



# Ethiopia's STI Policy, Strategy and Updates

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# National Innovation System of Ethiopia

TOP LEADERSHIP

The Prime Minister  
S&T Council

Execution

MOST

S&T Related  
Ministries

Innovation  
Support &  
Research  
System

Financial  
Support

Universities  
S&T  
University

National  
IP&STI  
System

GRI

LI

National  
Quality  
System

Tech  
Parks, Incu  
bation  
Centre

TVET

SMME

The Base

Quality General Education


























People and Culture



# National Development Priorities and Their Alignment with SDGs

	National Development Priority Areas in GTP II	Sustainable Development Goals				
1	The <i>Agriculture Sector</i> remains the Source of the rapid Economic growth.	15 አጠቃላይ ግብርና አጠቃላይ ግብርና	13 የአየር ጥቃት አጠቃላይ ግብርና	2 ጥቅም ጥቅም	6 ጠቅላይ ግብርና ጠቅላይ ግብርና	14 የውሃ ስብጥር አጠቃላይ ግብርና
2	Expediting transformation of the economic infrastructure by enabling the <i>manufacturing industry</i> grow by leaps and bounds.	9 ኢንዱስትሪና ልማት ግብርና	4 ጥራት ያለ ትምህርት ለሁሉም	1 ጥቅም ጥቅም	12 አጠቃላይ ግብርና ጥቅም ለሁሉም	8 ምድር ስፋት የኢኮኖሚ ልማት
3	Prioritizing <i>Productivity, Quality and Competitiveness</i> by increasing Efficiency in order to reach the Full Production Capacity of the Economy	4 ጥራት ያለ ትምህርት ለሁሉም	12 አጠቃላይ ግብርና ጥቅም ለሁሉም	7 አየር ጥቃት አጠቃላይ ግብርና	8 ምድር ስፋት የኢኮኖሚ ልማት	9 ኢንዱስትሪና ልማት ግብርና
4	Correcting the Imbalance between the Gross <i>Demand</i> Level and the Gross <i>Supply</i> Level	8 ምድር ስፋት የኢኮኖሚ ልማት	9 ኢንዱስትሪና ልማት ግብርና	10 አካል ልዩነት ማለት	12 አጠቃላይ ግብርና ጥቅም ለሁሉም	13 የአየር ጥቃት አጠቃላይ ግብርና
5	Building/Reinforcing capacities in the <i>Construction Industry Development and Project Management</i>	11 አጠቃላይ ግብርና ግብርና	9 ኢንዱስትሪና ልማት ግብርና	8 ምድር ስፋት የኢኮኖሚ ልማት	4 ጥራት ያለ ትምህርት ለሁሉም	12 አጠቃላይ ግብርና ጥቅም ለሁሉም

# National Development Priorities and Their Alignment with SDGs

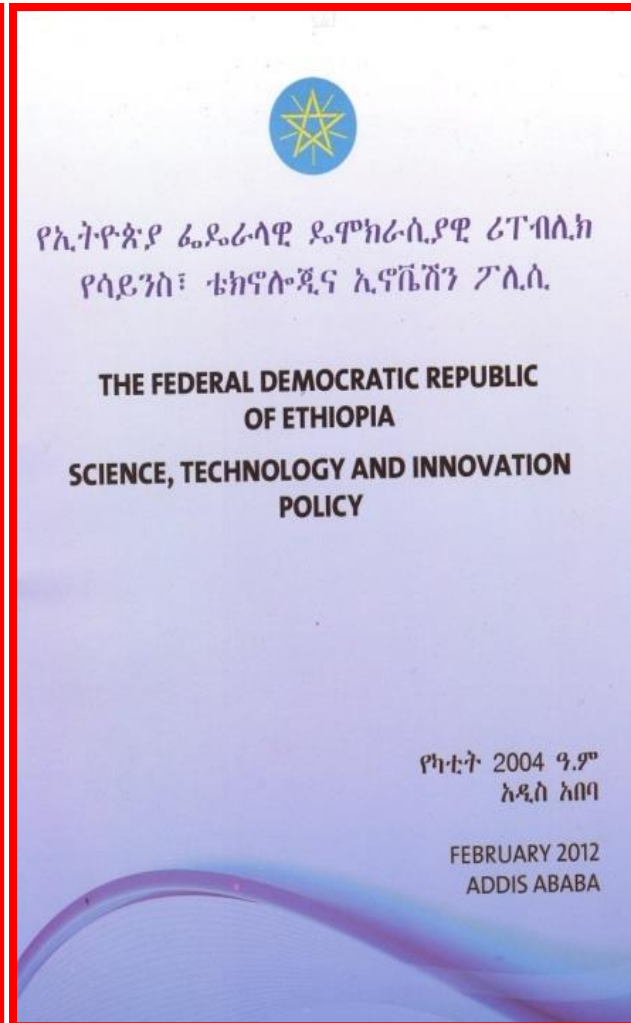
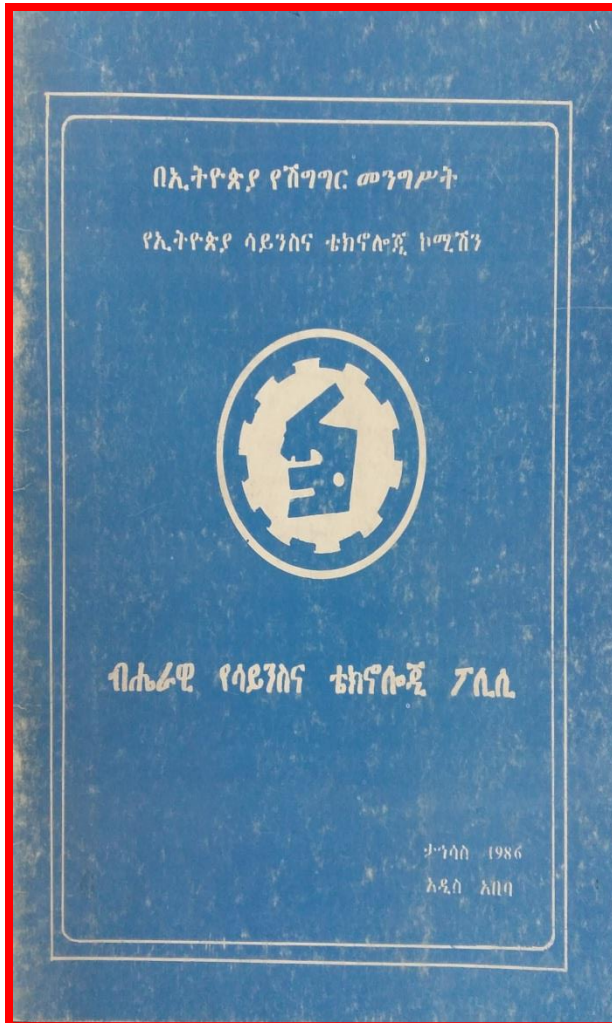
	National Development Priority Areas in GTP II	Sustainable Development Goals
6	Adopting <b>Urban Administration and Management</b> comparable with the Rapid Urbanization, Industrialization and Structural Changes	    
7	According due precedence to transform <b>Domestic Investors</b>	    
8	Supporting the <b>Human Resources Development Efforts</b> with Technology	    
9	Building <b>Climate Resilient Green Economy</b>	    
10	Upholding <b>Developmental Perspectives</b> by eliminating Rent-Seeking Attitudes	    

# STI Priorities

- Agriculture
- Health
- ICT
- Energy
- **Manufacturing**
- Water/Irrigation
- Mining

- **Agro-Processing**
- **Leather/Textile**
- **Foods/Beverages**
- **Metals**
- *Pharmaceuticals*
- **Chemicals**
- **Construction**
- **Inputs**

# 1. The FDRE STI Policy



- The STIP of the FDRE *was issued in 2012* replacing the National Science and Technology Policy that was adopted in 1993.
- This policy primarily *comprises general directions and major implementation strategies* identified upon series of consultative discussions held with stakeholders.

## 2. Vision, mission and objectives of the STI policy



# 2.1 Vision

- The vision of the STI Policy is based on the national vision: “to see Ethiopia become a country where a democratic rule, good governance and social justice reigns upon the involvement and free-will of its peoples, and once extricating itself from poverty becomes a middle-income economy as of 2020-2023.”
- Accordingly, the *STI vision of the country is:*  
“To see Ethiopia entrench the capabilities which enable rapid learning, adaptation and utilization of effective foreign technologies by the year 2022/23”



## 2.2. Mission

To *create a technology transfer framework* that enables the building of national *capabilities in technological learning, adaptation and utilization* through *searching, selecting and importing* effective foreign technologies in manufacturing and service providing enterprises.



## 2.3. Major objectives of the policy are:

1. Establish and implement a *coordinated and integrated general governance framework* for building STI capacity;
2. Establish and implement an appropriate national *Technology Capability Accumulation and Transfer* (TeCAT) system;
3. *Promote research that is geared towards technology learning and adaptation*;
4. Develop, promote and commercialize useful *indigenous knowledge and technologies*;
5. Define the national science and technology *landscape* and strengthen *linkages among the different actors* in the national innovation system;
6. Ensure implementation of STI activities in *coordination* with other economic and social *development programs and plans*;
7. Create *conducive environment* to strengthen the role of the private sector in technology transfer activities sustainably.

# 3. Policy directions and strategies



# 3. Policy directions and strategies

- *Based on the national STI problem analysis and assessment of the characteristics of countries selected as benchmarks for their best practices, **eleven critical policy issues** are identified.*
  1. *Technology Transfer,*
  2. *Human resource development,*
  3. *Manufacturing and service providing enterprises,*
  4. *Research,*
  5. *Financing and incentive schemes*
  6. *National quality infrastructure development,*
  7. *Universities, research institutes, TVET institutions and industries linkage,*
  8. *Intellectual property system,*
  9. *Science and technology information,*
  10. *Environmental development and protection, and*
  11. *International cooperation.*

# 3.1. Technology transfer

- The issue of *technology transfer* should primarily focus on devising a system of learning, adapting and utilizing as well as disposing of imported technologies in order to meet national demand.
- The national capability to learn, adapt and utilize foreign technology is still at *a very low stage*.
- Hence, *appropriate support will be given to create capabilities which enable to search, select, adapt, and utilize effective foreign technologies* that support development needs.

# Technology Transfer Strategies

1. Import effective and appropriate foreign technologies and create capabilities of adaptation and utilization of these technologies in manufacturing and service providing enterprises;
2. A system to search, select, adapt, utilize as well as dispose imported technologies should be established and implemented;
3. Establish and implement a *system to use foreign direct investment (FDI)* and other ways of supporting technology transfer;
4. Strengthen technology transfer among and between various manufacturing and service providing enterprises;
5. Strengthen wide use of intellectual propriety, standards and other related information in support of technology transfer.

# Examples

- **Ministry of Foreign Affairs:**
  - National Business and Economic Diplomacy Forum
  - Infrastructure and Engineering Technology Transfer Committee – *solutions to challenges of technology transfer issues*
- **Ministry of Innovation and Technology:**
  - Technology Roadmaps development – identifying required technologies in 24 priority sectors for middle income Ethiopia
- ***Ministry of Science and Higher Education***
  - Linkage forums
  - Sector specific TT activities
  - Universities (50 public and 174 private HEIs)
  - TVET (1547 TVET Colleges)
  - Research Institutes/Centers of Excellence in Universities)

# National STI Road Maps Implementation

- **Tech-Roadmap in 24 Sectors**
- Agriculture (crop & livestock), agro-processing (meat & coffee), sugar, irrigation, cement, mining & petroleum, energy, railway, road construction, building construction, information and electronics, metal, chemical, textile, leather, pharmaceutical, environmental, fertilizer, edible-oil, space, nuclear, and bio & emerging technology roadmap





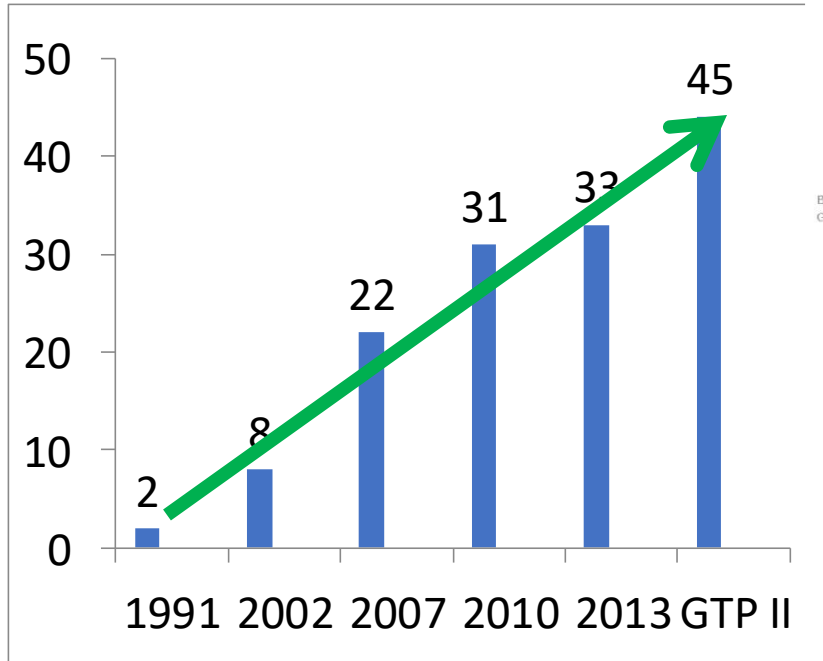
## 3.2. Human resource development

- To search for, select, diffuse, adapt and use technologies from other countries *competent local technicians, engineers and scientists are needed.*
- In Ethiopia the level of qualified manpower capable of transferring foreign technology *is low*, certainly inadequate to facilitate the effective transfer of technology.
- Hence, the *national education and training system will need to place emphasis on producing engineers and natural scientists* in manufacturing and service providing enterprises; qualified in understanding and utilizing appropriate technologies.

# Human resource development Strategies

1. *Develop science and technology institutions* that focus on producing highly qualified technicians, engineers and scientists in line with the demand of the national economy;
2. Focus on modifying the balance of the enrollment numbers of higher education students in favor of the *science and technology human resource development* need of the country and conduct *practical training in cooperation with industry*;
3. Increase the number of *females enrolling* in engineering, science and TVET institutions;
4. Enable the establishment of *workforce* in manufacturing and service providing enterprises with the knowledge and skills necessary to learn, adapt and utilize technology.

# Ethiopian HEIs Landscape



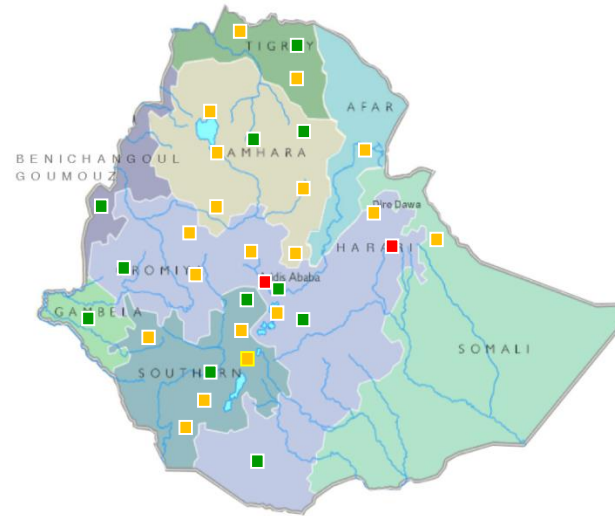
**Private HEIs : N=174**

**4 Universities**

**1 Institute**

**4 University Colleges**

**165 Colleges**



## 2 Universities up to 1991

1. Addis Ababa University
2. Haramaya University

## 21 Universities 1992 - 2009

1. Adama University
2. Aksum University
3. Ambo University
4. Arba-Minch University
5. Bahir Dar University
6. Debre Birhan University
7. Debre Markos University
8. Dilla University
9. Dire Dawa University
10. Gonder University
11. Hawassa University
12. jigjiga University
13. Jimma University
14. Mekelle University
15. Mizan Tepi University
16. Semera University
17. Sodo university
18. Wollega University
19. Wollo University

## 33 Universities 2010 - 2013

1. AASTU
2. Asosa University
3. Bule Hora University
4. MadaWalabu University
5. Metu University
6. Wachamo University
7. Welkite University
8. Debre Tabor University
9. Woldiya University
10. Adigrat University
- 11.. Arsi University
- 12.. Gambella University

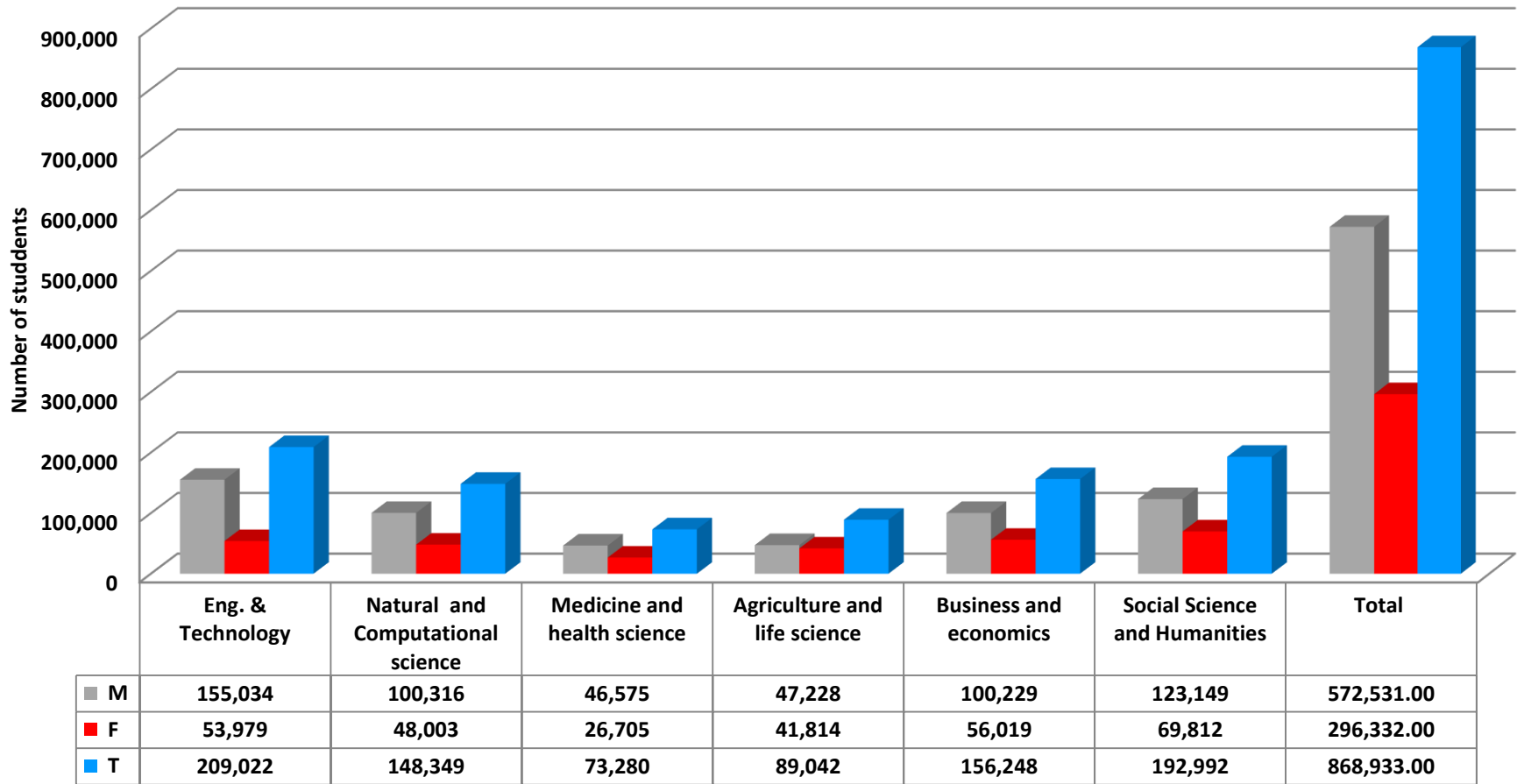
# Examples of studies on HR

## MoST and Ethiopian Academy of Sciences

1. Science and technology human resource demand and supply: published in 2015
2. HR demand and supply in health and agriculture: published 2016

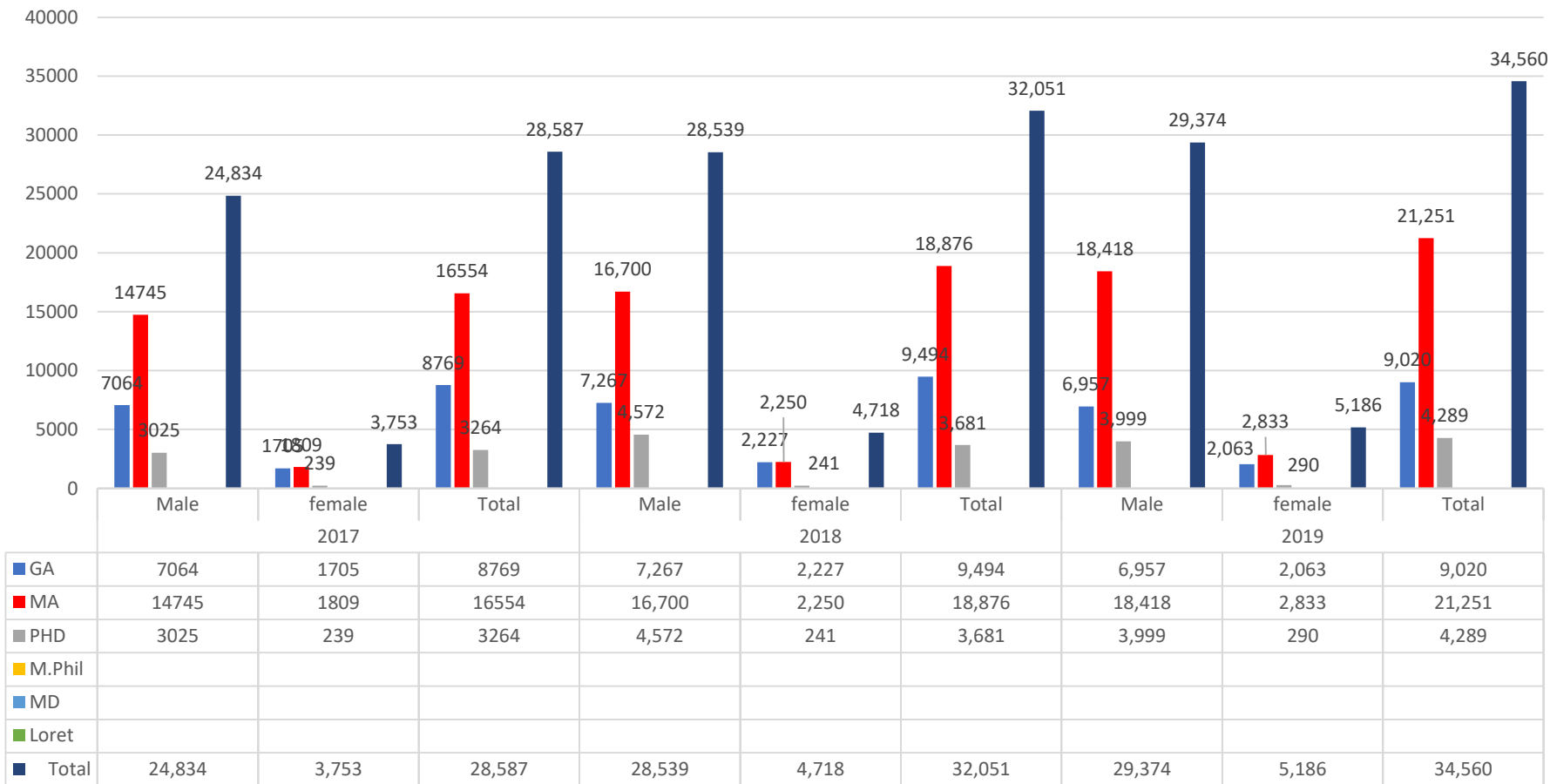
# HE Student gender aggregated Data

## 2019 Undergraduate Student Data in Band



# Higher Education Teachers Data (gender aggregated with academic rank)

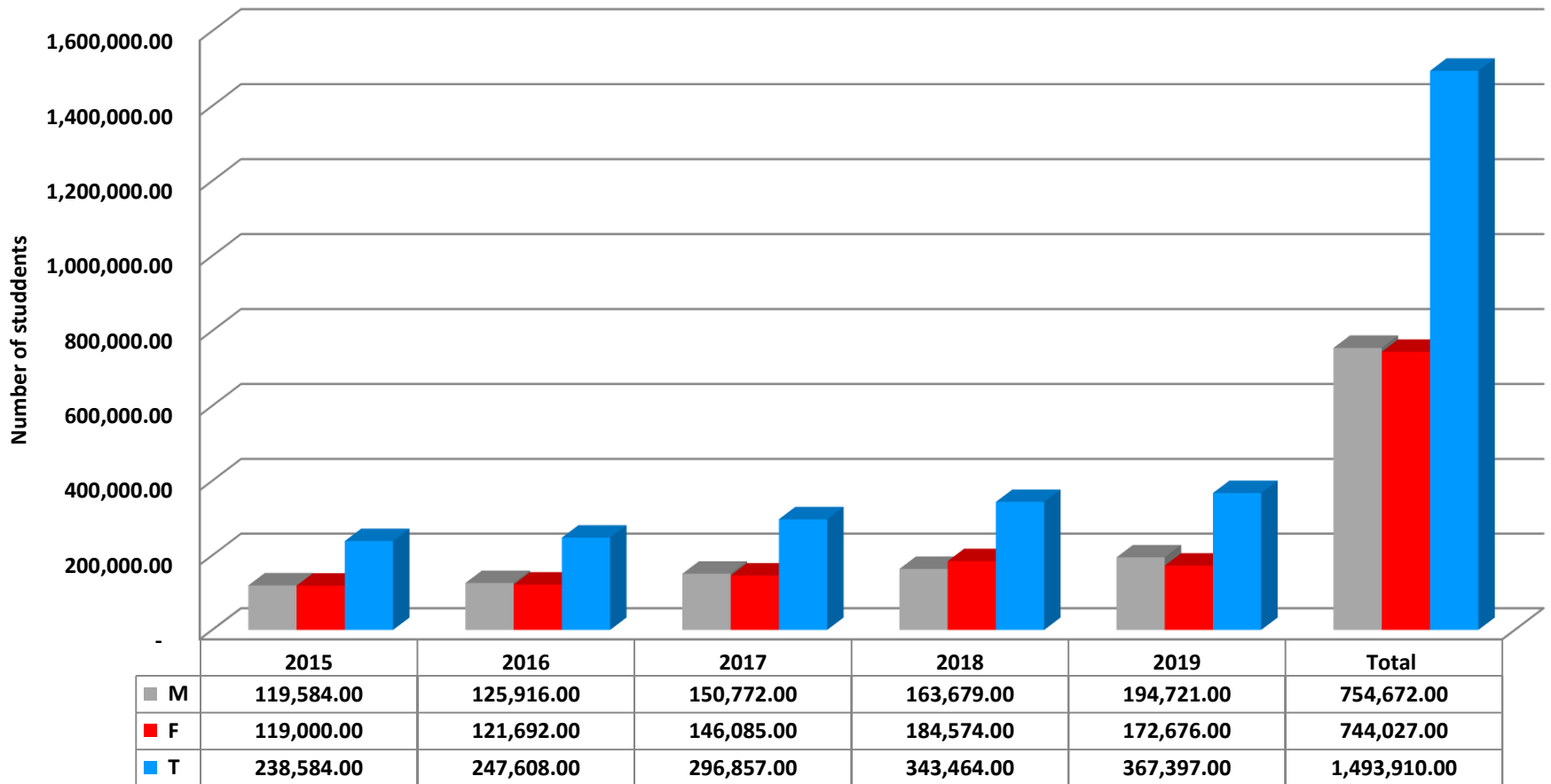
Higher Education Teachers



GA MA PHD M.Phil MD Loret Total

# TVET Trainees Enrollment Trend

From 2015 up to 2019 TVET Trainees Enrolment



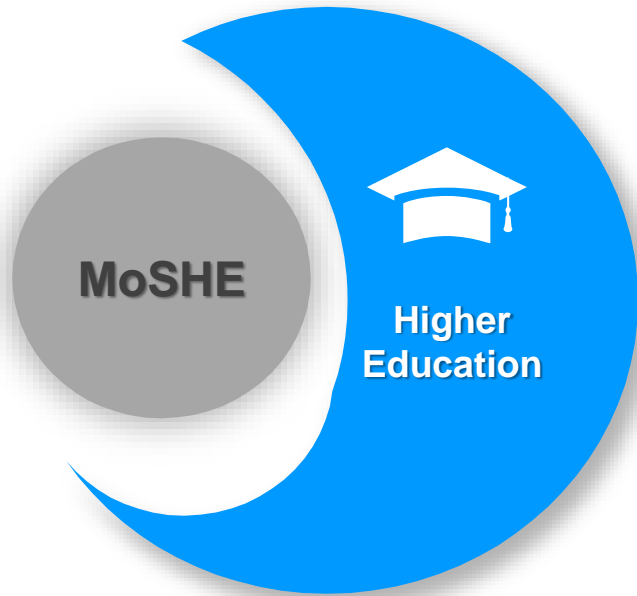
## ***Current unemployment rate among university graduates is extremely high ( 50%)***

- Strengthening career services at selected universities. Career services is new to intervention among Ethiopian universities and capacity development intervention would be relevant
- Strengthening entrepreneurship education and training. Main streaming entrepreneurship in HE curricula and introducing extracurricular entrepreneurship trainings
- Strengthening technology business incubation(TBIS) services and developing science and technology parks (STP).
  - TBIC/STPs have been established at some of the universities but they are at a very infant stage and twining with international universities for capacity development helps
- Higher education leadership development system
  - Developing higher education leaders and managers is critical and especially developing female leaders is a huge challenge and intervention in this topic is vital for overall development of the higher education system

***Employment facilitating interventions are required!!!***



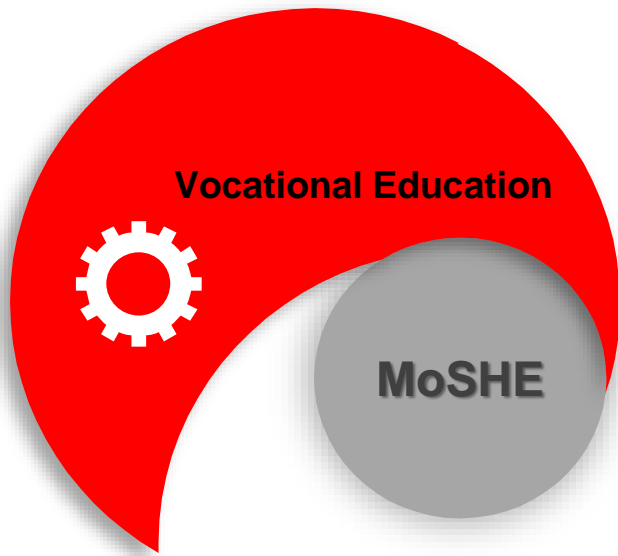
# Ethiopian Education Development Roadmap



## Higher Education

- Access in Higher Education
- Equity in Higher Education
- Unity in Diversity in Higher Education
- Quality in Higher Education
- Relevance of Higher Education
- Efficiency of Higher Education
- Research, Technology Transfer and Community Services
- Financing of Higher Education

# Ethiopian Education Development Roadmap



## Recommended Reform Issues for TVET System

- Policy Reform Issues
- TVET Strategy Reform Issues
- TVET System Governance Reform Issues
- TVET Qualification Framework (TQF)
- Occupational standards and curriculum
- TVET Trainers and Leaders
- TVET Delivery Reform Agenda
- Occupational Competency Assessment
- Building the Image of TVET
- TVET Financing Reform Agenda
- Cross cutting issues

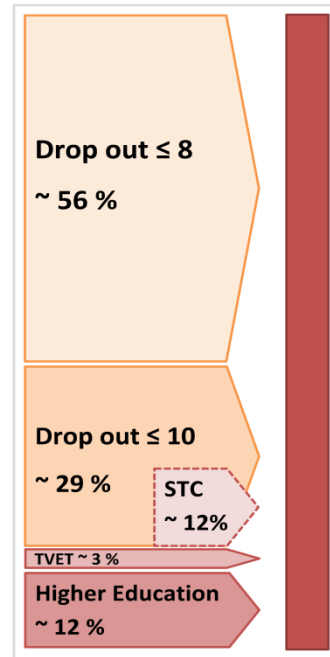
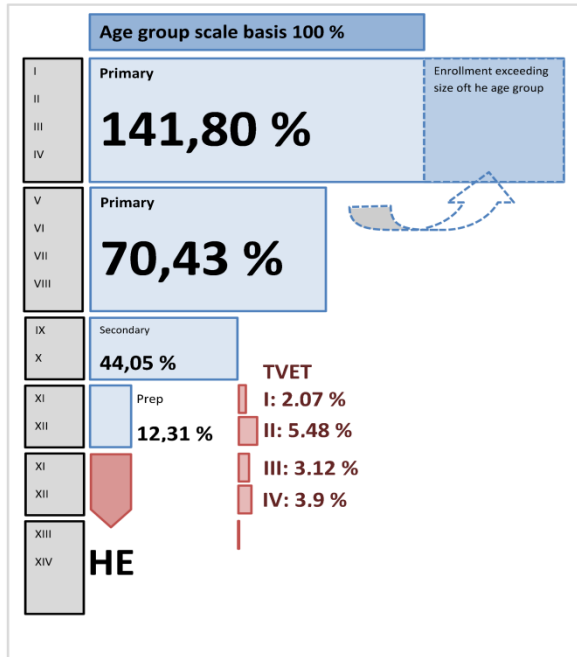
# Employability Challenges

**2,2 million** new **job seekers per year** in Ethiopia for the next 3 decades

However, around **2 million young people** each year enter the world of work **without or with minimal qualifications or skills**

Young people with formal qualifications also often **don't meet the requirements** of employers due to **skill mismatch**. Firms in Ethiopia struggle to recruit candidates with **appropriate hard (technical) and soft skills**.

# Enrollment vs Drop-Out Rates



- 1,1 million school leavers from primary education (grade 1-4)
- 250.000 drop out with grade 8
- 700.000 with a maximum of grade 10
- **Around 2 million un- or under-skilled workforce**

Source: ELMA 2018

# Reform agenda and most important priority areas for MoSHE in the coming years

- **Alignment of TVET and HE programs with the industry:** MoSHE to intensify the cooperation with the private sector; first pilot / model approaches tested by GIZ show that there is also a great willingness on the side of the private sector to support the skill development agenda – e.g. the Graduate Anchoring Program (GAP) in the construction sector – 7 large Ethiopian construction companies act as trainers and they will train more than 100 graduates to improve their skills. This can be scaled up to more companies and other sectors all over the country)
- **Diversification of TVET and HE system** to increase access and provide longer training for a better skilled workforce (focus on access for more young people – strengthen the informal TVET sector for short-term solutions and – at the same time – make like long learning possible by making the education system more permeable to keep young people longer in school and training to elevate their skills level)
- **Foster women in education to ensure equitable access** for women (with the aim to include women in all sectors and also to raise the educational level of women that usually has an effect on reduction of birth rates and demographic change)
- **Adequate Infrastructure**
- **Financing TVET**

# Higher Education System Transformation Agenda



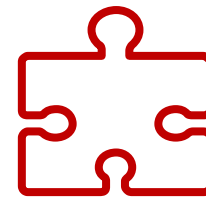
Alignment with the Economy



Accountability



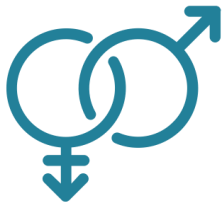
Financing



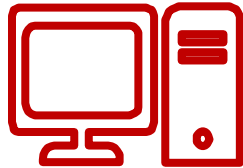
Diversification



Transition into the World of Work



Women in Education



Enabling Infrastructure



Modern Educational Standards



Teacher Training



Research Quality & Relevance

## 3.3. Manufacturing and service providing enterprises

- The role of manufacturing and service providing enterprises in the STI sector ranges from conducting and supporting research and technology transfer activities to contributing to and implementing the policy framework.
- However, such enterprises have *no clear value-adding linkages* between them and their *role in advancing the STI is not well defined* in Ethiopia.
- Hence, assistance will be provided to strengthen micro and small enterprises development to serve as basis for the expansion of medium and large enterprises.
- Beside this, emphasis will be placed on the provision of support to medium and large enterprises in order to allow them to play a vital role in technology transfer.

# Manufacturing and service providing enterprises Strategies

1. **Support** medium and large enterprises to become *focal points for searching, learning, transferring, and adapting foreign technologies;*
2. **Strengthen** *linkages between value chains within and between industries;*
3. **Strengthen** *TVET institutions' contribution in building the capacity of micro and small enterprises.*



## 3.4. Research

- In order for a country to have effective learning, transfer, adaptation and utilization of technology, having an effective *national research system* typically becomes of significant strategic importance.
- In Ethiopia *research is needed* to address the resolution of major social and economical problems; contribute to the achievement of national development objectives; and to meet technology demand.
- However, it is learnt that there is a *gap between the research activities and focuses in higher education and research institutions and the national development need*.
- Hence, the *national research system should be strengthened and orientated to focus on the national technological demands for searching for, learning about, adapting and utilizing effective foreign technologies*.

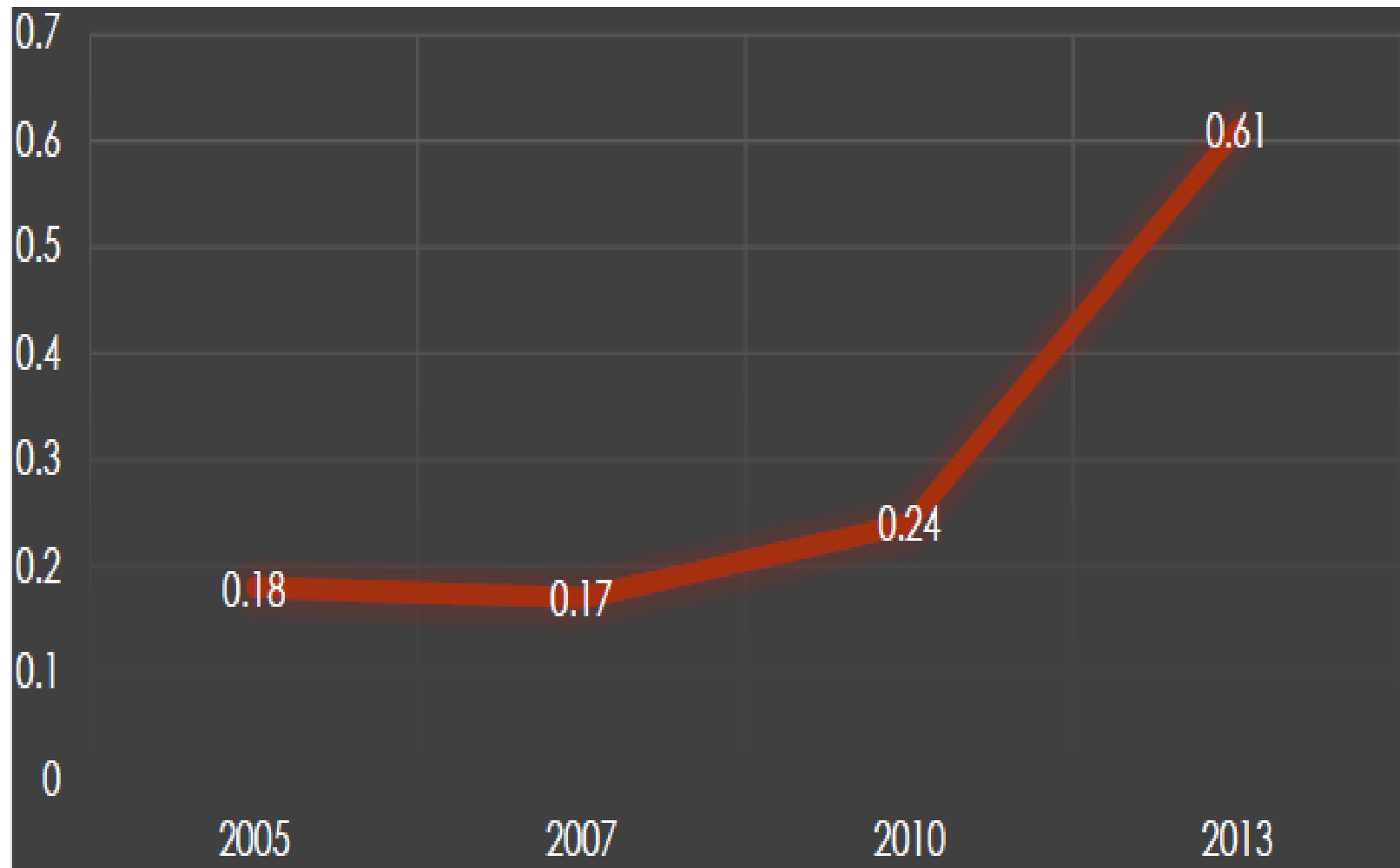
# Research Strategies

1. Support research institutes to **develop their capacity** to search, learning, adapting and utilizing effective foreign technologies;
2. **Ensure** research work in higher education and research institutions is **in line with the technological needs** of national development programs;
3. Support **joint research** activities among universities, research institutes and industries;
4. Support medium and large **industries to establish research centers** on technology adaptation.

# Challenges of research in Ethiopia

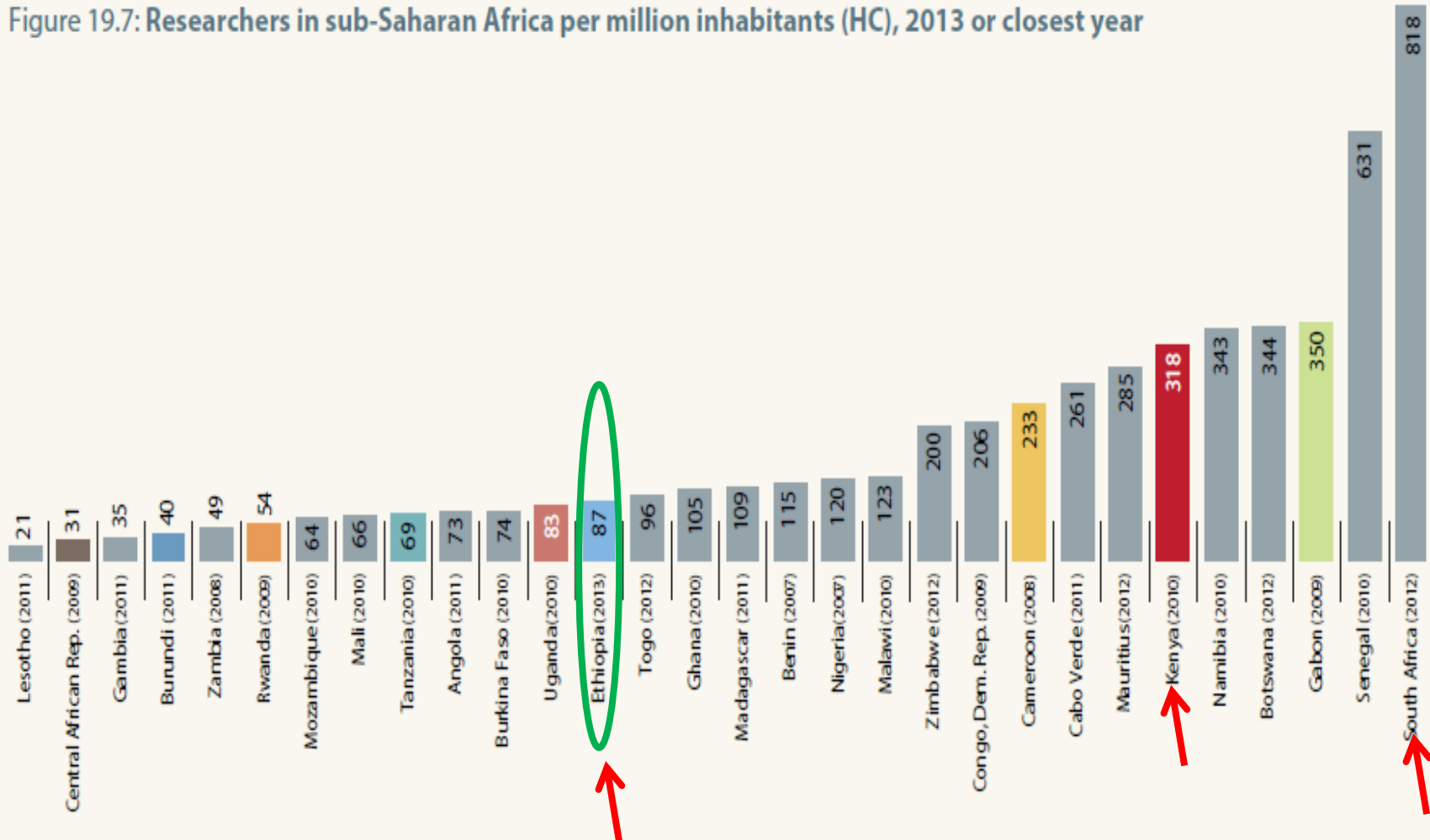
1. Shortage of qualified human power/Lack of research *experience*.
2. Poor *mentoring* of young researchers.
3. Limited capacity for *management* of research projects.
4. Increasing brain drain.
5. Limited/poor *collaboration* within and among researchers/research groups (Lack of effective platform that facilitates interaction and collaboration of different stakeholders: sector ministries, research institutions, universities, NGOs, etc)
6. *Fragmented research endeavors* (project-based, non-thematic, mono-disciplinary and not need based).
7. Problem of *quality and relevance*
8. Lack of adequate *research infrastructure*
9. *Funding scarcity*
10. *Weak dissemination* and use of research evidence for policy

# Expenditure on R&D: Growth in GERD as % of GDP in Ethiopia



# Researchers number per million population is also low in Ethiopia

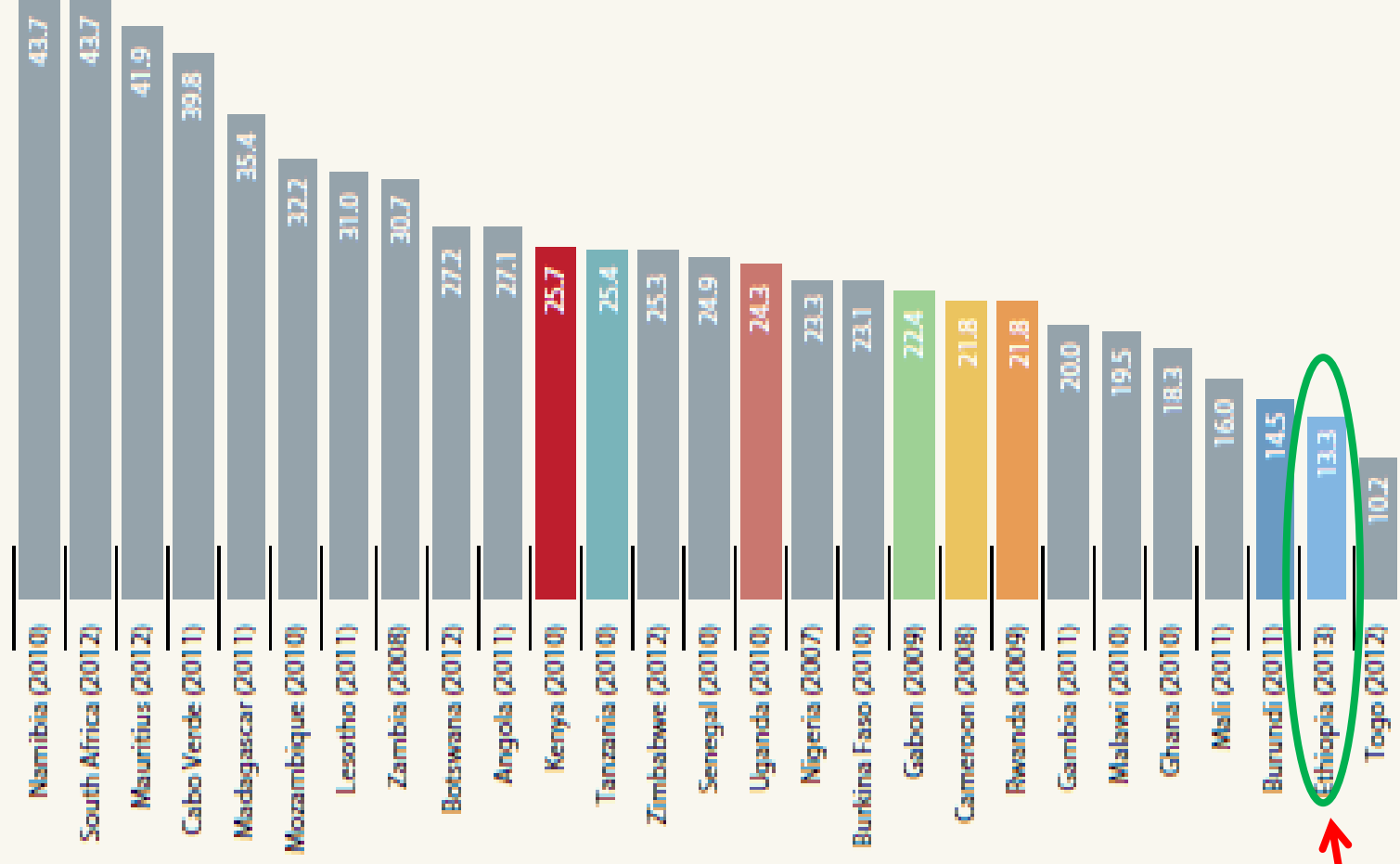
Figure 19.7: Researchers in sub-Saharan Africa per million inhabitants (HC), 2013 or closest year



Source: UNESCO Institute for Statistics, April 2015

# Women Researchers number is low in Ethiopia

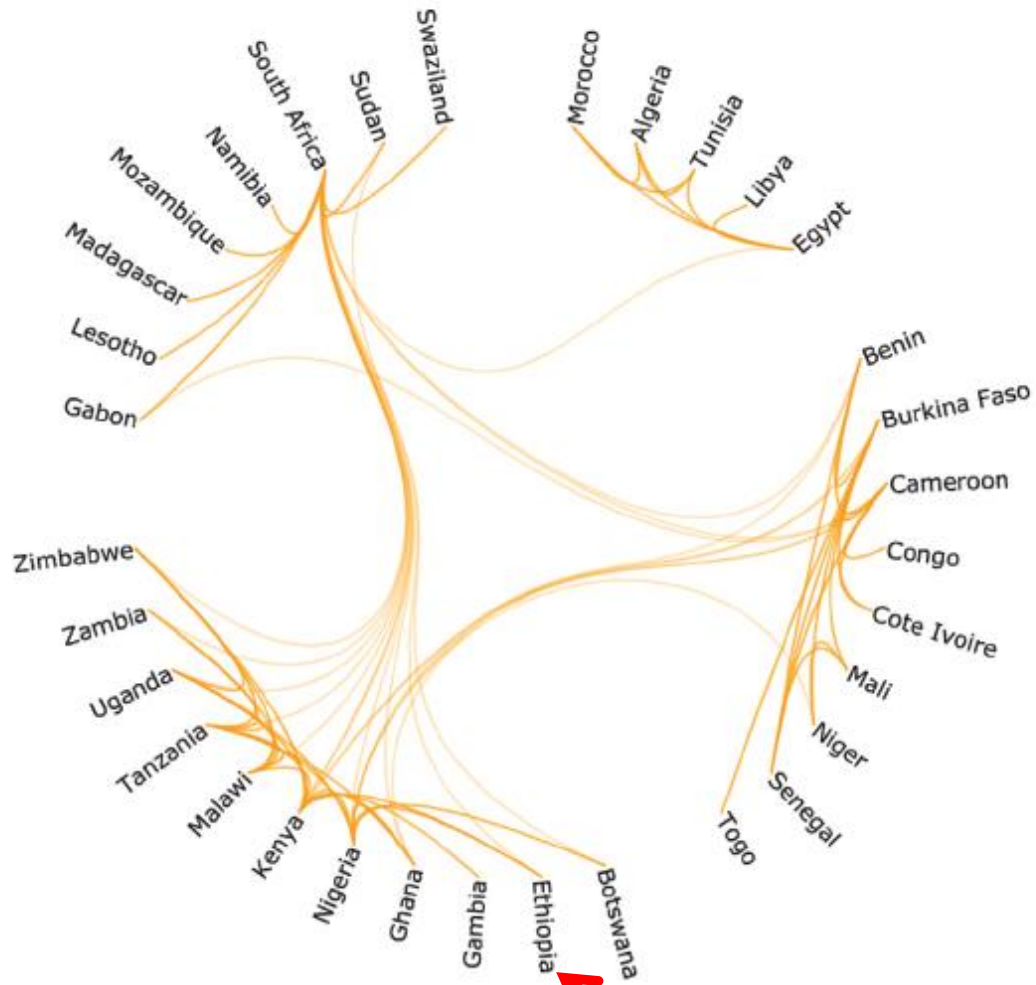
Figure 19.3: Women researchers in sub-Saharan Africa, 2013 or closest year (%)



Note: Recent data are unavailable for some countries.

Source: UNESCO Institute for Statistics, April 2015

# Research in Ethiopia – Networks



Ethiopia is **not** well integrated into major research collaboration network in Africa

Source: Web of Science<sup>SM</sup>; Analysis: Daniel Hook\*

# Research in Ethiopia – Patents

Ethiopia rarely show up in the list of countries receiving patent from USPTO

	2005				2006				2007				2008				2009				Total				
	Utility	Design	Plant	Reissue	Utility	Design	Plant	Reissue	Utility	Design	Plant	Reissue	Utility	Design	Plant	Reissue	Utility	Design	Plant	Reissue	Utility	Design	Plant	Reissue	
<b>Sub-Saharan Africa:</b>																									
Benin									1															1	
Burkina Faso																	1							1	
Cameroon									1								1							2	
Chad													1											1	
Ethiopia									1															1	
Gabon									1															1	
Ghana									1															1	
Kenya	9	1			3				1				4				7						24	1	
Mauritius														1										1	
Namibia									1															1	
Seychelles					2								1											3	
South Africa	87	16	5		109	13	5		82	30	3		91	32	1		93	39	6	1		462	130	20	1
Zimbabwe	1				1				1								4							7	
<b>Arab states in Africa:</b>																									
Algeria					1																			1	
Egypt	7				4				12				2				3							28	
Morocco	1				3				1				4				1	2						10	2
Tunisia	1				2								2											5	

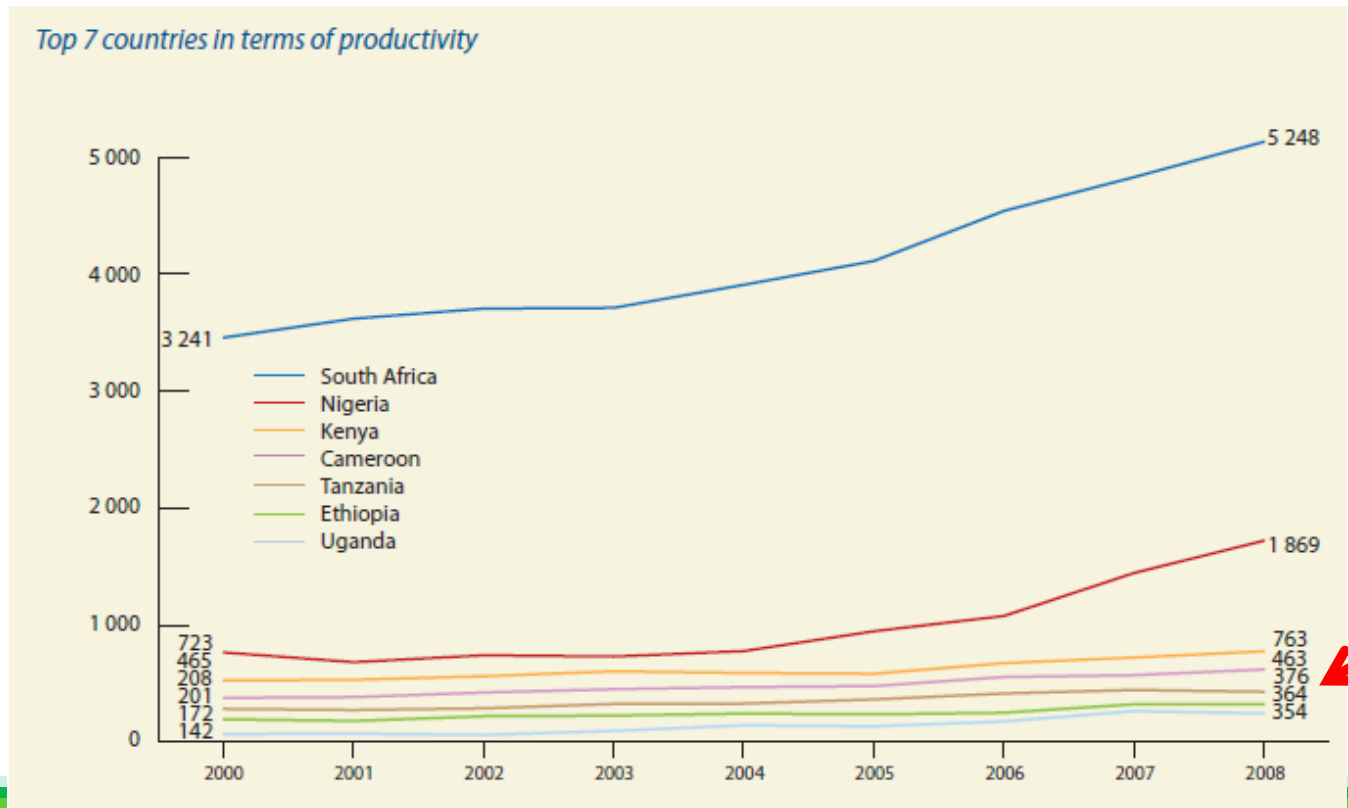
Note: The country of origin is determined by the residence of the first-named inventor. Utility patents are for new inventions.

Source: data from United States Patents and Trademark Office

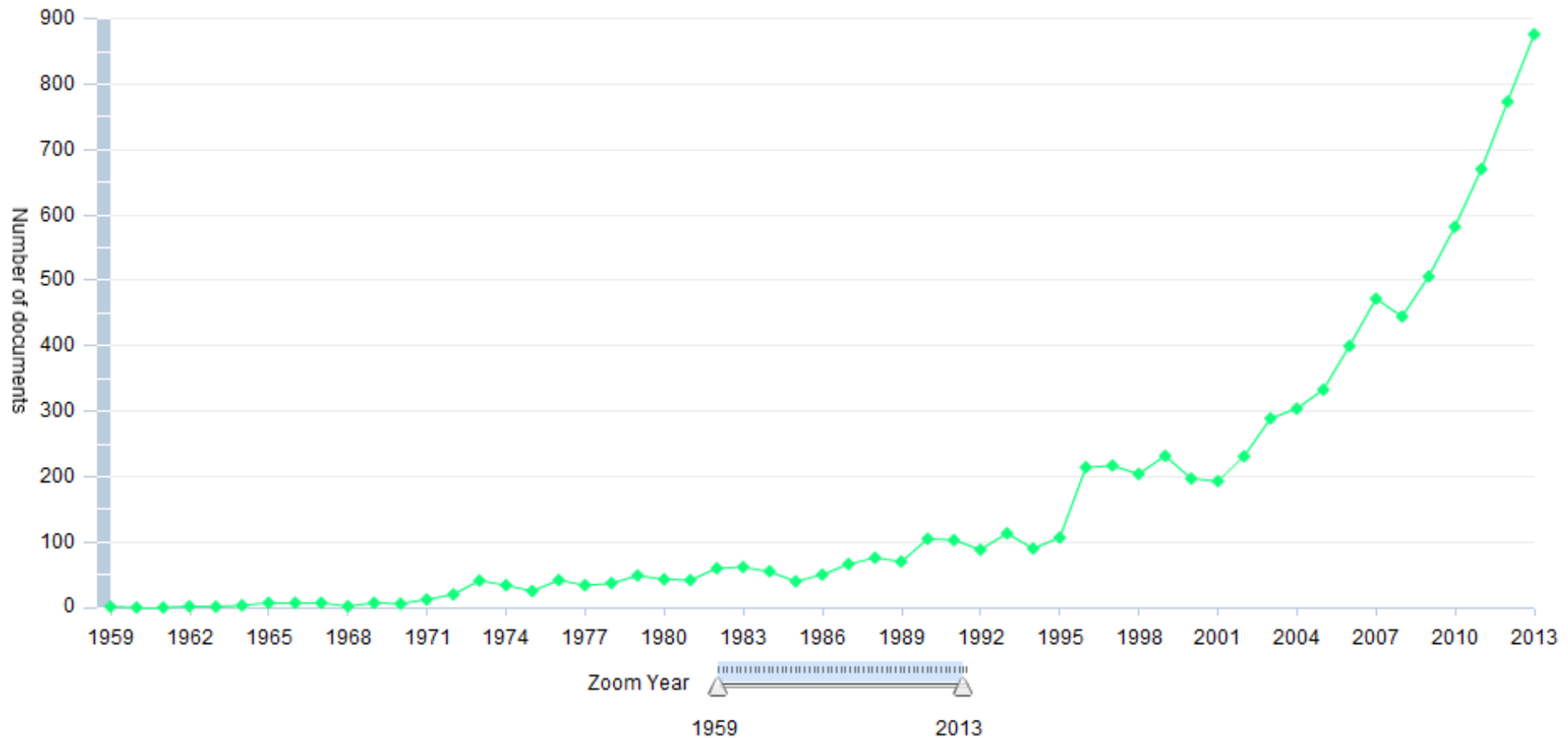


# Research in Ethiopia – Publications

- Ethiopia is one of African countries that *produce low scientific output in terms of publications.*

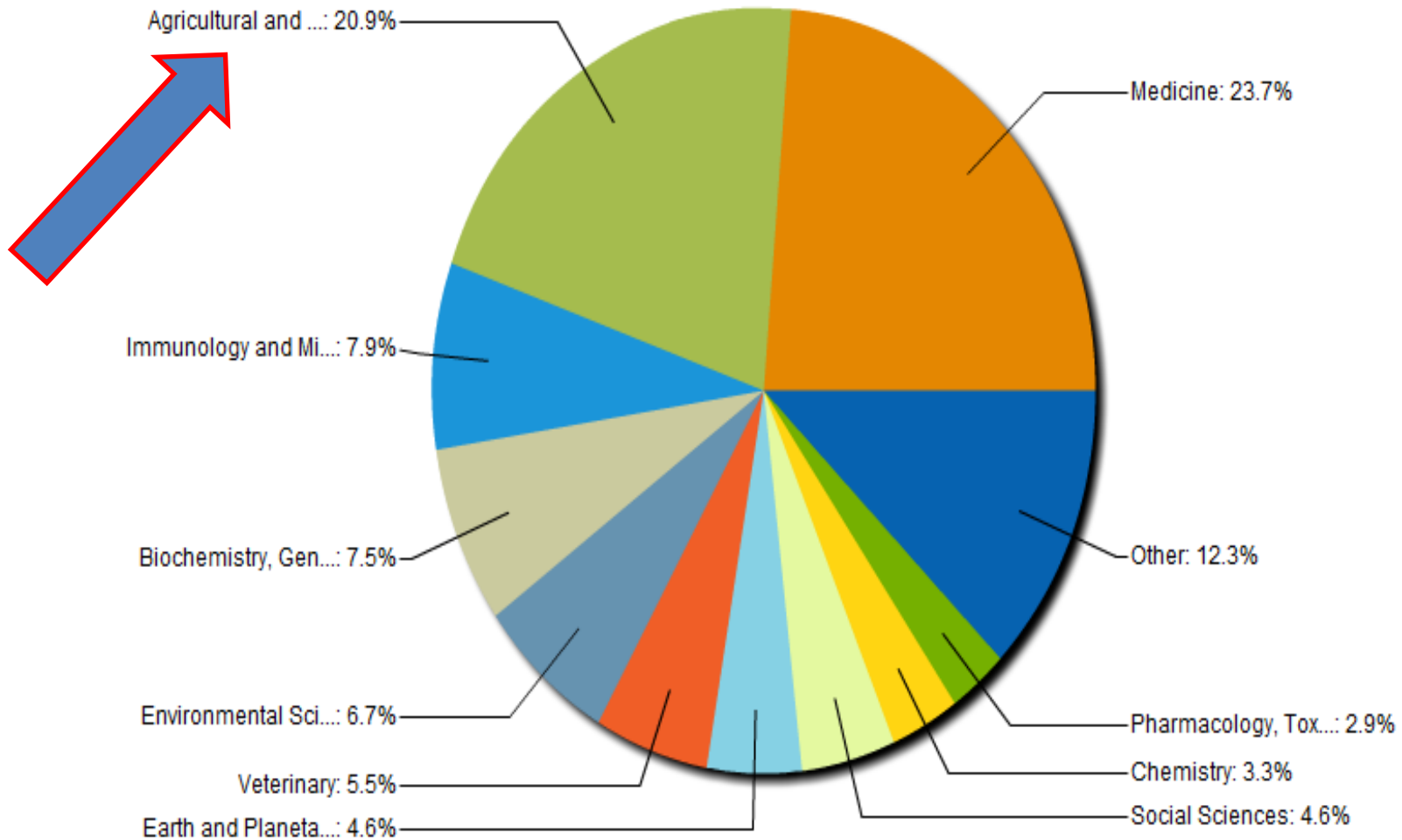


# Research in Ethiopia – Ethiopian Publication Productivity (Source: Elsevier, 2013)

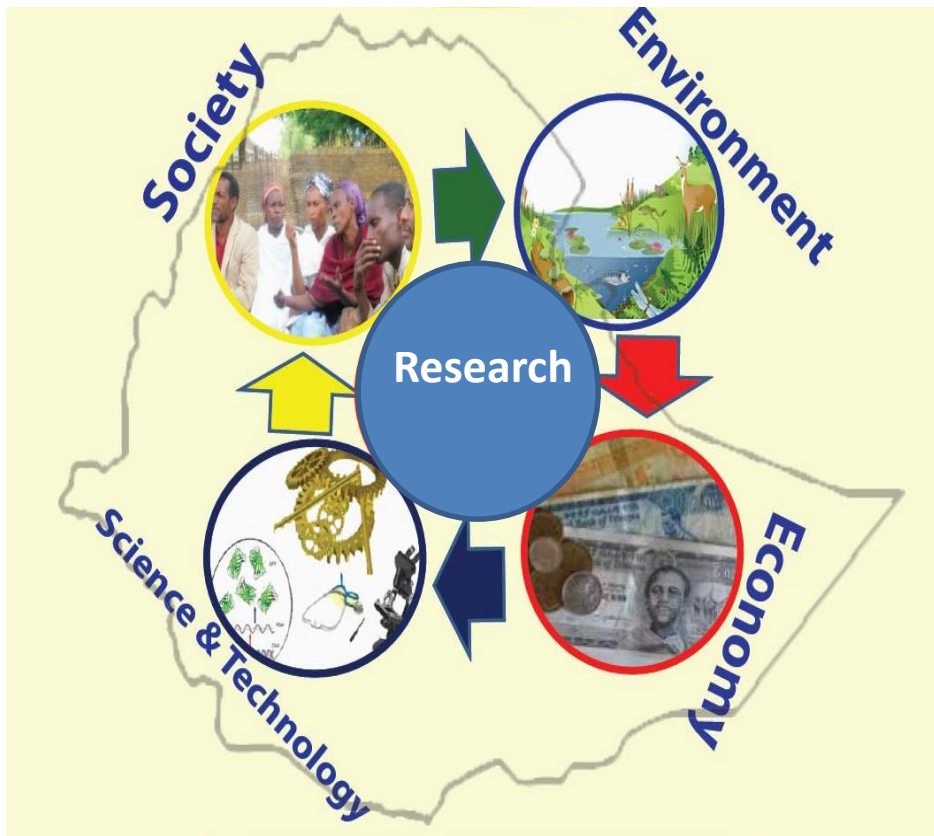


Number of publications per year increased by 9 times from 1991 to 2013: Sign for improvement

# Research in Ethiopia – Subject Area Split for the Ethiopian Publications (1959-2013)



# Opportunities to strengthen research in Ethiopia



- **National STI Council and National Research Council:** *Ex. competitive research funding.*
- **Sectoral Research Councils:** *Ex. Ethiopian Agricultural Research Council; Ethiopian Health Research Council.*
- Research becoming visible part in federal institutions organogram.
- **Professional associations** supporting research and engaging in dissemination.
- **Ethiopian Academy of Sciences, SEWiST,** promoting research culture.
- Etc...

## 3.5. Financing and incentive schemes

- An effective transfer of foreign technologies requires the availability of *sufficient finance*.
- In Ethiopia there is *not yet a well developed* and systematized finance and incentive *mechanism* to support technology transfer in manufacturing and service providing enterprises.
- Therefore, financing and incentive schemes need to be established *to support activities on searching for, learning about, adapting and utilizing of effective foreign technologies in line with national development needs.*

# Financing and incentive schemes

## Strategies

1. Offer various *incentives to medium and large enterprises* that will be involving in searching for, learning about, adapting and utilizing foreign technologies in line with the national investment policy;
2. *Establish incentive schemes* to award those manufacturing and service providing enterprises which show high performance gains through technology transfer;
3. *Allocate resources* for higher education and research institutes in line with the economical development for their contribution to technology transfer.

# 5.6. National quality infrastructure

- A national quality infrastructure landscape contributes significantly to *deliver quality and standardized products and services* to local and international markets.
- **Failure to meet the quality standards** is one of the major problems prevailing in most of local manufacturing and service providing enterprises in Ethiopia.
- This is mainly due to **lack of implementing standards** in the national collection.
- In order to solve problems related to productivity and quality thereby creating competitive manufacturing and service providing enterprises, **capacitating the standardization, metrology, conformity assessment service providers and accreditation bodies** would of paramount importance.

# NQI Strategies

1. Ensure the adoption of best practices on productivity, quality and safety management systems in all manufacturing and service providing enterprises;
2. Incorporate issues of national quality infrastructure in the *curricula of higher education and TVET colleges*;
3. Establish a credible and internationally recognized *metrology system*;
4. Promote and strengthen the use of **standards and technical information** as a tool to facilitate technology transfer;
5. Establish an effective and credible *national conformity assessment system* having the capacity to demonstrate the effective implementation of standards for products and services;
6. Establish a national *accreditation system with international recognition* as a means to demonstrate the credibility of the Ethiopian NQI;
7. **Issue additional mandatory standards** to conduct proper technical regulation on various products and production processes;
8. Ensure creation of strong *regulatory capacities* which make use of the services provided by the national quality infrastructure institutes.



# NQI institutions



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ETHIOPIAN STANDARDS AGENCY



National Metrology Institute of Ethiopia

ብሔራዊ የሥነ-ልቦና ኢንስቲትዩት



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Ethiopian Conformity Assessment Enterprise

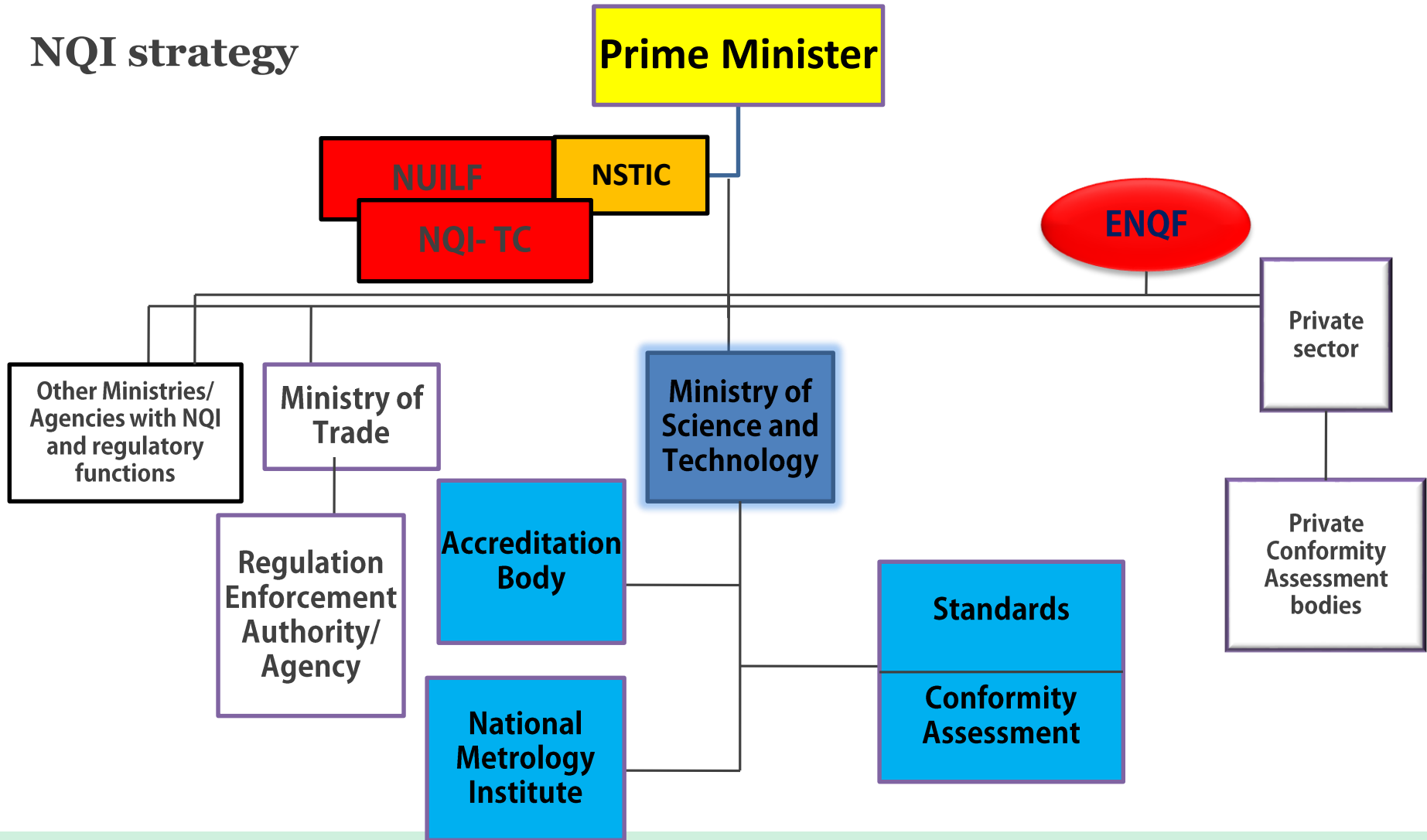
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ETHIOPIAN NATIONAL ACCREDITATION OFFICE

# NQI Strategy and Capacity Building Needs

NQI strategy



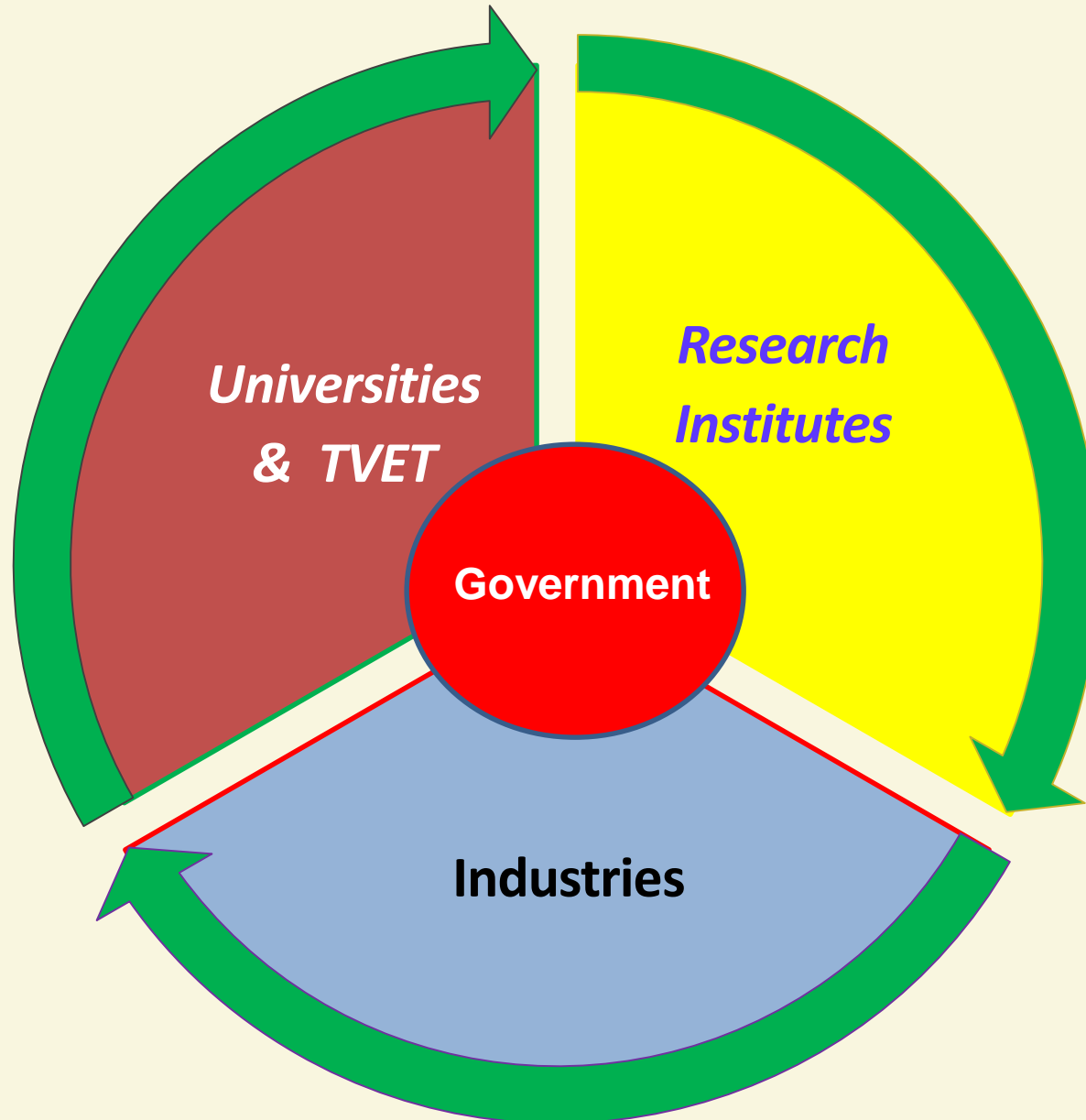
## 3.7. Universities, research institutes, TVET-institutions and industry linkage

- Universities, research institutes, TVET institutions and industry can be demonstrated to be **core actors in the national innovation system**.
- The strength as well as effectiveness of the established linkages among these institutions largely depends on their tendency and capability to be involved in activities dealing with technology transfer.
- As far as technology learning is concerned, the current situation of our country confirms that *universities are not taking the leading role and are lagging behind the industries*.
- Therefore, the linkages that exist among these actors should focus on contributing to capacitating the productivity of manufacturing and service providing enterprises.
- The shared effort should also focus *on identifying appropriate technologies and their sources, understanding the technologies through learning-by-doing and adaptation as well as effective utilization*.
- Thus, joint cooperation and support system among the actors will be established with the aim to support and facilitate the search, selection, importation, adaptation and utilization of effective foreign technologies.

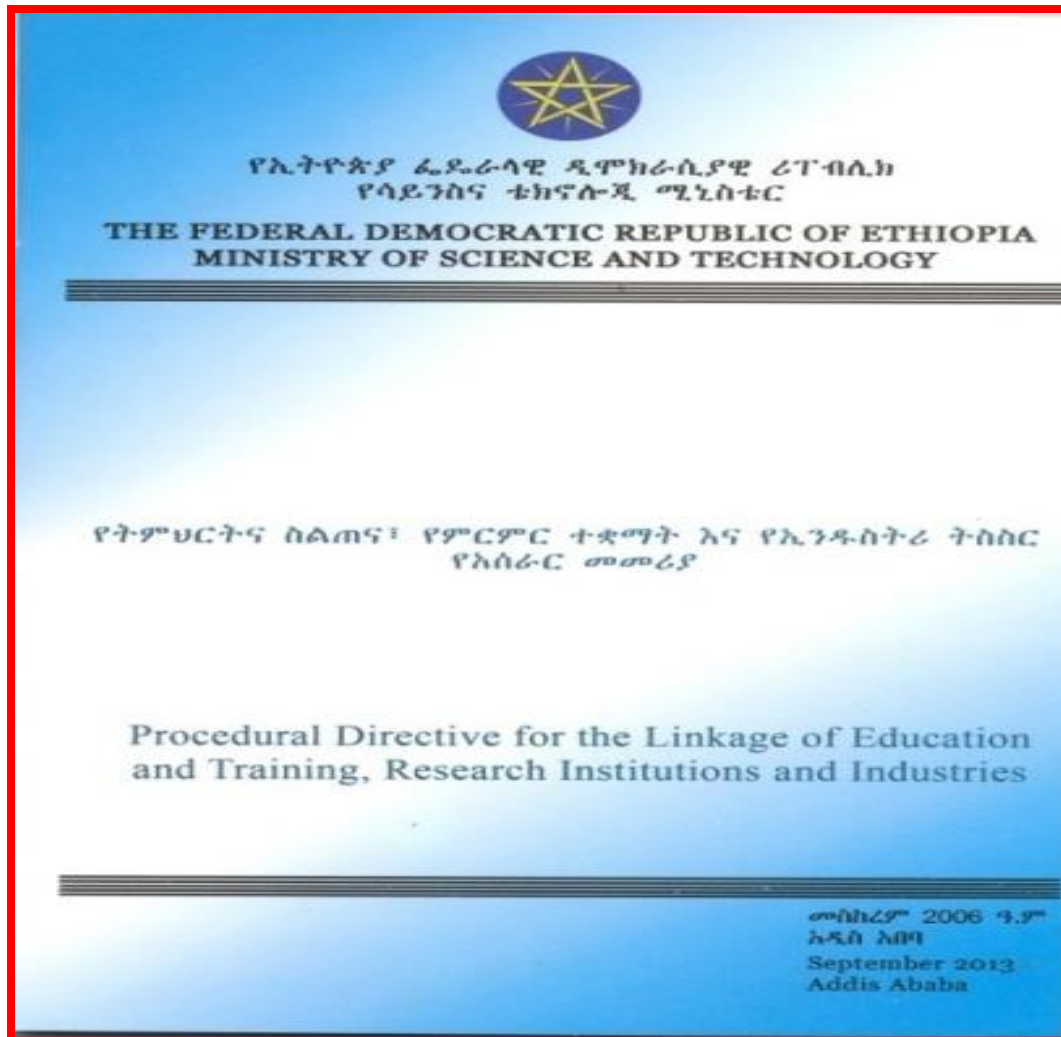
# URITVETI Linkage Strategies

1. Establish a *system that integrates and synergizes* technology transfer issues among Universities, research institutes, TVET-institutions and industry;
2. Create a *conducive environment* for university academia and students to engage in technology transfer activities in industry;
3. Create *strong linkages* among universities, research institutes and industry addressing technology adaptation;
4. Establish a system that enables *universities to provide an advisory role to industry* in relation to technology transfer activities

# URITVETI Linkage



# Directive for URITVETI Linkage



## 3.8. Intellectual Property System

- Intellectual Property system is said to *play a valuable role* if it contributes to technology transfer as well as to technology capability building through FDI and technology licensing.
- Nevertheless, *intellectual property system* as a whole in Ethiopia is not playing a substantial role in accelerating technology transfer and expansion of local innovation activities.
- Hence, the Ethiopian IP system needs to be designed in such a way as to support the endeavor of technology learning and adaptation as well as to protect the rights of inventors and creators and support the augmentation and application of indigenous knowledge.

# IP System Strategies

1. Make use of **IP information** at large in support of the efforts to build national technology capability;
2. Establish and implement a system that ensures **effective protection of indigenous genetic resources** and IP assets of the nation besides bringing benefit out of them.
3. Develop and implement the application of **IPR systems** at national and institutional level;
4. Strengthen and implement **copyright protection** in such a way to encourage and promote creative works;
5. Strengthen **trademark protection** to create a healthy and competitive environment among manufacturing and service providing enterprises





# Ethiopian Intellectual Property Office

IP right , copy right protection and trade mark protection

## 3.9. Science and technology information

- Collecting, organizing, analyzing, disseminating, and using information related to science and technology is of significant importance for successful technology transfer.
- In Ethiopia there is **no well organized science and technology information source or system** as required by manufacturing and service providing enterprises, higher education, researcher institutes and other entities.
- Despite the fact that there are certain types of information which are prepared and kept in the form of *statistics, databases, indicators and bibliography*, there are no mechanisms to publish and update them regularly.
- Therefore, it is imperative to **develop and establish a national science and technology information system** to fill the gaps and bring expected results, including the acceleration of technology transfer.
- Establishing and strengthen such a system will **create a capacity that accelerates technology transfer through identifying, gathering, organizing, analyzing, disseminating and proper utilization of science and technology information.**

# ST Information System Strategies

1. **Establish** a National Science and Technology Information Centre;
2. **Support** technology transfer through gathering, organizing, analyzing, and disseminating of Science and technology information;
3. **Establish** and implement up-to-date systems to link and exchange science and technology information among national, regional and international information centers;
4. **Support** research activities with respect to strategies and methodologies of gathering, analyzing, management and dissemination of Science and technology information.



# Science & Technology Information Center

# STIC: Surveys and Publications



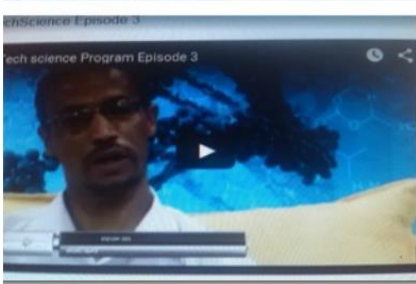
# STIC: TechScience Booklet



## Feature Articles

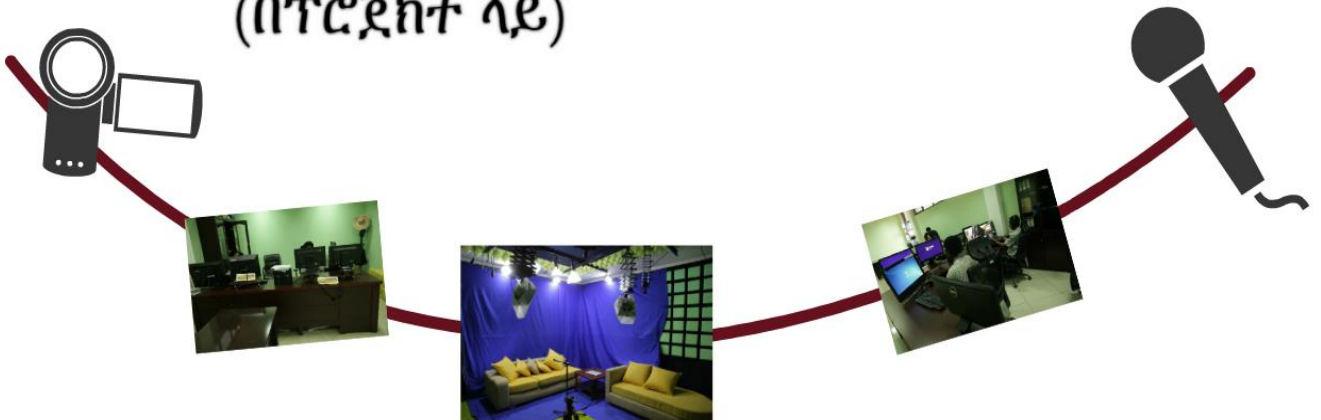
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# STIC: TechScience TV Program



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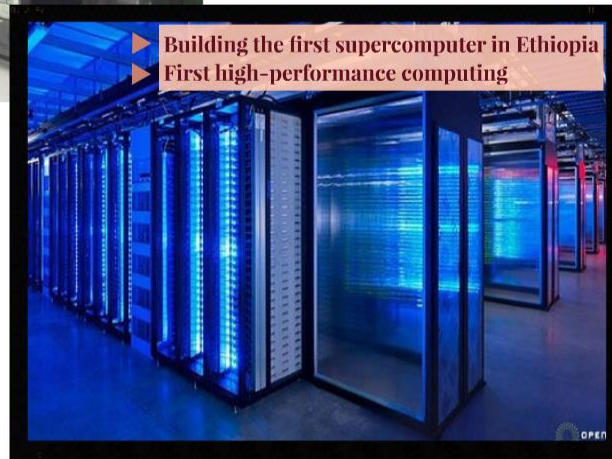
# STIC: Data center



▲ **Current**



▼ **Uptodate facility  
Needed**



- Host National S&T Indicators
- Search Engines
- National Digital Library
- Patent Information
- Web Portal and Page

- Mail, File, Application, e-Mail, Storage Servers
- PBX, Firewall, Fire Security, Air Conditioner ...



# STIC: E-Services

## National Digital Library

National Science Digital Library



- ENGINEERING & TECHNOLOGY
- AGRICULTURAL SCIENCE
- NATURAL SCIENCE
- HUMANITY
- MEDICAL & HEALTH
- SOCIAL SCIENCE

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## Patent Data Mining

### Patent Information Page



- Agriculture Technology
- Energy Technology
- Industrial Technology
- Water Technology

Million+ into Searchable Database!

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- Indigenous
- Other Services



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Go to Settings to activate Windows.

SCIENCE TECHNOLOGY

# 3.10. Environmental protection and development

- Environmental protection and development is *crucial to maintain continual and sustainable economic growth.*
- The major issues of the environment in Ethiopia are *desertification, deforestation and soil erosion.*
- In big cities lack of *solid waste disposal and sewerage system* are critical environmental challenges.
- Therefore, to address these and other environmental problems prevailing in the country, *appropriate technologies will be applied in the course of natural resource utilization and implementation of various development activities.*

# Environmental protection and development Strategies

1. Establish a system that *allows technology importation, adaptation, utilization, and disposal activities without polluting the environment*;
2. Create local capabilities to learn about, adapt and adopt *green technologies*;
3. Establish and implement a system that addresses *the safety of the environment and of society* in relation to the use of equipment emitting radiation, the use of actually or potentially non ecologically-friendly chemicals and other industrial inputs actually or potentially threatening to the environment.

# 3. 11. International cooperation

- International cooperation in the areas of science and technology is crucial for *information sourcing, manpower training, expert assistance, scientific visits, collaborative research, joint ventures in technology transfer and funding* of scientific and technological projects.
- However, *the current cooperation practice of our country lacks focus*, particularly on STI information sourcing, and exchange of scientists and engineers, thereby highlighting certain particular needs for cooperation to strengthen national technology capabilities.
- Therefore, the prime focus of international relations should be to *encourage cooperation with developed and developing countries as well as with various international and regional organizations with the objective of building national technological capabilities.*

# International cooperation Strategies

1. Ensure incorporation of STI *capacity building* elements in *bilateral and multilateral agreements*;
2. Strengthen *exchange of professionals and scientists* through South-South and North- South cooperation initiatives;
3. Initiate *joint research programs* with international partners, within Ethiopia, that have direct contribution to the national development agenda.

# 4. Policy Implementation and Principles



# 4. Policy Implementation and Principles

- This policy is an enabling *framework for the establishment of a national innovation system* as well as to *bring in stakeholders as core actors* contributing to its implementation.
- The primary focuses in the implementation of the policy should be the *establishment of a clear and effective STI governance structure, building technological capacity in learning about, adapting, and utilizing effective foreign technologies, as well as producing well trained technicians, engineers and scientists.*
- **The policy will be led by the *national STI council* and the *respective ministries will be responsible for its implementation.***

# The major policy Implementation Principles are:

- a) The *government will lead* the national STI capacity building process;
- b) STI *activities will be performed in an integrated manner* with other social and economical activities;
- c) Increase the *inclusion and participation of the private sector* in innovation activities by providing support which leads to competitiveness in learning about and utilization of technology;
- d) Establish an effective, accountable and transparent system of *allocation and utilization of resources for STI programs*, projects and activities;
- e) Promotion and encouragement of *strong integration and cooperation* among national and international stakeholders to utilize science and technology infrastructure as well as *to use resources effectively* and efficiently;
- f) Compilation of other countries' relevant *best practices* and adapting them as appropriate to be compatible with the **Ethiopian context**.



# 5. Governance of the National Innovation System



# 5. Governance of the National Innovation System

- The governance structure of the national innovation system will be implemented in a way to *lead, support and monitor the implementation of the policy.*
- The main actors of innovation system are:
  1. *National Science, Technology and Innovation Council;*
  2. *Ministry of Science and Technology (MoST); and*
  3. *Other related ministries and*
  4. *Innovation Support and Research System.*

## 5.1. Roles and responsibilities of the council

- a) Based on consultation present *recommendations on the selection and prioritization of national technology capacity building programs*; Monitor and evaluate technology adaptation and utilization activities in all national priority programs;
- b) Present *recommendations for resource allocation for technology capacity building* out of the gross domestic product (GDP); Monitor and evaluate its implementation
- c) *Recommend national priority areas* where support should be provided in the creation of competent human resource in science and technology, and to subsequently monitor and evaluate the implementation of such recommendations;
- d) Create and promote an *environment of integration and synergy among all actors* of innovation system.

## 5. 2. The national innovation support and research system

- This comprises:
  1. *universities,*
  2. *government research institutions,*
  3. *national laboratories,*
  4. *TVET institutions,*
  5. *financial support service providers,*
  6. *science and technology parks,*
  7. *intellectual property office,*
  8. *manufacturing and service providing enterprises and*
  9. *the agencies of the national quality infrastructure.*
- As the aforementioned bodies are main *actors in technology transfer, dissemination and research activities,* *they will be expected to provide financial, technical, legal and infrastructure development support* for the national innovation system.

## 5.3 MOST and other innovation system actors

- *The STI policy and recommendations of the council will be implemented by the MoST and other respective government bodies.*
- Effort will be exerted to ensure clarity of roles and activities, thereby preventing unnecessary task overlapping, redundant responsibilities and resource wastage.
- The MOST serves as *secretariat of the council*.
- MoST will provide and ensure the functions of *coordination, monitoring and support* to STI development activities based on the strategic direction of the council.

# 6. Monitoring and Evaluation

- Monitoring and evaluation systems will be implemented at each level.
- M & E will ensure the *effectiveness of the policy implementation, efficient resource utilization and taking of corrective measure on weaknesses*, with a specific responsibility resting with *the council*.

# Summary

- Our STI policy has:
  - clear vision, mission and objectives
  - Eleven policy issues and strategies
  - Clear implementation principles
  - Governance structure
- The STI policy is meant to:
  - ✓ *build strong STI capabilities,*
  - ✓ *access foreign technologies and*
  - ✓ *build strong national systems of innovation*which are important for economic growth, social welfare and addressing environmental challenges.
- *Although achievements are being enjoyed in some areas of the policy issues, much is yet to be done in the future. This requires concerted efforts from all stakeholders.*



Thank you!!

[www.moshe.ethernet.et](http://www.moshe.ethernet.et)