THE UNITED NATIONS COMMISSION ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT

18th SESSION

4–8 May 2015
Geneva

Item 4: Presentation of reports on science, technology and innovation policy reviews
6 May 2015

Contribution by

Ministry of Science and Technology of Thailand

Science, Technology and Innovation Policies in Thailand: Achievements and Challenges

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Minister of Science and Technology

Science, Technology and Innovation Policies in Thailand: Achievements and Challenges

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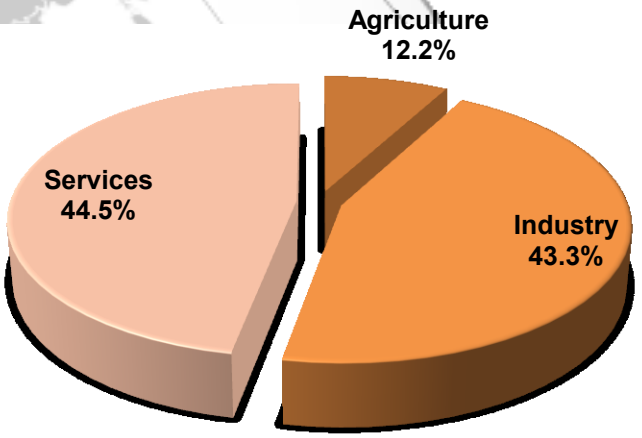
Minister of Science and Technology, Thailand

The 18th Annual Session of the United Nations
Commission on Science and Technology for Development (CSTD)
6 May 2015

Thailand *Context*

- An upper middle income economy
- ASEAN's 2nd largest economy
- Total population of 67.2 million (2014)
- GDP per capita (nominal) US$ 5,771 (IMF, 2015 estimate)
- World's largest natural **rubber** producer and exporter (WTO, 2013)
- World's largest exporter of **cassava** products (FAO, 2013)
- World's 2nd largest **rice** exporter (WTO, 2013)
- World's 2nd largest **sugar** exporter (WTO, 2013)
- World's 2nd largest **hard-disk drive** exporter
- **Automotive manufacturing** hub of Southeast Asia

GDP:
US$ 397.48 billion
(IMF, 2015 estimate)



Our *STI Context*

Strengths & Opportunities

- Agriculture, Food, Healthcare and Life Sciences
- Competitive business sectors, Manufacturing bases
- Opportunities in ASEAN

Weaknesses & Challenges

- Commercialization of research outputs
- Linkage of mega projects investment to STI & local industry development
- STI budgeting system
- Next generation knowledge workers
- Innovation for future competitiveness

The Values of STIP Review

- Critical evaluation of our STI system from external perspectives
- Learn from international best practices and failures
- Stimulate discussions and raise awareness on the role of STI in national economic and social development

Government Policy on STI
(12 September 2014)

1. **Reform STI administration system** to increase effectiveness of public-private linkage and partnership. **Increase R&D expenditures** to 1% of GDP with private/public sector ratio = 70:30*

2. Accelerate support for **STI manpower development** through STEM education, work-integrated learning, talent mobility, technological assistance to SMEs

3. **Reform incentive systems**, regulations and laws to enable commercialization of R&D and IP

4. **Use public mega investment projects and government procurement** to stimulate innovation in strategic areas, e.g., rail system and water management.

5. **Develop STI infrastructure & services** to effectively support technology and R&D commercialization

** 70:30 by 2021; 60:40 by 2016*

Mapping of STIP Review Recommendations & Government Policy

Thai Government Policy on STI	STIP Review Recommendations: 9 Strategic Thrusts for Change
1. Reform STI administration system to increase effectiveness of public-private linkage and partnership. Increase R&D expenditures to 1% of GDP with private/public sector ratio = 70:30	1. Move leaders and institutions out of their comfort zone 2. Mobilize for common goals and aspirations 3. Balance social, environment and economic objectives 4. Strengthen STI governance and management
2. Accelerate support for STI manpower development through STEM education, work-integrated learning, talent mobility, technological assistance to SMEs	6. Link innovation actors 8. Expand international connection
3. Reform incentive systems, regulations and laws to enable commercialization of R&D and IP	6. Link innovation actors 7. Support decentralization
4. Use public mega investment projects and public procurement to stimulate innovation in strategic areas, e.g., rail system and water management.	5. Improve resource management 9. Take advantage of megaprojects
5. Develop STI infrastructure and improve infrastructural services to effectively support technology and R&D commercialization	5. Improve resource management 7. Support decentralization

1. Move leaders and institutions out of their comfort zone

STIP Review Recommendations	Actions
Launch awareness campaign showcasing innovation initiative	- Grand Exhibition "Thai Innovation & Technology for SMEs & Farmers"
Build commitment for STI education and training reform	- Work-integrated learning program - Vocational Education Reform
Increase accountability through effective evaluation and conditional budget allocation	- Program-based budgeting system for strategic STI investment programs allowing for multi-year budget allocation (instead of annual allocation) with a new performance-based monitoring and evaluation scheme

Implemented Underway Planning

2. Mobilize for common goals and aspiration

STIP Review Recommendations	Actions
Provide training for policymakers and stakeholders	- STI Policy& Management Program (PMP) for Policy Makers and STI Executives - Establishment of STI Policy Institute
Strengthen STI consultation process	- New STI Law
Agree on a common agenda for reform of STI education and training	- Vocational Education Reform - STI PMP for Policy Makers and STI Executives
Develop a long-term vision for agriculture	- Provincial Chief Science Officer and Chief Science Advisor - Strategic STI Initiatives, e.g. Organic Farming, Community-based Water Management Program, Tailor-made Fertilizers

Implemented Underway Planning

3. Balance social, environmental and economic objectives

STIP Review Recommendations	Actions
Design STI incentives to benefit disadvantaged groups	- 300% Tax Incentives - Crowd funding - Industrial Technology Assistance Program for SMEs - Innovation Coupon - Loan guaranteed for SMEs - One-stop service MSTQ and Testing Labs - STI Facilitation Center - Regional Science Parks - Special Innovation Zone - Enjoy Science Program with Chevron
Follow up on actions suggested in Thailand's climate change TNA reports	- Technology Action Plans for Climate Change Adaptation and Mitigation - Set up of National Designated Entity
Develop a strategy for STI in agriculture that focuses on the poor	- Agriculture Strategic Research Program (Rice, Rubber, Cassava, Sugar Cane) - Regional Science Parks - Special Innovation Zones

Implemented Underway Planning

4. Strengthen STI governance and Management

STIP Review Recommendations	Actions Taken /Underway/Planning
Strengthen the role of the National STI Policy Committee	- New STI Law
Separate policy advice from program implementation	-Establish an STI Advisory Committee for the Prime Minister - Move the National STI Policy Office from the Ministry of Science and Technology to the Prime Minister's Office
Rationalize the structures of R&D institutions	- Reliable third party evaluation (e.g., TDRI)
Enhance coordination between research, education and industry	- Special Innovation Zones - Talent Mobility
Review educational quality assurance and quality enhancement systems	- Education Super Board

Implemented Underway Planning

5. Improve resource management

STIP Review Recommendations	Actions
Prioritize resources: Build a critical mass	- R&D Promotion Package for Electronics and Auto Industries
Update the mix of financing instruments for supporting innovation	- 300% Tax Incentives - Crowd funding - Innovation Coupon - NIA Zero Interest Loan - Tech Commercialization Fund
Use public procurement to develop technological capabilities of domestic firms	- Government Procurement Program to Support Local Innovation
Budget allocation processes to be transparent, based on performance	- Program-based budgeting system for strategic STI investment programs
Strengthen the impact of R&D programs on raising opportunities for and productivity of small-scale farmers	- Smart Farming Program

Implemented Underway Planning

6. Link innovation actors

STIP Review Recommendations	Actions
Expand schemes at the interface between the sources and the demand for knowledge	- Special Innovation Zones
Review incentives for mobility and collaboration	- New Office of Higher Education Commission Regulation
Promote cooperative education	- PPP Scholarship Program - Talent Mobility - Work-integrated learning, Career Academy
Strengthen business incubation program and support research spin-offs and commercialization	- AIMS Program - Thai-BISPA
Strengthen formal participation of a wide range of stakeholders in program design, implementation and evaluation	- Regional Science Parks - MoU with Foreign countries
Strengthen linkages in agriculture	- Agriculture Research & Development Program - Thailand Agriculture Mobile Information System - Provincial Chief Science Officer and Chief Science Advisor

Implemented Underway Planning

7. Support decentralization

STIP Review Recommendations	Actions
Expand STI Infrastructure and networks in the region	- Regional Science Parks Network - Special Innovation Zones
Develop STI Policymaking capacities at the regional level	- STI Policy& Management Program (PMP) for Policy Makers and STI Executives
Expand school models that promote innovation and local development	- Work-integrated learning, Career Academy
Reinforce agriculture extension services	- Organic Farming Program

Implemented Underway Planning

8. Expand international connections

STIP Review Recommendations	Actions
Build business linkages between TNCs and local firms	- R&D Centers Promotion Program
Engage international experts on STI policies and program design and evaluation	-Science Diplomacy – Thailand Global Partnership Program - International Research Network
Maximize international collaboration and mobility	-Science Diplomacy – Thailand Global Partnership Program - ASEAN Talent Mobility Program

Implemented Underway Planning

9. Take advantage of megaprojects

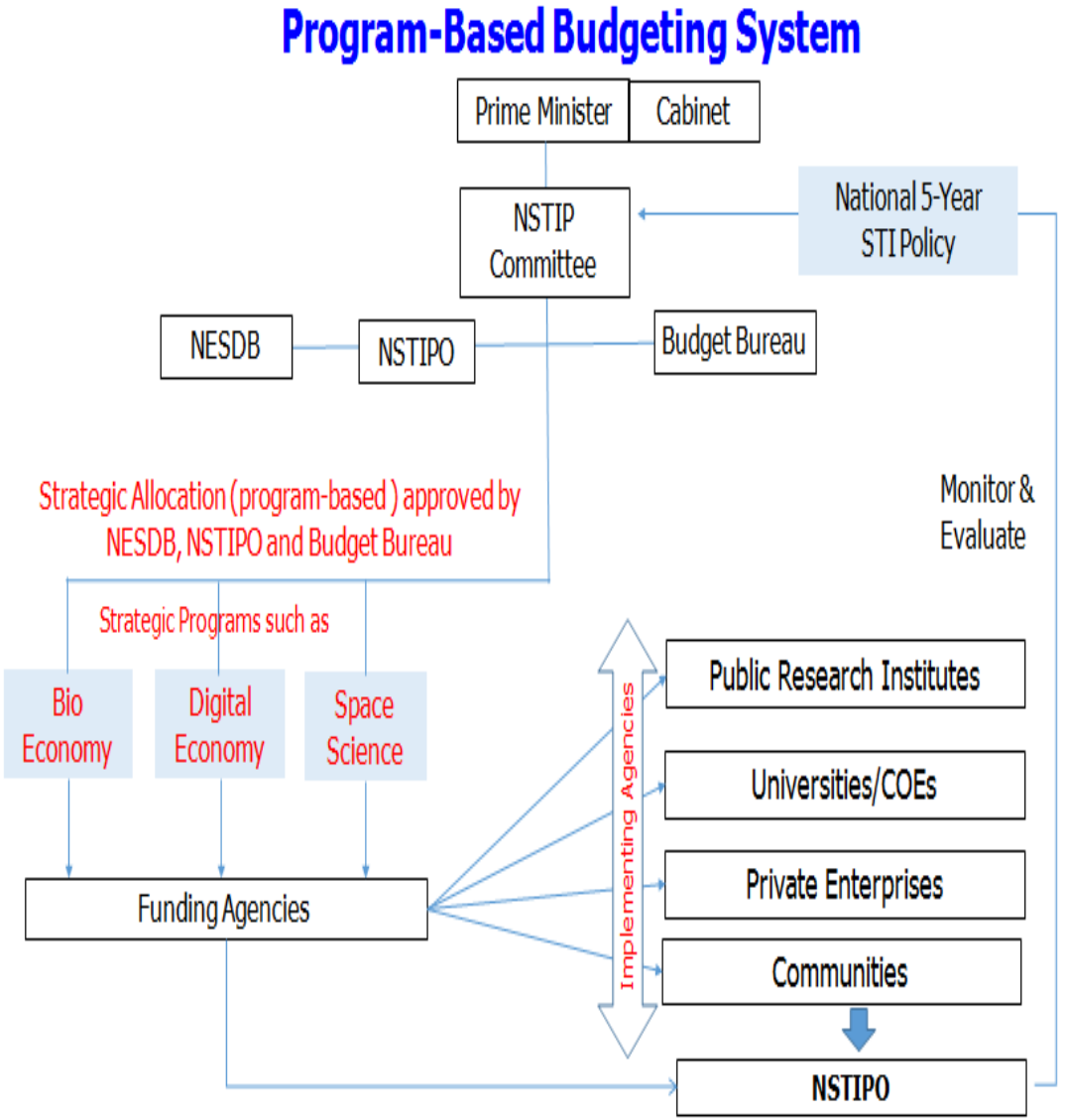
STIP Review Recommendations	Actions
Ensure that HRD and the generation of technology spillovers are an integral part of the railway project	- Rail Academy
Make technology transfer an explicit objective of public procurement	- Government Procurement Program to Support Local Innovation

Implemented Underway Planning

Highlight of Actions

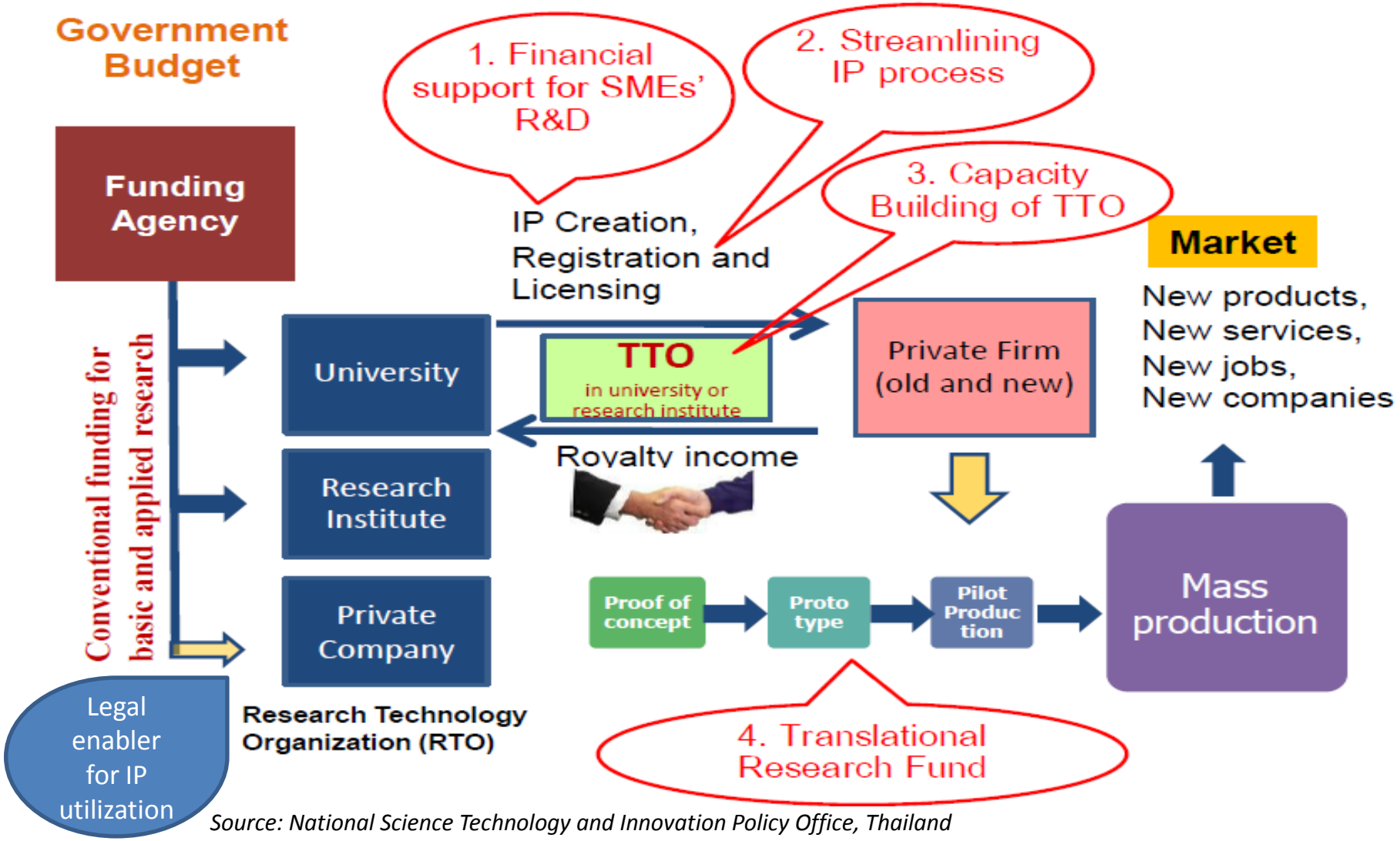
New STI Law to Enhance STI Governance and Management

- Establish Science Cabinet
- Establish High-level STI Advisory Committee
- Move the National STI Policy Office from the Ministry of Science and Technology to the Prime Minister's Office
- Set up a **Program-based Budgeting System** for strategic STI investment programs allowing for multi-year budget allocation (instead of annual allocation) with a new performance-based monitoring and evaluation scheme



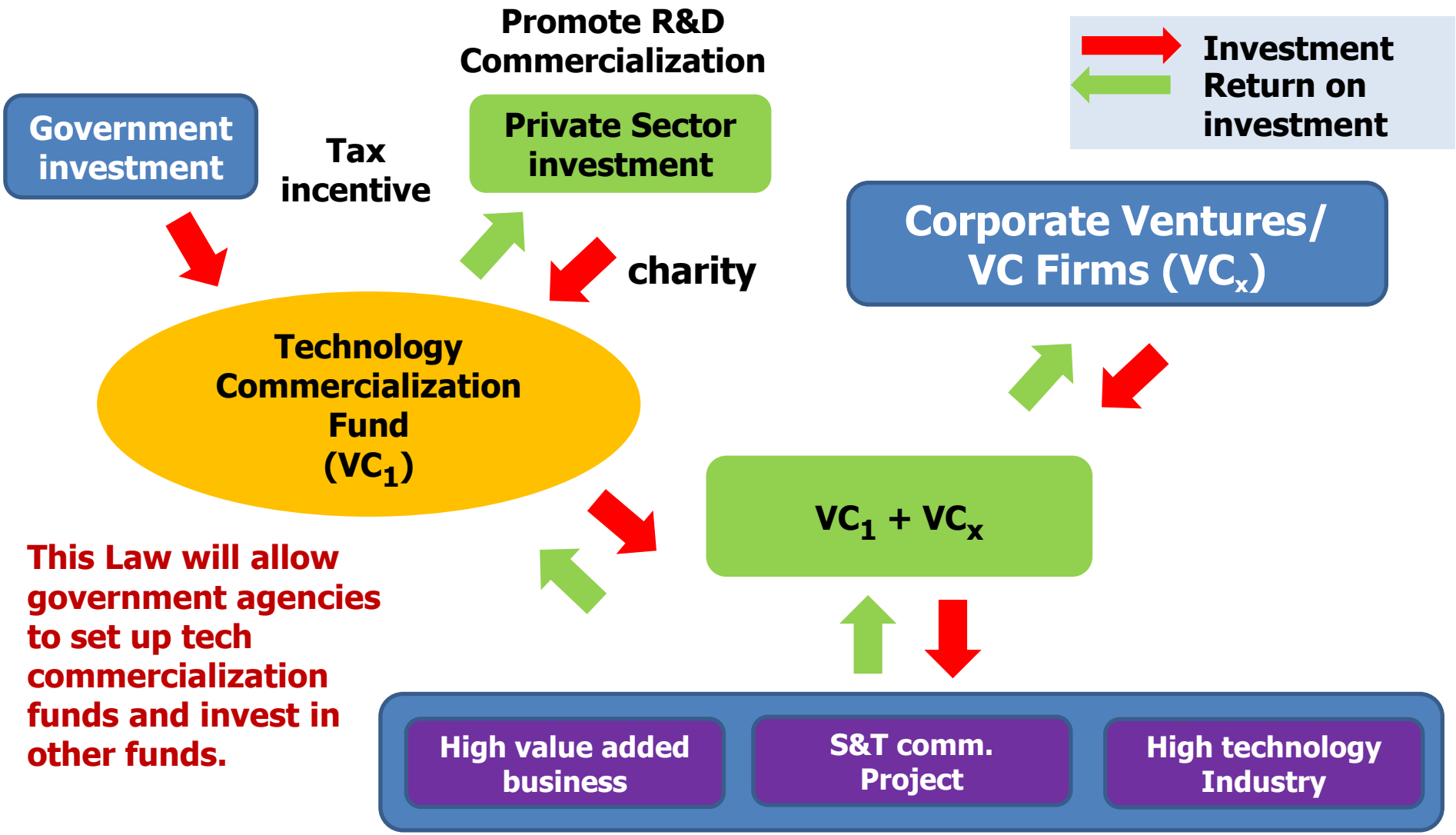
Source: National Science Technology and Innovation Policy Office, Thailand

New IP Commercialization Law allowing transfer of IP ownership from funding agencies to grantees



Source: National Science Technology and Innovation Policy Office, Thailand

New Law allowing Government Agencies to set up Technology Commercialization Fund

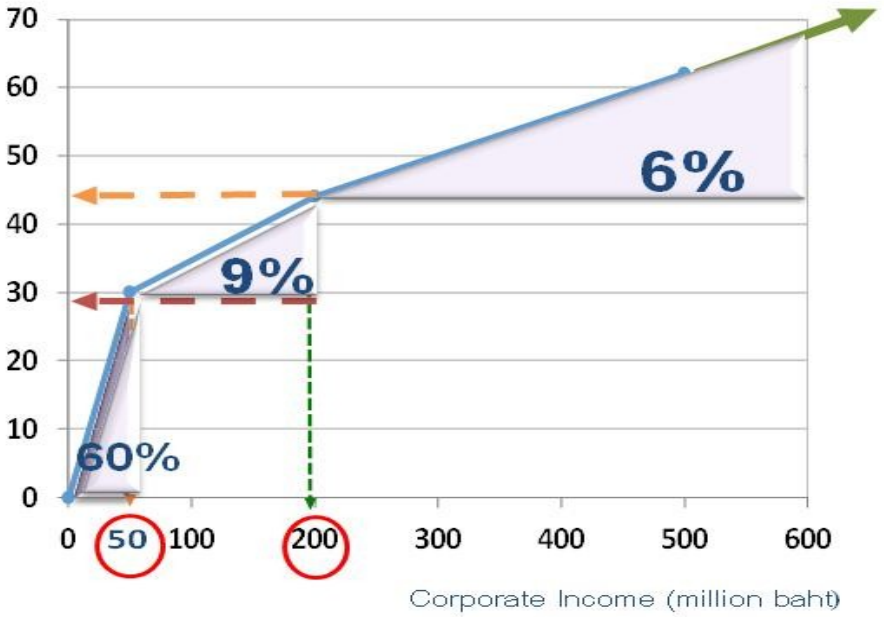


This Law will allow government agencies to set up tech commercialization funds and invest in other funds.

Source: Satit Charnchaokul, 2014

300% Tax Exemption for R&D and Innovation Expenditures

- Enhancing Tax deduction for research, development and innovation expenditures **from 200% to 300%**
- Expanding the scope of expenditure, including **Innovation** expenditure



Automation/ equipment

Training

R&D

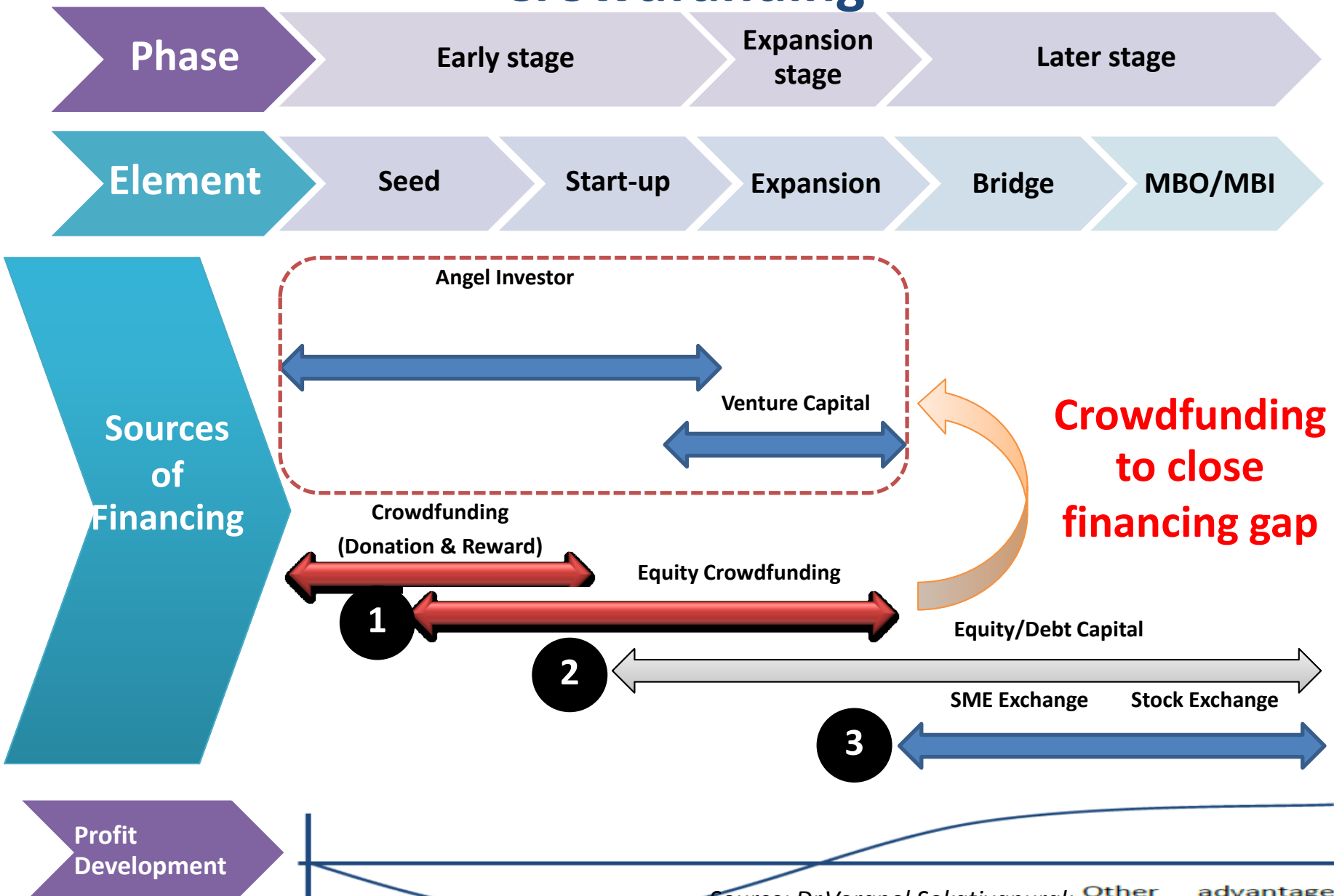
IP and technology acquisition

IP registration

Design

Source: National Science and Technology Development Agency (NSTDA), Thailand

Tax Exemption for Private Equity Fund and Crowdfunding



Source: Dr.Vorapol Sokatiyanurak

Development of Special Innovation Zones (SIZ)

Northern Science Parks Network

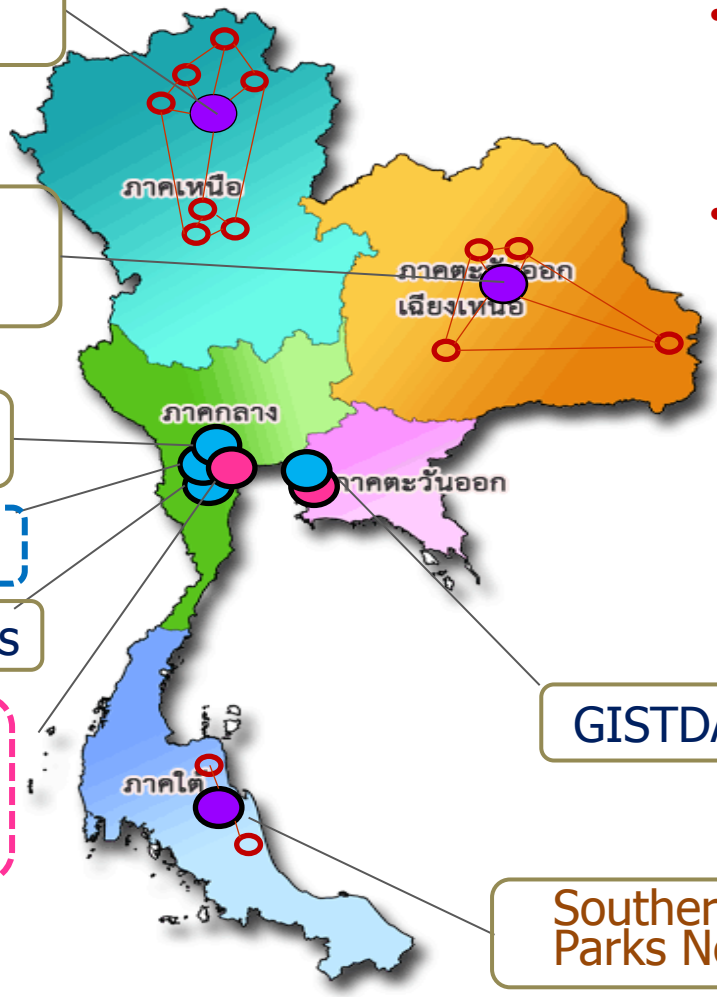
North-eastern Science Parks Network

THAILAND SCIENCE PARK

ASEAN Food Innopolis

University Industrial Parks

Privately owned SIZ (e.g. Enhancement of existing industrial estates)



GISTDA Space Park

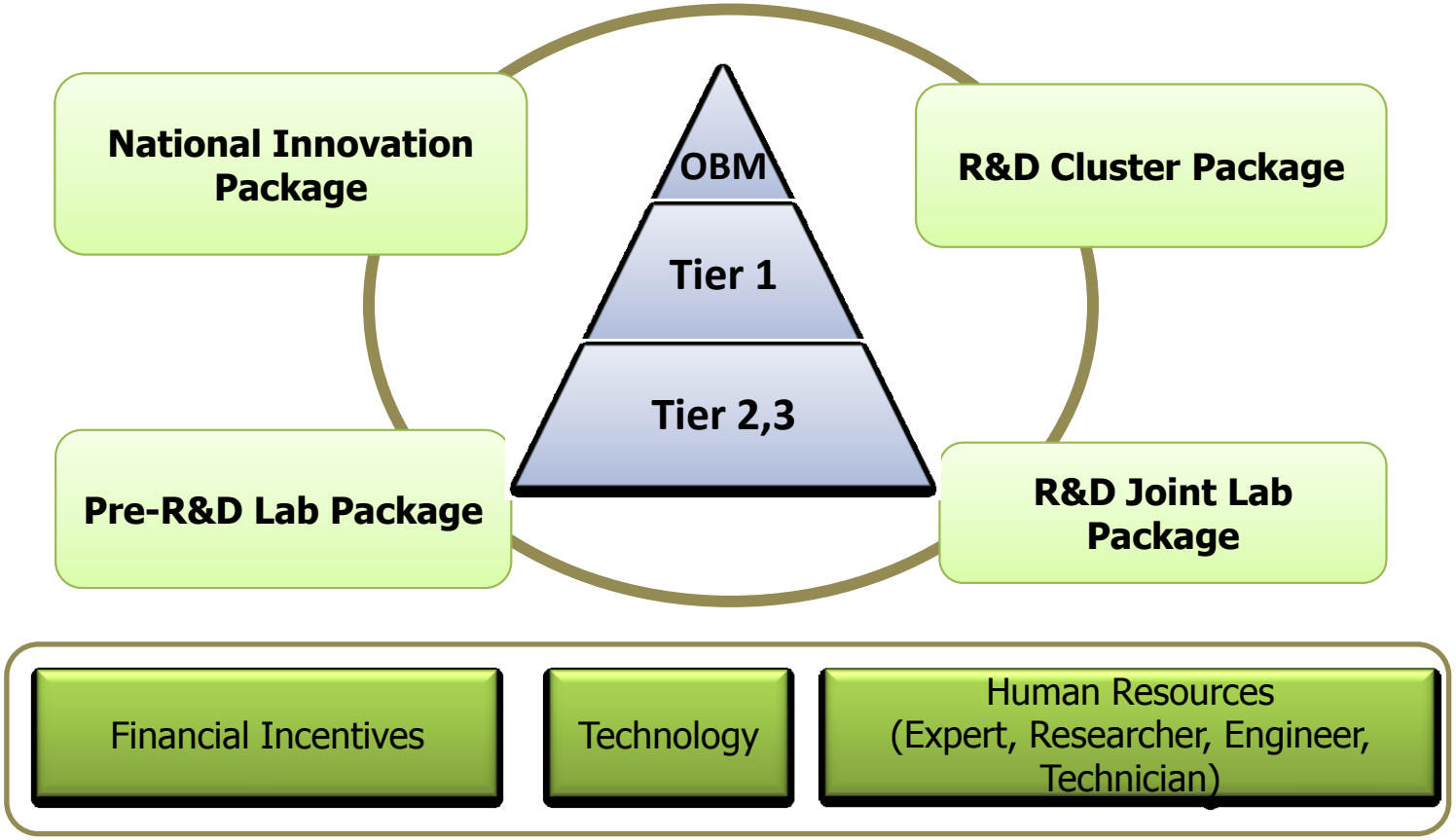
Southern Science Parks Network

Special incentives for SIZ

- **10-Year CIT exemption without cap.**
- **Expert's PIT waive for the first 5 years and after 5 years 10% flat rate**

Source: National Science Technology and Innovation Policy Office and National Science Technology and Innovation Policy Office, Thailand

R&D Centers Promotion Program



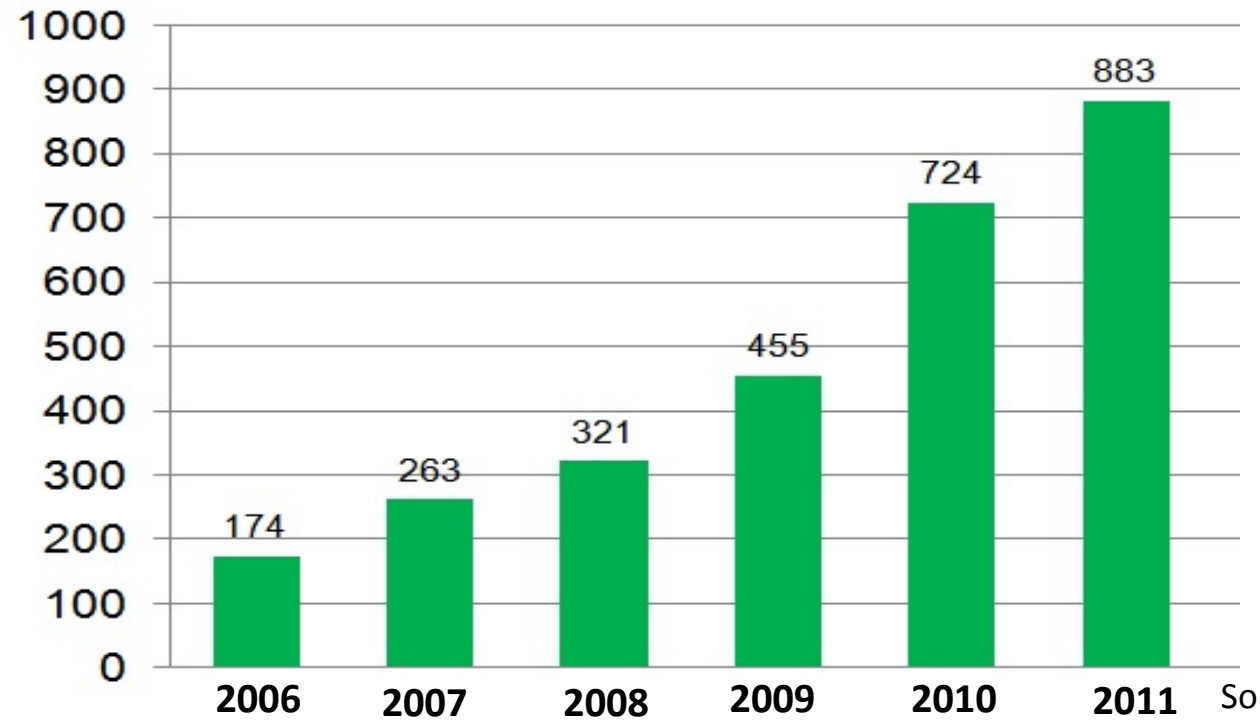
Source: National Science Technology and Innovation Policy Office, Thailand

Scaling up of Industrial Technology Assistance Program for SMEs

Investigate technological problem	**Matching supply of & demand for technology**	**Technological consultancy service Joint R&D**	**Funding subsidies 50:50**

S&T Acquisition Program (Local & Overseas)	**Training/ Workshop**	**Attach local expert to overseas expert, help technology transfer to firms and universities**

Number of projects

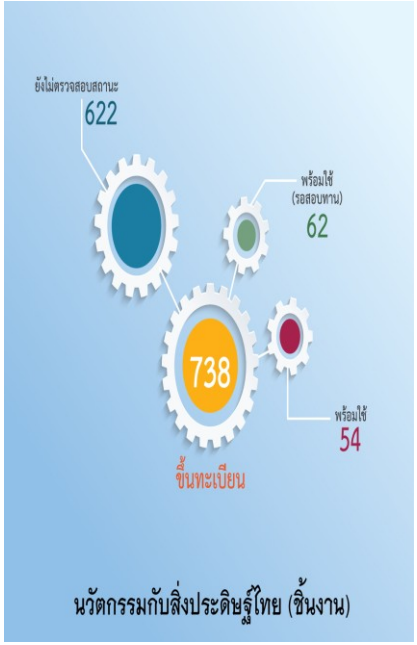


- 2,820 technology Development& innovation projects
- 10 regional nodes linking with local universities and science parks with 50 project managers
- Total investment 55.4 Million USD

Source: ITAP, NSTDA

Government Procurement Program to Support Local Innovation

Account of Government Purchasing Demand



Ministry of Science and Technology

Thai Innovation

www.innovation.go.th

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Registration of Innovative Products

- ประดิษฐ์ไทย
- บัญชีความต้องการของภาครัฐ
- Online Report
- สรุปภาพรวม
- หมวดสำรวจ
- หมวดโรงงาน
- หมวดก่อสร้าง
- หมวดการศึกษา
- หมวดการเกษตร
- หมวดวิทยาศาสตร์
- หมวดงานบ้านงานครัว
- หมวดยานพาหนะและขนส่ง
- หมวดยุทโธปกรณ์และความมั่นคง
- หมวดการแพทย์ สุขภาพ และสาธารณสุข
- หมวดไฟฟ้า อิเล็กทรอนิกส์ และโทรคมนาคม
- หมวดอื่นๆ

Show All |< < 1/ 37 > >| 738 records found. | Open Search Form | Innovation Website

Clear Condition :

No.	innovationname	organization	organizationtype	ministry	innovationstatus	workinggroup	categ
1	"คลาร่า" โคมไฟแขวน	พาณิชย์	ราชการ	พาณิชย์	ยังไม่ตรวจสอบสถานะ	อื่นๆ	ไฟฟ้า อิเล็กทรอ และโทรคมนา
2	"ออมสิน" ซึ่งเป็นแร่ธาตุอาหารเสริมระดับนาโนที่ออกฤทธิ์เป็นยาและวัคซีนสำหรับพืช	วิทยาศาสตร์และเทคโนโลยี	ราชการ	วิทยาศาสตร์และเทคโนโลยี	ยังไม่ตรวจสอบสถานะ	อื่นๆ	วิทยาศาส
3	'SOFA SHOES' แบรนด์ SHUBERRY	อุตสาหกรรม	ราชการ	อุตสาหกรรม	ยังไม่ตรวจสอบสถานะ	การแพทย์	การแพทย์ สุขภาพ แ สาธารณสุ
4	"CHITORA" ไคโตซานแคปซูลเพื่อกักเก็บสารหอม	สำนักงานนวัตกรรมแห่งชาติ (องค์การมหาชน)	ราชการ	วิทยาศาสตร์และเทคโนโลยี	ยังไม่ตรวจสอบสถานะ	เกษตร	การเกษตร
5	"e-delicious" เครื่องมือตรวจวัดมาตรฐานรสชาติอาหารไทย	สำนักงานนวัตกรรมแห่งชาติ (องค์การมหาชน)	ราชการ	วิทยาศาสตร์และเทคโนโลยี	ยังไม่ตรวจสอบสถานะ	เกษตร	การเกษตร
6	"ดินสอมิณี" หุ่นยนต์บริการดูแลผู้สูงวัย	สำนักงานนวัตกรรมแห่งชาติ (องค์การมหาชน)	ราชการ	วิทยาศาสตร์และเทคโนโลยี	ยังไม่ตรวจสอบสถานะ	การแพทย์	การแพทย์ สุขภาพ แ สาธารณสุ
		สถาบันวิจัย					

STI & Mega Projects

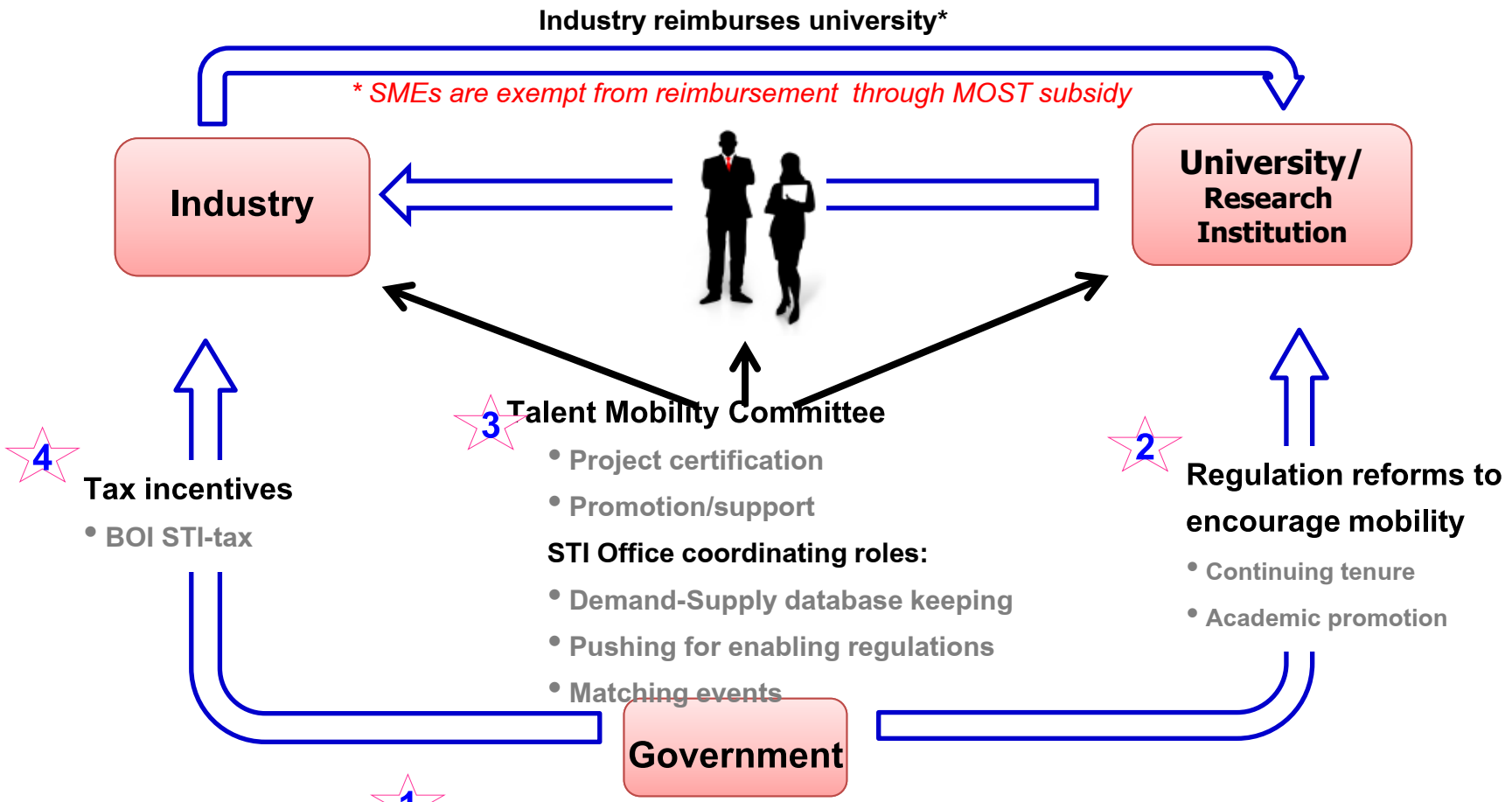
Rail System

Water Management

National Space Program

Talent Mobility Program

To facilitate the mobility of researchers in governmental agencies and higher education institutions to the industry.



Education, Learning & Workforce

STEM Education and Workforce Development

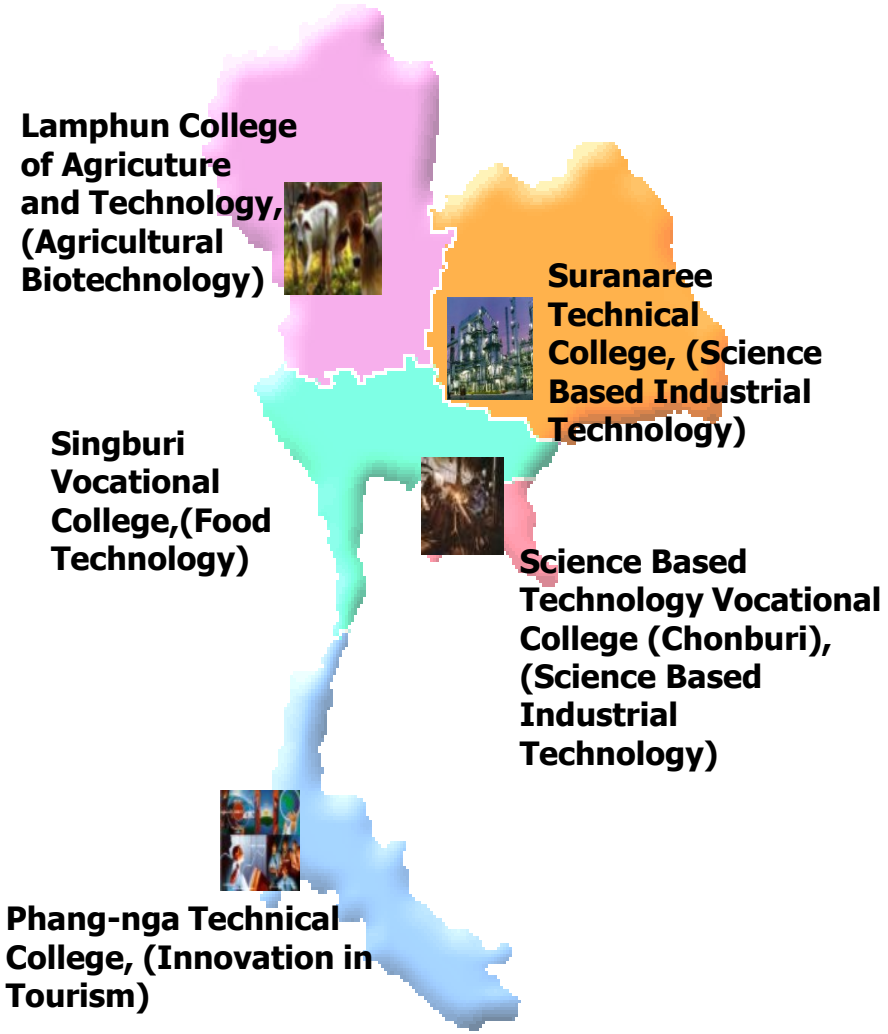
WiL

Work-integrated Learning

- School in the Factory
- Apprenticeship
- Cooperative Education

SBTS

Science-based Technology Schools



Science-Based Technology Schools focusing on different sectors

STI Policy & Management Program (PMP) for Policy Makers and Executives

A Training Program for policy makers and executives to build a network of STI policy makers and innovation practitioners

Coverage: central administration, local administration, private sector, community leaders

Source: National Science Technology and Innovation Policy Office, Thailand

Astronomical Parks in 77 Provinces & Science Museums

Science Diplomacy:
Thailand Science, Technology and Innovation Global Partnership (TGP) Program

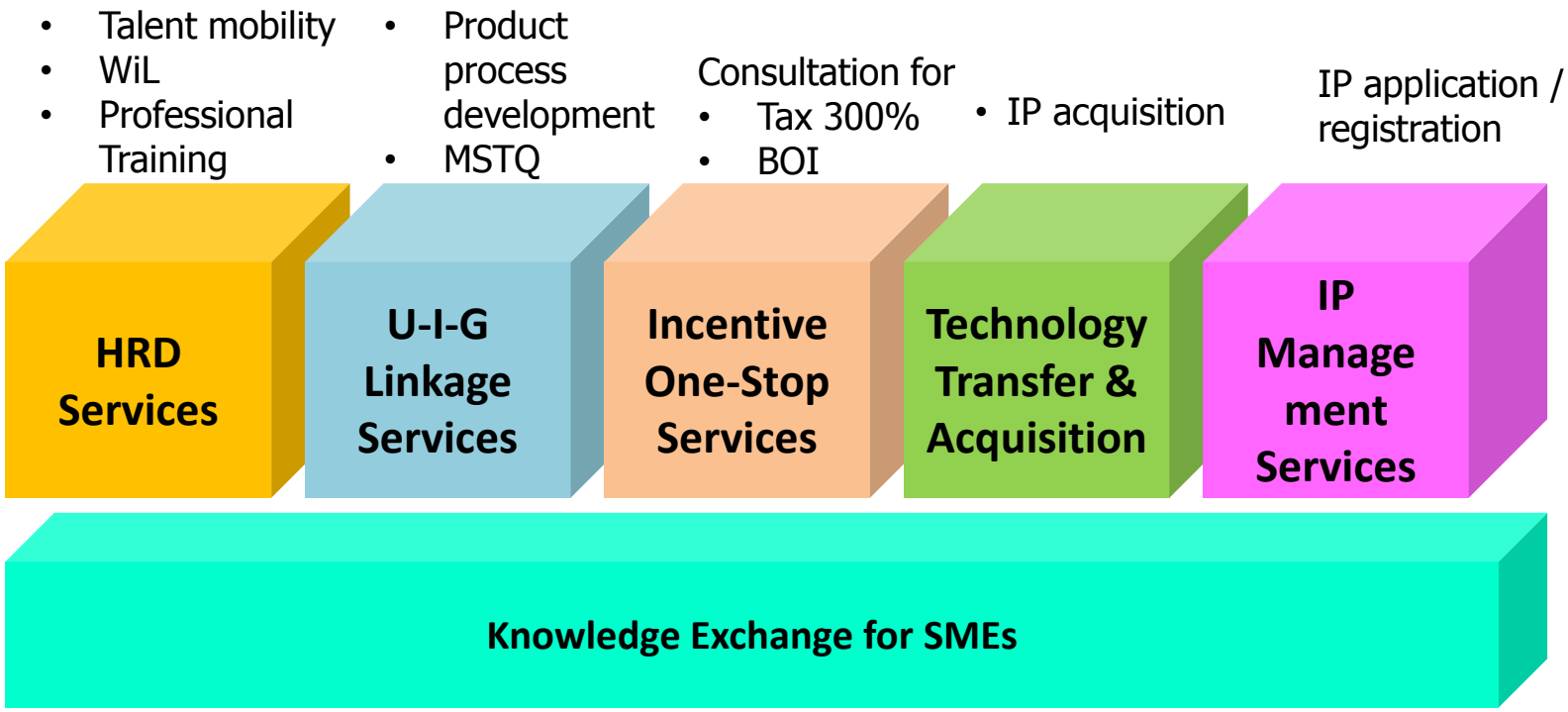
HRD & Talent Mobility

Strategic R&D Collaboration

SME & Innovation Partnership

Thematic Tracks: Food & Agriculture, Health & Life Sciences, Energy, Climate Change, ICT & Digital Economy, Rail & Logistics

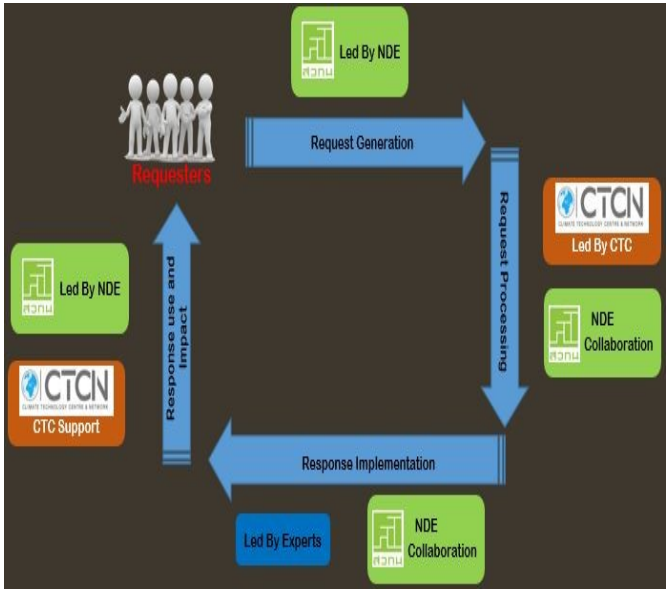
STI Facilitation Platform for Industry



- **Facilitate S&T related services to industry**
- **Services cover RDI value chain from Lab to Commercialization**
- **One-stop service for RDI developer**
- **6 Platforms serve all industries needs**
- **Tailor made Service for each company**

Thailand Technology Needs Assessment (TNA) & Technology Action Plan (TAP) & National Designated Entity (NDE)

Thailand NDE acts as a Climate Technology Center and Network (CTCN) focal point and manages the submission of requests for technical assistance.



Source: National Science Technology and Innovation Policy Office, Thailand

The Network of Ban Limthong, Buri Ram Province

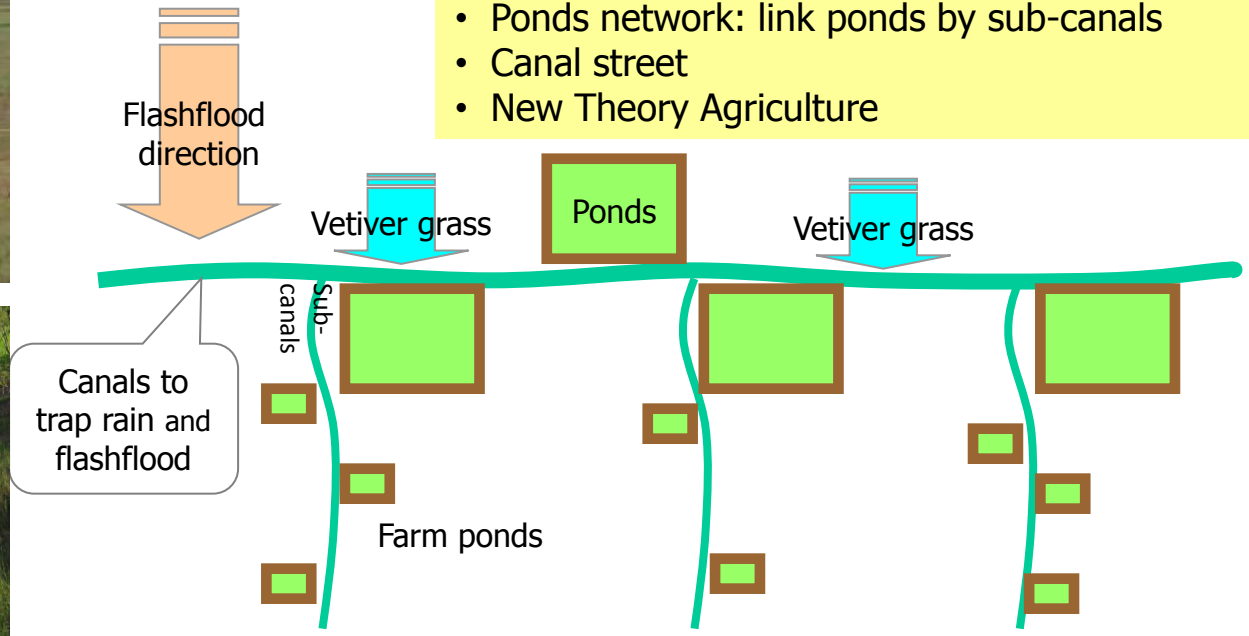
With Sustainable Water Management in Flood and Drought Areas

Before: (More than 40 years)
No water, No management, No agriculture, High debt, Villagers leaving town

After:
Enough water year-long by creating small water retention units and sub-canals as water linkage throughout the area

H.M. the King's Initiative

- Science and Technology (Maps, GPS receivers, etc.) for data collection, area measurement, systematic thinking
- Trap flashflood by canals
- Ponds network: link ponds by sub-canals
- Canal street
- New Theory Agriculture

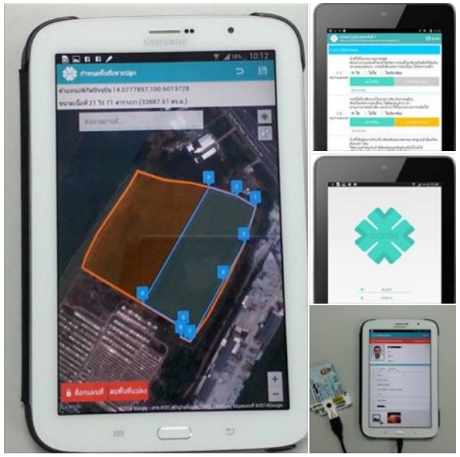


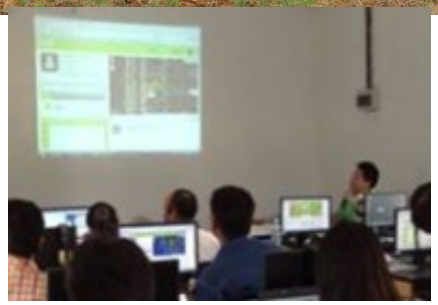
Success 10 Years of Water Management System

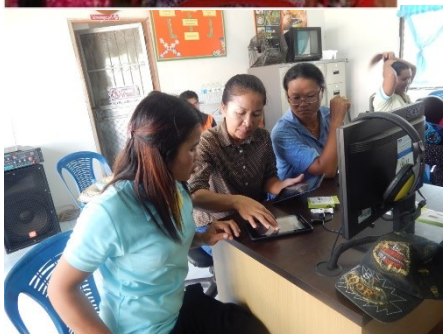
- Enough water all year, Better living Standard
- 2.5 times higher income, Released debt
- Abundant agriculture
- Local people came back
- Expand working network from 1 village (3,700 Rai) to 35 villages, and conceptual network covered 3 sub-districts (71,566 Rai)

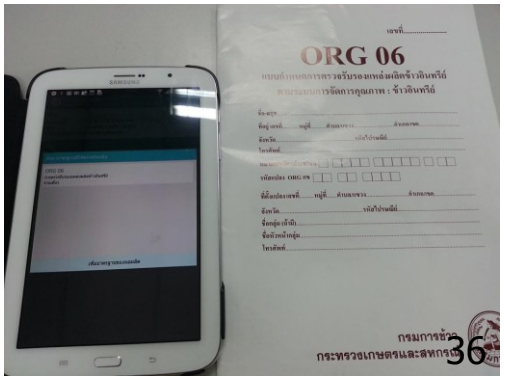
STI for Organic Rice Cultivation

- Aim to boost organic rice cultivation
- Introduce technologies that help farmers maintain their organic standards or meet the standards to acquire the certification.
- Promote soil improvement/organic matter amendment (fresh rice straw, green manure)
- Thailand Agriculture Mobile Information System (TAMIS) was introduced
- More than 4500 farmers have been trained so far

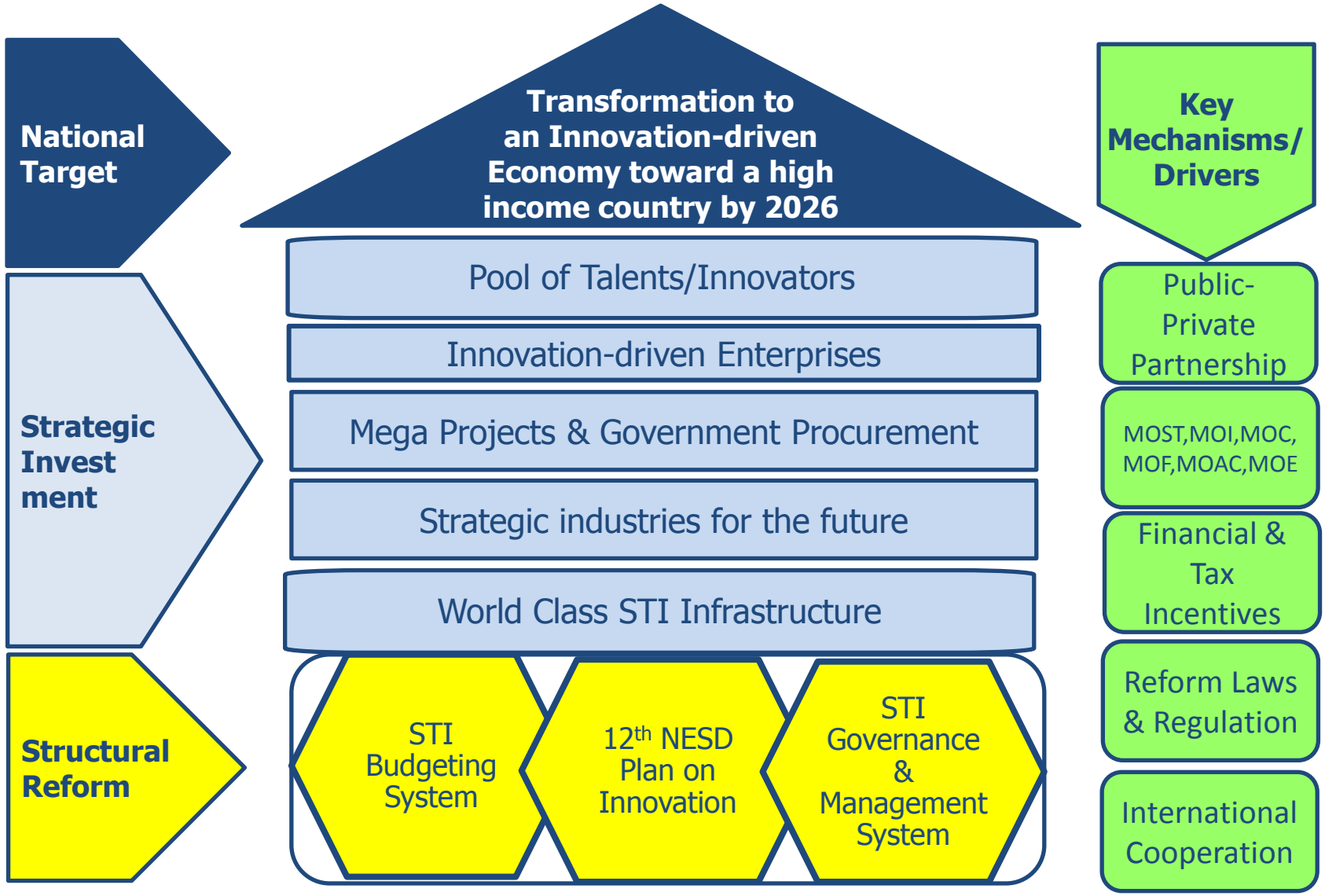








Blueprint for Thailand STI Reform



Source: National Science Technology and Innovation Policy Office, Thailand

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http://www.most.go.th