The STI Decadal Plan, 2021-2031: Progress

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Portfolio Committee on Higher Education, Science and Technology

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

2030 NDP

Outline of presentation

- The philosophy underlying the Decadal Plan
- The need to adapt to rapid technological change
- The STI priorities and Societal Grand Challenges
- Systemic enablers of the Decadal Plan:
  - The Science and Innovation IMC
  - The Innovation Compact
  - A new Strategic Management Model
  - STI Public Budget Coordination
- Progress highlights to date
- Feedback from the inaugural Science and Innovation IMC
- Next steps in the implementation of the Decadal Plan

Philosophy underlying the Decadal Plan

- The 2019 White Paper signaled a shift of focus from building the NSI, to deriving maximum impact from the NSI to help address SA's challenges.
- The SA NSI has pockets of excellence, and so the intention is to continue with the development of the NSI e.g. to support institutions and develop research capacity and high-end skills,
- The social sciences will be mainstreamed in all of the programmes and projects – to address the complexity of the challenges facing SA and the world
- A deliberate focus on **just transitions** e.g. in health, education and energy. To illustrate, the move to renewables for energy must also take into account the energy needs of poor rural households, not only the needs of industry and middle-class consumers.

The need to adapt to rapid technological change

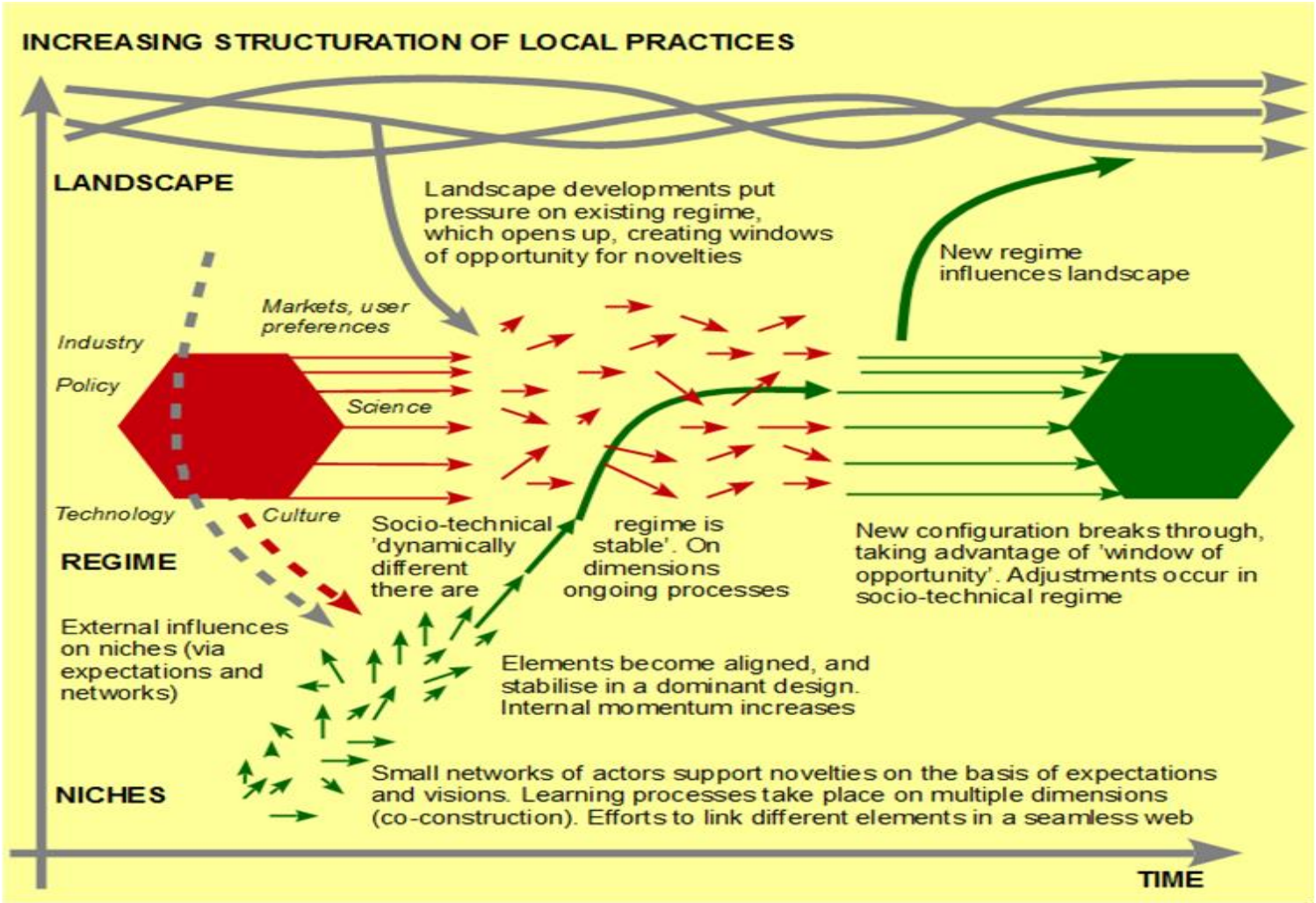
Theme: 2019 White Paper on Science, Technology and Innovation

Science, Technology and Innovation
enabling
inclusive sustainable
South African **development**
in a
changing world

Socio-technical systems: An example

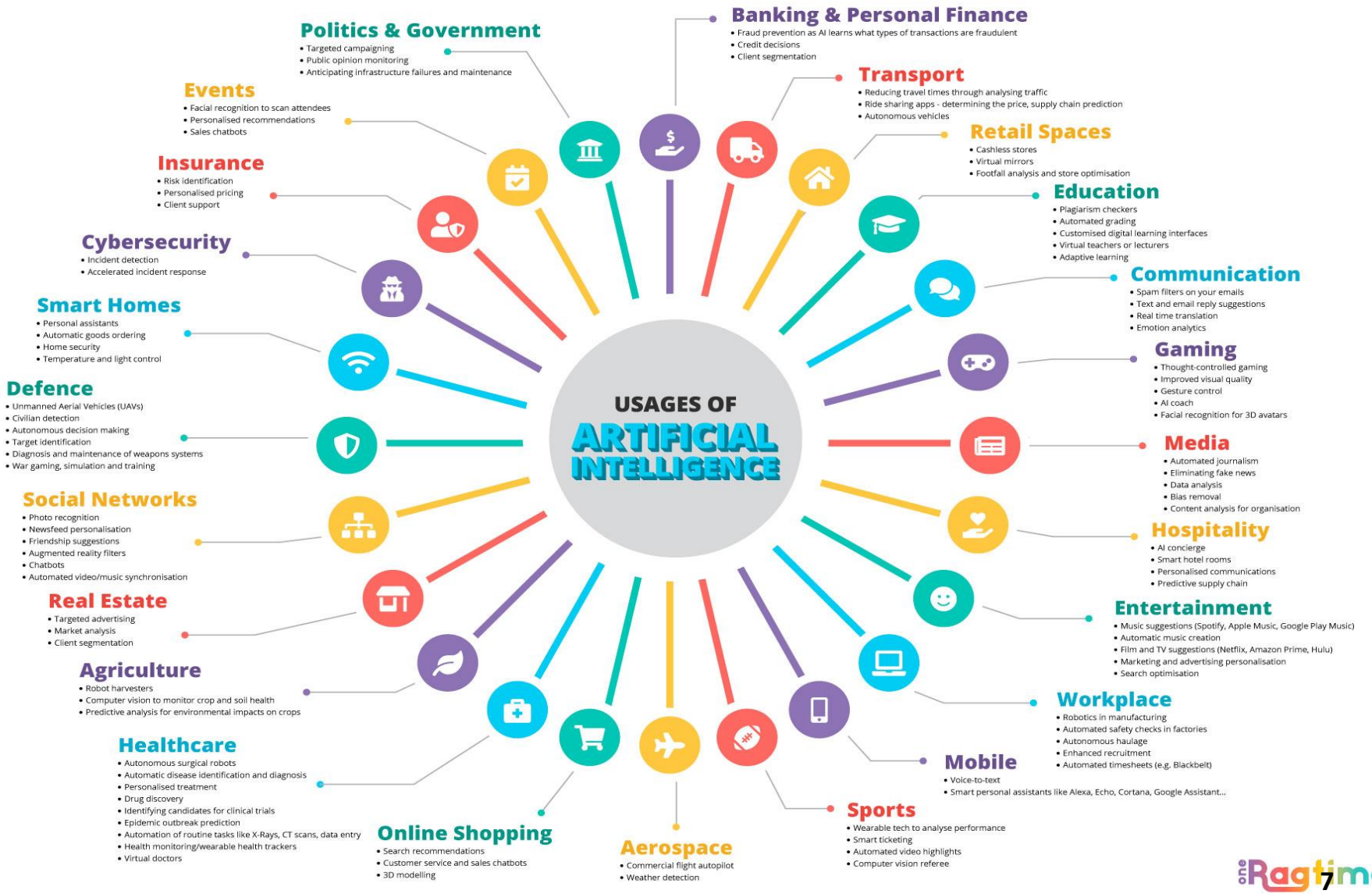
Figure 3. Socio-technical system for mobility (adapted from Geels 2005b: 446).

How STI disrupts socio-technical systems giving rise to new regimes society The



Geels, 2002, Geels and Schot, 2007, Schot and Kanger, 2016

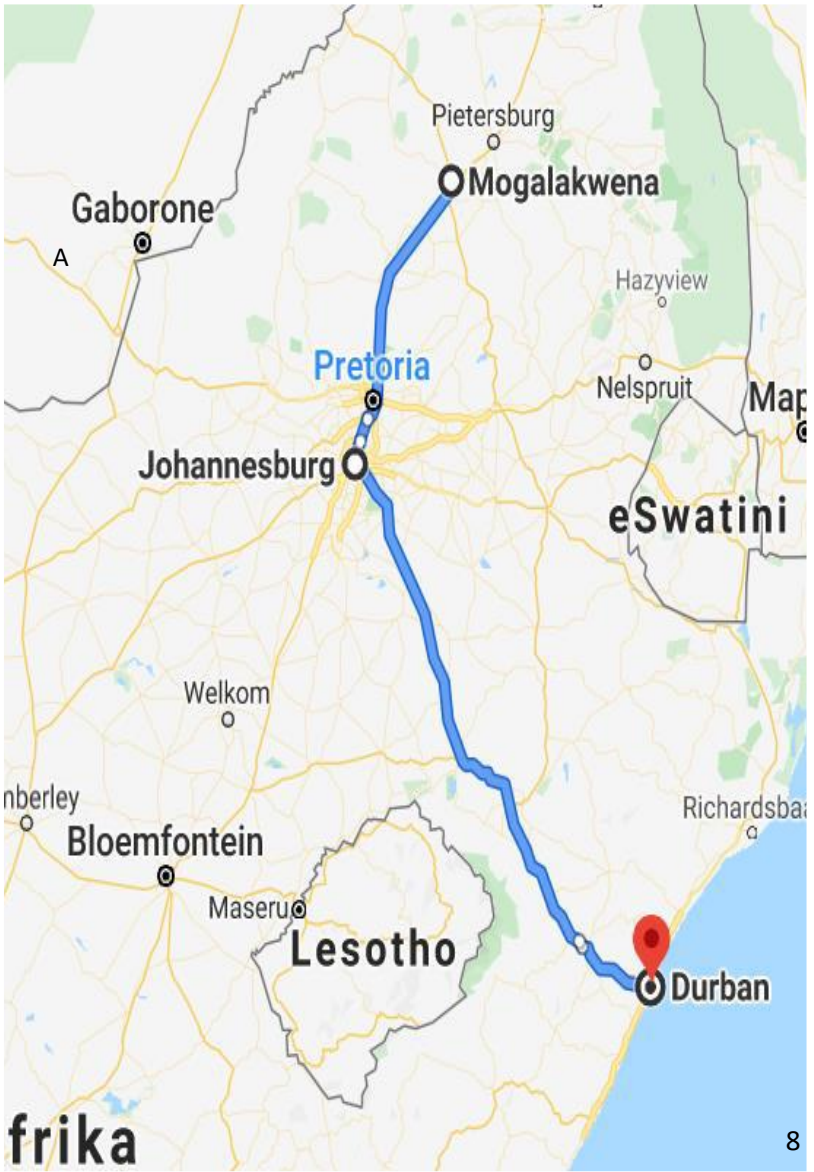
Disruption: Artificial Intelligence



Platinum Valley ⟶ Hydrogen Valley

Our objective is to kickstart a South African hydrogen economy through the creation of a Hydrogen Valley.

- The South African government's Department of Science and Innovation (DSI), in partnership with Anglo-American, Bambili Energy and ENGIE are looking into opportunities to transform the Bushveld complex and larger region around Johannesburg, Mogalakwena and Durban into a **Hydrogen Valley.**
- The goal of this study was to identify concrete, catalytic project opportunities in promising H2 hubs to kickstart H2 activities in the region. Promising ongoing initiatives like the H2 corridor project were leveraged in the selection of the hubs.
- The selection of the corridor from Durban to Mogalakwena was based on **existing hydrogen potential** to switch many of the industrial, mobility and buildings activities to hydrogen fuel or feedstock.
- Techno-economic analysis was carried out to assess the business case of identified projects, map their potential for positive social impact and define necessary policy actions to create the conditions for implementation.
- Within the Valley, project sponsors are interested in **identifying hydrogen hubs** which are local areas with high concentration of hydrogen customers/off-takers and nearby hydrogen producers. Hubs may also extend to neighboring areas such as Johannesburg extending towards Rustenburg, mimicking a hub and spoke configuration.



STI priorities and Societal Grand Challenges

NACI Foresight STI priorities

- Climate change and the Circular Economy
- Education for the future
- Future of Society
- ICTs and Smart Systems
- High-technology industrialisation
- Nutrition security
- Water security
- Health innovation
- Sustainable energy

Societal Grand Challenges

	Societal Grand Challenges	Illustrative content
1	Climate Change & Sustainability	Climate change, as well as issues such as bio-diversity loss, waste, pollution, technologies for the Circular Economy, soil erosion
2	Future-proof education and skills	The education & skills value chain thus including ECD and TVET colleges, skills for the 4IR, Curriculum change, STI for education and skills development, role of ICTs, etc.
3	The future of society	Impact of rapid technological advancement on human and social dynamics, AI and ethics, inequality and livelihoods, the social compact of science, trust, national identity, globalization, competence and role of the state in future societies, "what it means to be human" etc.

Large STI programmes

	Large STI programmes	Illustrative content
1	Innovation for a healthy population	Health includes both physical and mental, continue to build on existing successes while focusing on new issues e.g. pandemics, behavioural and societal aspects
2	Innovation for energy security	Energy for industry, and for poor and rural communities, renewable clean energy, a just transition, etc.

New sources of growth for the SA economy

		Illustrative focus areas
1	Sources of new economic growth for a re-industrialised, modern economy	A focus on high-tech industries, also the services sector, Modernising of existing sectors (mining, agriculture and manufacturing), Exploiting new sources of growth (role of ICTs e.g. in the geosciences, The Circular Economy, and IKS-enabled bio-innovation), also social issues such as employment loss in mature industries, and support for SMMEs and regional and local systems of innovation etc.

Governance principles for the STI Thematic Priorities (1)

- Use a multi-disciplinary management structure comprising government, industry, academia and civil society – as appropriate.
- Take guidance from the resolutions of the Science and Innovation IMC.
- Work in synergy with existing structures such as the Presidential Commission on Climate Change and the relevant Government Clusters.
- STI-intensive line departments to lead on the development of sector strategies, roadmaps etc.

Governance principles for the STI Thematic Priorities (2)

- The DSI to lead on the development of STI capabilities to support the relevant Master Plans and mandates / strategies of the sectoral lead departments.
- Involve the STI entities across government, as appropriate, in the governance and implementation.
- Principal STI governance instrument would be an RDI Plan which can also guide M&E indicators.

Example: Innovation Revitalising Agriculture (RDI Plan)

GOAL: Innovation driving economic growth & socio-economic development

OBJECTIVES

- Need for productivity – plants and animals
- Climate change
- Security of supply – Sustainability
- Control – mitigation products, green economy solutions
- Agility – technology dissemination to farmers
- Food security
- Biosecurity – detection, diagnosis, early warning systems
- Nutrition (hidden hunger)

Crop/plant improvement, molecular breeding and genome engineering
Crop Improvement:
(Wheat, Maize, Potato, Cotton breeding)
Climate Resilience research
Smart and Precision Agriculture
Biosecurity Research Hub – diagnostics, monitoring

Animal Improvement, molecular breeding and genome engineering
Animal Improvement
Animal vaccines
Livestock Identification and Traceability Systems (LITS)
Beef Genomics Programme
Aquaculture Bio-innovation Cluster
Dairy Breeding programme

Bio-innovation in support of Food and Nutrition and farmer innovation support

Agro-innovation Hubs

Small scale farmer technology diffusion
(Grapes, Low-chill apples, Urban Agric.

Agroprocessing value chain development
(Marula, honeybush, maize, Cape Aloe, vegetables, soya, bambara, beans), legumes

Digital Agriculture

Value chain analysis:
Sorghum, Canola, Dryland rice, and Cassava

Mobile food safety labs

OUTPUTS

New products, processes, Technology services: High-value crop and animal value chains are efficient, agile and robust.

Support new and emerging farmers to become commercial

Bio-innovation in support of food and nutrition

High-end skills, MSc, PhD, technicians

Agro-processing (niche products) in rural communities

Digital technology:
Decision support systems for farmers
Biosecurity: Early warning systems
Precision agriculture: Phenotyping
Remote sensing, Smart tools, etc.

OUTCOME/IMPACT

- Increased GDP
- Decision support tools to promote productivity and incomes
- Biosecurity -Pest and diseases
- Boost rural economies
- Traceability
- Sustainability
- SMMEs
- Job creation as a result of skills transfer

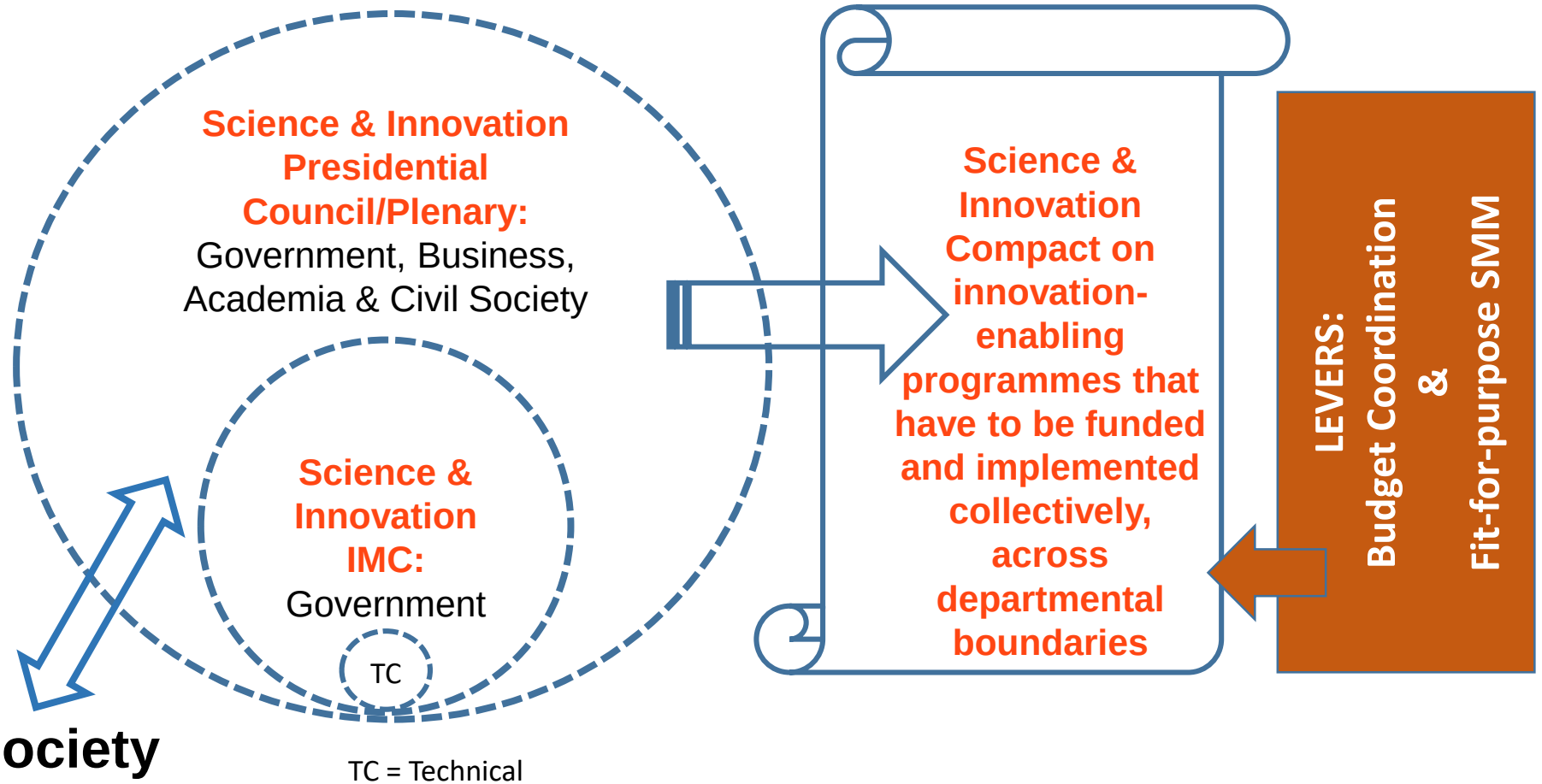
Coordination, facilitation and multi-disciplinary, multi-institutional agricultural bio-innovation programmes to drive productive value chains

Enablers for the implementation of the Decadal Plan

Science & Innovation coherence and coordination

Structures for Consultation & Decision making

Topics/Contents of Consultations & Decisions



TC = Technical Committee of DGs.

The TORs of the coordination structures and the role of the DSI

Presidential Science and Innovation Plenary: Bringing together government, business, academia, civil society in an annual meeting.	• Recommend a high-level whole-of-society STI agenda • Reflect on progress with large and high-profile STI programmes and recommended actions • Joint commitment of funding
Science and Innovation IMC: Bringing together STI-intensive departments, clusters, and enabling departments such as National Treasury, DPME, and CoGTA.	• Create an enabling environment for innovation via an Innovation compact to drive coordination • High-level agenda setting for STI across government • Approve Decadal Implementation Plans and cross-departmental RDI plans • Pool public funding to support STI strategies • Monitor the performance of the NSI, and STI strategies
The Department of Science and Innovation	• Provide Secretariat for the IMC and Plenary • Set the STI agenda, with inputs from line departments • Institutionalise M&E and Foresight at the National Advisory Council on Innovation (NACI), and expand analytical capacity • Develop an STI Investment Framework

Innovation Compact: Purpose

- Ensuring policy coherence and certainty related to innovation, the absence of which negatively impacts on business and foreign investment in South Africa

- Ensuring synergy among, rather than the duplication of initiatives and incentives, which wastes resources and negatively influences the contribution of innovation to addressing South Africa's priorities

- Ensuring commitment from the relevant NSI actors to working together to enhance innovation performance, and therefore also to pooling their resources (funding, knowledge and systems)

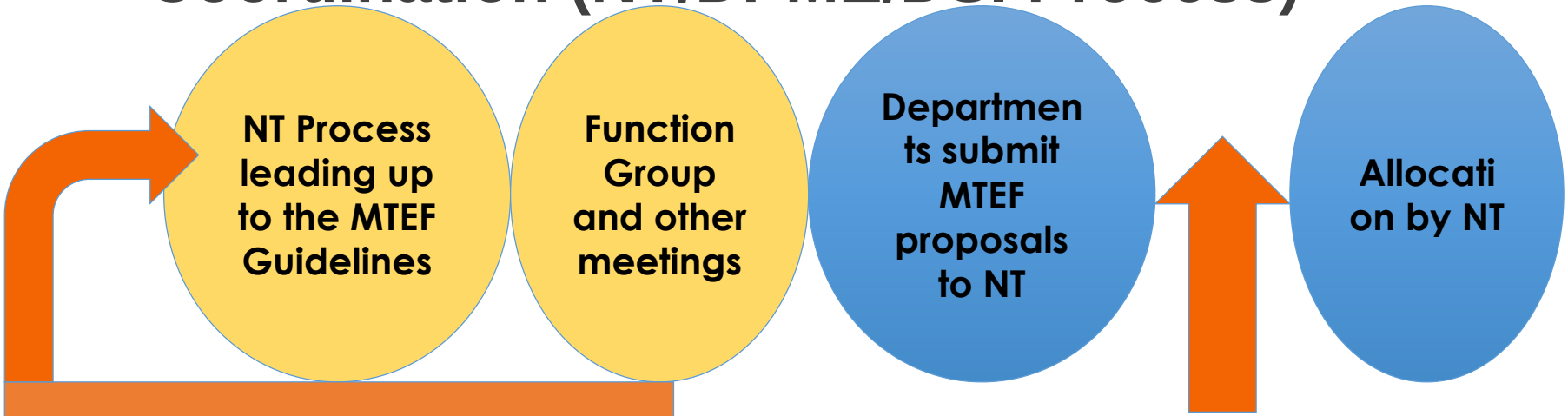
Proposed priorities of the Innovation Compact

- Specifically targeted education and skills to support innovation
- Arresting IP leakage from publicly funded R&D through increased support for commercialisation
- Public procurement of locally developed technologies
- Improving the capabilities across government to support innovation, as well as to increase the spatial footprint of innovation in SA in line with the District Development Model
- The development of an AI Strategy & Ethics Framework

Background of STI Budget coordination

- **Cabinet meeting of 15 February 2017** approved the introduction of a process for the coordination of the government's budget for STI activities.
- The **STI Budget coordination process** is a mechanism to **improve allocation of funds for STI**.
- The **funds cut across all spheres of Government**, to assist departments to implement their STI programmes
- To improve the productivity and competitiveness of key sectors of the South African economy and to contributing to higher GDP growth rates overall.
- **National** funding will be used for **RDI plans to support societal grand challenges**, for **Provincial** to support **growth and development strategies**, for local to support **innovation for local economic development priority**
- **National, Provincial and local to set aside appropriate percentage (%) of budgets for STI**

2022/23 MTEC Implementation of STI Budget Coordination (NT/DPME/DSI Process)

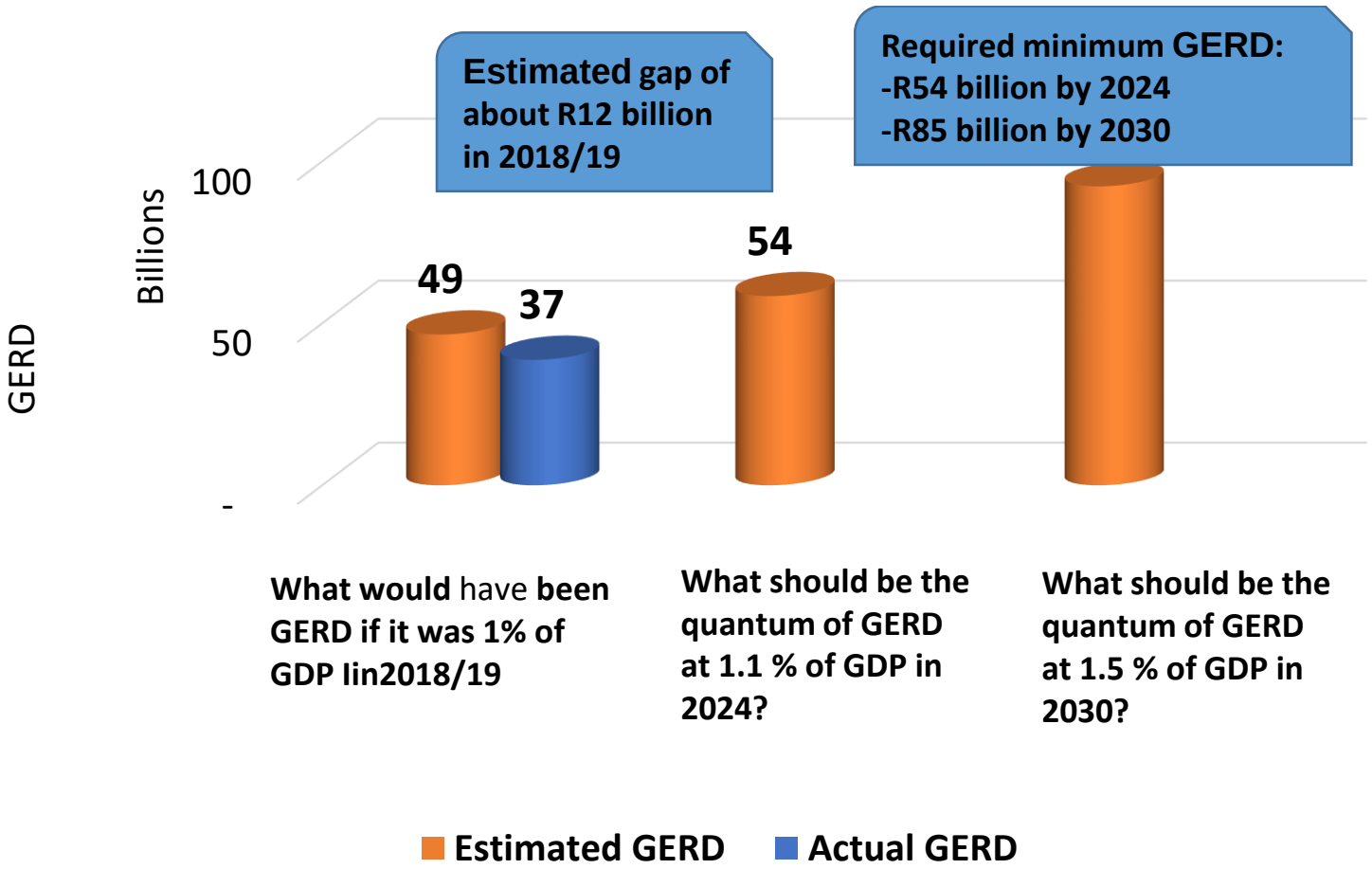


- **DST / NACI analysis to identify issues and funding priorities for NSI**
- **Report and briefing to NT**
- Priorities to be included in the MTEF Guidelines to guide STI funding requests by departments

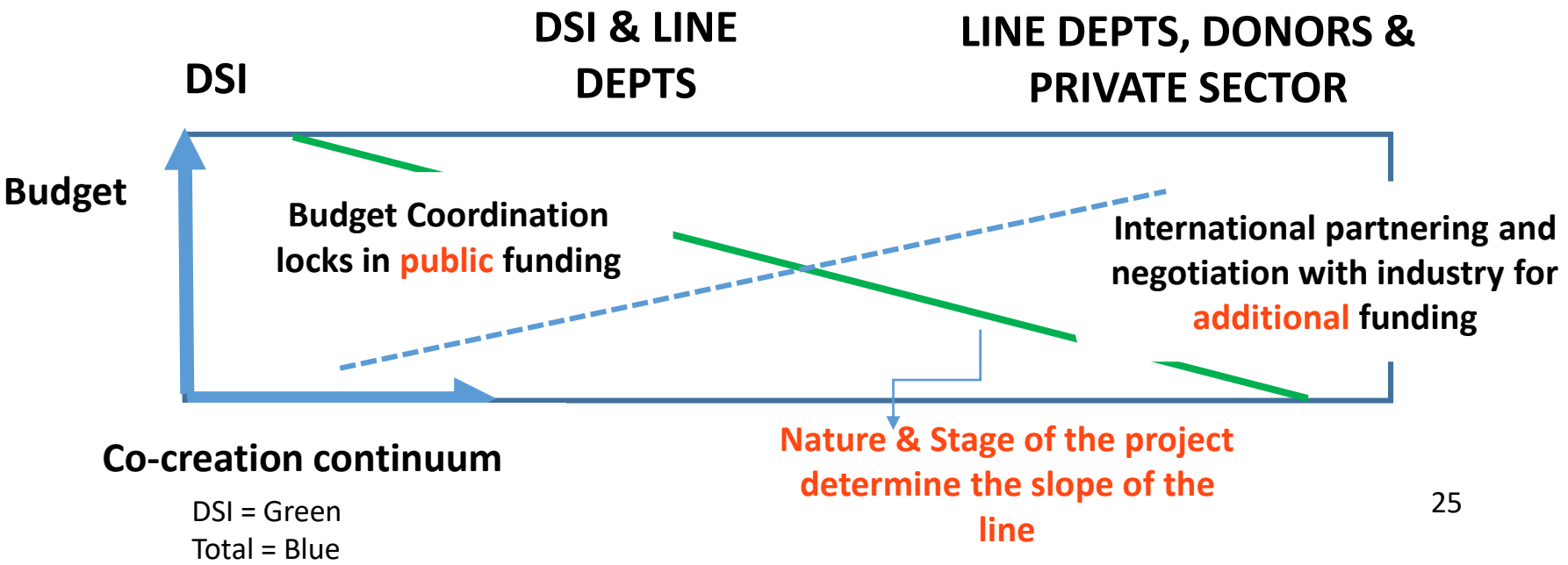
- DST / NACI analyses the MTEF requests for STI funding received by NT
- Identifies cross-cutting issues facing departments e.g. aging equipment
- Report and briefing to NT with recommendations on allocations

- **Ongoing data gathering and analysis by DSI/NACI and other specialist centers to inform M&E of funding productivity**
- The DSI and National Treasury (NT) have formed a task team on how **to integrate the Public STI Budget Coordination Mechanism into the MTEC** processes including engagements with the Technical Committee on Finance (TCF)
- The DPME, endorsed the principle of STI to be part of **Budget prioritization framework and Cabinet lekgotla priorities for2022-2024 –** For the funds are used for intended purpose purposes (M&E)

Estimation of required GERD by 2024 & 2030



SMM for Science and Innovation across government and sourcing funding



Progress highlights and commitments to date

Highlights (1)

- Cabinet approved the Decadal Plan for further consultation with government partners, the private sector and social partners (e.g. NEDLAC) in March 2021.
- The DG hosted follow-up meetings to get commitments from government departments on the implementation of the Decadal Plan, e.g. with the National Treasury.
- A major milestone was reached when the National Treasury agreed to the principle of STI budget coordination to ensure that public funding for STI is distributed on the basis of expert analysis across departmental boundaries, and committed to a working arrangement that saw the DSI play a significant role in the process – this work is ongoing.

Highlights (2)

- The DSI has started working with its entities to discuss and plan the implementation of the Decadal Plan priorities and align their Annual Performance Plans (APPs) to the Decadal Plan.
- A high-level well-attended workshop was held between the DSI and the CSIR to discuss their alignment to the Decadal Plan, and subsequent planning documents reflected the CSIR's commitment to such a shift.
- A draft framework for the Innovation Compact has been developed.
- The inaugural meeting of the Science and Innovation IMC took place 25 November 2021.

Feedback from the inaugural meeting of the Science and Innovation IMC

INAUGURAL MEETING OF THE INTERMINISTERIAL COMMITTEE ON SCIENCE, TECHNOLOGY AND INNOVATION

Programme

25 November 2021
12:00 to 14:00
Microsoft Teams

Chair: Dr BE Nzimande, Minister of Higher Education, Science and Innovation

12:00	Welcome and introduction of IMC members by the Chair
12:10	Background on the Interministerial Committee on STI by the Chair
12:20	Presentation of the draft terms of reference for the IMC led by the Chair
12:40	Presentation on the Decadal Plan by the Director-General of Science and Innovation
13:10	A case study on the role of innovation in socio-economic development by the Chair of the National Advisory Council on Innovation
13:25	Discussion and decisions on – • the draft terms of reference for the IMC • the proposed STI priorities to address Societal Grand Challenges • the revised Strategic Management Model and the budget coordination mechanism for STI • the Innovation Compact
14:00	Way forward and closure by the Chair

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2030 NDP

STAY SAFE
VACCINATE TO SAVE SOUTH AFRICA
TOGETHER WE CAN BEAT CORONAVIRUS

Excellent attendance of the inaugural Science & Innovation IMC

- 17 Ministries were invited, 12 attended (at the level of Minister, Advisors, DG or DDG).
- The table below shows the level of attendance: 8 Ministers attended, 8 DGs and 4 DDGs and/or advisors.

MINISTERS	DIRECTORS-GENERAL	ADVISORS AND DDGS
Higher Education, Science and Innovation (incl. Deputy Minister)	Science and Innovation	Science and Innovation
Trade, Industry and Competition	Higher Education and Training	National Treasury
Communications and Digital Technologies	Trade, Industry and Competition	Centre for Public Service Innovation
Forestry, Fisheries and Environment	Public Enterprises	International Relations and Cooperation
Public Works and Infrastructure	Public Works and Infrastructure	
Public Service and Administration	Planning, Monitoring and Evaluation	
Cooperative Governance and Traditional Affairs	Communication and Digital Technologies	
Public Enterprises	Small Business Development	

Feedback from the IMC (1)

- **Issues raised by IMC Ministers**
  - Sharpen focus on supporting commercialisation of SA's IP to support industrialisation.
  - Highlight the importance of building local capabilities.
  - Highlight the role of logistics and infrastructure to link to the African Free Trade Area.
  - Include the focus areas of the Decadal Plan in the TORs.
  - Dept. of Labour and Employment should be a standing member of the IMC, as innovation can both create and reduce employment and labour strategies needed.

Feedback from the IMC (2)

- The importance of integrating STI into the long-term planning of government is clear, and should be highlighted.
- South Africa needs a skills development and training Master Plan. It is necessary to quantify the skills needed per area, develop realistic quantitative targets and assign responsibilities to appropriate departments and role players. But skills development is a cross-cutting priority and so all government departments need to contribute to the targets as appropriate.
- There is a need to create learning opportunities for South Africans through study tours of high-performing STI-intensive countries.

Feedback from the IMC (3)

- The core team of the IMC should include the DPSA to assist with engendering an innovation mindset and skills across government.
- The role of the Centre for Public Service Innovation can also has a role to play in creating an innovation-enabled state.
- The objectives of the IMC should also include reference to how STI can contribute to South Africa meeting her international obligations e.g. on the Sustainable Development Goals.
- A central repository is needed where government can collect all the STI-related learning it derives from international visits. This input was made in support of Minister Dlamini-Zuma's input on making provision for learning from international partners.

Feedback from the IMC (4)

- The Department of Transport is pivotal to an innovation-enabling environment, e.g. to ensure access to markets and functioning ports for international trade – and will be included in IMC.
- Similarly, the DPSA will be included in the IMC.

Next steps in the implementation of the Decadal Plan

Next steps

- With regard to the IMC and its programme of work:
  - Update the Terms of Reference, as discussed in the meeting.
  - Institutionalise the DGs' Technical Committee and work programme.
  - Finalise the Innovation Compact and confirm the priority projects with government partners.

- Start work on the STI Presidential Plenary

- Have follow-up engagements with industry, social partners and NEDLAC to ensure their continued commitment to the priorities and discuss potential contributions from them.

- Deepen the work of integrating STI into long-term government planning and budgeting with the National Treasury and the DPME.


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