SANBio Annual Event 2019
21–22 May 2019
CSIR International Convention Centre,
Pretoria, South Africa
Beyond the Valleys: Untold tales of Bio-preneurs

FULL PROCEEDINGS
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DAY 1: 21 MAY 2019

PLENARY SESSION INTRODUCTION AND OPENING REMARKS

The NEPAD Southern Africa Network for Biosciences (SANBio) provides a shared research, development and innovation platform for collaborative research in health and nutrition and SANBio hosted the annual event on 21-22 May 2019 at CSIR ICC in Pretoria. The theme of this year’s event was Beyond the Valleys: Untold tales of Biopreneurs 2019. The main thrust of the 2019 event was to explore how innovation within the biosciences community could be commercialised to benefit the entire SADC region and to present the outputs of the BioFISA III Programme which was ending in June 2019.

Mr Daan du Toit, Deputy Director General, International Relations, Department of Science and Technology (DST), South Africa, who opened the event, highlighted three key reasons as to why it was so important for the DST to support SANBio.

Firstly, SANBio seeks to harness science and technology for the growth, development and advancement of the economies to improve quality of lives of citizens; that very much captures the essence of what science and technology is all about. Mr du Toit indicated that regardless of any political changes at ministerial level which may take place post the recently held general elections in South Africa, the South African government remained committed to investing in Science and Technology (S&T) to improve the lives of its citizens and the region as a whole. The South African cabinet had recently approved a White Paper for Science and Technology for South Africa, a policy document which spelt out the government’s vision for Science, Technology and Innovation (STI) in South Africa, strongly aligned with the trajectory that SANBio is taking to translate science into products and services, closer partnerships with industry, and growing new class of entrepreneurs which will be heart of the knowledge economy; so Science & Technology for growth and development is completely aligned with what DST is seeking to achieve.

Secondly, regional integration and regional partnerships were integral to the South African government’s foreign policy agenda. The most important aspect of the government’s international cooperation was intra-African collaboration. As with all countries throughout the world, South Africa needs international cooperation, and S&T advances when one shares experience, shares expertise, when you pool resources and SANBio’s roles in achieving that with regional collaboration was critical in order to create a vibrant innovation ecosystem, which in southern Africa will be essential for the region’s growth. That is why the DST has been committed over many years to support S&T in the southern African region. Mr du Toit remarked that DST had seconded Ms Morgan to the SADC secretariat for many years during which she has done sterling work to help us build the southern Africa innovation ecosystem. He extended this appreciation to Ms Morgan for the work she had done in promoting S&T in the SADC region, at the African Union, UNECA, and NEPAD. DST has for many years supported the NEPAD S&T Flagships, and in addition to SANBio, there is Southern African Network of Water Centres of Excellence (SANWATCE), the African Laser centre at CSIR, and the African Institute for Mathematical Sciences (AIMS). Mr du Toit affirmed that DST supports these initiatives because DST is committed to the African Agenda 2063 and it is in South Africa’s own interest to support these initiatives, because for South African innovation to prosper, SA needs to be part of a vibrant regional innovation ecosystem. He stated that DST had not celebrated enough what SANBio had done to enable collaboration through real projects and meaningful cooperation. He reiterated that DST remained committed to supporting SANBio.
Lastly, why this event and the partnership was so important, is that it also enables DST to leverage and build broader international partnerships and Mr du Toit specifically wanted to reflect on the excellent partnership with Finland. South African STI has had privilege over many years to benefit from cooperation with Finland. Before BioFISA, SA hosted the Cooperation between South African and Finland (COFISA) programme which provided learning around building innovation ecosystems. Indeed many of the innovation policy programmes that SA is implementing today in SA was inspired or informed by the SA partnership with Finland. Another programme hosted by CSIR focused in ICT Research and Innovation, and we all know that Finland is a global centre of excellence for ICT R&D. It was almost logical to build on that solid foundation, and many years ago the BioFISA programme was conceptualised and SA was very grateful that the Finnish government reciprocated the interest in co-investing with SA in BioFISA and supporting this regional initiative.

Mr du Toit also indicated he had presented in many forums and always referred to BioFISA as best practice example of the type of trilateral cooperation between partners in the north, partners in the south and regional collaboration context to harness STI for development. Mr du Toit also informed the audience that Finland was also supporting the Southern Africa Innovation Support (SAIS 2) Programme, which is again almost at the cutting edge of what we believe a new vision for development cooperation should be. When Mr du Toit was based in Brussels he met with the EU to discuss plans to support innovation in Africa, and he informed them that they should look at Finland as they were already implementing while the EU was only planning. Mr du Toit then thanked the Ambassador of Finland, not only for the support to BioFISA, but for the long-standing friendship and partnership in development cooperation. He remarked that although it is the end of this cycle of the BioFISA Programme, but he was optimistic about exciting prospects which lay ahead as SA seeks to further develop bilateral collaboration with Finland and deepen the regional focus. In conclusion Mr du Toit welcomed delegates on behalf of DST, reassured delegates and urged them to spend the next two days to build upon the solid foundation that SANBio had created. He wished that SANBio would prosper and be the flagship for regional science partnerships.

**Ambassador Kari Alanko, Finland**

His Excellency, Ambassador Mr Kari Alanko of Finland, welcomed delegates to the Annual Event which had been attracting great deal of interest, and indicated that it was a pleasure to be here together with the DST, with whom Finland has had a great partnership who had been jointly supporting the BioFISA Programme for eight years. In particular, BioFISA had supported health and nutrition in Southern Africa. Mr Alanko stated as a country Finland has much to give to the programme. Finland was ranked #1 in the Global Good Country Index which measures the level of national commitment to global issues. Mr Alanko remarked that relative to the size of its economy, Finland had contributed more to humanity and the planet than any other country, a significant feat in light of its small geographical size and small population. For decades Finland had invested hundreds of millions of Euros in health related education, research and research infrastructure. This has created cutting edge Finnish research and treatment in specialised areas such as cancer, brain disease, cardiovascular disease and genetics. It was also one of the first countries in the world to set up a national digital patient data repository of its population’s health covering both the public and private healthcare sectors.

Mr Alanko remarked that instead of presenting itself as an obstacle, Finland’s isolated gene pool is one of the reasons why Finland has become a leader in digital health. The Finnish people’s genetic composition provides a unique research setting in light of these facts. A 30 year history of sample collection exists, hundreds and thousands of patient reports are available in digital form, and biobank data was combinable patient reports and national healthcare registries. All this is backed up by universal health care, homogenous care guidelines and legislation providing access to healthcare data. Finns also have a positive attitude to medical research and
trust medical professionals and the willingness to take part in medical research is generally high among the public. Finland is one of the best ecosystems for health research and development.

According to the World Economic Forum Global Health Competitiveness Report 2016/17 Finland was number one in terms of its availability of scientists and engineers. It has the latest technology and excellent collaboration between its universities and industry in research and development. It’s no wonder that Finland is ranked among the three strongest health technology economies in the world, while digital health is its largest tech export. Finnish health tech solutions are not only developed but largely manufactured in Finland.

Food production in Finland is “clean” and this is evident in its taste. The excellent quality of Finnish food is based on the well-being of animals, high quality standards and modern agricultural technology that support both of these. In recent years there have been some interesting food innovations which have come into the market. Mr Alanko gave the example of pulled oats made by Golden Green which had taken the market by storm. Pulled oats, a fully vegetarian product is a combination of oats, flava beans and yellow peas, and has a higher nutritional protein value than beef and chicken. Another interesting food innovation from Finland was Valio’s Oddlygood range of lactose free non-dairy products made from oats, and the company won an award in 2018 for lactose free butter which is highly regarded by the French baking industry. He also highlighted that all milk produced in Finland was free of antibiotics, not very common elsewhere in the world.

In conclusion Ambassador Alanko pointed out that it has taken a lot of hard work, commitment and cooperation for Finland to produce world class technological innovations in biosciences. Finland is at a point where it has set a course for low carbon and resource efficient society and a sustainable circular economy. The key role in reaching this goal is played by bio-economy. Everything currently produced from oil today could be produced from wood and this included bio-chemicals, bio-plastics, pharmaceuticals and food additives.

**The main objective of SADC is to achieve development, peace and security, and economic growth, to alleviate poverty, enhance the standard and quality of life of the peoples of Southern Africa.**

Ms Anneline Morgan, the former Senior Technical Advisor to SADC, stated that SANBio played a critical role in championing biosciences, and this has been achieved by strengthening institutional capacities and facilitating R&D networks in the SADC region. The increase in regional collaboration was evidenced through the increase in projects across all member states. She acknowledged the support of the Finnish government in the programme since its inception and partnerships with other strategic partners and contributions from other member states.

Between 2003 and 2005, NEPAD had the vision to set up five network centres of excellence across the continent of which the southern African network was the most successful and growing in strength each year; while one was operating as a hub and not a network, and all other networks were not operational at present. She noted that partnerships have grown with the Finnish Government since the inception of SANBio and there is a new partnership in the form of Hivos in continuing to support some activities of the SANBio network. The SANBio network has a key role to play in supporting the regional agenda of SADC. This is evident in its support of the current mandate of SADC in supporting industrial development and competitiveness and social economic development to facilitate regional integration. There is already traction in this regard as the SANBio
Fish Node at LUANAR is part of the consortium that is already mapping of the aquaculture value chain in SADC. In championing the industrial development in this area SADC member states have prioritised key areas to be invested in by member states with the support of private sector, these include agro-processing, pharmaceuticals, mining and capital goods. The agro-processing value chain mapping which identified key areas where member states need to work with private sector was concluded in April 2019, had been validated by member states and was available for dissemination. The pharmaceutical value chain would soon be completed, and the mining vision was completed in April 2019. These reports are there to help member states to facilitate and set key value chains with private sector to support industrial development in the SADC region.

In conclusion Ms Morgan acknowledged that the SANBio Annual Event has been a premium event in providing a platform for the region to converge and discuss key issues in policy and priorities and wishes that SANBio continues to play this key role. She also acknowledged the role that SADC member states had played, not only in investing in the network, but also those who had positioned their own national institutions and contributing to the sustainability of the network and in implementing the business plan of SANBio.

The African Union –Promoting Africa’s growth and economic development by championing citizen inclusion and increased cooperation and integration of African states.

Dr Tichaona Mangwende

Dr Tichaona Mangwende, the Principle Program Officer, African Union Development Agency (AUDA), NEPAD, acknowledged all African Union (AU) states represented at the event. Dr Mangwende reflected that he had been part of BioFIA I Programme in 2009 and although there had been a lot of learning in the programme, there were a sizeable number of achievements that led to BioFISA II and this was anchored by the support of the Biosciences Unit at the CSIR. He highlighted the valuable role the CSIR had played in the implementation of the BioFISA I and BioFISA II programmes and supporting the African institutions. He asked SANBio to strengthen its identity and make itself known beyond just the structures of the CSIR. The identity of SANBio had to be defined along with its relationship with African governments and institutions. Once SANBio’s identity was known then it had to make known its value and role across the SADC region. SANBio also had to focus on innovation within the public sector and to look at the strengthening the capability, and examine the systems that are in place to deliver the value that has been promised by the network. In conclusion Dr Mangwende urged SANBio to use the process while it was developing its new business plan to clarify the value that it delivers, the capability systems to determine how it would deliver its value and products that it delivers. He acknowledged the Governments of Finland and South Africa for supporting SANBio, and the fact that African Union Development Agency is hosted by the South African government. He looked forward to a brighter future for SANBio. He noted that the light of SANBio used to only flicker and it was heartening to see that the flame was now getting bigger, delivering warmth to all in SADC and the African region.
The mandate of the CSIR requires the organisation to undertake directed scientific and industrial development research to improving the quality of life of the people of South Africa.

Dr Thulani Dlamini, CEO, CSIR

The CEO of the CSIR thanked all delegates for the attendance. He expressed his gratitude to all the partners of the BioFISA II programme and acknowledged the presence of DST, Embassy of Finland and support of the member states. He pointed out that the SANBio program was an excellent example of what Africa could achieve if resources could be pooled together. He went on to give the delegates an overview of the CSIR and its vision for the future. The CSIR’s mandate is to perform directed research and technological innovation and the work that CSIR does is directed by the needs of government, industry and society. Similar to what SANBio and BioFISA II Programme aims to do trying to solve societal issues and trying to deliver technologies which translate into impact in society. The value of the work is derived if it is relevant for the environment in which we are trying to develop research development and innovation. There has to be directed research, and this differentiates the CSIR from academic institutions in South Africa and the area of research that CSIR pursues has to be informed by the impact that it wishes to make. The scientific development at the CSIR must inform industrial development and vice versa. It must also inform a capable state in which the government can deliver services to its people and ultimately it must improve the quality of lives of the people of South Africa, which is a huge responsibility and that is the mirror that the CSIR measures its impact. The CSIR needs to be able to make industry more competitive, to enable government to deliver services and also develop human capital.

The CSIR’s vision is that we are accelerators of socio-economic prosperity in South Africa through leading innovation, so it is a social and economic contribution that CSIR makes. This is achieved by collaboratively innovating and localising technologies whilst providing knowledge based solutions for the inclusive and sustainable advancement of industry and society. The CSIR has realised that it will not be able to innovate around all the problems it is trying to solve and there are opportunities to bring in innovations from other parts of the world, localise them and adapt them for the specific challenges we are trying to address. As scientists and engineers, we get caught in the paradigm of re-inventing the wheel, while there are opportunities to build on what other people in the world have done and advance our own agenda. The other area that CSIR is engaged in is in the provision of knowledge solutions in terms of thought leadership, and evidence based policy advice to government, so that’s the knowledge contribution that we provide in terms of our impact. Ultimately the issues of sustainability are critical. The CSIR also contributes to human capital development and transformation agenda of South Africa.

One of the challenges that CSIR faces is the monetisation of the current patent portfolio is holds, thus speaking to the relevance of the work that the organisation does. The CSIR recently and re-examined the role that it plays in industrialisation and this informed the new strategy which aims to bring about transformative change, increased competitiveness and growth in terms of GDP growth, exports and job creation. This exercise informed by the 4th Industrial Revolution identified nine sectors that will direct the work that the CSIR does in the future. These are Chemicals, Mining and Manufacturing, Health, Logistics, Smart Places, Defence and Security, Next Generation enterprises, and Advanced Agriculture and Food and forms new operation model for CSIR. Dr Dlamini further elaborated on the Advanced Agriculture and Food cluster which builds on the
previous work does in CSIR. With the support of DST investment, 31 enterprises were developed, 86 interns were trained and contributed 183 jobs created and 88 products were transferred to industry.

The CSIR collaborates across the region and Africa and Dr Dlamini provided specific examples where CSIR has worked with SADC partners. Globally CSIR has also worked with international organisations indicating the excellence of the work, world class technologies and the CSIR has been able to license some technologies. Dr Dlamini concluded that the CSIR remains committed to the various initiatives it is engaged with on the African continent, and this is not limited to technological innovation but also through thought leadership. In particular it is helping with the development of the AU Health Research Strategy and East African Bio-economy strategy and the CSIR was open and willing to share its knowledge with all of its partners within the rest of the African continent.

To live is to choose. But to choose well, you must know who you are and what you stand for, where you want to go and why you want to get there. (Dr Kofi Annan)

Dr Ereck Chakauya

Dr Ereck Chakauya, the SANBio Network Manager, reflected on the work that SANBio had done in the past five years. He indicated that the purpose of NEPAD SANBio was to pool resources in infrastructure. The formation of SANBio was a ministerial decision to strengthen science in the continent, and it was recommended to have a network approach with four networks and a pan African network. SANBio had to focus on biotechnology, biodiversity, safe development and indigenous knowledge. The SANBio Business plan was endorsed by ministers in 2014 and SANBio operates on a hub and spoke model. SANBio responds to frameworks at the continental level, to regional economic policies at the regional level and at a national development plans at a national level.

He also pointed out SANBio operates in a context where African economies were becoming increasingly informal whilst innovation, science and technology tended to be the preserve of a formal economy; Africa had to therefore invest more in its own indigenous innovations in order to benefit its increasing informal economy.

An area had had to be emphasised was the indigenous knowledge systems, and address the cross cutting approach of innovation. Whilst the knowledge economy was there, it could not be implemented into informal economies. Within the universities on the continent, although there was a serious lack of researchers, those that were available had to develop projects in conjunction with industry which would benefit citizens across both the formal and informal economies. In many countries researchers were in the government or teaching and there should be projects implemented with tangible products. The average person needs to benefit from science. SANBio is a platform for collaboration. If the relationships do not work, there will not be alignment. SANBio is ensuring that there is effective alignment between different actors- public sector, academia, industry and non-governmental organisations. Good science has to produce publications and products on the market. This could only be achieved if science was aligned with research which must in turn be aligned with industry.

Dr Chakauya thanked all the partners who made SANBio effective and especially thanked the scientists, funders and different stakeholders.
Ms Zvikomborero Tangawamira

The BioFISA II Programme Manager, Ms Tangawamira, informed the audience that the BioFISA II programme was launched in 2015 to support SANBio in three focus areas. The outputs of the programme were available in three publication volumes which were disseminated to the audience. The BioFISA team had embarked on visits to all member states and also took regional teams on study tours in terms of technical skills, gender mainstreaming, and the commercialisation of research. The second tier was the building of capacity both in terms of entrepreneurship and technical skills and also addressing gender mainstreaming. The third component of BioFISA II programme was to support the commercialisation of health and nutrition research into products. Over 300 applications were received for commercialisation grants of which 14 were selected. The goal was to get a minimum of two new products launched with preference given to female entrepreneurs. The achievements of BioFISA II programme were given as:

a. As a result of research and development, seven products had reached end-users.
b. Six start-up businesses were established.
c. More than 1000 individuals were trained in technical and entrepreneurial skills. Over 65% of the trainees were female.

d. The network was expanded from 500 stakeholders to more than 3 000.
e. Seed and Flagship projects supported 20 students in their graduate studies.
f. 26 collaborations were formed between the public and private sectors as a result of the Seed and Flagship projects.
g. At least 50 direct and indirect jobs were created.
h. 250 women were supported within the FemBioBiz Acceleration Programme, across eight different countries.
i. FemBioBiz received support of over R5 million from regional stakeholders and another season was being implemented with support from the Hivos Foundation.
j. An additional R10 million had been raised by some of the project teams to continue with implementation.

A network of 30 student ambassadors was created across a number of countries. All were supporting biosciences within the region. Of key importance to the BioFISA II programme was the youth, who are the future of the continent. There were several teams of youth ambassadors who were working in various countries, supporting their governments’ initiatives on BioFISA II.

In conclusion, Ms Tangawamira thanked the CSIR as the implementing agent of the BioFISA II Programme.

Session 1 Plenary – all presentations:
https://www.youtube.com/watch?v=r643g9nZ0Cg&t=6082s
REFLECTIONS ON THE FINNISH GOVERNMENT’S SUPPORT ON AFRICAN INNOVATION AND NUTRITION

Reflections on supporting innovation in health and nutrition over the past 10 years

Presented by: Ms Paivi Lehtonen (Department of Foreign Affairs, Finland)

Ms Lehtonen stated that the first phase of the BioFISA programme from 2009 to 2012 had been to build the SANBio network over a period of four years. It was the first time that Finland had supported a trilateral cooperation and the first time that Finland had supported bioscience in the world. Some pilot projects were funded, and although it proved to be successful, two bottlenecks were identified. The first was that the private sector was not involved which meant that the research undertaken was not reaching nor benefitting those it was aimed at. The second issue was that the SANBio secretariat proved unsustainable as it remained dependent on donor funding. Despite this dependency, the Finnish government undertook to fund the Network for a further four year period.

Phase two of the BioFISA II Programme started in 2015 and was focussed on animal and human health. BioFISA had funded 14 projects in total which had resulted in researched products actually reaching their markets. There had also been great successes achieved within the FemBioBiz Programme.

PANEL DISCUSSION

SESSION 2: SUCCESSES AND FAILURES IN COMMERCIALISING RESEARCH: FROM SPIN-OFFS AND START UPS TO COMMERCIAL PARTNERSHIPS

This session showcased seed and flagship projects supported by NEPAD SANBio through the BioFISA II Programme and explored various models of commercialising research outputs. The panel shared lessons learnt and discussed what worked and what did not, particularly focusing on 3 models of commercialising research, i.e, spin-offs/start-ups, licensing technologies to private companies and direct commercialisation by the universities.

Facilitator: Dr Victor Konde, AEH Global/UNECA, Ethiopia
Panellists:
Dr Justen Manasa, University of Zimbabwe
Prof Abednego Dlamini, University of Eswatini
Prof Irvin Mpofu, Chinhoyi University of Technology
Dr Nomusa Dlamini, CSIR
Ms Mischa Fraser, Iqaba Biotech (Pty) Ltd
Ms Avril Harvey, Parceval (Pty) Ltd
Prof David Katerere, Tshwane University of Technology
Dr Konde asked the panel the following:

**What are the major pitfalls in working with the private sector to commercialise publicly funded research outputs? Would it be different if the research was funded by the private sector? Would it be different if the research institute took the product to market or if the private sector funded the research directly?**

The panellists shared their views on some of the factors that contributed to a breakdown in public-private partnerships:

- Private sector is very agile, but procurement in the public sector takes too long whereas in the private sector decisions could be made far more quickly. Furthermore, the public sector was not flexible enough in its approach when dealing with the commercial sector. It would be more optimal for the universities to license their technologies to the private sector.

- There is the possibility to have a middle ground though the technology transfer offices it was possible to work with industry to commercialise products from research and this has worked in some cases.

- There are different ecosystems in the universities and in the private sector. While this project was based on the work done over a number of years in research, there was the opportunity for private sector involvement to take this further. Procurement in the public sector is very rigid and is based on price whereas the private sector has more flexibility and has more choice to procure goods on quality and cost. Another issue was that while the industry wants to work with researchers and academia to commercialise, the private sector has a board of trustees who want to see a return on investment. So while there are two different ecosystems, they can work together in that the private sector will put the pressure on universities to develop products quicker; and the universities will put pressure on industry to reflect and ensure that the products it develops serves a market need. The two ecosystems can work together and through collaboration, create a shared understanding and meet at middle ground and serve the needs of both the researchers and the needs for commercialisation to market.

- If there is a partnership for commercialisation, there needs to be a clear understanding of the intellectual property, whether the commercialisation partner is able to commercialise the research and the importance of having a shared vision.

- The private sector, on the other hand, had its own motives and that is to make a profit, while a donor has other goals to achieve like collaboration, networking and capacity building.

- Private sector funders wanted products that were already proven and tested. Commercial companies wanted a final product to commercialise.
g. If there is an innovation identified at the university, it needs to be pushed out to industry as soon as possible. It has to be commercialised very fast so that the product can be tested in the market. At universities the time frame for further research and development may delay entry to the market.

h. There was often conflict between universities and the private sector on how new technologies would be valued. There were many instances of new technologies being hidden in universities simply because the private and public sector were unable to agree on a fair evaluation of the technology itself and the value of the research that had gone into it.

i. Any relationship between universities and the private sector had to be long-term with both sharing the risks and taking accountability for their roles in the development of the product, right through to its commercialisation.

What are the key challenges that African universities face in commercialisation of research through its own start-ups and spin offs? Should universities/research institutions use spin-offs/license/sell a technology and what kind of support should they provide post tech transfer?

a. The first option was to license technologies via the technology transfer offices and if uptake was not there, it could be offered to someone else. However if the academics were interested in taking the innovation to commercialise themselves, it was an option to set up a start-up company with the right kind of support and who had the special skills set which was required to commercialise – firstly the innovator who knows the problem, someone who can source the funding and a marketer who can sell the innovation. Academics may not have these skills sets and need support to develop their start-ups.

b. For an academic to scale up, they face challenges with infrastructure in scaling up.

c. Universities are not supposed to compete with private sector to produce goods and services, universities should generate the IP and come up with new innovations and then transfer them to industry. A key challenge at universities is the lack of a programmatic approach to research framework where there are key stages of ideation, design and pushing viable research up to prototype stage and then moving the IP to industry. The second challenge is the lack of supporting institutions. Commercialisation should take place in innovation hubs as you cannot commercialise from universities.

Generally speaking it was agreed that universities should license out new technologies to the private sector which would then assume its commercialisation. Some panellists were in favour of universities assuming a far more hands-on role in the commercialisation process; it was suggested that universities would be able to at least start or be part of the supply chain process (i.e. commercially preparing a product or service for market) with the actual marketing of the product being left in the hands of the private sector. One panellist was adamant that commercialisation was not the role of universities; researchers should develop the IP/prototype of a product or service and then sell or license these out to the private sector. There was a measure of disagreement to this stance; the market is a free space and any entity was entitled to compete within it.

a. It was pointed out that one particular challenge faced by universities was that of sourcing foundation phase funding. Whilst funding could be found for the start and end of a project (foundation and to-market phases) it was often in the middle of the life-cycle of a project that funding would diminish.

b. Companies would invest in private R&D that would result in a product or service. Biotech in particular was hugely successful in being funded by the private sector. The drawback was that the research would not be within the public domain as private companies closely protected their research. One suggestion was that academics should move within the private sector where they had access to greater funds.

How should public private partnerships be structured for the commercialisation or research output? Why did the partnerships with private sector not work? What should the configurations to commercialise research? Who should drive the commercialisation process and who mobilises external funding for product commercialisation?

a. Product development should be funded by universities with commercialisation funded by the private sector. Partnerships between the universities and the private sector must share the risks and
accountability on research projects. There had to be a way to instil a culture of commercialisation in universities so that they could partner with the private sector without losing their research capabilities whilst realising some commercial returns.

b. The distinction between where research ended and commercialisation started was blurred which made it difficult to sell a technology and gave rise to issues around the ownership of IP. Sometimes it made sense for a university to license a technology and sometimes it made more sense to produce the product in-house. Academia was no longer just about research; it was about generating income through other avenues. Universities were thus challenging businesses using the same concept as Uber: you don’t need an office and everyone involved actually worked for themselves.

c. Private companies could target universities with specific requests for products to be developed for licensing.

Comments from the floor:

- Industry had to put forward the funds for universities to do specific research of which the private company would own the IP.
- Education in the sciences at school level was extremely important if innovation was to thrive.
- Universities in Africa were established to create labourers. Universities had to change the reason why they were established, decolonise their curricula and encourage innovation and science.
- In business there were the two “Cs” which stood for Collaboration and Competition. The problem in most African countries was that there was a lack of collaboration between governments and universities. Governments were more pre-occupied with politics rather than economics which meant they did not focus on economic development. Those in power had to start to work with their universities in order to address much of the challenges facing Africa. In Singapore the government led development, not the private sector. The same applied to the UAE.

SPOTLIGHT 1: WHAT’S HAPPENING IN REGULATORY FRAMEWORK IN HEALTH?

Presented by: Ms Andrea Keyter, Deputy Director: Medical Devices, SAHPRA

The regulatory framework in Africa is fragmented and at times poses a challenge for commercialising health innovations. Recently the Dept of Health in SA migrated the Medical Control Council of South Africa and created SAHPRA. Ms Keyter presented an update on the regulatory environment governing the registration of complementary medicines and medical devices. Ms Keyter reported progress in operationalisation of SAHPRA:

- SAHPRA operational policies have been developed and approved by the Board
- SAHPRA has relocated to a new temporary fit-for-purpose premise at the CSIR.
- SAHPRA staffed with approximately 200 full-time employees and a similar number of external evaluators supporting regulatory activities currently.
- The transfer agreement for transferring former MCC staff to SAHPRA, in terms of Section 197 of the Labour Relations Act, has been signed.
- The SAHPRA business model has proposed a staffing complement of around 450 full-time employees to carry out all required regulatory functions and will be phased in over a period of five years.
Funding to perform SAHPRA functions were from fees levied for services as well as a contribution from National Treasury and SAHPRA developed a Fees /Performance metrics model.

SAHPRA was building searchable databases, including of registered medicines, to improve public access to information.

Consistent and timely communication with key stakeholders was critical to ensuring good regulatory practices and the creation of a culture of transparency. In this transitional phase, SAHPRA is prioritising the implementing a formal communications strategy and systems as a matter of urgency.

Reengineering and streamlining of procedures and processes for the registration of medicines, approval of clinical trials and authorisation of Section 21 medicines.

Implementing improved procedures for the review and approval of radiation control applications.

Establishing a new regulatory framework for medical devices and in-vitro diagnostic (IVD) products.

The process for complimentary medicines:

Category D = Complementary medicines intended for use in humans and animals which are, without further manipulation, ready for administration, including packaged preparations where only a vehicle is added to the effective medicine. Medicines in Category D shall be classified into the following sub-categories:

(a) discipline-specific medicines with such disciplines as determined by the Authority; and

(b) health supplements.

Guidelines:

- 7.01 Complementary Medicines - Safety, and Efficacy
- 7.03 Complementary Medicines - Use of the ZA CTD format in the preparation of a registration application
- 7.04 Complementary Medicines – Health Supplements: Safety, Efficacy
- 2.24 Guidance for the submission of the South African CTD/eCTD – General & Module 1
- 2.01 General Information
- 2.03 Alcohol content of medicines
- 2.04 Post-Importation testing
- 2.05 Stability
- 2.06 Biostudies
- 2.07 Dissolution
- 2.08 Amendments
- 2.14 Patient Information Leaflets (PILs)
- 2.15 Proprietary Names for Medicines
- 2.16 Package Inserts for Human Medicines
- 2.25 Pharmaceutical and Analytical – CTD/eCTD
- 4.01 Guide to Good Manufacturing Practice for Medicines in South Africa
- 16.01 Guideline for Licence to Manufacture, Import or Export and the forms:
  - Application for Registration of a Medicine – South African Common Technical Document (ZACTD)
  - 6.15 Screening Template for new application for registration
  - 6.10 Licence Application to Manufacture, Import or Export Medicine

The process for medical devices:

IVD technical dossiers, applications and guidelines were being published for implementation. Suppliers must submit evidence of the approved medical device establishment licence. Upon such time that medical devices are called up for registration, via publication in the Government Gazette. Suppliers who have been licensed as medical device establishments must submit evidence of the approved registration certificate of the said medical device.
SESSION 3: BOTTLENECKS IN THE COMMERCIALISATION PROCESS

This session explored the challenges faced by seed and flagship projects during the commercialisation process. The panel consisted of companies and institutions taking various technologies to markets and shared practical experiences on issues that can make or break the business pathways during the commercialisation process.

Facilitator: Mr Sibusiso Manana, Technology Innovation Agency
Panellists:
Dr Phiyani Lebea, TokaBio (Pty) Ltd
Prof Riëtte de Kock, University of Pretoria
Mr Louis Roux, Lifeassay Diagnostics
Prof Emmanuel Kaunda, LUANAR
Ms Thandie Lebotse-Zulu, Blue Pride
Ms Khilona Radia, Antrum Biotech
Dr Christopher Gadzirayi, Bindura University of Science Education

Mr Manana opened the session stating that it would focus on the many challenges dealing with commercialisation including regulatory aspects, the cross border partnerships, tap into challenges that partners experienced and how they overcame them if they did succeed; and to touch on the lessons learnt.

How did the regulatory framework affect the commercialisation of their products?

The University of Bindura was in partnership with a company to commercialise a feed, and a conflict arose when the product had to be registered: in whose name was it registered as IP ownership was the heart of commercialisation. Was IP registered under the university or the private sector company partner?

Companies should be compliant with regulatory requirements if they had a good idea of exactly what the regulatory bodies wanted. One of the biggest issues for Antrum was the time taken to register products across Africa. All SADC regulatory authorities should be aligned with each other in order to expedite compliance with regulatory requirements across borders and register products accordingly. This is a major issue for the health diagnostic devices in other SADC countries.
Blue Pride’s major markets were outside of Africa; the EU, the USA and Japan. Major markets i.e. the EU are extremely difficult to penetrate as its regulations and sustainability requirements were too onerous for smaller exporting countries to comply with. Thus regional markets assume greater importance. In the African market there were small companies that were distributing throughout Africa but entry into the EU and USA markets was extremely difficult due to their high levels of regulations. The access and benefit sharing agreements are also required for the European and US markets. One way of overcoming some of the challenges was to register sister companies in those markets. The other requirement was that the company had to demonstrate that the supply chain of the raw product is sustainable. The EU also required proof that any product harvested from the “wild” would not render the product depleted and that it was sustainable. In Botswana most land was deemed communal land and thus there was no requirement to obtain a license to harvest. Harvesting was done by women and the youth within the communities. However, trying to get the EU to understand the concept of harvesting on communal land which did not require any regulatory compliance was not an easy task.

Malawi had a huge malnutrition problem. Initially the solution had been to increase the availability of fish which started a fish farming initiative. However, the value chain of fish was very long and thus the idea was borne to replace fish meal as a source of protein. The production of meal worms as a protein replacement for fish has been extremely successful. From a regulatory point of view, however, several challenges had been encountered. Whilst the worms do not have to meet regulations when used for animal feed, they do when being used for human consumption, including HACCP certification which would take two to three years to achieve. In Europe, the mealworm had proved to be highly successful but the regulatory environment to sell the meal there for human consumption was onerous. Assessments of products should be done in one country and that assessment should allow for the product to be marketed in all SADC countries. Compliance with South African regulations was to produce meal worm that was safe to consume. Labelling was also very important as consumers had to understand what they were purchasing.

When commercialising animal health products it was better to go for low hanging fruit (those markets with less regulations) whilst pursuing those that had high levels of regulations. One way of gaining market penetration was to source a distributor who was active in the field who could take care of registration matters. In exchange for their service, they wanted exclusivity on distribution, a method of penetration that tended to work for all parties concerned. It was emphasised that any claims made on a product had to be supported by substantial documented evidence. In this regard it was vital to have the input of universities in terms of being able to produce the verification required.

In terms of the regulation for food products the laws are well documented in South Africa. For food products, HACCP certification, GMP processes and labelling is critical.

Cross-country collaboration is an imperative in terms of aligning regulations and allowing for a more flexible movement of products across borders. SANBio could assist in this regard in fast tracking products through regulatory environments; some countries had no regulations, some were planning to implement new regulations and some had established regulations.

The export of meat to Europe was extremely difficult due to its strict disease protocols. This had resulted in most African countries not exporting their beef but rather consuming it locally. In order to export beef, Africa will have to develop its own testing protocols, in line with those of the EU, which would allow African beef to be tested and subsequently declared fit for the export market.

Conclusions and recommendations:

At an institutional level universities would have to get guidance from government to determine on what basis they could partner with private businesses. At an organisation level universities must focus not only on research but also on how they are able to contribute to the private sector in such a way that would create employment opportunities through the production of researched products.

At an operational level, the protocols used internally by universities in terms of its interactions with business and regulatory bodies had to become more flexible.
SANBio should support SMMEs in being able to navigate regulatory processes and to assist with fast-tracking of products. It could also assist in helping start-ups tap into the correct networks and to collaborate across borders. Governments should create an environment which is conducive to young entrepreneurs to enter into the market. Mr Manana concluded that commercialisation process and there are many risks that have to be mitigated – IP sharing, regulatory framework, cross border collaboration and timing of export initiatives. Managing these effectively was crucial to success in commercialisation.

SPOTLIGHT 3: WHAT’S HAPPENING IN GLOBAL HEALTH RESEARCH?

Presented by: Dr Robert Ridley Unicaf Univ. Malawi

Reports from international bodies such as the WHO and other UN Agencies have called for research on particular interventions across entire health systems across the globe. Several funders have or are channelling money into such interventions. Since 2015 the focus on Millennium Development Goals (MDGs) had changed to Sustainability Development Goals (SDGs). Dr Ridley looked at developments of policy priorities at a global and continental level. He focused on the transition from the millennium development goals to the sustainable development goals. There was a move to systems thinking, at the SDG level there is one goal and a more broader definition- but still retains child and maternal health, communicable diseases more emphasis on surveillance, research and innovation for universal health coverage and issues around finance.

**MDGs (2000 to 2015)**

MDG4: Reduce the under-5 mortality rate: **Success** - Under-5 mortality rate declined 90 to 43 deaths per 1,000 live births (1990-2013)

MDG 5: Reduce maternal mortality ratios: **Success** - Maternal mortality ratio declined 380 to 210 per 100,000 live births (1990-2013)

MDG 6: Halt and reverse the spread of HIV/AIDS, malaria and other major diseases, such as TB: **Success** Target diseases declined New HIV cases from 3.5 m to 2.1 m, Malaria deaths from 839,000 to 438,000 and Non-HIV TB deaths from 2.4m to 1.1m

**SDGs (2016 to 2030)**

SDG 3: Ensure healthy lives and promote wellbeing for all at all ages

The MDG goals were met as a result of investment in the last 15 years, and the challenge is to sustain these goals. There was an improvement of data collection and influx of resources by development agencies by Gates Foundation and national agencies and others and the development of new global organisations with specific mandates to address health challenges, and innovation driven organisations to address challenges – e.g. drugs for malaria, new diagnostics for AIDS and other medical devices. The African continental leaders also developed a new perspective on research and innovation for health and common viewpoint around public health and intellectual property. On the continental level there are new policies in place to develop health research systems and innovation and more funding was available for research through Grand challenges and partnerships with EU. However all these initiatives with the exception of South Africa and a few other countries, have been funded by external donors.

In Africa and in the current context of SDGs, there are continental frameworks that direct development particularly Agenda 2063-50 year strategy for Africa driven by the AU, STISA 2024 which is trying to stimulate
investment in innovation and recognises that research requires delivery through innovation and entrepreneurship, we have the health strategy for Africa as well as SDG3, mainly around systems development and universal coverage, and a research strategy for Africa – development of systems for Africa. It is acknowledged that health research systems and support mechanisms in Africa are weak. More funding has come into the continent for research and higher education with AFDB and World Bank.

A new initiative called Alliance for Accelerating Excellence in Science in Africa coordinated through NEPAD via the African Academy of Sciences funded by the Gates Foundation for higher education research and innovation and a large portion of this funding is targeted for research in health. Another issue is the African centre for disease control, which will have an influence on data collection. The major challenge where there is lack of data, there is lack of resources and an inefficient means of planning. Another influence is the development of hubs and entrepreneurship has grown over the last five years and the large source of funding may come from private sector in the future.

According to Deloitte the top 10 technologies in health are:

1. Next Generation Sequencing
2. 3D Printing
3. Immunotherapy e.g. cancer
4. Artificial intelligence – predictive analysis
5. Point of care diagnostics
6. Virtual reality
7. Leveraging social media for population trends
8. Biosensors and trackers – wearables
9. Convenient care
10. Telehealth

The trend is for technologies that one does not normally associate with these sectors and the use of ICT is evident in most of the above applications. IT graduates are coming into the areas of health and agriculture and developing other entrepreneurial approaches. Dr Ridley further highlighted a major problem is that health research partnerships still continue to be external due to the fact that the funding is external so there is a need for African **LED** innovation rather than African **COPYED** innovation. The major inhibitor to research was a lack of appreciation and understanding of research by policy makers and they should be part of the audience in an event such as this.

It was pointed out that there was a strong and irrefutable correlation between animal and human health; 75% of all emerging infections were animal in origin including Ebola, Avian flu and Swine Flu. Looking after the health of animals is a prerequisite for human health. Animal health issues are a sentinel that a human health issue is about to occur. Antibiotic resistance for human diseases is a major problem and there is an opinion that this is due to the overuse of antibiotics in animal health.

A final take home lesson is that when you get into policy discussions the current topics are non-communicable diseases and new technologies, but the issues of communicable diseases like malaria and TB are a couple of genetic mutations away which could evolve in drug resistance which could eradicate the gains of the previous five years.

There should be engagements with public private partnerships and getting technological solutions which serve the needs of the have nots, underserved populations (and a focus on inclusive innovation) which are affordable for those who cannot afford or access these solutions. If you have this as the forefront of your research and development objectives then the delivery will be far better and more effective than focusing on the population that can afford the solution.
SESSION 4: HEALTH INNOVATION IN AFRICA

Africa has a proud history of health and medical innovation. This panel discussed the future with people working on the front lines of medical and health innovation in Africa and was asked to consider the current and future opportunities for health innovation in Africa.

Facilitator: Dr Nick Walker, ONEBio
Panellists:
Mr Charles Faul, Akili Labs
Dr Robert Ridley: Unicaf University
Mr Siraaj Adams, Digital Health

What is currently happening in the digital health space sector?

Mr Adams was the CEO of Digital health which is a digital health tech service company and also runs an accelerator for startups in the digital health space by providing them with market access. Digital health platforms are unique ways of communicating information using mobiles and other devices. A lot of successes in digital health have a strong business DNA behind it. At Digital health accelerator they identify solutions that have a market fit meaning there has a demand, has a social impact indicating that this is a solution to a problem that the platform can solve, and has uptake and adoption. While there are hundreds and thousands of applications available, very few have material impact on patient health, or provide decision support and healthcare outcomes. What Digital Health accelerator does is identify the really good technologies being developed and then facilitates and provides support and linkages to funding to take them to market. Ultimately sustainability is securing clients and contracts rather than being reliant on a donor funding platform. The South African Dept. of Health has already launched its own apps in this regard and most of the apps are related to patient decision support. Three or four years ago there was a move towards telemedicine, and consideration was now being given to the improving guidelines for safe ways for video consultations which would offer specialist care in remote areas. Big companies are now looking at video consultation processes especially in remote areas, in rural clinics where nursing staff need access to medical professionals and
specialist advice. There is also a growing area of medical advices and wearables and all these are examples of businesses. There is commercial value in building a solution and how you connect all the information and data sources together to derive value. Currently there are varieties of good ideas but very few commercial business models that can be built up and are viable. There are various experts service providers who have to work together and there is always a need to update information and scale.

He stated that whilst there was venture capital available for healthcare innovations this required strict adherence to regulatory issues such as tax clearances, VAT registrations etc. Many of these systems do not exist in some African states which made investors wary of investing.

Where are the opportunities in the healthcare space in Africa?

Dr Ridley opened his remarks indicating that health care opportunities in Africa lie everywhere simply because there is an abundance of unmet needs throughout the continent. There are numerous opportunities for health innovation in the health sector in Africa and there are an unlimited number of opportunities that can be accessed.

At the moment current work in is adaptation and copying of applications and in about ten years’ time there will be more lead innovations coming from Africa needs to drive to be a leader in innovation. It was important to note that within African youth there was no fear of failure because they had nothing to lose. The youth had a real “can do” attitude couple with an extraordinary amount of optimism. Africa would have to start to put itself at the forefront of technology development. Currently Africans were copying technology; they would have to become the creator of technology. Africa had to capture and build on the energy of the youth. If it didn’t, the social consequences of unemployed youth could be catastrophic.

What could the impact of getting health innovations to the right places?

Charles Faul develops molecular diagnostic systems and other solutions using AI and other diagnostics for health. Mr Faul explained how his company had partnered with the Canadian Red Cross on a project involving molecular diagnostics for HIV and pneumonia. He pointed out that the device developed could be used at the primary health care level. However, there were still issues that had to be addressed in respect of compliance with regulations and registration of the device.

How difficult is it for start-up companies to raise funding in the health innovation space?

Chances of start-ups accessing funding is 50%, but the awareness of raising funding or accessing opportunities is not filtered into emerging opportunities in the areas where the solutions are needed at a grass roots level. But they are not aware of the funding opportunities or opportunities for incubators. Non-technical people can come up with solutions. If you are not an experienced or established company but an undergraduate or someone in training instead, you do not have the required information and a business plan for accessing funding. This needs to be critically addressed and these innovators need to be identified and supported.

The criteria for scaling applications for start-ups is the same as those of larger enterprises, so there is still a lack of funding for startups in the technical “grass roots” and innovation space. Demand is outstripping supply for start-ups but on a global scale it was a small number of people chasing a small pot of money. The basic capacity for technical innovation in Africa was still behind the rest of the world. There were not enough PhD and Masters Programs available on the continent which meant that research was not being generated in Africa. If Africa wanted to scale up it had increase its research programs. It was up to the entrepreneurs to sell the vision of bio-prenuers to governments and NGOs that were able to fund programs.

It was anticipated that the healthcare sector would realise a 5 to 6% growth rate which would in turn attract more private sector money. Demand is outstripping supply for start-ups because the basic capacity for technical innovation in Africa is still behind. One issue that had to be addressed was that of Masters and PhD students being sent out of Africa to study instead of keeping them within Africa to develop African solutions to Africa’s problems.
Questions from the floor:

Was any research being done into traditional medicine?

Dr Ridley responded that the amount of research on traditional medicine was very low for a variety of reasons. If a traditional cure or remedy was available the question was: what was the efficacy of the treatment and was it possible to scale it up? Scaling up required a guaranteed process and safety became a huge issue. There was a discontent between the thinking of traditional medicine protagonists and regulatory bodies and until this aspect was addressed, scaling up traditional medicine will continue to problematic.

How can start-ups secure funding?

Mr Adams suggested that start-ups approach large pharma companies with the idea of partnering with start-ups.

**Africa had the opportunity to create its own solutions for African problems. The funding was there and with mentorship and coaching the right solutions can come onto the market.**

**SPOTLIGHT 4: WHAT’S HAPPENING IN GLOBAL NUTRITION RESEARCH?**

Presented by: Dr Victor Konde, AEH Global/UNECA

The African continent faces the problem of combatting malnutrition in its various forms: undernutrition and micronutrient deficiencies as well as obesity. The scale and nature of these problems differ across countries and their populations on the continent. Latest data from the United Nations indicate worrying trends in African food and nutrition insecurity that must be tackled. Innovation has the potential to find sustainable solutions for African food systems relating to the complex interplay of issues spanning health, nutrition, agriculture, climate change, ecology and human behaviour. Globally the main goal was to leave no-one behind. The target was to end hunger, achieve food security for all and promote sustainable agricultural practices.

Currently 43% of Africans were classified as “poor”; 150 million were food insecure with nearly 60 million children suffering from stunted growth due to poor or too little nutrition. Two billion Africans are overweight or obese whilst millions are malnourished.

The key areas of focus had to be on the following:

- Access to quality food – increasing production vs reducing production costs
- Fortification vs diversity
- Storage and preparation – well cooked, over cooked
- Jobs and incomes – busy lives leads to an increased demand for fast foods
- Nutrition choices
- Sustainability
In order to make any inroads into the rising obesity challenge facing Africa, along with its malnutrition across the continent substantially more data was needed. The different nutritional needs of people through the different ages of their lives had to be better understood.

**PANEL DISCUSSION**

**SESSION 5: FOOD INNOVATION IN AFRICA**

Despite the richness of the plant species on the African continent and the availability of R&D data at universities, the continent is struggling to unlock its potential to address pressing issues in food. A coherent strategy to tackle food and nutrition insecurity is urgently needed. The strategy had to address key aspects of food security.

**Facilitator:** Dr Sechaba Bareetseng, SANBio

**Panellists:**
- Dr Markus Fröhlich, Philafrica Foods
- Dr Ndegwa Maina, University of Helsinki
- Dr Tawanda Muzhingi, International Potato Centre
- Dr Siya Ntutela, AfricaBio

How is food innovation defined from the African context?

The panellists were unanimous in their response that simplicity is the answer; design food products that use local produce (i.e. cassava and sorghum) and that do not rely on imported raw ingredients i.e. wheat. Cassava is the biggest crop in Africa but had not been industrialised into a pan-African food product. There are other local staple products that are nutritious, easily grown and able to cope with Africa’s climatic conditions. Food innovation should focus on the creation of products that use local produce are tasty, nutritious, have health benefits and marketed and can attract the consumer to consume these products. Further research is vital for getting these products at a level where they can be included in the market and basket of goods.

How can we translate the R&D that is available in universities and research institutes to products on the market?

There was drive to move research from the lab to the business. The challenges were with the adaptation of products that were being produced. More research is needed to bridge the gap between lab research and scaling up- a clear understanding of the market, promoting the health benefits and making a product that can
be consumed, is appealing to the consumer, and ensuring that the supply of the product is sustainable. Cassava was used in bread to replace wheat but the problem was that the bread had no shelf life and its taste did not appeal to the people. Finland succeeded in taking its local problems and formulating local solutions; Africa had to do the same. To this end educating the African population on the benefits of using African products was extremely important.

**How can the linkages between research institutes foster closer linkages with start-ups and private sector?**

In the US universities had a mandate to provide extension services in different areas while in Africa most universities did not offer extension services or if they did, these were offered through farmers’ organisations. It was important that Africa redesigned its approach by integrating its solutions emanating out of research into local communities.

University researchers had to look to those food products which could be distributed at local SMME level which did not require logistical support. The suggestion was also made that universities should expand their services to include food labelling, food safety and even as far as assisting in food production. Above all, the youth had to become the drivers of investment into the agricultural space. Government has a big role to play, and there is a need for policies to support the players who work in the food innovation space.

**What are neglected food crops and how can we harness these crops for food innovation?**

Africans tended to eat non-indigenous crops i.e. wheat, potatoes and tomatoes. Sorghum was local crop with a high nutritional value but was not a mainstream crop. It had huge potential but was rejected as a food source or not consumed in the mainstream. Teff was used primarily for horse food yet was used as a food crop in Europe. Sorghum had to be destigmatised as being a product for “poor” people.

The importance in creating value chains for food innovation was demonstrated by work done on orange flesh sweet potatoes and video illustrating the different actors and processes was presented.

**How were the ingredients for the bread, as made in the video, kept from spoiling?**

The product was kept in a cold chain and farmers were educated in staggered planting and harvesting in order to ensure a continual turnover of base crop. Research was underway for the raw ingredients to be kept for up to three years without refrigeration.

The discussion centred around the need for African researchers to develop and exploit the value of indigenous food products, and be able to market them, and in some instances create new markets for these products. Unfortunately people wanted that which they knew and which was affordable. Farmers wanted to grow crops that gave the highest possible yield using the least amount of capital. To develop new crops would require additional funding and entirely new marketing chains to make them viable. In respect of funding, and from the European perspective, there was funding available. Finland was heavily involved in funding, particularly for development research. More clinical trials should be conducted on sorghum as nutritionally it could replace rice. In Africa the middle class was going back to its roots in terms of its food choices as the middle class was educated and knew the value of its traditional foods.

“**As Africans we need to appreciate what we have on the continent. We are a young society and must use this to our advantage.**”

**PITCHING SESSION 1 & 2**

Another key element of the event was the support of emerging entrepreneurs, innovators, start-ups and established companies who participated in two pitching sessions co-hosted with Hivos Foundation, a leading
impact investor in the region. At the pitching event 13 companies out of 45 who had applied and working in the health and nutrition sectors, were selected because they were working on addressing an unmet need in the agriculture, fintech and health space.

The list of companies is in Annex 2. They presented in front of an esteemed panel including Ms Bernice Robbertse and Mr Jaap Spreeuwenberg from Hivos Impact Investment, Mr Pieter de Beer from IDC, Ms Zanele Benya from Land Bank, and Ms Ntandokazi Nodada from SAB Foundation. Five companies were then selected to present in the final pitching session on day 2.

**SPEED NETWORKING AND IDEATION SESSION**

Delegates were asked to introduce themselves to each other in an interactive speed networking session where they had to collect four similar coloured rubber bands from other delegates, thus collecting five in total. Different groups were then asked to have an ideation session/brainstorming session where they could address the following topics or innovation challenges:

1. How to fund SANBio in the next five years?
2. What platforms should SANBio use to support exchange of information and collaboration
3. Future priorities for the SANBio Network Nodes – Mushroom
4. Future priorities for the SANBio Network Nodes IKS
5. Future priorities for the SANBio Fish Node (Aquaculture)
6. Future priorities for the SANBio Network Nodes Plant Genetic Resources
7. Future priorities for the SANBio Network Node – Bioinformatics
8. Future priorities for the SANBio Network Node – Animal Livestock
9. Role of artificial intelligence in Biosciences
10. Future of 3D printing to improve efficiency in Biosciences

The output of this session has been sent to NEPAD SANBio to use in the business plan development for 2020-2024.
Ms Lubbers opened the session saying that it was an honour to partner with the CSIR to try and scale up the SANBio program, particularly with regard to promoting female entrepreneurship with the programme FemBioBiz. Hivos had a long history of supporting farmers and was one of the first organisations to embrace micro financing concepts. In 2016 Hivos Impact Investments was founded, focussed on investing in social entrepreneurs with viable projects.

A pitching panel session was then held whereby each presenter was given three minutes to present their concept to a panel of judges Mr Jaap Spreeuwenberg from Hivos Impact Investments, Ms Ronell Dass from LifeCo Untld and Mr Pieter de Beer from IDC.

Facilitator: Ms Nabwalya Vlahakis

1. Mr Kudzai Kutukwa, Mobbisurance

https://mobbisurance.com/

The current business models of the insurance industry did not support small farmers. Mobbisurance was attempting to solve the problem of providing low cost insurance cover for small farmers who often lost their crops to natural disasters.
Extensive use of satellite based imagery which would:

- Reduce monitoring costs on farmers
- Automate pay-outs
- Allow for experts to monitor crops and give advice
- Negate the need for site visits by insurance officers
- Negate the need for costly claims' departments

The idea was to target 1.4m small farmers through partnering with other agricultural and insurance entities.

Climate change and the history of changing weather patterns were incorporated into data collections and because such data gave greater certainty to farmers, input and running costs were reduced. Insurers also had more certainty and could reduce their costs as well.

The support required for the business was a strategic partnership with businesses that focussed on the requirements of small farmers.

2. Mr John-Paul Matenga, YouFarm

http://www.youfarm.co.zw/

YouFarm believed that there were no excuses for not funding farmers. Banks were not willing to lend money to small farmers so the idea behind YouFarm was to get people to invest with farmers. YouFarm gives access to farmers for collateral-free finance by getting people to invest in crops and livestock, sharing the profits with the farmers when the product reached the market. Those who did not own land would be part of the value chain and could realise a return on investment at the same time. YouFarm is the convergence of fintech and agriculture. The business model was that farmers and investors took 40% each of the profits with the remaining 20% going to YouFarm.

YouFarm funded its first crops at the end of 2018. It now had USD1.2m in cropping investments for 2019/2020. This effectively meant that every crop, before being planted, already had a market. The business had grown extremely fast with over 180 farmers already registered. The business was seeking USD1m in funding to invest in growing feed for livestock (feed constituted 75% of livestock costs).

3. Mr Paul Shepard, Future Farms

https://futurefarmssa.co.za/

Future Farm Hydroponics provides training and systems to the food market within Johannesburg and Cape Town. It currently had 16 commercial farms established on city buildings and had trained 20 previously disadvantaged people. It vision was to bring farming into the urban environment by utilising inner city buildings, thus negating the need for some logistical support services to get to market.

It required R8m to establish more farms and cover their running costs until such time as the project became self-funding. The advantages of hydroponic farms were that they enabled produce to grow in a controlled environment realising increase yields, used less water and pesticides and had a low overall running cost. A partnership had been formed with an LED lighting company which assisted with the correct lighting.

4. Dr Peter Durcan, Afrobodies
AfroBodies produces custom antibodies that detect previously ‘hard to find’ substances with speed and precision. It uses the unique properties of the immune system of alpacas to make recombinant antibodies that are smaller, more heat stable and more easily adaptable to detect carbohydrate moieties and chemical compounds. Alpacas in particular were used for the product of the antibodies as they naturally produce an antibody not found in cows, rabbits and mice.

It was looking to raise USD6m to expand its operation.

5. Ms Sibongile Bongadi, uku’hamba

Uku’hamba is in the business of producing low cost prosthetics from natural fibres used in materials for 3D printing. It needed support to buy a R250 000 3D printer. Discussion ensued on the business with some judges of the opinion that uku’hamba was involved more in a social cause than an economic pursuit. The suggestion was that the enterprise rather tries and raises funds from donations rather than raising investment equity.

PANEL DISCUSSION

SESSION 6: ENHANCING THE ENTREPRENEURSHIP LANDSCAPE IN THE SADC REGION

The session explored the different mechanisms and role players in supporting entrepreneurship focused on women and youth in the SADC Region. The panel consisted of hubs, incubators, regional ecosystem support partners and representatives from women and youth who discussed different mechanisms to support women and youth entrepreneurship in the SADC Region.

Facilitator: Dr Chamunorwa Togo, The Innovation Hub

Panellists:

Dr Devina Lobine, University of Mauritius
Mrs Muzalema Mwanza, Safe Motherhood Alliance
Dr Budzanani Tacheba, Botswana Innovation Hub
Dr Flora Ismail Tibazarwa, Southern Africa Innovation Support (SAIS2) Programme
The panel introduced themselves and gave a background on the work they were doing or initiatives they were working with in the innovation and entrepreneurship ecosystem.

Dr Budzanani Tacheba was of the view that a dedicated approach was needed to provide support to female entrepreneurs simply because of population demographics within the SADC region; Africa had a growing youth population with a far greater number of females than males. It therefore made sense to support the bigger proportion of females. Mixed in with this with was the element of gender discrimination against women. It was heartening to see that more and more governments were shifting their focus to the development of women entrepreneurs but there was still a severe lack of funding for such development: Women had to work harder in order to raise funding as most could not raise it as easily as men could. Women need mentors and support systems to help them grow in their entrepreneurial endeavours as they typically started from a much lower base than men did.

Future mechanisms that should be considered to support female and young entrepreneurs:

a. Innovation hubs.

b. Impact investments – not only investing for returns but also for social upliftment and impact.

c. Incubation hubs which nurture female businesses through the steps required for them to become investment-ready.

d. Increase entrepreneurship and education within schools.

e. There had to be a mechanism that linked the youth to universities.

Entrepreneurship should be promoted in its totality at youth level across both genders. Most skilled youth tended to move to Europe where there were greater opportunities for them. If more opportunities were created within Africa, the youth would remain provided that there was proper training and funding made available; if neither of these were available, entrepreneurs would fail.

Skilled youth within SADC were developing entrepreneurial skills but they too suffered from a lack of available funding which often forced them to move to Europe where there were more opportunities. Mentorship, again, is an important part of up-skilling the youth to start and grow their own businesses. The current trend was to move away from pure grants to grants where the entrepreneur had “skin in the game”.

SAIS has supported 32 organisations of which 15 had female heads. A rough survey was done across 40 women and it came back very clearly that women lacked support systems which could assist them up the ladder of building a business. Mentorship was important in this regard and in partnership with Hivos, SAIS will be addressing how to curb the drop-out rate of women within the entrepreneurship space. A boot camp was currently being run in Zambia at which the matter of creating new businesses with the youth was the main topic.

What is the current scenario for smaller companies to enter new technology areas and entering new markets?

Start-ups have to enter the market quickly –failing fast and test in the market, building networks etc. and then create markets for their products. If people want to enter your market then you need to collaborate. Ms Mwanza indicated that without the exposure to the FemBioBiz programme she would not have had such opportunities to take her product to scale and enter new markets.

Where is the development fit for a particular idea for the stage of the entrepreneur?

There are a couple of training programmes before an emerging entrepreneur to complete before you enter a hub or accelerator. Strong mentorship programmes are very important in assisting entrepreneurs. Venture capital for women is very limited at 2 % success rate. Hubs and incubators are important in facilitating this access.

What will be the best programme for information to get ideas from people who are not in the mainstream?

Having a programme like the youth ambassador programme and decentralising activities like outreach, co-creation activities are important in getting the information out to the rural entrepreneur. Local government platforms are important in building platforms to reach rural entrepreneurs. Africa had to change its mindset
and move away from the culture by regarding success as how many were “below” ourselves and rather look to identifying how many people we have brought up to same level as ourselves.

**Empowering a woman was empowering a nation.**

**SPOTLIGHT 4: INSIGHTS ON VENTURE CAPITAL AND PRIVATE EQUITY FUNDING AND CROWD FUNDING**

Mr Vuyisa Qabaka, HYBR Group Southern Africa

Mr Qabaka highlighted a number of ways in which funding could be accessed. He noted that the venture capital landscape was currently at US$725m which was a clear indication that there was money available within the start-up space. He drew particular attention to the following facts:

a. R346 billion – the current funding gap of SMEs in South Africa
b. 98.5% of the SA economy is made up SMEs yet they’re only delivering 28% of all jobs
c. 70% of SMEs in SA are informal with majority of these being black-owned sole proprietors
d. 52.4% of SA youth was currently unemployed, the highest globally with black youth suffering the most

Fast growing start-ups (SMEs), also called scale-ups are important. Globally, only 0.5% of start-ups reach $10m by their fifth year; a rate of 1 out of 200. The failure rate of start-ups was due in the main to: inexperienced leadership, non-scalable products or services, under-optimised operations, poor access to markets and an inability to raise funds.

New models of funding were being explored, such as:

- Angel Investing: An angel investor is an affluent individual who provides capital for a business start-up, usually in exchange for convertible debt or ownership equity. Angel investors usually give support to start-ups at the initial moments and when most investors are not prepared to back them.
- Peer-2-Peer investing: Peer-2-Peer investing was a loan-based method of funding.
- Crowd funding: Crowd funding accounted for 14% of all global capital.
- Most start-ups ran out of cash and ended up in “the valley of death: not enough revenue, quickly enough”.

**PANEL DISCUSSION**

**SESSION 7: FUNDRAISING FOR START-UP COMPANIES**

Securing adequate funding is a key requirement for growth of any type of business, but for many start-ups, the acquisition of funds that helps them build their company is an immense challenge. Most business start-ups usually begin with high hopes and create at least some kind of traction with investors. The reality was that capital had to come from somewhere and it came with an expectancy of a return. Investors expected entrepreneurs to be sufficiently educated to run an effective operation. Unfortunately, the level of entrepreneurship education currently available only achieved setting up people up for failure: There had to be
an “entrepreneurship ecosystem” which could create and produce the talent required to build a sustainable enterprise.

**Facilitated by: Dr Audrey Verhaeghe, SA Innovation Summit**

**Panellists:**
Ms Carmen di Rito, LifeCo Unltd
Mr Jaap Spreeuwenburg, Hivos Impact Investments
Mr Vuyisa Qabaka, HYBR Group Southern Africa
Ms Aurora Psico, Head of Partnerships, Gapi - Sociedade de Investimento
Mr Fanuel Kapanje, Group Finance Director, ZB Bank Limited

Dr Verhaeghe opened the session with a statement that there were more and more venture capitalists (VCs) establishing funds across the African continent. However, VCs complained that they couldn’t find viable projects to invest in and entrepreneurs contended that they couldn’t source funding. There was a disconnect between the two or elude each other.

**What were the main obstacles which brings about the disconnect between entrepreneurs and venture investors?**

Lifeco Unltd works on the supply side and demand side. Entrepreneurs need to be opportunity ready and the organisation works with them to make them investment ready. As entrepreneurs develop they can become investment ready.

The disconnect comes about because Africa is a very inefficient market but there are many opportunities in Africa and as you nurture, a few promising entrepreneurs emerge, then the ecosystem is built up, a track record is built up with successes and there are more opportunities for investment.

There is very little entrepreneurship education even at schools. Thus the basic understanding of entrepreneurship is lacking. If an entrepreneur cannot appreciate why an investor would invest in them, then they have very little understanding of their businesses and will find it difficult to get investment. Training in entrepreneurship had to start as young as possible. Young people had to be given the opportunity to be as entrepreneurial-ready as quickly as possible and thereafter to become opportunity and investment-ready.
The reality of capital is that it had to come from somewhere and it had an expectancy of return. The reason why there were challenges in Africa was because of the challenges with education, particularly entrepreneurial education. There were companies and SMMEs that are not investable or bankable and, unfortunately, do not deserve capital. It takes seven to ten years for capitalists to realise a return on their investment. Entrepreneurs therefore had to invest more in themselves and their knowledge and ask the question: Why would someone give me money to invest in my idea? Entrepreneurship was not so much about having an idea but rather having products or services that were viable and would make an impact.

Capital had to be looked after. The Zimbabwean government is struggling to get its policy framework to work again and to become competitive. The government had created an environment that was not favourable to the suppliers of capital. There was a lot of capital available within the Zimbabwean market but because of the environment, within which it operated the capital was not released and thus opportunities could not be taken.

Within Africa often the market and people that needed investment were not investment-ready. Investment is not only about returns; the funds must translate into impact. This is the most difficult type of investment as a return is needed on both fronts.

The ecosystem for investment falls flat in South Africa because of the lack of financial support. Financial support is lacking because there was no clear understanding among entrepreneurs of the overall ecosystem of investment. Is there an issue for African investment, because there was an undeserved market looking for smaller amounts of investment that was less than what was offered by VCs etc.

Is there an African paradigm?

The continent was not yet ready, the momentum still had about five years to build up. Parallel to other developing countries, Africa was way behind; it still had much to do before it would realise substantial investment.

African ideas can spread across the continent but this could only happen if there was a supportive ecosystem; the Lesotho Highlands Water project would not benefit Cape Town which was suffering from a water shortage simply because the ecosystem (from connectivity to infrastructure) was not in place. 74% of the continent’s GDP lay in South Africa, Kenya and Nigeria so any effort outside of those countries carried high risk.

South Africa worked better with the UK than it did with other African countries. This had to be addressed. South Africa had interacted just as smoothly with other African countries as it did with the UK.

The Unicorn Fund looking at investable opportunities across 13 countries in Africa, although this would take time over a long period of time. Entrepreneurs have a responsibility to be accountable to investors and the type of instruments that are used for funding entrepreneurs need to be relooked at and there needs to be more innovative ways on how investors work with entrepreneurs.

Africans had to understand that funds for Africa’s projects came from outside of its borders. Projects had to be bankable but they also had to compete for capital with the likes of India. Africa had to stop looking at itself as being deserving of special treatment when it came to funding and, most importantly, Africans had to start investing in African projects. It was also imperative that Africans understood that, in order for their projects to attract funding they too had to have “skin in the game”; investors will not invest if the entrepreneur himself has not put his own funds at risk.

There was an important dynamic that had to be understood: many economies were supported by family businesses. A recent study done in the Western Cape showed that family businesses had a higher impact rate (70%) than other businesses. The banking system within South Africa had to rethink its position in terms of funding small businesses. Unfortunately South Africa had five large commercial banks which were unwilling to take risks on small businesses. In the USA, for example, there were many small banks which were willing to take risks on small companies.

The 80/20 principle – what one aspect of change in funding would have an impact for entrepreneurs?
a. Policies should be focussed specifically on SMMEs and start-ups. Government could assist by providing a guarantee structure whereby it could put up a portion of finance with the private sector providing the rest. Should the business fail, neither the public nor private funders would have lost a large amount of capital.

b. Strengthen structural barriers and ensure contractual enforcement.

c. Mind-set - money will find a world-class project provided that the project was run by a world-class person. Africans had to change the way they thought so that they could become world-class performers.

d. Africa must build its own financial institutions geared to African problems and no rely on the way of doing business used by western institutions.

e. Entrepreneurial education is key foundation in building an entrepreneurial economy.

Was there an imbalance in supporting female entrepreneurship?

a. In Mozambique the barrier was not gender, it was culture; few women were educated through the school system.

b. Women had the resilience to keep at it because they always worked for something “bigger than themselves”.

c. From a bankable perspective women are a better risk than men as they tend to repay loans and commitments.

Questions from the floor:

Knowledge had become a commodity but nobody did anything with it; knowledge was not being used as an extraordinary resource. The youth had to be equipped with technology. First world countries had already introduced computer programming at primary school level, but this was not the case in Africa.

What will the panellists do within the next three months to address the issues?

a. Mr Fanuel Kapanje - Partnering with schools and taking 100 learners through an entrepreneurship competition.

b. Ms Aurora Psico – youth and women programs were currently being run on capacity building and institutional development.

c. Mr Vuyisa Qabaka – three days of work in Zimbabwe on start-ups. Programs were also being delivered in various African countries.

d. Mr Jaap Spreeuwenberg – investments were being made into Zimbabwe.

e. Ms Carmen di Rito – focus will remain on catalytic partnerships between capital and entrepreneurs.

**African ideas must be shared across the African continent and Africans must be invited to become involved in the execution of African projects.**
SPOTLIGHT 5: MARKETING FOR BIO-BUSINESSES IN THE 21ST CENTURY
Presented by: Mr Rob Maclean, eCommerce Experts

Mr Maclean presented a marketing tool for marketing for bio-businesses in the 21st Century.

Key to marketing was to first get the “free stuff right”. Start small, test and learn. Of key importance was that any business had to find the right platforms it needed in order to market its products; there was no “one size fits all” philosophy. He elaborated on the various social media platforms that were conducive to marketing and explained the difference between free services and paid platforms and the advantages of both categories.

PANEL DISCUSSION

SESSION 8: SCALING A BUSINESS: CHALLENGES AND PITFALLS TO LOOK OUT FOR IN HEALTH & NUTRITION

Growth is the key to the success of any start-up, but the best businesspeople know that following a path of careful, calculated growth is smarter than pursuing expansion you can’t handle. Knowing this, there are a number of issues both seemingly small and unexpectedly complex, to consider. This session explored the challenges and pitfalls in scaling a health and/or nutrition related business. The panel consisted of international companies in health, companies dealing with nutrition and foods, a livestock vaccine company as well as a national development finance institution.

Facilitator: Dr Boitumelo Semete-Makokotela, CSIR
Panellists:
Dr Bethuel Nthangeni, Onderstepoort Biological Products
Mr Grahame Osler, Denmar Estates
Mr Owen Nyoni, Capital Foods
Mr Pieter de Beer, Industrial Development Corporation
The panel was asked to speak to the following:

**What are some of the pitfalls that you should take into consideration when taking a product to market?**

The pitfalls of upscaling a product from pilot to mainstream product:

- a. Always produce a product that consumers want and not what you think would work.
- b. Test the market and make sure that the product and its packaging meet with the approval of the consumer.
- c. Never lose sight of quality; never upscale a product whilst sacrificing quality.
- d. When developing a new product speak to a commercial partner and ensure that the raw materials sourced are correct.
- e. Efficiency is important, especially on low margin, high volume products. Raw materials had to be bought at the lowest price whilst not compromising quality. Cut the red tape, particularly at the procurement stage of a business so as to ensure a continual flow of raw materials.

**How do businesses navigate the upscaling space?**

Whilst companies spent a lot of time developing products, it must have structures in place before it could be scaled. The business had to be able to absorb the increased costs that came with scaling up. A good business needs strategy, structure in order for it to become a larger enterprise and you need finance and investment to maintain the business.

The biggest pitfall for small businesses was that as soon as the business was scaled up, the entrepreneur lost control and thus had to have the correct management structure in place to assume control. Entrepreneurs are not always the best CEOs for their own businesses and they had to understand that whilst they are the “inventor” of a product, only a manager with a commercial mindset and experience could take it further.

**To what extent does do companies acknowledge when they have to hand over the reins and bring in different management structure and when does this need to happen?**

The IDC invested approx. R1bn into 35 companies. Of these only three were performing well under their original management. All of the other businesses were either in distress or had closed. At the time of investing the money the IDC had not considered the people who ran the business. Any new investments it made considered the calibre of individuals who ran the company. The IDC team has learnt that the composition and
track record of the management team is the core fundamental element that can ensure an enterprise’s success. Even the best technologies and products if poorly managed will not be able to have market traction or growth.

As businesses grow, so different departments with their own managers would evolve. Consideration had to be given to outsourcing specific functions in the business i.e. distribution; distributors were able to give a more efficient service which in turn gave the company a competitive edge. The advantage of having distributors was that they had market traction, reputation and could provide an introductory path for a new product and they already had relationships with the consumer market and retail partners. Each aspect of the business needs to be controlled and managed. The scope of the business and business strategy would determine when the management structure would change to accommodate new roles in the enterprise.

**What must entrepreneurs avoid when scaling a business?**

Firstly, scaling a business beyond local borders required that close consideration be given to the politics of the export market. The example of Zimbabwe was used to illustrate the point: Zimbabwe imports a lot of products but its cash flow was problematic due to political issues. Some markets are excluded to producers simply because of politics. Whilst most companies wanted to grow into large export markets, sometimes regional growth was good enough, i.e. trading with SADC countries rather than looking to move into Europe and the USA immediately. For small businesses the concept of diminishing returns was a very real threat as the cost of securing more business often came at a much higher cost. Any purchaser of a product who did not pay, had to be cut off. These were the harsh decisions that had to be made in business.

**Questions/ comments from the floor:**

*If a company was failing but had good products, should business rescue practitioners be appointed to assist the company?*

It was pointed out that success stories with business rescue were few and far between. Generally speaking it was better to close the business rather than allow it to suffer more stress.

The heartbeat of a business is its systems. Whilst sales are the driving force of a company, sound structures and systems were imperative for stability. Systems allowed for the proper management of money coming in and money going out ensuring a healthy cash flow for the business.

Entrepreneurs should try and find time to expose themselves to what happened in the private sector. The private sector had a culture that was totally different to any other, its culture was money and how to make it.

Quality, from the point of view of the product, the reputation of the company and service, was paramount.

**It’s not just about making the product. It’s about people, systems, quality and finances.**

**PANEL DISCUSSION**

**SESSION 9: SANBio and the Way Forward**

In light of the fact that SANBio which was 14 years old and was currently developing its fourth business plan for the period 2020-2024, this session was forward looking and engaged key SANBio stakeholders who were collaborating with the SANBio Network to address a key question – SANBio in 5 years, what’s next? Each of the stakeholders provided a synthesis of where they think SANBio should go and the focus for SANBio in the next five years, considering the notable changes in the operational environment of SANBio and the business environment regionally and at continental level.
Facilitator: Dr Ereck Chakauya, SANBio

Panellists:
Dr Tichaona Mangwende, AUDA-NEPAD
Ms Mmampei Chaba, DST
Prof Emmanuel Kaunda, LUANAR, SANBio Fish Node
Prof Keo Motaung, Global Health Biotech (Pty) Ltd
Dr Devina Lobine, University of Mauritius

Dr Chakauya spoke of what SANBio had achieved since 2012. He invited the panellists to comment on what SANBio should do over the coming years.

Dr Lobine:
- Harness the power of collaboration both within and without the SADC region. There is no strategic framework to deliver on what SANBio wanted to drive; it is acting as a funding agency and not a networking agency.
- Leverage networks in order to reach more people.
- Recruit more ambassadors in order to increase the visibility of SANBio and in turn reach more people. Ambassadors could be the change-makers.
- SANBio must establish a social media presence.

Prof Keo Motaung:
- Focus on how products will be commercialised.
- SANBio to facilitate stronger links with universities and the private sector.
- SANBio should fund some projects.

Ms Mmampei Chaba:
- Follow-up on what had happened to projects established under BioFISA II and build on them where necessary.
- Engage with policy makers at a regional level, particularly with SADC countries.
- Continue to invest in young entrepreneurs, particularly through training programs.
- SANBio must link to universities in order to propel the spirit of innovation and teach entrepreneurship.
Dr Tichaona Mangwende:
- SANBio will have to diversify its income streams in order for it to remain sustainable i.e. co-funding from member states of SADC.
- SANBio had to support innovators in the agricultural and health/wellness spaces to the point that it could become a global competitor.
- Map the innovation/value chain, from concept to market, through an advisory panel or framework.
- The business plan must look at how SANBio could use AUDA to put it on the world map.

Prof Emmanuel Kaunda:
- SANBio must reposition itself strategically in respect of health and nutrition. SANBio had a far greater strategic role to play across the African continent.
- There was no clear framework in place which can guide investors looking to invest in start-ups. SANBio could consider putting in place such a framework.
- The issue of identity of SANBio was still problematic. When SANBio received funding, its identity became that of the funder. The relationship of SANBio with its funding partners had to be very clear so that SANBio did not lose its identity.

Comments from the floor:
- SANBio cannot drive commercialisation and it cannot fund projects as it is not a funding agency.
- SANBio had to be careful that it did not try and do all things for all people. Its budget was sufficient for it to facilitate networks but it could not drive commercialisation, even in just South Africa.
- It had to use its current budget to drive networking across 13 countries and create a strategic framework to drive what it had to drive: facilitation.
- If SANBio funded individual projects then it was acting as a funding agency and not a facilitating agent.
- SANBio had to drive its mandate in such a way that it drove the strategy for the whole region.
- SANBio could co-ordinate universities to offer new entrepreneurship courses.
- It was noted that students and universities were not aware of SANBio simply because its name was not “out there” and the network’s activities was not visible to a large proportion of its potential stakeholders and partners.
- Africa has the opportunity to leapfrog the rest of the work in terms of agriculture; ignore the science and concentrate on how malnutrition can be addressed through agricultural.
- There was still an opportunity for SANBio to consider mapping innovation value chains and identify programs that could link opportunities available in one country to a need in another. SANBio could play a strategic role and be the linkage and the network facilitator in this important regional exercise.
- SANBio had to diversify away from just nutrition and health and start to diversity into artificial intelligence and block chain as both of these concepts would be game-changers in the region and drive future direction of the technology space in biosciences.
- Member states had to give funding in order for programs to be implemented.
- A platform had to be created for member states and the principles of the member states to determine how they could invest into SANBio.
- The network had to include innovation hubs across the region.

Conclusion:
Dr Chakauya summarised the session by stating that he agreed that SANBio had different roles to play in the ecosystem, but this was being worked on in order to clear up the confusion and define its value to each type of stakeholder.

Prof Kaunda concluded by saying that the value chain of innovation in economic sub-sectors was being mapped. Innovation meant different things to different people and the mapping was determining what drove innovation in government and private sectors. The second stage will be to look at innovation processes. Now was the time for SANBio to locate itself in a position based on the results it had realised so far.
The SANBio steering committee had to carry out its duties and in this regard the governance structure of SANBio had to be strengthened.

As SANBio moved forward it had to do so, on the foundation it had already built. It was pointed out that SANBio had an extensive database which was accessible to those wanting to network with specific individuals or companies.

Dr Chakauya stated that everyone wanted an Africa that was grounded in knowledge-based economies. Knowledge had to be considered as an extraordinary resource.

**CLOSING REMARKS**

**Dr Domingos da Silva Neto, Secretary of State, Angola**

On behalf of the government of Angola, Dr Domingos da Silva Neto thanked the governments of Finland and South Africa for their support for SANBio. He stated that the multi-disciplinary principle between all collaborating nations was working well and this meant that both the SANBio network and BioFISA II were doing excellent work in finding solutions to the health and nutrition challenges in the SADC region. He encouraged both organisations to continue to prioritise their support of projects and innovations which focussed on the promotion of local and regional products.

The next ministerial committee meeting would happen in July and suggested that it would focus on what BioFISA II could do differently in order to improve regional integration and improve the usage of the facilities offered by SANBio and BioFISA II.

He wished all well on their journeys home and offered a special thanks to the organising committee.
## Annex 1: Programme for SANBio Annual Event 2019

### SANBio Annual Event 2019 Programme

**Venue** Main Exhibition Hall, CSIR ICC

**Video link:** Session 1 Plenary – all presentations: [https://www.youtube.com/watch?v=r643g9nZOCg&t=6082s](https://www.youtube.com/watch?v=r643g9nZOCg&t=6082s)

**Programme Director** Ms Nabwalya Vlahakis

### DAY 1 - TUESDAY 21 MAY 2019

#### Session 1: Plenary Welcome

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<th>Time</th>
<th>Activity</th>
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<tr>
<td>09:00-09:05</td>
<td>Opening and Welcome remarks by DST</td>
<td>Mr Daan du Toit, DDG: International Relations, Department of Science and Technology, South Africa</td>
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<tr>
<td>09:10-09:15</td>
<td>Welcome remarks by MFA</td>
<td>HE Ambassador Mr Kari Alanko, Ministry for Foreign Affairs of Finland</td>
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<td>09:20-09:25</td>
<td>Welcome remarks by SADC</td>
<td>Ms Aneline Morgan, Senior Technical Advisor, SADC Secretariat</td>
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<td>09:30-09:35</td>
<td>Welcome remarks by NEPAD</td>
<td>Dr Tichaona Mangwende, Principal Programme Officer, AUDA-NEPAD</td>
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<td>09:40-10:00</td>
<td>Presentation by CSIR CEO</td>
<td>Dr Thulani Dlamini, CEO CSIR</td>
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<td>10:00-10:15</td>
<td>SANBio in the last 5 years</td>
<td>Dr Ereck Chakauya, SANBio Network Manager</td>
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<td>10:15-10:30</td>
<td>BioFISA II Programme Achievements and lessons</td>
<td>Ms Zvi Tangawamira, BioFISA II Programme Manager</td>
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#### Group Photo

10:40-11:00 Tea and Networking

**Video link:** Presentation by MFA and Session 2 and Spotlight 1: [https://www.youtube.com/watch?v=hrvGwQENVbY&t=5762s](https://www.youtube.com/watch?v=hrvGwQENVbY&t=5762s)

**Presentation by MFA**

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<td>Reflections on supporting innovation in health and nutrition over the past 10 years</td>
<td>Ms Päivi Lehtonen, Ministry for Foreign Affairs of Finland</td>
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**Panel discussion 2 and 3**

**Session 2: Successes & failures in commercialising research-from spin-offs and start-ups to commercial partnerships**

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<th>Facilitator</th>
<th>Dr Victor Konde, AEH Global/UNECA, Ethiopia</th>
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<td>Panel</td>
<td>Ms Avril Harvey, Parceval (Pty) Ltd, South Africa</td>
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<td>Prof Abednego Dlamini, University of Eswatini</td>
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<tr>
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<td>Ms Mischa Fraser, Inqaba Biotechnical Industries Pty Ltd, South Africa</td>
</tr>
<tr>
<td></td>
<td>Prof Mpofu, Chinhoyi University of</td>
</tr>
</tbody>
</table>
### Spotlight 1: What’s happening in the regulatory framework in health?

Ms Andrea Julsing Keyter, South African Health Products Regulatory Authority

Video link: Session3, Spotlight 2, Session 4, Spotlight 3 and Session 5: [https://www.youtube.com/watch?v=bumwC5o1AvE&t=9483s](https://www.youtube.com/watch?v=bumwC5o1AvE&t=9483s)

### Session 3: Bottlenecks in the commercialisation process

**Facilitator**
Mr Sibusiso Manana, Technology Innovation Agency, South Africa

**Panel**
- Dr Phiyani Lebea, TokaBio (Pty) Ltd, South Africa
- Ms Khilona Radia, Antrum Biotech (Pty) Ltd, South Africa
- Prof Emmanuel Kaunda, Lilongwe University of Agriculture and Natural Resources, Malawi
- Mr Louis Roux, Life Assay Diagnostics (Pty) Ltd, South Africa
- Prof Riette de Kock, University of Pretoria, South Africa
- Dr Christopher Gadzirayi, Bindura University of Science Education, Zimbabwe
- Mrs Thandie Lebotse Zulu, Blue Pride Pty Ltd, Botswana

### Buffet lunch on the deck

### Panel Discussion 4 and 5

**Spotlight 2: What’s happening in global health research?**

Dr Robert Ridley, Unicaf University, Malawi

### Session 4: Health innovation in Africa

**Facilitator**
Dr Nick Walker - ONEBio, South Africa

**Panel**
- Mr Charles Faul, Akili Labs, South Africa
- Mr Siraaj Adams, Digital Health Cape Town, South Africa
- Dr Robert Ridley, Unicaf University, Malawi

### Spotlight 3: What’s happening in global nutrition research?

Dr Victor Konde, AEH Global/UNECA, Ethiopia

### Session 5: Food Innovation in Africa

**Facilitator**
Dr Sechaba Bareetseng

**Panel**
- Dr Tawanda Muzhingi, International Potato Centre, CGIAR, Kenya
<table>
<thead>
<tr>
<th>TIME</th>
<th>ACTIVITY</th>
</tr>
</thead>
</table>
| 17:30-18:30  | SPEED NETWORKING SESSION  
               | Speed networking and Tea/Coffee  
               | Venue: Foyer                  |

**DAY 2 - WEDNESDAY 22 MAY 2019**

<table>
<thead>
<tr>
<th>TIME</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.5.2019</td>
<td>Venue Main Exhibition Hall</td>
</tr>
<tr>
<td></td>
<td><strong>Programme Director</strong></td>
</tr>
<tr>
<td></td>
<td>Ms Nabwalya Vlahakis, ZNBC</td>
</tr>
<tr>
<td></td>
<td><strong>Video link: Pitching Session and Session 6:</strong></td>
</tr>
<tr>
<td></td>
<td><a href="https://www.youtube.com/watch?v=1pYBddaS1ZE">https://www.youtube.com/watch?v=1pYBddaS1ZE</a></td>
</tr>
</tbody>
</table>
| 09:00-09:05  | Opening Remarks for Pitching Session  
               | Ms Tanja Lubbers Regional Manager, Head of Hivos Southern African Hub     |
| 09:10-10:00  | Pitching panel - top five from Day 1 to present  
<pre><code>           | Facilitated by Ms Nabwalya Vlahakis, ZNBC                                |
</code></pre>
<p>| 10:00-11:00  | Session 6: Enhancing the entrepreneurship landscape in the SADC region    |
|              | <strong>Facilitator</strong>                                                           |
|              | Dr Chamunorwa Togo, The Innovation Hub, South Africa                      |
|              | <strong>Panel</strong>                                                                |
|              | Dr Flora Ismail Tibazarwa, Southern Africa Innovation Support Programme, Namibia |
|              | Dr Budzanani Tacheba, Botswana Innovation Hub                             |
|              | Mrs Muzalema Mwanza, SafeMotherhood Alliance, Zambia                      |
|              | Dr Devina Lobine, University of Mauritius                                 |
| 11:00-11:15  | Tea and Networking                                                        |
|              | Video link: Spotlight 4 and Session 7:                                    |
|              | <a href="https://www.youtube.com/watch?v=OrqYc1pgYak">https://www.youtube.com/watch?v=OrqYc1pgYak</a> |
| 11:20-11:30  | <strong>Spotlight 4: Insights on VC and private equity funding and crowd funding Panel</strong> |
|              | Mr Vuyisa Qabaka, HYBR Group Southern Africa                             |
| 11:35-12:35  | Session 7: Fundraising for start-up companies                             |
|              | <strong>Facilitator</strong>                                                           |
|              | Dr Audrey Verhaeghe, SA innovation Summit, South Africa                  |
|              | <strong>Panel</strong>                                                                |
|              | Mr Jaap Spreeuwenburg, Hivos Impact Investments, The Netherlands          |
|              | Ms Aurora Psico, Gapi - Sociedade de Investimento, Mozambique             |
|              | Mr Fanuel Kapanje, ZB Bank Limited, Zimbabwe                              |
|              | Mr Vuyisa Qabaka HYBR Group Southern Africa                              |</p>
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:40-13:40</td>
<td>Ms Carmen di Rito, LifeCo UnLtd, South Africa</td>
</tr>
<tr>
<td></td>
<td>Buffet lunch on the deck</td>
</tr>
<tr>
<td>13:45-13:55</td>
<td>Video link: Spotlight 5 and Session 8:</td>
</tr>
<tr>
<td></td>
<td><a href="https://www.youtube.com/watch?v=p_bSSbuYycc&amp;t=3017s">https://www.youtube.com/watch?v=p_bSSbuYycc&amp;t=3017s</a></td>
</tr>
<tr>
<td>13:45-13:55</td>
<td><strong>Spotlight 5: Marketing for bio-businesses in the 21st century</strong></td>
</tr>
<tr>
<td>13:45-13:55</td>
<td>Ecommerce</td>
</tr>
<tr>
<td></td>
<td>Mr Rob Maclean, eCommerce Experts, South Africa</td>
</tr>
<tr>
<td>14:00-15:00</td>
<td><strong>Session 8: Scaling a business: challenges and pitfalls to look out for in Health &amp; Nutrition</strong></td>
</tr>
<tr>
<td>14:00-15:00</td>
<td>Facilitator</td>
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<tr>
<td></td>
<td>Dr Boitumelo Semete-Makokotlela, NextGen Health CSIR, South Africa</td>
</tr>
<tr>
<td>14:00-15:00</td>
<td>Panel</td>
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<tr>
<td></td>
<td>Mr Grahame Osler, DENMAR Estates, South Africa</td>
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<td></td>
<td>Mr Owen Nyoni, Capital Foods, Zimbabwe</td>
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<td></td>
<td>Mr Pieter de Beer, Industrial Development Corporation, South Africa</td>
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<td></td>
<td>Dr Bethuel Nthangeni, Onderstepoort Biological Products, South Africa</td>
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<tr>
<td>15:00-15:15</td>
<td>Tea and Networking</td>
</tr>
<tr>
<td>15:15-16:15</td>
<td>Video link: Session 9 and Closing remarks:</td>
</tr>
<tr>
<td>15:15-16:15</td>
<td><a href="https://www.youtube.com/watch?v=XrLtVnpYvCA&amp;t=22s">https://www.youtube.com/watch?v=XrLtVnpYvCA&amp;t=22s</a></td>
</tr>
<tr>
<td>15:15-16:15</td>
<td><strong>Session 9: SANBio and the Way Forward</strong></td>
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<tr>
<td>15:15-16:15</td>
<td>Facilitator</td>
</tr>
<tr>
<td></td>
<td>Dr Ereck Chakauya, SANBio Network</td>
</tr>
<tr>
<td>15:15-16:15</td>
<td>Panel</td>
</tr>
<tr>
<td></td>
<td>Ms Mmampei Chaba, DST, South Africa</td>
</tr>
<tr>
<td></td>
<td>Dr Tichaona Mangwende, AUDA-NEPAD</td>
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<tr>
<td></td>
<td>Prof Emmanuel Kaunda, LUANAR, Malawi</td>
</tr>
<tr>
<td></td>
<td>Prof Keo Motaung, Global Health Biotechnology (Pty) Ltd, South Africa</td>
</tr>
<tr>
<td></td>
<td>Dr Devina Lobine, University of Mauritius</td>
</tr>
<tr>
<td>16:15-16:30</td>
<td>Announcement of Pitch Winners</td>
</tr>
<tr>
<td>16:15-16:30</td>
<td>Marnix von Holland, Hivos and Marja-Reetta Paaso, SANBio</td>
</tr>
<tr>
<td>16:30-16:45</td>
<td>Closing Remarks</td>
</tr>
<tr>
<td>16:30-16:45</td>
<td>Prof Domingos de Silva Neto, Angola</td>
</tr>
<tr>
<td>17:00-20:00</td>
<td><strong>NETWORKING SESSION</strong></td>
</tr>
<tr>
<td>17:00-20:00</td>
<td>Mix and mingle: African Music and Dance</td>
</tr>
</tbody>
</table>
### Annex 2: List of companies in Pitching Competition

<table>
<thead>
<tr>
<th>Organisation/company /institution</th>
<th>Idea</th>
<th>Country</th>
<th>Website of company/organisation (if applicable)</th>
<th>Industry sector</th>
<th>Stage of innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uku'hamba</td>
<td>Idea to manufacturer light weight and low cost prosthetic using bio-composites (natural fibre). Use advanced technology 3D printer to fasten output production.</td>
<td>South Africa</td>
<td></td>
<td>Human Health</td>
<td>Idea</td>
</tr>
<tr>
<td>Mobisurance</td>
<td>Solution is an autonomous satellite imagery based crop insurance product for smallholder farmers.</td>
<td>South Africa</td>
<td><a href="http://www.mobisurance.com">www.mobisurance.com</a></td>
<td>Fintech and agriculture</td>
<td>Prototype developed</td>
</tr>
<tr>
<td>Xabindza Biotecnologia</td>
<td>Farming black soldier fly larvae to bioprocess food waste and industrial organic residuals, transforming them into protein rich feed for monogastric animals and nutrient organic fertilizer, offering a circular economy solution for waste management.</td>
<td>Mozambique</td>
<td></td>
<td>Animal Nutrition</td>
<td>Prototype developed</td>
</tr>
<tr>
<td>Scaled IMPACT</td>
<td>Mealworm based protein production for aquaculture or protein or for human consumption.</td>
<td>South Africa</td>
<td><a href="http://www.scaledimpact.org">www.scaledimpact.org</a></td>
<td>Human and animal nutrition</td>
<td>Start-up company</td>
</tr>
<tr>
<td>Verager (Pvt) Ltd</td>
<td>Production and processing of drought resistant, nutrient dense cowpeas into a sausages, wors, Burgers patties and Rupiza.</td>
<td>Zimbabwe</td>
<td></td>
<td>Human Nutrition</td>
<td>Start-up company</td>
</tr>
<tr>
<td>GRONUT</td>
<td>GRONUT is a peanut/maize blend that is extruded to precook and sterilize the product. Vitamins and minerals are added to have complete meal by just adding water or milk.</td>
<td>South Africa</td>
<td><a href="http://www.gronut.co.za">www.gronut.co.za</a></td>
<td>Human Nutrition</td>
<td>Start-up company</td>
</tr>
<tr>
<td>Company Name</td>
<td>Description</td>
<td>Location</td>
<td>Sector</td>
<td>Status</td>
<td></td>
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<tr>
<td>YouFarm</td>
<td>YouFarm provides access to collateral free funding and technology for farmers by getting people to invest in crops and livestock and share the profits with the farmers when the produce goes to market.</td>
<td>Zimbabwe</td>
<td>Agricultural Finance</td>
<td>Start-up company</td>
<td></td>
</tr>
<tr>
<td>Serenitii Luxury Body Care</td>
<td>Skin care products based on indigenous plant oil extracts.</td>
<td>South Africa</td>
<td>Natural Products</td>
<td>Start-up company</td>
<td></td>
</tr>
<tr>
<td>MK Enterprise</td>
<td>Farming of <em>O.niloticus</em> Tilapia in a sustainable manner.</td>
<td>South Africa</td>
<td>Aquaculture</td>
<td>Start-up company</td>
<td></td>
</tr>
<tr>
<td>Afrobodies</td>
<td>Production of recombinant alpaca antibodies to detect microscopic substances such as chemicals, proteins, carbohydrate moieties. Our products can be used in Life Sciences Research, Agriculture, Immunodiagnostics, Immunotherapy.</td>
<td>South Africa</td>
<td>Biotechnology</td>
<td>Established business</td>
<td></td>
</tr>
<tr>
<td>Future Farms</td>
<td>Hydroponic Farming Business, water-efficient farming methods, indoor farming, localised urban farming, rural hydroponic farming schemes.</td>
<td>South Africa</td>
<td>Human Nutrition</td>
<td>Start-up company</td>
<td></td>
</tr>
<tr>
<td>Inqaba Biotechnical Industries Pty Ltd</td>
<td>Manufacture, validation and commercialise a novel forensic DNA kit targeting male DNA for improved discrimination between male suspects in sexual assault cases. The kit is supported by a database and website that provides statistical support to the user.</td>
<td>South Africa</td>
<td>Biotechnology</td>
<td>Established business</td>
<td></td>
</tr>
<tr>
<td>ABC Plus+</td>
<td>The business is focusing on developing by-products from the so-called rejected resources native to Southern Africa, with potential use in human and animal health, animal and human nutrition.</td>
<td>Zimbabwe</td>
<td>Other Biosciences</td>
<td>Prototype developed</td>
<td></td>
</tr>
</tbody>
</table>