

Bio-innovation and the National System of Innovation

Making sure it's possible

The NIOH Research Day
19 November 2020



science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

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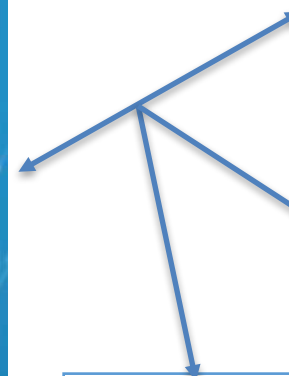
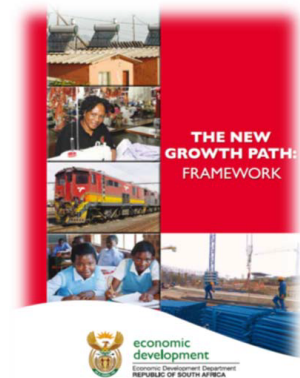


Contents

- National framework for Science, Technology, & Innovation
- The Bio-economy Strategy
- Health Priorities
- What is innovation?
- Institutional framework for Innovation at the NHLS
- Principles & services in support of innovation

National Framework: White Paper on STI

- The White Paper on Science, Technology and Innovation (March, 2019) emphasises the “core themes of **inclusivity, transformation, and partnerships**” and “to foster an NSI in which creativity, learning and entrepreneurship can flourish.”



Agenda 2063

STISA 2024

National Framework: White Paper on STI

CHAPTER 1: INTRODUCTION

CHAPTER 2: LOOKING TO THE FUTURE

CHAPTER 3: A COHERENT AND INCLUSIVE NATIONAL SYSTEM OF INNOVATION

CHAPTER 4: AN ENABLING INNOVATION ENVIRONMENT IN SOUTH AFRICA

4.1 Performance, gaps and innovation focus areas

4.2 Policy intent: Brand South Africa as an innovative country

4.3 Policy intent: Adopt a broader conceptualisation of innovation beyond R&D

4.4 Policy intent: Adopt a whole-of-society approach to innovation

4.5 Policy intent: Use public procurement as a vehicle to further innovation

4.6 Policy intent: Increase support for and collaboration with the business sector

4.7 Policy intent: Support commercialisation of publicly-funded intellectual property

4.8 Policy intent: Ensuring that legislation on intellectual property rights from publicly financed research and development responds to the changing policy context

4.9 Policy intent: Increase the spatial footprint of innovation in South Africa

4.10 Policy intent: Support innovation for social and grassroots innovation

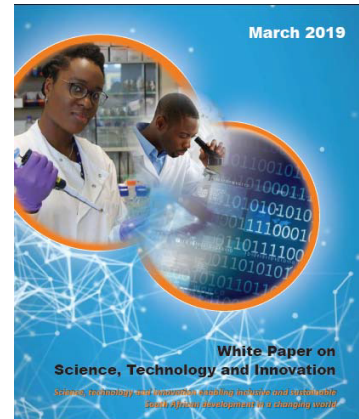
4.11 Policy intent: Exploit new sources of growth

4.12 Policy intent: Innovation to revitalise existing sectors

4.13 Policy intent: Strengthen government's role as an enabler for innovation

CHAPTER 5: INCREASED HUMAN CAPABILITIES AND AN EXPANDED KNOWLEDGE ENTERPRISE

CHAPTER 6: FINANCING SCIENCE, TECHNOLOGY AND INNOVATION



The Bioeconomy Strategy

What is the bioeconomy?

Bioeconomy: *comprises those parts of the economy that use renewable biological resources from land and sea – such as crops, forest, fish, animals, and micro-organisms – to produce food, materials and energy.*
(EC defn.)

In SA:

“**Bioeconomy** refers to activities that make use of bioinnovations, based on biological sources, materials and processes to generate sustainable economic, social and environmental development. In the bio-economy the entire innovation system/ network, ranging from ideas, research, development, productisation and manufacturing to commercialisation, should be used to its full potential in a coordinated manner.”

- **Health Innovation**
- Agricultural bio-innovation
- Industrial and Environmental Biotechnology
- Indigenous Knowledge based Technology Innovation



DSI invested well over R3 billion on strategy implementation since 2004

Bioeconomy

- Skills & multiplier effects & competitiveness – jobs
- Improved crop/livestock yields – food/feed
- Disease management – healthy society
- Climate change mitigation – socio-economic stability
- Recycling biomass – sustainable planet

Health priorities for next 10 years

New treatment and prevention technologies:

Convergence of nano-bio-cogno-info technologies provide a new ways of finding health care solutions

Digital Health:

Convergence of digital technologies with health, healthcare, living, and society = enhancement of the efficiency of healthcare delivery & more personalized and precise medicine

Precision Medicine:

Genetic and genomic medicine provide the basis for tailor-made, population-based health care solutions

Linked to the SA burden of disease

Better Health
for all



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So what is innovation?

“**Innovation** is the creation, development and implementation of a new product, process or service, with the aim of improving efficiency, effectiveness or competitive advantage.”

Can include:

- Policy briefs
- New processes
- New products
- New services

- Internal or external
- Proactive or reactive

**Improves efficiencies,
functionings, and
capabilities**

IP - (patent, copyright, etc) – protecting your idea

Development – improving efficiencies of production

Prototyping – getting the concept to work reliably

Productization – Design, preparing for manufacture, pilot scale

Commercialisation – legal contracts; partnerships; investments

Scale up – meeting local demand

Marketing – Advancing awareness of solution

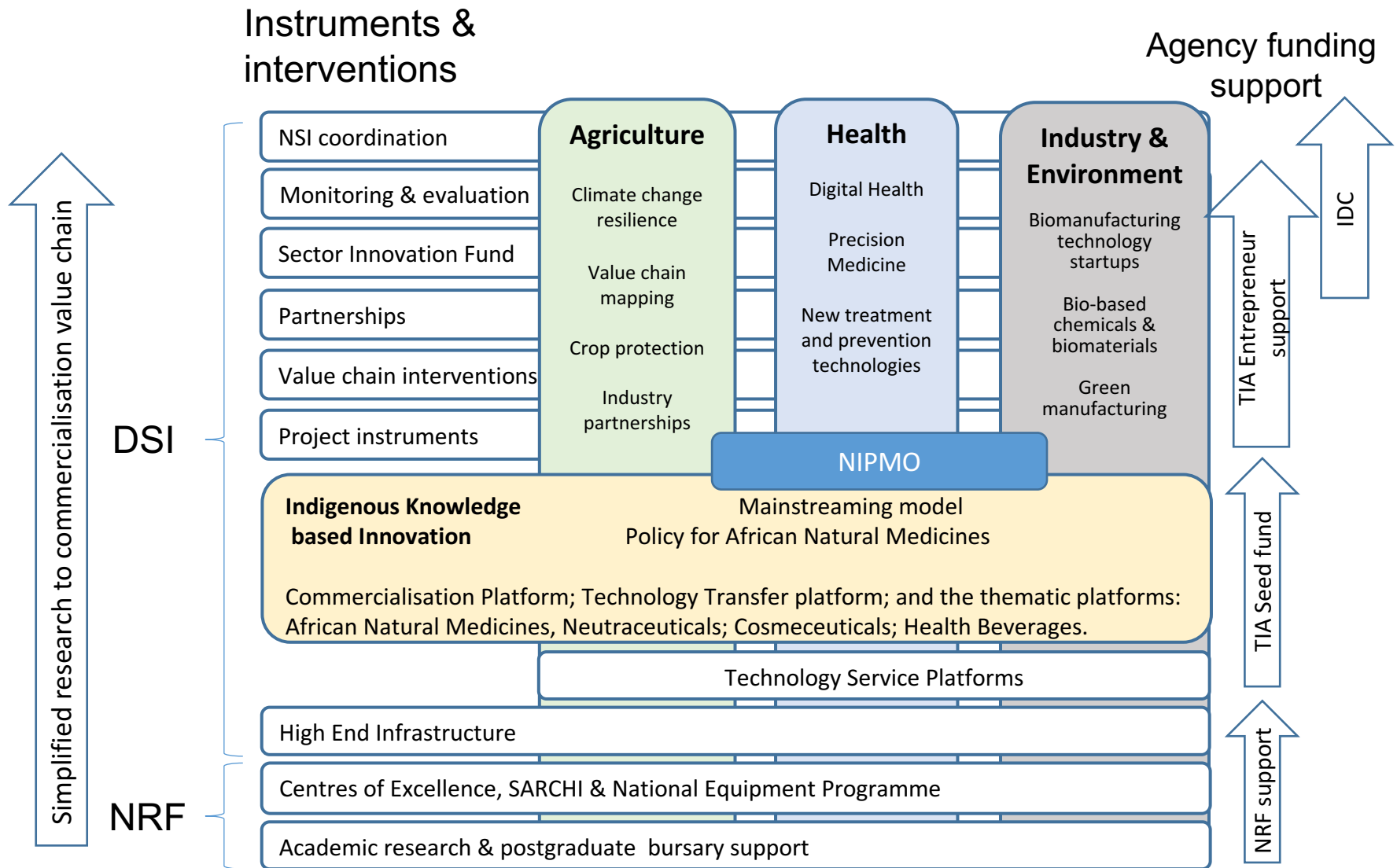
International expansion – meeting international standards, partnerships

So what is innovation?

Discovery/invention
can be a solo affair;
Innovation is
necessarily a social
process

Public Sector: Team SA,
collaborate, share, partner!!!

BIO-INNOVATION approach – Coordination!



The NHLS Innovation Plan 2020-2024

(organisational framework)



NATIONAL HEALTH
LABORATORY SERVICE

The NHLS Vision: *To be the “Africa’s centre of excellence for innovative laboratory medicine”.*

NHLS Strategic Mission: *To provide quality, affordable and sustainable health laboratory medicine, provide training for health science education and undertake innovative and relevant research.*

Problem statement, including: “risk of becoming redundant” & “reducing efficiencies in the National System of Innovation”

8 Steps towards making the NHLS an innovation enabled organisation, including

- **The NHLS Executive and Board endorses the Innovation Plan for the NHLS.**
- **An Innovation Office be established at the NHLS**
- **The Innovation office develops mechanisms for supporting innovation**
- **Organisational framework for innovation / commercialisation**
- **Mechanisms are developed to reward internal/process innovations that improve staff effectiveness**

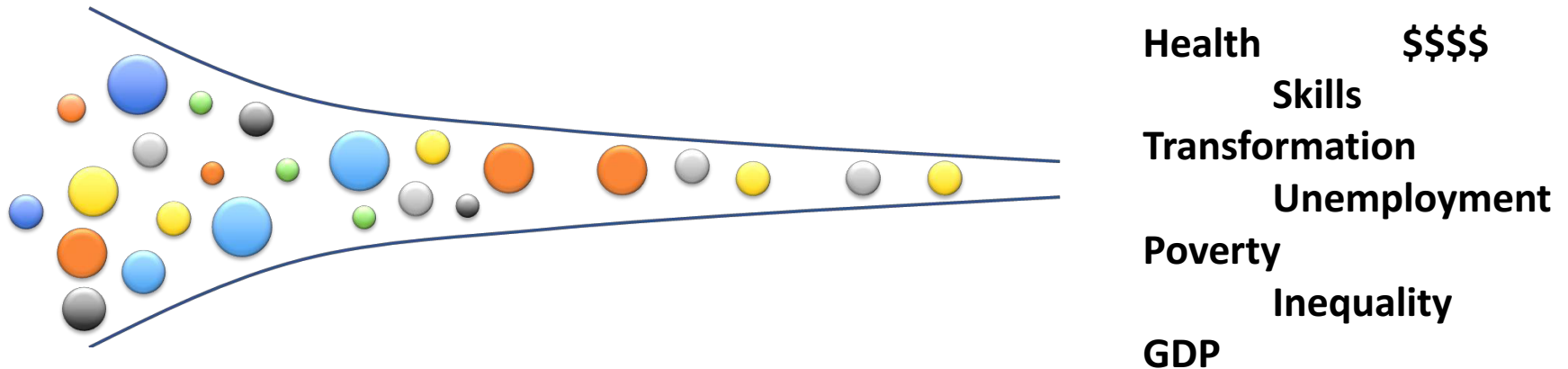
Innovation Plan
approved

TECH TRANSFER OFFICE
established

Principles and support for innovation

Objective: to increase the innovation capability, translation, effectiveness and competitiveness of SA

Non Zero-sum game!



So what instruments and services can we access?



Capebio
Rich in Diversity



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NATIONAL INSTITUTE FOR
POLICY MANAGEMENT
AND
ORGANIZATION
DEVELOPMENT
MINISTRY OF PLANNING
AND ECONOMIC DEVELOPMENT
GOVERNMENT OF INDIA



sa sme
FUND



our future through science



CAPE HEALTH
INNOVATION
CATAPULT



The word cloud visualizes the 2012-2013 NSF funding priorities for the Biological Sciences Directorate. The most prominent word is 'Bio-innovation', which is the largest and most central. Other large words include 'Health', 'people', 'Industry', 'Environment', 'Agriculture', 'biotechnology', 'crops', 'bio-processing', 'synthetic', 'bio-catalysis', 'engineering', 'unemployment', 'Bio-economy', 'IPAP', 'genetic', 'enzymes', 'disease', 'DNA', 'plants', 'diagnostics', 'biopharming', 'biorefinery', 'GMO', 'poverty', 'New', 'animals', 'bioinformatics', 'Genetic', 'bio-manufacturing', 'APAP', 'NDP', and 'innovation'.

Dankie
Enkosi
Ha khensa
Re a leboga
Ro livhuwa
Siyabonga
Siyathokoza
Thank you