

TERTIARY EDUCATION TRUST FUND (TETFund)

GUIDELINE FOR ACCESSING TETFund NATIONAL RESEARCH FUND

TERTIARY EDUCATION TRUST FUND (TETFund) Publication

2014

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CHAPTER ONE: INTRODUCTION

In pursuance to the Act establishing the Education Trust Fund (ETF) and now Tertiary Education Trust Fund (TETFund), the Board of Trustees of the Fund established a National Research Fund aimed at resuscitating research activities in the nation's tertiary institutions.

The National Research Fund (NRF) is one of the five special intervention areas introduced in order to realise the objective of addressing the critical need for high quality manpower to drive the nation's economy and development aspirations towards attaining the nation's Vision 20:2020 and beyond. Three Billion Naira (₦3.0b) was approved for the National Research Fund in 2009 by Mr President, Umaru Musa Yar'Adua.

In order to actualise the intent of the National Research Fund, the Board of Trustees set up a Committee and charged it with the responsibility of implementing the intervention. After extensive consultations with experts and various stakeholders, the blueprint for roll-out of the National Research Fund was produced in 2009. The blueprint was categorised in three (3) sections as follows:

1. Thematic Areas for the Research Fund
2. Guidelines for the Operations of the Research Fund
3. Guidelines for Completing the Application Form as well as copy of Application Form for Research Grant

The Guidelines for Accessing the ETF Research Fund was used to call for research proposals from the Nigerian research community.

The current Guideline for Accessing TETFund Research Fund is the product of the review of the first edition published in December 2009. The review was informed by the need to:

- reflect the change of name from Education Trust Fund (ETF) to Tertiary Education Trust Fund (TETFund) which was effective from the signing of the TETFund Act 2011
- incorporate emerging areas of research within the existing three thematic areas; and
- write good research proposals that can attract funding from the TETFund National Research Fund

CHAPTER TWO: CATEGORIES AND THEMATIC AREAS OF THE NATIONAL RESEARCH FUND

2.1 Main Categories and Thematic Areas for the NRF

There are three main categories for the National Research Fund – Humanities and Social Sciences, Science, Technology and Innovation and Cross-cutting. These three main categories are further subdivided to sixteen thematic areas as shown in the Table below:

	Main Thematic Area	Research Focus Area
National Research Fund	Humanities & Social Sciences	National Security, National Integration & Peace Studies
		Education & Training
		Economic Development
		Social Welfare
		Population Studies
		Tourism
	Science, Technology & Innovation	Agriculture, Food Security & Food Technology /Processing
		Health
		Transportation
		Power & Energy
		Engineering: Construction & Building Technology
		ICT & Telecommunications
		Space Science
	Cross-Cutting	Geological Sciences
		Entrepreneurship & Wealth Creation
		Environment, Housing & Urban Development
Climate Change		
Resource Governance		
Science & Technology Management		
Sports and Recreational Development		

CATEGORY 1: HUMANITIES AND SOCIAL SCIENCES

Thematic Area 1: National Integration , National Security and Peace Studies

Post-independence Nigeria has been faced with various challenges including those of national integration and national security. They include the Civil War (1967-1970), the various ethno-religious conflicts, the Niger Delta conflict in the last two decades, the electoral violence and more recently the *boko haram* insurgency, the Fulani herdsmen attacks in parts of the north, youth gangsterism and kidnappings and the criminal activities that have pervaded the society generally. All these underscore the urgency for greater effort to find effective and sustainable means of guaranteeing national cohesion, security and peace.

Strategic Objectives

The objectives for this research segment are to initiate studies and generate data to:

- I. Develop on the basis of reliable data, effective policies and mechanisms for enhancing national integration.
- II. Evolve mechanisms and models for conduct and deliverance of free, fair and violence-free election on a sustainable basis.
- III. Evolve mechanisms for guaranteeing security and continuous improvement for the protection of lives and property and the territorial integrity of the nation.
- IV. Improve and enhance the capabilities of national security agencies

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Peace and Conflict Resolution	Resource mobilisation and resource distribution conflicts
	Ethno-religious crises
	Peace education
	Indigene versus Settler conflicts
National Integration	Successful integration models: historical as well as contemporary, and how to replicate them
	Economic integration models and their application
	Government integration mechanisms (NYSC, Unity Schools, Federal Character, etc): their uses and limitation and new policies
Leadership and Values	Role of values in leadership and governance
	Cultural/religious values and national development
	Values and institutional performance in the public sector
Electoral Reform	Comparative electoral systems
	Electoral reforms and electoral management
	Electoral violence and its implications to Nigeria's democracy
National Security Sector Reform	Police reforms: scope, significance and constraints
	Traditional authorities and trans-border security
	Community policing: best practices and application to Nigeria
	Nigeria and international terrorism: policy and impact

Thematic Area 2: Education and Training

The importance of education for human and national development cannot be overemphasized. Indeed, all other aspects of development depend on educational development. This central importance of education has been underscored by the emergence of knowledge-based economy facilitated by information and communications technology (ICT). There is therefore the need for research in education that would prepare current and future citizens for the new global and knowledge-driven world. In addition to addressing these global roles, research in education should also address the contemporary issues and problems facing the system such as:

- Funding and budgeting
- Adequacy or otherwise of teaching and learning materials and resources
- Enrolment and classes sizes
- Education for relevance to the society and for national development objectives
- Planning, management, supervision and inspections for monitoring, implementation of blueprints and policies.

Strategic Objectives

The strategic objectives are to execute studies and provide data and information that will assist in:

1. Reviewing the current educational system at all levels for optimal performance and relevance
2. Raising the standards and quality of education at all levels and , of it's products to globally acceptable levels
3. Ensuring incorporation of appropriate teaching and learning technologies (including, but not limited to ICT) for successful learning outcomes in the system.
4. Ensuring and assuring the relevance of the educational system to community and overall national development.

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Learning Tools and Innovations	Use of ICT and other technologies
	Virtual learning communities
	Effective use of new technological resources
	E-education in all its ramifications
	Effective learning of large classes
	Large class management
Quality Assurance	Teaching and teaching qualities
	Teacher training issues including continuous training
	Programme quality
	Ensuring the continuous maintenance of high qualities
	Learning and learner qualities
	Ethics in teaching and learning (examination malpractices, sexual and other harassments, etc)
	Challenges brought about by technology
	Content mobility and functional education
Access to Higher Education	Emergence of private institutions at all levels
	Performance and other gaps between private and public institutions
	Open and distance learning
	Cross-border education
Funding of Education	Funding models
	Public/Private partnership issues
	Role of stakeholders at all levels of education
Indigenous Education	Integration of religious/traditional education with western education and vice-versa
	Integration of home (social) education and experience into the system
Human Resource Development and Management	Needs assessment for national manpower development
	Education for manpower development
	Education for skill acquisition
	Management of educational institutions
Equity	Gender Equity
	Education for the challenged (physically, mentally, etc)
	Rights education

Thematic Area 3: Economic Development

The process of economic development has been a long and arduous one especially for a developing country grappling with a myriad of challenges: poverty and unemployment rates in the country have been high, with two thirds of the people living below poverty line; the structure of the economy has remained largely unchanged, depending on crude oil as the major source of government revenue and export earnings; the high levels of unemployment rates, which have hovered above 20%; the challenges posed by globalisation and the dearth of foreign direct investment especially in the non-oil sector of the economy.

Efforts have been made with limited results to address these challenges. Macroeconomic policy environment has engendered economic growth (averaging 6.5%, but below the level to realise the goals enshrined in Vision 20:2020) and low inflation (with inflation close to single digit). However, the growth has been associated with joblessness, with high level of unemployment in which the youth are the most affected. The Transformation Agenda seeks to address the issue of economic development through its emphasis on job creation and improving the prospects for economic policy to bring about economic growth in ways that benefit the people; economic growth should go hand-in-hand with employment creation as this is the only way to achieve and maintain sustainable reductions in poverty.

The current policy framework therefore sees poverty reduction as an important goal to pursue in a number of ways: removal of barriers in agriculture, industry and related other real sectors of the economy; deregulation has gathered pace, with a new wave of privatization taking effect in 2013; measures have been stepped up to promote the private sector access to international markets through the export free zones; a code of corporate governance has been promulgated, aimed to improve the flow of FDI flows to other sectors of the economy.

The Public Enterprises Act of 1999 established the framework for government enterprises that are to be wholly or partially privatized. The privatization of state-owned electricity assets took place in 2013 as part of the government's roadmap for power sector reform. With the formal transfer of five power plants and ten distribution companies to new private owners, it remains to be seen whether this wave of privatisation would achieve results of the kind experienced in the communication sector where some employment impact has been witnessed.

The Nigerian Export Processing Zones Authority (NEPZA) has licensed 25 free zones, of which 14 has long started operation. This and related measures were aimed at improving the entry and access of Nigerian goods to foreign markets. In addition, efforts have been made to promote trade in the West African sub region. The ECOWAS has set up mechanisms for the coming into being of a six-lane Trans West African highway that would stretch from Lagos to Abidjan, passing through the neighbouring countries of Benin, Togo, Ghana and Cote d'Ivoire.

Strategic objectives

The strategic objectives of the research themes are to:

- i. Create a nexus between economic development research and economic development policy formulation and implementation.
- ii. Develop a broad-based analytical framework to enhance data-driven policy recommendations on development issues.

Thematic Areas and Research Focus:

Thematic Area	Research Focus
Economic Policy	Economic policy, price stability and growth
	Privatization and employment in communication, power and related sectors
	Economic strategy and policy for agricultural transformation
	Policy for promotion of tourism
Employment creation	Agricultural productivity and job creation
	SMEs and employment creation
	Youth employment strategies and policies
	Public sector employment intensive schemes
International Trade and development	Non-oil exports promotion strategies
	Improving the gains for Nigeria from the WTO and other frameworks of international trade
	Export free zones and Nigeria's international trade performance
	Globalisation – risk, opportunities and challenges
Economic and corporate governance	Corporate governance in quoted companies
	Commercial banks and corporate governance
Income security in old age	Pension systems and old age welfare
	Income security in informal sector

Thematic Area 4: Social Welfare

Social welfare issues are central in development discourses and policy formulation. Of particular concern are those related to vulnerable populations such as the aged and ageing populations, Infants, orphans and vulnerable children and people living with disabilities (PWDs). There is a huge policy and programme gaps in addressing critical social welfare issues as it affect these sets of people in Nigeria. Till date, there is no social security system in the country. With the fast growing population and rapid social transformation in terms of urbanization, there is the need to develop a robust and comprehensive social welfare policy that will address the need of the population. There is the need for an all-inclusive national social welfare policy to respond to the developmental needs of Persons living with Disabilities (PWDs), infants, orphans and vulnerable children, as well as the elderly within the society. This will address the growing social problem of infant mortality, alms solicitation, street begging, child labour, street hawking by children, social excesses of street urchins as well as taking into consideration the plight of the ageing population and other vulnerable groups including PWDs.

However, there is a dearth of nationally representative data and research on these population sub-groups in Nigeria. This has been one of the major banes in developing a policy framework for social welfare in Nigeria. Besides, there is the need to underscore the socio-cultural diversities in Nigerian societies. There is therefore the need to support and strengthen multi-disciplinary cutting-edge researches that adequately provide a platform for culturally compelling policies and programme directions in developing social welfare programmes. This is expected to culminate into responsive holistic policy and programmatic interventions towards ensuring improved quality of life of the Nigeria citizens.

Strategic Objectives

To provide evidence-based research and reliable data set for:

1. Situation analyses of the challenges of vulnerable groups in Nigeria for appropriate intervention
2. Developing policy and programmes for social welfare and social safety nets in Nigeria
3. Developing capacities and infrastructures in social welfare

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Ageing and Aged Population	Socio-cultural changes, social support
	Quality of life and vulnerability indicators
	Living arrangement, family structure and the elderly
	Health care and health utilization
	Economic and demographic aspects of population ageing
	Policy framework for the aged and ageing population
	Programme intervention
Infants and children	Health and social intervention studies
	Policy and programme intervention
Orphans and Vulnerable Children	Social research on patterns, determinants and causes
	Health and psycho-social intervention studies
	Policy and programme intervention
	Capacity development
Populations Living with Disabilities	Demographic and social patterns
	Health and social intervention studies
	Policy and programme intervention
	Capacity development

Thematic Area 5: Population Studies

Population study is a major developmental issue in a country. It provides reliable estimates of the citizenry and the factors affecting its dynamics, structure and configuration. Demographic research is focused on three critical areas of fertility, mortality and migration. Other emerging areas include labour force and employment, reproductive health, population and environment, and population and development studies. In Nigeria, efforts in demographic research have not yielded sufficient data needed for sectoral planning and have left unresolved questions and agitations on past census figures.

Strategic Objectives

The strategic objectives for the research theme are to:

1. Support under-researched areas of population discipline
2. Provide opportunity for capacity development in cutting-edge research
3. Facilitate a synergy between population research and policy development
4. Support for national associations for exchange of ideas through conference and workshop

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Migration	Issues around migration:
	Forced migration
	Refugees
	Internally displaced persons (IDPs)
Labour Force and Employment	Situation analysis
	Gender and Labour force
	Unemployment
Population and development	Monitoring of development indicators
	Sectorial analysis and research on development
Fertility, Mortality, Reproductive health including HIV/AIDS	Patterns, levels and determinants
	High risk behaviour
	Child and maternal health
	Youth

Thematic Area 6: Tourism

Nigeria is still to take advantage of the growing modern tourism industry which, in 2005 registered approximately 800 million international tourist arrivals worldwide. As a labour-intensive industry, tourism has the potential to create more jobs per unit of investment than any other industry as it brings many benefits to governments, local authorities as well as the private sector through the generation of foreign revenue, financial returns on investment, taxation on tourists and tourist products, and, linkages to other local industries such as agriculture and fisheries. As noted by the World Economic Forum (WEF):

“...despite the current difficulties, the Travel and Tourism (T&T) sector remains a critical economic sector worldwide and one that provides significant potential for economic growth and development internationally. A growing national T&T sector contributes to employment, raises national income, and can improve a country’s balance of payments. The sector is thus an important driver of growth and prosperity and, particularly within developing countries, it can play a leading role in poverty reduction...”

The potential market segments for immediate development in Nigeria are likely to be leisure (new experience seekers; Nigeria’s Diaspora; special interest; expatriate community; family holidays), conference and meetings, visiting friends and relatives (VFR), religious events, the Slave Routes, and other possible products.

The need to develop tourism has not been lost to Nigeria as she developed a National Tourism Master Plan in 2002 with the support of the United Nations World Tourism Organisation (UNWTO) and the United Nations Development Programme (UNDP). Recognised in the planning process was the need to promote the sustainable development of the tourism industry through capacity building of the Government (at the Federal level) in the areas of human resource development, research development, improved sectoral planning and governance.

Key problems militating against the growth of the sector are:

- Weak institutional framework for the management of the sector
- Weak human resources capabilities of the tourism and hospitality sectors
- Weak education and training institutions
- Restrictive funding schemes of small and medium enterprises (SMEs) in the sector
- Weak system for the collection, compilation and analysis of tourism statistics
- Weak strategic marketing approach
- Less friendly visa regimes
- Inadequate links between local suppliers
- Lack of language skills
- Poor understanding of tourist values, attitudes and expectations
- Good internationally-operated hotels but rather poor locally operated hotels

Strategic Objectives

The objectives for this research segment are to initiate studies and generate data towards addressing the above-identified problems facing the tourism sector in the country. These are to:

1. Develop on the basis of reliable data, effective policies and mechanisms for enhancing tourism in the country.

2. Strengthen the institutional framework for the management and development of the industry and ensuring collaboration and synergy among the key stakeholders.
3. Evaluate the available education and training institutions towards the production and support of the different cadres of manpower for the sector based on international best practices and standards.
4. Develop effective schemes including funding and other mechanisms for the support of SMEs operating in the sector.
5. Identify and market the diverse products of tourism available in Nigeria to the local and global players in the industry.
6. Improve and enhance the service quality of local hospital industry towards the promotion of tourism.

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Tourism Policy, Governance & Organisation	Legislation in support of tourism
	Quality of institutional support by relevant ministries, agencies, councils, etc.
	Public/private partnership towards the growth of the sector
	Identification and Marketing of tourism products
	Comparative study of visa regime against international best practices
Tourism Management Information System	Essential Databases of key aspects of tourism in the country
	Generation of statistical and market information on tourism e.g. air arrivals, land frontier arrivals, visitor numbers, characteristics, behaviour and spending
	Survey of potential and available range of tourism products
	Operations Management in Tourism
Tourism Hospitality, Education and Training	Travel behaviour
	Education and Training systems for the diverse cadres of manpower in the tourism industry
	Regulatory framework for training and education in the industry
Tourism Potential Clusters	Skills set in support of tourism
	Tropical Rainforest tourism potential
	Ecotourism potential
	Adventure tourism
	National Parks and Reserves
Socio-Economic Impact	Festivals and Events
	Case study of economic impact of tourism
	Employment generation capacity
	National security and tourism
	Transportation system
	Case study of managing a tourism business
	Investment climate
	Foreign Direct Investment in tourism business
Nigerian Tourism Competitiveness Index	

CATEGORY 2: SCIENCE, TECHNOLOGY AND INNOVATION

Nigeria was ranked 120 out of 142 countries on the **2013 Global Innovation Index**, which measured countries' innovation capabilities and how they drove economic growth and prosperity. Nigeria's scores in the research, and knowledge/ technology categories were rather discouraging. Nigeria was placed 140th in human capital and research; 114th under knowledge and technology; and 74th under creative output (the latter appears promising for innovation potential).

Modern economic growth and development efforts are interlocked with strategic human capacity building/utilization activities. Despite the abundance of natural resources, our national economy is dominated by labour intensive, low value-adding technologies in a mono-product fuelled economic setting.

The twenty first century world is anchored on a highly competitive globalised economy best described as information-rich; knowledge-based; science, technology, and innovation-driven; and predominantly private sector-led. This calls for an integration of science, technology and innovation-driven, value-adding research and development activities into our nation's development efforts. In some cases, the conducting of fundamental research in areas of comparative national advantage would become necessary.

Thematic Area 7: Agriculture, Food Security and Food Technology/ Processing

Nigeria's ecological conditions, climatic and cultural diversities put the country at an advantage for the production of a wide range of food products. The varying vegetation from the mangrove forest in the Niger Delta through the Guinea, Sudan Savannah to the Sahel Savannah has made it possible for the production of an aggregate of food commodities which are found in tropical climate, the highlands and the delta regions.

Also, cultural practices of the various ethnic groups present alternatives for various uses of agricultural commodities, resulting in different products. Nigeria has a pool of knowledge in indigenous technologies which can be upgraded to process agricultural raw materials and enhance food availability in the country. Besides, many crops which are known to thrive in other climatic regions can also be grown in some parts of the country- wheat for example. This area is thus a thriving ground for research that would provide data on improved technologies for sustained food production and food security.

Strategic Objectives

The strategic objectives are to:

1. Sustain research efforts for the enhancement of agricultural development for improved food security.
2. Identify and provide evidence- based data on food commodities for which the country has comparative advantage
3. Execute studies into the use of contemporary technologies for the improvement of agricultural output to meet local demand.

4. Encourage multidisciplinary research in livestock production, aquaculture fish and shellfish production, crop production, agricultural mechanization, food processing and storage, and, agricultural management and policy evaluation.

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Production	Development of improved planting materials (seeds, stems, etc)
	Application of biotechnology to develop or design varieties with specific desired attributes
	Development of fertilizers suitable for the ecology of Nigeria
	Design and development of machinery for agricultural production
	Development of environmentally-friendly insecticides/pesticides
	Converting waste to wealth; developing products from agricultural waste
	Development of aquaculture for fish seed and table seed production
	Development of livestock for milk and other dairy products
	Development of micro livestock for meat and improved animal protein
Biotechnology for crop and livestock improvement	
Processing	Development of indigenous food products
	Development of new products from local commodities
	Development of alternatives to imported food products
	Design and development of machineries and equipment for processing agricultural commodities
	Developing value chain schemes for various raw materials
Preservation and storage	Development of storage systems for agricultural commodities
	Upgrading indigenous technologies for food storage
	Building capacity for design/fabrication of silos
	Development of commercial refrigeration systems for fruits, vegetables, fresh foods and other food items
Distribution	Developing packaging materials for food distribution
	Developing transport systems for food distribution

Thematic Area 8: Health

Nigeria's general health system performance was ranked 187 among 194 member nations of the World Health Organisation (WHO) in the year 2000. Preventable disease burden and poverty identified as major causes of the problem. Maternal mortality ratio in Nigeria is one of the highest in the world. Some other health status indicators such as under-five were mortality and adult mortality rates are higher than average for sub-Saharan Africa.

The National Strategic Health Development Plan (NSHDP) was developed to implement appropriate policies and programmes as well as undertake necessary actions that will strengthen the National Health System in order to be able to deliver effective, quality and affordable health. The NSHDP has as its target:

- Reducing morbidity and mortality rates due to communicable diseases to the barest minimum;
- Reversing the increasing prevalence of non-communicable diseases;
- Meet global targets on the elimination and eradication of diseases; and
- Significantly increasing the life expectancy and quality of life of Nigerians.

The overarching goal of the NSHDP is *to significantly improve the health status of Nigerians through the development of a strengthened and sustainable health care delivery system.*

Strategic Objectives

The strategic objectives are to:

1. Strengthen the national health system such that it would be able to provide accessible, affordable, effective, efficient and high quality health services that will improve the health of the people
2. Utilize research to inform policy, programming, improve health, achieve national and international development goals as they relate to health and contribute to the global knowledge platform
3. Provide an implementable national health investment plan.
4. Develop equity-oriented strategies for health delivery in the country
5. Develop lifestyle - related policies: Alcohol misuse, tobacco control and nutrition, physical activities, prevention of road traffic crashes and behavioral change communication with regards to sexual activity especially among the drivers of the AIDS epidemic in the country
6. Establish a sustainable mechanism for capacity development and enhancement

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
National Health Systems Management	Health research policy and mechanism for evidence-based policy making in health
	Human resource development and management to address the dearth and poor capacity of health care workers and identify inefficiencies, wastage and fraud
	Improving the managerial capacity and motivation of health care workers
	Setting health research agenda and priorities
	Ethical standards and practice codes for health research
	Impact of ICT on health services
	Sharing research results among researchers, policy makers and development practitioners
	National health interventions to address the relevance, efficiencies, effectiveness, adequateness and impact of national health interventions such as NHIS, NACA, NPI and NTBLC programmes
	Inter-sectorial collaboration
NHIS schemes	
Health Systems and operational	Bio-informatics: develop a comprehensive repository for health research at all levels (including both public and non-public sectors)
	Getting research findings into strategies and practices
	Health research communication strategies – creating a framework for sharing research knowledge and its application
	Quality assurance and quality monitoring for health products
	Efficacy of locally available and affordable health technologies that may save lives of millions of people
	Promoting basic research methods
Priority Diseases and Health Problems	Infectious diseases; chronic conditions; epidemiological/transitional diseases
	Epidemiological research to identify the major health problems, their pattern of distribution and determinants in different parts of the country and in different segments: orphan diseases, orthopaedics, prosthetics,
	Maternal and child health care
Product Development Research (Pharmaceutical, biological and diagnostics, therapeutics and educational products)	Developing new and improved tools for the prevention, treatment and control of diseases of local importance
	Value addition to herbal medicinal resources and traditional knowledge
	Research into traditional medicinal practices and products
	Application of biotechnologies in development of molecular diagnostics, recombinant vaccines, vaccine and drug delivery, bio-remediation, sequencing pathogen, genomes, female-controlled led protection against sexually transmitted infections, bio-informatics, nutritionally enriched genetically modified crops, recombinant, therapeutic proteins and combinatorial chemistry
	Application of nanotechnologies in health – diagnostic tools, drug and vaccine delivery, surgical devices, prosthetics, methods of diagnosis and prevention; more effective treatment with existing drugs, detection of pathogens such as mycobacterium and HIV
Social and Behavioural Research	Research on socio-cultural and environmental factors affecting health: to identify determinants of gender issues, domestic violence, conflict, migration/displaced people, poverty alleviation, social security system for the under-privileged and people living with disabilities
	Monitoring the impact and efficacy of information, education and communication (IEC) materials

Thematic Area 9: Transport

The interrelatedness of transportation development and economic growth has been a constant theme of geographic inquiries, particularly in economic and transportation geography. With increasing urbanization, transportation of goods and people has become so complex that it cannot be left to the whims and caprices of the diverse public and private transport operators in the sector. More so, the fact that several countries have established national research and training institutes for the study of socio-economic and technical issues of transportation further accentuates this point.

The varying problems of transportation across cities and villages in Nigeria call for fundamental research towards providing evidence-based and practical solutions. The country at present is characterized by:

- Intra- and inter-city road networks in varying motorable conditions.
- Air transport system for in-country and out-country travels by millions of Nigerians with local and foreign service participation;
- Rail system that has been largely neglected thereby denying the country the unique opportunity of mass transportation of people and goods currently being handled by road-damaging haulage trucks and trailers;
- Inland waterways transport that has not been developed to take advantage of its great potential in some areas of the country.

Strategic Objectives

Research on transportation is geared towards:

1. Establishing the operational characteristics of the following modes of transportation in the country: road transportation (cars, trucks, trailers, motor cycles, bicycles, etc.), Rail transportation; air transportation, and inland waterways.
2. Acquiring scientific understanding of the various transportation systems towards providing support to the established units or ministries of government with responsibility for the development of transportation policies as well as planning and operations for regions, cities and towns.

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Transportation Systems	For each of the different modes of transportation (road, rail, air, waterways):
	Basic features, operational characteristics and level of deployment in the country
	Spatial characteristics using GIS
	Economic impact
	System of maintenance
Transportation Safety and Security	Generation of accident database
	Policies and programmes to promote safety and security
Road Transportation Facilities and Plans for Cities and Regions	City traffic flow simulation
	Traffic operations
	Road construction profile across the country
	Cost trends for highway projects in the country
	Materials for road construction
Transportation Policy Formulation and Implementation	Policy issues for the different modes of transportation
	Institutional framework for policy formulation and implementation

Thematic Area 10: Power and Energy

The role of energy and power in achieving economic growth needs no emphasis as the state at which it is used has become a veritable indicator of the level of development of a nation. Electricity is one of the major constraints to growth with the Power Holding Company of Nigeria (PHCN) supplying only 20% to about six million customers; consequently, businesses and individuals run generators several hours per day at operating costs which vary from four to six times the tariff per kilowatt-hour on the public grid. The energy and power supply problems impact on urban and rural populations despite the abundance of basic energy resources - renewable and non-renewable. Thus, electricity supply occupies a central position in the nation's quest for national development. The main challenge is the conversion of available energy sources into *thermal energy* to meet our domestic and industrial requirements for direct heat, *mechanical energy* for direct use to drive machines, and into *electricity*, which is the most versatile form of energy. Also crucial is the institutional framework for the management of the energy and power supply chain.

Strategic Objectives

In consequence of the above, the strategic objectives of research on energy and power are to:

1. Determine the national energy demand and supply patterns
2. generate data and information on the quality and quantity of the available energy resources
3. Develop and deploy appropriate technologies for energy conversion to meet the thermal and electric power needs of the nation.
4. Establish the characteristics of the national system for the generation, transmission and distribution of electrical power
5. Evolve appropriate institutional framework for the management of the energy supply value chain
6. Develop alternative sources of energy

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Energy Resources Audit	Evaluation of the available non-renewable energy sources (crude oil, natural gas, tar sand and coal)
	Renewable energy resource potential (Hydropower, solar, biomass, wind)
Energy and Power Generation (Non-renewable Sources)	Establishment of the existing power generation capacity of the various power plants operating in the country including the identification of their operational problems (material, human and organizational)
	Environmental impact assessment of power generation systems
	Development of technologies for efficient conversion into electricity
	Design and production of various energy converters
	Energy mix to meet demand
	Economics of power generation
Energy and Power Generation (Renewable Sources)	1. Hydro:
	Development of mini- and micro-hydropower schemes
	Environmental impact of dam construction
	Design and construction of hydropower stations
	Engineering design and production of hydropower plants, equipment and accessories
	2. Solar Energy:
	Development of solar energy conversion technologies for the production of heat and electricity
	Manufacturing of solar energy production systems
	Market studies of solar energy systems
	3. Biomass:
	Development of efficient and less hazardous biomass conversion devices and systems to utilize materials such as agricultural residues, animal and human wastes as energy sources for use particularly in the rural areas
	4. Wind Energy:
	Wind data acquisition across the country and development of wind maps
	Development of wind energy conversion technologies
	Local production of components and spare parts of wind power systems
	5. Hydrogen:
Keeping abreast of international trends in hydrogen production and application	
Developing a database on the potential of this emerging energy resource	
Developing local capacity for hydrogen to ensure hydrogen utilization as a preferred energy source	
Electricity Transmission	Evaluation of the existing transmission systems in the country, identifying operational problems
	Transmission systems to minimize losses and damages to the environment
	Materials of electricity transmission
Electricity Distribution	Identification of the existing distribution systems in the country
	Spatial distribution of electricity demand and supply
	The economics of power distribution
Management Structure	Organizational structure for the optimal management of the national energy generation, transmission and distribution systems

Thematic Area 11: ICT and Telecommunications

The greatest contemporary boost to world economic development is the Information and communications technology (ICT) revolution. ICT is an increasingly evolving and expanding industry that has markedly revolutionized the way we do virtually everything including e-government, e-learning, e-library, e-commerce, e-banking, e-mails as well as e-crimes.

World economic development and international economic competitiveness are becoming increasingly knowledge driven. ICT is unarguably the most contemporary intellectual infrastructure. Software development and its huge out-sourcing industry know no boundaries and this is one area the country can make easy entry. Therefore national investment in ICT development would readily enhance our national development initiatives. Nigeria is reputed to be amongst the world's fastest growing GSM markets. Unfortunately, this ever expanding local market is currently being serviced only by imports.

Strategic Objectives

The major strategic objective in investing in ICT research development is to develop a critical mass of experts and other skills in the industry to enable the country to key into this ever expanding international market.

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Telecommunications	Wireless communications
	Fibre optics application
	GSM handset development and production (including medical issues (radiation emissions) and social issues)
	Intelligent agents for monitoring telecommunication networks
	Computer networking
Computer Hardware and Associated Peripherals	Computer architecture
	Micro-processor design, development and production
	High performance/speed computing
Software Development	Originating algorithms and theoretical computer science
	Artificial intelligence
	Cyber and internet crimes including internet security and e-banking fraud prevention
	Bio-informatics
	Biometric security
	Local input into web content development
	Social influence of the web, including digitalization of unique and rare documents
	Market inventory and software needs assessment of various local industry applications (where we are, where we need to be and where we can contribute)
	Intelligent/cognitive tutoring systems (including development of intelligent tutor authoring systems)
	Multi-lingual systems (Nigerian languages)
Multimedia and Animation	Multimedia computing (particularly for education and public enlightenment)
	Animation and its applications
	Simulation and its applications
Data Banks	Development of web based national data bank

Thematic Area 12: Engineering: Construction and Building Technology

An overview of the Nigerian construction industry shows that organized construction contracting in Nigeria began in the 1940s with few foreign companies coming into operation. Nigeria's Independence in 1960, bolstered by the "oil boom" of the 1970s, brought an upward trend in the construction activities and up to the end of the second Republic in 1983, the construction industry in Nigeria witnessed an overwhelming upsurge in construction contracting dominated by expatriate companies with few indigenous companies. Unfortunately, the period also exposed **the country's indigenous companies' low level of human resources development** required for planning, designing, constructing and maintaining the magnitude (in size and number) of projects conceived by the government. However, with improved training institutions, engagement of expatriates, collaborations between indigenous and foreign entrepreneurs, political stability and improved government policies, the apparent resources gap needed for successful completion of complex projects between indigenous companies and their foreign counterparts are now closer compared to the pre-independence era.

While noting that the building and construction industry is one of the pillars of the domestic economy, the national housing policy of 2006 projected the sector as accounting for 11% of employment nationwide. A lot still has to be done to bring the construction industry to its expected level of performance in Nigeria as borne out by its relatively low percentage contribution to the country's GDP at 1.99% in 2010 and 2.08% in 2011.

The construction sector's level of manpower ranges from highly skilled professionals to completely unskilled labourers. At the high end, the sector parades an array of professionals such as Builders, Engineers, Architects, Quantity Surveyors, Structural Engineers, Mechanical Engineers, Electrical Engineers whose knowledge and skills are utilized on large construction projects. Most required are trained professionals that can face the challenges emanating from the rapid pace of technological innovation and the globalization of the economy which have forced business and industry to adapt to new challenges triggered by an ever sophisticated society characterized by an increasing demand for customized and high quality services and products in various segments of the industry.

Also of crucial importance is the institutional framework for the regulation of professional practice and skills development in the sector. This comprises: one, the agencies (e.g. the Council for the Regulation of Engineering (COREN), the National Board for Technical Education (NBTE), the National Universities Commission (NUC)) which regulate the education and professional training of the different cadres of manpower; and two, the agencies which control the major building and construction projects in the sector through technical evaluation of designs and granting of approval.

Strategic Objectives

In consequence of the above, the strategic objectives of research on construction and building technology are to:

1. Profile the industry in terms of the key operators – local and international
2. Determine the skills set requirement and provision at all levels - professional, technical and vocational
3. Generate data and information on the quality and quantity of the available education and training institutions targeted at the sector.
4. Evaluate the institutional framework for the regulation of activities in the sector
5. Identify the key factors militating against the operations in the sector
6. Case studies of key issues in the sector such as collapsed structures, materials and

technology input, financing, etc.

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Profile of the Industry	Institutional framework for policy formulation and regulation of practice in the sector
	Key actors – local and international
	Employment generation capacity
	Model of growth
	Socio-economic impact
	Operational problems (investment climate, material inputs, human and organisational)
	Analysis of global Construction Industry
Human Resources Development	Identification of skills and skill-gaps of the different cadres of professions in the sector
	Education and training institutions/facilities for manpower production and development
Case Studies	Collapsed structures
	Key actors in the sector – Local and International
	Construction and Building Materials and Machinery
	Building and Construction Technology
	Construction Project Management
	Infrastructural Financing
	Real Estate Development and Management
	Design and Build in Public Construction
	Disputes Settlement in Construction
	Application of Information Technology in Construction Engineering

Thematic Area 13: Space Science and Technology

The pervasive role of space science and technology in solving problems of the development of human societies is now well known. Needs assessment carried out by the National Space Research and Development Agency (NASRDA) of Nigeria confirmed that satellite data utilization is needed for development in many sectors of our national economy. These include:

- Agriculture;
- Water resources development and management;
- Solid mineral exploration and exploitation;
- Ecosystem management with its associated goods and services;
- Demographic and cadastral analysis;
- Transportation and utilities;
- Environmental management;
- Defense and security;
- Health and public health delivery;
- Disaster management, etc.

Effective development and deployment of space science and technology tools in our nation's development efforts would in turn promote the economic viability of the space programme through effective patronage both domestically and internationally.

Strategic Objectives

In view of the above, the strategic objectives of research on space science and technology are:

1. Promote the development of critical manpower with requisite knowledge, skills and tools of space science and technology for Nigeria's inclusion as an effective participant in the globalized economy;
2. Intensify research activities to ensure the active development of Nigeria's available critical space infrastructure (remote sensing and communication satellites) to promote sustainable socio-economic development at reduced costs;
3. Using the available space infrastructure to promote mutually beneficial win-win research partnerships to solve critical national developmental problems at an accelerated rate;
4. Develop independent, accessible, relatively inexpensive, flexible and dynamic remote sensing and communication capabilities that would stimulate a broad spectrum of applications in the above-indicated national needs;
5. Conduct demand-driven research on space applications to meet the needs of stakeholders in an internationally competitive and sustainable manner; and
6. Ensure the systematic popularization of space science and technology applications through government – academia – private sector partnership in problem-solving.

Thematic Areas and Research Focus:

Thematic Area	Research Focus
Agriculture	Mapping land use planning and management e.g. flood plains suitable for rice cultivation
	Crop inventory and yield forecasting, vegetation inventory/revision, planning and management including sustainable forest logging and grazing and planning afforestation programmes
	Mapping, investigating and monitoring pest infestation including desert locust and Quelea birds risks
	Crop performance monitoring
	Mapping, investigation monitoring of distressed crops areas
Water Resources Development and Management	Surface hydrology and watershed management including analysis of major drainage basins
	Location of dams or planning water impoundment for various uses among which are irrigation, domestic, industrial, navigation, fisheries, recreation, hydroelectric power, etc.
	Structural analysis for aquifers, springs and borehole locations
	The preparation of water resources master plans
Solid Mineral Exploration and Exploitation	General geology mapping and map update/revision
	Planning solid mineral exploitation including mine reclamation
	Structural (including linear) analysis and regional geological reconstruction and mineral exploration
	The preparation of geomorphologic maps
Ecosystems Management with Associated Goods and Services	Mapping/differentiation of endemic/economic flora and fauna and wild life habits and ecosystems (e.g. dry forests and wetlands)
	Forest and rangeland monitoring
	Pollution of marine ecosystems due to effluents from domestic and industrial wastes
	Planning, protection and management of lakes, reefs and mangrove ecosystems
	Mapping and monitoring of wild aquatic plants, e.g. water hyacinth
	Local and regional planning for tourism and tourism potentials, as well as investigation of historical/archaeological sites
Demographic and Cadastral Analysis	Mapping/planning population survey and census enumeration and human settlement areas
	Rural and urban growth mapping and monitoring
	Monitoring land use/cover dynamics
Transportation and Utilities	Terrain evaluation for various uses of regional planning.
	Route location and road allocation planning with road maintenance strategies.
	Planning and economic railway network development
	Mapping and planning utilities location; oil pipelines. power transmission lines, cables and telecommunication networks
	Planning waterways and general land and water transportation networks
Environmental Management	Mapping/planning sewage location and domestic and industrial waste disposal sites
	Mapping/monitoring soil and land degradation
	Determination of environmental impact assessment
	Risk zone mapping and environmental inventory and monitoring
Defense and Security	Mapping of state and international boundaries
	Mapping/planning terrain trafficable for movement of ground troops and military wares.

	Provision of maps/geo-information for vehicle tracking
	Mapping/determination of camouflages
	Bathymetric mapping of the coastal areas for surveillance purposes
Health and Public Health Delivery	Epidemiology studies of the relationship between disease vectors and environmental variables (larvae habitats) e.g. flooded pastures and transitional swamps and other breeding sites and plants
	Weather data for delineating harmattan dust areas with associated diseases
	Remote sensing for meningitis early warning, and in prevention and isolation of river blindness environment
Skills and Capacity Building	Facilitate/enhance remote sensing education or capacity building for the use of earth observation data
Disaster Management	Development of measures for Prevention and Mitigation

Thematic Area 14: Geological Sciences

Geology is a study of the earth, the latter providing the basic physical environment in which we live. Nigeria is blessed with abundant solid mineral resources. Outside of oil and gas industry, the sustainable development of the solid minerals sector would also help diversify the national economy and provide alternative sources of revenue. Most of the minerals are currently mined and exported in their raw form, which is rather unfortunate. The association of impurities with many of the mineral deposits calls for beneficiation to ensure removal of impurities. Mineral processing deficit is a common national problem that needs urgent attention. The dearth of modern mineral mining and processing activities calls for active research and development to develop value-adding technologies.

Strategic Objectives

1. Seek better understanding of geological processes as they relate to and influence human activities, including possible hazards.
2. Enhance solid minerals mining and processing technologies.
3. Develop methodologies/technologies that would enhance oil recovery from old oil fields/marginal fields.

Thematic Areas and Research Focus:

Thematic Area	Research Focus
Solid Minerals	Improving exploration and mining activities through technological inputs, especially for artisanal operators
	Tackling the mineral processing deficit challenge through mineral beneficiation and processing activities
	Environmental challenges in mineral beneficiation and processing. Including health risks from geological factors
	Modern design and fabrication of mining equipment and processing machinery for small-scale operators
Oil & Gas	Oil recovery enhancement techniques for marginal field operators
	Design and fabrication of spare parts to enhance effectiveness of the Nigeria content policy
	Design and manufacturing of modular refineries for use in teaching and research in our higher education institutions
	Development of oil pollution remediation technologies

CATEGORY 3: CROSS-CUTTING TOPICS

Thematic Area 15: Entrepreneurship and Wealth Creation

In the 21 Century, the highly competitive global economy is best described as information rich; knowledge-based; science, technology and innovation(S,T&I) driven. Skills acquisition and value-adding research and development (R&D) are critical enablers of entrepreneurship and wealth generating enterprises. Also the use of ICT tools helps accelerate and promote assimilation of global best practices. Manufacturing catalyses promotes growth of the private sector. Knowledge-driven SMEs generally form the bedrock of all viable, globally competitive modern national economies; hence their critical role in entrepreneurship and wealth creation programmes.

Strategic Objectives

The objective is to:

1. Promote value-adding, demand-driven research and development activities by deploying global best practices that will ensure accelerated growth and development of viable SMEs, develop vocational enterprises for the emergence of diverse and globally competitive products and services.

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Socio-cultural Change Imperative in Economic Modernization	Influence of culture and tradition on entrepreneurship and wealth creation
	Identifying knowledge and skills gap in developing a globally competitive economy
	Public policy framework for integrating sciences, technology and innovation into National Development Programme
	Strengthen government –academia-industry collaboration
Tripod of Technology (Government-Academia-Industry) Linkage	Models for strengthening tripod of technology linkages and collaborations
Technology-Driven Diversification of National Economy	Upgrading/modernization of traditional process technologies (multi-sectoral) with great multiplier effect with emphasis on: “Low hanging fruits”, that is, near market or pilot plant stage’ High profile value-adding activities (process improvement, product development, quality improvement, cost reduction, productivity enhancement, packaging effectiveness, enhanced delivery system, etc) to ensure the attainment of export grade goods and services by SMEs
	Technology adaptation for SMEs
Advantages of manufacturing Technology (Capital Goods Research, Production and Reverse Engineering)	Engineering design and fabrication of tools, equipment, and machinery for multi-sectoral applications, deploying virtual manufacturing tools
	Design, engineering simulation and computer modelling of engineering processes, plant, machinery and spare parts for rapid prototyping for use by SMEs
	Engineering materials research (iron, steel, non-ferrous metals and alloys, plastics, glass, ceramics, polymer electronics and nanotechnology)
	Mechanical engineering tools development (power tools, hand tools, cutting tools and machine tools)
Software Development	Local software development for use in all thematic areas capitalizing on locally and globally available opportunities
Biotechnology and Bio-resources Development	Bioreactor design and fabrication using virtual manufacturing tools
	Industrial enzymes production
	Bio-prospecting, molecular biology and pharmaceuticals
	Bioremediation
	Effective and safe herbal combinations therapy for malaria, hypertension, diabetes, etc
	National inventory of medicinal aromatic and pesticidal plants of Nigeria
Financing of Innovation and Nurturing Entrepreneurship	Development of intellectual property rights for traditional medicine
	Models of financing SMEs
	Venture capital development
	Technology incubation
	Models of technology/industrial parks

Thematic Area 16: Environment, Housing and Urban Development

Nigeria is faced with enormous environmental challenges posing threats to the livelihood of tens of millions of its teeming population. Among these challenges are:

- **Coastal erosion** which has been buffeting much of the country's 853km coastline and **sheet and gully** erosions which have done untold damage in the South-East, with severe threat to agriculture and dwellings.
- **Deforestation** - Nigeria is fast losing its forest cover at an annual national **deforestation** rate of 0.76%. As at 1985, deforestation had already claimed over 1,544 square miles of the nation's forests and the problem continues unabated.
- **Desertification** – This is posing a great threat to the frontline states of northern Nigeria. Over ten states and 34% of the nation's prime arable land are being affected by this encroachment.
- **Oil spillage and gas flaring** - This is one of the consequences of oil exploitation in the South-South zone of Nigeria resulting in reduction of farmlands and pollution of water resources.

As far as the urban environment is concerned, Nigeria has one of the fastest rates of urbanisation in the world. With an urbanisation rate of 5.3%, the growth of urban populations in Nigeria is twice the international average. It is estimated that before the year 2020, 60% of Nigerians will be living in urban centres. However, the urban environment in Nigeria is not without its problems; some of these are transportation; water and sanitation; inadequate affordable housing, waste disposal as well as the threat of environmental pollution and sustainable urban development. Nigeria must begin to address these problems in a serious, concerted and strategic manner if it is to achieve its developmental goals and objectives.

Strategic Objectives

The objective is to conduct research on the physical and built environment that will:

1. Provide reliable data and generate information for effective planning and policy formulation at all levels of government
2. Provide information for effective and proactive management of the environment
3. Provide scientific understanding of Nigeria's ecology and Environment and develop appropriate environmental technologies which could tackle environmental problems and mitigate the effect of ecological disaster
4. Explore innovative strategies and mechanisms for managing the nation's urban growth & development and address the challenges of Nigeria's urban growth and development.

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Desertification, Coastal and Gully Erosion	Monitoring information systems for desertification, coastal and gully erosions
	Appropriate technologies for desertification and erosion mitigation and control
	Drought and environmental disaster early warning systems
	Sustainable development in ecologically distressed areas
Pollution, Environmental Health and Ecosystem Management	Air pollution and environmental health, especially in urban centres
	Oil pollution bioremediation and ecosystem restoration
	Sustainable biodiversity projects
	Reforestation/Innovative forest management practices
Housing and the Urban Environment	Appropriate building systems and technologies
	Social housing: Housing economics and finance
	Environmental sanitation; waste recycling and waste disposal technologies
	Urban management; municipal services and sustainable urban development
Environmental Governance	Assessment of environmental policy and governance
	Policy research on housing and urban development
	International best practices and compliance with UN, regional and international conventions and protocols

Thematic Area 17: Climate Change

The Climate Change Vulnerability Index 2014 classified Nigeria's vulnerability as extreme and ranked her as number 6 most vulnerable country to climate change. This extreme vulnerability has negative implications for the country's sustainable development. It has been estimated that climate change result in the loss in GDP of between 6% and 30% by 2050, worth an estimated US\$100 to 460 billion in Nigeria. Climate change presents significant threats to the achievement of the MDGs especially those related to eliminating poverty and hunger and promoting environmental sustainability. According to some reports, by 2020, if no adaptation is implemented, between 2 – 11% of Nigeria's GDP could potentially be lost (DFID, 2009). Five critical transmission mechanisms through which climate change could stall and even reverse human development have been identified as:

- Agricultural production and food security
- Water stress and water insecurity
- Rising sea levels and exposure to climate disasters
- Ecosystems and biodiversity
- Human health

Strategic Objectives

The objective is to conduct research in the area of climate change adaptation and mitigation strategies

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Climate Change	Monitoring and mitigation of anthropogenic greenhouse gases (GHG); development of green technologies
	Impact, vulnerabilities and adaptation to climate change
	Climate Change modelling and scenarios
	Forest and land use monitoring systems and enhancement of forest carbon stock
	Policy research on housing and urban development
	International best practices and compliance with UN, regional and international conventions and protocols

Thematic Area 18: Resource Governance

The major resources of concern are oil, gas and mineral resources on the one hand and land on the other hand, as presented below.

Oil, Gas and Mineral Resources

Nigeria is well endowed with the existence of several natural resources in the forms of oil, gas, solid minerals and land. There is no gainsaying the fact that oil and gas account for more than 70 per cent of the national revenue. At an average of 2.2 million barrels of oil per day Nigeria has a reserve to production ratio of 42 years for oil and 155 years for gas. The long-term vulnerability of the country is underscored by the non-renewable nature of these resources coupled with the on-going efforts by oil-importing economies, such as the United States of America, seriously engaged with research and development of renewable/alternative sources of energy geared towards reducing the current dependence on imported crude oil. A recent publication in Nigeria attested to the gradual reduction in the level of crude oil importation from Nigeria by USA, occasioned by the discovery and utilization of shale oil and gas. The question is – Are we governing the oil and gas sector properly to take advantage of the present and future revenue inflows to develop other sectors to sustain revenue generation within the dynamics of a competitive global economy? For example, the lingering debate on the Petroleum Industry Bill (PIB), which has taken close to 14 years, attests to the policy instability in the system to take care of the conflicting interests of the key stakeholders – the government and the International oil companies operating in Nigeria.

From the evaluation of the Resource Governance Index (RGI) of about 58 oil and gas resource-based countries by the National Resource Governance Institute (www.resourcegovernance.org), a research-based organization concerned with the promotion of the effective, transparent and accountable management of oil, gas and mineral resources for the public good, it was shown that Nigeria had a relatively weak RGI, which must be addressed. It has been shown that through capacity building, technical assistance, research, funding and advocacy, countries like Nigeria can still realize the development benefits of her natural resource wealth.

Furthermore, as revenue from oil and gas dwindles, the country is expected to pay due attention to the relatively neglected mining sector, another veritable source of income generation. There are several solid minerals spread over the country including gold, gypsum, uranium, coal, bitumen and tin. It is envisaged that through proper governance of the sector, the country can significantly increase income. The sector can also generate employment as borne out by countries like Australia whose mining sector employs 187,400 people directly, and a further 599,680 in support industries. In 2010, Canada employed 308,000 workers in mineral extraction, smelting, fabrication and manufacturing. This was in addition to many companies involved with the supply of engineering, geotechnical, environmental, financial and other services to mining operations the same year.

Land Reform

The need for land reform has been raised at various fora, but not much has been done about it. The lack of action may not be unconnected with the lack of relevant research data on land reform. There is therefore the need to have extensive research in this area to address the various issues on the need for such reforms. In the area of land tenure system, for example, there is need for research on user rights and land consolidation.

Strategic Objectives

1. To conduct research towards the development of evidence-based policies and programmes that will enable the country to sustainably realize the full benefits of her natural resources in terms of wealth and job creation as well as the development of non-natural-resource-based sectors of the economy.
2. To provide appropriate data and information that allow for informed and effective land reform that answers the questions being raised.

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Oil, Gas and Mining Sector	Institutional and Legal setting for operation in the sector
	Manpower development policy and practice to support the sector and achieve high local content
	External and Internal factors impacting the diverse operations in the sector
	Linkage to the national economy
Land Tenure System	User rights
	Land consolidation
Land Use	Land use in urban areas
	Influence of culture and tradition on land use
Technology Use	Use of modern technology (such as GIS) in land reform and land use

Thematic Area 19: Science and Technology Management

The need to manage science and technology to deliver innovation towards building a knowledge-driven economy cannot be overemphasized. Meeting sustainable development goals will require action on a number of dimensions, including harnessing and maximizing the potential of technological innovation. Too often, technologies are either not developed at all for lack of a sufficiently profitable market, or if developed, are not accessible or well-adapted to end-user needs. There is therefore a need to seek to advance knowledge and understanding of how to equitably improve the functioning of our national innovation system (NIS) for sustainable development technologies. This will necessarily involve studies of how well the NIS functions to meet sustainable development needs in key areas such as energy, food security, health care delivery, water supply, manufactured goods, etc.

The need for the above has not been lost to the federal government of Nigeria which established the National Centre for Technology Management (NACETEM) as an agency under the Federal Ministry of Science and Technology (FMST). The Agency was set up to, among others: serve as a training centre for the development of high level manpower in the Science, Technology and Innovation (STI) management to all tiers of government and the private sector; to conduct policy research, evaluation and review with a view to providing sound policy advice for dynamic technology-driven, knowledge-based development; and assist the various governments (Federal, State and Local) in the country in STI policy formulation and strategies for utilising such for development.

Strategic Objectives

The kernel of the research on science and technology management is the examination of specific cases of “system interventions” (e.g., policy interventions, institutional innovations, new approaches to shaping the innovation process) intended to strengthen the national innovation system, with the broader aim of developing policy recommendations that draw from, and are generalizable across, multiple sectors. The findings will contribute to realizing the potentials of science and technology to meet the most pressing challenges of sustainable national development.

Thematic Areas and Research Focus:

Thematic Area	Research Focus
National Science, Technology & Innovation Policy	Evaluation of the National Science, Technology and Innovation Policy in relation to meeting identified development goals
	Institutional framework for the management of NSTI policy implementation
Development of Science, Technology and Innovation (STI) indicators	Development of an acceptable set of STI indicators for monitoring, benchmarking, evaluating and forecasting STI performance in Nigeria for the overall planning purposes
National Technological and Innovation Capability	Technological skills gaps analysis in the different sectors of the economy
	Institutional framework for technological skills acquisition
	Assessment of innovation capacity and competitiveness indices in the key sectors of the economy

Thematic Area 20: Sports and Recreation Development

Sports are competitive activities, organized under a collection of rules and customs, requiring specific skills or athleticism. Sports may be mental, such as card games and chess, or physical, such as track and field, ball sports, etc. Recreation is an activity purely for leisure, differing from sports in that it is non-competitive. The study of sports and recreation seeks to understand physiological elements such as performance and health; social implications such as psychology, ethics and responsibility; and practical application such as management, business and law. The importance of recreation is underscored in one of the United Nations Declaration of Rights which states that;

“Every man has a right to leisure, right to participation in the cultural life of the community, right to education directed to the full development of the human personality”.

The declaration of the rights of the child says:

“The child shall have full opportunity to play and recreation, which should be directed to the purposes as education; society and the public authorities shall endeavour to promote the enjoyment of this right”.

Thus, recreation has become one of man’s basic needs and rapid changes in modern society have caused dramatic realizations about the relationship of leisure to creative and adjusted living. The character of recreation is changing rapidly. Modern trends in education, science and technology have given recreation and leisure a new dimension. Gone are the days when people feel that recreation can be done in any form. The scope is increasing daily because of the type of advancement experienced in the field of science and technology.”

Sporting activities in Nigeria include soccer, cricket, field hockey, table tennis, tennis, netball, athletics (track and field), boxing, etc. Recreational activities include wrestling, local boxing, swimming, hunting, ayo, water regatta, boat regatta, dancing, acrobatics, fishing etc. Wrestling in particular was used for multipurpose for settling boundary disputes, for selecting champions, for ladies to choose their suitors and for honouring fallen heroes.

Sport development is defined as a process where a desire in a particular sport is created and nurtured. This may include activities like participating in sports and getting information on the same. Unfortunately, the collection and generation of data on recreational, cultural and sporting activities have not received any serious attention in Nigeria. This is partly because of a poorly developed culture of data gathering and production and partly because the sub-sector and accompanying activities have been supervised by different Government agencies and line ministries. Typical agencies involved with data collection and analysis to generate information towards evidence-based developmental policies in the sector include the Federal Ministry of Sports & Social Development, National Theatre, National Archives, Television and Radio Stations, National Commission for Museum and Monuments, National Broadcasting Commission, News Agency of Nigeria, among others. For example, in the *“Guidelines for Implementation of The Sports Development Policy For Nigeria (1989)”*, the Ministry is expected to, among others: encourage the development and organisation of and participation in sports in Nigeria; Co-ordinate and integrate efforts to raise the standard of performance in sports in Nigeria; and conduct and encourage research into all matters relating to sports.

Arising from the above, research efforts, under the Fund, are expected to enhance the developmental efforts of the above organisations through fundamental research in to key issues driving the diverse sporting and recreational activities in the country. These research efforts can be grouped under:

- Sports and Recreation Policy
- Major sporting events
- Participation in sports and recreation
- Economic value of sport
- Market segmentation
- Funding

- Facilities and Planning
- Sports and recreation and youth crime
- Sport and Health

Strategic Objectives

The strategic objectives are to execute studies and provide data and information that will assist in:

1. Sports and recreation policy formulation and implementation
2. Reviewing the current institutional framework for the development of the sector towards optimal performance and relevance
3. Raising the standards and quality of sports and recreational activities in the country
4. Increasing levels of participation in sports and recreation
5. Evolving the mechanism for the involvement of major key stakeholders in the funding and other forms of promotion of sports and recreation.

Thematic Areas and Research Focus:

Thematic Areas	Research Focus
Institutional framework for sport and recreation development	Overview of the existing public institutions for the management and development of sports and recreation in Nigeria: <ul style="list-style-type: none"> ➤ Federal Ministry of Sports and Social Development ➤ National Theatre ➤ National Archives, ➤ Television and Radio Stations ➤ National Commission for Museum and Monuments National Broadcasting Commission ➤ News Agency of Nigeria
Major sporting and recreation events	Survey of sporting and recreational activities
	Access and environment of sports and recreation
	Youth and adult participation in sports and recreation
	Local and global Competitiveness in sports
	Sport and the physically challenged
Socio-economic value of sport and recreation	The economic value of sport in Nigeria
	The value of sport and recreation in tackling youth crimes
	Increasing participation in sport and recreation
	Sport/recreation and health (physical and mental)
	Sport/recreation and social cohesion
Funding of Sports and Recreation	Funding models of sports and recreation
	Public/Private partnership issues
	Sports clubs/ Recreation centres
Facilities and planning	Overview of public and private facilities for sport and recreation
	Facilities development and management
Human Resources Production and Development	Education and training for sports and recreation
	School sport
	Professional skills for sport and recreation management

CHAPTER THREE: GUIDELINES FOR ACCESSING THE NATIONAL RESEARCH FUND

1.0 Preamble

A 21st century reality is that Research and Development (R&D)/intellectual activities have strong correlation with the socio-economic growth and development of a nation. This has led to the birth of a global knowledge economy (k-economy) that is predominantly driven by science, technology, and innovation (S, T & I). In a knowledge-based economy, the currency of exchange is information and its attendant value-adding processes. This has necessitated a paradigm shift in corporate and national strategies that have brought to the fore the critical role of research activities. The concept of best practices has also become integral to the learning and skills acquisition processes of the 21st century. This forms the basis for the federal government's decision to establish a National Research Fund Facility under the Tertiary Education Trust Fund (TETFund).

This Blueprint is to serve as a guide on how researchers can access the TETFund National Research Fund.

2.0 Vision:

"...to deliberately promote evolution of a knowledge-based, globally competitive, R&D-driven socio-economic development process in Nigeria".

3.0 Mission

"...to use the tools of research to catalyse the generation, acquisition, adaptation, assimilation, dissemination and utilization of knowledge and skills to drive the socio-economic development of Nigeria in a sustainable and socially responsible manner" ..

4.0 Objectives

- Support and promote problem solving research activities in priority areas of national development.
- Create research leadership and competence in Institutions of higher learning and specialised research Institutes by deploying the tools of science, technology & innovation in a socially responsible manner.
- Promote integrated capacity building (human, infrastructural, and institutional) activities in order to encourage public-private, domestic-international partnership.
- Aggressively promote collaborative R&D activities (partnerships) across the tripod of technology (government - academia - industry) to enhance commercialisation of R&D outputs and thus ensure sustainable job creation and wealth generation as well as increased local content in industrial production activities.
- Provide funding incentives to ensure the development and growth of knowledge-based, R&D-driven SMEs in the medium-term (2-5 years) and long-term (over 5 years) that can enter the globally competitive export market. (To network with Nigerians in the Diaspora and other international bodies).
- Encourage basic research geared towards strengthening the applied science milieu of interest to our nation's economy.
- Promote multi-disciplinary research and multi-stakeholder collaboration in the national interest.

5.0 National Research Fund Management

5.1 National Research Fund Committee

This is a Committee of the BOT and chaired by a member of the Board. The administrative Secretariat is domiciled in the Education Support Services department of TETFund. This Committee on behalf of the BOT provides an oversight function on all activities related to research within TETFund.

5.2 NRF Screening and Monitoring Sub-Committee (NRFSMC)

The NRFSMC which comprises of experts from different disciplines was established by the BOT of TETFund. It comprises of 3 sub-committees for screening proposals submitted under the different research category areas as described in Chapter two-screening and monitoring sub-committees for the different research category areas – Humanities and Social Sciences; Science, Technology and Innovation; Cross-Cutting Topics. The Terms of Reference of the Committee include:

1. Determine whether each proposal adequately addresses the programmes objective;
2. Assess whether or not strong research partnership agreements, involving the academic communities, are likely to emerge or are in place;
3. Assess whether in planning the research, the applicant has taken care to identify and respect relevant research protocols;
4. Make recommendations to the National Research Fund Committee on proposals on their suitability for funding; and
5. Monitor the progress of the implementation of the funded researches/researchers.

6.0 How to Access the National Research Fund

6.1 Eligibility

- Every lecturer in public tertiary institutions in Nigeria is eligible. Multi-disciplinary researches comprising of researchers from various disciplines are encouraged. The lead researcher where there are many researchers is called the Principal Researcher/Investigator
- The PI will be personally and actively responsible for the conduct of the research and must be considered eligible by the Research Fund Screening and Monitoring Committee. The PI **must be institution-based**

6.2 Duration of the Funded Researches

- TETFund will support researches for a maximum of two (2) years in the first instance.
- This may be renewed, extended or expanded based on satisfactory performance up to a maximum of one to two years with convincing justification

6.3 Familiarity with the Areas of Fundable Research

- The category and specialized subject areas selected for TETFund funding are as follows. Select only one that is the most appropriate to your research.

CATEGORY	THEMATIC AREA
A. Humanities and Social Sciences	1. National Integration, National Security and Peace Studies 2. Education and Training 3. Economic Development and Tourism 4. Social Welfare 5. Population Studies 6. Tourism
B. Science, Technology and Innovation	1. Agriculture, Food Security and Food Technology/Processing 2. Health and Social Welfare 3. Transport 4. Energy and Power 5. ICT & Telecommunications 6. Engineering: Construction and Building Technology 7. Space Science
C. Cross Cutting Themes	1. Entrepreneurship & Wealth Creation 2. Environment, Housing & Urban Development 3. Climate Change 4. Resource Governance 5. Science and Technology Management 6. Sports and Recreation Development

7.0 Application Procedure

- The application procedure will comprise the following:
 - Call for proposal
 - Submission of proposal
 - Sorting of the research proposals into their various research areas as in the table in Section 6.3 above
 - Screening/Evaluation of the proposals by the NRFSMC
 - Invitation of the Principal Researcher/Investigator with fundable research proposals to defend their proposals
 - Recommendations of the finally selected fundable proposals to the BOT NRF Committee
 - Award of Research fund
 - Release of Funds in approved tranche payments

7.1 Call for Research Proposals

- TETFund will put out a call for research proposals in National Dailies, its websites and publication (the Panorama). There will be two (2) calls for proposal annually; January and July.
- **Each call for proposal will have a submission deadline**; any proposal received after this deadline shall not be considered

7.2 Standardized Format/Template

- All applicants for the National Research Fund are required to use a standardized format/template (Annex 1) for the completion of their proposals.
- Any proposal that does not follow this format shall not be considered (All applicants are advised to have a copy of the format with them while writing the proposal)
- A soft copy of the proposal can be obtained from the Fund's website

7.3 Submission of Research Proposals

- Hard Copies (5) of the proposals shall be submitted by the researchers through the Head of their Institution to the address below:

**The Executive Secretary
Tertiary Education Trust Fund (TETFund)
No 6 Zambezi Crescent
Off Aguiyi Ironsi Street
Maitama Abuja**

- The proposals to be submitted must be signed by the Head of institution before submission
- Soft copies of the research proposals shall also be submitted by the researchers to the email address below:
bogorose@tetfund.gov.ng
- And copy the email addresses below:
ukimio@tetfund.gov.ng
israelcookey@tetfund.gov.ng
asimolowoma@tetfund.gov.ng

7.4 Sorting of Proposals

- All research proposals received before the expiration of the deadline would be sorted out by the NRF Secretariat into the various groups/categories as highlighted in Section 6.3

7.5 Screening/Evaluation Proposals by the National Research Fund Screening and Monitoring Committee

- All submitted and sorted proposal will be subjected to appraisal by the NRFSMC according to the different categories (Humanities and Social Sciences, Science, Technology and Innovation and Cross-Cutting Topics)
- When the expertise is lacking in the NRFSMC and their sub-committees, peers may be recommended the preliminary review of proposals
- Fundable researches will be recommended to the BOT through the NRF Committee

7.6 Evaluation Criteria

- The Screening and Monitoring Committee will assess applications in accordance with the assessment criteria:
 - Proposal submitted using the approved format
 - Total budget should not be above 40 million Naira
 - PI must be institution based
 - Inclusion of a work plan
 - Must be signed by the Chairman of the Institution's Research Committee and Head of Institution (or his representative)
 - Other criteria as may be prescribed by the NRFSMC

7.7 Defense of Fundable Researches by Principal Investigators/Researchers

- Invitation of the Principal Researcher/Investigator with fundable research proposals to defend their proposals

7.8 Award of Grants

- All fundable researches successfully defended by the PI will be given a letter of award

7.9 Release of Funds

7.9.1 Notification

- The Principal Researcher/Grantee will be advised in writing of the duration and amount of the research grant awarded and will be provided with a budget that reflects acceptable types and amounts of expenditures for each grant year

7.9.2 Mode of Disbursement of Funds

- Disbursement will be made in three tranches of 60%, 30% and 10% for first, second and last disbursements.

1. Accessing the first tranche:

First tranche includes project execution cost and Administrative Cost and shall be credited directly into Benefitting institution NRF designated Bank Account through electronic funds transfer. The Director of Finance and Investment of the Fund will confirm to you when the transfer is effected. To access the first tranche, the following are required:

- Duly signed and stamped Letter of Acceptance of the Award from the Principal Researcher and Benefitting Institution on the Institution's letter headed paper to reach TETFund not later than two (2) weeks from the date of receipt of the Letter of Award. **Expiration of two (2) weeks without receipt of Letter of Acceptance/response from the Principal Researcher and benefitting institution will amount to non-acceptance of the award;**
- Letter of commitment from the Beneficiary Institution duly signed with official stamp by the Head of the Institution;
- A request letter for the release of the first tranche of the grant duly signed and stamped by the Principal Researcher and Head of Institution
- A copy of the Award Letter for the Research Grant being accessed
- Details of Designated TETFund NRF Bank Account (Account Name, Account Number, Sort Code, Names of Signatory to the account and any other relevant information).

2. Accessing the second tranche:

The release of the second will depend on:

- The level of work done (progress report) as ascertained by the National Research Fund Monitoring Committee and submission of project progress evaluation report to TETFund;
- Submission of acceptable expenditure returns.
- Recommendation by the NRFSMC to the NRFC
- Submission of List of Equipment/Facilities acquired to TETFund and
- Request letter for 2nd Disbursement/Release from the beneficiary institution duly signed and stamped by the Head of the Institution and Principal Researcher's Institution.

3. Accessing the third and final tranche:

- Submission of Quarterly Research Report(s) generated after 2nd tranche disbursement;
- Submission of final narrative and financial report using the templates provided in Annexes 2 and 3
- Submission of acceptable expenditure returns
- Submission of four (4 Nos.) bound copies and electronic/soft copy version of the Research Project report funded including the Research findings and significance to development of Education, Social and Economic sectors of Nigeria
- Submission of two (2 Nos.) bound copies of the Research Project Execution Proceedings.
- Submission of Letter of Research Completion of TETFund;

- Evaluation report by the NRFMC indicating its satisfaction in the project execution
 - Recommendation by the NRFSMC to the NRFC
 - Request letter for 3rd Disbursement/Release from the beneficiary institution duly signed and stamped by the Head of the Institution and Principal Researcher's Institution.
- 4. 5% of the approved research fund shall be reserved and utilized as institutional support for the host institution.**

7.10 Renewal of Grant

- No grant will be renewed automatically
- Support beyond the term originally approved by the BOT will be dependent upon submission and approval of a renewal application for a new grant.
- All recommended applications must be approved by the BOT before funds will be made available
- A report of all funds spent during the term of the previous project shall be one of the requirements for approval of a new grant.

7.11 Un-Obligated Fund

- Because budgets in applications for grants are estimates of the funds required to perform the research indicated, unspent funds may remain at the end of each year and at the termination of the grant
- Any unspent funds remaining at the end of each grant year may be carried over to the following year.
- **However, unexpended funds remaining at the termination of the grant must be returned to the TETFund NRF dedicated account. If the renewal request is approved, a new approval must be drawn in line with existing conditions.**

7.12 Extension of Term

- A no-cost extension for the research project may be approved when requested and justified in writing.
- Extension of the term will either be for three (3) or six (6) months.
- A request for an extension must include:
 - The amount of money to be carried into the extension period;
 - A statement of why the funds were not used in the original grant period;
 - A statement of how the funds will be used during the extension;
 - A report of the research progress and budget for the previous year, on forms provided by the BOT. A request for an extension must be made at least 30 days before the termination date of a grant.

7.13 Supplementary Fund

- During the term of grants, supplemental funds may be requested. Such requests must be justified in writing.

7.14 Transfer of a Grant

- The BOT retains the right to transfer a grant from one beneficiary to another
- Such transfer must be based on a written request from the Principal Investigator which should be accompanied with the letter of transfer of the principal researcher
- Such a request should also contain the name and particulars of the new PI endorsed by the Head of Institution and also signed by the new PI
- In addition, the original beneficiary must submit an acceptable report of expenditures along with the written request

- No interruption of financial support should be involved if the request to transfer the grant is received by the Board at least 30 days prior to the anticipated date of transfer and the financial report is submitted by the old beneficiary prior to the transfer date.

7.15 General Categories of Accepted Expenditure

- Researchers may request for funds for the following categories of expenditure:
 - Stipends for professional and non-professional personnel;
 - Cost of training of personnel including Masters and PhD degrees.
 - Permanent equipment;
 - Consumable supplies;
 - Travel;
 - Other expenditures not included under the above categories, and indirect costs.
 - Costs of prototype production.
 - **Overall, personnel and project management costs plus institutional support must not exceed 15%**

7.16 Personnel

- The stipends of all personnel paid from grant funds shall be in accordance with the conditions of the offer
- Requested stipends are not to be used to replace salaries already assured by institutional or other funds.
- **Grants may not be used for secretarial, purchasing, accounting, financial record keeping, laundry and maintenance services, unless specifically requested in the application.**

7.17 Professional Support

- **Tenured Staff:** the BOT will not pay salaries of tenured/permanent staff;
- **Professional Salaries:** The stipend support payable to **Principal Researcher is to be 5% of the value of the research grant.** Stipend for other researchers associated with a grant may be requested in proportion to the time they spend directly on research supported by the grant.

7.18 Technical and Non-Professional Support

- Stipends for technical and non-professional personnel may be requested in proportion to the time they will spend on research supported by the grant.

7.19 Dues

- Dues for professional bodies should not be charged against grant funds.

7.20 Premiums on Hazards and Other Insurance

- There should be insurance cover for major equipment

7.21 Equipment and Supplies

- All Scientific equipment purchased from the research fund shall be inscribed with "**TETFund National Research Fund**" on such equipment. The equipment becomes the property of the host institution upon the completion of the project
- Cost of installing equipment purchased with the funds will not be allowed unless such funds were requested in the application and specifically approved in the budget of the grant awarded
- Office equipment, personal computers, supplies, books and journals may not be purchased with grant funds unless included and approved in the budget of the grant awarded.

- Consumable supplies may include any type of laboratory supplies, including purchases and maintenance of experimental animals.

7.22 Travels

- Expenses for domestic/foreign travel related to the successful performance of the research project may be charged to a grant only when included in the application and within the amount specifically approved in the grant.

7.23 Others

- Any other expenditure directly related to the cost of conducting the proposed research may be requested for in the application for a grant.

7.24 Virement of Funds

- Transfers between and among categories of the budget approved in the grant may be made as follows:
 - transfer between personnel and consumables supplies categories may be made at the discretion of the beneficiary, but
 - no transfers may be made without prior approval in writing by the TETFund Board for equipment costing more than N500,000.00
- Unless prior approval in writing has been obtained from the Board, expenditures are likely to be disallowed for items not specifically included in the budget of the grant awarded.

7.25 Termination of Award

- A research grant award may be terminated before the end of a project if:
 - The Principal Researcher requests, in writing that the award be terminated;
 - The Principal Researcher is unable to carry out the research as specified in the grant
 - The sponsoring institution requests in writing that the award be terminated because the Principal Researcher has ceased to be a staff of the host institution;
 - The Principal Researcher fails to notify the Board of any change in his/her affiliation with the department or institution on record at the time the award was made;
 - The Principal Researcher changes any aspect of the award from that which was originally approved by the BOT, including significant changes in the specific aims of the research studies, without prior notification and approval by the Board;
 - Reports of progress and recommendation for continuation are not received from the Principal Researcher within one month of the end of each award year
 - The Principal Researcher is found by a professional researcher to have committed professional misconduct or fraud.
 - Report of the Monitoring and Screening Committee is not favourable at any level of monitoring.
- **The equipment from a failed grant should be returned to the Board**

8.0 Monitoring of Funded Researches

- The NRFSMC will carry out periodic review of progress in the execution of the research projects in line with criteria approved by the TETFund BOT

8.1 Submission of Progress Reports

- Progress report shall be submitted every six (6) months after the commencement of the research and in accordance with the Plan of Action approved for the research

- For the 2 year period, a minimum of three (3) progress reports are expected, that is, 6, 12 and 18 months after commencement of the research (the format for the progress reports is presented in Appendix 2)
- All progress reports shall be submitted in 5 hard copies and soft copy to the Executive Secretary using the email address given in Section 7.3 above
- The reports will be sorted by the Secretariat and would be evaluated by the NRFSMC in terms of quality against the objectives in the research proposal.

8.2 Monitoring Research Activities in the Institution

- Members of the NRFSMC shall visit the beneficiary institutions to monitor and physically evaluate the progress of the research (after the receipt of progress reports)
- These visits will also throw up any challenges that the research may be facing

8.3 Submission of Final Reports

- At the completion of the research, a final report using the attached template (Appendix 3) will be used to write the final report
- For the final report to be accepted by TETFund, it must be endorsed by the Head of Institution before submission by the Principal Researcher to TETFund
- The submission of the final report shall be accompanied by a covering letter duly signed by the Principal Researcher and the Head of Institution

9.0 Accounting Procedures

This must be in compliance with the approved audit requirements of TETFund

9.1 Annual Financial Report

- A brief account of the expenses made for each research grant shall accompany every progress report as indicated in Section 8.1 above.
- Also, at the end of each grant year, an annual financial report shall be submitted to TETFund.
- Any unexpected funds remaining at the end of each grant year may be carried over to the following grant year.
- Forms and instructions for this report will be sent to researchers, along with the forms for the progress financial report.

9.2 Final Financial Report

- A full account of all expenses made for a research project is due within 30 days of the termination of the grant.
- Unexpended funds remaining at the end of the grant must be returned to the Fund if renewal request is not successful. If renewal request is successful, the remaining funds from the previous grant will be applied to the first payment of the renewal grant using prescribed forms.

All reports shall be submitted to the Executive Secretary of TETFund

CHAPTER FOUR: POST RESEARCH ACTIVITIES

1.0 Publication of Manuscripts

- As soon as a manuscript is accepted for publication, a copy of it, with the name of the journal and the expected date of publication, should be sent by e-mail or fax to the Chairman of the Research Fund Committee.
- Manuscripts will be respected as privileged communications.
- As soon as a reprint of a published article is available, two copies should be sent to the chairman of the committee.
- The TETFund National Research Fund must be acknowledged in all dissemination materials (e.g. publications, scientific exhibits, scientific presentations, press releases, etc.) related to research supported in full or in part by the Research Fund.
- The following acknowledgement, or its equivalent, should be used:

"This Research was funded by the TETFund Research Fund"

2.0 Creation of Database of TETFund-Funded Researches

- The Fund shall create a robust database of TETFund-funded research to encapsulate research findings, publications, patents, prototypes, among others.
- In order to obtain optimum benefits from the TETFund-funded research activities, TETFund will organize TETFund Researchers' Industry Annual Forum/Exhibition to showcase important results, patents, prototypes etc.

3.0 Establishment of TETFund –Industry Liaison Committee

- In order to promote active collaboration between government-researcher-industry, the TETFund will establish appropriate Industry Liaison Committee.
- The primary responsibility of this committee will be to bridge the gap and strengthen the researcher-industry linkage, know the research needs of industries that require government (public) funding and sensitize the industry on the need to promote in-house R&D outfits in line with global best practices in a knowledge-driven economy.

Annex 1

National Research Fund Proposal Template/Format

Principal Researcher/Investigator
Name:
Institution:
Department:
Telephone no:
E-mail Address:
Co- Researcher (s) (if any)
1. Name:
2. Name:
Project Title:
Executive Summary:
Introduction
Problem Statement/Justification
Objective(s) of the Study
Literature Review
Methodology (Should include description of study area/site/subjects, data collection and data analysis)
Results (Expected outputs/Results)
Work Plan/Time Frame (Provide activity by activity in the form of a GANTT Chart)
Budget (Provide a budget break-down by activity/line item)
References

Signature of Principal Researcher:

Signature of Chairman IRC:

Signature of Head of Department:

Signature of Head of Institution:

Annex 2
National Research Fund Progress Report Template/Format

Progress Report No:	
TeTfund Reference No:	
Period of Reporting:	
Title of Research Project:	
Name of Principal Researcher:	
Department:	
Institution:	
Effective Date of Starting the Project:	
Expected date of completion:	
Grants approved and expenditure incurred during the period of the report	
Total Amount Approved:	
Total Expenditure incurred so far:	
Balance:	
Report of the Work done (please attach a separate sheet):	
Brief Objective of the Project:	
Work done so far and results achieved:	
Challenges/difficulties if any, experienced in implementing the project:	
Estimated time of completion:	
Status of Activities in the Work Plan (completed; on-going; yet to start):	

Signature of Principal Researcher:

Signature of Chairman ICR:

Signature of Head of Department:

Signature of Head of Institution:

Annex 3
National Research Fund Final Report Template/Format

Title of Research Project:
Name and Address of Institution:
TeTfund Reference No:
Name and Address of Principal Researcher:
Tenure of the Project:
Total Amount Approved:
Total Amount Received:
Final Expenditure (give details on a separate sheet):
Objective(s) of the Project and whether objectives achieved (give details):
Summary of the findings of the study (Use separate sheet):
Value added to knowledge
Challenges/difficulties if any, experienced in implementing the project:
Dissemination of the findings (publications of the results in journals, monographs, etc; presentation in conferences & seminars, etc)

Signature of Principal Researcher:

Signature of Chairman ICR:

Signature of Head of Department:

Signature of Head of Institution: