

# *Challenges and opportunity for STI agenda for Africa 2030: the role of high education institutions*

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Entrance to UNN



The Lion triangle



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# ***INTRODUCTION***

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***? Science: organized study of the universe and its environment through core subjects***

***It is the basis of technology and innovation***

***? Technology: is the application of scientific knowledge for practical purposes***

***? Innovation: implies change, revolution, alteration, breakthrough, new ideas, transformation etc***

***Role of high education institutions (HEI) is very crucial because, it is basis for STI that leads to development of a nation. Being famous in STI is a true measure of greatness, achievement and self reliance of a nation.***

***New set of values and new frame of minds are required to face challenges confronting STI in Africa***

***? Do we do or where do we get these?***

***All from HEI***

***Challenges and opportunities will be discussed***

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## ***CHALLENGES FACING STI IN AFRICA***

### ***Major Challenges***

➤ ***Poor infrastructure***

➤ ***Culture***

➤ ***Innovation***

➤ ***Lack of fundamental basic research***

➤ ***Poor Science Policy***

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## *Other Challenges*

- Lack of transparency and discipline displayed by some researchers
- Laxity and non-dedication of researchers to their work
- Failure of government to fully implement policies made by them, in development of STI.
- Non-encouragement of dedicated and committed researchers by some governments in Africa; this results in brain drain.
- Lack of fund and facilities needed for innovative research work?
- Non-conducive atmosphere such as lack of power, dilapidated infrastructure etc which result to low productivity.

- No encouragement/financing of fundamental research, as there is no definite evidence for their immediate benefit and applications.
- Africans in particular concentrate only on the application and consumption of existing technologies for immediate benefit. This is not the meaning of research and technological development.
- General societal misconception of S&T today. Belief by people that they will suffer the indirect negative effects of S&T innovations.
- Lack of non collaborative research work both at national and international levels ; we prefer to work in isolation.

## ***Dilapidated Structure (Poor Infrastructure)***





# ***CULTURE***

- Culture has a very big significance in local, regional and global sustainable development
- It has to do with human appreciation of each other and natural resource around us
- Role and significance of culture are not considered in African schools
- Culture has been neglected in the past but not now there is increase in ecological, economic and social challenges
- Culture helps to make development much more relevant to the needs of the people

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***Innovation***

***Survival of mankind in the face of these daunting weather is hinged on the ability to **innovate*****

***Innovation is very important in challenges facing development. Different innovations play different roles in development process.***

***Innovation***

***Man, since his creature, has overcome various challenges of nature and dominated his environment because of the ability to innovate***



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For example; local innovations are required for attaining local needs (tropical diseases)

Innovation drives economic growth and addresses socio-economic challenges, such as health and poverty.



Our special and precious planet

A Venn diagram illustrating the three pillars of sustainability: Social, Environment, and Economic. The diagram consists of three overlapping circles. The top circle is blue and labeled 'Social'. The bottom-left circle is green and labeled 'Environment'. The bottom-right circle is orange and labeled 'Economic'. The intersection of the Social and Environment circles is labeled 'Bearable'. The intersection of the Social and Economic circles is labeled 'Equitable'. The intersection of the Environment and Economic circles is labeled 'Viable'. The central intersection of all three circles is labeled 'Sustainable'.

**Social**

**Bearable**

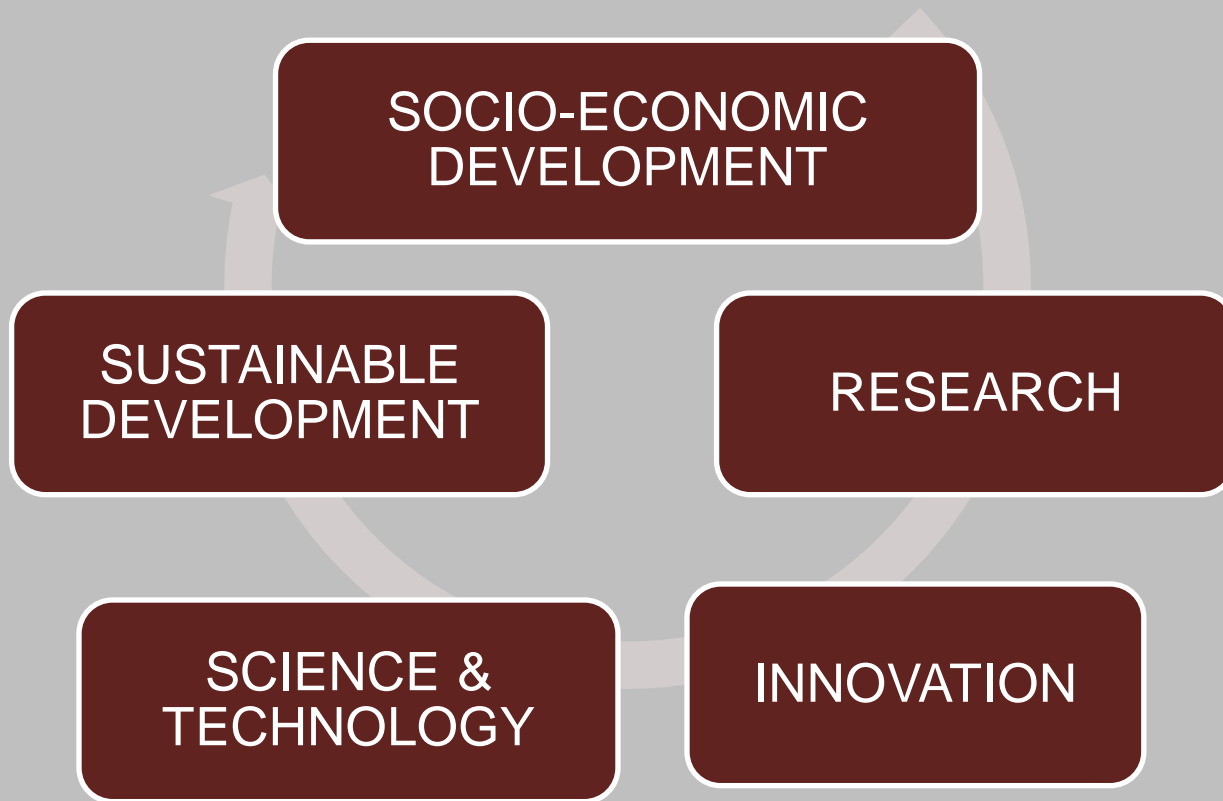
**Equitable**

**Sustainable**

**Environment**

**Viable**

**Economic**



## *Basic research in Science and development*

- Is the ability to unfold people's imagination, intensive effort in research
- To assert authority and self-reliance in carrying out research activities
- Most outstanding technology innovations are based on research into fundamental principles
- Requires, motivation, determination, perseverance, patience among others
- Hence collaborative research work, both national and international should be encouraged



# ***DURING Collaborative Research in Spain***

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Inter collaborative Research meeting among scientists from different Universities in Nigeria.



# *Science Policy*

- ✓ Government of African countries to put in place a mechanism for coordinating STI, R&D efforts
- ✓ Universities & Higher Institutions will enhance this
- ✓ Each country in Africa to revise their science policy
- ✓ Emphasis on need for coherent, systematic & comprehensive approach to determining technological program and its implementation
- ✓ Considering; domestic production in agric, rural dev, energy & environment, health, food security etc

# OPPORTUNITIES

- ✓ Careful exploration of our local environment to source for our local available resources,
- ✓ Such as herbs, minerals, oil, peculiar climate, weather, food etc. is very important
- ✓ opportunity to possibly discover our hidden treasures that will be beneficiary to the society.
- ✓ Encourage self reliance; self employment and non-employment issue would have been addressed.
- ✓ Innovation in S&T would open up avenues for manufacturing our tools, particularly in agriculture for food production.

✓ Again, careers from S&T ranges from communication, music, sports and games, education medicine, energy, space, environment and climate to finance.

✓ Innovation applied to S&T allows for building a world connected by Millions of miles of optical fibers and African's case will not be different.

✓ African should desist from the tendency of consuming scientific products and other products from Western countries, without any effort to contribute in production.

✓ To be part of shaping communication technology of tomorrow, Africans have to be in touch with science.

# ***STRATEGIES FOR IMPROVING STI IN AFRICA***

- Scientists in African countries should be encouraged to engage in international and National collaboration, particularly with more advanced countries.
- Most developing countries should participate in the development and innovations in science and technology.
- They should be encouraged to use the results and products emanating from R&D in science and technology.
- Applications emerging from technology and innovations should be made cheap enough and affordable to all.

- Young ones should be encouraged to develop interest in S&T when still young,

Hence they will develop interest in choosing career in science and technology.

- Our science and technology curricula should be re-visited to reflect societal needs.

- Role and significance of culture should be considered in drawing curricula in S&T both in secondary and tertiary institutions.

- Innovation has a very vital role in our development, it drives economic growth and addresses socio-economic challenges hence, should be highly and properly considered in our curricula.

# ***ROLE OF UNIVERSITIES AND HIGHER INSTITUTIONS IN ACHIEVING STI AGENDA FOR AFRICA***

➤ It is expected that high institutions offers quality education, which is holistic and necessary tools for education for SD, that Africa needs.

This involves the social, economic and environmental context

➤ There exist inter-linkages between these factors that quicken SD and courses offered in HEIs

➤ Better scientific future for Africa can be achieved through;

➤ Efficient educational strategies based on; innovation & basic Res in Sc

cultural practices which incorporate networking and adequate funding



➤ HEIs to re-visit their curricula, for present one do not address long term needs for SD in Africa

➤ HEIs should adopt to physical changing , historical and social conditions in Africa

➤ This will help to restore the increasing damage to the environment

➤ Training program, workshops, capacity building , collaborative research work should be encouraged

➤ HEIs should initiate and direct science, technology innovation and culture oriented res. work that will link to environmental issues as; CC, degradation, drought, pollution, natural disaster etc.

# Science Training Workshop in Abuja, Nigeria, 2013



➤ HEIs to establish data base in strategic places of res in their respective countries

➤ HEIs should committee the government in taking positive decision on this, for rapid economic development

➤ HEIs to address team work; inter/intra disciplinary research work

➤ HEIs to encourage openness, unity inter University collaboration

➤ Very crucial for HEIs to identify and take care of social, political and economic relationship in a nation, which set back the success of SD

# Science Training Workshop in South Africa Cape Town, 2011



# **WAY FORWARD**

- ***The role of Universities and other higher institution in STI in Africa will be very effective and lead to a tremendous success if only;***
- ***HEIs implement most of the strategies suggested in this paper***
- ***In HEIs, STI training must be reinforced to be more of team work than individual efforts and collaborative research work***
- ***STI , to appeal to our younger ones by using local available resources that meet societal needs***
- ***Science policy makers must involve high institutions academic administrators in drawing S&T policy.***

- **Fundamental research should be encouraged in our Universities and other research institutes**

- **Though it is a long term investment, is major basis for technological development**

- *High institutions should commit stakeholders (industries etc) to be involved in basic science research, so that the results will be of benefit to them.*

- *S&T development in Africa should be properly funded by African Governments, if we really want to join the race.*

# *CONCLUSION*

- African Universities/Higher Institutions must face challenges of making STI training work for US
- Success of Universities on this, will then make SD in Africa a reality and not just a concept.
- We need to be open and have spirit of team work, no antagonistic attitude, no disunity, tribalism etc
- Time we fight to see all our suggestions and ideas implemented, we have lofty ideas but implementation has always eluded us.

➤The world & Africans are now recognizing the importance of HE, hence,

➤Continental summit held in Dakar, Senegal, 10 – 12 March, 2015, with Theme: 'Revitalizing Higher education for Africa's future'.

➤It was recognized and emphasized that HE is critical to promoting faster technological growth and natural resources

➤They also pointed out that this in turn, improves countries ability to maximize economic output and build human capabilities.

➤Finally, many stakeholders are advocating for revitalization of HE, we need to work for peace, unity, intra and inter collaborative res. Work and share our productivity with love



*GREAT AFRICANS & colleagues!*

*WHAT DO WE NEED?*

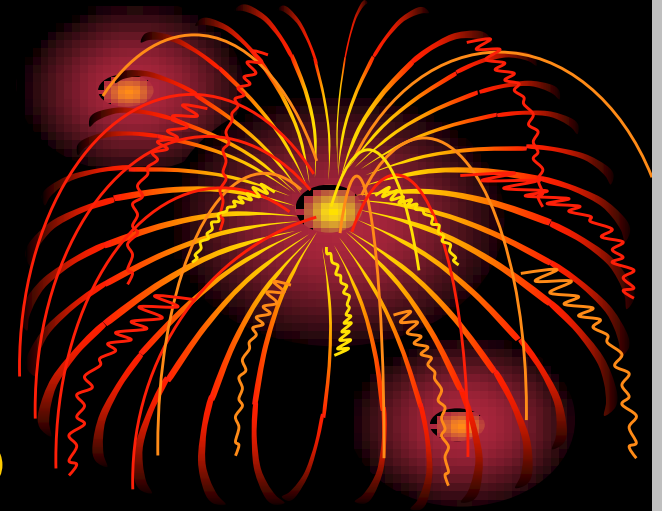
*WE NEED ACTION! TO RE-THINK*

*WE NEED IMPLEMENTATION !*

*THEN, WE ARE THERE !*



**Thanks**



**GOD BLESS YOU**