ROLE OF GOVERNMENT IN SUPPORTING INNOVATION IN NIGERIA

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RELATED TERMS

- Technology

- Invention

- Innovation

Focus of innovation

- Product innovation-expanding /substituting goods
- Market Innovation- sub-product of PI, labeling a product
- Process innovation- enhances competitiveness by cost reduction, quality assurance etc,
- Organizational Innovation- introduction of new management or marketing techniques, adoption of new logistics arrangements etc.

TYPES AND SCOPE OF INNOVATION

Types

- **Catch up innovation** -innovation process of a company lagging behind the state of the art, trying to close the efficiency and quality gap separating them from their global competition

- **Running to stand still innovation** - innovation process of a company applying the same efficiency and quality level as its competitors, constantly innovating in order to keep up with its competitors to hold its market position

- **Innovation for competitive advantage** - innovation process of a company

   Continuously trying to get ahead of its competitors and expand its market position

Scope

- **Radical innovations**- up till now technological development paths are abandoned. Replacing knowledge

- **Incremental innovation –** changes according to a given technological path

RESEARCH AND DEVELOPMENT VS INNOVATION

Research is:

- A means of demonstrating ones ability and capability in solving an identified problem in a particular area in a peculiar way

- A means of making contribution to knowledge

- A means of generating Intellectual Property

- A means of attracting research funds

REQUIREMENTS OF R&D

- Knowledge of the subject matter
- A sound proposal
- Up to date information on the subject
- Materials/Equipment
- Funds
- Protection of R&D result
- Market/Beneficiary

ROLE OF GOVERNMENT

- Policies

- Infrastructure

- Enabling Environment

- Regulation/Control

- Linkage with International Organization

- Bi/Multi lateral Agreements with other Countries

1.

INFRASTRUCTURE

NIGERIANKNOWLEDGE INFRASTRUCTURE

- • 141 Universities (Fed,states and Private)!

- • 125 Mono-Polytechnics, 98 COE!

- • Over 300 Research Institutions!

- • 38 IPTTOs!

- • World-class Industries!

- • Large pool of high class capacities

- (Professors, PhDs, Professional bodies,

- Diaspora capacity)!

- • Research capabilitities (Labs, Workshops, Libraries)!

OUTPUT
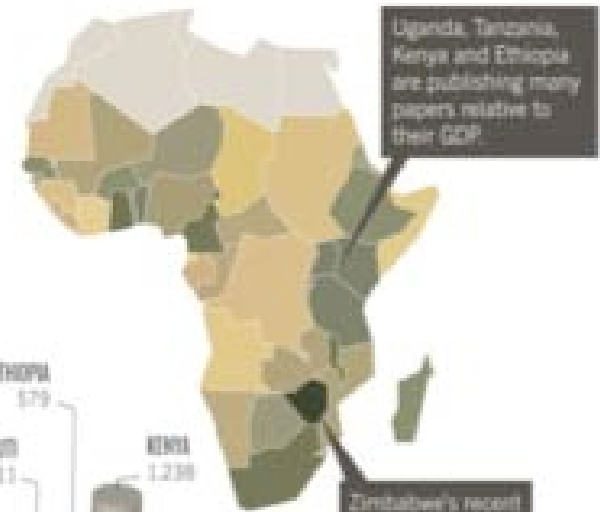
- Graduates/Post Graduates

- Publications

- Prototypes

- Skills

- Softwares etc
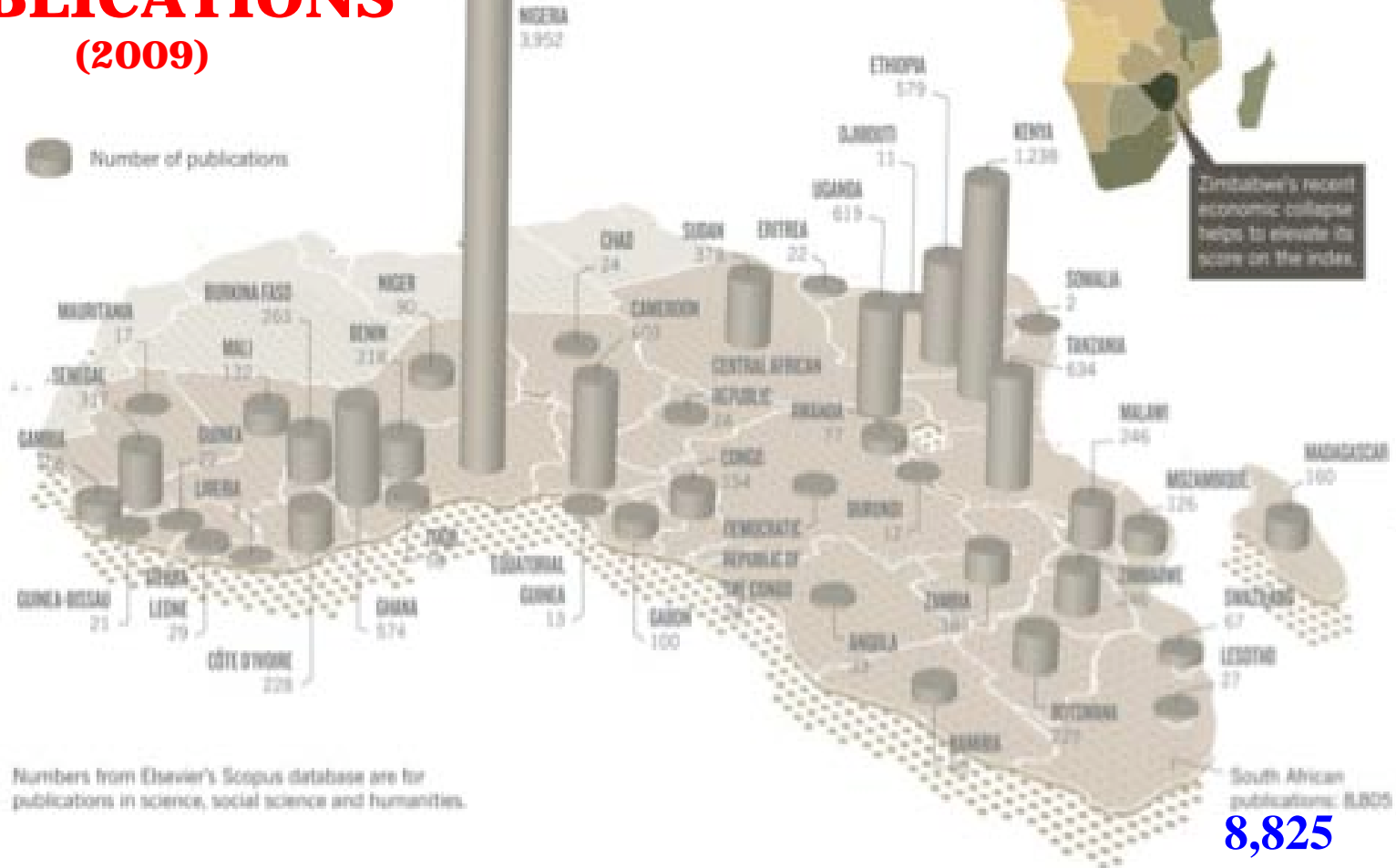
PUBLISHING LANDSCAPE

South Africa and Nigeria dominate the publication output of sub-Saharan Africa, according to 2009 data. But when publication totals are indexed against gross domestic product (GDP), other nations stand out.

**PUBLICATIONS (2009)**

3,952

8,825

Publications per billion US$ GDP
120
0

Uganda, Tanzania, Kenya and Ethiopia are publishing many papers relative to their GDP.

Zimbabwe's recent economic collapse helps to elevate its score on the index.

Number of publications

Numbers from Elsevier's Scopus database are for publications in science, social science and humanities.

South African publications: 8,805

TOTAL PUBLICATIONS 1990-2009

- South Africa   86,649
- Egypt   59,412
- **Nigeria**   **27,743**
- Ghana   4,236
- Senegal   3,387
- Mali   1,109

NEEM PROCESSING PLANT
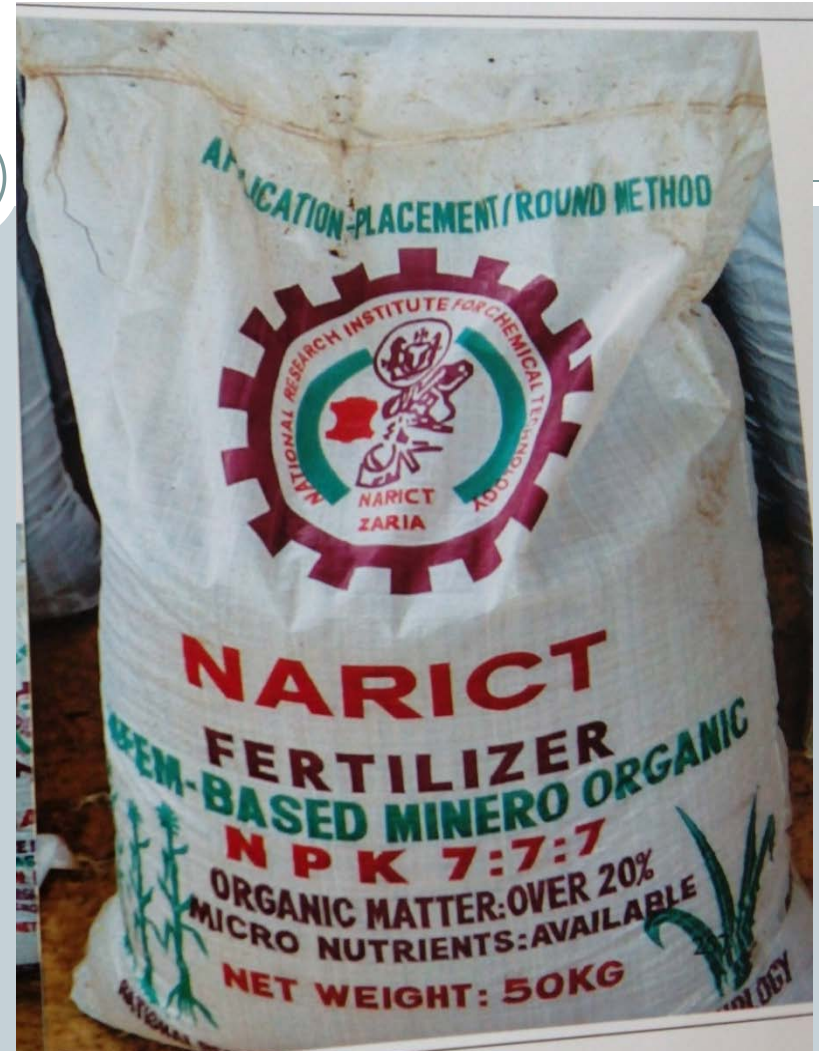
Jatropha curcass fruit farming for the production of Bio-diesel

Prototype Testing of locally produced bio-diesel fuel

Plate 1.7: ICT Penetration in Nigeria

Plate 1.8: Science kits:

Plate 2: : Outputs-National System of Innovation(2014)

Plate 1.9: NICOSAN Drugs: Circle cell Anamia.

Plate 1.10:INDUSTRIAL MANUFACTURING.

Motorcycle Engine Cast

Machine Spareparts

Industrial Valves

Research and Development
No. of Scientists and Engineers Engaged in R&D (Per Million Population)

Countries	Engagement in R&D
Pakistan	162
Morocco	700
Malaysia	500
Korea	4,947
Japan	5,189
Singapore	5,834
Finland	7,689

2.

POLICY

SCIENCE,TECHNOLOGY & INNOVATION POLICY

- The first National Science and Technology Policy in Nigeria was produced in 1986 under the leadership of Prof. E. U. Emovon
  - ☐ Designed to create harmony for environmental knowledge through R&D so as to ensure a better quality of life for the people.
  - ☐ Was reviewed after about 10 years of its implementation.

- The second policy was formulated in 1997 under the leadership of Major-General Sam. I. Momah
  - ☐ The revised policy was aimed at creating an independent, integrated and self-sustaining economy with focus on:
  - ☐ Coordination and management of S&T system,
  - ☐ Collaboration and funding.

STI POLICY CONTD……………

- A second revision was carried out under the leadership of Prof. Turner T. Isoun in 2003.
  - The policy emphasizes the need for a coherent, systematic and comprehensive approach to the determination of technological programmes taken into account the formerly neglected sectors such as biotechnology, energy and environment, ICT, etc.
  - The policy document is seen today as compendium of other S&T sub-sectoral policies and rather voluminous.
- Beyond policy considerations, the need to carry out a system-wide reform was consummated and implemented in 2005 under the Nigeria/UNESCO STI reform initiative.
  - It adopted the National Innovation System (NIS) approach as a framework for STI system reform. Thus the need to design a new policy that will address these challenges becomes indispensable.

NATIONAL STI POLICY

- # THE STI POLICY WAS APPROVED IN 2012
- Aligning the Policy Vision with the Nigeria's VISION 20-2020 thereby creating a MISSION statement for STI
  - **By 2020, Nigeria will have a large, strong, diversified, sustainable and competitive economy that effectively harnesses the talents and energies of its people and responsibly exploits its natural endowments to guarantee a high standard of living and quality of life to its citizens**
- **STI Policy Mission**
  - Evolving a nation that harnesses, develops and utilises STI to build a large, strong, diversified, sustainable and competitive economy that guarantees a high standard of living and quality of life to its citizens.

NSTI POLICY IMPLEMENTATION

- Plan and Preparation in progress for the drafting of Implementation Action Plan of the policy

  o Seek for inputs by identifying relevant stakeholders'

- Carry out advocacy plans to look for Support and Funds where necessary

- Engage Legal Practitioners to translate document to a Bill and legalize the STI Policy

NATIONAL ST&I POLICY

THRUST ON:-

- Science and Innovation Promotion

- Human Resource Development

- Intellectual Property

- Technology Transfer Diffusion

- Standardization and quality assurance

NSTI THRUST CONT'D

- ST&I Information management system

- Women & STI

- Research & Development in:-

- Agriculture

- Water resources

- Biotechnology

- Health, Environment, Mines and Materials etc

NRIC

National Research and Innovation Council (NRIC)

- Chaired by Mr.President

- Inaugurated in February 2014

- All Federal Ministers and representatives of OPS as members

- FMST Secretariat

NATIONAL RESEARCH AND INNOVATION FUND (NRIF)

- 1% of GDP

- 0.5% Technology Transfer Fees from OPS

- 5% of Funds received by:-

-TETfund

-RMRDC

-PTDF

-ADF

-Ag.DF

-NSDC etc

Presidential Standing Committee on Invention and Innovation (PSCII)

Constituted in 2005

➢ Chaired by PSFMST & Members drawn from various MDAs:

➢ FUNCTIONS:

❑ Encourage innovations and inventions in Nigeria

❑ Assesses and validate all claims to innovations and inventions and

❑ Take all necessary action to ensure full commercialization of all promising and feasible innovations/inventions

3.

ENABLING ENVIRONMENT

HELIX OF EFFICIENT NATION BUILDING

GOVERNMENT **(LEADERSHIP)**
- **POLITICAL**
- **ECONOMIC**
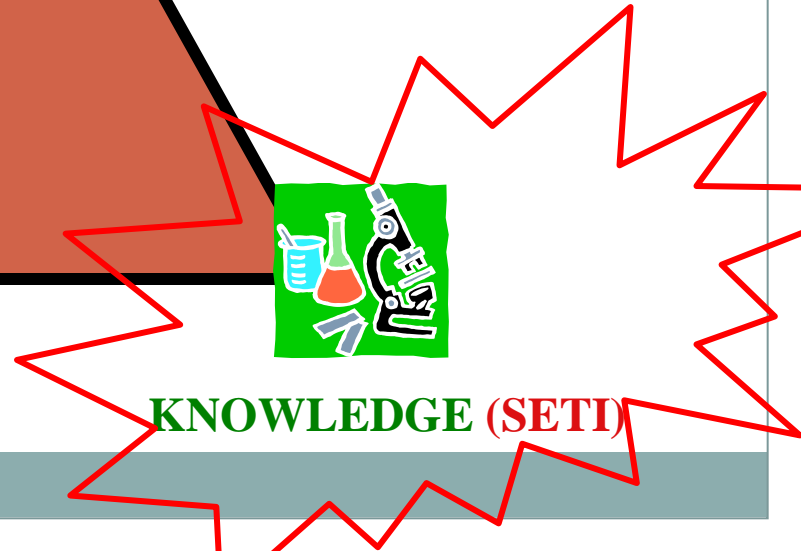- **MORAL**
- **TECHNOLOGICAL**

SUSTAINABLE NATION BUILDING

INDUSTRY/ENTERPRISE

KNOWLEDGE (SETI)

SCIENTISTS

- **RESEARCH!**
- **FACTS AND FIGURES(Research)**
- • SPECIALISTS (**SCIENTISTS**)!
- • HIGHLY TRAINED AND QUALIFIED!
- • EXPENSIVE TOOLS AND FACILITIES!
- • CLEAR KNOWLEDGE, DISCOVERIES!
- • CONCEPTS, DOCUMENTS, DATA AND STATISTICS!
- • **PUBLICATIONS/PhDs (PROMOTION ?)"**
- • **RESEARCH INFRASTRUCTURE (Labs & Equipment)"**
- • **CITATION/ACADEMIC PARTNERSHIPS..."**
- • **RELEVANCE?"**

TECHNOLOGISTS/ENGINEERS

DEVELOPMENT (T)!

- **ENGINEERING TECHNOLOGY**
- **POSSIBILITIES AND APPLICATIONS**
- • TECHNOCRATS (**ENGINEERS, ARTISANS…. OTHERS)!**
- • HIGHLY SKILLED IN **TRANSFORMING KNOWLEDGE"**
- • PROOF OF CONCEPTS ON PRODUCTS AND PROCESSES!
- • PRODUCTION PROCESSES INFRASTRUCTURE!
- • PROTOTYPES AND PILOT PLANTS!
- • TECHNOLOGY SERVICES!
- • **RELEVANCE** ?

INNOVATORS

- **SOLUTIONS AND PRODUCTS**
- **• EVERYBODY..... ARTISANS "**
- **• FEASIBILITY AND FINANCING"**
- **• IP MANAGEMENT & LICENSING"**
- **• PRODUCTION, MARKETING, BRANDING...."**
- **• BUSINESS PLANNING/MANAGEMENT"**
- **• PRODUCTS"**
- **• PROCESSES"**
- **• KNOW-HOW SERVICES (Consultancy etc)"**
- **• RELEVANCE?**

REFLECTIONS ON STI ELEMENTS

POSSIBILITIES AND APPLICATIONS (D)
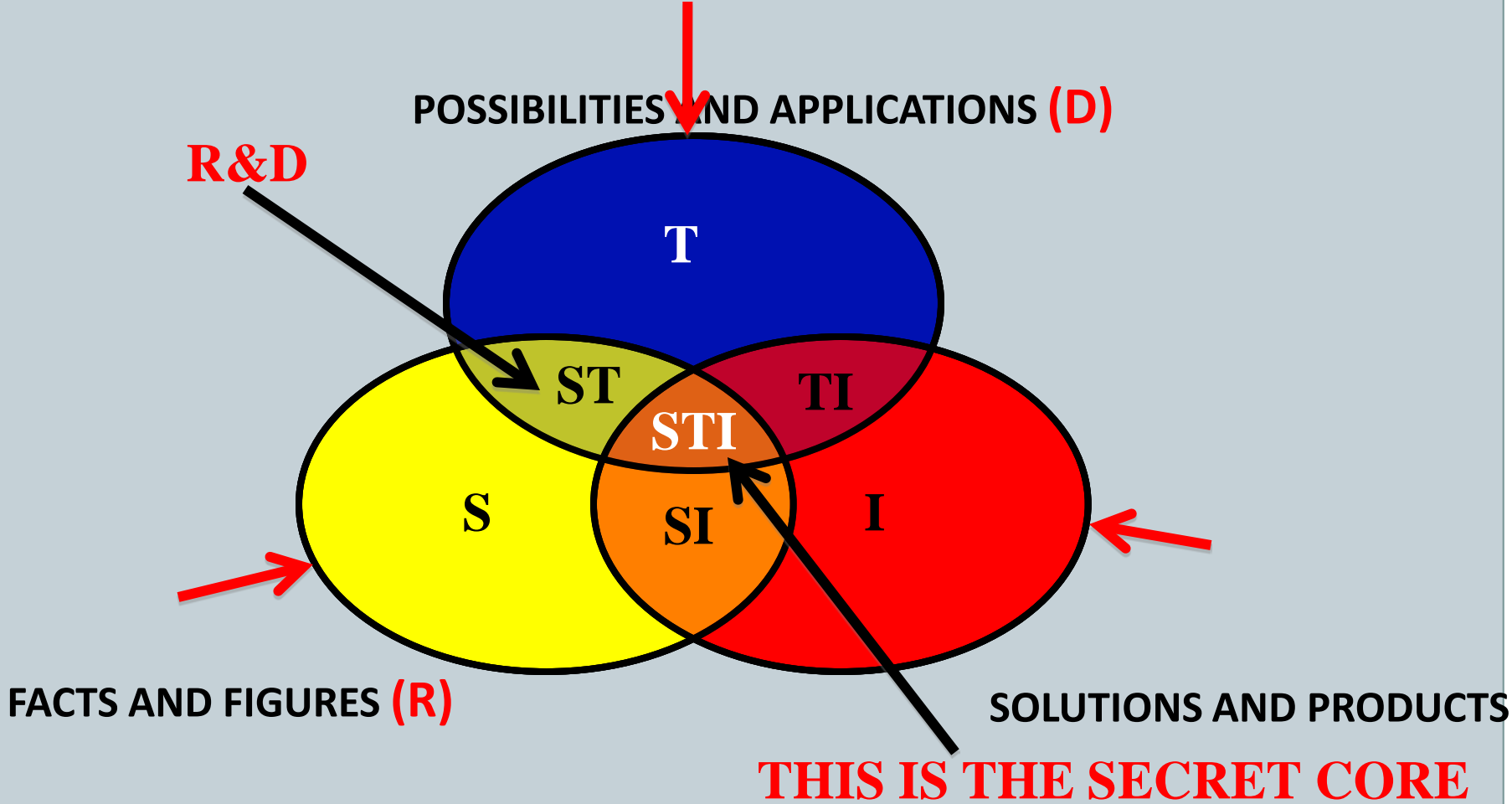
TECHNOLOGY

FACTS AND FIGURES (R)

SOLUTIONS AND PRODUCTS

SCIENCE

INNOVATION

IDEAL STI ENVIRONMENT

World's Top Economies

		GDP	Population	GDP per capita
World		$61 Trillion	6.5 Billion	$9,200 WAG
US		$12 Trillion	300 Million	$41,600
China		$8.9 Trillion	1.3 Billion	$6,800
Japan		$4 Trillion	127 Million	$31,600
India		$3.7 Trillion	1.1 Billion	$3,700
Germany		$2.5 Trillion	82 Million	$30,100
United Kingdom		$1.8 Trillion	61 Million	$30,100
France		$1.8 Trillion	61 Million	$29,600
Italy		$1.7 Trillion	58 Million	$28,700
Russia		$1.6 Trillion	143 Million	$11,000
Brazil		$1.5 Trillion	188 Million	$8,300

		GDP	Population	GDP per capita
Canada		$1.1 Trillion	33 Million	$33,900
South Korea		$1.1 Trillion	49 Million	$22,600
Mexico		$1.0 Trillion	108 Million	$10,000
Spain		$1.0 Trillion	40 Million	$25,600
Indonesia		$870 Billion	245 Million	$3,600
Australia		$636 Billion	20 Million	$31,600
Taiwan		$630 Billion	23 Million	$27,500
Turkey		$585 Billion	70 Million	$8400
Iran		$570 Billion	69 Million	$8,400
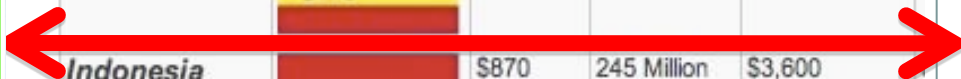
NEW FARMS?

LETTUCE

FARMING INPUTS

SMALL

MEDIUM AND LARGE

4.

REGULATION

NOTAP

- Regulates inflow of Foreign Technology into Nigeria

- Supports development of Indigenous Technology

- Supports Software Vendorship

- Promotes IP culture

- Establishes IPTTO in Tertiary institutions

- Conducts capacity building workshops

- New initiatives ;NITTF, Technology story board etc

5.

INTERNATIONAL ORGANIATIONS LINKAGES

WIPO

World Intellectual Property Organization (WIPO) has been at the forefront of aiding Innovation in Nigeria through :

- Establishment of Patent Information and Dissemination Centre at NOTAP
- Intellectual Property and Technology Transfer Offices in Tertiary Institutions
- Technology Information Support Centre (TISC) at TPD Registry
- Capacity Building (Short Courses, Training, Workshops etc)

IPTTO/TISC

Both IPTTO and TISC support Inventors/Inventions through:-

- Human Capacity Development

- Protection of Intellectual Property

- Transfer of Technology

- Dissemination of up to date information

- Guide conduct of R&D activities

FINAL NOTES

CHALLENGES OF INVENTORS

SOCIO-CULTURAL ENVIRONMENT

* **Reciprocity**-helping out family members
* **Low collectivist characteristics**
* **Distrust in the system** –economic, legal, institutions
* **Risk aversion- employees** - over caution, protect the superior
* **Risk aversion– entrepreneurs- lack of financial backup**
* **Human capital base – brain drain**
* **Education system- based on other contexts**
* **Lack of critical mass of students in areas of science and technology**

Institutions and Policies

- **Lack of Stability-** of macroeconomic political and juridical framework
- **Lack of Comprehensive Policies** - for technology and for enhancing skills and knowledge
- **Lack of incentives schemes**
- **Institutions accountability-corruption**
- **Low R&D funding –(**Developing innovative solutions and adapting external innovations to local conditions **)**
- **Weak networks between universities**
- **Weak networks between universities and R&D institutions**
- **Low Research funds-** culture secrecy and distrust

The business sector

- **Lack of innovativeness**
- **Low productivity**
- **International competition**
- **Outdated business models**
- **Lack of funding**
- **Weak human capital base**
  - Entrepreneurs often lack formal training in bookkeeping and may not have the experience or the knowhow to secure a bank loan
  - Entrepreneurs often lack any formal training in customer service, business plan writing, or in meeting quality standards

FINAL NOTES

CONCLUSION/SUGGESTIONS

POSSIBLE SOLUTIONS

- Strengthening change agents- universities, R&D institutions and local private sector (business plan competition)
- Strengthening innovation system
- Entrpreneurship education
- Introducing quality standards
- Setting up centers for innovation
- Tendering for partners
- Setting up exposure platforms- producers and customers
- Targeting return immigrants
- Utilising Global value chain- , standards, knowledge transfer horizontal organization Allocation of risks
- Utilising gobal networks
- Building local capabilities that can absorb adapt and diffuse knowledge
- Create New "Entrepreneur-Friendly" Institutions
- Promote Proper Governance
-

THANK YOU

I WELCOME COMMENTS AND QUESTIONS

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