FEDERAL REPUBLIC OF NIGERIA

NATIONAL SCIENCE, TECHNOLOGY AND INNOVATION (STI) POLICY

FEDERAL MINISTRY OF SCIENCE AND TECHNOLOGY

2012 EDITION
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National Policy on Science, Technology and Innovation

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PRESIDENTIAL STATEMENT ON THE NEW NATIONAL POLICY ON SCIENCE, TECHNOLOGY AND INNOVATION

I present to Nigerians, the New National Policy on Science, Technology and Innovation, a Policy which I believe will crystallize the effort of my administration at bequeathing a lasting legacy to the present and future generations of Nigerians. The history of our nation is replete with great scientific and technological innovations that have been recognized in modern history. We take pride in our historical strides in arts and culture, traditional medicine, meteorology, agriculture, to mention but a few. These accomplishments by our people were underpinned in science and technology, a service tool that has supported the advancement of man over the years.

The Transformation Agenda of my government is aimed at repositioning Nigeria towards reclaiming its pride of place among the comity of nations and realizing the great hopes and aspirations of our founding fathers at Independence. The mission is onerous, ambitious and altruistic, but I see it as a choice we must make today to rescue our future from poverty and deprivation. I am convinced that Science, Technology and Innovation (ST&I)

remain the key tool that will help us to achieve the desired transformation. My conviction stems from the resourcefulness of our people, the gains of the application of the outputs of Science, Technology and Innovation in other countries and the implications for the quick turn-around of the economy.

We have approved this policy as a national guide, not only for the Federal Ministry of Science and Technology (FMST) and its agencies, but also as platform for collaboration among the agencies of Federal and State Ministries. Let me state here that the FMST is a Service Ministry of Government and as such, has the mandate to interact with all relevant agencies and organizations, synergizing and promoting the application of ST&I results in all sectors of the economy.

The areas expected to be covered include human capital development, agriculture, industrial growth, health, environment, energy, banking and finance, information and communications technologies, women and youth empowerment, job creation, tourism, trade, science acculturation, natural resources management, building and construction, national security, nuclear science and technology, sports and recreation, diplomacy and transport management among others.

I have undertaken to be the Chairman of the National Research and Innovation Council (NRIC) so as to provide the leadership needed by this Policy to drive our national development on all fronts while preserving and respecting the individual mandates and responsibilities of the line ministries and agencies of Government.

Finally, let me commend the leadership of the Federal Ministry of Science and Technology for the production of this invaluable document, which seeks to transform my vision and the vision of our founding fathers into reality. This will, no doubt, lead to the improvement of the lives of our dear countrymen and women, enhance the status of our beloved country, among the comity of nations and sustain our pride of place as giant of the African Continent.

HIS EXCELLENCY,
DR. GOODLUCK EBELE JONATHAN, GCFR
PRESIDENT AND COMMANDER IN CHIEF OF THE ARMED FORCES FEDERAL REPUBLIC OF NIGERIA

FOREWORD

The global economic landscape is experiencing rapid changes. Globalisation, especially is creating considerable new opportunities and new challenges. Its impact on national economies is driven by significant progress in Science and Technology (S&T) as exemplified by a plethora of breakthroughs in Biotechnology, Space Research, Energy Development, and Information & Communication Technology (ICT), among others. It is therefore obvious that if Nigeria, given its natural endowments, is to successfully transform its economy and take her rightful place in the comity of nations, S&T and its integration in national socio-economic development processes must be accorded the highest priority. It is in this regard that the Transformation Agenda of President Goodluck Jonathan's Administration which calls for a fundamental and far-reaching re-orientation of the Nigerian State towards holistic socio-economic development in the framework of Vision 20:2020 must be understood.

In Nigeria, various administrations since independence showed interests and increased appreciation of the role of S&T in national socio-economic development. The realisation of this fact motivated the Federal Government to re-establish the Federal Ministry of Science and Technology (FMST) as a separate entity in 1985. Since then, Nigeria has expended a great deal of effort on

S&T policy development through a combination of the untiring efforts of its scientists, engineers and technologists, international cooperation and government support.

The first National Science and Technology Policy in the country was produced in 1986. The policy was designed to create harmony in the pursuit of knowledge about the environment through Research and Development (R&D). The aim was to use S&T knowledge to ensure a better quality of life for the people. The policy was reviewed in 1997 to give more emphasis to coordination and management of the S&T system, sectoral developments, collaboration and funding. In 2003, the S&T policy underwent yet another review to take account of lapses observed in the implementation of the 1997 policy, especially on the need to address the institutional frameworks that should foster interaction among the various elements of the National Innovation System (NIS).

The review also incorporated a programmatic approach to policy formulation. It emphasised the need for a coherent, systematic and comprehensive approach to the determination of technological programmes. The policy gave prominence to flagship programmes of Government of the day such as Biotechnology, Information and Communication Technology (ICT), Space Science & Technology, Energy and Engineering Materials e. t. c.

However, the 2003 'policy' document is now seen as a compendium of key S&T sub-sectoral policies, and rather voluminous. Furthermore, it did not adequately attend to the issue of S&T culture and the harmonisation of S&T policy with other socio-economic policies.

In 2005, the need to carry out a system-wide reform was consumated and implemented under the Nigeria/UNESCO Science, Technology and Innovation (ST&I) reform initiative. It adopted the National Innovation System approach as a framework for Sciencec, Technology and Innovation (ST&I) system reform. The reform, among other issues, stressed that economic development initiatives, institutional governance, research and development agenda for the country, funding mechanisms, Intellectual Property (IP) and ST&I infrastructure development be addressed in any revised ST&I policy. Thus the need to design a new policy that would address these challenges became indispensable.

The new ST&I policy, taking advantage of the experiences in the design and implemenation of S&T policy in the last two decades and a half, is a product of a novel, all-inclusive, participatory policy making; involving consultative meetings with various stakeholders across the length and breadth of the country as well as International Development Partners

The participatory approach to the design of the policy has heightened awareness and provided opportunities for various actors to articulate their views and make inputs into the new policy. The approach also promoted collective ownership of the policy by all stakeholders.

One notable feature of this policy is the emphasis on 'innovation', which has become a global tool for fasttracking sustainable development. This policy is a clear demonstration of the country's renewed commitment to ensure that our R&D engagements enhance new business development, encourage employment generation as well as wealth creation through the proliferation and growth of Small Scale Enterprises (SMEs), that are ultimately translated into goods and services in the market place .

I wish to acknowledge and commend the efforts of all the staff of the Federal Ministry of Science and Technology (FMST) and her agencies particularly the National Centre for Technology Management (NACETEM) for anchoring the development of the new ST&I policy. Specifically, I want to appreciate the various contributions of members of the Academies of Science and Engineering, the Chambers of Commerce and Industry, Manufacturers Association of Nigeria (MAN), National Universities Commission (NUC), Committee of Vice-Chancellors (CVC), the Military, cognate Ministries as well as our

Development Partners for their support and useful contributions to the revised policy. My special appreciation goes to members of the Science and Technology Committees of the National Assembly; former Honourable Ministers of Science & Technology – especially my predecessors, Prof. Mohammed Ka'oje Abubakar, Dr. Alhassan Bako Zaku; and many policy experts and eminent Nigerians for their time and invaluable inputs to the successful completion of this policy.

I want to assure all Nigerians that this new National Science, Technology & Innovation (ST&I) Policy vividly articulates workable strategies for achieving the Transformation Agenda of the present administration. I therefore call upon all stakeholders to strongly support the policy and actively assist in its thorough implementation.

God Bless Nigeria

Prof. Ita Okon Bassey Ewa, FMSN
Honourable Minister of Science and Technology
Federal Republic of Nigeria,
April, 2012

ACKNOWLEDGEMENT

The Management of the Federal Ministry of Science and Technology has undertaken to review the National Science, Technology and Innovation (ST&I) Policy as a response to the need to carefully mainstream ST&I into all sectors of the economy. The Ministry has existed for over two decades and has accumulated substantial capacity in the areas of research and development, acquisition and adaptation of foreign technologies, as well as addressing the needs of the Organised Private Sector (OPS). The current effort has been guided by past policies which provided justification and inspiration for all National S&T development programmes executed over the years. These policies were subjected to thorough review by experts and scholars and a new National ST&I Policy has now been approved by the Federal Executive Council.

Indeed Nigeria, has now entered into a new phase in her development strides, with inherent emerging challenges within the context of the evolving globalization. These have been conceptualized in the National Vision 20:2020 and the Transformation Agenda of Mr. President with definitive roadmaps to provide focus for ST&I intervention in all the key sectors of the economy. It is within this broad vision that the existing policy was reviewed.

It is therefore imperative for the FMST Management to appreciate the efforts of past leadership of the Ministry who have conceived and implemented the earlier versions of the policy with outstanding landmark achievements to showcase for the investments over the years. We wish to acknowledge the contributions of staff of the Ministry and the agencies, especially NACETEM who have provided indefatigable support to the Management in the course of developing the current policy.

The technical aspect of the development of the current policy benefited from a wide spectrum of stakeholders from the higher education institutions and regulatory bodies, Organised Private Sector (OPS) and the public service at both Federal and State levels. The overwhelming support enjoyed by the policy is not only an indication that the time for the revision was ripe. It also signals the inclusiveness and acommodation of divergent views which the policy embodies. We therefore sincerely wish to thank all the stakeholders, Chairmen and Secretaries of various expert committees, members of the National Assembly and all the S&T professional associations for their untiring support for the development of the policy document.

We wish to specifically thank our International Develoment Partners, the World Bank and the UNDP for their financial and technical support towards the development of the new policy. Their support underscores the resolve of the international community to complement the efforts of the Nigerian Government, an indication of the renewed faith in the capacity of our Government to lead the country on the path of sustainable growth and development.

Ultimately, we wish to thank God Almighty, who has made this whole effort to come to fruition. We appreciate God for the wisdom he bestowed on the leadership of all the sub committees in the course of harnessing and synthesizing the input from the various stakeholders. We pray God to guide and lead us all aright as we go into the implementation phase of the policy docuument.

Mrs. R. S. Jimeta, mni
Permanent Secretary,
Federal Ministry of Science and Technology,
Abuja

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LIST OF ACRONYMS

ADF	-	Automotive Development Fund
AMT	-	Advanced Manufacturing Technologies
ARIPO	-	African Regional Intellectual Property Organization
CDM	-	Clean Development Mechanisms
C & P	-	Conventions and Protocols
CVC	-	Committee of Vice-Chancellors
FDI	-	Foreign Direct Investment
FMST	-	Federal Ministry of Science and Technology
GDP	-	Gross Domestic Product
GLP	-	Good Laboratory Practice
ICT	-	Information & Communication Technology
IDPs	-	International Development Partners
IP	-	Intellectual Property
IPR	-	Intellectual Property Rights
ITF	-	Industrial Training Fund
JPO	-	Japan Patent Office
MAN	-	Manufacturers Association of Nigeria
MDA	-	Ministries, Departments and Agencies
NACETEM	-	National Centre for Technology Management

NCDF	-	National Communications Development Fund
NCST & I	-	National Council on Science, Technology and Innovation
NIA	-	National Intelligence Agency
NIS	-	National Innovation System
NRIC	-	National Research and Innovation Council
NRIF	-	National Research and Innovation Fund
NSA	-	National Security Adviser
NUC	-	National Universities Commission
NV	-	National Vision
OPS	-	Organized Private Sector
PTDF	-	Petroleum Technology Development Fund
R & D	-	Research and Development
RMRDC	-	Raw Materials Research and Development Council
SIPO	-	State Intellectual Property Office
SLT	-	Science Laboratory Technology
SMEs	-	Small Scale Enterprises
ST & I	-	Science Technology and Innovation
S & T	-	Science and Technology
SST & IC	-	State Science, Technology and Innovation Council
STEM	-	Science, Technology, Engineering and Mathematics Education

TICs	-	Technology Incubation Centres
TET	-	Tertiary Education Trust Fund
TNA	-	Technology Needs Assessment
UNDP	-	United Nations Development Programme
		UNESCO - United Nations Educational, Scientific and Cultural Organization
USPTO	-	United States Patent and Trademark Office
WIPO	-	World Intellectual Property Organization

1.0 PREAMBLE

The cardinal objectives of accelerating development, competitiveness and creation of wealth for all Nigerians mark the beginning of Nigeria's intent to formulate and implement the National Vision 20:2020 Economic Transformation Blueprint (NV20:2020). Achieving the objectives of this Vision will be anchored on three pillars of optimising the nation's key sources of economic growth, guaranteeing the productivity and well-being of Nigerians and fostering sustainable economic development.

The 2012 Science, Technology and Innovation (ST&I) Policy was designed in tandem with the objectives and pillars of the NV20:2020 so as to resolve practically the long standing disconnect between economic planning, and science and technology. The new policy on ST&I thus has as its core mission the evolution of a new Nigeria that harnesses, develops and utilises ST&I to build a large, strong, diversified, sustainable and competitive economy that guarantees a high standard of living and quality of life to its citizens. Specifically, the new ST&I Policy is designed to provide a strong platform for science, technology and innovation engagements with the private sector for the purpose of promoting sound economic transformation that is citizen centred.

To effectively foster a seamless engagement of ST&I with the desired transformation, the policy has recognised also the weaknesses of the National Innovation System and thus set out to strengthen structures for the coordination, promotion, and management of interactions within the system. This is to reduce and eventually eliminate the current high level of "stand alone" research efforts scattered all over the country and forge synergies among system components that will identify common problems and pool resources for research, tie research agenda to national priorities and reduce the time-to-market of research activities. In forging seamless interactions within the system of innovation, the policy will support the creation of, and maintenance of up-to-date, reliableand accessible database of Nigeria's ST&I resources (human and material) and activities, needed for sound economic planning and policy making.

As a system that optimally allocates resources among competing needs and encourages interactions among individuals, businesses, firms and government, an economy working perfectly permeates and affects every strata of the population. The transformation of the Nigerian economy based on science and technology therefore is the transformation of the Nigerian people, organisations and institutions into science and technology thinking entities.

The new ST&I Policy will vigorously promte activities for ST&I communication and inculcation of ST&I culture in Nigerians. The success of the new economic transformation blueprint will especially require the institution of science and technology thinking as a way of seeing and doing business at all strata of the society, from the household and small business levels to all tiers of government.

It is our collective interest as a people and a nation to therefore pursue the implementation of this policy which was designed to drive the economic Transformation Agenda and deliver its objectives as an integral part of the NV20:2020.

2.0 NATIONAL SCIENCE, TECHNOLOGY AND INNOVATION POLICY

2.1 National ST&I Policy Vision Statement

By 2020, Nigeria will have a large, strong, diversified, sustainable and competitive economy that effectively harnesses the talents and energies of its people and responsibly exploits its natural endownments to guarantee a high standard of living and quality of life for its citizens.

2.2 National ST&I Policy Mission

Evolving a nation that harnesses, develops and utilises ST&I to build a large, strong, diversified, sustainable and competitive economy that guarantees a high standard of living and quality of life for its citizens.

2.3 General Policy Objective

Build a strong Science, Technology and Innovation capability and capacity needed to evolve a modern economy.

2.4 Specific Policy Objectives

The specific objectives are to:

i. Facilitate the acquisition of knowledge to adapt, utilise, replicate and diffuse technologies for the growth of SMEs, agricultural development, food security, power generation and poverty reduction.

ii. Support the establishment and strengthening of organisations, institutions and structures for effective coordination and management of ST&I activities within a virile National Innovation System (NIS).

iii. Encourage and promote creation of innovative enterprises utilising Nigeria's indigenous knowledge and technology to produce marketable goods and services.

iv. Support mechanisms to harness, promote, commercialise and diffuse locally developed technologies for the production of globally competitive goods and services that intensively utilise Nigeria's raw materials.

v. Facilitate and support the creation and maintenance of up-to-date, reliable and accessible database on Nigeria's ST&I resources and activities.

vi. Promote activities that enhance effective ST&I communication and inculcation of ST&I culture in Nigerians.

vii. Create and sustain reliable mechanisms for adequate funding of ST&I activities in Nigeria.

viii. Initiate, support and strengthen strategic bilateral and multilateral co-operations in science, technology and innovation activities across all sectors of the economy.

2.5 The Underlying Philosophy

1. **Leadership:** Building strong political will, commitment and leadership as well as engendering strong and sustained private sector participation in R&D.

2. **Priority Setting:** Emphasizing the demand-side as against the supply–driven S&T engagements with the private sector in Nigeria.

3. **Funding:** Evolving reliable funding mechanism and sustained investments on the part of government, private sector and development partners.

4. **Partnership:** Building a virile National Innovation System, where all the key components are adequately linked for synergy, partnership building and enhanced competitiveness.

5. **Culturalisation:** Making S&T a way of life and building a culture of innovation to create an enhanced standard of living for all citizens.

3.0 POLICY STRATEGIES

3.1 Science, Technology and Innovation Promotion

Rationale

There is need to popularise and inculcate ST&I culture in Nigerians for rapid socio-economic transformation.

Objective

To create awareness in the society on the relevance of ST&I culture for the improvement of quality of life and sustainable economic development.

Strategies

i. Encouraging relevant stakeholders to provide students in primary and secondary schools, as well as technical colleges with broad-based curricula comprising relevant scientific knowledge and vocational skills.

ii. Promoting broad-based curricula comprising relevant scientific knowledge and vocational skills for schools and colleges.

iii. Providing Policy incentives to Nigerian youth for career development in S&T fields.

iv. Popularising ST&I through regular technology fairs, exhibitions, S&T clubs and the mass media

(films, newspapers, radio, television, internet, etc.)

v. Supporting programmes of the professional S&T bodies concerned with building ST&I capacity.
vi. Improving conditions of service of ST&I professionals to encourage creativity and innovation.
vii. Utilising as much as possible Nigerian ST&I personnel and institutions for consultancy when such expertise is available.
viii. Recognising individual or institutional contributions to development through application of ST&I.
ix. Empowering women in the utilisation of ST&I for economic development.
x. Increasing local content in industrial processes and engineering infrastructure development activities.
xi. Encouraging the establishment or strengthening of S&T Ministries at the State level.
xii. Encouraging the development and use of local languages for the transfer of ST&I knowledge to the formal and informal sectors of the economy.
xiii. Promoting inventions and innovations that address immediate local needs.

3.2 Human Resource Development in ST&I

Rationale

The imperatives of self-sufficiency and global competitiveness require development of national capability in ST&I to stimulate inventions and generate innovations for sustainable development.

Objective

To develop capacity and capability in ST&I for competitiveness in the production of technological goods and services.

Strategies

I. Producing world class scientists, engineers and technologists who are professionally competent in theory, practice of basic sciences and the needs of entrepreneurship.

ii. Providing adequate support for continuous training of academic staff in tertiary and research institutions.

iii. Strengthening curricula in technological entrepreneurship and management of technology for science and engineering students.

iv. Mainstreaming students in the Arts and Social Sciences to appreciate the relevance of ST&I in business as well as national development.

v. Creating special incentives for students and graduates of Science, Technology, Engineering and Mathematics (STEM) Education.

vi. Encouraging and providing opportunities for the products of informal training schemes in ST&I to go for further formal training.
vii. Strengthening capacity building institutions within the military, public and private sectors of the economy.
viii. Facilitating on-the-job standardised training for professionals in ST&I organisations.
ix. Promoting academic-industry exchange programmes to enhance knowledge sharing.

3.3 Research and Development (R&D)

Rationale

There is need to prioritise strategies (i.e. R&D sectoral issues) for multi-disciplinary, mission-oriented R&D activities in S&T geared towards the generation, acquisition, storage, application and diffusion of S&T knowledge for national development.

Objective

To foster sectoral innovative R&D activities, at the level of R&D institutions and firms, that are largely demanddriven and market–oriented in line with national developmental goals.

Specific Sectoral Strategies

1. Agriculture

i. Enhancing agricultural productivity through cultivation of improved crop varieties and breeds of livestock and fisheries.
ii. Encouraging technology uptake and diffusion of agricultural innovations to farmers.
iii. Encouraging labour-saving and low-cost gendersensitive agricultural raw materials processing technologies.
iv. Developing appropriate and innovative technologies for breeding, feeding, health and management of livestock and poultry.
v. Encouraging agricultural waste management and utilisation.
vi. Developing indigenous technologies for value addition of agricultural produce.

2. Water Resources

i. Developing R&D, demonstration and deployment capabilities in the management of surface and ground water resources for sustainable exploitation
ii. Promoting the use of safe, clean, efficient and sustainable water technologies for national development.
iii. Promoting R&D in water conservation and utilisation techniques for domestic, agricultural, energy and industrial use.

iv. Facilitating the adaptation of appropriate water technologies for rural development.
v. Developing capacity and capabilities for water management and environmental sustainability.

3. Biotechnology Research

I. Promoting the understanding of biotechnology and its applications for national development.
ii. Building capacity and capabilities in biotechnology research and its applications.

iii. Harnessing indigenous knowledge on natural products and commercialising discoveries as well as positioning Nigeria in the bio-genetic market.

iv. Ensuring growth and opportunities in the application of advanced bio-processing and biomanufacturing processes.

v. Facilitating brand recognition for Nigerian biotechnology products and benchmark progress.

vi. Promoting the documentation and use of biogenetic resources and eliminating bio-piracy.

vii. Ensuring compliance with biosafety and bioethics guidelines in biotechnology R&D.

4. Health Research & Innovation (Natural Products, Natural Medicine, Pharmaceutical Research, etc)

i. Ensuring that research priorities are targeted towards meeting health and nutritional requirements and challenges in Nigeria.

ii. Promoting effective linkages and collaborations among knowledge institutions and industries engaged in the health sector.

iii. Strengthening demand-driven R&D in natural and orthodox medicines as well as pharmaceutical research.

iv. Facilitating the development of biological diagnostic tools and vaccines.

v. Encouraging R&D in alternative and molecular medicine as well as genomics.

vi. Developing standards for monitoring and evaluation of health products.

vii. Promoting ethics and standards in research.

viii. Promoting documentation and dissemination of natural health research.

5. Energy

i. Developing of R&D, demonstration and deployment capabilities in thermal (coal, oil and gas), nuclear, solar, wind, biofuels, hydro and other renewable energies.

ii. Developing requisite infrastructure and human capabilities for acquisition and deployment in nuclear power technology.

iii. Promoting the use of safe, clean, efficient and sustainable energy technologies for national development.

iv. Encouraging the development of energy conversion technologies for sustainable power generation.

v. Facilitating the adaptation of appropriate energy technologies for rural development.

vi. Encouraging the development and deployment of locally produced power equipment for sustainable power industry.

vii. Supporting national vision to acquire technologies for sustainable power industry.

6. Environmental Science and Technology

i. Promoting the integration of environmental concerns in all development policies and ensuring public understanding of the scientific basis of their actions on the environment.

ii. Developing an appropriate and effective waste management system to reduce pollution emission from waste generation.

iii. Encouraging the use of clean technologies in production system.
iv. Developing capacity to monitor, predict and mitigate adverse effects of natural phenomena such as floods, drought and desertification.
v. Encouraging science and technology intervention that promotes sustainable development.
vi. Encouraging integration of environmental factors with standard national accounts/asset to improve environmental monitoring systems.
vii. Promoting the development of a national environmental data base to support economic development.

7. Mines and Materials Development

i. Encouraging R&D in the exploration, exploitation, utilisation and value addition of mineral resources.
ii. Building capacity and enhancing capability in solid minerals processing technologies and new materials development.
iii. Strengthening the development and transfer of technologies for sustainable utilisation of mineral resources.

8. Ferrous, Non Ferrous and Chemical Technologies Research

I. Encouraging R&D in the exploration, exploitation and utilisation of ferrous, nonferrous, and petroleum resources.
ii. Building capacity and developing indigenous capability in iron and steel, petrochemical and engineering plastics development.
iii. Promoting R&D activities to develop internationally competitive textiles and leather industries.

9. Information and Communications Technology (ICT)

I. Encouraging capacity building in ICT in Nigeria.
ii. Encouraging and supporting collaborative R&D activities among industry, higher educational institutions as well as private and public research institutions for software and hardware development.
iii. Developing indigenous capabilities for the local manufacture of ICT hardware, software and other accessories through technological substitution and transfer.
iv. Encouraging knowledge in ICT as a critical component of ST&I in Nigeria
v. Creating ICT databank in support of ST&I.

vi. Encouraging the incorporation of ICT knowledge in all sectors in Nigeria.
vii. Supporting ICT multi-disciplinary training modules as fundamental prerequisite to prepare, drive and enhance all sectors of Nigeria's development.
viii. Establishing Science Parks with ICT backbone and software development.
ix. Developing special conversion programs to transform existing Engineers to ICT specialists.
x. Facilitating National ICT innovation competition at all levels of education.
xi. Encouraging industry-University-Government Networking on ST&I initiatives.

10. Space Research and Investments

i. Developing adequate capacity in space technological infrastructure and research for socio-economic development.
ii. Deploying space technology infrastructure in national development.
iii. Enhancing indigenous capabilities in space research and satellite technologies.
iv. Developing space research as a critical component of national security.
v. Developing multi-disciplinary research in diverse fields of Space Science and Technology and coordinating activities in relevant areas such as:

- Basic Space Science and Astronomy
- Remote Sensing
- Satellite Technology Development
- Geodesy and Geodynamics
- Space Transport and Propulsion
- Space Science and Technological Education
- Atmospheric research

vi. Creating meaningful Nigerian Space Science and Technology programme that should enhance technological advancement such as:
   1. Exploring national (Nigerian Universities and other research institutions) and international cooperation in Space Science, Technology and application.
   2. Creating a conducive environment that can attract Nigerian scientists who are home and abroad.
   3. Creating enabling environment to enhance the development of space science and technology infrastructure in national institutions.

11. Industrial Research, Development and Production

i. Ensuring R&D activities are directed towards the development of appropriate technologies for the production of industrial goods and services in small, medium, and large scale firms.

ii. Developing local capacity for design and

production of machine tools and spare parts for rapid industrial growth and development.

iii. Fostering interactions among universities, or higher education research institutions, industries and investors to generate innovations.

iv. Ensuring value-addition to the nation's natural resources for industrial development.

v. Fostering the development of technological entrepreneurs to facilitate innovation.

12 New and Emerging Technologies (Nanotechnologies and New Materials)

I. Building institutional capacity and capabilities in new and emerging technologies.

ii. Encouraging collaborative R&D activities between industry, higher education and research institutions on new and emerging technologies. (external collaborations).

13. Raw Materials and Manufacturing

i. Developing capacities in storage, retrieval and updating of data and information in earth-based raw materials.

ii. Promoting access to, and stimulating interest on, earth-based raw materials locally and internationally.

iii. Mapping and quantifying biomaterial resources that are available in the country.

iv. Creating the various value chains from available biomaterials.

v. Harnessing and adapting indigenous knowledge for sourcing earth-based raw materials and biomaterials.
vi. Creating a database of new and emerging materials.
vii. Identifying and promoting the adoption of new and emerging technologies for raw materials, new product development and materials processing technologies for national industrial growth.
viii. Building institutional capacity and capabilities in earth based raw materials, bio- materials, new and emerging materials and technologies such as Advanced Manufacturing Technologies (AMT).
ix. Promoting effective linkages and collaborations among institutions, agencies and relevant stakeholders in earth-based raw materials, biomaterials, new and emerging technologies.
x. Strengthening the development and proliferation of technologies and innovations for sustainable utilization of earth-based raw materials, biomaterials, new and emerging materials and new products.

14. Defence & National Security

i. Supporting and facilitating ST&I capacity and capability building in the operations of the armed forces and other security services.
ii. Promoting strategic military R&D for national security and development.

iii. Encouraging the development and deployment of advanced technologies in military hardware and operations through reverse engineering.
iv. Promoting the use of ST&I to prevent and control crimes and threats to national security.
v. Deploying ST&I for the protection and security of indigenous technology, innovation and related intellectual property.
vi. Establishing a Corp of ST&I intelligence officers in the NIA/Foreign Affairs.
vii. Establishing an ST&I "Desk" in the office of the National Security Adviser (NSA) for protection of indigenous technology.
viii. Fostering linkages of R&D collaborations among the academia, military, industries/businesses for the benefit of National military industrial complex.
ix. Encouraging the sourcing of about 5% of military hard and softwares locally.

15. Transport System

I. Promoting R&D to support activities in the road, rail, water and aviation transportation system.
ii. Encouraging investment in local innovation in the transport and aviation sectors.
iii. Facilitating the adoption and use of R&D outputs and local innovations for all forms of transportation and construction (i.e. road, rail, water and aviation).

iv. Conducting R&D activities in accident investigation and mitigation.
v. Strenghtening and evolving mechanisms and strategies for information management systems to establish and operate inter-modal urban mass transport system.
vi. Facilitating R&D activities and innovations that will fast-track massive delivery of community-based technologies for rural/access roads construction and maintenance.
vii. Strengthening the ST&I component in the design, construction and maintenance of roads.
viii. Promoting the use of ST&I for efficient transport management for socio-economic and industrial development.
ix. Investigating potentials for expanded public transportation service and transit-oriented development to reduce transport emission while providing efficient mobility option.
x. Developing a quality-assured, web-based knowledge database on research capacities of tertiary institutions, transportation technologies, and technology needs in transport industry in Nigeria.
xi. Encouraging research and development in technological devices for monitoring and tracking transport/traffic operations.

16. Youth, Sports and Tourism Development

i. Encouraging R&D in sports medicine and materials, psychology, nutrition, physical education and other disciplines for the able-bodied and physically challenged.

ii. Promoting ST&I in recreational activities to enhance healthier and physically strong citizenry.

iii. Promoting competition and award schemes in ST&I among youths in and outside the educational system.

iv. Facilitating programmes and schemes for mentoring the youth in career development in ST&I.

v. Encouraging application of ST&I in tourism development.

vi. Incorporating ST&I into Sports Education

vii. Ensuring the development of appropriate curricula to enable the acquisition and application of appropriate R&D skills in regular Universities, particularly Universities of Technology and Polytechnics.

viii. Developing sports infrastructure using ST&I.

ix. Collaborating and harmonizing ST&I operations in the sub-sector with relevant government Ministries, Departments and Agencies (MDAs) as well as the private sector.

x. Fostering collaboration between ST&I agencies and appropriate tourism and sports bodies.

17. Works, Land, Housing and Urban Development

i. Research and review existing codes/standards and strengthen R&D capacity for effective design, management and production of relevant technologies in building, construction and urban development

ii. Defining the roles of federal, state, local governments and other stakeholders in dealing with issues of urban development, housing and land administration.

iii. Promoting the application of ST&I in the production and utilisation of local materials for building and construction to facilitate mass-housing delivery.

iv. Promoting effective linkages and collaborations among knowledge-based institutions, professional bodies and the construction industries.

v. Promoting R&D and innovative schemes for evolution of green construction culture in Nigeria (green homes and green cement).

vi. Encouraging activities and regulatory roles that promote public safety in building and construction and mitigating effects of natural disasters.

vii. Promoting the development of standards for the design and specifications of materials used in building and construction.

viii. Institutionalising strategies for funding R&D activities in Building, Land and Urban Development including extra-budgetary steps like duties and tariffs.

ix. Establishing framework for ICT-based land administration and management of land ownership and mitigating effects of environmental disasters through best use of land and resources.

18. Wood Resources

I. Promoting R&D in the cultivation, exploitation and application of wood resources, with value addition, to pulp, paper and timber industries.

ii. Promoting the application of ST&I to create new products to provide support for Nigerian pulp, paper and timber.

iii. Generating environmentally sustainable forest management practices, increasing capacity of processing and value adding facilities.

iv. Facilitating emerging wood resources technology related to biofuels, bio-chemicals, bio composites, nano-cellulose, building and construction industry (timber and plywood products in innovative zero energy houses, wood plastic composites).

v. Building capacity through education, research and know-how technology training.

vi. Ensuring utilisation of Nigerian grown timber in construction of highly efficient structural systems.

19. Science Laboratory Technology (SLT)

I. Facilitating the setting of minimum standards for laboratories in secondary, tertiary and ST&I institutions for learning, teaching, services and Research & Development.

ii. Supporting activities in the educational, research, medical and industrial laboratories.

iii. Adopting and promoting the principles of Good Laboratory Practice (GLP) in conformity with international best practices.
iv. Fostering training and employment of certified science technologists for proper management and maintenance of laboratories.
v. Developing and promoting the documentation of laboratory equipment for planning and development.
vi. Ensuring the monitoring, inspection, accreditation and certification of laboratories in R&D institutions in both public and private sectors by relevant regulatory bodies.

3.4 Intellectual Property Rights

Rationale

There is need to create and protect Intellectual Property Rights (IPR) and give recognition to inventors in order to stimulate the development of inventions as well as create wealth for Intellectual Property (IP) owners and the country.

Objectives

i. To encourage the generation, protection and effective management of Intellectual Property to promote invention and innovation activities in the country.
ii. To ensure the harmonisation and coordination of IPR activities in Nigeria.

Strategies

i. Ensuring adequate recognition for Intellectual Property, promotion and protection of inventions, traditional knowledge, indigenous technology and other intellectual assets.
ii. Building local capacities in Intellectual Property management for effective transfer of technology.
iii. Promoting awareness programmes on Intellectual Property at all levels of education.
iv. Establishing and strengthening technology transfer offices for effective management and utilisation of Intellectual Property Rights in all universities, polytechnics, research institutes and other public and private organisations.
v. Providing appropriate incentives to inventors to stimulate creativity and innovations.
vi. Developing mechanism for equitable distribution of benefits accruing from inventions, traditional knowledge, biodiversity resources and innovations among stakeholders.
vii. Establishing, regularly updating and facilitating access to intellectual property data bank.
viii. Initiating when appropriate, the enactment and review of IP laws to incorporate all aspects and issues relating to plant breeders' rights, traditional knowledge and genetic resources.
ix. Encouraging partnership with IPR organisations such as World Intellectual Property Organisation (WIPO), African Regional Intellectual Property Organisation (ARIPO), United States Patent and Trademark Office (USPTO), State Intellectual Property Office (SIPO), Japan Patent Office (JPO).
x. Supporting the development of IP assets through incubation and commercialisation processes.

3.5 Technology Transfer and Diffusion

Rationale

There is need to develop capacity and capability in technology transfer processes in order to stimulate rapid technological and industrial development.

Objectives

i. To establish mechanisms for the promotion, commercialisation and diffusion of locally developed technologies to drive the development of small, medium and large industrial firms.
ii. To facilitate the transfer of technologies including knowledge to utilise, adapt, diffuse and replicate imported and local technologies.

Strategies

i. Increasing investment in technology incubation centres (TICs) and establish functional S&T parks.
ii. Encouraging private sector participation in the establishment and management of technology incubation centres and science parks.
iii. Supporting universities and research institutes to establish technology incubation centres and science parks for the commercialisation of R&D results.
iv. Developing comprehensive and accessible databank of all commercialisable R&D results, inventions and innovations for ease of reference.
v. Conducting periodic monitoring and evaluation and establish a feedback mechanism for technology transfer and diffusion processes.

vi. Conducting technology needs assessment (TNA) to determine technology gaps for appropriate actions.
vii. Improving on the incorporation of high-level imported technologies for local technology development.
viii. Providing technology support services and other incentives to transferees.
ix. Extension and enforcement of local content law for technology transfer.
x. Procurement as a deliberate strategy for national development will be utilised accordingly for technology transfer.

3.6 Standardisation and Quality Assurance

Rationale

Globalisation drives new technologies, products and processes across national boundaries. Consequently, there is need for adherence to quality and international standards in carrying out scientific, industrial and commercial activities for global competitiveness.

Objectives

i. To design systems for the enforcement of standards and quality assurance to ensure competitiveness of technological goods and services produced in Nigeria.
ii. To ensure the development and application of green technologies that promote clean development mechanisms (CDM).

iii. To ensure that all imported goods and services conform to requisite international and national standards.

Strategies

i. Building capacity and capability for standard quality assurance and environmental auditing.
ii. Providing innovative tools for standard and quality assurance in the design, development, production, installation and services in industries.
iii. Developing processes and instruments for the establishment and review of standards and quality assurance systems for national development.
iv. Providing a model framework for the establishment and review of an environmental management system.
v. Promoting environmentally friendly technology and processes that comply with International Conventions and Protocols (C&P).

3.7 ST&I Information Management System

Rationale

There is need to establish an effective information management system designed to provide real-time access to functional and updated database on ST&I activities in order to provide a platform for accessing, sharing and exchanging information.

Objectives

I. To develop relevant and accessible database on ST&I.

ii. To facilitate the development and management of ST&I knowledge base.

Strategies

i. Developing national ST&I indicators that will be revised periodically in line with international standards.

ii. Establishing and maintaining a national database on ST&I input/outputs within an agency of FMST and strengthen the existing information management system on R&D in all sectors.

iii. Creating active networks for interaction, cooperation and exchange of ideas among ST&I actors and stakeholders within and outside the country.

iv. Establishing a mechanism within the FMST to coordinate the management of ST&I Information system.

v. Establishing information system nodes in all agencies of Federal Ministry of Science and Technology (FMST) and other cognate ministries.

vi. Linking the National ST&I information system with the National Bureau of Statistics for local and international usage.

vii. Facilitating ICT infrastructure deployment to all S&T institutions.

3.8 Women and ST&I

Rationale

There is need to mainstream women in ST&I and provide more incentives to increase women's participation.

Objectives

i. To strengthen the political and institutional framework to promote women's participation in ST&I.
ii. To encourage the promotion of gender balance in ST&I disciplines and R&D institutions in the country.
iii. To make provision for greater involvement of women in ST&I to accelerate national development.
iv. To increase access of women and girls to ST&I.
v. To integrate gender assessment as necessary component of quality assurance of ST&I products in Nigeria.

Strategies

i. Encouraging the establishment of women ST&I desk at both the ministry level and relevant public and private agencies involved in ST&I activities.
ii. Supporting women to participate and hold leadership positions in ST&I endeavours.
iii. Providing funding and other incentives for continuing education of women in ST&I.
iv. Providing scholarships and mentoring to increase female enrollment and retention in ST&I disciplines.

v. Providing a framework to encourage and increase women's employment in ST&I sectors.
vi. Initiating some vibrant national and sub-national women and ST&I for that will regularly engage in reflections on the role of women in ST&I for national development, and network them with their international counterparts.
vii. Supporting efforts to promote gender mainstreaming in ST&I.

4.0 FUNDING FOR ST & I ACTIVITIES

Rationale

For the Policy to achieve the desired impact, there is need to institute and evolve reliable and sustainable funding frameworks from government, private sector and development partners so as to ensure adequate funding for ST&I infrastructure and activities for sustainable development.

Objective

To ensure investment of adequate resources in research, development and innovation for sustainable development.

Strategies

a) Establishing a National Research and Innovation Fund (NRIF), with a minimum of 1% of GDP and not less than 5% strategically sourced from the following listed public, private and international organisations:

i. Raw Materials Research and Development Council (RMRDC)
ii. Tertiary Education Trust (TET) Fund
iii. Industrial Training Fund (ITF)
iv. Automotive Development Fund (ADF)
v. National Communications Development Fund (NCDF)
vi. Information Technology and Development Fund
vii. Agricultural Development Fundviii. Ecological Fund

ix. Lottery Fund
x. Sugar Development Fund
xi. Development/Donor Agencies, etc.
xii. Petroleum Technology Development Fund (PTDF)
xiii. Organized Private Sector (OPS) - 0.5% of Technology Transfer Fee.

b) Government Allocations

i. Making adequate annual budgetary allocation to fund research and development activities in ST&I.
ii. Providing operational funding for:
- critical investments in ST&I infrastructure; and
- routine activities of the nation's ST&I system.

c) Public and Private Partnership

i. Fostering in-house and local contractual R&D activities in public and private enterprises by making such investments tax deductible.
ii. Encouraging industrial firms to:
   a. establish and equip "in-house" R&D units;
   b. give grants and endowments competitively to individuals and institution to actively engage in R&D in Nigeria; and
   c. establish, equip and fund laboratories in universities and research institutes.
iii. Encouraging development finance institutions (e.g Bank of Industry, Nigerian Export- Import Bank) to set a fixed percentage of their loanable

funds at low rate of interest for financing manufacturing industries.

d) International R&D Funds

i. Developing robust mechanisms to attract international funding for R&D and innovation in Nigeria.

e) Venture Capital

i. Promoting and supporting establishment of venture capital schemes, including risk capital to small and medium technology-based businesses, utilizing the output of research and development (R&D) and innovation. These businesses would be conferred with incentives including Pioneer status.

5.0 ST&I PARTNERSHIP AND COLLABORATIONS

Rationale

There is need for Nigeria to become an active player in the global web of ST&I activities contributing to and benefitting from global pool of ST&I knowledge for sustainable development.

Objective

To establish and improve on existing cooperation in regional and international scientific and technological development programmes for the enhancement of industrial development and competitiveness.

Strategies

i. Facilitating the acquisition and advancement of new and emerging technologies through international ST&I collaboration and Foreign Direct Investment (FDI).
ii. Strengthening collaborative research and development activities with regional and international agencies.
iii. Encouraging the nation to join and participate in international ST&I information networks.
iv. Promoting international exchange programmes for staff and students in tertiary institutions, military and public service capacity-building institutions that are engaged in ST&I research activities.

v. Mobilising and actively engaging Nigerian ST&I professionals in the Diaspora for national development.
vi. Establishing relevant ST&I centres of excellence in new and existing institutions.
vii. Encouraging multidisciplinary teams of experts for collaborative R&D and commercialisation efforts.
viii. Facilitating Nigeria's integration into the Global Knowledge Network through creating avenues for strategic engagements with partners and multiple voices on global ST&I issues.
ix. Creating incentives for cross-border collaboration that empowers Nigeria's scientific, technological and industrial transformation.
x. Facilitating access to ST&I (knowledge) produced abroad through formalised liberal technology tranfer agreements, including trade agreements and patent laws.
xi. Providing advice and knowledge that could lead to the establishment of the infrastructure of innovation.
xii. Promoting creative competition amongst States to measure technological and investor friendly environment in the States.
xiii. Facilitating reversal of brain drain.
xiv. Increasing foreign funding through international collaboration and internationalization of research, science, technology and innovation.

xv. Encouraging knowledge centres to provide support for Nigeria's emerging industrial clusters through linkages and collaboration.

xvi. Facilitating effective partnership through the alignment of culture, social values and work ethics of Nigeria to the requirements of modern, entrepreneurial, scientific, technological and innovation goals.

6.0 GOVERNANCE

Rationale

To enhance effective coordination, direction and management of ST&I activities in Nigeria, it is essential to establish and strengthen relevant institutions and structures needed to provide sound ST&I administration, good governance as well as quality leadership at all levels of government. To demonstrate leadership at the highest level, top priority should be given to the creation of a platform for inclusiveness, ownership, sustainability and inter-agency collaboration among key actors and stakeholders.

Objective

To create an appropriate organisational environment of complementary relationships and network that minimises frictions and institutional lapses for the coordination, management, promotion and application of ST&I in the production of goods and delivery of services for socioeconomic development.

Strategies

I. Creating a governance structure that is inclusive and broad based.
ii. Reconstituting boards and committees to reflect the current Policy intent and directions.
iii. Creating specific roles to avoid role duplication and confusion.

iv. Establishing an appropriate legal framework for effective organisational management and control.
v. Strengthening the States' Ministries of S&T and FMST as the coordinating institutions for all ST&I activities in the country.
vi. Establishing appropriate departments or structures in the FMST and States' ministries of S&T to facilitate linkages among FMST, cognate ministries/agencies, research institutions and industries.
vii. Strengthening Research and Development institutions to enable them deliver on the policy objectives.
viii. Encouraging all S&T institutions, the public and private sectors in the country to carry out programmes and activities that are in consonance with the National ST&I Policy.
ix. Carrying out mandatory periodic evaluation and monitoring of the performance of the national innovation system.
x. Ensuring the establishment of appropriate ST&I Ministries/Policy organs at the states and local government levels.
xi. Establishing other relevant ST&I research institutions to fast-track sustainable development.

6.1 Policy Performance, Evaluation and Monitoring

Rationale

The need to ensure that the implementation framework and action plans are strictly adhered to is critical in order for the Policy to have signficant impact on the lifestyle and standards of living of the citizens

Objectives

i. To develop policy strategies for ensuring its relevance to the lifestyle and standards of living of the citizens.
ii. To ensure compliance of all operators with the guidelines of the implementation framework and action plan.

Strategies

I. Designing and adopting measurable implementation frameworks and action plans for effective monitoring of ST&I programmes and projects.
ii. Providing clearly defined key performance indicators for ease and transparency of monitoring.
iii. Instituting periodic performance evaluation and monitoring of key institutions engaged in ST&I activities and projects.

7.0 INSTITUTIONAL AND LEGAL FRAMEWORK

Rationale

The lack of long term commitment to ST&I has been a major impediment to our nation's economic development. Therefore, there is a need to accord ST&I a central role in national economic planning and development through the establishment of effective institutional and legal framework as well as linkages at various levels within the NIS.

Objective

To develop appropriate legal framework to institutionalise long term commitment (backed by legislation) to the implementation of ST&I Policy within the context of national economic development.

Strategies

I. Reviewing the National Science and Technology Act, CAP 276 of 1977 and the FMST Act No 1,1980 to incorporate the new ST&I Policy.

ii. Restructuring the FMST to address the demand of the new ST&I perspective.

iii. Strengthening the National Council for Science, Technology and Innovation, restructuring FMST departments, enabling ST&I research institutes and agencies as well as ST&I committees at the federal, state and local government levels for effective implementation of the ST&I Policy.

iv. Establish a National Research and Innovation Foundation (backed by legislation) to manage competitive grants for sustainable short and long term research.
v. Establish a montoring and evaluation system for the policy to be managed by FMST.

7.1 Governance System

Rationale

To provide strong leadership, effective coordination and adequate resources for all ST&I activities within the National Innovation System.

Objective

To position ST&I as a national top priority endeavour to guarantee sustainably, high standard of living and quality of life for its citizenry and fast track industrial and economic development.

7.2 National Research and Innovation Council (NRIC)

The National Research and Innovation Council (NRIC) shall perform the under-listed functions:

i. Set national priorities on R&D.
ii. Set directions to coordinate ST&I activities (including R&D) in line with national priorities.
iii. Establish new research institutes and strengthen existing ones as it may deem necessary.

iv. Facilitate fund raising activities to support innovation activities in areas of national needs and priorities.

7.2.1 Governance of National Research and Innovation Council (NRIC)

i. The Chairman will be the President of the Federal Republic of Nigeria

ii. The Council shall consist of the following as members:

- Honourable Ministers of the following Federal Ministries:
- Ministry of Science and Technology
- Ministry of Information
- Ministry of Communication Technology
- Ministry of Agriculture and Rural Development
- Ministry of Trade and Investment
- Ministry of Education
- Ministry of Health
- Ministry of Power
- Ministry of Energy
- Ministry of Works,
- Ministry of Finance
- Ministry of Lands, Housing and Urban Development
- Ministry of Petroleum Resources
- Ministry of Environment
- Ministry of Water Resources
- Two (2) Representatives of the organized

Private
Sector (OPS) FMST will serve as the Secretariat.

7.3 State Science, Technology and Innovation Council (SST&IC)

Functions

I. Provide leadership and directions for ST&I activities at the state level.

ii. Promote science education and disseminate science, technology and innovation information.

iii. Allign policies and programmes with those of the NRIC.

iv. Promote and implement decisions and programmes of the National Council on Science, Technology and Innovation (NCST&I).

Governance

i. The Chairman will be the Executive Governor of the State while the States' Ministry of Science and Technology or its equivalent will serve as the secretariat.

ii. The Council shall consist of the following as members:

- Honourable Commissioners of S&T and S&T related ministries,
- Honourable Commissioner for Finance
- Two (2) Representatives of Members of the

State House of Assembly.

- Two (2) Representatives of State chapter of Organised Private Sectors and relevant professional bodies.
- Two (2) Representatives of Chairmen of Local Governments in the State.

7.4 National Council on Science, Technology and Innovation (NCST&I)

Functions

i. Set broad directions to coordinate ST&I activities (including R&D) in line with national priorities.

ii. Collate and disseminate annual reports of achievement from all public ST&I agencies.

iii. Facilitate active interaction/brokerage among government, industry and national research system.

Governance

i. The Chairman will be the Honourable Minister, Federal Ministry of Science and Technology (FMST).

ii. The Council shall consist of the following as members:

- State Commissioners of Science and Technology (SCS&T) or its equivalent
- Federal cognate Ministries, Departments and Agencies
- Academies of Science and Engineering

- Nigerian National Merit awardees in Science, Engineering and Technology (SET)
- The Armed and other Security Forces
- Organised Private Sector
- Development Partners

iii. FMST will serve as the secretariat

8.0 CONCLUDING REMARKS

This policy reflects the renewed commitment and aspirations of the government and people of Nigeria to deploy S&T as the fulcrum of all activities geared towards realizing the nation's potentials as a regional power in Africa, emerging as a global economic power within a short time. The policy seeks to build a nation that is able to provide steadily and on a progressive basis, high standard of living and quality of life for its citizens by harnessing science and innovation ouputs as well as the energies and talents of its highly resourceful people.

The policy is thus formulated to enable ST&I maximally impact on the national economic development landscape with a view to ensuring that Nigeria emerges and remains among the top 20 economies in the world by the Year 2020 and beyond. This policy therefore shall be faithfully implemented as an integral part of the Vision 20:2020 and the Economic Transformation Blueprint of Mr. President.