

# World Bank Observations on Building STI Capacity For Development



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# Plan of Presentation

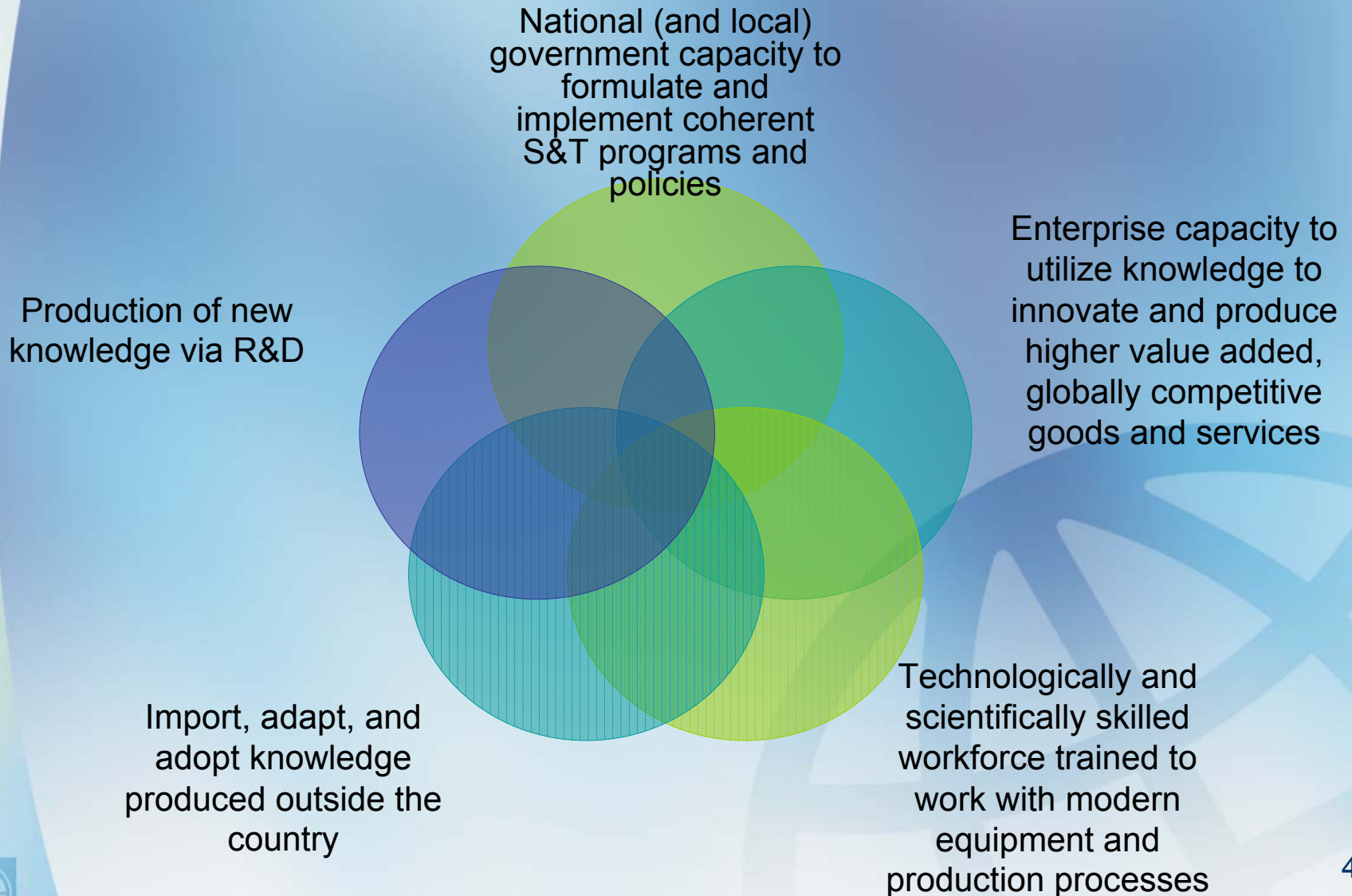
- What is STI Capacity?
- Observations from Government of Rwanda -- World Bank STI capacity building program
- World Bank Global Forum
- Conclusion



# What STI Capacity?

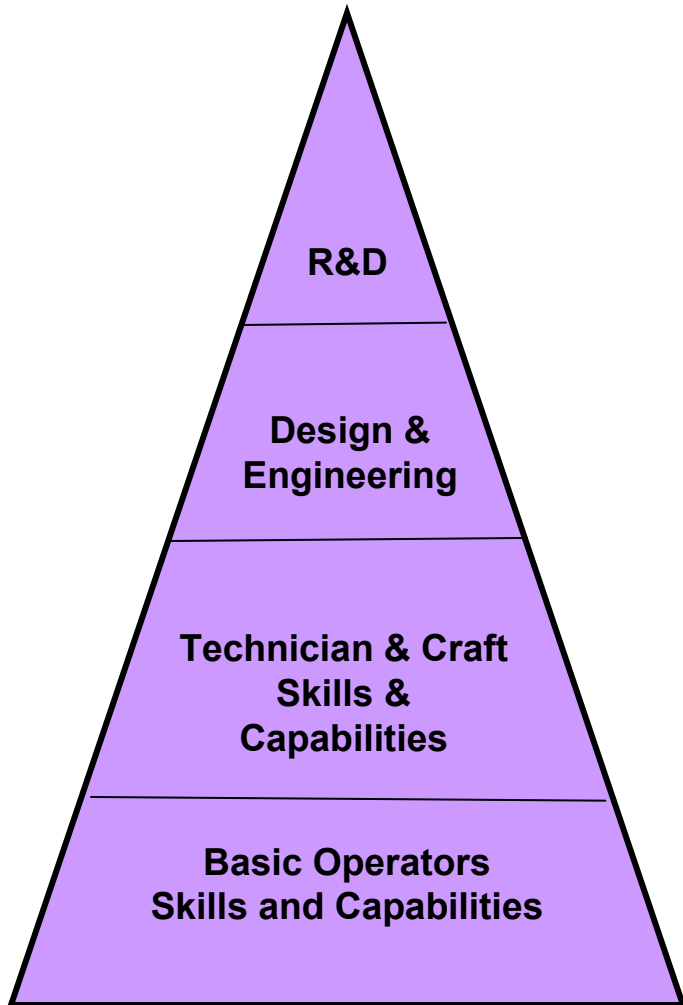


# Five Dimensions of STI Capacity



# Capacity building is needed at all skill levels

## Skill Levels



## Required Tasks

Hydrological Analysis of Surface and Underground Water



Watershed Conservation and Pollution Control



Well Boring and Pumping Underground Water



Harvesting Rainwater Run-offs from Roofs and Fields



Water Storage & Distribution Infrastructure



Water Purification and Water Quality Control

## Required Skills

Hydrology, Geology, Limnology, Geochemistry, GIS and Remote Sensing

Environmental Engineering, Chemistry, Soil Science, Geology

groundwater engineering, Construction, Masonry, Pump operation, maintenance

Geology and Hydrology  
Construction and Masonry

Civil Engineering; Construction, masonry (for tanks, reservoirs, pipes)

Chemistry, Microbiology, Public Health, Environmental Science, Laboratory Assistance

# Getting the Balance Right is Important!



# Observations from STI Capacity Building Program





# Government of Rwanda – World Bank STI Capacity Building Program

- Needs assessment and action plan – what does Rwanda have, what does Rwanda need, and how can Rwanda build capacity for:
  - Appropriate Technology
  - Food Processing
  - Deliver clean water to rural villages
  - Agriculture Productivity through Research and Extension
  - Geosciences and Geothermal Energy
  - Adding value to natural resources throughout value chain – importance of entrepreneurship
- **Hope to prepare a World Bank S&T project to finance the implementation of the recommendations in the Needs Assessments and Action Plans**



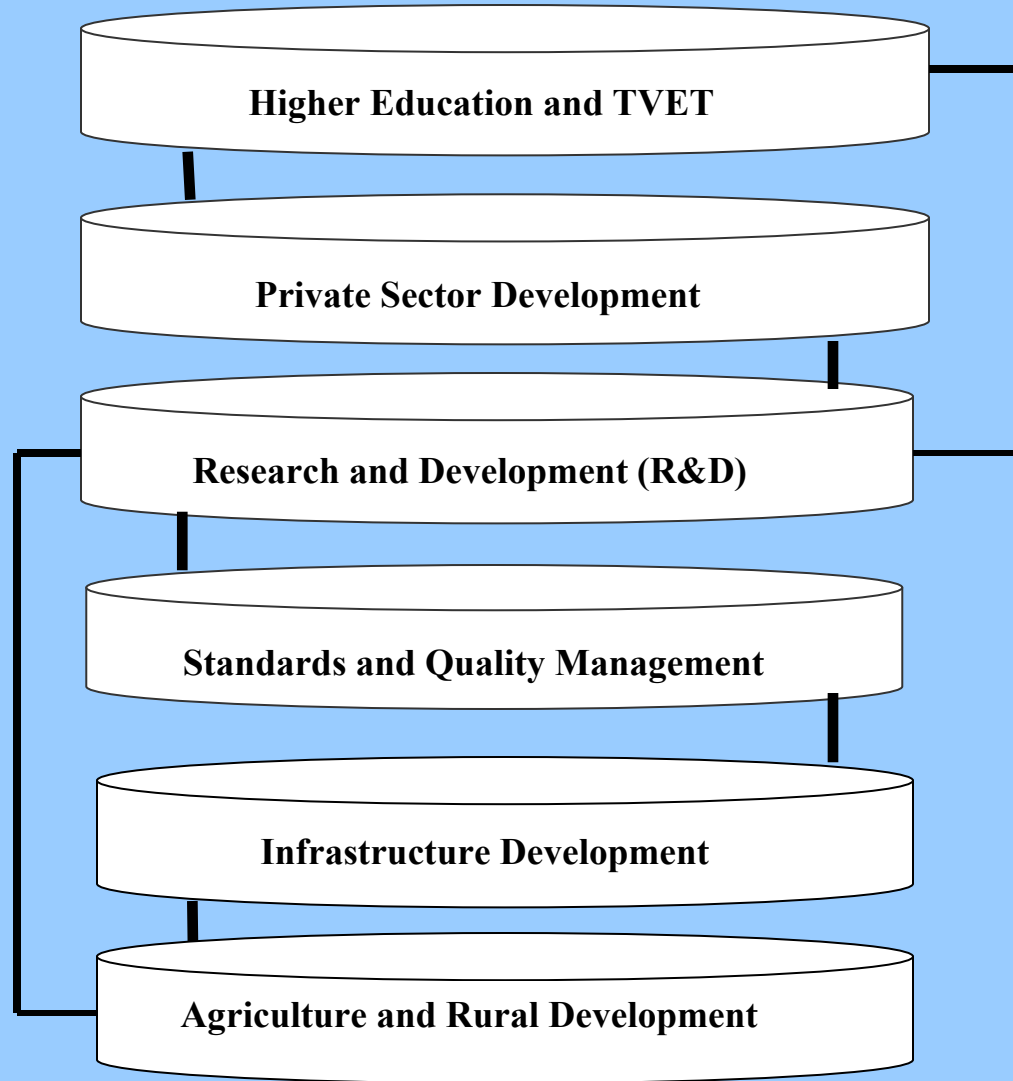


# Guiding Principles for STI Capacity Building Work in Rwanda

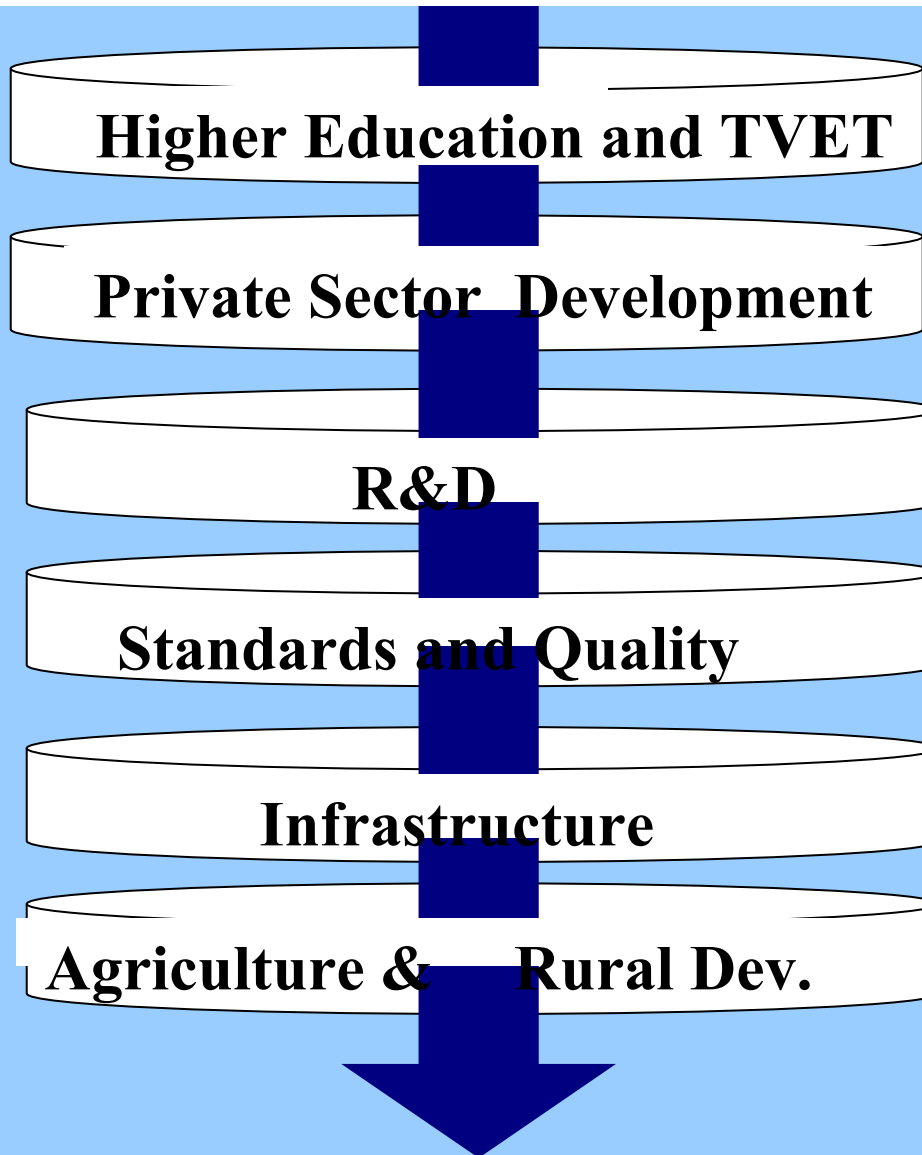
- Focusing on finding practical solutions to practical problems facing Rwanda in economic and social sectors
- Adopting a cross-sectoral approach that brings together many ministries and sectors
- Addressing all levels of technology and skills needs: from low-tech to high-tech, from vocational skills to sophisticated engineering skills.
- Looking for solutions in private sector for skills upgrading and technology development, not just in public sector



# STI Capacity Building: Linking Silos...



# ...Or Integrating Multiple Silos



STI needs assessment focuses on solving a problem (ex: food processing capacity building) and probes across multiple silos to identify capacity needs.

# Cross-Cutting Nature of STI Capacity Building

## Education and Human Resource Development

Ministry of Education  
 Ministry of S&T  
 Ministry of Labor  
 Ministry of Commerce

- National University of Rwanda
- Kigali Institute of S&T
- Institute for Scientific and Technological Research

## Rural Development

Ministry of Agriculture  
 Ministry of Labor  
 Ministry of Infrastructure

- Rural innovation Centers
- Farmers Association

## Vocational and Technical Education and Training

Ministry of Education  
 Ministry of Labor  
 Ministry of Commerce  
 Ministry of Infrastructure

- Vocation schools
- Technical School
- Rwanda Private Sector Federation

## Packaging

Ministry of Infrastructure  
 Ministry of Commerce  
 Ministry of Agriculture

- ISAR
- Rwanda Environment Management Agency (REMA)
- Rwanda Private Sector Fed.

## On the Job Training

Ministry of Education  
 Ministry of Labor  
 Ministry of Commerce  
 Ministry of Infrastructure

- KIST, NUR
- Vocation and Technical schools
- Rwanda Private Sector Fed.



## Private Sector Development

Ministry of Commerce  
 Ministry of Education  
 Ministry of Infrastructure  
 Ministry of Finance

- Kigali Institute of S&T
- Rwanda IT Agency
- Business Dev. Service
- RIEPA

## Transport and Power

Ministry of Commerce  
 Ministry of Education  
 Ministry of Infrastructure  
 Ministry of S&T

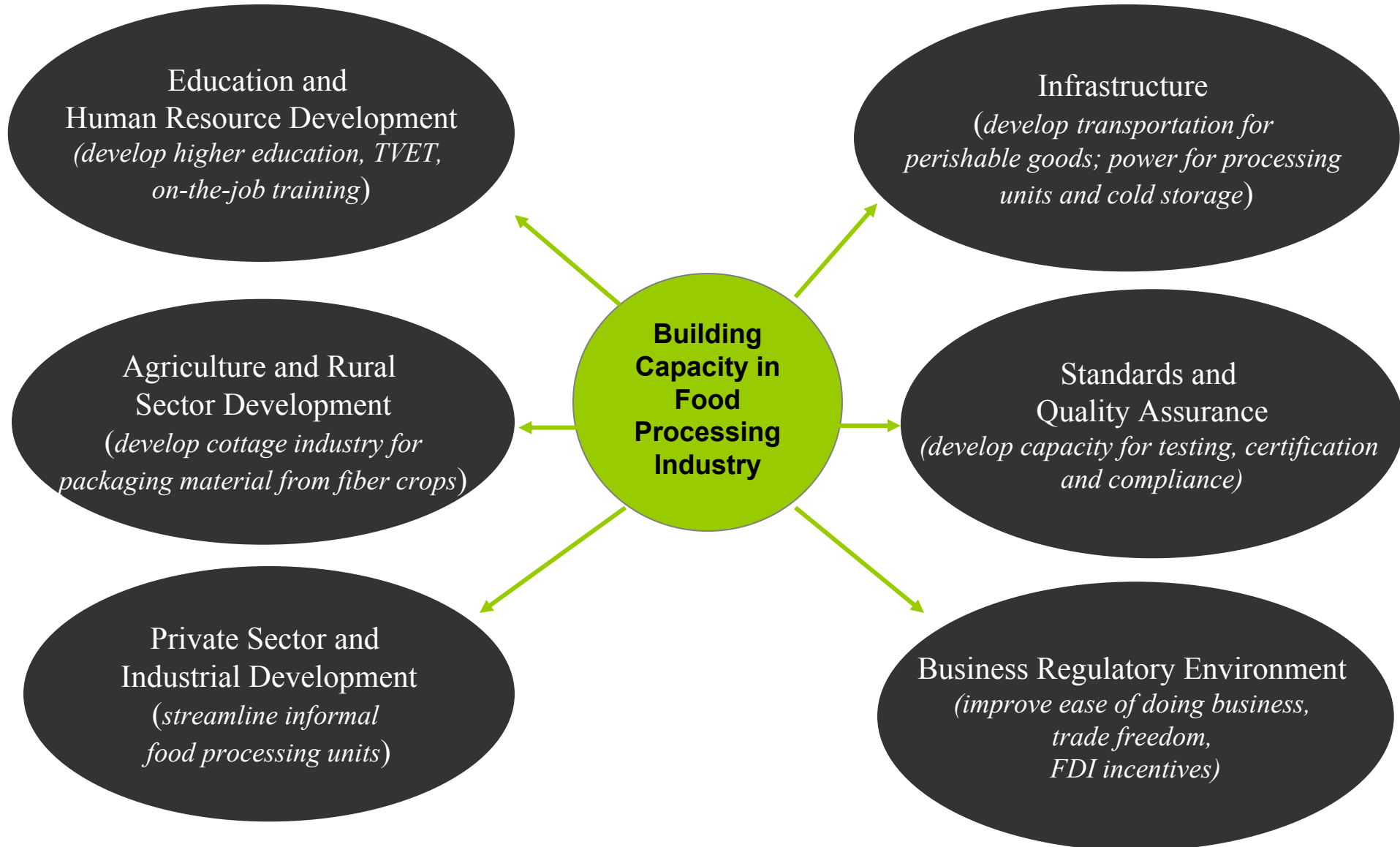
- CITT(KIST)
- Institute for Scientific and Technological Research

## Regulatory and Quality Management

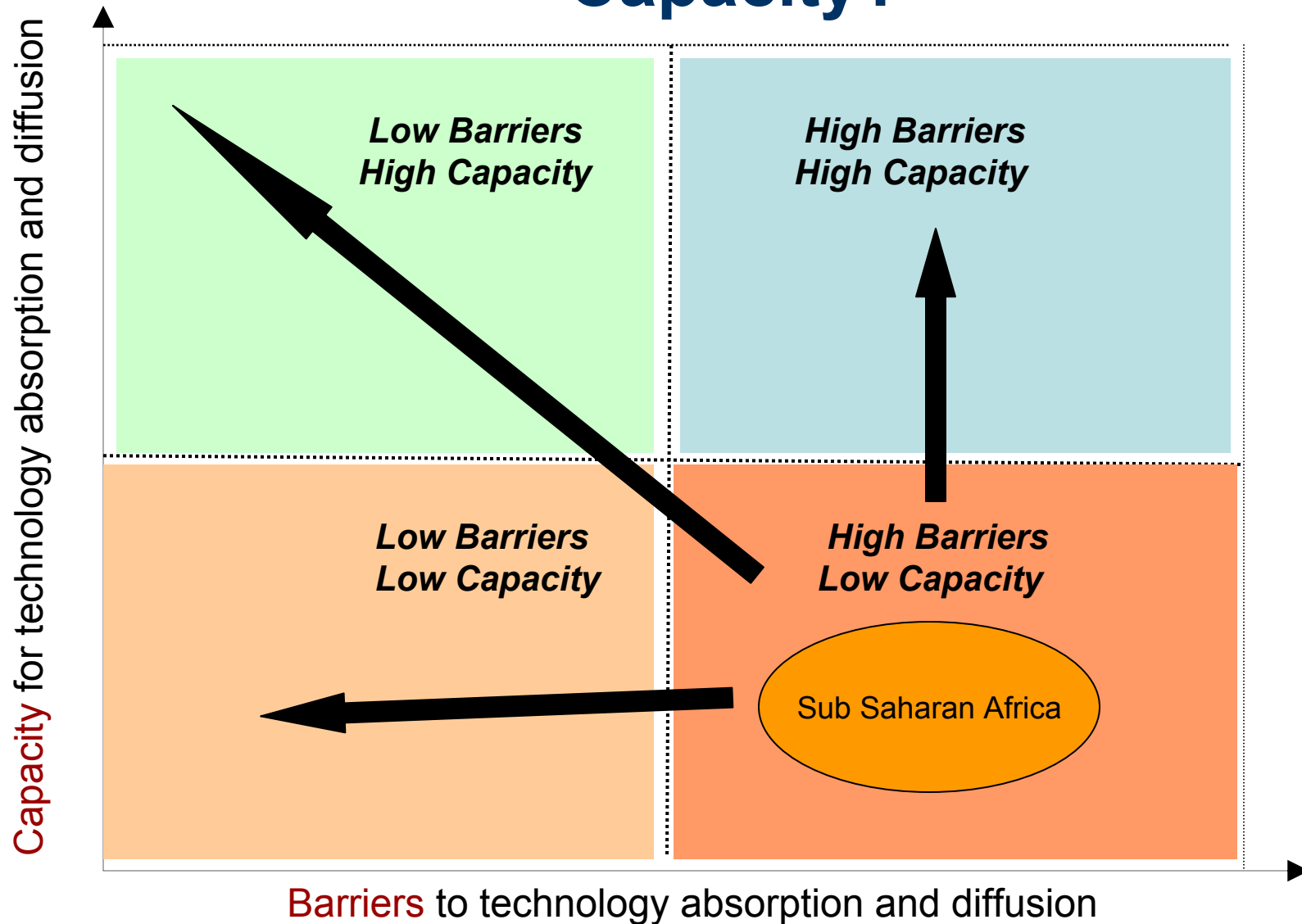
Ministry of Commerce  
 Ministry of Education  
 Ministry of S&T  
 Ministry of Agriculture  
 Ministry of Sanitation & Environment

- KIST
- Rwanda Environment Mgmt Agency
- Rwanda Bureau of Standards

# Cross-Cutting Nature of STI Capacity Building

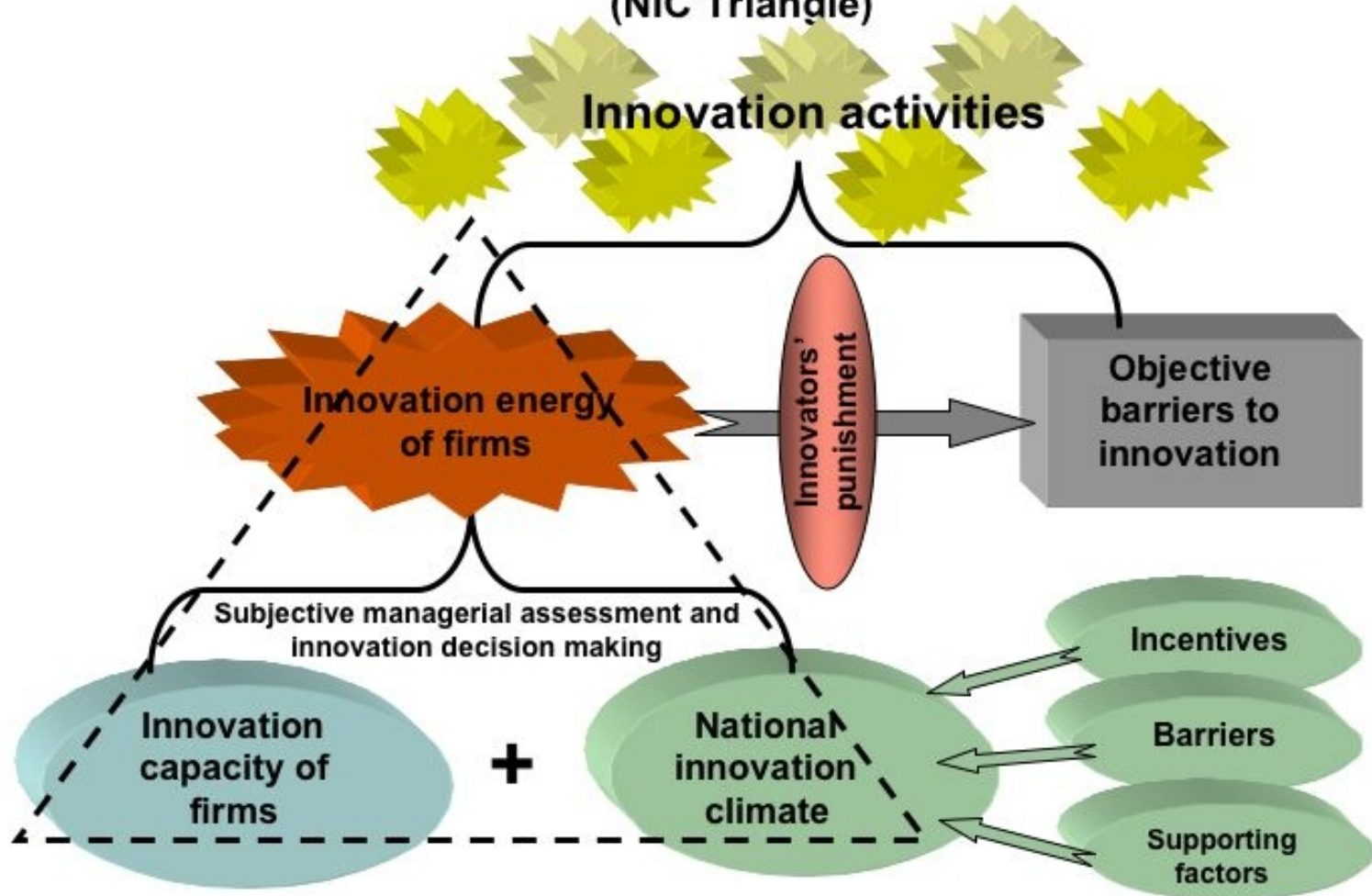


# Removing Barriers vs. Building Capacity?



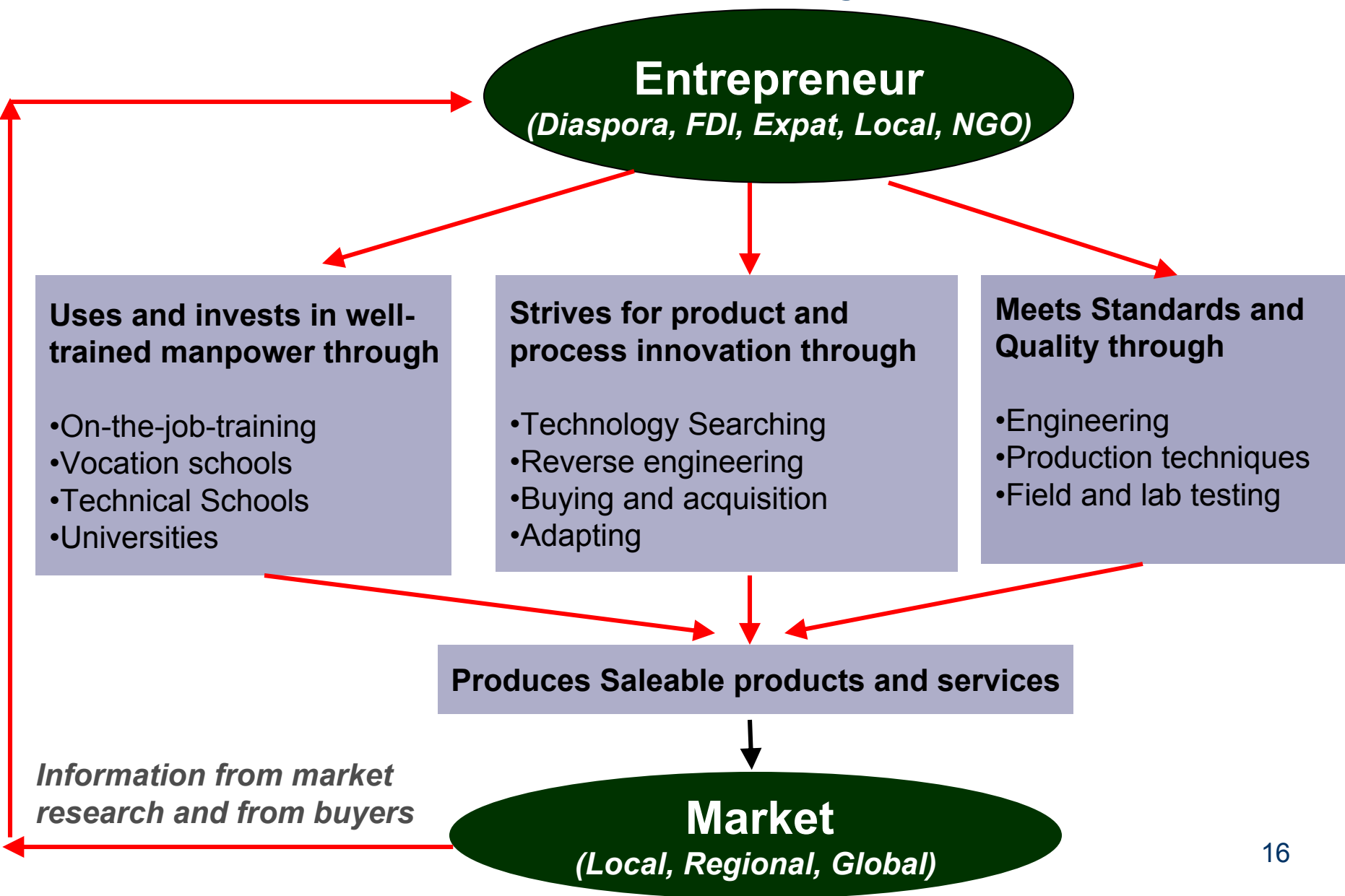
# Determinants of Enterprise Innovation

Innovation Energy of Firms as the  
3rd Element of National Innovation Capacity  
(NIC Triangle)





# Enterprise Model for STI Capacity Building: Options for Developing PPP's



# **Global Forum on Building Science, Technology and Innovation Capacity for Sustainable Development and Poverty Reduction**



# Global Forum: Building STI Capacity for Sustainable Growth and Poverty Reduction

- Dates and Location:
  - When: February 13-15, 2007
  - Where: Washington, DC



# Global Forum Participants

- Speakers
  - Thoughtful doers from government, industry, PPPs, NGOs
  - Presented STI capacity building case studies in which they were directly involved, to help participants:
    - Learn from lessons of experience – what did you do, how did you do it, what would you do differently?
    - Develop new and improved operational approaches for building STI capacity grounded in successful lessons of experience
- Participants
  - Government policy makers and program managers
  - Industry representatives
  - NGOs and Foundations addressing STI capacity building needs
  - Bank and Donor staff



# **Global Forum: Clusters of Issues**

- **Reducing poverty and achieving the MDGs: the role of STI capacity building**
- **Adding value to natural resource industries through STI capacity building**
- **Latecomer strategies for catching up -- linkage, leverage, learning, and STI capacity building**
- **The role of R&D in the development process**



# CONCLUSIONS



**There is No Choice: “The world is moving fast...with or without you!”**

**Countries must develop the capacity to run faster**





**Because sometimes, falling behind is not a viable option**







# THANK YOU

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