnology is part of the growth trajectory that presents the fastest possible way to increase agricultural productivity, foster efficient use of natural resources and establish a heritage-based bio-economy.



In recognition of the importance of biotechnology to national development, the Government of Zimbabwe in 2005 approved the National Biotechnology Policy, which led to the establishment of the National Biotechnology Authority (NBA) 2006. The NBA is a statutory body mandated to regulate, support and manage biotechnology research, development and commercialisation. Biotechnology is the utilization of organisms, their biological processes, or systems to produce products and services that improve human lives. The products of biotechnology are knowledge-based, tangible goods and services. Biotechnology is essential for human existence and socio-economic development. The Government of Zimbabwe has provided a conducive environment for the practice of biotechnology in Zimbabwe through the establishment of biotechnology programmes in academic institutions (Primary and Secondary Schools, Universities, Polytechnics, Colleges, Biotechnology research institutions (both public and private) and the development of the biotechnology regulatory framework in a bid to align with global advances and best practices in biotechnology. Recently the government has provided funding to support biotechnology start-up companies. The best example is the Advanced Cattle Reproductive Technology for semen production and artificial insemination project by the Department of Biotechnology at the Chinhoyi University of Technology.

Although significant strides have been made in the biotechnology field in Zimbabwe, a lot more has to be done to realise the full potential of biotechnology. It is imperative to note that biotechnology is a potential source of income for the Zimbabwean economy. Therefore, there is need to strengthen the biotechnology sector by:

- Promoting the safe use and application of biotechnology in all relevant sectors of the economy;

- Driving the socio-economic development of Zimbabwe through unlocking the full potential of biotechnology to produce goods and services which contribute to the National Gross Domestic Product (GDP).

To realise the above, the National Biotechnology Authority will use the following strategies:

1. Actively promote biotechnology research, development and innovation in key sectors of the economy which include agriculture, health, energy, industry and environment.
2. Restructure the organisation so that it is geared for the production of biotechnology products and services by establishing the Business Enterprise Development Department.
3. Support biotechnology research, development and innovation through operationalisation of the Biotechnology Fund.
4. Mainstream biotechnology into curriculum for primary, secondary and tertiary institutions.
5. Strengthen the regulatory framework which enables the production of safe and quality biotechnology products and services.
6. Mobilise resources through public and private partnerships with local, regional and international organisations and companies.

The 2019-2023 Strategic plan aims to transform the National Biotechnology Authority from its current state where it has 48 employees concentrating on regulation to an organisation with 175 employees concentrating on research and development and the commercialisation of biotechnology products and services. The strategy will be supported by a proposed output budget of ZW\$ 53,073,000 (USD8,845,500) assuming the current macroeconomic conditions in the country are maintained. During the implementation cycle of the plan there will be strict monitoring of the targets and whenever necessary responsive adaptation will be made to ensure success and delivery by 2023.

Acting Chief Executive Officer and Registrar

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**Dr. Deckster T. Savadye**

## **1. INTRODUCTION AND BACKGROUND**

Zimbabwe's regulatory framework on biotechnology and biosafety dates back to the early 1990s when the country's scientists approached the then Scientific Liaison Office in the Office of the President and Cabinet requesting that the Government puts in place legal measures to manage breakthroughs in modern biotechnology. Using United Nations Environment Programme (UNEP)/Global Environment Fund (GEF) and Government support, a comprehensive National Policy on Biotechnology and its safe use was developed (2005) and a new Act of Parliament - the National Biotechnology Authority Act [*Chap. 14.31*] was passed into law in 2006. This led to the establishment of the National Biotechnology Authority (NBA).

The mandate of the NBA is to regulate, actively support and manage biotechnology research, development and application. As the national competent authority for all biotechnology and biosafety matters, the NBA ensures biosafety in the development and deployment of biotechnology. NBA advises Government on all aspects concerning the development, production, use, application and release of biotechnology products and ensures that such activities are done in accordance with the provisions of the National Biotechnology Authority Act.

Biotechnology is defined as any technique that uses living organisms or parts thereof to make or modify products to improve plants or animals, or to develop micro-organisms for the benefit of mankind. The scope for biotechnology is very wide and includes agricultural biotechnology environmental biotechnology; industrial biotechnology and medical and pharmaceutical biotechnology. Thus, biotechnology is seen as one of the technologies with potential to empower people to attain household food and nutritional security, sustainable socioeconomic development and to reverse environmental degradation. Coupled with ICT, biotechnology accelerates the transformation from a raw material-based to a knowledge-based economy.

The application of biotechnology has led to numerous advances and sustainable socioeconomic development in many countries which include South Africa, China, India, Argentina, Brazil and the United States of America. Unfortunately, this has not been the case in Zimbabwe. Well-funded biotechnology research can immensely contribute to the fiscus. Though the country put in place manpower training programmes, legal and institutional frameworks for harnessing biotechnology by as early as 1992, the full exploitation of biotechnologies is still to be realised in Zimbabwe. This strategic plan document, created by the National Biotechnology Authority for the period 2019 to 2023, is designed to change the prevailing situation in Zimbabwe by implementing deliberate programmes that ensure biotechnology contributes tangible products and services that would enable Zimbabwe to attain the goal of being an industrialised upper middle-class economy by 2030. It recognises the important strides that were made in the previous strategic period to create a conducive environment for practicing biotechnology by laying a solid regulatory framework and infrastructure. The strategy emphasises that Zimbabwe should have a vibrant and strong biotechnology industry that solves national problems, adds value to our natural resources, exports finished products and services, creates employment and makes a significant contribution to the national gross domestic product (GDP).

## **2. VISION**

To be a hub for the development and safe application of biotechnology in all key socio-economic sectors by 2030.

## **3. MISSION:**

To position biotechnology as a key pillar for national development, industrialization and modernization in agriculture, health, energy and mining by managing, regulating and advancing biotechnology research, development and innovation/application for the delivery of socioeconomic and environmental benefits.

#### **4. VALUES:**

**Innovation** – We champion the creation of new and safe biotechnology applications and products.

**Responsiveness** – We continuously and timeously adopt new and emerging biotechnologies and enable their commercialization.

**Accountability**: - We will timeously justify our actions to our various stakeholders<sup>1</sup>.

**Excellence**: - We endeavour to attain and uphold the highest level of quality at all times.

**Integrity**: - We adhere to moral and ethical principles in all our endeavours.

**Fairness**: - We ensure fair treatment of ourstakeholders<sup>2</sup>.

#### **5. TERMS OF REFERENCE**

- i. Constitution of Zimbabwe, Amendment (No.20) Act 2013.
- ii. Transitional Stabilization Programme Reforms Agenda 2018-2020.
- iii. The 2<sup>nd</sup> Science and Technology Innovation Policy of 2012.
- iv. The National Biotechnology Policy of 2005.
- v. The National Biotechnology Authority Act [*Chap 14.31*] No. 3 of 2006.
- vi. The Cartagena Protocol on Biosafety to the Convention on Biological Diversity of 2003.
- vii. The Public Finance Management Act [*Chap. 22:19*] of 2009.
- viii. National Biotechnology Authority (Food, Feed, Food and Feed Additives and Seed) (Import, Export and Transit) Regulations, Statutory Instrument 157 of 2018.
- ix. National Biotechnology Authority (Genetically Modified Food and Feed) (Labelling) Regulations, Statutory Instrument 159 of 2018.
- x. National Biotechnology Authority (Agricultural Biotechnology Products) Regulations, Statutory Instrument 160 of 2018.
- xi. Any other relevant statutes.

<sup>1</sup>Stakeholders includesshareholders and other strategic partners.

<sup>2</sup>Stakeholders includesemployees, suppliers, and clients.

## **6. MANDATE OF THE NATIONAL BIOTECHNOLOGY AUTHORITY**

The general function of the Authority shall be to advise the Minister on all aspects concerning the development, production, use, application and release of products of biotechnology, and ensure that all activities with regard to such development, production, use, application and release are performed in accordance with the National Biotechnology Authority Act [*Chap. 14:31*].

## **7. KEY FUNCTIONS OF THE NBA**

The Authority shall have the following specific functions—

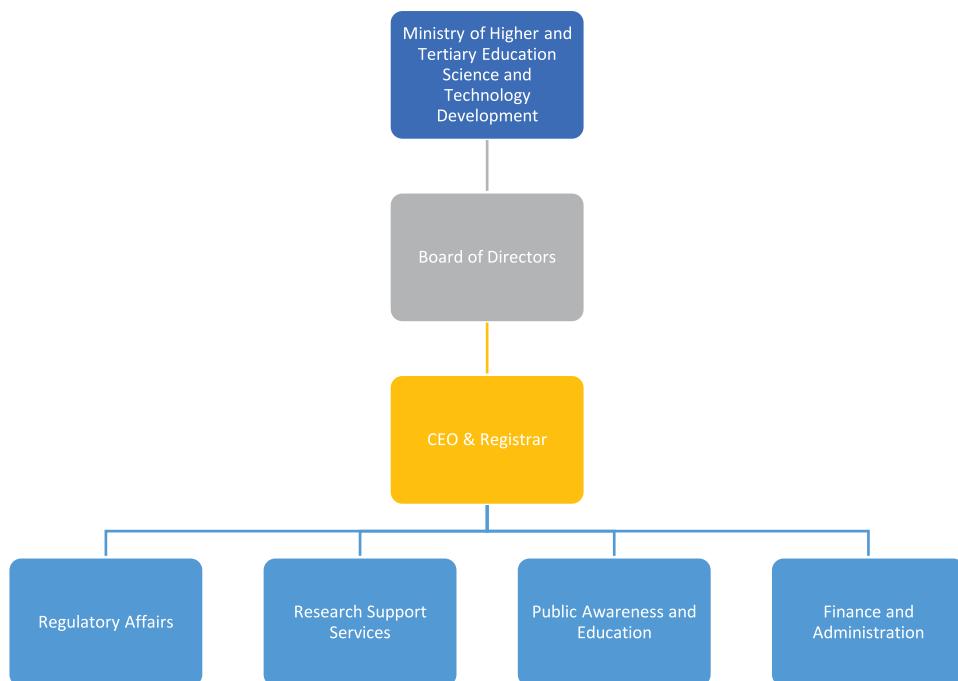
- (1)
  - a) to evolve a long-term policy for safety in biotechnology in Zimbabwe;
  - b) to actively promote and spearhead biotechnology research, development and commercialisation in Zimbabwe;
  - c) conduct targeted research in areas of national priority in the following fields: agriculture, health, environment, energy and mining
  - d) to spearhead genome analysis, research and development, and services to the applied life sciences community;
  - e) to review project proposals concerning high risk category organisms and controlled experimental trials involving them, and make decisions on whether to approve, prohibit or restrict such trials;
  - f) to review reports of all ongoing approved projects and controlled experimental trials involving high risk category organisms;
  - g) to approve deliberate releases of properly evaluated products of biotechnology;
  - h) to approve the large-scale use of products of biotechnology in industrial production and application;
  - i) to assist in the clearance of applications for setting up industries based on the use of products of biotechnology;
  - j) to monitor and recommend best practices for the discharge of biological waste from laboratories, hospitals, industry, into the environment;

- k) to ensure that biotechnology guidelines and standards are adhered to generally and in the execution of projects or controlled experimental trials involving high risk category organisms;
- l) to conduct training programmes for biosafety officers, biotechnology scientists and industrialists;
- m) to identify, prioritise and propose areas for standardisation of products of biotechnology to the Standards Association of Zimbabwe, the Medicines Control Authority of Zimbabwe, the Environmental Management Agency and other relevant bodies;
- n) to approve the safety aspects of the import, export, manufacture, processing and selling of any products of biotechnology, including substances, foodstuffs and additives containing products of biotechnology;
- o) to advise the customs authorities on the import and export of biologically active material and products of biotechnology;
- p) to collect and disseminate information pertaining to safety procedures associated with work on or research into modern biotechnology;
- q) to establish contact and maintain liaison with bodies in other countries and international organisations concerned with monitoring work on or research into biotechnology;
- r) to perform such other functions as provided for in this Act.

(2) For the better exercise of its functions, the Authority shall have the power, subject to this Act, to do or cause to be done, either by itself or through its agents, all or any of the things specified in the Schedule either absolutely or conditionally, and either solely or jointly with others.

## 8. DEPARTMENTS IN THE NBA AND THEIR ROLES

To effectively implement the 2019 to 2023 strategic plan the current NBA organisational structure will be changed by creating 3 additional departments and introducing a layer of directors in the organogram. Currently the NBA is organised into three departments as shown in Figure 1.

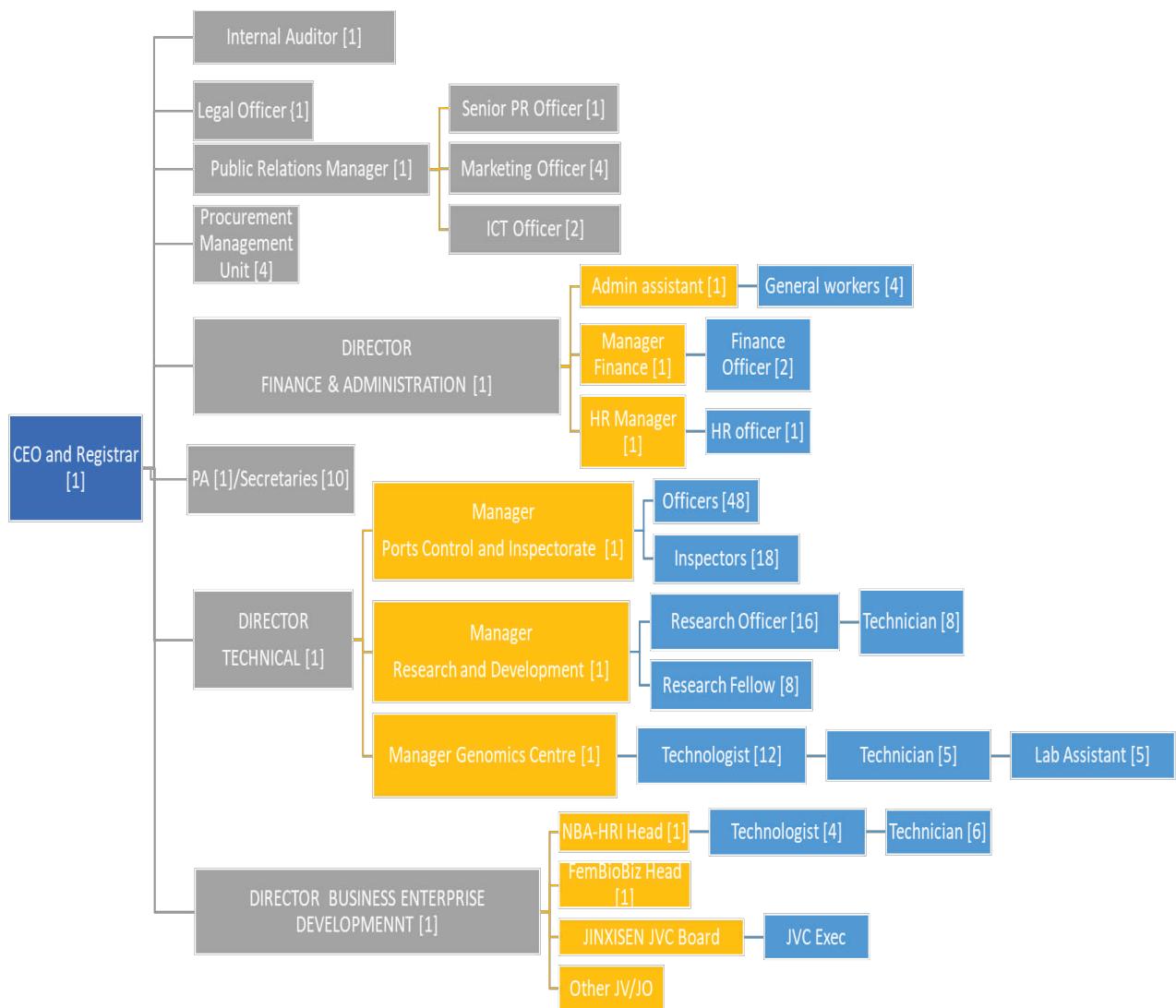


**Figure 1. The existing organisational structure of the NBA.**

The current structure is not suitable to deliver the objectives of the new strategic plan hence it will be realigned. The new strategic plan will therefore be supported by a new organisational structure shown in Figure 2. If implemented this structure will achieve the intended objective of having clear departments and also align the NBA with the strategic plan for 2019-2023.

There is however an integral relationship between the Research & Development and the Business Enterprise Development departments since research output should translate into commercialisation of products and services under the Business Development Department. The main focus of the Business Development Department is the Genomic Centre. It is acknowledged that the NBA Research & Development Department is not the only source of business since NBA can form partnerships with other organisation to commercialise products and services hence the NBA-HRI, NBA-JinXisen and NBA-AiBST joint venture proposals.

These use special purpose vehicles and Joint Venture companies in which NBA has shareholding. It is also noted that before a product or service is commercialised there might be need to conduct some proof of concept or verification research hence the need for a strong Research and Development Department. As such most activities will appear in both departments at various stages.



**Figure 2. The new organisational structure of NBA aligned with the new strategic plan.**

The organisational chart shows the new structure of NBA, which includes a total workforce of 175 employees across various departments and units. The structure is organized into three main directorates: Finance & Administration, Technical, and Business Enterprise Development. Each directorate oversees specific functional areas and units, such as ports control, research and development, and business enterprise development. The chart provides a clear visual representation of the hierarchy and the number of employees in each position.

years such that in 2023 all the positions are occupied. The total number of employees in each section is summarised below.

Department	Unit	Number of employees
CEO's Office		16
Directors		3
Managers		6
Finance & Administration		8
Secretaries		10
Regulatory Affairs	Ports Control	48
	Inspectorate	18
	Research	32
	Genomic Centre	22
Business Development	NBA/HRI	11
	FemBioBiz	1
<b>TOTAL</b>		<b>175</b>

The functions of each department are summarised below.

## **8.1 CHIEF EXECUTIVE OFFICER'S OFFICE HAS THE FOLLOWING UNITS:**

### **8.1.1 Corporate Affairs and Legal Services**

- Corporate governance.
- Policy/legislation review and development.
- Drafting, reviewing, recommending and processing collaborative agreements.
- Ensuring compliance to obligations under treaties and conventions.
- Developing and reviewing guidelines and Standard Operating Procedures.
- Handling and processing appeals including litigation issues.

### **8.1.2 Audit**

- Reporting directly to the Chairperson of the Audit Committee of the Board
- Reviewing of internal control systems.
- Conducting internal audits.
- Risk management.

### **8.1.3 Public Relations and Marketing**

- Formulation and execution of the communication strategy.
- Interfacing with stakeholders on behalf of the Authority.
- Generation of organisational progress and annual reports.
- Marketing the Authority's services and products.
- Conducting public awareness, training and education on biotechnology and biosafety.
- Developing promotional materials.

#### **8.1.3.1 Information, Communication and Technology (ICT)**

The Information, Communication and Communication department

- Develop ICT policies and strategies.
- Provide and support ICT infrastructure and information systems.
- Systems design and development.
- Design and production of promotional and other organizational materials.
- Design and maintenance of the website.
- Maintenance of ICT assets.

### **8.2 Procurement Management Unit**

- An independent procurement unit that conducts all the purchasing processes for the NBA.
- Disposal of assets.
- Adherence to the provisions of Procurement Regulatory Authority of Zimbabwe (PRAZ)

### **8.3 TECHNICAL DEPARTMENTS:**

#### **8.3.1 Research, Development and Innovation**

- Conducting research in crop improvement, medical, pharmaceutical, environmental and animal biotechnology.
- Conducting research including Biosafety research
- Setting up and running the National Biosafety Reference Laboratory.
- Registration of products with relevant authorities
- Administering the Biotechnology Fund.
- Responding to calls for grants and publications.

#### **8.3.2 Genomics Centre**

The initial focus of Genomic Centre shall be to:-

- Advance scientific and technological competencies in the design, development and application of genomics technologies including:
  - Genome and gene sequencing
  - Gene annotation, editing and expression
  - Forensics and diagnostics and
  - Bioinformatics
- Foster genomics research and service provision in life sciences including:
  - Genetic purity test for seeds, crops and animals
  - Developing digital Barcodes for regulatory purposes
  - Provision of services to third parties e.g. determining genetic status of foods, allergenicity tests, paternity tests, Marker assisted breeding to increase the quality of the national herd, developing rapid test kits
- Facilitate training, education and capacity building of:
  - Graduate students and technicians
  - Researchers
  - Extension personnel
  - Health practitioners
- Facilitate research and innovation
  - Tissue culture for root and tubers
  - Potentiation of yields of target crops with specific focus on food crops (maize, sweet/Irish potato) and cash crops (cotton, soya beans),
  - Bioremediation of contaminated sites
  - Development of human and animal drugs, medicines and vaccines
- Promote industrial and commercial application of genomic technologies.
  - Convert research results to goods and services on a commercial scale
  - New and improved products that can be patented
  - Adopting proven biotechnologies for commercial and industrial purposes

The success of the initial phase shall determine the pace at which the Centre will broaden the scope and extent of the developments in the biotechnology industry.

### **8.3.3 Inspectorate and Ports Control**

#### **8.3.3.1 Inspectorate**

- Conducting inspections of biotech facilities, processes and products.
- Reviewing of applications for trial and commercial release of biotechnology products.
- Monitoring and surveillance of biotechnology applications, processes and products.

### **8.3.3.2 Ports Control**

- Monitoring biotechnology imports and exports at ports.
- Pre- and post-shipment inspections of imports and exports of biotechnology products.
- Rapid response to possible cases of bioterrorism breaches.
- Issuance of permits and certificates.
- Establishment of sub-offices at all ports of entry

## **8.4 BUSINESS ENTERPRISE DEVELOPMENT DEPARTMENT**

The Business Enterprise Development will focus on formulating business strategies and projects out of biotechnology research outcomes including:

### **8.4.1 Biotechnology Enterprises**

- Collaborating with biotechnology entrepreneurs in translating research results into products and services. Commercialisation of internally developed or adopted biotechnologies
- Establish and run strategic business units for the purposes of fostering further research and generating revenue.

### **8.4.2 Farm unit**

The farm unit is not intended to be primarily a commercial farm. It is intended to achieve the following:

- Research Trials
  - On crops (e.g. on new seed varieties, cotton and soya bean)
  - On animals (e.g. Cattle breeds)
  - On new foods/feed formulations
  - On testing new drugs and vaccines

## **9. FINANCE AND ADMINISTRATION DEPARTMENT**

The Finance and Administration Department has the following units:

### **9.1.1 Finance**

- Resource mobilisation strategies:
  - Generate income from operations (levies, fees) and commercialisation of our research outputs (target \$1 million from regulation and \$50 000 from Commercialisation of research outputs)
  - Actively seek grants from relevant potential partners (annual target of \$500 000)

- Austerity measures to contain expenditures
- Budget management
- Prepare revised forecast with each quarterly financial reports
- Strategy and Budget to be ready by beginning of September
- Financial reporting
- monthly management accounts by 7<sup>th</sup>of the following month
- Quarterly accounts within 14 days after quarter end.
- Half yearly accounts by end of July.
- Audited annual financial statements, 3 months after year end
- Debtors and creditors management.
- Implementation of an effective working capital management

### **9.1.2 Human Resources**

- Development and implementation of Human Resources policies.
- Staff recruitment and retention
- Re-grading, promotion and transfers
- Staff training and development.
- Managing the staff appraisal system.
- Ensuring health and safety

## **10. ENVIRONMENTAL SCAN**

### **10.1 CURRENT SITUATION**

<b>Department</b>	<b>Achievements</b>	<b>Challenges</b>	<b>Recommendations</b>
Research, Development and Innovation	<p>1. Established a biosafety level one laboratory, operating at 20% capacity.</p> <p>2. Collaborative linkages for a tissue culture project with Horticulture Research Institute (HRI). Three orange fleshed sweet potato varieties, rich in Vitamin A were received from the</p>	<p>1. Inadequate laboratory equipment and chemicals.</p> <p>2. Absence of a laboratory with biosafety levels 2, 3 and 4.</p> <p>3. Limited financial resources to operationalize the Biotechnology Fund. An initial capital</p>	<p>1. Consideration of Public-Private Partnerships to establish the laboratory biosafety levels 2, 3 and 4</p> <p>2. Continue to seek research grants.</p>

	<p>International Potato Centre in Mozambique. To date, NBA has managed to clean 9 varieties; 5 of which are very popular on the market. The project generated \$18 000 in sales.</p> <p>3. Collaborative linkages with national, regional and international partners e.g. SANBio (ZAR300 000); COMESA; ISAAA; ICGEB; ABNE; BCH (US\$15 000); BBI (US\$25 000); European Union (US\$200 000). Collaborations focus on capacity building, technical and financial support.</p> <p>4. Trained stakeholders and staff on biosafety and biotechnology.</p> <p>5. Published research papers.</p>	<p>injection of \$500 000 is required.</p> <p>4. Limited resources for biotechnology and biosafety research.</p>	
Business Enterprise Development	<p>1. Joint Venture with JinXisen for production of virus free potato planting materials.</p>	<p>1. Unavailability of farm land for running business strategic business units.</p> <p>2. Inadequate infrastructure for tissue culture e.g. green and store houses, pack sheds.</p>	<p>1. Engage the Ministry of Agriculture to secure land.</p> <p>2. NBA has mobilized \$341 000 in 2018, but the resources are not enough for start-ups and commercialization efforts. Therefore, we</p>

			<p>urge the Ministry of Finance to approve the Biotech Fund.</p> <p>3. Set up strategic business units with technology developers in e.g. crop and animal production, biofertilizers, biofuels.</p>
Inspectorate	<ul style="list-style-type: none"> <li>1. Twenty-four agricultural biotech products registered.</li> <li>2. Seven clinical studies involving medical biotech products were registered.</li> <li>3. Thirteen biotech facilities registered.</li> </ul>	<ul style="list-style-type: none"> <li>1. Poor enforcement of regulatory provisions due to absence of some Statutory Instruments.</li> <li>2. Inadequate human resources and off-terrain vehicles for inspections.</li> </ul>	<ul style="list-style-type: none"> <li>1. Gazette Statutory Instruments for facility registration and medical biologics.</li> <li>2. Acquire two off-terrain vehicles for monitoring and surveillance.</li> </ul>
Ports Control	<ul style="list-style-type: none"> <li>1. Established 9 port offices out of 21 ports.</li> </ul>	<ul style="list-style-type: none"> <li>1. Sharing offices with other regulators at ports.</li> <li>2. Shortage of human resources to man all the shifts at all ports of entry.</li> <li>3. No rapid test kits for ascertaining GMO status at ports of entry.</li> </ul>	<ul style="list-style-type: none"> <li>1. Secure independent offices at Victoria Falls, Nyamapanda, Kariba, Kazungula and Plumtree.</li> <li>2. Improved efficiency at border posts through use of the ZIMRA single window.</li> <li>3. Establish equipped mini-labs at ports of entry.</li> <li>4. Establish an online permit issuance system which can accommodate NBA port offices.</li> <li>5. Join border surveillance</li> </ul>

			teams.
Corporate Affairs and Legal Services	<ul style="list-style-type: none"> <li>1. Gazetted 3 Statutory Instruments.</li> <li>2. Developed standards for GMO Labelling and Agricultural Biotechnology Products.</li> <li>3. Developed guidelines and procedure documents.</li> <li>4. Developed MOUs with: HRI; SAZ; EMA; ZEF; AiBST; ZOPPA Trust; ICGEB.</li> </ul>	<ul style="list-style-type: none"> <li>1. Outdated National Biotechnology Policy.</li> <li>2. Absence of the Corporate Affairs and Legal Services Officer.</li> </ul>	<ul style="list-style-type: none"> <li>1. Recruit the Corporate Affairs and Legal Services Officer.</li> </ul>
Audit	<ul style="list-style-type: none"> <li>1. Audited accounts up-to- date as of 2017.</li> </ul>	<ul style="list-style-type: none"> <li>1. Insecure systems as result of understaffing in the Finance Department.</li> </ul>	<ul style="list-style-type: none"> <li>1. Recruit the Internal Auditor.</li> </ul>
Finance and Administration	<ul style="list-style-type: none"> <li>1. Functional accounting systems in place and up-to -date.</li> <li>2. Well maintained head office premises.</li> </ul>	<ul style="list-style-type: none"> <li>1. Erratic inflow of funds from the fiscus.</li> <li>2. Only one old vehicle for operations.</li> </ul>	<ul style="list-style-type: none"> <li>1. Adoption of cost saving measures including realignment and staff adjustments.</li> <li>2. Resource mobilisation.</li> <li>3. Procure 5 vehicles for research, commercial, regulatory and general administration over 2 years.</li> </ul>
Human Resources	<ul style="list-style-type: none"> <li>1. Draft Human Resources manual developed.</li> <li>2. Human capital</li> </ul>	<ul style="list-style-type: none"> <li>1. Recruitment freeze by the Government as a result NBA has 48 out of the</li> </ul>	<ul style="list-style-type: none"> <li>1. Staff development for improvement of service delivery particularly in gene drives, synthetic</li> </ul>

	<p>development (biotechnology and biosafety courses and staff upgrading).</p> <p>3. Adoption of an effective performance appraisal system.</p>	<p>required 185 staff compliment.</p> <p>2. Inadequate resources for human capital development especially in key focus areas i.e. biotechnology research, development and innovation</p>	<p>biology, nanobiotechnology, drug discovery, animal breeding, science communication; and project management.</p> <p>2. Review of working conditions including salary and other employment benefits.</p> <p>3. Lobby Government to unfreeze critical posts to enhance service delivery.</p>
Information and Communication Technology	<p>1. Reliable computer systems and application software such as Belina, Paynet and Pastel.</p> <p>2. Availability of computer hardware and network infrastructure.</p> <p>3. In-house functional permit system i.e. Biomaster.</p>	<p>1. Limited ICT infrastructure at border posts including fibre internet connectivity and computers.</p>	<p>1. To have an ICT system that can link all borders to the head office.</p> <p>2. Mobilise resources to acquire more ICT equipment and infrastructure through collaborations with strategic partners e.g. European Union and ZARNet.</p>
Public Relations and Marketing	<p>1. Drafted a communication strategy.</p> <p>2. Publication of annual reports and monthly newsletter.</p> <p>3. Successfully conducted public awareness activities e.g. exhibitions, workshops, media programmes.</p> <p>4. Established 7 pilot biotech clubs in</p>	<p>1. Limited financial resources to conduct public awareness campaigns i.e. for promotional materials, travelling expenses and an off-terrain vehicle.</p> <p>2. Misconception on biotechnology, particularly GMOs.</p>	<p>1. Finalization of a communication and marketing strategy.</p> <p>2. Increase platforms for interface with the public e.g. through workshops, media, exhibitions, public debates on topical biotechnology issues and joining business networks.</p> <p>3. Review school and tertiary institutions'</p>

	<p>schools.</p>		<p>curricular to include biotechnology and biosafety.</p> <p>4. Expand the school and tertiary institutions biotech innovation clubs programme.</p>
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## 10.2 PESTLEG ANALYSIS

<b>Political</b>	<ul style="list-style-type: none"> <li>The country's internal political environment is stable and conducive for fulfilling the NBA mandate.</li> <li>Due to improved international relations the NBA through the parent ministry is now forging collaborations with international institutions/investors from countries like Brazil and China.</li> <li>The emergency response to chemical and biological threats is a collective responsibility of state institutions including universities and research institutions.</li> </ul>
<b>Economical</b>	<ul style="list-style-type: none"> <li>The Government has fiscal constraints and is facing challenges in meeting its commitment of allocating 1% of GDP towards research, and development. Part of this allocation is required to operationalize the Biotechnology Fund for funding biotechnology research, development and innovation.</li> <li>In, addition there is need for the Ministry of Finance to approve the Biotech Fund Levy i.e. 1% of annual revenue from biotechnology enterprises.</li> <li>NBA like many other parastatals has not been spared from economic challenges faced by Zimbabwe. As a result, the NBA has not been able to fully execute its mandate and currently needs significant capital injections for infrastructure and other capital requirements.</li> <li>However, it is also important to note that biotechnology has contributed significantly to the economies of countries like Brazil, China, Argentina and South Africa who are implementing bio-economy strategies.</li> </ul>
<b>Social</b>	<ul style="list-style-type: none"> <li>Public fears as a result of misconceptions on biotechnology and GMOs calls for intensive public awareness, training and education campaigns. There is need to engage science communicators, policy makers and community gate keepers to disseminate unbiased information on biotechnology and GMOs.</li> </ul>

<b>Technological</b>	<ul style="list-style-type: none"> <li>The National Skills Audit shows that Zimbabwe has essential skills gap. As a result, Zimbabwe is lagging behind on adoption of new and emerging technologies and advancements. This situation poses a challenge of being a net importer of new technologies and products.</li> <li>There is also need to strengthen the regulatory framework for adequate regulation of new and emerging technologies.</li> </ul>
<b>Legal</b>	<ul style="list-style-type: none"> <li>Biotechnology applications cut across all sectors of the economy hence there are overlapping roles with regards to biotechnology regulation. There is need for a harmonized approach by all Ministries and stakeholders affected by the technology for effective adoption.</li> <li>Zimbabwe put in place a biotechnology policy and law and is a signatory to several international agreements on biotechnology e.g. the Convention on Biological Diversity, Cartagena Protocol on Biosafety.</li> <li>There is, however, need to review the National Biotechnology Policy to ensure that it covers aspects of new and emerging technologies.</li> </ul>
<b>Ecological</b>	<ul style="list-style-type: none"> <li>Concerns on the potential effects of certain biotechnology products on the environment e.g. GMOs, calls for more research on the potential impact of this technology on biodiversity.</li> <li>There is also need to take advantage of biotechnologies with potentials in cleaning up the environment and preserving biodiversity e.g. bioremediation and biomining.</li> </ul>
<b>Governance</b>	<ul style="list-style-type: none"> <li>After several years the NBA, now has a legally constituted Board as well as requisite functional committees to oversee its operations.</li> <li>Lengthy procedures which have been set for acquiring certain approvals e.g. Joint Venture Agreements, general procurement, tend to delay operations.</li> </ul>

### 10.3 SWOT ANALYSIS

<b>Strengths</b>	<b>Weaknesses</b>
<ol style="list-style-type: none"> <li>NBA Act and statutory instruments currently in place.</li> <li>Permanent premises for the head office.</li> <li>Network of port offices.</li> <li>Legally constituted Board.</li> <li>Skilled manpower.</li> </ol>	<ol style="list-style-type: none"> <li>Some statutory instruments are yet to be enacted.</li> <li>Limited resources and infrastructure.</li> <li>No institutional farm.</li> <li>No laboratories with biosafety levels 2-4</li> <li>Low remuneration to attract seasoned researchers.</li> </ol>
<b>Opportunities</b>	<b>Threats</b>
<ol style="list-style-type: none"> <li>To grow through commercialization and</li> </ol>	<ol style="list-style-type: none"> <li>Interagency overlaps in roles.</li> </ol>

<p>industrialization of biotechnology.</p> <ol style="list-style-type: none"> <li>2. Growth through research and development.</li> <li>3. Increase sphere of influence as a regulatory body.</li> <li>4. Existence of collaboration opportunities.</li> <li>5. Harmonization of biotech research in Zimbabwe to reduce duplication of efforts.</li> <li>6. Promote synergies between NBA and other entities that carry out biotech research.</li> <li>7. Existence of biotechnology products for adoption and application.</li> <li>8. Biotech Fund to translate research results into products and services through supporting start-ups.</li> </ol>	<p>2.Inadequate and unpredictable fiscal support.</p> <p>3. Recruitment freeze by the Government.</p>
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## 11. KEY RESULT AREAS

No.	Key Result Area	Weight (%)	Responsible Department/s	Sector KRA Reference	National KRA Reference	SDG Reference
KRA 1	Research, Development and Innovation	30	Research Development and Innovation; Genomics Centre	1	TSPRA pages 117, 137, 144, 257 & 279	9
KRA 2	Business Enterprise Development	25	Business Development; Public Relations and Marketing	2	TSPRA pages 119, 154, 180, 182, 191 and 266	9
KRA 3	Governance and visibility of the National Biotechnology Authority	20	The Board CEO Directors/Managers Finance and Administration Audit/Legal Affairs Public Relations	3	TSPRA pages 38, 40, 87, 294	16
KRA 4	Regulation of Biotechnology	10	Inspectorate; Ports Control; Corporate Affairs and Legal Services	4	TSPRA pages 131, 194 and 288	3
KRA	Attraction and recruitment	10	HR, CEO, Directors	5	TSPRA	4,9

5	of highly skilled staff				Pages 270, 279.	
KRA 6	Sustainable use of available resources	5	All	1,2,3	TSPRA Pages 137,194, 197	11,12 ,13, 14,17

## 12. CLIENTS' NEEDS AND PROBLEM ANALYSIS

External		Needs/Problems	Characteristics	Extent	Priority
1	Consumers	<b>Needs:</b> <ul style="list-style-type: none"> <li>1. Food and nutrition security</li> <li>2. Environmentally friendly products.</li> <li>3. Safety assurance on biotechnology products</li> </ul> <b>Problems:</b> <ul style="list-style-type: none"> <li>1. The market is full of products with chemical residues.</li> <li>2. Limited availability of information on safety of biotechnology products.</li> </ul>	<ul style="list-style-type: none"> <li>1. Highly nutritious and affordable food.</li> <li>2. Products that do not contaminate the environment.</li> <li>3. Need for comprehensive risk benefit analysis.</li> </ul>	<ul style="list-style-type: none"> <li>1. 30%</li> <li>2. 50%</li> <li>3. 30%</li> </ul>	1
2	Researchers	<b>Needs:</b> <ul style="list-style-type: none"> <li>1. Infrastructure</li> <li>2. Capacity Building</li> <li>3. Funding</li> <li>4. Registration</li> <li>5. Networking</li> <li>6. Accreditation</li> <li>7. IPR Protection</li> </ul>	<ul style="list-style-type: none"> <li>1. Requisite infrastructure</li> <li>2. Regular training</li> <li>3. Adequate financial support and easy access to the Biotechnology Fund.</li> <li>4. Simple registration procedures</li> <li>5. Effective networking system</li> </ul>	<ul style="list-style-type: none"> <li>1.50%</li> <li>2. 50%</li> <li>3. 85%</li> <li>4. 50%</li> <li>5. 50%</li> <li>6. 90%</li> <li>7. 80%</li> </ul>	2

		<p><b>Problems</b></p> <ol style="list-style-type: none"> <li>1. High cost of registration</li> <li>2. Limited research funding</li> </ol>	<ol style="list-style-type: none"> <li>6. Registration which affords international accreditation</li> <li>7. Information on intellectual property rights.</li> </ol>		
3	Industrialists	<p><b>Needs:</b></p> <ol style="list-style-type: none"> <li>1. Review of the GM policies.</li> <li>2. Partnerships and Joint Ventures.</li> <li>3. Certification.</li> <li>4. Variety approval/release.</li> <li>5. Approvals for field trials and permits.</li> <li>6. Consultation</li> </ol> <p><b>Problems</b></p> <ol style="list-style-type: none"> <li>1. Few client consultative meetings.</li> <li>2. Inadequate information on biotechnology and biosafety</li> </ol>	<ol style="list-style-type: none"> <li>1. Approval of GMOs</li> <li>2. Favourable collaborations.</li> <li>3. Quality assurance.</li> <li>4. Timeous and easy issuance of permits.</li> <li>5. Frequent consultation</li> </ol>	<ol style="list-style-type: none"> <li>1. 80%</li> <li>2. 50%</li> <li>3. 50%</li> <li>4. 80%</li> <li>5. 50%</li> </ol>	3
4	Farmers	<p><b>Needs:</b></p> <ol style="list-style-type: none"> <li>1. Improved seeds and breeds.</li> <li>2. High quality inputs i.e. fertilizers and pesticides.</li> <li>3. Market.</li> <li>4. Capacity development</li> <li>5. Protection from uncertified biotechnology products</li> </ol>	<ol style="list-style-type: none"> <li>1. Climate resilient seeds and breeds.</li> <li>2. Effective inputs.</li> <li>3. Market acceptance.</li> <li>4. Awareness workshops and educational tours</li> <li>5. Ensure that only certified products are marketed.</li> </ol>	<ol style="list-style-type: none"> <li>1. 50%</li> <li>2. 50%</li> <li>3. 80%</li> <li>4. 50%</li> <li>5. 50%</li> </ol>	4

		<b>Problems</b> 1. Few communication platforms for biotechnology and biosafety issues			
5	Institutions of higher learning	<b>Needs:</b> 1. Infrastructure 2. Curriculum review 3. Laboratory Certification 4. Internships and job opportunities 5. Human capital development  <b>Problems:</b> 1. Limited resources for research 2. Few organisations offering biotechnology internship places	1. Advanced equipment. 2. Curriculum which is in tandem with technological advancements. 3. Accreditation which is internationally recognised. 4. Internship opportunities to students and employment to graduates. 5. Biosafety training	1. 70% 2. 50% 3. 80% 4. 50% 5. 50%	5
6	Importers	<b>Needs:</b> 1. Permits 2. Registration 3. Decentralisation of the permit office.  <b>Problems:</b> 1. Lengthy turnaround time. 2. Manual permit application process is cumbersome.	1. Timeous permit issuance. 2. Easy registration 3. Affordable services. 4. Decentralised operations.	1. 20% 2. 20% 3. 50%	6

7	Exporters	<b>Needs:</b> 1. Permits 2. Registration 3. GMO testing 4. GMO declarations  <b>Problems:</b> 1. Sometimes permits are not issued within the stipulated time of 24hrs. 2. Manual permit application process is cumbersome.	1. Timeous permit issuance 2. Easy registration 3. Affordable services 4. Timeous issuance of GMO declarations.	1. 20% 2. 20% 3. 50% 4. 20%	7
8	Suppliers	<b>Needs:</b> 1. Offering services to NBA 2. Payment of services 3. Registration  <b>Problems:</b> 1. High competition in securing tenders. 2. Late payments.	1. A reasonable return on services/goods offered and fairness on awarding tenders 2. Timeous payments 3. Easy registration	1. 40% 2. 30% 3. 20%	8
Internal		Needs/Problems	Characteristics	Extent	Priority
1	Employees	<b>Needs:</b> 1. Remuneration 2. Human capital development 3. Job security 4. Conducive working environment  <b>Problems:</b> 1. Low remuneration 2. Limited internal capacity building 3. Limited staff accommodation	1. Market competitive rates of remuneration 2. Continual training 3. Long term contracts 4. Favourable working conditions	1. 40% 2. 50% 3. 80% 4. 40%	1

### 13. STAKEHOLDERS ANALYSIS

EXTERNAL	Demands/expectations	Characteristics	Extent	Priority
1. Ministry of Higher and Tertiary Education, Science and Technology Development	1. Accountability of functions and services offered to fulfil mandate 2. Accountability of allocated resources (Public funds hence need for Audit Reports) 3. Advice on biotechnology and biosafety matters	1. Accountability 2. Audited financial statements which are up to date. 3. Unbiased advisory services	1. 5% 2. 0% 3. 0%	1
2. Other Government (Ministries e.g. Ministry of Health and Child Care; Ministry of Lands, Agriculture and Rural Resettlement; Ministry of Environment, Tourism and Hospitality Industry; Ministry of Finance and Economic Planning	1. Complementarity of functions to other Ministries and Parastatals 2. Accountability of allocated resources 3. Advice on biotechnology and biosafety matters e.g. adoption of biotech in industry; technical information on risks and benefits to agriculture production and animal health, biodiversity conservation, risks and benefits to food safety and public health	1. Efficient regulatory service 2. Audited financial statements which are up to date. 3. Unbiased advice	1. 10% 2. 0% 3. 3%	2

3. Legislators	1. Information on biotechnology and biosafety 2. Advice on biotechnology and biosafety matters	1. Readily available information. 2. Objective scientific facts.	1. 40% 2. 40%	3
4. Partners	1. Transparency 2. Accountability 3. NBA expertise	1. Detailed and justified reports which are up to date. 2. Adherence to laid procedures and standards. 3. Biosafety and biotechnology advice and training	1. 0% 2. 0% 3. 25%	4

## 14. POLICIES

External		KRA Ref	Internal		KRA Ref
	<b>Local Policies</b>				
1	Labour Act [ <i>Chap 28.01</i> ] (as amended 01-02-2006)	1,2,3 4,5	1	National Biotechnology Policy of 2005	1,2,3 ,4
2	Second Science, Technology and Innovation Policy of 2012	1,2,3 ,5,4	2	Guidelines and Procedure Documents	1,3,4
3	National Environment Policy of 2003	1,2,6	3	Human Resources Policies	1,2,3 ,5
4	The Environmental Management Act [ <i>Chap. 20:27</i> ] of 2002.	1,2,6	4	ICT Policy	1,2,3 ,5
5	The Public Health Act [ <i>Chap. 19</i> ] of 1924.	3,6	5	Finance and Admin Policies	1,2,3 ,6
6	Animal Health Act [ <i>Chap. 19:01</i> ] of 1960.	1,2,3	6	National Biotechnology Authority (Food, Feed, Food and Feed Additives and Seed) (Import, Export and Transit) Regulations, Statutory Instrument 157 of 2018.	1,2,4
7	The Prevention of Cruelty to Animals Act [ <i>Chap. 19:09</i> ] of 1960	1,2,3	7	National Biotechnology Authority (Genetically Modified Food and Feed) (Labelling) Regulations, Statutory Instrument 159 of 2018.	1,2,4
8	The Food and Nutrition Security Policy of 2013.	1,2,3 ,4	8	National Biotechnology Authority (Agricultural Biotechnology Products) Regulations, 2018, Statutory Instrument 160 of 2018.	1,2,4
9	The Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZimAsset) of 2013 to 2018	1,2,3 ,4,5, 6			
10.	Transitional Stabilisation	1,2,3			

	Programme, reforms agenda 2018 –2020	,4,5, 6			
11	The Public Finance Management Act [ <i>Chap. 22:19</i> ] of 2009.	4			
12	Health Professions Act [ <i>Chap. 27:19</i> ] of 2000.	1,2,6			
13	Medicine and Allied Substances Control Act [ <i>Chap. 15:03</i> ]	1,2, 3,6			
14	Food and Food Standards Act [ <i>Chap 15:04</i> ] of 1995	1,2,3			
15	State Enterprises Restructuring Agency	1,2,3 ,4,5			
16	Public Procurement and Disposal of Public Assets Act [ <i>Chap. 22:23</i> ]	1,2,3 ,6			
17	Joint Venture Act [ <i>Chap. 22:22</i> ]	1,2			
18	Zimbabwe National Industrialization Policy -2018 - 2020	1,2,5			
	<b>International Policies</b>				
19	Cartagena Protocol on Biosafety to the Convention on Biological Diversity of 2003	1,2,3			
20	World Trade Organisation – Sanitary and Phytosanitary Agreement of 1995	1,2,3			
21	Sustainable Development Goals of 2015	1,2,3 ,6			
22	African Union, Agenda 2063	1,2,3 5,6			

## 15. GOALS

Ref.	Goals	Weight	Target					Responsible Department/s	KRA Ref.
			Base year 2018	2019	2020	2021	2022		
G1	To increase Research, Development and Innovation from 15% to 55% by 2023	0.3	15%	20%	25%	35%	45%	55%	Research, Development and Innovation, Genomics Centre Partners
G2	To establish 5 Biotechnology Enterprises by 2023	0.25	0	1	1	1	1	1	Business and Enterprise Development Partners
G3	To improve the corporate governance and visibility of the National Biotechnology Authority 95% by 2023	0.2	40%	50%	60%	70%	80%	95%	CEO Directors/Managers Audit/Legal Affairs Public Relations
G4	To improve the regulation of biotechnology research, development, applications and products thereof from 56% to 95% by 2023	0.1	56%	66%	76%	86%	90%	95%	Corporate Affairs and Legal Inspectorate, Control
G5	To attract and recruit highly skilled staff 175 in all departments by 2023	0.1	20%	40%	60%	80%	90%	100 %	Board, HR, Directors
G6	Sustainable use of available resources	0.05	10%	15%	25%	45%	65%	85%	All

Given the new structure of NBA is requisite to evaluate before 2023 fit for purpose and function of the new departments

## **16. STRATEGIES, ASSUMPTIONS AND RISKS**

Period	Strategies	Assumptions	Risks
<b>Key Result Area: 1 RESEARCH, DEVELOPMENT AND INNOVATION</b>			
<b>Goal 1:</b> To improve Research, Development and Innovation from 10% to 55% by 2023			
Budget Year 2019	<ol style="list-style-type: none"> <li>1. Additional Equipment for the research Lab.</li> <li>2. Improve skills level</li> <li>3. GM crop trials (Cotton, Soybeans, Maize, Sweet potato)</li> </ol>	Laboratory infrastructure and equipment Human expertise Strong local and external linkages and synergies	Unpredictable treasury disbursements Limited additional advanced equipment
2-4years	<ol style="list-style-type: none"> <li>1. Undertake research on new products and services</li> <li>2. Insulin production</li> <li>3. Biofertilizer production</li> <li>4. Traditional medicines production and packaging</li> <li>5. Bio-economy</li> <li>6. Increase collaborations with national industries, regional and international stakeholders with interest in biosciences</li> </ol>	Favourable relations with national industries and international community.	Lack of keenness of industries to support local research
Period	Strategies	Assumptions	Risks
<b>Key Result Area: 2 BUSINESS ENTERPRISE DEVELOPMENT</b>			
<b>Goal 3:</b> To establish five biotech-led strategic business units through commercializing research results by 2023.			
Budget year 2019	To establish five biotech-led strategic business units through commercializing research results.	-Acquisition of farmland with adequate water resources  -Existing for biotech	-Change of land tenure policies -Poor investor confidence. -Poor performance
2-4 years			

	<ol style="list-style-type: none"> <li>1. NBA-HRI-renewal</li> <li>2. Establishment of JV Companies</li> <li>3. Establishment of Genomics centre</li> <li>4. Operationalise new MOUs/JVAs</li> </ol>	<p>products and services.</p> <p>-Availability of potential investors.</p>	by biotech start-ups
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Period	Strategies	Assumptions	Risks
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#### **Key Result Area: 3 GOOD CORPORATE GOVERNANCE**

**Goal 3:** To improve the corporate governance and visibility of the National Biotechnology Authority 95% by 2023

2019 Budget	<p>-Restructure the NBA by adding new departments to increase separation of powers and introduce improved control systems.</p> <ol style="list-style-type: none"> <li>1. Corporate Affairs and Legal Services</li> <li>2. 3 Directors (Technical, Business, F&amp;A)</li> <li>3. Audit</li> <li>4. Procurement Management Unit</li> <li>5. Public Relations and Marketing</li> </ol>	<p>The new organisational structure functions more effectively than the previous structure</p> <p>Resources to implement the new organisational structure are available</p>	<p>Poor compliance by institutions</p> <p>Failure to attract competent qualified staff</p>
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2-4 years	<p>Increase the functionality of the NBA Board by increased communication between management and the Board.</p> <p>Regular Board meetings</p>	<p>There is common vision and openness of the Board and management.</p> <p>High integrity of the staff.</p>	If there is lack of cooperation of the management
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Period	Strategies	Assumptions	Risks
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#### **Key Result Area: 4 REGULATION**

**Goal 4:** To improve the regulation of biotechnology research, development, applications and products thereof from 56% to 100% by 2023

Budget year 2019	To increase registration of facilities.	The statutory instrument on facility registration will be gazetted.	Poor compliance by institutions
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	To strengthen the regulatory framework through on farm risk assessments.	NBA secures a farm	Target species for some products may not be available on the farm.
	To take onboard new and emerging technologies through continual review of the NBA Act and Policy.	Support from the parent Ministry	Rapid advancements in new and emerging technologies
	To expedite permit issuance through an online application system.	Availability of hardware and software	Cyber attack
	To improve GMO surveillance programmes by using GIS and remote sensing	High Performance Computer connectivity	High connectivity fees
Period	Strategies	Assumptions	Risks
<b>Key Result Area: 5 QUALIFIED AND SKILLED STAFF</b>			
<b>Goal 5:</b> To attract and recruit highly qualified and skilled staff in all departments by 2023			
Budget Year 2019	Advertise and recruit 12 (PhD) qualified and skilled staff for all the positions indicated in the organogram. This is especially important for research staff and technologists in the Genomics Centre.	Government allows for the recruitment of new staff and funds their salaries. The experienced staff are available to fill in the vacancies.	Treasury may not fund the new staff recruited.  Experienced staff may not be available
2-4 years	Engage strategic local and international partners for staff training and development	Existence of partners interested training biotechnology research, development and innovation.	Unfavourable conditions linked to funding
Period	Strategies	Assumptions	Risks
<b>Key Result Area: 6 SUSTAINABLE USE OF AVAILABLE RESOURCES</b>			
<b>Goal 6:</b> To use the available resources sustainably			
Budget Year 2019	1. Reduce the use of paper by implementing paperless communication by e-mail and phone  2. Reduce the amount of waste generated at the NBA	A functional internet system available all the time  All the employees cooperate and	Unreliable internet services. Poor security of e-mails  Lack of cooperation by staff

	and recycling waste 3. Water Usage efficiency by recycling water	understand the need to conserve resources	
2-4 years	4. Reduce the use of electricity from the grid by installing a solar system to provide 50% of the power requirements of NBA	Funds are available and the cost of installation is affordable	Unfavourable conditions linked to funding

## 17. STRATEGIC RESULTS CHAIN, MONITORING AND EVALUATION

### 17.1 FRAMEWORK

#### 17.1.1 IMPACT PLAN

Impact Description	Impact Indicator	Measurement Unit/ Criterion(% , no. rate, etc.)	Target					Cross Limkaages	Goal Reference	KRA Reference
			Base year (2018 )	201 9	2020	2021 2	2022 2023			
1 Increased contribution of Biotech to the Fiscus	Increased adoption of biotechnology	Number of patients -prototypes -Publications - GM crops trials -Tested local drugs	- 0	1	2	2	3	+/-1	NGOs, CCZ, SAZ, Min of Health	G1, G2
2 Vibrant Bio-economy driven by	Increased number of biotechnology products and services available for commercialisation	Crop varieties/breeds produced using biotechnology techniques	0	1	1	1	2	+/-1	Seed companies, Researchers, SIRDC, DR&SS	G1, G2, 1, 2,
	Commercialisation of biotechnology products and	Number of biotech Enterprises Established	0	1	1	1	1	-/+ 1	Relevant government departments, Local research institutes, Industry, partners	G1, G2, G4

<b>3</b>	Increased Efficiency, effectiveness of NBA	Increased number of highly productive qualified and skilled staff	Number of PhD holder scientists	0	3	3	3	Universities, training colleges, partners, EMA, City of Harare, Board,
<b>4</b>	Increased resource use efficiency and productivity	Reduction of grid electricity usage by 5% Reduction of waste by 50%	Number of qualified Directors and managers	0	2	2	0	Universities, training colleges, partners, Board
		Amount of money spent on electricity Amount of waste and purchase of resources (e.g. Paper, water)	Amount of money	0	10 %	10 %	10 %	EMA, City of Harare, ZESA, Staff

18 OUTCOMES PLAN

Impact Reference	Outcome Description	Outcome Indicator	Measurement Unit/Criterion (% , no. rate, etc.)	Target	Cross Linkages						Allocatable Reference	Goal Reference	KRA Reference
					Base year (2018 )	2019	2020	2021	2022	2023			
IMP1	1 Increased biotech	New products /services	Number	5	3	3	4	5	6	+/-1	Researchers, industry, Partners	1	1

	research, development and innovation in the country	generated									
<b>2</b>	Improved policies on biotechnology and biosafety	Policies and programmes promoting biotechnology and biosafety	Number	6	3	4	5	6	+/-1	Government ministries and departments, relevant stakeholders	1, 4
<b>3</b>	Increased revenue generation from strategic business units	Revenue collected	Amount	\$110 00	\$25 000	\$75 000	\$150 000	\$200 000	+/-20 %	Zim Earthworm Farms (ZEF), Horticulture Research Institute, Genomics CentreJinXisen	2
<b>4</b>	Increased public understanding of biotechnology and biosafety	Positive polls	Percentage	43	46	50	54	58	+/-1	Media houses, schools	2,3
<b>IMP2</b>	<b>5</b> Increased uptake of clean technology products.	Eco-friendly products and services	Number	24	5	5	5	5	+/-1	Relevant government departments, Local research institutes, Industry	1,2,6
<b>6</b>	Increased compliance to regulations	Incidents of unapproved environmental releases of biotechnology products	Number	0	0	0	0	0	0	Relevant government departments, Industry	4

## 19. OUTPUTS PLAN

Goal Ref	Out com e Ref	Programme/Proj ect/Outputs(s)	Quantity	Budget/Cost US\$								Responsible Departments		
				Base year (2018)	2019	2020	2022	2023	Base year (2018)	2019	2020	2021		
1	1,6	Establishment of Genomics Centre	1	25%	34%	60%	70%	85%	10%	\$15000	\$500000	\$1000000	\$1000000	Research Development and Innovation; Business Enterprise Development
2	1,5	Number of projects funded by the Biotech Fund	5	0	1	1	1	1	2	\$0	\$500000	\$1000000	\$200 0000	Research Development and Innovation; Business Enterprise Development
1	1,5	Number of patents/ trade marks registered	5	0	1	1	1	1	1	\$0	\$100000	\$100000	\$100000	Research Development and Innovation; Business Enterprise Development
1	1	Number of research papers produced	10	1	2	2	2	2	\$1000	\$1 500	\$2000	\$2000	\$2000	Research Development and Innovation
1,3	3	Number of strategic business units established and maintained	5	1	2	2	2	3	\$10 000	\$2000000	\$10 000	\$10 000	\$10 000	Business Enterprise Development; Finance and Administration
1,2,3,4	1,3,5	Number of partnerships established	6	8	1	1	1	1	2	\$1000	\$1000	\$1000	\$2000	Corporate Affairs and Legal Services; Research Development and Innovation;&Business Enterprise Development
1,2,3	1,3	Number of tissue cultured plantlets produced	9200000	800000	1200	20	20	20	\$15000	\$15000	\$15000	\$15000	\$15000	Business Enterprise Development; Finance and Administration

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<b>1</b>	<b>1</b>	Number of equipment and expert database entries	140	0	75	30	15	10	10	0	\$20000	\$2000	\$2000	\$2000	\$2000	Research Development and Innovation,& ICT
<b>3</b>	<b>4</b>	Number of exhibitions and public awareness workshops	67	7	10	12	15	15	15	\$40000	\$50 000	\$70 000	\$90 000	\$90 000	Public Relations and Marketing	
<b>3</b>	<b>4</b>	Number of media appearances	145	20	25	30	30	30	\$5000	\$10000	\$20000	\$20000	\$20000	\$20000	Public Relations and Marketing	
<b>2,3,4</b>	<b>3</b>	Revenue mobilised							\$800 000	\$1 000000	\$1 200000	\$1 800 000	\$1 800 000	\$2 000 000	Finance and Administration	
<b>4</b>	<b>6</b>	Dossiers reviewed	100	20	20	20	20	20	\$10000	\$10000	\$10000	\$10000	\$10000	\$10000	Inspectorate	
<b>4</b>	<b>6</b>	Permits issued	12500	2500	2500	25	2500	25	\$25 000	\$25 000	\$25 000	\$25 000	\$25 000	\$25 000	Port Control	
<b>4</b>	<b>6</b>	Samples tested	250	50	50	50	50	50	\$6000	\$6000	\$6000	\$6000	\$6000	\$6000	Port Control	
<b>4</b>	<b>6</b>	Number of consultative (liaisons) workshops held	5	1	1	1	1	1	\$10 000	\$10 000	\$10 000	\$10 000	\$10 000	\$10 000	Corporate Affairs and Legal Services, Public Relations and Marketing	
<b>1</b>	<b>1,2, 4, 5,6</b>	Number of people trained	610	60	10	15	150	15	0	\$20 000	\$20 000	\$25 000	\$25 000	\$25 000	\$25 000	Research and Innovation and Human Resources
<b>4</b>	<b>6</b>	Number of biotechnology facilities audited and registered	75	15	15	15	15	15	\$6000	\$6000	\$6000	\$6000	\$6000	\$6000	Inspectorate	
<b>4</b>	<b>6</b>	Statutory Instruments, SOPs and standards developed	10	5	2	2	2	2	\$10000	\$30000	\$30000	\$30000	\$3000	\$3000	Corporate Affairs and Legal Services	
<b>4</b>	<b>6</b>	Number of sub-offices opened	2	1	2	0	0	0	\$15000	\$30000	0	0	0	0	Port Control	
		<b>TOTAL BUDGETARY REQUIREMENT IN ZW \$(1US\$=ZW\$6)</b>		<b>945,00</b>	<b>17,745,000</b>	<b>17,550,000</b>	<b>7,878,000</b>	<b>6,984,000</b>	<b>2,916,000</b>	<b>53,073,000</b>						

## 20. RESOURCES

a.	Output Cost	\$53 073 000
b.	Operational Cost	\$6 800 000
c.	Human Resources	\$5 162 000
d.	Materials and equipment (This include office consumables and equipment, vehicles, and laboratory equipment to be used by NBA personnel)	\$7 500 000
e.	Space requirements Office space at the Head Office, Beitbridge, Forbes, Chirundu, Plumtree, Victoria Falls, Nyamapanda, Kazungula, Harare International Airport, Joshua Mqabuko Nkomo International Airport. Cost of mobile offices provisions, rentals and rates for 2019 to 2023.	\$6 000 000
f.	I.C.T requirements Desktop computers, laptops, palmtops (Ipads, tablets), smartphones, server, software (including anti-viruses), SAP system, bioinformatics system linked to the High-Performance Computer (HPC), faster and reliable internet and system that links head office with sub-offices	\$3 030 000

## **21. LIST OF PARTICIPANTS**

- Prof. F. Mtambanengwe (NBA Board Chair).
- Mr. E. Moyo (Vice NBA Board Chair).
- Dr. D.T. Savadye (Acting CEO and Registrar)
- Prof. M. Masocha (NBA Board Member).
- Ms R. P. Karimanzira (NBA Board Member).
- Ms G. N. Mhlangu (NBA Board Member).
- Dr. F. Chatiza (NBA Board Member).
- Mr. Z. Dhlamini (NBA Board Member).
- Michael Mangami (Finance and Administration Manager).
- Annah R. Takombwa (Acting Technical Affairs Manager).
- Mary Maume (Acting Public Awareness and ICT Manager).
- Edwin Mupanehari (Acting Regulatory Affairs Manager).
- Graciana. C. Gandawa (Senior Biosafety Officer).
- Definate Garise-Nheta (Senior Human Resource Officer).
- Faith Muvhunzi (Senior Biosafety Officer).
- Nontando Mnkandla (PA to the CEO and Registrar).

**“Without strategy,  
execution is aimless.  
Without execution,  
strategy is useless.”**

**Morris Chang**



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