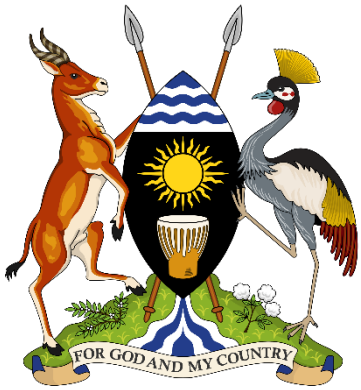

ADDRESS BY H.E. YOWERI KAGUTA MUSEVENI

DRAFT

PRESIDENT OF THE REPUBLIC OF UGANDA

ON THE OCCASION OF CELEBRATING THE WORLD SCIENCE DAY FOR PEACE AND DEVELOPMENT

10TH NOVEMBER 2021

H.E. the Vice President

Rt. Hon. Prime Minister

Cabinet Ministers

Members of Parliament

Permanent Secretaries

Heads of the Various Government Departments and Agencies

Our Scientists

Distinguished Guests

Countrymen and Women

Prior to Uganda's independence, Science, Technology and Innovation (ST&I) was an integral part of the central government, under the East African Common Services Organization (EACSO) with headquarters in Nairobi, Kenya. The three countries Uganda, Kenya and Tanzania first cooperated in matters of ST&I through the EACSO since December 1961. During its lifetime, EACSO was instrumental in setting up the University of East Africa, Inter-University Committee for East Africa, East African Posts and Telecommunications Administration that was subsequently replaced the East African Posts and Telecommunications Corporation.

EACSO later became the East African Community in June 1967. With this arrangement ST&I appeared to be quite well organized. However, its efforts were focused more on research aimed at improving productivity of cash crops such as cotton and coffee; and tackling tropical diseases such as malaria and trypanosomiasis.

After independence in 1962, Uganda embarked on nation building with industrialization being at the centre of the development agenda. ST&I was expected to play a key role in the industrialization process but it did not feature vividly in the development plans of the time. There was lack of clarity on how to promote ST&I for national development. This led some scholars to believe that ST&I was often given low priority in the development planning process. However, there was a growing global effort to help developing countries use STI as a tool for development (United Nations Educational, Scientific and Cultural Organization (UNESCO), 1987). Several African countries in the 1960s and 1970s established national research councils as coordination mechanisms for scientific research and development. In Uganda, a National Research Council was set up in 1970 to guide and coordinate research efforts.

The predominant view at the time seemed to be that industrialization was preceded by research, then experimental development and later production and commercialization of products. This linear view of ST&I is often criticized because it fails to recognize other factors necessary in the innovation process. A "systems approach" to ST&I seems to be the more favoured view because it recognizes the contribution of several actors in an interactive learning relationship, and the factors which influence such a relationship. Innovation is believed to be an outcome of these complex interactions between diverse actors. Most of all the drive to integrate ST&I into national development planning was initiated by continental wide efforts notably by the UNESCO supported Conferences of Ministers responsible for the Application of Science and Technology in Development in Africa I and II (CASTAFRICA I and II) in 1974 and 1987 respectively; and the Lagos Plan of Action (LPA) in 1980. In UNESCO's view, rapid scientific and technological progress could only be achieved through the indigenous efforts of developing countries. This view became popular among developing countries because they found it consistent with their aspirations to liberate themselves from colonialism.

Consequently, in 1980 African leaders met in Lagos Nigeria and developed a masterpiece "*Lagos Plan of Action*".

The Lagos Plan of Action provided that each country should establish a center or body to *"help the country in determining the origins and effects of alleviating the technological dependence and in approaching technological self-reliance by striking a socio-economically favourable balance between foreign inputs and those inputs that are generated by the indigenous science and technology system and utilized by the national sectors of production and services"*. Such a center was to be entrusted with the mandate for national science and technology policies and coordination of all national research and development programmes.

The ideals of the Lagos Plan of Action were for member countries to attain self-sufficiency by becoming technologically independent. The Lagos Plan of Action specifically called for member countries to develop short, medium and long term integrated development plans, with science and technology as an integral part. Perhaps that is why in 1987, I appointed late Professor William Senteza-Kajubi to chair the Education Policy Review Commission.

The Kajubi Commission was empowered to overhaul Uganda's education system following the two decades of Uganda's decline of the 1970s and '80s. Two years later in 1988/89, I spearheaded establishment of Uganda's first University of Science & Technology in Mbarara (MUST) - since Uganda's independence in 1962! This was after I had struggled with Makerere University to turn it into a Science based University. Soon after establishing Mbarara University of Science and Technology, I also spearheaded value-added research and development and commercialization of *Nile Toothpaste* from our local *mutete* (lemon) grass. This was probably Africa's first herbal toothpaste! Notably, hardly any herbal toothpaste or health products were popular in Uganda in the 1990s. But herbal toothpaste brands, including multinational brands, proliferate in our supermarkets in Uganda today!

In the early 1990s, too, I spearheaded and supported the creation of the Makerere University Building Unit with equipment, machinery and money. Makerere University Building Unit was supposed to be a partnership between the Faculty of Technology and the Estates Department. Its aim was to harness the skills and expertise of the staff and students in the Faculty of Technology so Makerere University

Building Unit would compete for construction contracts in the open market! Had things gone according to plan, by now Makerere University Building Unit should have built such skills, knowledge, competence and technical capacities that it would be competing with international construction and engineering companies that dominate the Uganda construction market today!

From the foregoing discussion, you see that the integration of Science, Technology and Innovation in Uganda's national development planning could have started in the 1990s under the NRM with the establishment of the Uganda National Council for Science and Technology (UNCST) under the Uganda National Council for Science and Technology Act, 1990 (CAP 209 of the Laws of Uganda). The UNCST replaced the National Research Council.

During the 1970s and early 1980s, development planning was interrupted by political instability and civil unrest; and further by the structural adjustment programmes of the 1980s and the early 1990s. Between 1990-97 government implemented an economic recovery program aimed at stabilizing the economy and creating a conducive environment for rapid economic growth. These included among others

interest rate reforms and fiscal measures to reduce Uganda's budget deficit, liberalization of trade policies and revitalization of the private sector. From 1997 to 2008 development planning was guided by the Poverty Eradication Action Plan (PEAP).

Significant reforms of the public sector happened during this period including the creation of dedicated research and development organizations such as the National Agricultural Research Organization, (NARO) Uganda National Health Research Organization Uganda (UNHRO) and the Uganda Industrial Research Institute (UIRI). Government line ministries assumed a policy and regulatory function, leaving research to academic and research organizations. It is at this stage that traces of ST&I integration into national development planning started to emerge.

Though not explicitly stated, the need for ST&I was implied in most of the PEAP actions particularly those meant to increase ability of the poor to raise their incomes such as modernizing agriculture; as well as in actions to improve the quality of life of the poor, for example, in combating HIV, developing more efficient energy systems, designs for improved housing, and improving primary and secondary education.

The PEAP was Uganda's comprehensive development framework from 1997 to 2009. It was government's three-yearly planning document.

All the PEAPs, PEAP 1997, 2001 and 2004, had no specific actions to promote Science, Technology and Innovation. But they all recognized the need for ST&I in some of the actions such as those aforementioned. It may have been possible to articulate ST&I within the context of the PEAP, but such a strategy would not be sufficient mechanism to promote Science, Technology and Innovation primarily because results from Science, Technology and Innovation are usually realized in the long term, though there could also be some short term outputs. PEAP neither provided a clear mechanism of how to use nor invest in Science, Technology and Innovation to bring about the desired outcomes of economic growth. As such it appeared as if Science, Technology and Innovation had been given low priority and no status in the planning process despite its potential central role in enhancing economic growth.

The PEAP was replaced by the five-year National Development Plan (NDP) starting 2010. The subsequent National Development Plans (NDP II and NDP III) and the and the National Resistance

Movement Manifesto 2021-2026 all peg onto a robust scientifically based industrialization, for the country to attain a middle income and transform the population from subsistence to a modern society. Over the past decade, substantial effort has been invested in infusing science, technology and innovation into the national economy.

On the one hand, National Development Plan I (2010-2015) recommended a Ministry of Science and Technology to "*Institutionalize a sector for Science and Technology and Innovation*". The Omaswa Task Force Report, on the other hand, recommended a new Ministry of Higher Education, Science, Technology & Industry with the mandate of Coordination and Oversight of Higher Education in Uganda. The Task Force noted the successes of the Presidential Initiative in Science, Technology and Innovations in Makerere University as reflected, for instance, in the Kiira EV Car innovation. The Task Force recommended that this initiative be developed into a national Science and Technology Research Fund to be awarded competitively through the UNCST under the Ministry of Higher Education, Science, Technology and Industry. In view of the foregoing, therefore, I created the new docket for the Minister of State for Higher Education, Science and Technology (MS HEST) in

March 2015. This is how the former Ministry of Education and Sports (MoES) became the Ministry of Education, Science, Technology and Sports, (MoESTS).

ST&I was included in the NDP II as a sector that provides institutional and infrastructural support to the production of goods and services. It was the first time Science, Technology and Innovation was explicitly recognized in the national development planning process of Uganda. Unlike in the 1960s, 70s and 80s where foreign influences shaped Science, Technology and Innovation planning, the integration of Science, Technology and Innovation into NDP II was an outcome of indigenous efforts which I spearheaded. I then created the Ministry of Science, Technology and Innovation in May 2016 with a Mandate to Provide Overall Policy Guidance and Coordination for Scientific Research, Development and the whole National Innovation System in Uganda. The Main Objective of Creating the Ministry of Science, Technology and innovation was to Facilitate Science-Led Economic Development, with Specific Emphasis on Increased Industrialization, Commercialization and Improved Productivity in All Sectors.

The Ministry of Science, Technology and Innovation was encumbered with persistent functional duplications and over laps with its key agencies; glairing gaps in coordination and regulation of a fragmented ecosystem; cannibalistic competition undermining effective performance on the backdrop of the absence of a prioritized National Science, Technology and Innovation Agenda to guide Strategic Action. Due to the lack of clarity, delineated mandates and functions, critical areas in the management of the science, technology and innovation were not accorded due attention by the Ministry of Science, Technology and Innovation.

It is against this background that in June 2021, I directed that the portfolio of Science Technology Innovation be placed under Office of the President for direct and effective management. I accordingly appointed Hon. Dr. Monica Musenero Masanza the Minister of Science, Technology and Innovation – Office of the President, serviced by the Statehouse Comptroller as the Accounting Officer. This administrative change birthed the docket of Science, Technology and Innovations - Office of the President (STI-OP).

In view of these structural adjustments, there is need for planning to inform streamlined implementation of the plans at national level addressing the observed disparities and concerns. Even with these structural adjustments, some of the actors in the old establishment and bureaucrats in government have made it hard for the ministry to access funding which is hindering the implementation of key government programmes.

In spite of these bureaucracies, as we join the rest of the world to celebrate the World Science Day for Peace and Development today Wednesday, 10th November 2021, the portfolio of Science, Technology and Innovation looks to be more streamlined than ever before. Hon. Dr. Monica Musenero Masanza has undertaken several key stakeholder engagements and the result of this consultative process has been the identification of six (6) priority industrial value chains to be the core focus for strategic intervention in the short-medium term under NDP III namely: Pathogen Economy, Engineering, Mobility, Beauty and Apparel, Digital Economy, and Agro-Security.

As you have witnessed through the various activities and exhibitions during the National Science Week, there will be increased Industrialisation, Commercialization, Productivity and Enterprise Development with the right application of Science, Technology and Innovation in each of these identified industrial value chains. The prioritization of the selected Industrial Value Chains was informed by four (4) key attributes based on careful consideration:

(i) Need: Items that will transform how our people live and do business (Supporting the Parish Model)
(ii) Advantage: where Uganda has competitive advantage e.g. raw materials, localization potential etc.
(iii) Market: Availability of Domestic, Regional, Continental and Global Market; and
(iv) Potential for growth looking at trends in market size.

Table 1 presents the global contribution of the prioritized industrial value chains to provide context of the potential for strategic development for ultimately export promotion of relevant goods and services.

Table 1: Global Contribution of Prioritized Industrial Value Chains

Value Chain	2020 (Trillion USD)	2025 (Trillion USD)	CAGR (%)
Pathogen Economy	1.27	1.7	6.01
Engineering	0.83	1.17	7.04
Mobility	5.3 (2017)	9 (2030)	4.16
Beauty & Apparel	0.42 /1.5	0.56/2.25(2026)	4.6/8.45
Agro-Security	9.6	13.3	6.6
Digital	1.0	1.7	18.5

Pathogen Economy

The Pathogen Economy ideas was hatched by our scientists when I I instructed Musenero to brings together scientists to produce local response tools to help us respond to the COVID-19 Pandemic and other epidemics. Before that, we were not doing much. But since them, we have moved. For Example, we have a natural therapeutic where we have completed the clinical trial and the regulators are now examining the information which came out. We are working on four Covid-19 vaccines – although we have been delayed a lot with delays in accessing some reagents we needed, we have made progress. Despite these delays, we have still made progress. One of our vaccines is in the final stage of animal trials (Stage 7), the other is in stage 5, although we should have been further ahead had it

not been the delays in getting some of the inputs. The other two are helping us to build our capacity so that in future, we can immediately produce new vaccines because we shall have the technology. We also embarked on working to produce no diagnostic kits for COVID and other diseases where we have progressed the science for PCR kits, saliva diagnostic kits and *nano* particles awaiting the manufacturing factories to be built to start production and ultimately commercialisation.

Digital Economy

The Digital Economy Platform aims to shape a vibrant and equitable digital future by fostering forward-looking insights and creative solutions to advance an inclusive technological future for Ugandans. This will be done by providing evidence-based foresight to help decision-makers navigate the intersection of public policy, societal challenges, and digital trends to cultivate shared prosperity. The Digital Economy Platform will focus on creating an enabling environment through facilitating progressive regulation, promoting digital literacy and skills, working with other agencies to setup the necessary physical and digital infrastructure, promoting and facilitating a fully digital government, fostering digital

safety and security and promoting the development of local content.

Mobility Industrial Value Chain

We have taken definitive steps towards building a robust, competitive and sustainable Mobility Industrial Value Chain in Uganda. The prioritization of the Mobility Industrial Value Chain is in cognisance that it provides an unprecedented opportunity for harnessing the nation's population dividend in promoting value addition to Uganda's mineral and other natural resources with the view of import substitution and export promotion of vehicles, parts, components, systems and mobility engineering services. The goal is 500,000 vehicles produced annually by 2030 coupled with establishment of efficient, integrated, sustainable, safe and inclusive public transport system(s) while promoting environmentally friendly transport solutions.

Government is committed to working with the Private Sector, Academia and Development Partners to ensure that as many parts of the Bus, Trucks, Pick Ups, SUVS, 2-3 Wheelers, Tractors etc. are made locally by our scientists, MSMES, and artisans. This is projected to create over 300 factories manufacturing 65% of the required vehicle parts

locally by 2030 and employing over 100,000 people. Government will institutionalise programs to skill and perfect the skills of our artisans (in Katwe etc.) to manufacture vehicle parts even for export transforming them from subsistence into manufacturing, ICT and services sectors and hence into the money economy.

Engineering

Whereas Ugandan scientists and engineers have been playing a pivotal role in generation of knowledge and innovations, building human capital, and providing technical guidance on development agenda among others, more is needed. Uganda, the Pearl of Africa, is considered well-endowed in terms of natural resources, i.e., the climate, mineral resources, coupled with good hospitality, innovations and entrepreneurship. In addition, a lot of innovations at product level have been generated over the years through research, ingenious, and indigenous knowledge and many more in the pipeline. Most of the efforts have achieved proof-of-concept and hence ready to propel industrial and social-economic transformation. With financial support from government, and application of science, engineering and technology, these innovations can be pillars to

spur value-addition and job creation in a number of sectors of the respective value chains.

Beauty and Apparel

It is timely that we have prioritized the Beauty and Apparel Economy as a pivotal cluster to shape the National Development Strategy, with Science and Innovation. Uganda will be able to tap into some of the world's key manufacturing-money sectors; Beauty (500 Billion), Apparel (1.5 Trillion), Textile (1.3 Trillion) all at CAGR above 4.0%. This is a highly labour intensive sector, carrying millions of jobs at different value stages. Asian pioneers- China, Bangladesh, India, and Pakistan have recently exploited the global shift from richer Europe and North America to propel their economies, reducing unemployment significantly. The current gradual shift to Africa should be seized immediately as witnessed in Ethiopia lately.

Our dedicated team of scientists is integrating efforts towards sustainable value addition, with innovation and utilizing several local raw-materials, and developing local capacity. With the oil and gas sector at a ripe stage, we hope that industrialization into refining for beauty products, polymers, and auxiliaries for textile manufacturing will be an added

innovation. We are prioritizing capacity building (including strengthening TVET initiatives), research and development, and advanced skilling, among others; to support and promote innovation and industrialization; and, subsequently, import substitution.

Agro – Economy

I have been telling you to stop the practice of "*okukolera ekida kyonka*" - working for the stomach only. We are now supporting the development of sustainable food value chains and inclusive market systems, promote business opportunities for the rural populations and strengthen markets to enhance industrial linkages and economic transformations with "*ekibalo*". The enhancement of agricultural value chains and food systems is a central aspect of inclusive and sustainable industrialization.

Uganda has the lowest number of tractors at 0.4 tractors per 1,000 hectares while Kenya and Tanzania are at 2.7 and 1.5 respectively. It takes sixty days to cultivate a hectare of land using a hand hoe, compared to three days with draught animal power while a sound tractor can plough five hectares in a day. The Food and Agricultural Organization (FAO) recommended Tractor: Arable Land ratio is 1:40

hectares. This implies that Uganda needs 172,500 tractors to maximize its potential, and these will be manufactured locally. These are some of the interventions that will be supported under the Parish Development Model.

Uganda Science Innovators' Award

I wish to congratulate the winners of the Inaugural Uganda Science Innovators' Award from each category. The Uganda Science Innovators' Award is premised on celebrating Ugandans' innovation efforts as well as inspiring young innovators to activate their abilities and contribute to technology development in the country.

I thank you and wish you Good Luck.