





The Decadal Plan

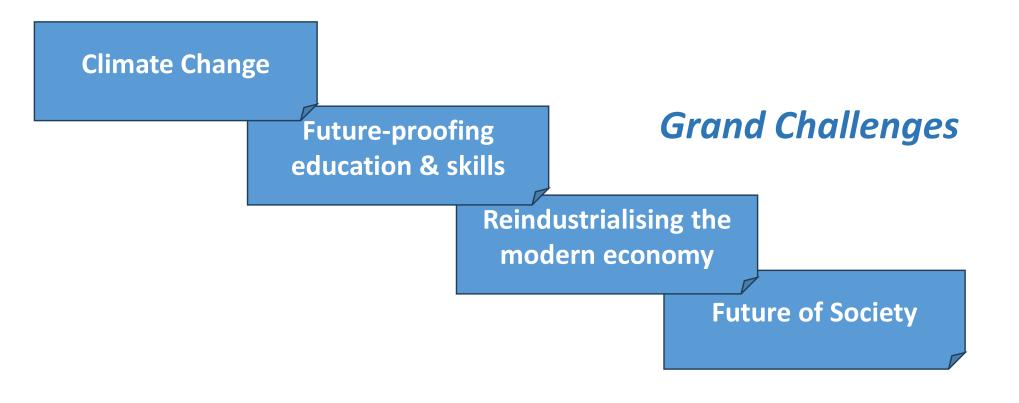
The Decadal Plan is the implementation plan for the 2019 White Paper on Science, Technology and Innovation (STI)

Vision of the White Paper: Science, technology and innovation enabling sustainable and inclusive development in a changing world

The Decadal Plan theme is:

"deepening knowledge economy for enhanced socioeconomic impact"

The Decadal Plan



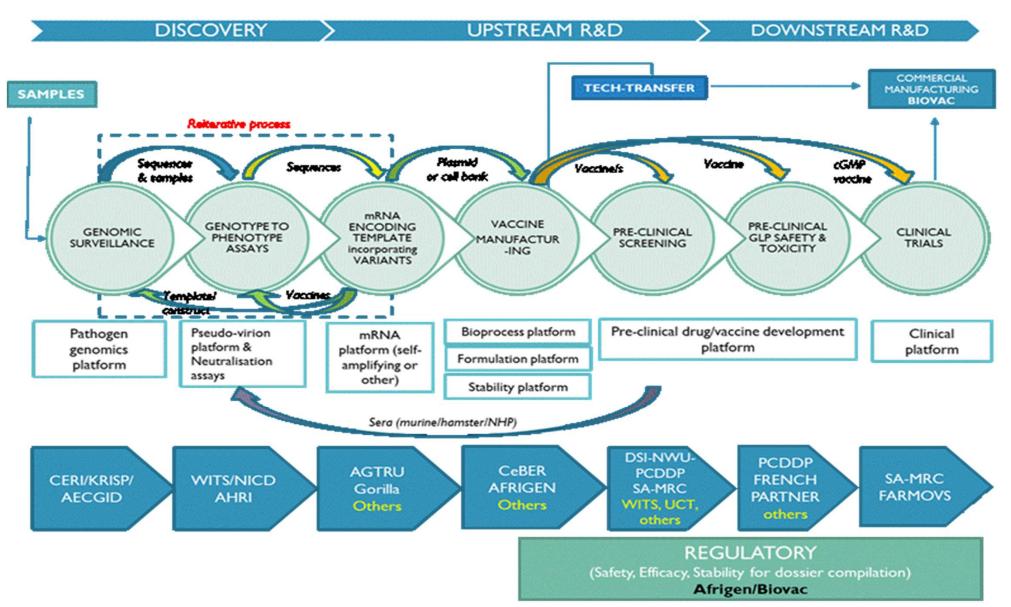
STI Priorities

Energy Innovation

Health Innovation

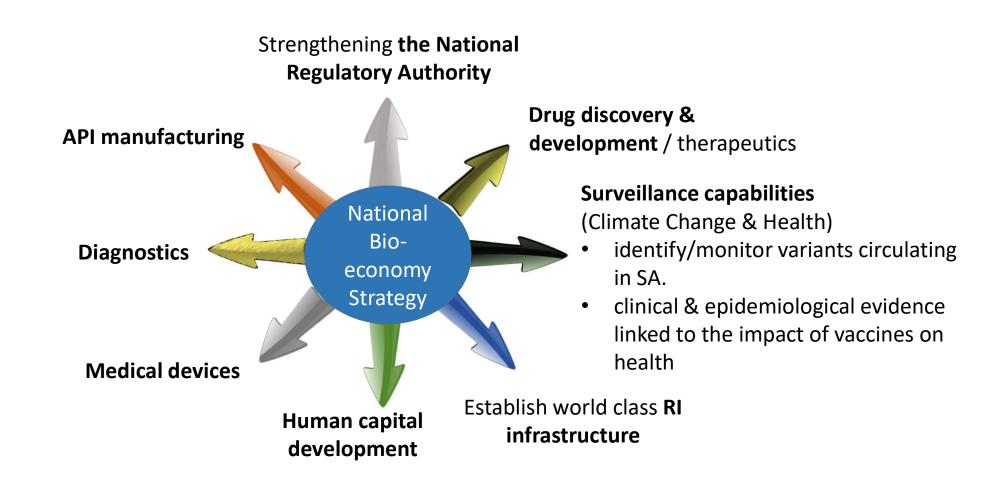
Building infrastructure & expertise

Building innovation capacity & develop pipeline of homegrown products.



Capabilities needed for a vibrant vaccine manufacturing capability

Support and strengthen the country's local **research**, **development and innovation capabilities to manufacture** active pharmaceutical **ingredients**, vaccines, biopharmaceuticals, diagnostics and medical devices to address the disease burden **while ensuring security of supply**.

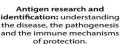


Vaccine development pipeline









Proof of concept: vaccine can didate is evaluated for safety and efficacy profile using in vitro and in vivo tests.





Safety studies: in depth test ing of the vaccine candidate's safety in laboratory and animal models (local and systemic tox icity). This is done following regulatory guidelines.

Adjuvant(s) for the formulation of the vaccine candidate are selected.



In parallel with the preclinical tests, the delivery system for the vaccine candidate is estab lished, and the manufacturing is up-scaled

Protocols in line with Good **Manufacturing Practices** (GMP) are established and the first GMP-level batches are



Phase I: the vaccine candidate is tested on a small number of healthy individuals to assess safety.

Phase II: the vaccine is tested on a larger number of people to evaluate safety and immune response, and explore the opti mal dose.

Phase III: thousands of people to assess protection against the target infection & safety.





case of a positive outcome, a license to market the vaccine is granted, and the vaccine is included in national healthcare systems.

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established and optimised, for the GMP-grade, large scale production of vaccine doses This is to ensure that a sufficient number of doses is made available for national vaccination programmes.

The manufacturing process is

SAFETY MONITORING



Post-marketing safety and efficacy are continuously monitored, throughout the entire life of the vaccine. Any side effects or issues observed and reported after vaccination are carefully assessed.

Issues can be reported by patients and healthcare profes-

Building innovation capacity & human capital pipeline for domestic vaccine manufacturing

Next generation



Early career



Midcareer

Robust healthcare

system & workers



Established

Researchers

Sanitation & Disposal

Transport & logistics

Design &

education & training sector

Manufacturing Technicians &

> engineering Communication e.g. language barriers

> > **Environmental conservation**

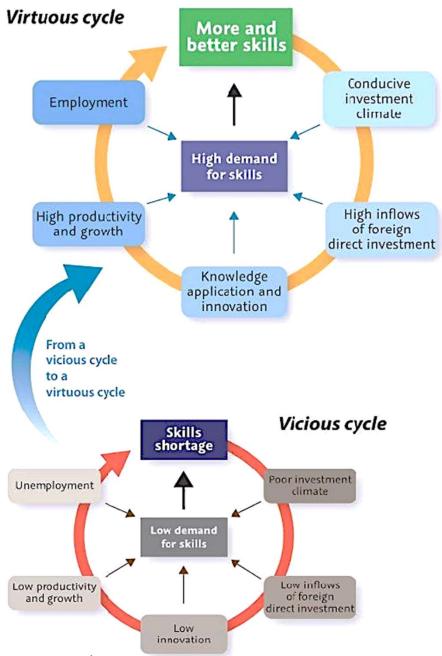
ENTREPRENEUR SKILLS

Essential Skills Needed to be an Entrepreneur



Post school

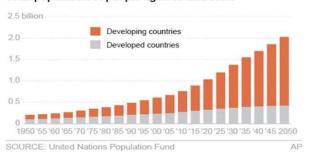
Transformation: Diversity & Inclusion



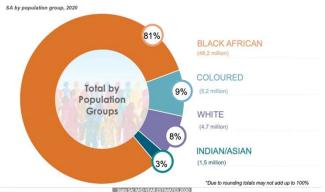
World not ready for aging population

The number of people in the world aged 60 and older is expected to grow past 2 billion by the year 2050.

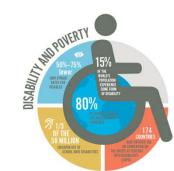
Total population of people aged 60 and older



The black African population is in the majority and constitutes approximately 81% of the total SA population











Source: DOI:10.13140/RG.2.2.12234.49605

Key Success Factors







- Microbiologists and chemical analysts
- Quality
 assurance/release/production/warehouse
 pharmacists
- Quality assurance/control and production managers
- Maintenance artisans/technicians/engineers/industrial engineers
- Production/Quality control team leaders
- Technical manufacturers
- Procurement category leads
- Controllers/product handlers (cold storage)
- Technical manufacturing
- Fill and finish capabilities'

- Core expert team
- Third party collaborators: skills and knowledge transfer
- On the job training
- Centres of Excellence
- Learning academy
- Service and maintenance contracts with suppliers of equipment
- Training initiatives in partnership with collaborators including suppliers
- Exposure and protocols for regulatory inspections
- Access to information and expertise

- Scientific Validity
- Collaborative partnerships
- Social justice
- Equal moral respect for participants & communities
- Voluntary participation
- Independent review
- Confidentiality
- Anonymity
- Informed consent
- Respect
- Beneficence
- Research merit & integrity
- Non-maleficence

Sustaining a viable domestic vaccine manufacturing capability

- Strengthen policy coordination & build incentives for developing local, regional & continental capacity & capabilities for vaccines manufacturing
- Develop, train, skill, re-skill & upskill human capital across the PSET sector
- Strengthen the enabling environment: for facilitating access to funding, tech transfer & mutually-beneficial partnerships (equitable sharing of IP & downstream dividends)
- Invest in the establishment & maintenance of large scale & feeder research infrastructure platforms with a focus on geographical spread
- Ensuring security of equitable supply, access & distribution locally, regionally & continentally



...locally manufacture
60% of the vaccine doses
required on the continent
by 2040...



THANK YOU

Siyathokoza

Re a leboga

Dankie

Ro livhuwa

Thank you

Siyabonga

Enkosi

Ha khensa