

الاستراتيجية الوطنية للتقنية الحيوية
THE NATIONAL BIOTECHNOLOGY STRATEGY

The National Biotechnology Strategy

JANUARY 2024

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Foreword



The National Biotechnology Strategy will have a transformative impact on our efforts to enhance sustainability, safeguard natural resources, and secure food production for present and future generations. This comprehensive strategy will drive groundbreaking innovations in water conservation, environmental preservation, and agricultural productivity. By harnessing the power of biotechnology, we are extending our reach across the globe, to realize shared environmental and agricultural opportunities. Our efforts are aimed at addressing pressing global challenges and shaping a sustainable world.

H.E. Eng. Abdulrahman Abdulmohsen AlFadley
Minister of Environment, Water and Agriculture



Biotechnology stands at the forefront of targeted sectors for development, given its profound scientific and health value. Investing in this vital sector will not only drive economic growth for the Kingdom but also foster innovation, leading to groundbreaking discoveries and offering a wide array of new employment opportunities for our citizens.

H.E. Eng. Khalid Abdulaziz AlFalih
Minister of Investment



Saudi Arabia is moving forward towards achieving the goals of Saudi Vision 2030 to build a sustainable and diversified economy. Biotechnology is considered one of the most important industries that are targeted for localization through biomanufacturing of vaccines and biosimilars, due to the importance it represents in achieving drug security. The National Strategy for Biotechnology aims to position the Kingdom as a leading player in this industry leveraging its existing capabilities.

H.E. Mr. Bandar Ibrahim AlKhorayef
Minister of Industry and Mineral Resources



The National Biotechnology Strategy represents a crucial step forward in our mission to improve the health and well-being of our citizens, while positioning our nation as the global leader in the biotechnology industry. The National Biotechnology Strategy outlines a comprehensive roadmap to address critical health challenges, accelerate medical advancements, and enhance patient care. With this strategy, we will leverage the power of genomics, precision medicine and advanced therapeutics to transform healthcare and improve the lives of people across the nation.

H.E. Eng. Fahad Abdulrahman AlJaljel

Minister of Health



The National Biotechnology Strategy is a catalyst for unlocking the full potential of the biotechnology industry. The strategy represents a key enabler for the priorities of research, development, and innovation. This strategy sets the stage for dynamic prospects to develop and empower our talented researchers, entrepreneurs, and innovators while driving groundbreaking discoveries and propelling our nation towards a prosperous future.

H.E. Eng. Abdullah Amer AlSwaha

Chairman of the Board of Directors of the Research, Development and Innovation Authority

Saudi Arabia's Journey in Biotechnology

Biotechnology is a field of science that combines biology with technology to develop innovative solutions and products that benefit society. It encompasses a wide range of applications, including healthcare, agriculture, environmental sustainability, and industrial manufacturing. For instance, biotechnology plays a vital role in tackling global health challenges, with the potential to combat many diseases worldwide. Leading think tanks emphasize the substantial role of biology-driven technologies on research and development (R&D) efforts and innovation in healthcare and sustainability.

Moreover, the use of biological methods can change the way materials and resources are produced across different industries—leveraging

the power and accuracy of living organisms and biological systems. Economically, biotechnology creates high quality job opportunities, boosts financial revenues, and cultivates a knowledge economy.

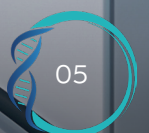
For Saudi Arabia, the adoption of biotechnology represents an immense opportunity to address global challenges, improve human health, enhance food production, protect the environment, transform industries, and drive diversified economic growth. Building upon the foundations of existing success stories and new initiatives, the Kingdom has already made notable strides in the biotechnology sector and is now setting the stage for further growth and impact.

The Kingdom recognizes the immense potential of the biotechnology sector and now focuses on developing it further to unlock its full benefits. With unified and coordinated efforts between the public and private sectors, Saudi Arabia is committed to supporting sustainable growth aligned with the objectives of Vision 2030. This includes enhancing quality of life, promoting localization, and fostering economic diversification.

Through the National Biotechnology Strategy, Saudi Arabia is addressing challenges and seizing opportunities in this vital sector. The strategy focuses on supporting research

and development, fostering local biomanufacturing capabilities, and forging strategic partnerships with global leaders in the biotechnology field, to propel Saudi Arabia to the forefront of the global biotechnology landscape. By leveraging these efforts, the Kingdom is determined to establish itself as a global leader and innovator in biotechnology.

This strategy is poised to position Saudi Arabia as a regional hub with far-reaching impact, marking the beginning of a transformative journey, not only for the Kingdom but also for the global biotechnology landscape.



A Snapshot of the Strategy and its Aspirations

Aspirations:

Establish Saudi Arabia as the
**leading biotech
hub in MENA**

by 2030 and globally by 2040.

.....

Contribute over **\$34.6 billion**
to the **non-oil GDP** by 2040,
representing **3% of the total.**

.....

Create **11,000** high quality,
**innovative job
opportunities** by 2030,
and **55,000** by 2040.

Highlights:

Through the following strategic plays, the National Biotechnology Strategy aims to position Saudi Arabia as a biotech leader, driving economic growth, fostering innovation, and improving the wellbeing of its citizens.



1. Vaccines:

- Develop end-to-end vaccine manufacturing capabilities for self sufficiency and MENA exports.
- Drive R&D in innovative vaccine technologies and become a regional hub for late-stage development.



2. Biomanufacturing and Localization:

- Build state-of-the-art local end-to-end bio-manufacturing platform to increase self-sufficiency, allow for the opportunity to export biologics/biosimilars globally, and enable the broader Biotech sector.
- Foster biosimilars penetration to reduce healthcare spend.



3. Genomics:

- Expand the national genomic database and analytics platform with the goal to foster research and drive prevention.
- Foster innovation through supportive policies and improved access to genomics data.
- Integrate genomic analysis and therapies into healthcare for more accurate prevention, diagnoses, and effective interventions.



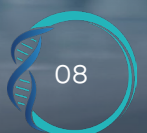
4. Plant Optimization:

- Enhance food self-sufficiency and agricultural productivity in the Kingdom.
- Promote climate sustainability and green practices.

The National Biotechnology Strategy Explained

The National Biotech Strategy is dedicated to driving the growth of Saudi Arabia's biotechnology sector and fostering a unified ecosystem. It aims to seize robust economic opportunities, create high quality jobs, elevate the health and wellbeing of citizens, and secure long-term prosperity and self-sufficiency for the country.

To prioritize the Kingdom's requirements and capitalize on significant opportunities, four strategic plays have been chosen to ensure focused attention on localization and acceleration of progress.



01



Vaccines:

The COVID-19 pandemic has highlighted the importance of the biotech industry, prompting the Kingdom to prioritize its preparedness and active involvement in vaccine development and distribution. This global health crisis has emphasized the necessity for effective vaccines and rapid response to combat infectious diseases. As a result, Saudi Arabia aspires to play a proactive role in the research and development of vaccines as well as their production and widespread distribution. The Kingdom is strategically positioned to play a vital role in the field of vaccines through a dual approach:

- **Research and Development (R&D):** Fostering innovation by investing in cutting-edge technologies and becoming a regional hub for late-stage vaccine development.
- **End-to-End Vaccine Manufacturing:** Establishing comprehensive vaccine manufacturing capabilities to achieve self-sufficiency and become a prominent exporter to the MENA region.

The Kingdom will pursue these initiatives to enhance its vaccine production capacity, ensure regional health security, and drive scientific advancements in the field.

02

Biomanufacturing and Localization:



To reduce dependence on imported drugs, Saudi Arabia aims to localize biomanufacturing, ensuring its citizens have timely, affordable, and convenient access to essential medicines. The focus on biomanufacturing and localization not only enhances self-sufficiency but also strengthens the country's capacity to produce biological products and solutions. This strategic approach contributes to economic diversification and promotes better health and wellbeing among the population.

- Developing a cutting-edge domestic biomanufacturing platform to enhance self-sufficiency, facilitate global export of biologics¹ and biosimilars², and drive growth in the broader biotech sector within the Kingdom.
- Promoting the widespread adoption of biosimilars (>60%) to reduce medical expenses and increase access to affordable and high-quality treatments.

¹ Biologics: Biologics are complex medications made from living organisms or their components, such as antibodies or insulin. Biologics are typically used to treat various diseases, such as cancer, autoimmune disorders, and genetic conditions.

² Biosimilars: Biosimilars are highly similar versions of approved biologic medications, developed to be more affordable alternatives with no clinically meaningful differences in terms of efficacy, safety, and quality compared to the original.



03



Genomics:

Saudi Arabia will harness the power of genomics¹ to unlock the nation's reference genome for future research and to improve the health and wellbeing of its citizens through effective prevention, diagnosis, and tailored advanced therapies – including cell and gene therapies. It is especially relevant considering the unique genomic profile of the Kingdom's population and the prevalence of certain genetic diseases.

With a clear vision to establish Saudi Arabia as a global player in genomics, the following strategic actions will be implemented:

- Expanding the national genomic database and analytics platform to establish a comprehensive knowledge base, enhance preventive healthcare, and improve overall wellbeing.
- Promoting a regulatory environment that fosters innovation, particularly by implementing policies that support genomics research and facilitate access to data.
- Exploring the potential of precision medicine by integrating genomics for more accurate diagnoses and effective interventions.

¹ Genomics is the study of the structure, function, evolution, mapping, and editing of organism's complete set of genes or genetic material present in a cell.

04



Plant Optimization:

To establish and secure a sustainable food supply, Saudi Arabia is dedicated to becoming a prominent contributor in the field of plant biology. Its objective is to enhance agricultural productivity and make substantial contributions to both regional and global environmental sustainability. Focusing on the optimization of crops and trees allows the Kingdom, with its particularly arid climate, to enhance self-sufficiency in food production and reduce its dependence on imports—while providing novel solutions to other geographies with similar climatic challenges by:

- Cultivating a thriving ecosystem for optimizing crop cultivation and fostering an innovation-friendly regulatory system.
- Empowering the Saudi Green Initiative (SGI) by introducing climate-resistant trees, thereby ensuring climate sustainability and promoting the nation's green era.

In addition to these four strategic plays, the strategy prioritizes broader enablement, fostering a thriving biotech ecosystem that encompasses a wide range of applications. This comprehensive approach strikes a balance between specific strategic plays and nurturing the overall growth and development of the biotech sector. By providing a strong foundation for the broader biotech sector and addressing the Kingdom's pressing needs, the strategy establishes a solid framework for remarkable progress.



Enablers of the Biotechnology Sector

The growth and impact of the biotech sector in the Kingdom are propelled by essential enablers that serve as the foundation for its development, fostering collaboration among diverse authorities and interconnected industries. By leveraging sector-wide enablers and tools, the strategy unlocks the full potential of the biotech sector, catering to various needs and driving significant advancements. These enablers play a crucial role in driving the sector's progress and ensuring its success. They include:

- **Sustainable Talent:** Ensuring a sustainable pool of skilled professionals and implementing tailored talent development programs and incentives that cater to the specific requirements of the biotech industry.
- **Cutting-Edge Infrastructure:** Maximizing the potential of current infrastructure and addressing any deficiencies, particularly in research and manufacturing facilities, to provide a strong foundation for the growth and expansion of the biotech sector.
- **Regulatory Excellence:** Embracing international standards and staying ahead of emerging regulations, creating an environment conducive to biotechnological advancements.
- **Strategic Funding:** Cultivating a strong funding ecosystem with dedicated grants and investment mandates for biotech, ensuring ample capital availability to drive research, development, and commercialization endeavors.
- **Geographical Model:** Strategically assessing the optimal geographic spread of the biotechnology industry, maximizing its potential impact and aligning it with national objectives.

Linkage of the Strategy with Vision 2030

The National Biotechnology Strategy aligns with multiple components of Vision 2030, making significant contributions to achieving 11 strategic objectives, primarily:



1. Ease access to healthcare services



2. Improve value of healthcare services



3. Strengthen prevention against health threats



4. Safeguard the environment against natural threats



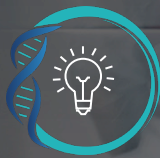
5. Localize promising manufacturing industries



6. Increase localization of non-oil sectors



7. Grow SMEs' contribution to the economy



8. Attract skilled foreign talent effectively



9. Enhance effectiveness of government spending



10. Ensure development of food security



11. Ensure sustainable use of water resources

It will also contribute indirectly to achieving 26 strategic objectives of the Vision and drive progress towards related areas, including:

- **Enhanced Wellbeing:** The biotech sector prioritizes improving the health and overall wellbeing of citizens and residents in the Kingdom, as well as the broader region. By addressing medical challenges, it aims to contribute to the target of extending the average human life expectancy by five years until 2040.
- **Environmental Sustainability:** The biotech sector plays a crucial role in promoting a more sustainable environment. Through the optimization of plants, biotechnology actively supports the Kingdom's sustainability goals, including the Saudi Green Initiative, and works towards achieving its net zero carbon emissions goal.
- **Resilient Economy:** The biotechnology sector fortifies and enriches Saudi Arabia's economy by effectively addressing challenges and driving the localization of non-oil sectors. By promoting the growth of the biotech sector, the strategy enhances the balance of payments and reinforces the economy's resilience.



Key Takeaways

The National Biotechnology Strategy will deliver tangible benefits for multiple actors of the ecosystem:



1. Citizens:

The strategy aims to empower citizens with improved healthcare outcomes and nutritional food products that are more effective and tailored to their specific needs.



2. Investors:

The market presents immense untapped potential and inherent strengths, making it an attractive investment opportunity for those seeking to be part of the Saudi biotech industry.



3. Global partners:

The Kingdom contributes to building the new frontiers of biotechnology, paving the way for scientific advancements that transcend borders, and nurturing multi-national collaborations in the private and public domain.



4. Government bodies:

The strategy serves as a coordinated and aligned effort to structure and develop the biotech industry, providing a framework for entities to effectively propel its growth.

The National Biotech Strategy marks a significant milestone for the Kingdom in the development of its promising biotechnology sector, with a focus on achieving long-term positive impact on society and economic growth. By addressing sector challenges, consolidating existing efforts, and providing necessary enablers, the strategy aims to generate additional impact on GDP and improve health and wellbeing. The sector's evolution under the National Biotechnology Strategy will contribute to diversifying the economy, creating job opportunities for citizens, empowering the private sector, and enhancing healthcare and food security. This will ultimately contribute to enduring prosperity for Saudi Arabia, and nurture a healthy nation, a sustainable environment, and a resilient economy.

Active collaboration and participation from all key stakeholders in the biotech ecosystem, such as researchers, entrepreneurs, investors, and policymakers, is paramount for the success of the strategy. By embracing global market trends, adopting best practices, and fostering local innovation. Saudi Arabia is positioned to be a leader in the biotechnology field, developing products and research to benefit not only the Kingdom but also the region and the world.

رؤية VISION
2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA



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THE NATIONAL BIOTECHNOLOGY STRATEGY