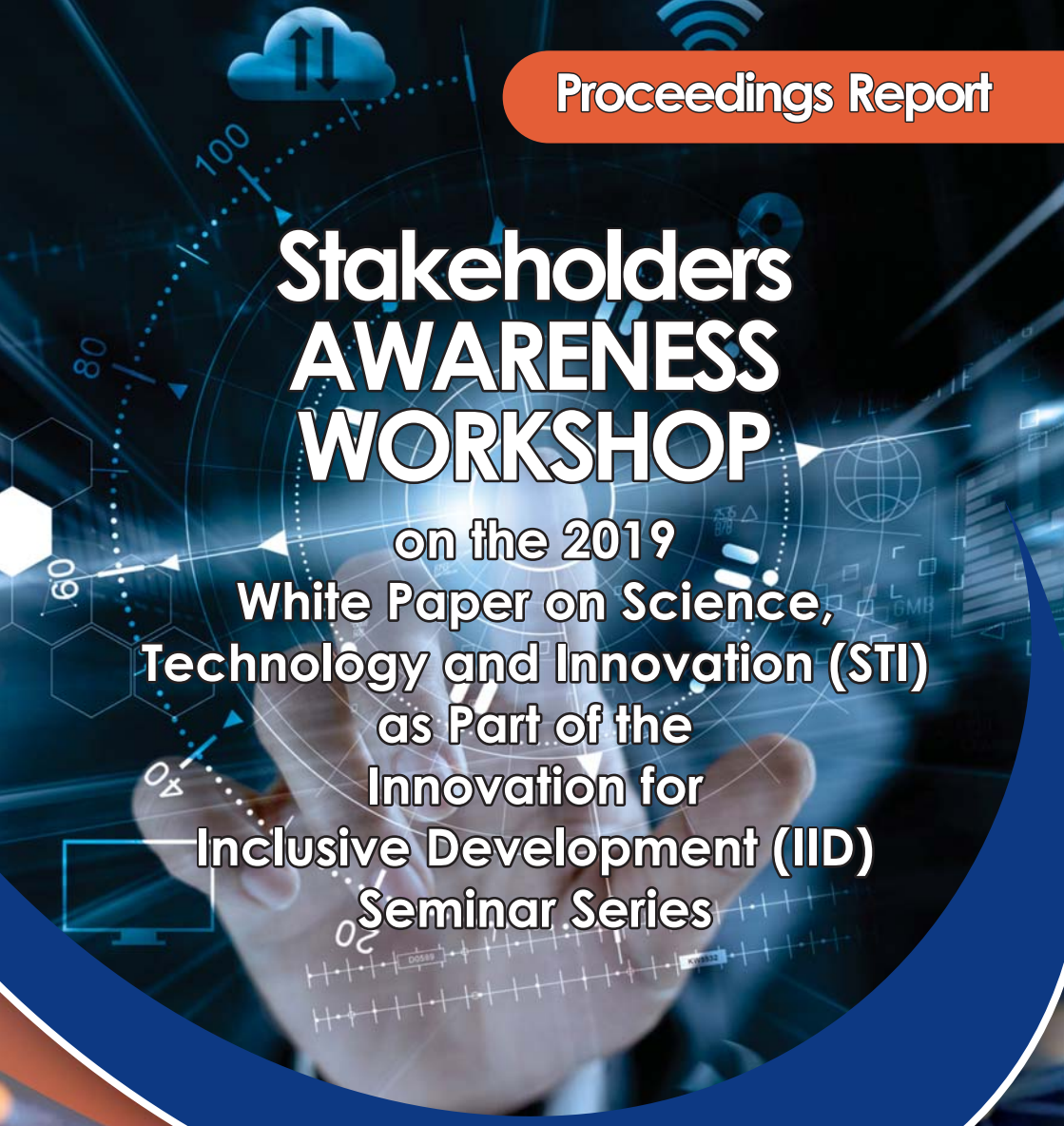
Proceedings Report

Stakeholders AWARENESS WORKSHOP

on the 2019 White Paper on Science, Technology and Innovation (STI) as Part of the Innovation for Inclusive Development (IID) Seminar Series



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The Academy of Science of South Africa (ASSAf) was inaugurated in May 1996. It was formed in response to the need for an Academy of Science consonant with the dawn of democracy in South Africa: activist in its mission of using science and scholarship for the benefit of society, with a mandate encompassing all scholarly disciplines that use an open-minded and evidence-based approach to build knowledge. ASSAf thus, adopted in its name the term 'science' in the singular asreflecting a common way of enquiring rather than an aggregation of different disciplines. Its Members are elected based on a combination of two principal criteria, academic excellence and significant contributions to society.

The Parliament of South Africa passed the Academy of Science of South Africa Act *(No 67 of 2001)*, which came into force on 15 May 2002. This made ASSAf the only academy of science in South Africa officially recognised by government and representing the country in the international community of science academies and elsewhere.

This report reflects the proceedings of the Stakeholders Awareness Workshop on the 2019 White Paper on Science, Technology and Innovation (STI) as part of the Innovation for Inclusive Development (IID) Seminar Series held at Future Africa. Views expressed are those of the individuals and not necessarily those of the Academy nor a consensus view of the Academy based on an in-depth evidence-based study.

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on the 2019 White Paper on Science, Technology and Innovation (STI) as Part of the Innovation for Inclusive Development (IID) Seminar Series

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ACKNOWLEGEMENTS

This proceedings report is a product of the Academy of Science of South Africa (ASSAf) in partnership with the Department of Science and Innovation (DSI) on the Innovation for Inclusive Development (IID) seminars. The IID learning interventions align with one of DSI's strategic objectives, namely, to use "knowledge, evidence and learning to inform and influence how science and technology may be used to achieve inclusive development". The purpose is to demonstrate how innovative technology solutions may be used to improve the capacity of the State to deliver and improve access to basic services, and thereby advance local economic development.

The seminar entitled "Stakeholders Awareness Workshop on the 2019 White Paper on Science, Technology and Innovation (STI)" provided an opportunity for stakeholders to reflect on the policy intents of the cabinet approved 2019 White Paper on Science, Technology and Innovation (STI). The White Paper sets a long-term policy direction for the South African Government to ensure the growing role for the STI, which is aligned to the developmental challenges of the country. The paper is based on the extensive review of the National System of Innovation (NSI) and focuses on using STI to accelerate inclusive economic growth and to assist South Africa to benefit from global development such as rapid technological advancements, geo-political and demographic shifts. The new White Paper seeks to ensure that South Africa benefits from the potential of STI to advance the objectives of the National Development Plan (NDP) by instilling a culture of valuing STI, expansion and transformation of research systems, institutional landscape and human resource base of the STI, increased funding and funding efficiencies etc. The outcomes of the seminar will feed into the DSI's Decadal Plan to direct the implementation plan for the 2019 White Paper on STI.

ASSAf acknowledges the DSI and all the speakers. The 130 participants from various sectors including the public and private sector, non-governmental organisation (NGOs), academia and media are greatly acknowledged individually and collectively.

The contributions of the ASSAf Liaison Programme, led by Mr Stanley Maphosa and the contact person for this project Dr Tebogo Mabotha's contributions throughout the project are hereby acknowledged and appreciated.

Prof Himla Soodyall
ASSAf Executive Officer

WELCOME AND INTRODUCTION

Mr Imraan Patel, Deputy Director General: Socio-Economic Innovation Partnerships, Department of Science and Innovation, DSI

Mr Patel set the tone for the deliberations by reflecting on the following:

- The debate about the Smart cities concept was raised in President Ramaphosa's recent State of the Nation Address (SONA). The President called for a discussion on how to reimagine Sustainable Human Settlements (SHS), and in this context, input from this seminar would be welcomed. Those in STI could help contribute to this discussion, for example by considering possible small-scale pilot projects and leveraging from what already exists in this space.

  Mr Patel anticipated that the discussions at this workshop would highlight STI's ambition, drive and support for the Smart cities concept within the space created through the White Paper on STI, as well as short- and longer-term measures for implementation.

- Increasingly, a very strong narrative around partnerships has emerged in political discourse in recent years. This was one of the key points in the Minister's foreword to the White Paper on STI and came across strongly in the SONA and many of the responses from other Ministers. The coordination question has not yet been fully resolved. The White Paper correctly identified that coordination is a series of things and has to do with institutions as well as mindset. This called for deep reflection as well as a process of iteration and finding appropriate institutional models. Much was happening in this space, yet the mechanisms for ongoing systematic coordination have not been determined.

  Mr Patel appealed to participants to be open to listening to what others were doing and find the connections between different spaces in order to identify high impact projects or initiatives.

- The issue of inclusive development required a more deliberate approach. This called for continuous analysis so as to be able to internalise key stakeholders groupings and ensure inclusion of communities outside of the STI sector. Inclusion had to do not only

with what was in the White Paper, but also about learning to do transformation in terms of partnerships to ensure inclusion.

Mr Patel requested that the words 'transformation, innovation and partnerships' in the Minister's foreword to the White Paper should serve as a backdrop to the discussions.

Outcomes of this workshop would feed into the DSI's Decadal Plan, serving as drivers for future plans and partnerships.

WHITE PAPER ON SCIENCE AND TECHNOLOGY 2019

Ms Urszula Rust, Senior Policy Specialist, Department of Science and Innovation, DSI

Ms Rust's presentation provided a high-level overview of the White Paper to set the scene for the group discussions.

Despite substantial progress made by the DSI and STI-intensive departments, the National System of Innovation (NSI) has not fully lived up to its potential in supporting the country's economic growth and development challenges. This, together with the changes in megatrends and global technologies, highlighted the need to update STI policy. The 2019 White Paper on STI was approved on 13 March 2019 and its vision is stated as 'STI enabling inclusive sustainable South African development in a changing world'.

The White Paper's objectives are to:

- Instil a culture of valuing STI
- Create an enabling and inclusive NSI governance environment
- Facilitate innovation
- Increase and transform the human resource base of the NSI

- Expand and transform the research system
- Expand the institutional landscape
- Increase funding and funding efficiencies.

Some examples of the policy intents in the White Paper relating to the objectives are:

- Creating and enabling and inclusive NSI governance environment, achieved through:
  - An Annual STI Plenary chaired by the Presidency, that would bring together business, civil society, academia and government to discuss NSI needs and progress
  - A Ministerial STI Structure that would adopt an Innovation Compact that would drive coordination across government
  - Bolstering the National Advisory Council on Innovation (NACI) to support the Ministerial STI Structure and undertake monitoring and evaluation (M&E) for the NSI
  - Using Intellectual Property (IP) from publicly funded research and development (R&D) to help transform the ownership of the economy
  - Institutionalising a gender framework
  - Revitalising critical STI policy nexuses (on the economy, on education, and on social issues)
  - Improving sector coordination via Sector STI Plans, fully involving business
  - Empowering the role of civil society in innovation.
- Innovation would be enabled and facilitated through:
  - Strengthening the innovation culture
  - Adopting a government Innovation Compact aligning STI and policies of other government departments
  - Encoding sovereign innovation priorities in Decadal Plans to focus effort and resources
  - Harmonising innovation incentives to increase access for innovators
  - Broadening policy focus on innovation beyond R&D and include localisation

- Increasing provincial and local level innovation
- Supporting grassroots and social innovators
- Strengthening Offices of Technology Transfer
- Providing increased support for business
- Improving the integration of innovators into global value chains
- Adopting locally developed technologies
- Tapping new sources of growth (such as Circular/green economy, the next industrial revolution).

- The human resource base of the NSI would be increased and transformed through:
  - Building a science-aware society by training science journalists and expanding the network of science centres (with support from business) for example
  - Increasing the Science, Technology, Engineering, Mathematics (STEM) pipeline, developing more technical skills, providing more training abroad and retaining researchers in the higher education system.
  - Strengthening international collaboration and science diplomacy, especially in Africa.

- Expanding and transforming (in the wider sense) the research system through:
  - Utilising the potential of the historically Black universities and Universities of Technology, as well as the 'silent majority'" (lecturers who do very little, if any, research)
  - Institutionalising a research prioritisation process (while ensuring that there is room for curiosity- based research) in order to be able to fund certain initiatives at critical mass
  - Funding priority research areas better.
  - Increasing support for research (basic, inter- and transdisciplinary, Social Sciences and Humanities)
  - Supporting a culture of openness, as and where appropriate
  - Increasing investment in infrastructure, including cyber infrastructure.

- Increasing funding and funding efficiencies through:

- Targeting Gross Expenditure on R&D (GERD) of 1.5% of Gross Domestic Product (GDP) in the next ten years
- Establishing a Sovereign Innovation Fund
- Exploring untapped funding sources (such as corporate social investment, crowd funding)
- National departments setting aside an appropriate % of budgets for STI
- Increasing investment in incubators and grassroots entrepreneurs by provincial and local departments.
- Promoting STI-focused Foreign Direct Investment (FDI) and targeting multinational corporations.
- More support from development finance institutions for STI-driven industrialisation
- Harmonising funding instruments and improving their efficiency.
- Improving the allocation of resources through an STI public budget coordination process that interfaces with the Department of Planning, Monitoring and Evaluation (DPME) Budget Mandate Paper and the National Treasury processes.

There has been a major shift from the 1996 to the 2019 White Papers in several areas. The overarching shift concerns the 1996 White Paper's focus on developing and building the NSI, whereas the 2019 White Paper focussed on increasing the impact of STI on the country's economic and developmental priorities, The 2019 White Paper broadens the Science and Technology (S&T) focus to include innovation, addresses cross-cutting partnerships and sectoral STI plans and budgets, and reflects the move towards openness and the 4th Industrial Revolution (4IR).

The DSI recently began working on a Decadal Plan that would direct the implementation plan for the White Paper and guide research, technology and innovation focus areas for the NSI over the next decade. It would be a collaborative document, developed with input from government as well as business, academia and civil society. Documents that would provide input to the Decadal Plan include the White Paper on STI, the NACI foresight study, the NACI review of the National Research and Development Strategy and the Ten-Year Innovation Plan, and the National Development Plan (NDP).

DISCUSSION: QUESTIONS/COMMENTS

(Question) Prof. Kobus Eloff, University of Pretoria (UP): I am very encouraged with the 2019 White Paper. However, success needs to be supported and excellence needs to be rewarded. This is missing. White males and top universities can do a lot in this area. Historically Black universities should be supported by building collaborations. A lot of good work with a lot of economic potential is going on at universities, but there is a gap between the research and commercialising innovation.

(Response) Ms Urszula Rust, DSI: The point about rewarding research excellence is valid. In the discussions around the White Paper, building linkages between established research-ers and emerging researchers, retention of established researchers of whatever race and gender, and the need for incentives for established researchers to monitor and develop young people in the system were addressed. The issue is at the forefront of the thinking, but more deliberation on how best to do this is necessary. Through the Decadal Plan process, it will be possible to come up with particular programmes that can be measured.

(Comment) Mr Mmakgabo Maheya, South African Bureau of Standards (SABS): Innovation and technology are an integral part of development, modernisation and commercialisation. For this reason, the Department of Trade and Industry (the dti) commissioned a study on technology commercialisation. Government departments and the different sectors are working in silos and their different policies continue to be a cause of frustration. SABS established a committee on innovation management three years ago. Prior to that, the DSI was regarded as the custodian of innovation in the country. The committee is involved with in global discussions and has developed a document on idea management, strategic intelligence management and IP management. Rewarding excellence is outlined in idea management. Forums such as this should involve all the role players.

(Response) Ms Urszula Rus, DSI: It is true that we continue to work in silos, but all the important actors need to be brought on board and decide together how best to counter this. We need to understand entrenched agendas that make it difficult for people to work together. There might be a storming, forming and norming phase as these forums are brought into a policy learning space where we find out what others have been doing, what has worked and which lessons can be learnt. This is one of the policy intents in the White Paper.

(Question) Mr Sobuza Mathebula, Sol Plaatje Municipality: What are the different phases of developing DSI's Decadal Plan?

(Response) Ms Urszula Rus, DSI: The Decadal Plan will be based on the White Paper, the NDP, the NACI foresight study and reviews, as well as the plans of the new administration. The DSI is at the stage of looking at these documents and trying to define possible focus areas. These areas will be mapped to identify who owns the area, the progress that has happened in that area and so on. The next step is to have sector specific workshops to develop the content of the plan and once approved, there will be a public consultation process. The process should take a year or so. People will be brought into the process at the appropriate times and inputs are welcome.

COMMENT:

From the presentation, there is a huge need for people doing work around the coordination of the NSI both at the high level and around the emphasis on science for transformation. I noted the comments on IP and the need to broker IP more productively into the economy. It is even more difficult if we do not have technologies and it is around knowledge that is in people's minds as this kind of science impacts processes around trust in people. We need to find ways in the Decal Plan to prioritise the funding it takes to have these 'silent coordinators' at different levels within the system and look at the M&E indictors for this kind of work, rather than just focussing on the science outputs.

(Response) Ms Urszula Rust, DSI: This is an insightful point. The White Paper talks about coordination not only in terms of committees, but also around values and setting up STI units in relevant places to start instilling an innovation mindset into work. A M&E and policy learning framework, building the knowledge-policy interface, is going to be developed. These are the kinds of interventions to be considered.

COMMENT:

South Africa does very well in terms of R&D but is stifled when it comes to implementation. When dealing with policy makers, scientists and

innovators need to be very clear about how they can assist them using existing tools. We cannot afford scientific ideas to be stifled and budgets exceeded but still not being at the implementation stage.

(Response) Ms Urszula Rust, DSI: This is about who to bring on board at what stage. It will be difficult to bring policymakers on board too late. The issue is about how to support commercialisation and make sure, even at the sectoral level, that the initiatives work together. We need to come up with 'operating procedures' for these kinds of projects. It is hugely frustrating for scientists, once they have done a lot of good work, to try to find somebody to take the work forward. We will need to do this differently and will need guidance from the people at universities who actually do the work, about what they need to make this work and the kind of frameworks that need to be put in place.

(Comment) Mr Grant Greyling, The Innovation Hub: Please share more details about the Sovereign Innovation Fund.

(Response) Mr Imraan Patel, DSI: The concept of the Sovereign Innovation Fund has been accepted. At the time this was being discussed it was combined with the gaps that the Department of Small Business Development had identified. There was a joint input to National Treasury to conceptualise the fund. The work has not been fully developed because the requirements far exceed what is available. Nevertheless, work is being done and as the new administration comes into play, final decisions will be made on how to take it forward. The idea of the fund is to create a targeted instrument that addresses the gap between good ideas and commercialisation. The rules still have to be developed.

INNOVATION FOR INCLUSIVE DEVELOPMENT STRATEGY

Ms Nonhlanhla Mkhize, Chief Director: Innovation for Inclusive Development, Department of Science and Innovation, DSI

The workshop provided an opportunity to reflect on the policy intents of the 2019 White Paper and ensure the incorporation of stakeholder interventions and initiatives in the Decadal Plan, being mindful of emerging and converging technologies and their influence on the quality of life.

The 1996 White Paper committed to harnessing S&T for economic growth as well as improving quality of life for all. In around 2002, the National Research and Development Strategy introduced the Technology for Poverty Reduction Mission focussing on harnessing S&T to develop technology solutions for improved access to basic services and capacity of the state to deliver those services, and to ensure an inclusive and accessible NSI. The Technology for Poverty Reduction Mission was implemented through sustainable livelihoods (or innovation for local economic development (LED)) and S&T for SHS. In 2012 the Ministerial Review, which reflected on the performance of the NSI in relation to the 1996 White Paper, indicated poor responses to market and social demand and an under-conceptualised and under-developed role of social innovation in the NSI. The 2019 White Paper focussed on STI with the intentional focus on impact and attaining development objectives.

The DSI's understanding of the notion of inclusive development is development focussed on promoting access, participation and benefitting from the STI system in a way that builds capabilities, unlocks opportunities and includes the living conditions of all. The STI system needs to contribute to the alleviation of poverty and the reduction of inequality, ensuring that the system contributes to transforming South Africa.

The main pillars of the IID Strategy within the context of the White Paper are:

- Innovation for basic service delivery: Although household access to basic services has improved substantially since 2002, there remain under-served areas where accelerated access and improved capacity to deliver and infrastructure maintenance are needed. Work done in universities, science councils, the private sector and non-profit organisations (NPOs) should contribute in these areas. In instances where government has invested in the development of technology solutions, there are no clear policies relating to the adoption and acquisition of these technologies. Policy intents relate to public procurement as being key to further innovation, supporting commercialisation of publicly funded IP, exploiting new sources of growth, focussing on ICT and the 4IR and strengthening government's role as an enabler of innovation.
- Innovation for local economic development (ILED): One of the key priorities in this area is ensuring that everyone is able to benefit from investments in STI and have access to and participate in STI activities and opportunities. Policy intents relate to increasing the spatial footprint of innovation in South Africa, innovation to revitalise existing sectors as well as strengthening government's role as an enabler for innovation. ILED is premised on the following priorities: strengthening local systems of innovation through enhancement of local ST&I capabilities, capacities and networks, catalysing local industries/ clusters through innovation-centred systemic interventions and enabling local government and local economic development actors to foster innovation-driven LED. In supporting social and grassroots innovation and increasing the social footprint, it is best to align with provincial strategies. Acknowledging that there are many actors supporting grassroots innovators, it is important to work together in a way that maximises output, efficiency, and eliminates duplication.
- Youth STI: Priorities in this area concern the creation of economic opportunities for youth through STI, ensuring that the STI system responds to the needs of young people and contributes to reducing unemployment of youth, and interventions that respond to young people who are not employed or in education and training.
- Enabling policy environment: In the commitment to invest in certain technologies, the acquisition of the technologies has to be enabled through responsive and supportive policies. As a United Nation member state, South Africa has committed to harnessing STI for the development agenda by responding to the Sustainable Development Goals (SDGs).

- Upgrading the M&E capacity and policy capacity of the NSI: M&E is essential in order to be able to measure the impact of investment in STI and the capacity of the state to be able to deliver on its mandate.

DISCUSSION: QUESTIONS/COMMENTS

(Question) Gauteng Department of Economic Development (GDED):

- How does DSI see the role played by provinces in terms of contributing to the White Paper?
- In terms of opportunities for collaboration, the Gauteng Provincial Government is in a process of revising the Gauteng Innovation Strategy and has partnered with several entities to jointly ensure that the revised provincial innovation system applies to current requirements both domestically and globally. The presentations provide a sense of how we can adopt the DSI White paper in our provincial dynamics and together with the Gauteng Provincial Forum (to be launched soon) find opportunities for collaboration. I will communicate with colleagues from the DSI after this workshop.

(Response), Mr Imraan Patel, DSI: The comments are welcomed. The DSI is already working with the Gauteng Province with the idea of having a joint consultation to ensure alignment in areas of focus and responsibility.

(Question): Is there a system in place that allows monitoring of lessons learnt from a project management point of view? This is important because good ideas need to be implemented. Is there a scientific view of the country's political system? This is crucial. Do we understand the tools and the powers of the persons that are approached and are we packaging them the right way?

(Response) Ms Nonhlanhla Mkhize, DSI: We are increasingly being asked about the contribution, value and impact of our investment in terms of improving the quality of life of ordinary South Africans. At the political level, we are seeing a greater appetite for innovation. The question is, if we have so many solutions that respond to inclusive development, why are we not seeing them? We are responsible to ensure policy coherence and alignment so that a sector that potentially absorbs the technologies developed by other sectors is not hindered by procurement legislation. In terms of project management, a range of projects have been implemented by other departments and partners beyond the DSI

and key lessons have been learnt. One such lesson is that working in a complex space requires project management skills. It is necessary for us to improve these skills.

(Response) Mr Imraan Patel, DSI: There is a lot of science behind the political system. There is a difference between the existence of information and knowledge and its use. Nowadays there is a much greater focus on evidence-based policymaking. Government now has a well-developed M&E system and there is a series of evaluations of the DSI's big programmes. Much of this concerns the policy-making process and how politics either hampers or enhances this process. Even though the science is available, the problem is not easy to solve because the country's political set-up is complex and dynamic.

BREAK-AWAY SESSIONS

Participants were asked to discuss and respond to the following points in the break-away groups:

- What are the ongoing initiatives happening in your sector (beyond government)?
- How should information about the initiatives be made available?
- What opportunities are there for collaboration?
- What suggestions do you have in terms of policy intent interventions?

SESSION ONE: S&T FOR SUSTAINABLE HUMAN SETTLEMENTS

Chair: Mr Ephraim Phalafala, Deputy Director: S&T for Sustainable Human Settlements, Department of Science and Innovation, DSI
Presenter: Ms Nonhlanhla Mkhize, Chief Director: Innovation for Inclusive Development, Department of Science and Innovation, DSI

SHS supports the experimentation of S&T-based innovations for tackling poverty including the creation of sustainable job and wealth opportunities, building SHS, and enhancing the delivery of basic services, and focusses on innovative and mature technologies that do not yet have widespread

application, but have the potential to achieve government's broad development objectives.

Current programmes and SHS projects are:

- Innovative Partnership for Rural Development programme: Basic services using technologies are deployed in rural areas through priority district municipalities to demonstrate how innovation can improve the lives of people.
- Accelerating Sustainable Water Service Delivery project: The project is focused solely on alternative ways of delivering water services to rural communities using S&T and has been implemented in four district municipalities.
- Technology for Rural Education and Development programme: The programme addresses a whole range of innovations using technology to improve education and has been implemented in the Eastern Cape in partnership with the Department of Basic Education. Lessons learnt from the programme were used to inform Operation Phakisa.
- SHS Roadmap: The roadmap is currently being developed in partnership with the CSIR in order to enhance the uptake of innovations in the SHS space
- Development of knowledge products and decision support tools and hosting learning interventions: These interventions provide assistance with implementing new technologies
- Sanitation Technologies Demonstration Programme: Testing a wide range of technologies in the sanitation sector for application in local municipalities
- Grassroots Innovation Programme: The programme has been implemented and would be up-scaled in acknowledgement of the fact that innovation can happen outside the R&D space.

Some of the relevant sector policies that are taken into account in charting the way forward in SHS are:

- NDP
- Back to Basics Programme
- National Sanitation Policy
- The New Urban Agenda

- SDGs
- White Paper on Human Settlements
- National e-Government Strategy.

Policy intents of the White Paper that have a direct link to SHS are:

- Adopt a broader conceptualisation of innovation beyond R&D
- Use public procurement as a vehicle to further innovation
- Support innovation for social and grassroots innovation to enable all the sectors of society to access the knowledge infrastructure
- Strengthen government's role as an enabler for innovation.

Proposed interventions to feed into the Decadal Plan include:

- Full implementation of the Grassroots Innovation Programme
- Technology Acquisition and Deployment Fund
- Smart Cities and Green Villages demonstration
- Innovation for Basic Services Delivery
- ICT for Development (ICT4D).

DISCUSSION: QUESTIONS/COMMENTS

(Comment) Mr Ephraim Phalafala, DSI: The DSI is in discussions with the dti about their programme that addresses commercialisation of ideas. The plan is that the DSI will take ideas (proof of concept) until the commercialisation stage and then the dti will assist with the commercialisation process. Currently, the details of the collaboration are being outlined.

COMMENT:

Developing Smart cities will require broad stakeholder involvement and the concept needs to be clearly understood in the local context.

(Response) Mr Ephraim Phalafala, DSI: There will be broad involvement in the implementation of the Smart cities concept. The move towards Smart cities (and Big Data) presents many opportunities and cannot be avoided, particularly in the context of increasing populations and urbanisation.

(Response) Ms Nonhlanhla Mkhize, DSI: Government is but one of many stakeholders in the conversation about SHS, which is addressed through a framework that has to do with the deployment of innovative building technologies with Smart cities as one of the focus areas. The South African Local Government Association (SALGA) is developing a concept document on Smart cities. The DSI is party to that and its role is to bring as many people as possible into the conversation.

Question: How will the Technology Acquisition and Deployment Fund be funded?

(Response) Mr Ephraim Phalafala, DSI: There will not be additional funding. Existing resources will have to be reprioritised.

(Response) Ms Nonhlanhla Mkhize, DSI: Innovative technology solutions are being developed by several institutions but are not necessarily reaching the deployment stage even when government is the target client. The DSI is committed to fund these up to the end of the experimentation phase, but an enabling policy is essential in order to harness STI in terms of delivering basic services. The extent to which procurement policy enables deployment of innovative technology solutions has to be considered. A further challenge is that there are pockets of funding for STI distributed across government departments. The Fund will take care of the acquisition of the technology, but deployment of the technology requires many components to work together.

(Question) Mr Ephraim Phalafala, DSI: What is your organisation's current focus and what area of STI is it involved in?

RESPONSES FROM PARTICIPANTS:

Response 1: Universities are producing high level skills that feed into whatever is necessary. Some universities function better than others. Universities undertake research so that their students can graduate with higher degrees. The research is focused on whatever the professors can

get money to do research on. Doing research is not possible without money.

Response 2: A comment was made that many lecturers are not doing research. It should be clear that they are not doing research because they are busy teaching very large classes of students. They are the users and implementers of research and need support in order to be able to inspire and inform students using the latest research. Their students become planners in municipalities and take on other important roles in society.

Response 3: We have a significant amount of competent and skilled people in high end technology. One thing that has always been missing is coordination. The proposal is to have an innovation forum that is ongoing and allows the public and private sectors as well as students to engage to resolve real life problems on an ongoing basis. This structure could be headed by DSI but involve everyone, across sectors and at all levels. This way IP will not collect dust because there will be direct access to the market, and it will help municipalities to unblock bottlenecks and resolve service delivery problems. A space needs to be created for energy and intelligence to come together to resolve problems. Let us create the conversation that will help move things forward.

Response 4: A vast source of innovation is available from universities in the form of Master's and PhD theses that are gathering dust. They are not taken to the next step. This is a waste. The data should be mined to see what ideas could be taken further.

Response 5: The CSIR is developing a 10-year roadmap and the Department of Human Settlements has a framework for innovation and transformative technologies. The roadmap is seen as a response to that and aims to instil a culture of innovation across a wide spectrum of stakeholders and contribute to developing an innovation pipeline. The principle idea is to look at how to foster innovation throughout the value chain and unlock the areas that do not flow. Numerous platforms already exist but are not known to everyone. Participants are invited to collaborate in the development of the roadmap.

Response 6: The CSIR has had thematic, cross-disciplinary discussions on Smart cities for two or so years. A lot of considerable thinking has taken place around this already. Some work has also been done on

neighbourhoods of the future and we are now looking at township economies and Smart technologies. We can also give input on green villages and Smart cities.

Response 7: Denel has substantial experience in technology solutions for various aspect s of SHS.

Response 8: We have recently been focussing on the management of drones in the context of air traffic control. There are many opportunities in this area, especially in terms of delivering services to rural communities that are difficult to access.

Response 9: We focus on ICT skills development and fund programme related to ICT. We are in a process of establishing a 4IR unit with funding from government. There will be a focus on developing the new skills that will be required in preparation for the 4IR. Government institutions operate in silos and collaboration needs to be improved, particularly in terms of cross-funding. The infrastructure of some of the rural programmes does not allow for implementation of 4IR technologies.

(Comment) Ms Nonhlanhla Mkhize, DSI: The private sector will fund ideas, but there is a need to ensure that the ideas are taken forward. There needs to be coordination between the creation of ideas and implementation of those ideas. With respect to an innovation forum, the White Paper suggests a high-level structure, but the forum is more about how to use existing mechanisms to ensure that the actions needed to move ahead are happening.

COMMENT:

Although much has been done to put in place policies, implementation of those policies have not been good. It would be very useful if we can understand what policies are getting in the way of implementing innovative technology solutions to help resolve social and economic challenges. This important aspect should be investigated.

(Response) Ms Nonhlanhla Mkhize, DSI: We would appreciate participants' specific policy 'pain points' and suggestions.

COMMENTS:

- The DPME is currently working on evidence mapping and synthesis. Through evidence maps we are able to package data and information from government organisations to ensure that evidence is available when policy decisions are made. We also try to speed up the process by getting IT solutions to help with the extractions.

- We should talk about the standards that need to be in place in order for people to collaborate. There should be a non-negotiable framework that people need to meet in order to get the line of support. Other issues also need to be discussed, such as who makes the decisions in that line of collaboration. A template will help. Roles and responsibilities in terms of collaboration need to be clear. A lot of people start off engaging but never see the process through. At what point does who become liable for what resources in order to achieve an end result. Collaboration will move ahead if such standards are in place.

- Since around 2010, reporting on national projects has slowed down. A number of projects have been established but there is a lack of reporting on these projects and they fade away over time. This is a reason for many good ideas becoming white elephants. Government departments that initiate projects in the provinces should consider a more hands-on type of reporting on those projects. This problem also has to do with management.

(Comment) Ms Nonhlanhla Mkhize, DSI: Participants will be invited to a seminar with SALGA to discuss Smart Cities and concepts. There are pockets of work across the country, each working on aspect of what this means. Work is being done by South African institutions, but there is work that is externally funded and influences how we should define Smart cities in the South African context. This is a complex space that needs clarification and definition, and we need to discuss what Smart concepts mean for South Africa.

SESSION TWO: INNOVATION FOR LOCAL ECONOMIC DEVELOPMENT (ILED)

Chair: Mr Eric Watkinson, Department of Science and Innovation, DSI
Presenter: Ms Busisiwe Ntuli, Director: Technology for Sustainable Livelihoods, Department of Science and Innovation, DSI

The 1996 White Paper was silent on the sub-national levels of the NSI and focused on the formal institutions in the NSI. The DSI's ILED strategy seeks to realise some of the aspirations of the 2019 White Paper, particularly in relation to LED, building on the other levels of the NSI towards a prosperous and inclusive society and economy.

Policy intents of the White Paper that link to LED and speak specifically to ILED refer to increasing the spatial footprint of innovation in South Africa, supporting social and grassroots innovation and strengthening government's role as an enabler for innovation, ensuring that local municipalities play an active role in fostering innovation driven LED. The 2019 White Paper moves towards transforming the geography of innovation in South Africa, ensuring that the location of innovation activities expands beyond urban areas to other peripheral spaces and attracts grassroots innovators in the local context. The DSI recognises that regional and local economies play a critical role in national inclusive growth and a knowledge economy.

There are a number of global examples that support the focus on regions and local economies, transforming the geography of innovation to avoid the perpetuation of uneven growth and encourage inclusion, while acknowledging the potential of the 4IR to further widen inequalities and hinder inclusive economic development.

A study on the state of innovation in local economic planning and execution in South Africa was conducted in 2015. The findings of the study became key to how ILED was conceptualised, particularly in terms of effectively driving inclusive development, job creation and poverty elimination.

The three pillars of ILED contribute to reversing historical geographies of innovation and building local knowledge economies that contribute to inclusive development. These are:

- Strengthening local STI capabilities by ensuring that capacity exists

(particularly in marginalised spaces) by way of infrastructure and human capability.

- Catalysing local industries, clusters and value-chains through exploitation of STI (systems of innovation and production)
- Enabling local government to foster innovation driven LED.

The DSI has introduced instruments and programmes in order to realise the ILED objectives, summarised as follows:

Objective	Programmes and Instruments
Strengthening local innovation systems	• Living Labs Fund (to support grassroots innovators) • Tools for Local Innovation Advancement (T4LIA)
Catalysing local industries and value-chains through STI	Systems of innovation and production – sector development
Enabling local government to foster innovation-driven LED	• Innovation champions for LED • Decision support tools: In-Touch Africa, Aquaculture app, T4LIA • Capacity

The DSI is working closely with the Department of Cooperative Governance (DCoG) to incorporate STI in the new National Framework on LED. This enables the different spheres of government to speak collectively about innovation and to have an LED strategy that informs the innovation agenda, seeking to improve how LED is conceptualised and managed in South Africa to effectively address unemployment, poverty and inequality (interpersonal and spatial).

The DSI will soon begin drafting the STI Decadal Plan, with an area of focus on ILED. The DSI together with the DCoG was engaging municipalities to collect case studies in order to pilot some aspects of the revised National Framework on LED, while also creating awareness of and getting buy-in for the framework as well as assisting municipalities to incorporate the innovation agenda in crafting their LED strategies and Integrated Development Plans (IDPs).

Participants were asked to point out the gaps in the ILED Strategy and the big initiatives that should be part of the Decadal Plan and consider partnering with the DSI in drafting the Plan.

DISCUSSION: QUESTIONS/COMMENTS

(Question) Prof. Kobus Eloff, UP: I cannot understand exactly how innovation can be taken to the rural areas and am concerned that money going to rural areas will provide very little return on investment. Are you talking about the application of innovation in rural areas? This would help tremendously. The main advantage of people in rural areas is the plant diversity available to them. This is extremely valuable. I cannot think of innovations in rural areas that can lead to job creation. UNP has done substantial research on valuable medicinal plants for human and animal consumption. Despite South Africa's rural plant diversity, there is often little income earning prospect from these species. What could innovation in other sectors of the rural economy offer e.g. services (water, electricity, refuse)?

(Response) Ms Busisiwe Ntuli, DSI: The question is a hot one, perhaps the Green Economy offers alternative rural income options. The points raised touch on a number of themes around application of knowledge or technology transfer versus inclusion in the innovation enterprise. There is a school of thought that subscribes to transferring technology that is developed elsewhere to rural areas and hope that it works. This is not necessarily wrong, but from the innovation for inclusive development perspective, open innovation needs to be promoted and knowledge generation should be owned by more than a select few within the system. People within rural areas can innovate. There are many examples of such innovations. Spaces are being created where people can test their ideas and advance the ideas into innovations.

COMMENTS:

- The concept of innovation as it is used in the presentations is confusing. Innovation is a process. Innovation for LED is different from innovation in LED. Concepts need to be clarified and used consistently or the discussion will remain at the level of policy intents and not move to specific policy actions. The White Paper does not offer conceptual clarity about the terms

- "Innovation", "Science" and "Technology" and it is not clear whether it is Innovation in Local Economic Development or Innovation for Local Economic Development. In ILED where is the driver, the locus and how shall the benefits and costs of research and development be distributed? How can new practices and services / products reduce social exclusion and environmental costs and build human capacity. Do we always need to do "research" in order to innovate?

- Issues to do with STI for inclusive development are not adequately covered in the discussions and in White Paper. Questions about how to deal with the distribution of benefits and costs of R&D and existing technologies, how to ensure that R&D and new technologies do not widen exclusion and how to reduce the social and environmental costs of new technologies need to be addressed.

(Response) Ms Busisiwe Ntuli, DSI: ILED emphasizes ownership of innovation by rural people- open innovation. It also focuses on resource-poverty and the means to advance economic development, through participation. For example, ILED could focus on water scarcity and participation in the design and management of irrigation systems. The importance of clarifying concepts is recognised and will receive the DSI's attention. ILED is based on the premise of local innovation and not just drawing from existing technologies and transferring to different spaces but encouraging knowledge generation in the local context with an appreciation for local problems and creating partnerships to collaboratively find solutions to local problems.

(Comment) Prof. Norman Marwashe, Agricultural Research Council (ARC): Indigenous Knowledge Systems (IKS) should feature more prominently. There must be clarity about what is meant by 'innovation'. It is often associated with universities, but it is much broader than that. There are many prototypes and new products that do not reach commercialisation because of the funding required to scale-up. If ILED is to be well understood by everybody, it will be important to engage beyond the formal research institutions to people on the ground. The tribal authorities need to be brought in the discussions on ILED. How should one tap into indigenous knowledge about locally available resources in rural areas? Who are the practical people who may develop and scale village "prototypes", so that they see the day of light?

(Response) Ms Busisiwe Ntuli, DSI: Perhaps traditional authorities are best able to advise. Spaces and the footprint of innovation relate to how to include in terms of infrastructure and human capability. This area of work is expressed in the White Paper, which talks about the need to decentralise innovation and R&D activities and have areas where there is focus on specific local problems. This is one way of extending the benefits of innovation. Some of the instruments being introduced (funding as a key instrument) ensure that other places and groups are reached and able to participate in the innovation enterprise. This also extends the benefits of innovation and ensures that inclusion does not remain an aspiration. The M&E component would look at these aspects. Indicators in the Decadal Plan will be very specific to how the benefits on the ground are realised.

(Comment) Prof. Refilwe Phaswana-Mafuya, North-West University (NWU): NWU's Mafikeng campus is located in in a rural area. We have had successful engagements with local communities about incorporating research not the work being done locally in order to maximise production and enhance LED. Innovation is not mutually exclusive. The more universities work with communities, municipalities and people at the grassroots level, the more can be achieved. Universities continue to try to not be ivory towers but to work with communities on issues that impact the daily lives of ordinary people.

(Response) Ms Busisiwe Ntuli, DSI: There certainly are examples of collaboration between universities and rural communities. Nevertheless, there are spaces where this is a serious disconnect between universities and communities, and where communities are simply used as research subjects and do not participate in the knowledge generation process. The concept of open science is not always embraced equally across the board. A lot can still be done in terms of strengthening the linkages. Any local institution ought to support LED and archaic research practices need to be done away with. As Universities with an interest in rural development, how do we foster real collaboration- during MSc / PhD research? For example, at North-West University there has been work with farmers on the importance of kraal manure. North-West University also has a focus on living labs.

(Response) Ms Busisiwe Ntuli, DSI: There is a specific focus on IKS within the DSI and all forms of knowledge are embraced and open science is encouraged. The new White Paper is very deliberate about embracing all sorts of innovation and ensuring that innovation serves all spaces.

Universities can adopt T4LIA's Open Science approach, although it is currently rare to do so. University of Venda is working in a similar way to North-West University

(Comment) Dr Nthabiseng Motete, ARC: Valuable lessons have been learnt from the access and benefit sharing programmes, but these appear to be exclusive to the environment and biodiversity sector and should be brought into the discussion on ILED. The dichotomy in all aspects of development influences the way we think about innovation in the local economy. There needs to be a merge between universities and places where technology is developed and applied. What are the prospects for opening new universities in more rural localities, as was the case with Sol Plaatjie University? With the passage of time we expect a number of rural areas to densify and what looks "rural" today may be dramatically different in 10 years time. How shall DEA's access and benefit sharing legislation be applied in rural areas?

(Response) Ms Busisiwe Ntuli, DSI: Agricultural colleges may bridge the gap in certain areas.

(Comment) Ms Nomfundo Mkhaba, Durban South Community Peace Builders: My greatest concern is how to get plans into one coherent place, where the warm bodies to do the work are too few, where ward councillors are an entry point to planning in a community. Indigenous languages cannot be in isolation and language development needs to be promoted. We are looking at the prospects of learning in language, learning with language, learning and language and learning through language so we can shift community discourse and the reaction to change. When talking about application of innovation in rural areas, you need to talk about my development and my self-actualisation in my thoughts which are in my language. Indigenous language development is a crucial aspect in understanding policies and being able to participate in the implementation of plans.

(Response) Ms Busisiwe Ntuli, DSI:
I agree that language has been a barrier to accessing the economy, education, governance and so on. There needs to be a focus on language when talking about inclusion and participation a local level.

Comment, The Innovation Hub: Based on our experience, grassroots innovation is a very difficult area to go into. From the presentations,

very little resources and attention have been given to the need for collaboration, particularly in terms of planning between different government departments. One of the Key Performance Indicators (KPIs) of ILED should be collaborative funding allocation that encourages players in the innovation space to work together. Baseline studies are needed to identify and map who is doing what is the various provinces and local municipalities. Coordination is key.

(Response) Ms Busisiwe Ntuli, DSI: Resource allocation for Local Economic Development is not great, although it is getting better. The LED framework offers the prospect that there shall be improved coordination/funding of LED amongst the National, Provincial and Local spheres of government.

(Comment) Mr Ellis Levember, SA Essential Oils: SA Essential Oils Business Incubator (SEOBI) has learnt that there needs to be breathing space for innovation to take place, for local value-chain innovation to take place. This is especially the case when young people are involved. It is good to see that business has been invited to discuss these matters. We often see good innovation, but it does not get commercialised. I want to see systems with inputs and outputs through processes. LED cannot exclude the rural areas, particularly as we look to the future. People must be helped to develop their solutions to their problems. Future scientists will have to come from the rural areas.

(Response) Ms Busisiwe Ntuli, DSI: Co-aged-innovation seems to be workable.

(Comment) Ms Huni Phala, South African Local Government Association (SALGA): SALGA is working with the CSIR towards regenerating small towns. Human capacity is a challenge in local municipalities in rural areas. They struggle to drive provincial and national strategies at local level and require assistance, particular if they are to implement ILED. The forum needs to agree on how best to coordinate the planning for ILED. My greatest concern is how to get plans into one coherent place, where the warm bodies to do the work are too few, where ward councillors are an entry point to planning in a community.

(Response) Ms Busisiwe Ntuli, DSI: The coordination issue has been problematic for a long time but there have been improvements. The starting point in putting together the Decadal Plan will be to map what initiatives are happening across the country and who is doing what.

Proposed structures of the National Framework on LED will ensure that LED is a priority and that there is coordination across departments and all tiers of government. We will take stock of the progress in this area in five years' time. We encourage collaboration at all levels. SALGA and DCoG are best placed to lead the conversation about how to ensure that planning is coordinated and that there is participation from all stakeholders.

REPORT BACK FROM THE BREAK-AWAY SESSIONS

SESSION 1: Mr Ephraim Phalafala, DSI

- The universities produce knowledgeable and skilled graduates that are helpful to the Human Settlements sector and are willing to cooperate.
- University lecturers should be supported in their important task of teaching large groups of students to become skilled and capable public servants.
- Although high end technologies are available, there is a lack of coordination to bring these to implementation. Innovation forums are needed where innovators can meet with stakeholders on an ongoing basis to facilitate collaboration.
- Data produced in Master's and PhD theses should be mined in order to take the innovations forward (particularly relevant in Engineering and Built Environment).
- The CSIR is developing a roadmap of all the pipeline technologies in the human settlements sector. A framework is being developed by the Department of Human Settlements to complement the roadmap.
- The CSIR is working in the areas of smart cities, smart infrastructure and neighbourhoods of the future, and the revitalisation of township economies. There should be a focus on knowledge sharing and best practices.

- Drones are being used increasingly for service delivery purposes, but drone traffic needs to be managed in line with air traffic control regulation.
- Input was given on skills development in preparation for the 4IR undertaken by the Media, Information and Communication Technologies Sector Education and Training Authority (MICT SETA). Funding is available for the development of ICT skills and new skills needed for the 4IR.
- There is an evidence mapping and synthesis hub in the DPME that ensures that evidence (including evidence in relation to human settlements) is made available when policy decisions are made.
- It is necessary to put standards in place for collaboration.
- Projects initiated by national government for implementation at provincial level should be well and consistently monitored. Reporting is crucial in this respect.

SESSION 2: Mr Eric Watkinson, DSI

- Several participants shared existing initiatives in LED. Others widened the scope to focus on baselines acknowledging what people already do and working with that as the basis for various government departments to effectively plan and work together.
- In general, the idea of decentralising innovation to local economics is accepted but people mostly raised concerns about the entry point.
- Organisations nationally (such as SALGA) could provide a way for planning to be coordinated.
- One of the most pressing matters is how to represent the problems people are experiencing and what the priorities are in the short-, medium and long-term, and how to allocate budget and evaluate the use of limited resources.
- Participants spoke of the cost and benefits of investment.
- The language barrier does not encourage inclusion and hampers buy-in to LED plans, maps and policies. If IDPs represent a conceptual, language and access problem, it could be true that rural Spatial Development Frameworks are much worse. Perhaps spatial planning at a smaller-scale than 1:50 000, say 1:10 000

represents an opportunity. The development of community-based spatial plans has proven to have worked in a number of urban informal settlement upgrades and there is no reason why similar participatory approaches (to layout for instance) would not work in rural areas.

WAY FORWARD

Ms Mkhize thanked participants for having availed themselves for the seminar. She indicated that the presentations and report from this seminar would be shared with participants and they would be invited to give inputs on the report as well as additional suggestions in response to the questions posed to the breakaway groups. Participants were also invited to engage directly with the DSI officials responsible for the White Paper. The following email addresses should be used: busisiwe.ntuli@dst.gov.za or Tshepang.mosiea@dst.gov.za

Participants would be invited to a number of further engagements that have been planned in preparation for drafting the Decadal Plan. Some of the issues to be addressed as part of better harnessing STI for South Africa development priorities include the responsiveness of legislation, the role of Higher Education Institutions in developing the relevant skills and the need for funded research projects to make tangible inputs towards the realisation of national development priorities.

ANNEXURE A: LIST OF PARTICIPANTS

Title	Name	Surname	Organisation
Dr	Stuart	Ali	Precision Medicine for Africa
Mr	Lucas	Baker	Fofa ka Nong NPO
Mr	Jay	Bhagwan	Water Research Commission (WRC)
Ms	Portia	Bhila	University of Venda
Dr	Gerda	Botha	South African Council for Natural Scientific Professions (SACNAP)
Dr	Siyavuya	Bulani	Academy of Science of South Africa (ASSAf)
Ms	Rebecca	Campbell	Engineering News
Ms	Laetitia	Cook	University of Pretoria (UP)
Prof	Robin	Crewe	UP
Prof	Duncan	Cromarty	UP
Ms	Peta	de Jager	CSIR
Mr	Brandon	Dickens	HBS Technologies
Ms	Joy	Dickens	HBS Technologies
Mr	Klaas	Dikobo	Rootstock Systems
Mr	Msimelelo	Dingiswayo	ASSAf
Prof	Chrisna	Du Plessis	UP
Prof	Kobus	Eloff	UP
Prof	Joseph	Francis	University of Venda
Mr	John	Fraser	ZA Confidential
Mr	Mthunzi	Gasa	Africa Unite
Ms	Sue	George	International Association for Impact Assessment South Africa (IAIAsa)

Title	Name	Surname	Organisation
Dr	Richard	Glover	International Science Council Regional Office for Africa (ISC ROA)
Mr	Uvesh	Gopichund	Air Traffic and Navigation Services (ATNS)
Mr	Grant	Greyling	The Innovation Hub
Ms	Nadia	Grobler	ASSAf
Mr	Khonzi	Hlophe	ATNS
Dr	Trudi	Joubert	UP
Ms	Phyllis	Kalele	ASSAf
Mr	Dominic	Kgaabi	National Research Foundation (NRF)
Prof	Nnenesi	Kgabi	North-West University (NWU)
Dr	Leti	Kleyn	ASSAf
Mr	Theuns	Knoetze	CSIR
Dr	Mpho	Lekgoathi	South African Nuclear Energy Corporation (NECSA)
Mr	Tshepiso	Lekoma	Department of Trade and Industry (the dti)
Mr	Phatu	Letsoalo	Office of the Premier: Limpopo Province
Mr	Ellis	Levember	SA Essential Oils
Ms	Precious	Lukhele	Department of Science and Innovation (DSI)
Dr	Peace	Mabeta	UP
Dr	Tebogo	Mabotha	ASSAf
Ms	Pheladi	Mabotha	Moloko Kwizeen
Ms	Paris	Mabotha	Spark Schools
Ms	Mandisa	Magwaza	Department of Planning, Monitoring and Evaluation (DPME)
Mr	Mmakgabo	Maheya	SABS
Ms	Nompumelelo	Mahlangu	ASSAf

Title	Name	Surname	Organisation
Mr	Tsepo	Majake	ASSAf
Dr	Clifford	Malaka	MICT SETA
Mr	Bongani	Maluleka	ATNS
Ms	Nkhensani	Maluleke	South African Local Government Association (SALGA)
Dr	Misheck	Mulumba	Agricultural Research Council (ARC)
Ms	Vuyisile	Mangena	Sol Plaatje University
Mr	Maokane	Manala	ATNS
Ms	Marvin	Mandiwana	ASSAf
Mr	Stanley	Maphosa	ASSAf
Prof	Norman	Marwashe	ARC
Ms	Nthabiseng	Maseko	NWU
Mr	Floyd	Masemola	ASSAf
Ms	Neo	Mashilo	ASSAf
Mr	Sobuza	Mathebula	Sol Plaatje Municipality
Ms	Sibusisiwe	Matiya	ISC ROA
Dr	Jennifer	Mirembe	National Department of Human Settlements (DHS)
MS	Nomfundo	Mkhaba	Durban South Community Peace Builders
Dr	Ntabiseng	Motete	ARC
Dr	Alina	Mofokeng	ARC
Mr	Mosibudi	Mokoele	the dti
Mr	Mathala	Mokwele	Department of Agriculture, Forestry and Fisheries (DAFF)
Mr	Mmakwena	Molala	National School of Government
Mr	Thabiso	Molemohi	South Africa Bureau of Standards (SABS)
Dr	Ghaneshree	Moonsamy	CSIR

Title	Name	Surname	Organisation
Ms	Thato	Morokong	ASSAf
Dr	Salerwe	Mosebi	University of South Africa (UNISA)
Ms	Makgomo	Mosoma	DAFF
Ms	Nomsa	Motsoene	the dti
Ms	Mahali	Motsoeneng	ATNS
Ms	Thembani	Mtangwanika	ATNS
Mr	Thabiso	Mudau	ARC
Prof	John	Mugabe	UP
Dr	Paul	Mungai	University of Cape Town (UCT)
Ms	Lule	Mutafya	UP
Dr	Mark	Napier	CSIR
Mr	Chris	Ndala	NRG Media and Advertising
Prof	Khathutshelo	Nephawe	SACNASP
Mr	Tiyani	Ngoveni	DSI
Dr	Luxon	Nhamo	International Water Management Institute (IWMI)
Ms	Shanna	Nienaber	WRC
Ms	Jacqueline	Nkate	National School of Government
Mr	Barry	Nkomo	Motor Industry Bargaining Council (MIBCO)
Mr	Leonard	Nkuna	DPME
Ms	Busisiwe	Ntuli	DSI
Ms	Pfungwa	Nyamukachi	The Conversation
Dr	Pertina	Nyamukondiwa	University of Venda
Mr	Willie	Nyoffu	Cooperative Governance and Traditional Affairs (CoGTA)
Mr	Larry	Obi	Sefako Makgatho Health Sciences University
Ms	Meshendri	Padayachy	the dti

Title	Name	Surname	Organisation
Mr	Imraan	Patel	DSI
Ms	Huni	Phala	SALGA
Mr	Ephraim	Phalafala	DSI
Dr	Khutso	Phalane-Legoale	ASSAf
Prof	Refilwe	Phaswana-Mafuya	NWU
Mr	Boyse	Pillay	CSIR
Ms	Mariana	Purnell	Agbiz Grain
Ms	Sibongile	Radebe	Technology Innovation Agency (TIA)
Ms	Takalani	Ramutaga	the dti
Mr	Ashaal	Roopchan	TIA
Ms	Urszula	Rust	DSI
Ms	Chanel	Schoeman	CSIR
Ms	Ithuteng	Sekaledi	Human Sciences Research Council (HSRC)
Ms	Gugu	Sema	MICT SETA
Dr	Genevieve	Simpson	NRF
Mr	Ameeth	Singh	Land Bank
Mr	Rendani	Sitari	Private
Mr	Phetole	Sithole	Sol Plaatje Municipality
Dr	Amanda	Skepu	Mintek
Prof	Vanessa	Steenkamp	UP
Ms	Nicolene	Steyn	SARChI Chair in Cities, Law and Environmental Sustainability
Prof	Chris	Theron	UP
Dr	Abraham	Thomas	Council for Geoscience
Mr	Takalani	Tshikalaha	ATNS
Ms	Nontando	Tusi	Recreate
Mr	Sarel	Van der Walt	TIA

Title	Name	Surname	Organisation
Ms	Louise	Van Heerden	ASSAf
Prof	Dawie	Van Vuuren	UP
Ms	Carin	Van Zyl	DPME
Dr	Christa	van Zyl	HSRC
Dr	Gusti	van Zyl	UP
Ms	Renate	Venier	ASSAf
Dr	Hilton	Vergotine	ARC
Dr	Janine	Victor	South African National Biodiversity Institute (SANBI)
Dr	Nokuthula	Vilakazi	UP
Dr	Njeri	Wabiri	HSRC
Mr	Eric	Watkinson	DSI
Prof	Brenda	Wingfield	UP
Mr	Justin	Witten	South African National Space Agency (SANSA)
Ms	Diana	Zhou	DPME
Ms	Barbara	Ziyane	Gauteng Department of Economic Development (GDED)
Mr	Bheki	Zulu	Companies and Intellectual Property Commission (CIPC)
Ms	Bongiwe	Zwane	ASSAf

ANNEXURE B: LIST OF ACRONYMS

4IR	4th Industrial Revolution
ARC	Agricultural Research Council
ASSAf	Academy of Science of South Africa
ATNS	Air Traffic and Navigation Services
CIPC	Companies and Intellectual Property Commission
CoGTA	Cooperative Governance and Traditional Affairs
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DCoG	Department of Cooperative Governance
DHS	National Department of Human Settlements
DPME	Department of Planning, Monitoring and Evaluation
DSI	Department of Science and Innovation
GDED	Gauteng Department of Economic Development
HSRC	Human Sciences Research Council
ICT	Information and Communication Technology
IID	Innovation for Inclusive Development
IKS	Indigenous Knowledge Systems
ILED	Innovation for Local Economic Development
IP	Intellectual Property
ISC ROA	International Science Council Regional Office for Africa
IT	Information Technology
IWMI	International Water Management Institute
LED	Local economic development
M&E	Monitoring and evaluation
MIBCO	Motor Industry Bargaining Council
MICT SETA	Media, Information and Communication Technologies Sector Education and Training Authority
NACI	National Advisory Council on Innovation
NDP	National Development Plan
NECSA	South African Nuclear Energy Corporation
NPO	Non-profit organization
NRF	National Research Foundation
NSI	National System of Innovation
NWU	North-West University
R&D	Research and development

S&T	Science and Technology
SABS	South African Bureau of Standards
SACNASP	South African Council for Natural Scientific Professions
SALGA	South Africa Local Government Association
SANBI	South African National Biodiversity Institute
SANSA	South African National Space Agency
SHS	Sustainable Human Settlements
SONA	State of the Nation Address
STI	Science, Technology and Innovation
T4LIA	Tools for Local Innovation Advancement
TIA	Technology Innovation Agency
the dti	Department of Trade and Industry
UCT	University of Cape Town
UNISA	University of South Africa
UP	University of Pretoria
WRC	Water Research Commission

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2019

Stakeholders Awareness Workshop on the 2019 White Paper on Science, Technology and Innovation (STI)

Academy of Science of South Africa (ASSAf)

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