

# *Green Innovation:* **The Role of STI Policy**

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LoCARNet 1<sup>st</sup> Annual Meeting Mobilising Wisdom for Low-Carbon Asia  
16 October 2012

Novotel Bangkok on Siam Square, Thailand



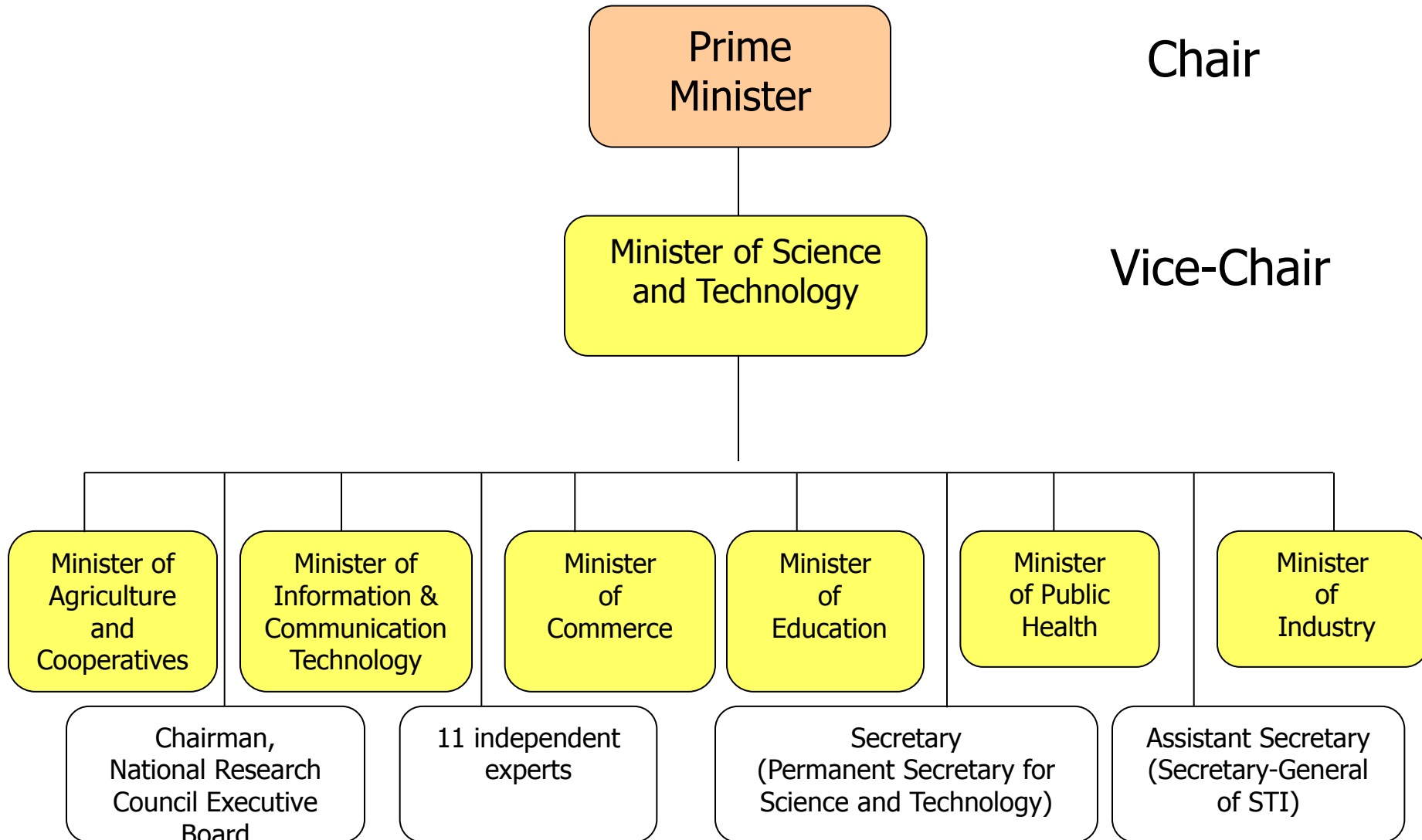
# Outline

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- The National Science Technology and Innovation Policy Office (STI)
- Thailand's Science Technology and Innovation Policy & Plan (2012-2021)
- Thailand Technology Needs Assessment for Climate Change (TNA)



# National Science, Technology and Innovation **Policy** Committee



# STI's Major Responsibilities

1

To formulate the **national STI policies and plans**

2

To develop standard measurements, **indicators, database,** and conduct **policy research** on STI

3

To provide **support** and advice to other government agencies in formulating their own STI implementation plans

4

To coordinate and monitor the development of national S&T **manpower**

5

To **monitor, evaluate** and report the national STI implementation to the Committee and the Cabinet



นโยบายและแผนวิทยาศาสตร์  
เทคโนโลยีและนวัตกรรมแห่งชาติ ฉบับที่ ๑  
(พ.ศ. ๒๕๕๕ - ๒๕๖๔)

สำนักงานคณะกรรมการนโยบายวิทยาศาสตร์  
เทคโนโลยีและนวัตกรรมแห่งชาติ

# The National Science Technology and Innovation Policy and Plan 2012 - 2021

Approved by the Cabinet on 17 April 2012

# Where will STI Plan Lead Us

A Knowledge-Based Society

Deployment of STI to Utilization/Commercialization  
Through Innovation

Sustainable Development achieved through  
**Low Carbon Society**

New S&T Pathway leading to Green Innovation

Significant and Meaningful Sectoral Targets

STI that promote Community Innovation and  
Strengthening for Quality of Life

# Key issues in the context of national development

“Economic Stability and Sustainability”

“Value Creation from Knowledge Application”

“Global and Regional Positioning”

“Quality Resource Based Management”

Social and Lifestyle Change	Economy and Trade	Food & Agriculture Security
Geopolitical Change	Power Decentralization	Climate Change
Health and Diseases	Energy Security	Scientific & Technological Change

Low Carbon Society ---- Green Growth

**Research & Development**

**Innovation**

**Technology Transfer**

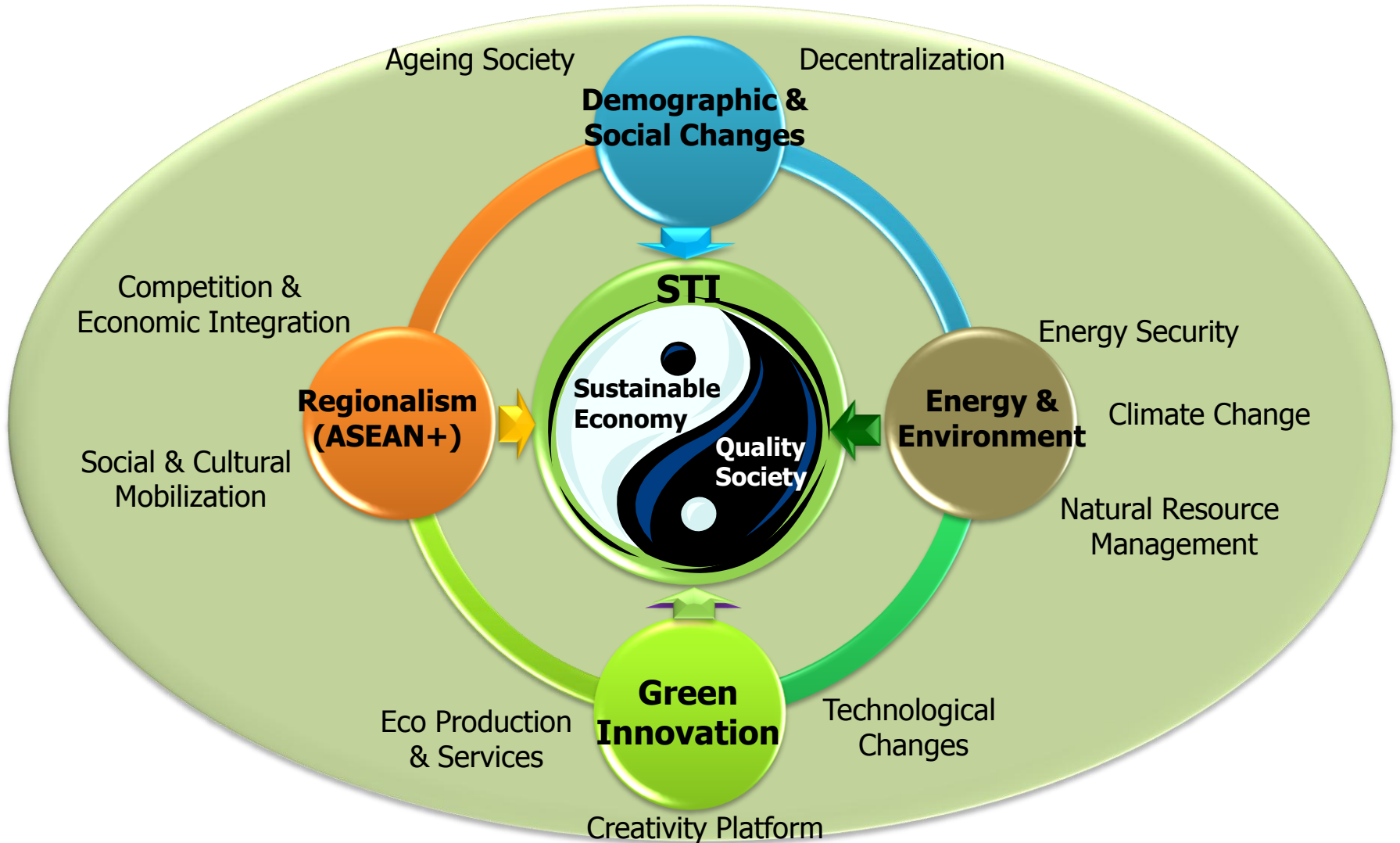
**Utilization/Commercialization**

**Human Resources**

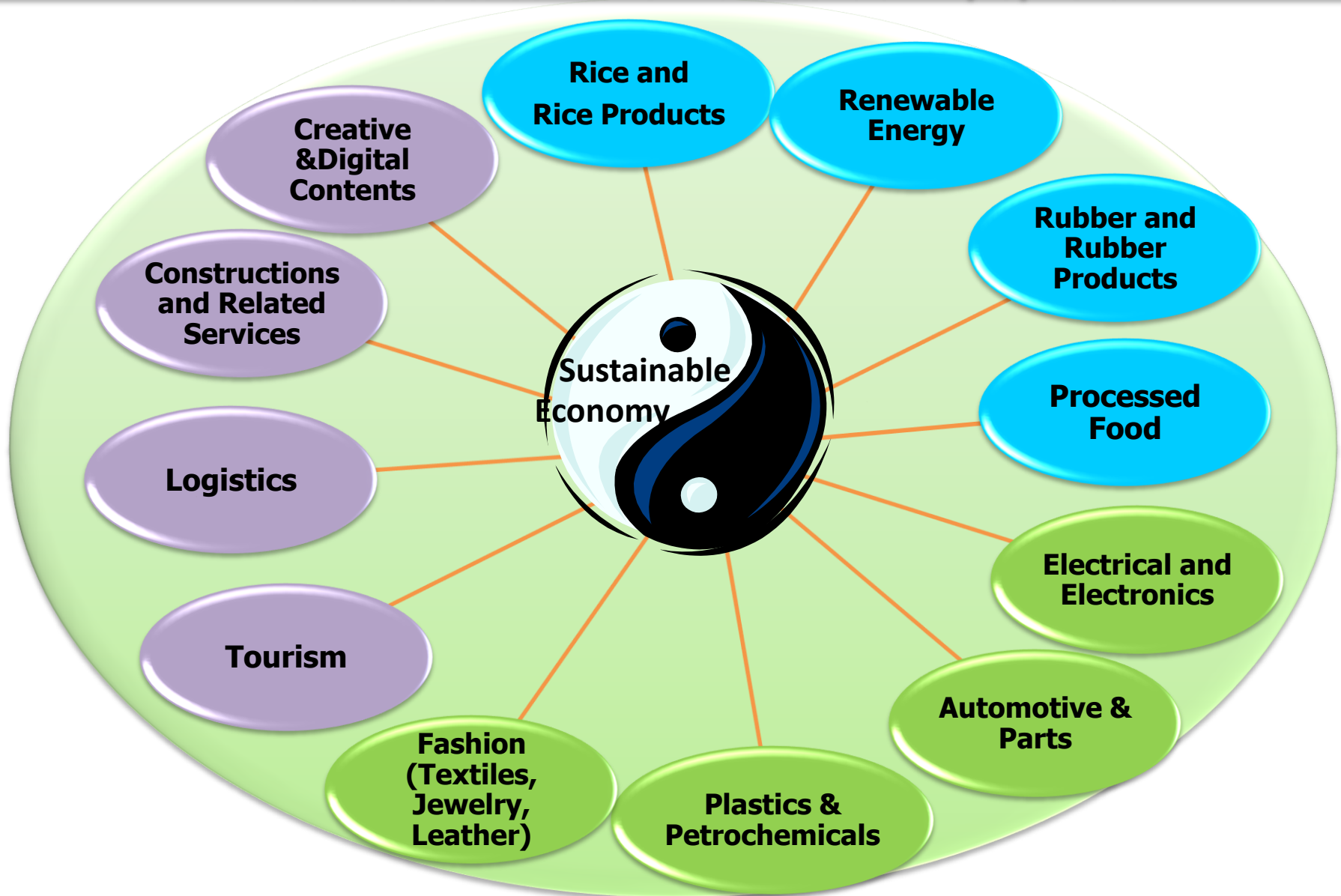
**STI Infrastructure**

**Enabling Environment**

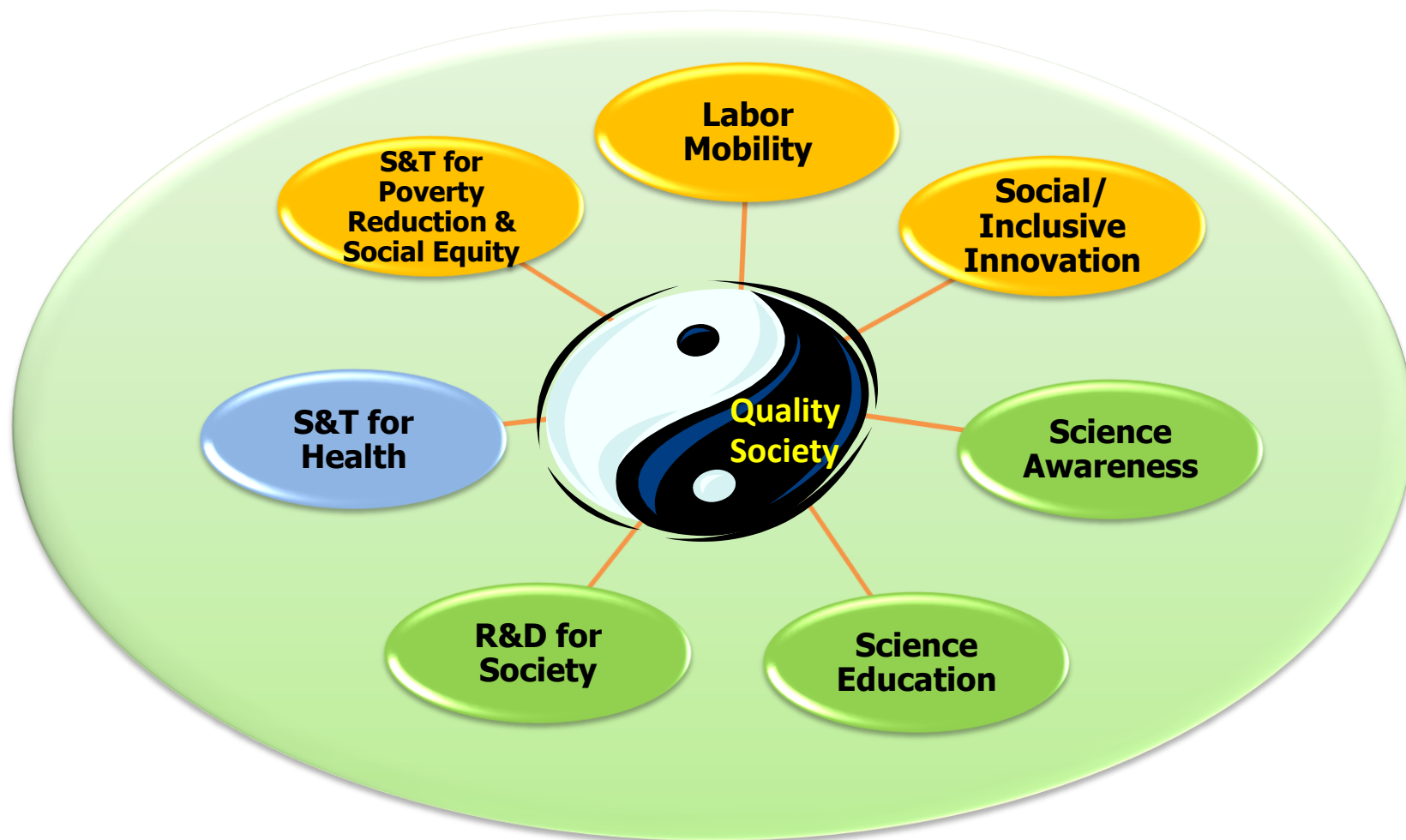




## Target Strategic Economic Sectors : Contribute to 33% of GDP and 65% of Employment



## Strategic Social Issues



**Geopolitical  
Change**

**Climate  
Change**

**Green Innovation**  
for Quality Society and Sustainable  
Economic Growth

**Empowering Society  
and Local  
Communities**

**Enhancing Economic  
Competitiveness and  
Flexibility**

**Ensuring Energy,  
Resource and  
Environment Security**

**Developing and Enhancing STI Human Capital**

**Promoting and Supporting the Development of STI Infrastructure  
and Enabling Factors**

# Strategies and Measures outlined in the National STI Policy & Plan



Geopolitical change

Climate change

## Green Innovation

for Quality Society & Sustainable Economic Growth

KRABI Initiative

Water Resource Management

Strategy 1:  
Empowering society and local communities

Strategy 2:  
Enhancing economic competitiveness and flexibility

Strategy 3:  
Ensuring energy, resource and environmental security

Green Society  
Inclusive Innovation  
Innovative Community

Green Economy  
Low Carbon Economy  
Bio-Based Industry

Green Environment  
Renewable Technology  
Technology for Climate Change

Basic/ Integrated/ Convergent Technologies (Earth Science, Neuro Science, ICT, New Materials, Biotech, Nanotech)

Strategy 4: Developing and enhancing STI human capital

Primary & Secondary

Vocational & Tertiary

Research

Labor

Enquiry -Based Learning  
Science Education

Science-Based Tech Schools  
Work Integrated Learning

THAIST, Mobility Fund,  
Research System Integration

Work Force  
STI Skill Upgrade

Strategy 5: Promoting and supporting the development of STI infrastructure and enabling factors

Regional  
Science Parks

T-RACE

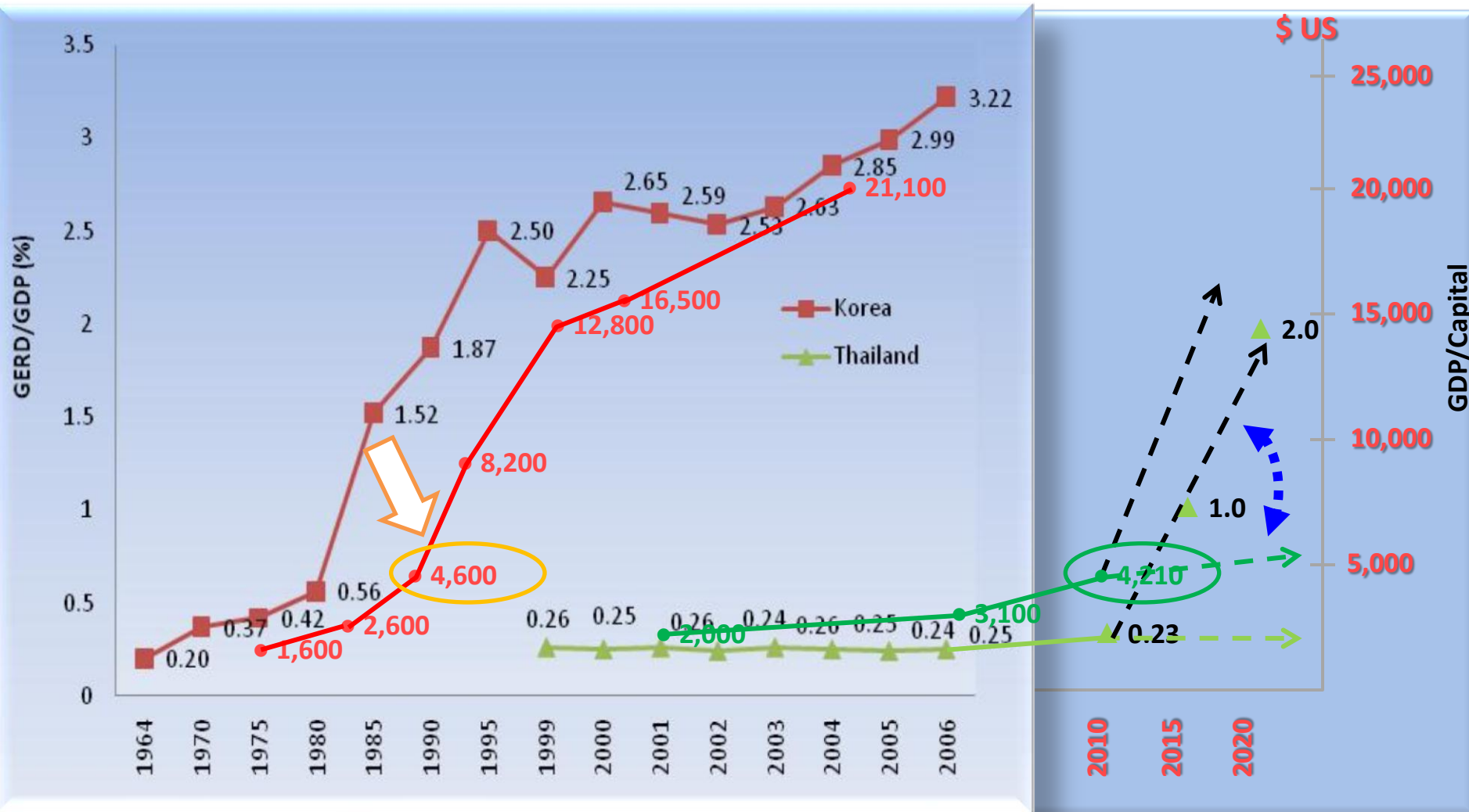
Technology &  
Innovation Bank

R&D Tax

IP Policy

Investment  
Incentives

# Overcoming the “Middle Income Trap”

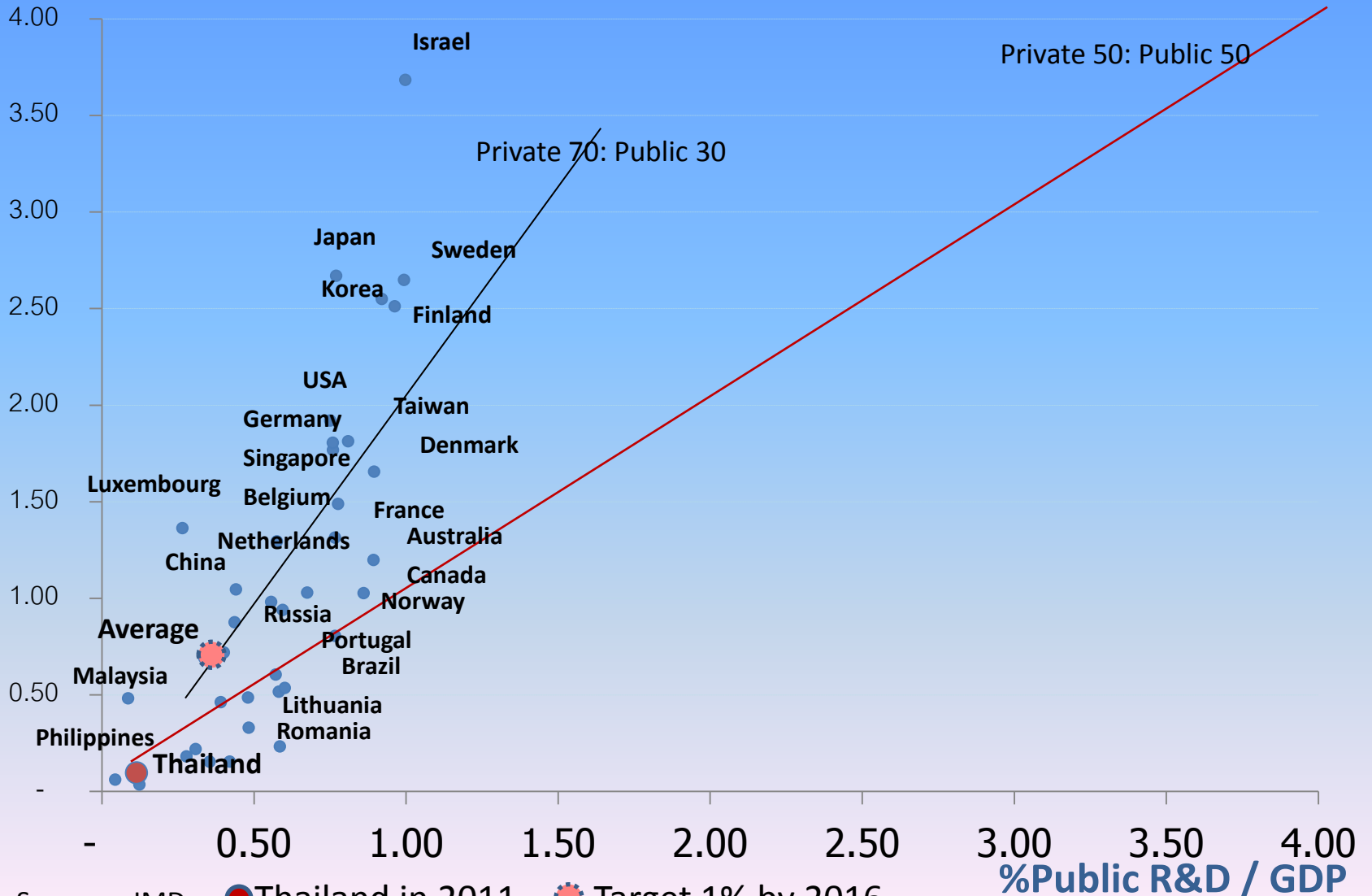


Source :

1. Main Science and Technology Indicators, June 2008
2. International Institute for Management Development (2008). World Competitiveness Yearbook 2008.
3. สำนักงานคณะกรรมการวิจัยแห่งชาติและสำนักงานพัฒนาวิทยาศาสตร์และเทคโนโลยีแห่งชาติ
4. Young Ok-Ahn (2009). Building Korea with Science, Technology and Innovation.

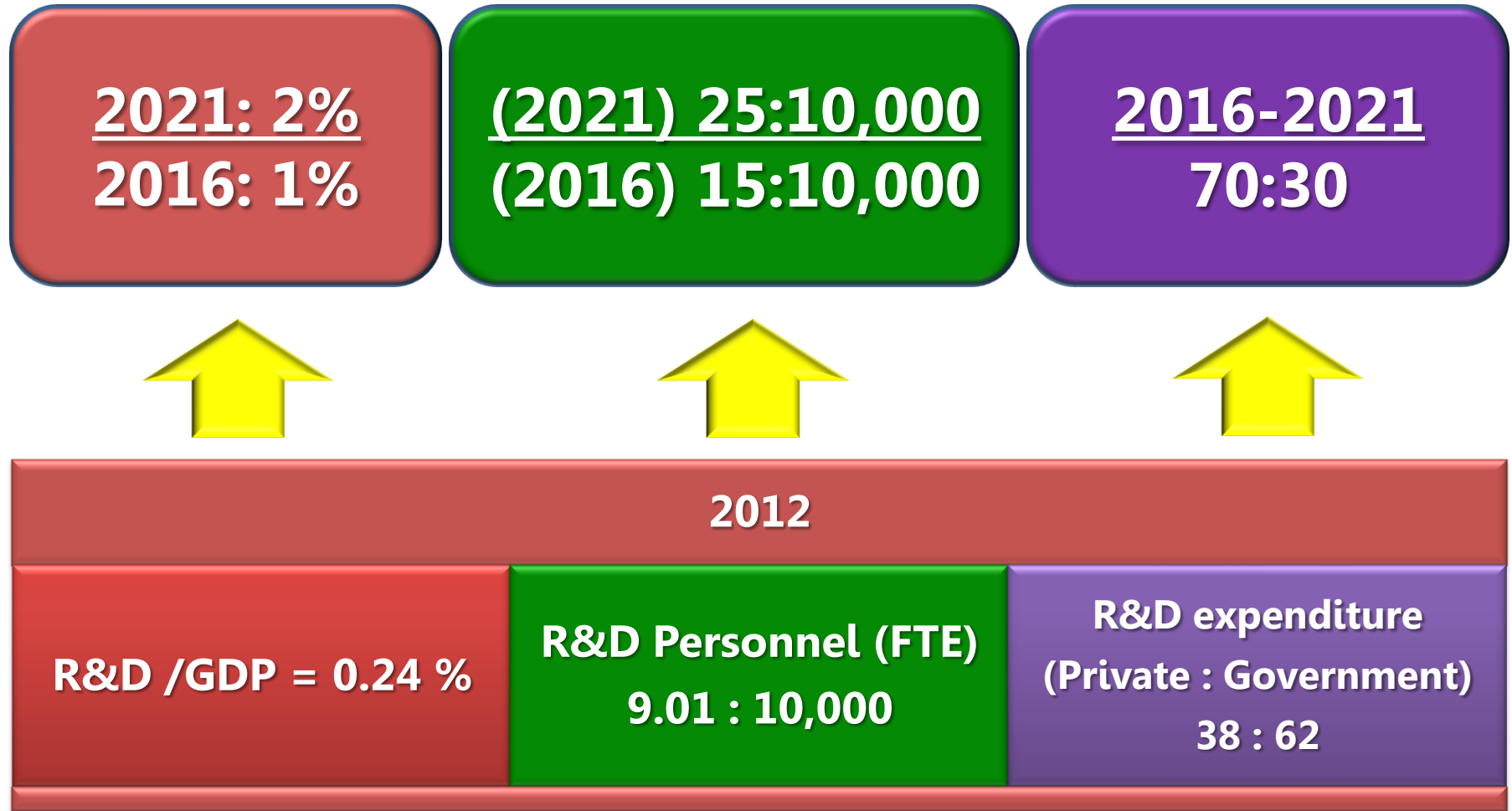
# Benchmarking R&D/GDP

%Private R&D / GDP



Sources : IMD ● Thailand in 2011 ⚙ Target 1% by 2016

# STI Investment Targets



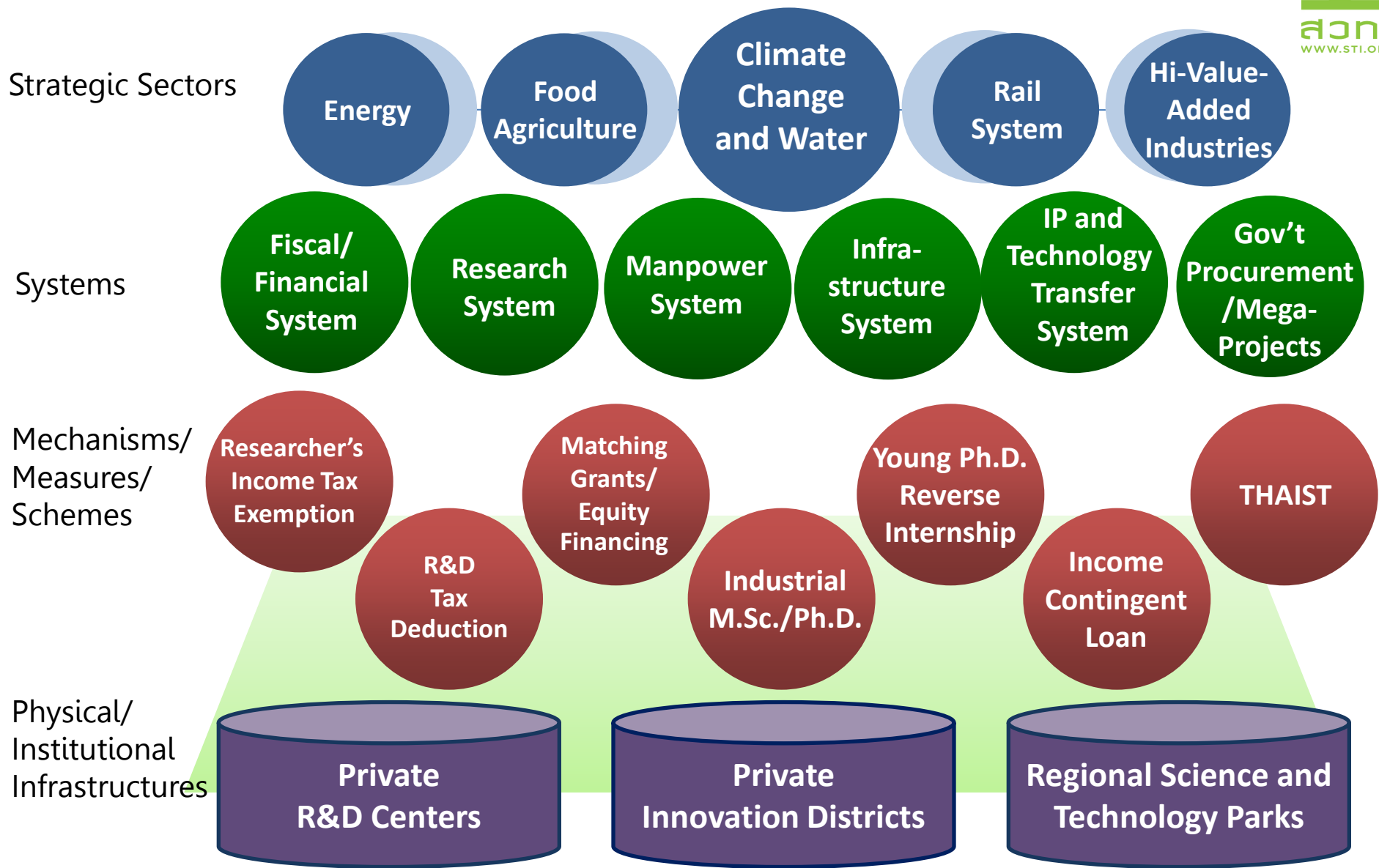
## Thailand Status in 2012

- R&D Exp = 21,493 MB
- R&D Exp : Gov : Private = 13,318:8,175 MB
- R&D Personnel = 57,220 (man-year)

Source: National Science Technology and Innovation Policy Office

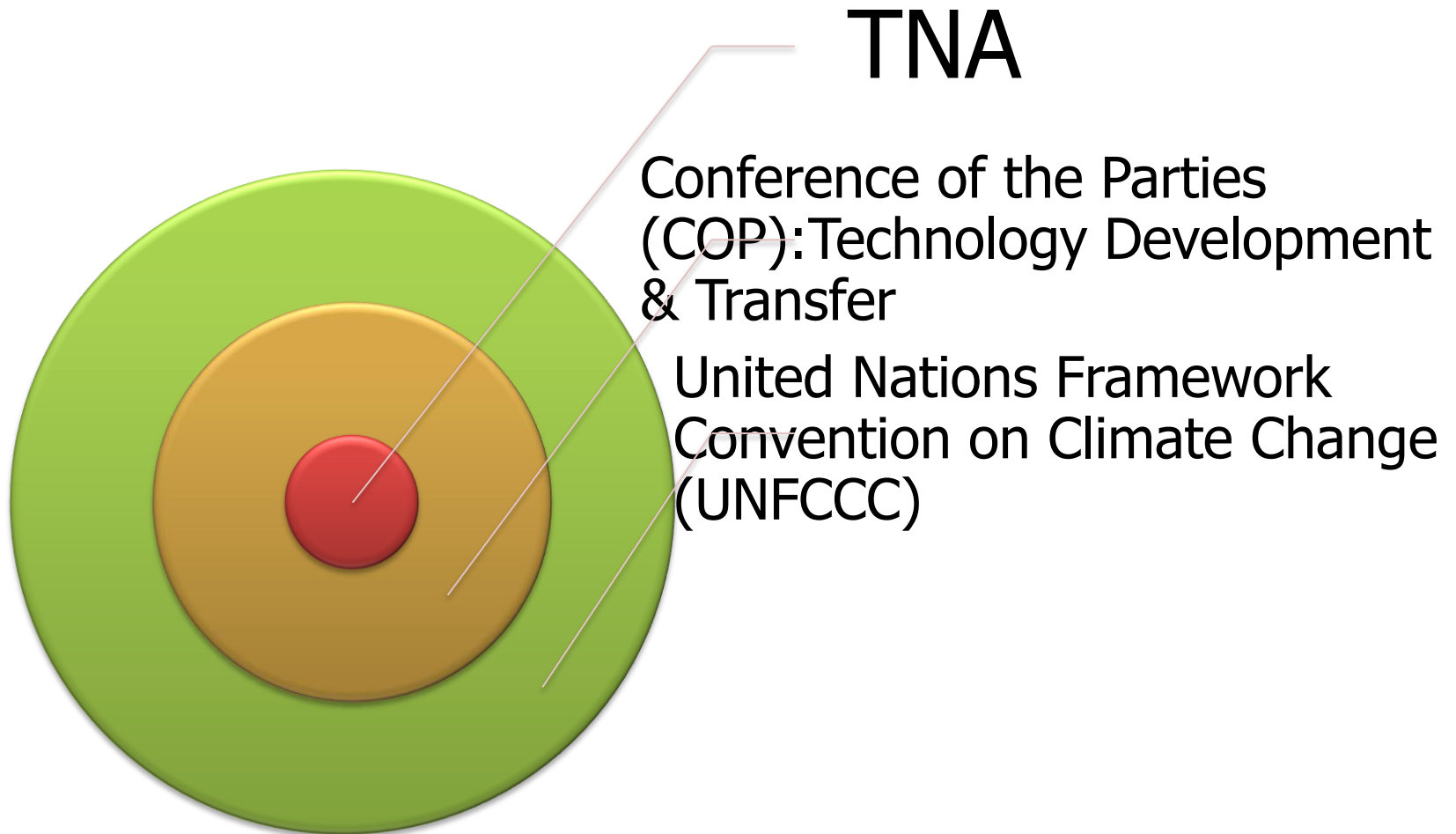


# STI Measures to Increase Competitiveness



# Thailand Technology Needs Assessment for Climate Change

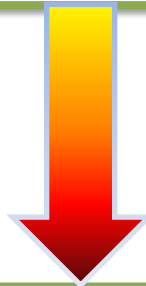
# Technology Needs Assessments (TNA)



# Purposes of TNA

To Identify and Prioritize Technologies

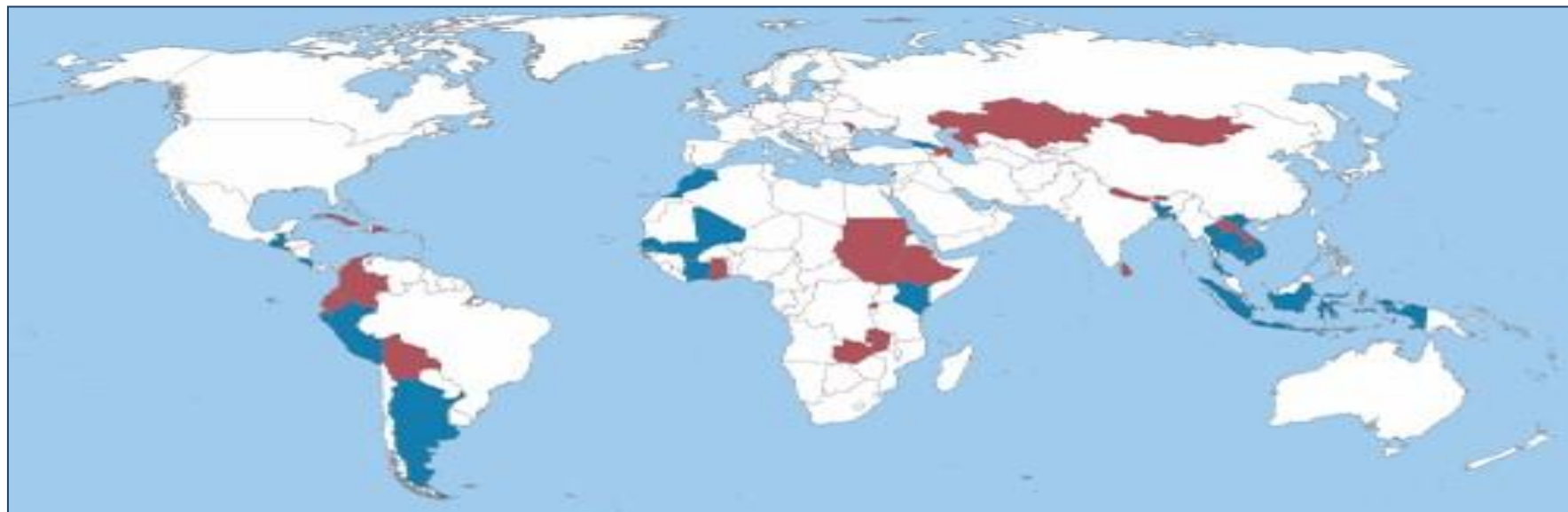
- Analyze barriers
- Find solutions
- Prepare diffusion



Develop Technology Action Plans (TAP)

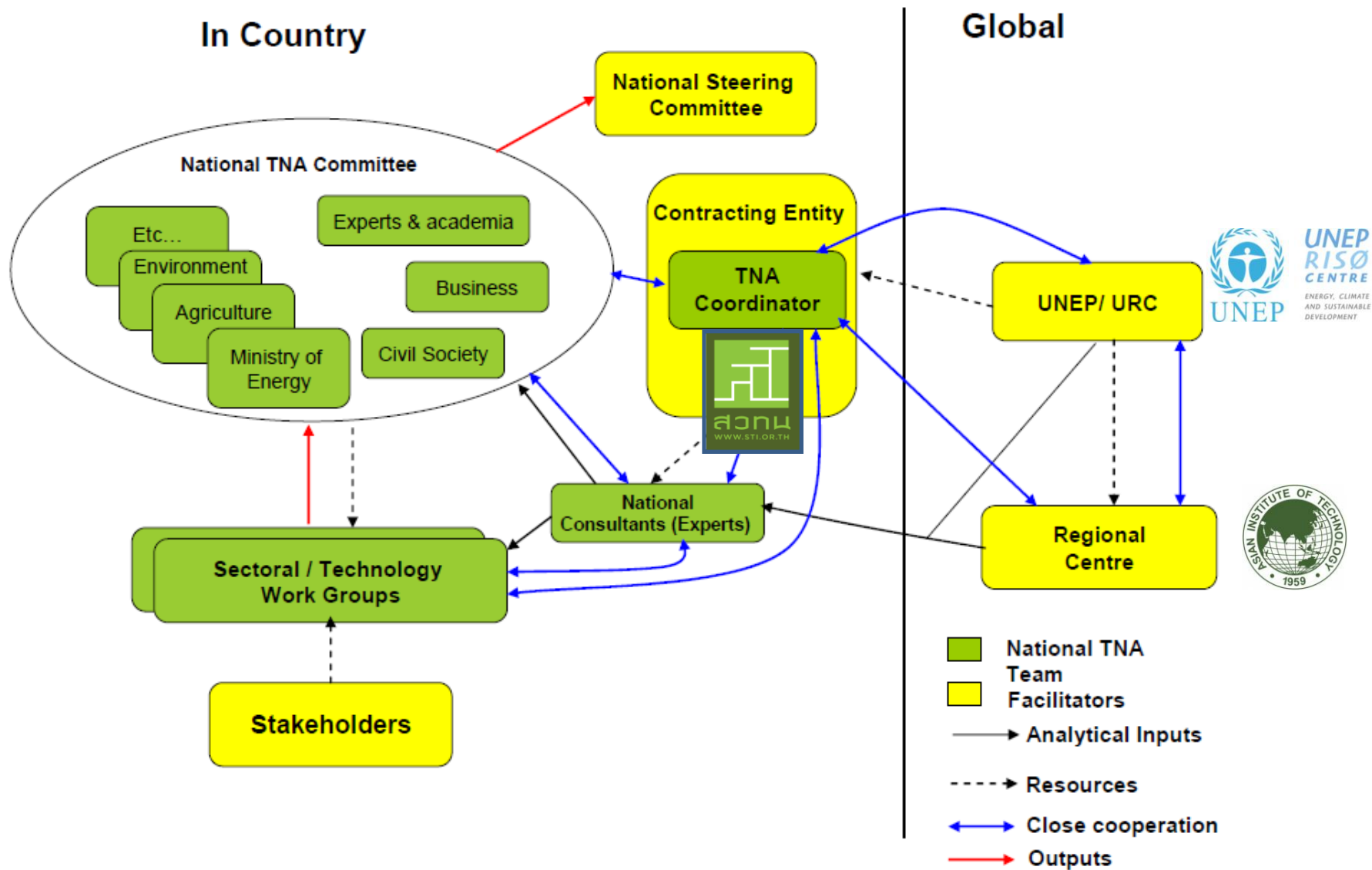
# PARTICIPATING COUNTRIES

## (A GEF FUNDED UNEP PROJECT)

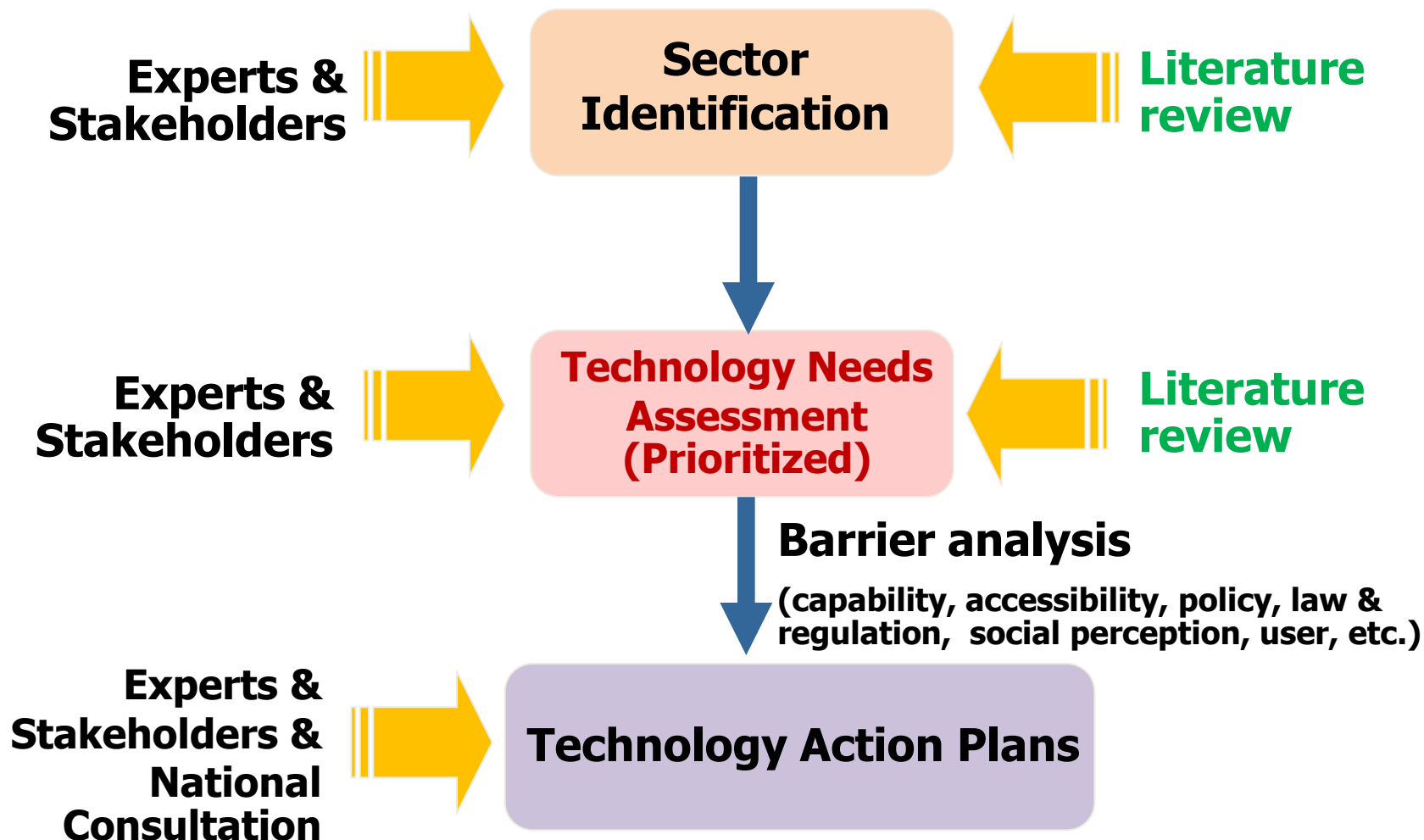


	Africa	Asia & Eastern Europe	Latin America & Caribbean
<b>1<sup>st</sup> Round (15 Countries)</b>	Cote d'Ivoire, Kenya, Mali, Morocco, Senegal	Bangladesh, Cambodia, Indonesia, <b>Thailand</b> , Vietnam, Georgia	Argentina, Costa Rica, Peru, Guatemala
<b>2<sup>nd</sup> Round (21 Countries)</b>	Ethiopia, Ghana, Mauritius, Rwanda, Sudan, Zambia	Azerbaijan, Bhutan, Kazakhstan, Laos, Lebanon, Moldova, Mongolia, Nepal, Sri Lanka	Bolivia, Colombia, Cuba, Dominican Republic, Ecuador, El Salvador

# INSTITUTIONAL STRUCTURE



# Process of TNA & TAP



# PRIORITIZED SECTORS

**Criteria:** Environment/Social/Economic improvement, GHG reduction potential , and reduction of vulnerability

## Agriculture



## Water Resource Management



## Energy

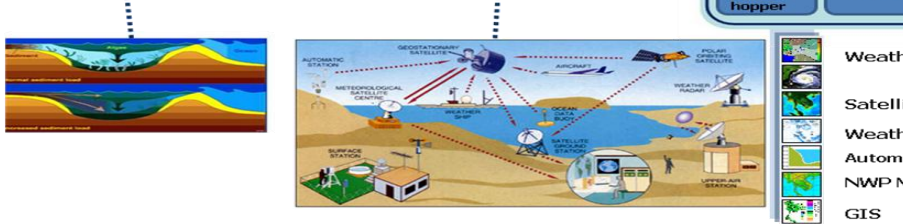
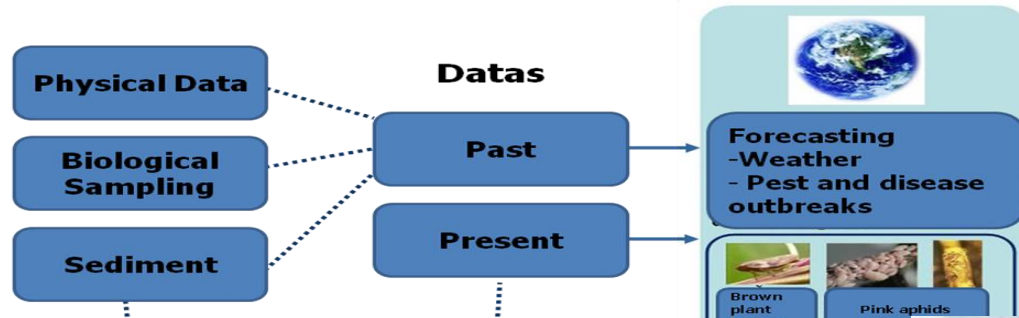


## Modeling

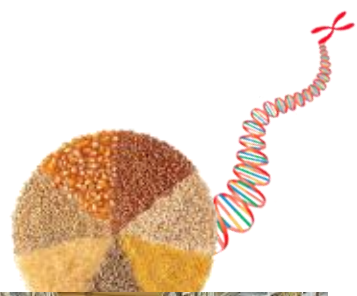




# TNA FOR AGRICULTURAL SECTOR



## Forecasting and Early Warning

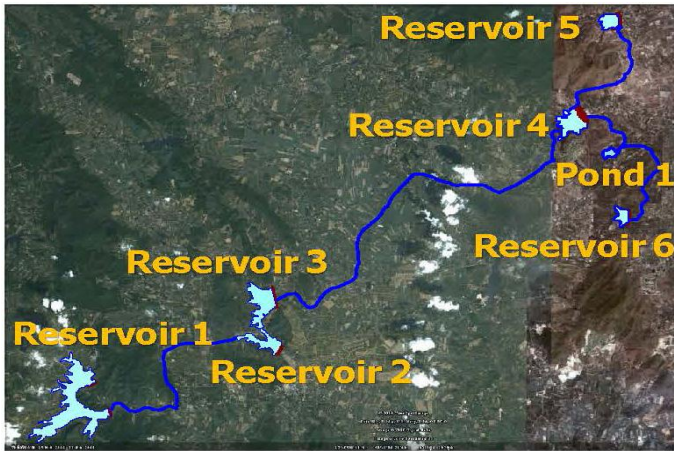


## Crop Improvement

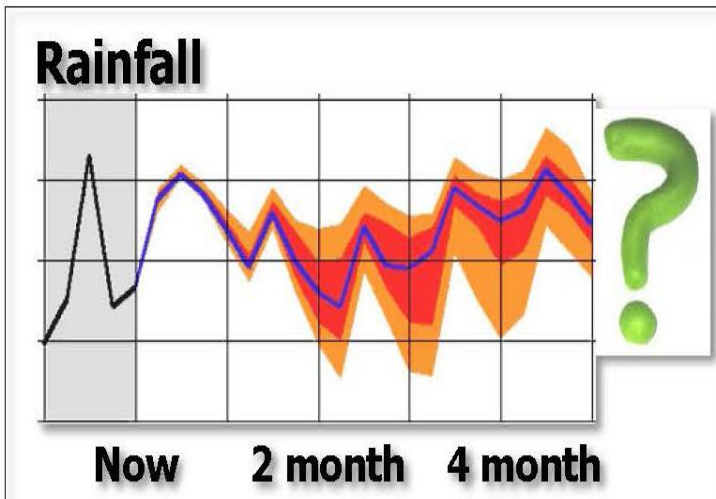
## Precision Farming



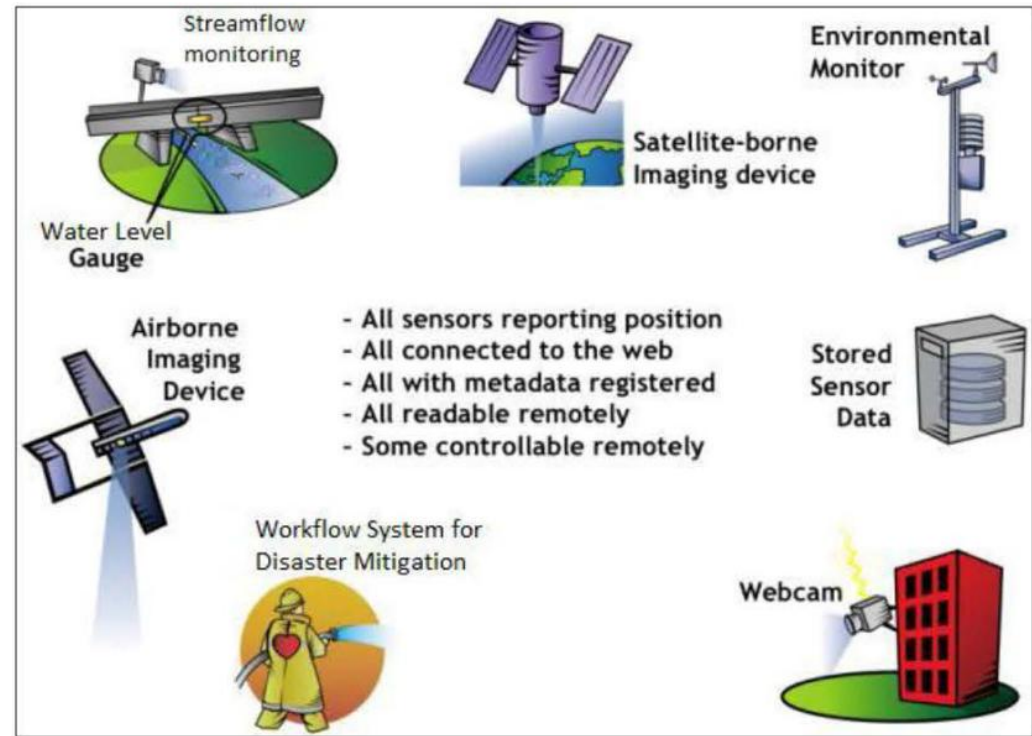
# TNA FOR WATER RESOURCE MANAGEMENT SECTOR



## Networking and management of water infrastructures



## Weather & Hydrological Modeling - Seasonal climate prediction

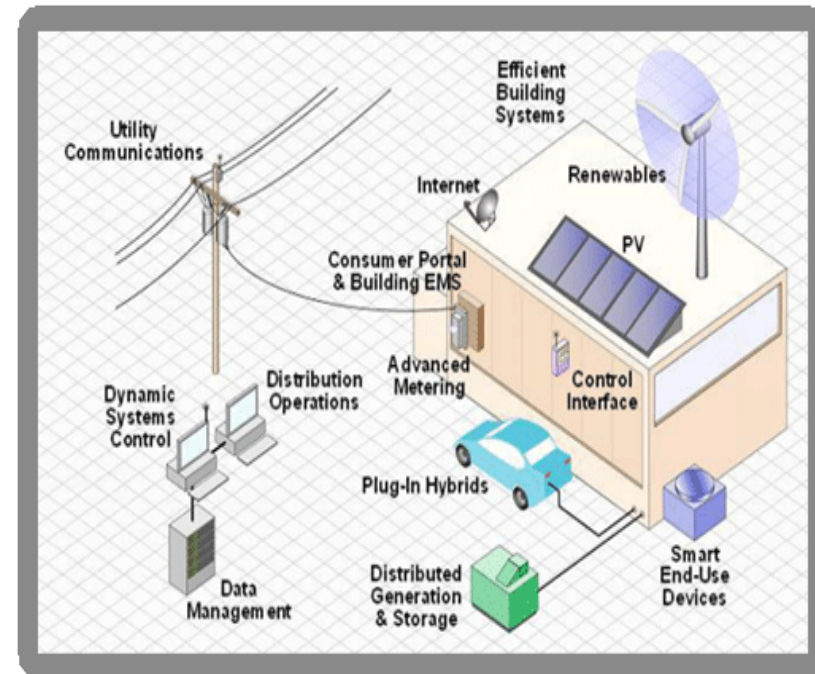
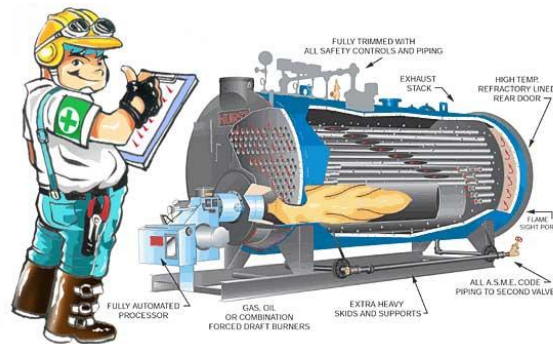
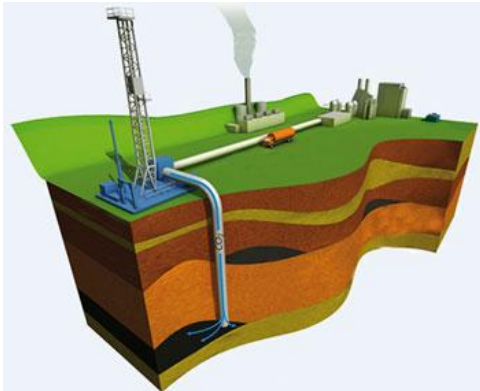


## Early Warning - Sensor web using observation and/or modeling data

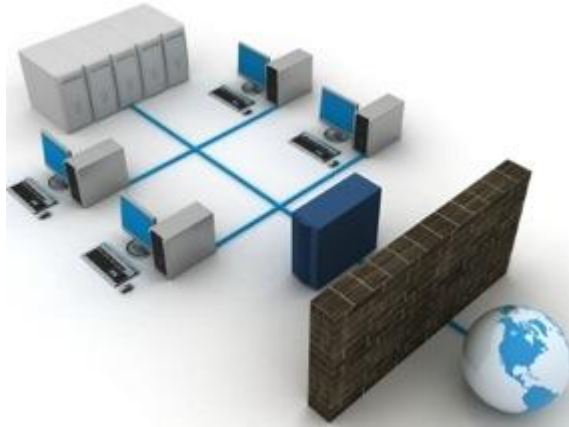


# TNA for ENERGY SECTOR

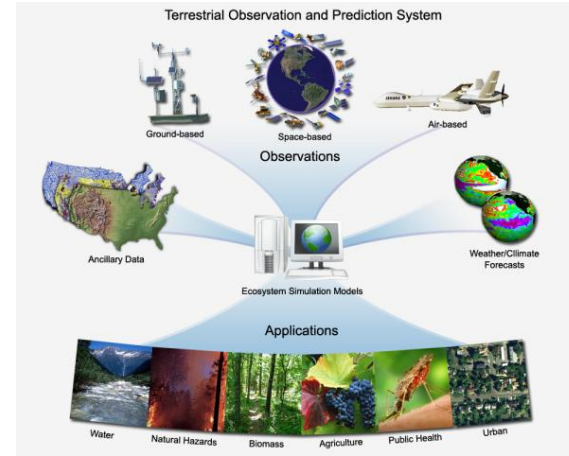
- (a) Energy supply
  - Smart grid
- (b) Renewable energy technology
  - Waste to power (power generation)
  - Second generation biofuels
- (c) Energy efficiency improvement
  - Fuel Combustion in industry sector
- (d) Energy related Climate Change technology
  - Carbon Capture & Storage (CCS)



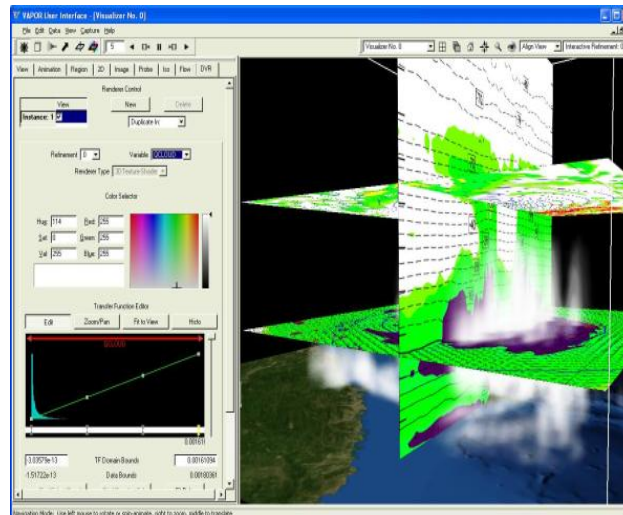
# TNA for Development of MODELING Capability



National Climate Data Centre



National Data Transfer & Management



Weather Research & Forecasting Model (WRF)

# Technology Action Plan

## **(a) Strategies/Activities**

- Technology capability
- Infrastructure
- Policy / Regulation

## **(b) Barriers & Solutions**

## **(c) Technology Action Plan (Short-term, Medium-term & Long-term)**

## **(d) Stakeholders**

# www.tech-action.org/TNAReports.asp

<http://www.tech-action.org/TNAReports.asp>

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## TNA Project

- » [About TNA](#)
- » [Participating countries](#)
- » [Country support](#)
- » [Events](#)
- » [Publications](#)
- » [Resources](#)



### Publications

- All publications
- Guidebooks
- Papers
- Perspectives Series
- TNA Newsletter
- TNA Reports

### TNA Reports

Evaluación de Necesidades Tecnológicas ante el Cambio Climático en Costa Rica - Mitigación (MINAET and INCAE, 15 February 2012)

Evaluación de Necesidades Tecnológicas ante el Cambio Climático en Costa Rica - Adaptación (MINAET and INCAE, 15 February 2012)

Technology Needs Assessments Report, Thailand – Mitigation (National Science Technology and Innovation Policy Office, Thailand, 16 July 2012)

Technology Needs Assessments Report, Thailand – Adaptation (National Science Technology and Innovation Policy Office, Thailand, 16 July 2012)



### THAILAND

#### TECHNOLOGY NEEDS ASSESSMENTS REPORT FOR CLIMATE CHANGE

#### MITIGATION

Coordinated by



Supported by



July 2012

### THAILAND

#### TECHNOLOGY NEEDS ASSESSMENTS REPORT FOR CLIMATE CHANGE

#### ADAPTATION

Coordinated by



Supported by



July 2012



# Krabi Initiative

Science, Technology and Innovation (STI) for a Competitive , Sustainable and Inclusive ASEAN

Endorsed by ASEAN S&T Ministers at the 6<sup>th</sup> IAMMST as a policy framework for STI cooperation in ASEAN, December 2010

## Rationale

ASEAN 2015 – Vision of ASEAN Leaders

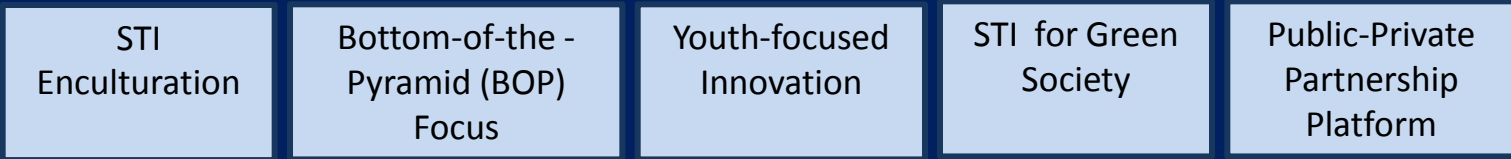
Roles of STI – A Balance between Competitiveness and Human Development (People-oriented STI)

Reinventing ASEAN Scientific Community for a Meaningful Delivery of STI Agenda in ASEAN

## Thematic Tracks



## Paradigm Shifts



## Courses of Action

Organisational restructure for a meaningful delivery of STI agenda in ASEAN

Develop mechanisms to pursue partnerships and cooperation with other stakeholders in STI

Enhance ASEAN Plan of Action on S&T for 2012-2015 and leverage the recommendations of the Krabi Retreat for development of future APAST beyond 2015

Implement monitoring and evaluation mechanism for the implementation of STI thematic tracks

# Thank you for your attention.



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