



# Insights and Experiences on National System of Innovation: | NSI in THAILAND

**UNFCCC Technology Executive Committee**

**"Developing and strengthening national systems of innovation to drive climate action"**

**Asia-Pacific Regional Climate Week - APCW**

Persada Johor International Convention Centre, Johor Bahru, Malaysia

16 Nov. 2023

**Surachai Sathitkunarat, Ph.D.**

Vice President

Office of National Higher Education Science Research and Innovation Policy Council (NXPO), Thailand

# NXPO's Roles and Responsibilities

## 7. Collaboration

Coordinate with both national and international public and private agencies on related higher education, science, research and innovation agenda

## 1. Secretariat Office to the National Higher Education, Science, Research and Innovation Policy Council

academic and administrative works for the policy council committee, special committees, and sub-committees

## 6. Data Integration

Coordinate the development and linkage of higher education, science, research and innovation databases

## 2. Policy, Strategy & Planning

Formulate recommendations to the policy council on related higher education, science, research and innovation policies

## 5. Monitoring & Evaluation

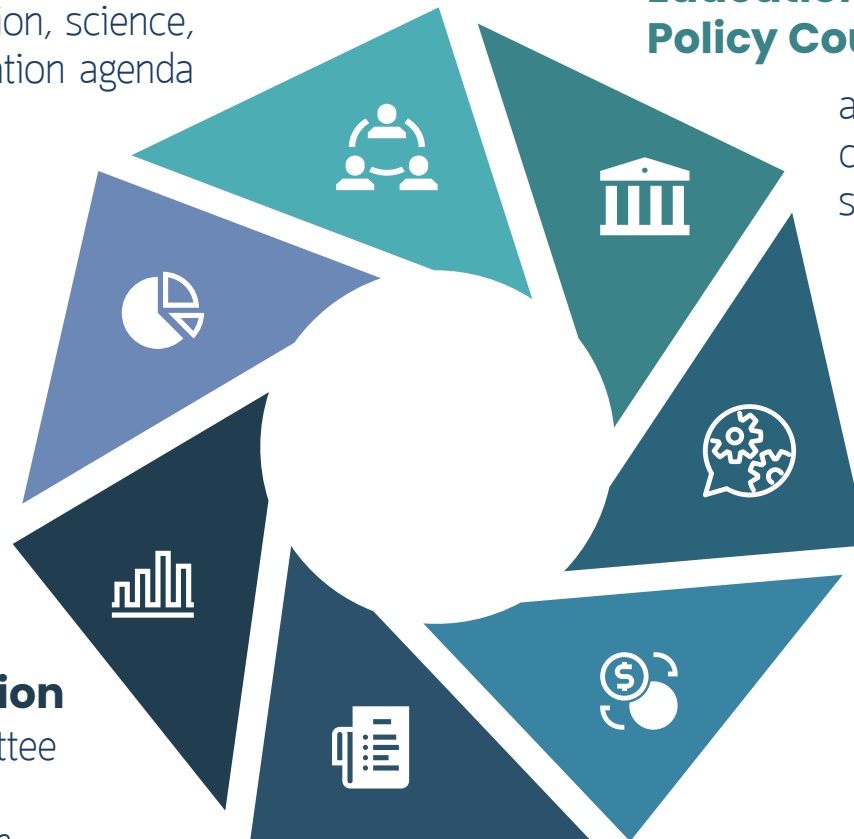
Assist the special committee of the policy council on monitoring and evaluation

## 3. Budgeting

Facilitate the policy council in the preparation of fiscal budgeting for higher education, science, research and innovation

## 4. Laws & Regulations

Propose strategies and measures, including law and regulation amendments to promote innovation ecosystem







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# OUTLINE

1

OVERVIEW OF  
THAILAND INNOVATION SYSTEM

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2

CASE STUDIES OF EXPERIENCES  
ON THAILAND INNOVATION SYSTEM

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3

THAILAND INNOVATION SYSTEM  
DILEMMAS & CHALLENGES







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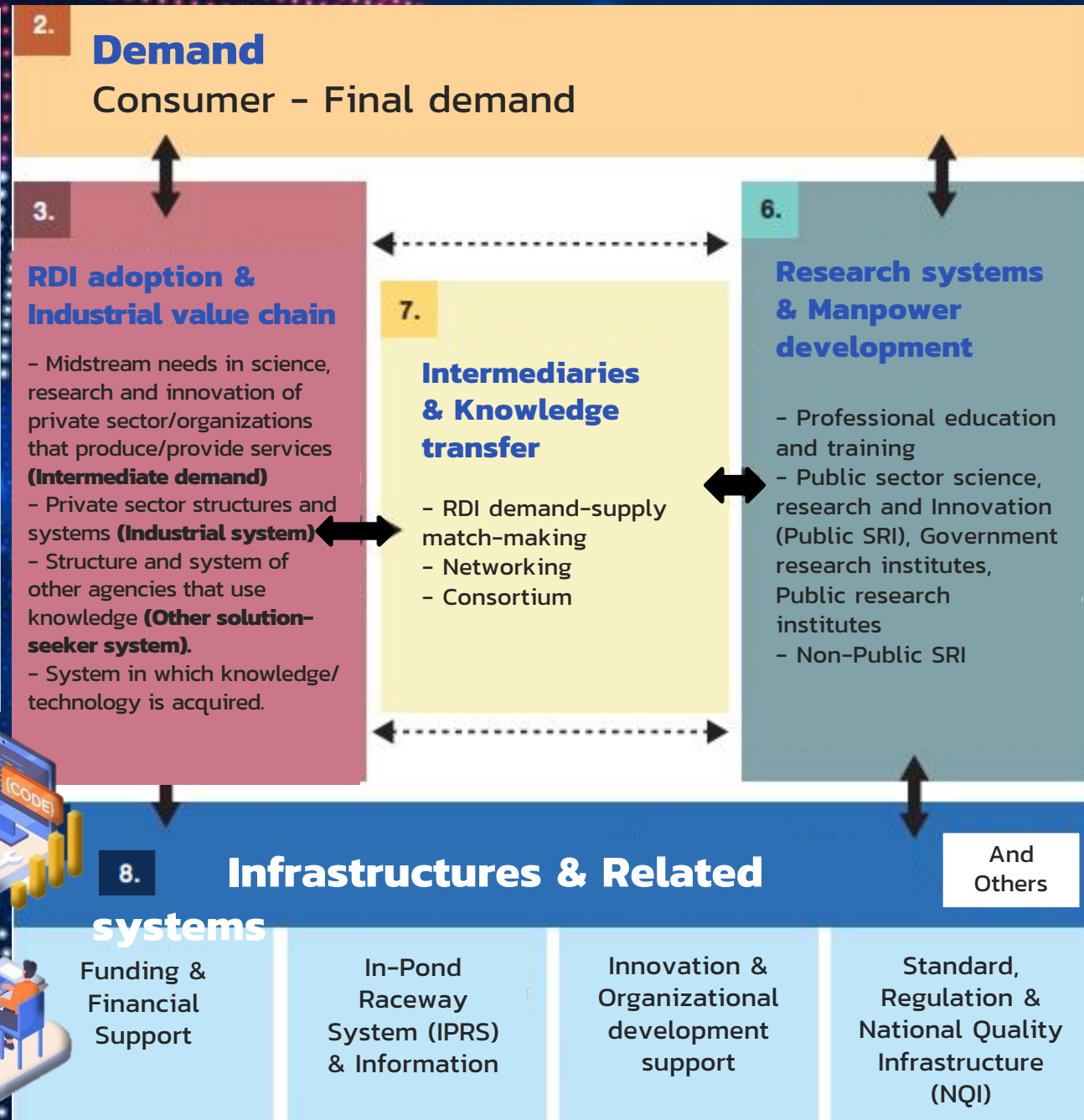
# OVERVIEW OF THAILAND INNOVATION SYSTEM



# Conceptual framework for analyzing the Thai Innovation System

Applied from Kuhlman & Arnold (2001)

Source: TSRI, Thailand



**1. Analytical boundary**  
 Such as problem definition, industry group definition, market characteristics, objectives of analysis, goal of analysis Area/Country Frame and Time Frame.

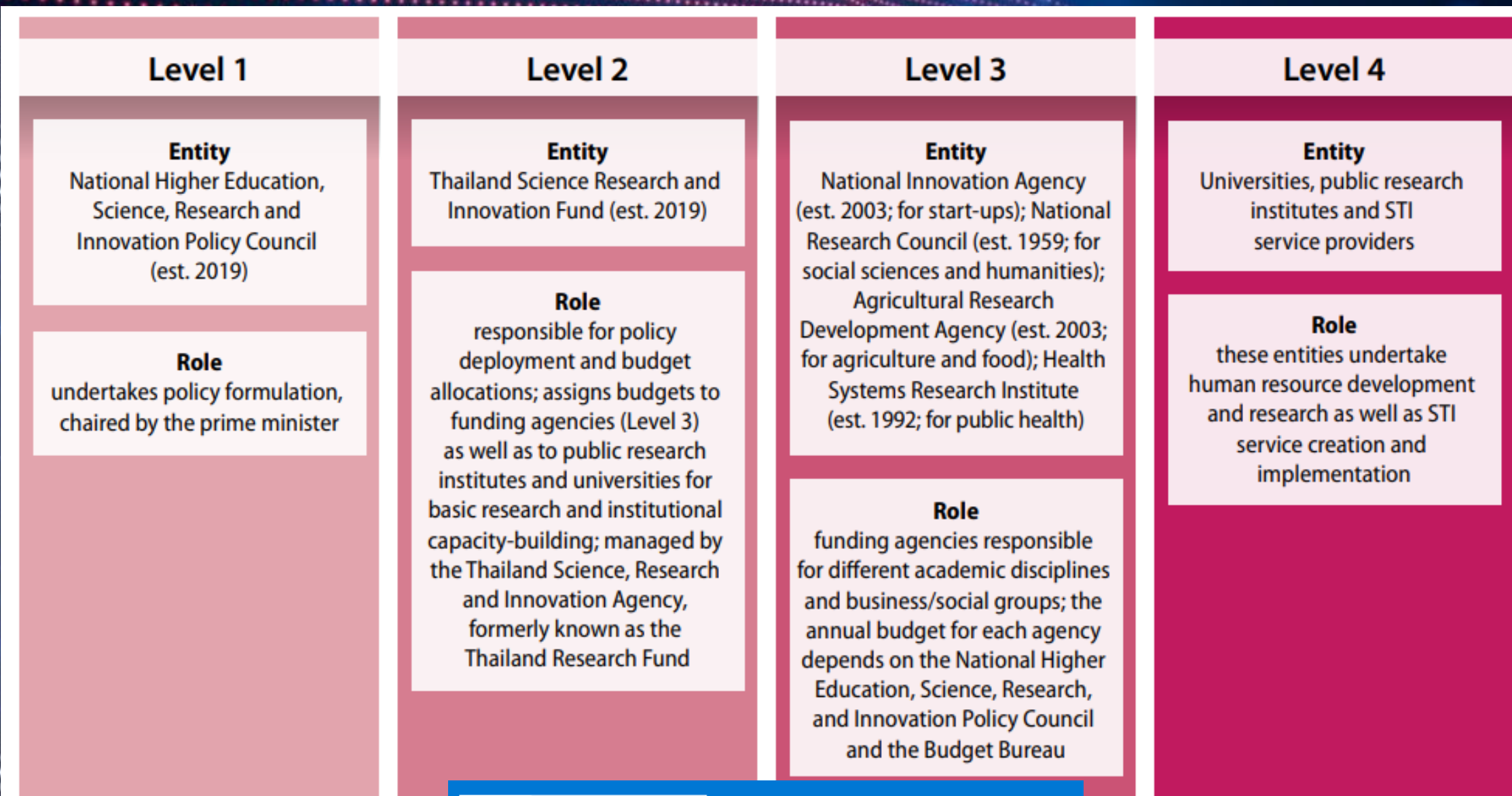
**4. Framework condition**

- Financial environment
- Taxation & Incentives
- Propensity to innovation & entrepreneurship
- Human/Labor Mobility
- Norms

**5. Political system**

- Government & Policy
- SRI Policies (science, research and innovation)
- Governance

# Structure of Thailand's national innovation system, 2019





# Thailand is dealing with **3 key challenges** that have impeded its economic, social, and environmental development:

## Innovation



### 1. MIDDLE-INCOME TRAP

Thailand's economy has slowed substantially as a result of the numerous crises it has encountered. Higher costs have made competing by manufacturing low-cost items impossible. Additionally, conventional mechanisms have failed to lift the country out of its middle-income trap



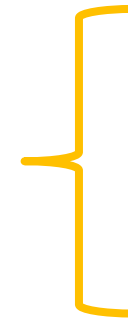
### 2. INEQUALITY

The COVID-19 pandemic has highlighted inequality in Thailand. Low-income households can no longer cover their basic needs. The unemployment rate is at an all-time high. Access to public services and education, as well as income disparity among senior citizens, are among examples of apparent issues this pandemic has unfurled.



### 3. ENVIRONMENTAL DEGRADATION

Thailand has experienced an exponential increase in the number and scale of industrial plants as a result of imbalanced development with a narrow focus on economic expansion. This growth spurt has brought on problems of pollution and irresponsible exploitation of natural resources. Inevitably, some serious damage has been done to nature and the environment.



To generate more revenue

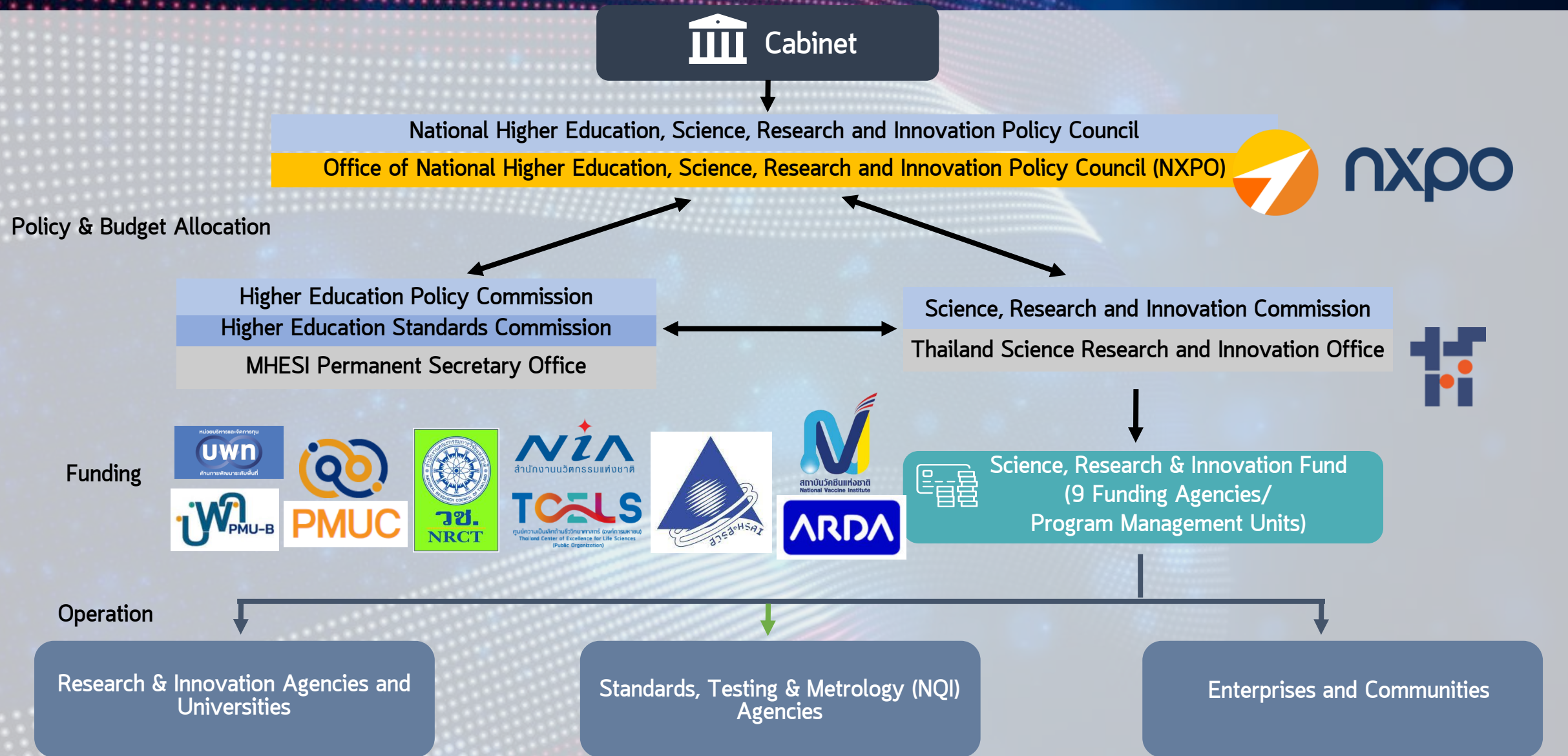


To reduce social gaps



To solve the environmental issue

# Structure of Higher Education, Science, Research and Innovation (HESRI) System





# Development of Science, Research and Innovation systems in Thailand

Examples of Thai government agencies that play an important role



**National Economic and Social Development Council**  
 Role: Create a national strategy that links plans/projects for the development of science, technology, research, and innovation.



**The Office of National Higher Education Science Research and Innovation Policy Council (NXPO)**  
 Role: Academic and administrative works for the policy council committee (Policy, Strategy & Planning | Budgeting | Laws & Regulations | Monitoring & Evaluation | Data Integration | Collaboration)



Role: Development of the science, research, and innovation system and research and innovation management system



**National Innovation Agency (Public Organization)**  
 Role: Promoting the creation of a national innovation system and creating opportunities to access and utilize innovative infrastructure.





# 15 Flagship Programs

## under National Science Research and Innovation Plan 2023–2027







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# CASE STUDIES OF EXPERIENCES ON THAILAND INNOVATION SYSTEM



# 1 Thailand Innovation-Driven Enterprise Hub: IDEs Hub

## Why?

- 1. Problem:** Team, Product – Market Fit, Supports
- 2. Opportunity:** More Attention to ASEAN Market and Startups, Vibrant Thai Startup Ecosystem
- 3. Risk:** Bankruptcy, Legal, Reputation
- 4. Strategic Positioning:**
  - Different: Affordability of Living
  - Better: Good Mix between Expats and Locals
  - Difficult to Mimic: Culture, Geography
- 5. Critical Success Factors:**
  - Founders
  - Financial Capital & Non-Financial Capital
  - Business Model

## Objectives

- 1. Drive IDEs Scale-Up Capacity (10X)**
- 2. Global & Open Mindset & Entrepreneurship**
- 3. Culture of Collaborations & Transformation**

## IDEs Focus

- 1. Agriculture & Food**
- 2. Services: Healthcare, Tourism, Logistics**
- 3. Bio-Circular-Green Economy (BCG)**
- 4. Education**

## How? : Key Strategy

### Talent Management

- Hire
  - Incentive
- Import
  - Smart Visa
- Develop
  - Thai Citizen

### Ease of Doing Scaleup

- Regulations/Legal
  - Incentive for Startups
  - Incentive for Investors
  - ESOP
  - Convertible Note
  - Regulatory Compliance and Hacking
- Non-Finance capital
  - Technology/ Network/ Infrastructure
  - Global Mentorship/ Scaleup Knowledge

### Availability of Funding

#### Finance

Government Financial Support  
University Holding Company  
PPP Platform

Strategic Board  
(Government+Investors+Academic)

Thailand IDEs Corporation

#### Traditional Model

##### University

- CUPT (นุอ.)
- U-Incubators
- U-Enterprise

Technology Transfer  
Knowledge Transfer

Industry  
(CVC)

#### Holding

Equity, Capital Gain



Investment  
M & A

#### Venture Model (PPP)

##### Foundation

Cash, Donation,  
Tax Exemption

#### Fund Investment

- Angel
- VC
- CVC
- Private Equity
- Crowdfunding

## Outcomes

- GERD 2% / GDP (370,000M THB)
- 1,000 IDEs & 1 Billion THB Sales
- 5 Unicorn Companies

↑  
IDEs  
SMEs/Startups/Scale-Ups

Innovation  
Economy



Society and  
Environment



Foundational  
Economy



# 1 Thailand Innovation-Driven Enterprise Hub: IDEs Hub

## Government & Universities



## Fund



## CV/CVC



## Innovation Center



## Incubator/Accelerator



## Startup Support Platform



## Key Stockholders

Increase 2% GDP (370,000M THB)  
No 1,000 IDEs & Sales of 1 Billion THB Increase  
5 Global Companies



## Talent Management

- Talent
  - Hire Incentive
  - Import Smart Visa
  - Develop Education/Training

- Global Talent Visa
- Youth Entrepreneurship Program
- Talent Development Grant
- Lifelong Learning Passport



## Ease of Doing Scaleup

- Legal/Regulation/Tax
  - Incentive for Startups, Incentive for Investors
  - ESOP, Convertible Note, Regulatory Compliance and Hacking
- Non-Finance
  - Technology, Network, Infrastructure

- Tax Exemption, Relief, Deduction for Startups
- Tax Exemption, Relief, Deduction for Investors
- ESOP Measures
- IDEs Investment Ecosystem Database

## Availability of Funding

- Finance
  - Government Financial Support
  - University Holding Company
  - PPP Platform

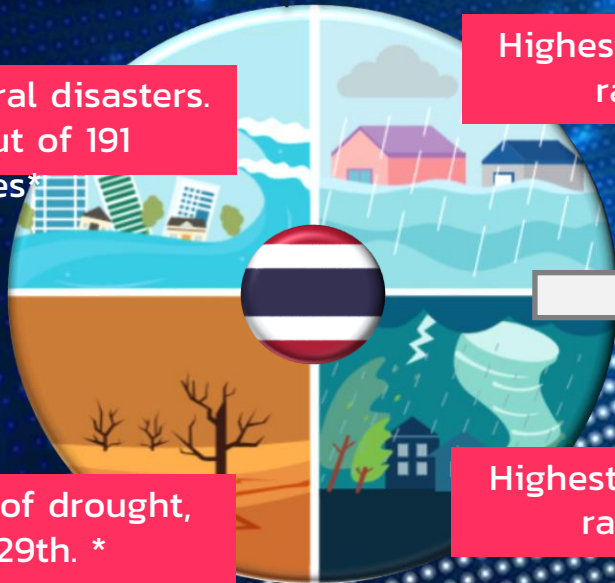
- Enterprise Finance Guarantee Scheme
- Start-up Loan
- University Holding Company
- PPP Co-Investment Platform



# Systemic Innovation Development Project : Water Resources Management System

## Demand

- Integration across ministries, both in terms of water use objectives (Function) and spatially through various committees, with full efficiency.
- Water management design requires innovation in both the water context and working mechanisms because the geography of Thailand's river basins is complex



High risk of natural disasters. Ranked 81 out of 191 countries\*

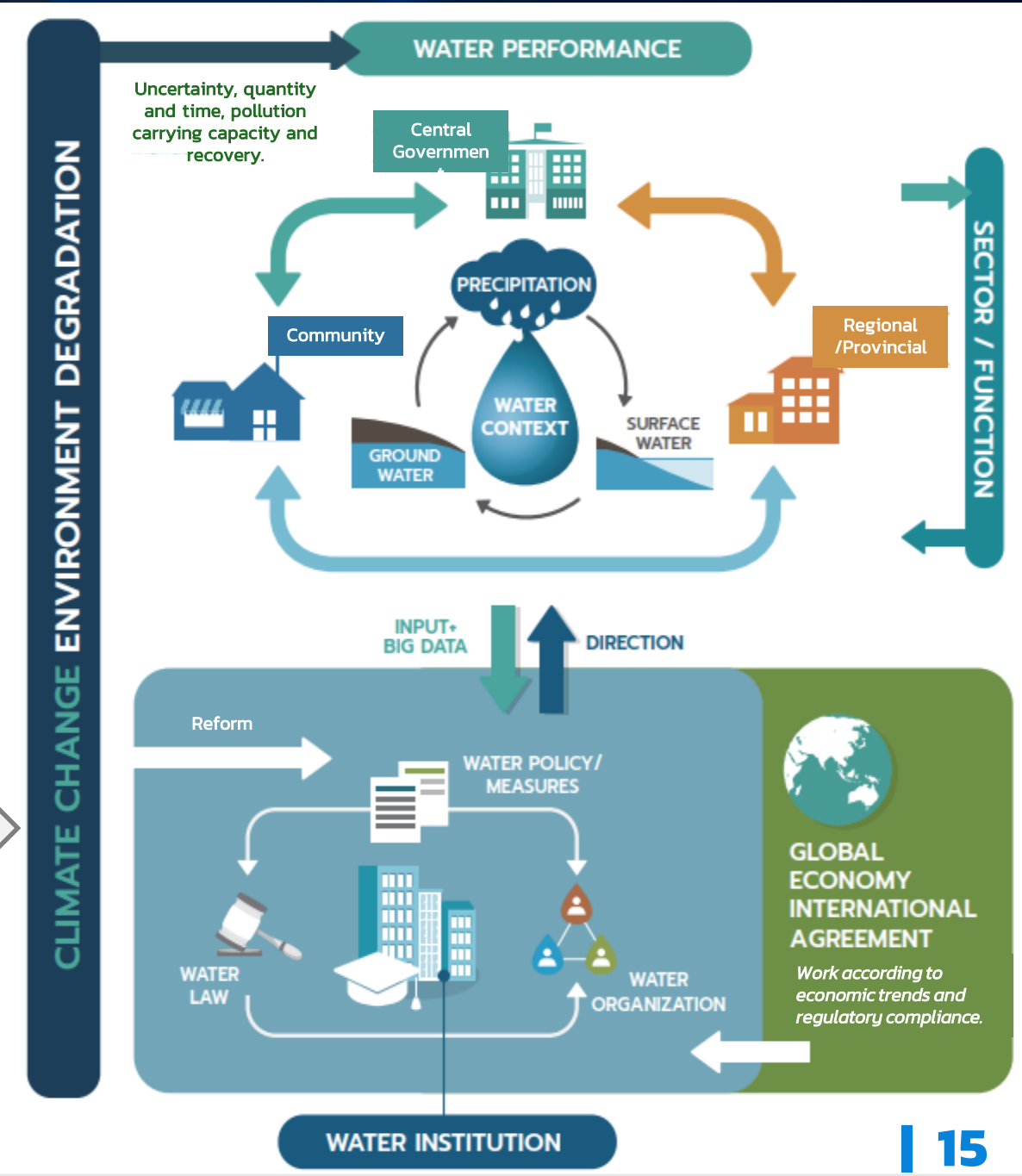
Highest risk of flooding, ranked 9th. \*

Highest risk of drought, ranked 29th. \*

Highest risk of cyclones, ranked 27th. \*

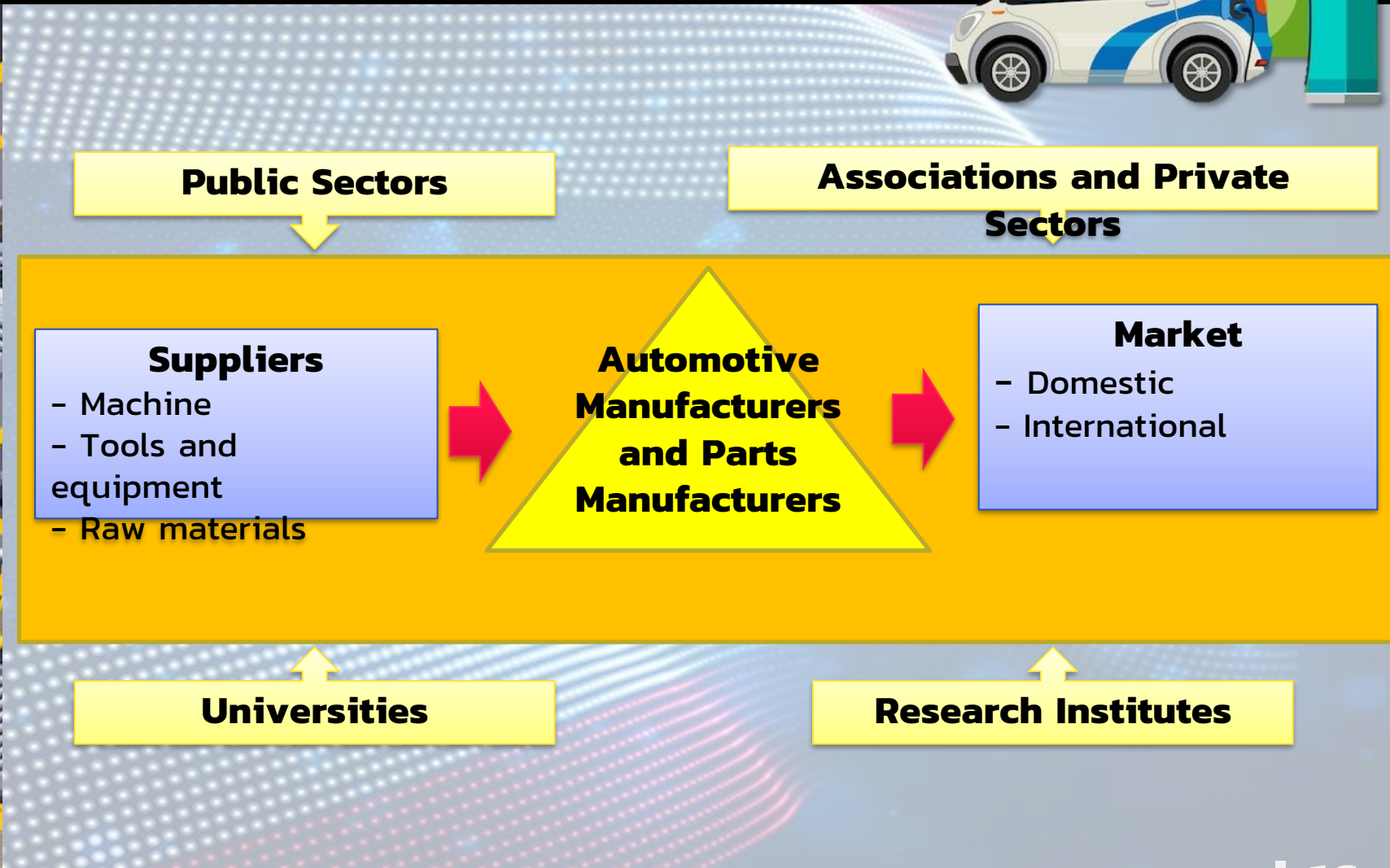
Source: NXPO, Applied from Water Institutional Reforms: Theory and practice, 2005

\* World Bank Group, 2022





# Sectoral innovation systems: In the case of the Thai automobile industry



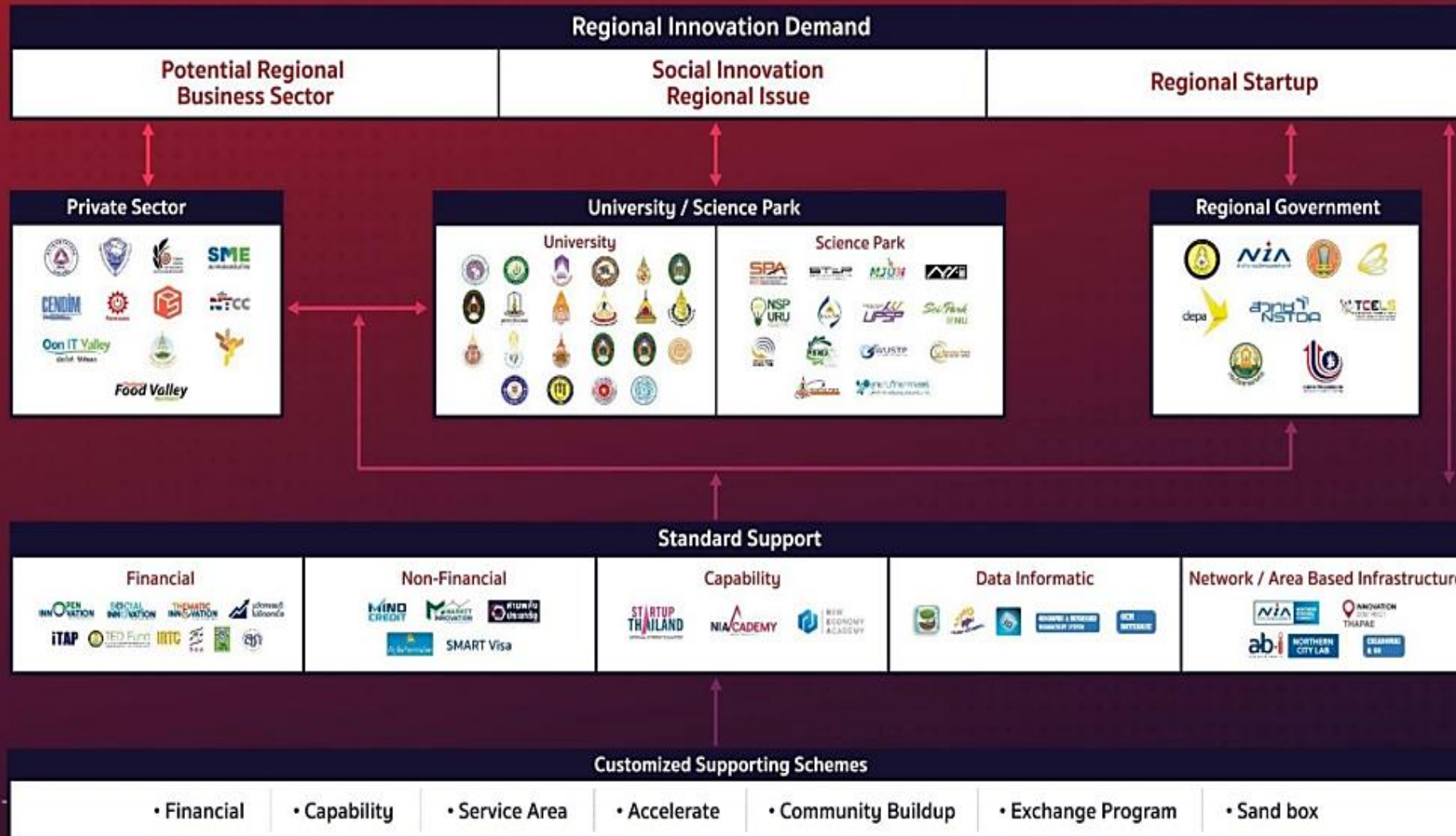


# Regional Innovation Business Platform



**NIA**  
สำนักงานนวัตกรรมแห่งชาติ

Strategy for enhancing innovation development in the region to promote "Innovation Ecosystem" by creating a strong innovation network in the area. NIA Regional Connect will act as a "System Integrator" in connecting government agencies, localities, universities, the private sector, and communities.







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# THAILAND INNOVATION SYSTEM DILEMMAS & CHALLENGES



# 7 THAILAND INNOVATION SYSTEM DILEMMAS & CHALLENGES

1. Firm Capability

7. Immunity to Global Challenge

6. Internationalization of Innovation from Thailand

5. Regulatory Hack & Innovation Friendly System



2. Human Capability

3. Innovation Infrastructure Utilization

4. Innovation Opportunity & Regionalization

Source: National Innovation Agency (Public Organization)



# National Higher Education, Science, Research and Innovation Policy Council

## NXPO Executive Board



Directorate of STIE Ecosystem for Uplifting Wealth of Nation



Directorate of Innovation Strategy in Higher Education and High-skilled Workforce



Directorate of Sustainable Development Policy and Future Planning



Directorate of Organization Management and Development

NXPO operates as a shared service support and facilitating administrative tasks for program management units.

The executive board of the PMU-C



Program Management Unit Competitiveness: (PMU-C)

The executive board of the PMU-B



Program Management Unit for Human Resources & Institutional Development, Research and Innovation (PMU-B)

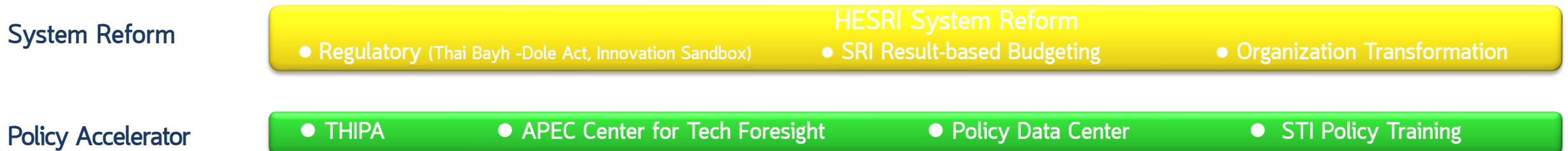
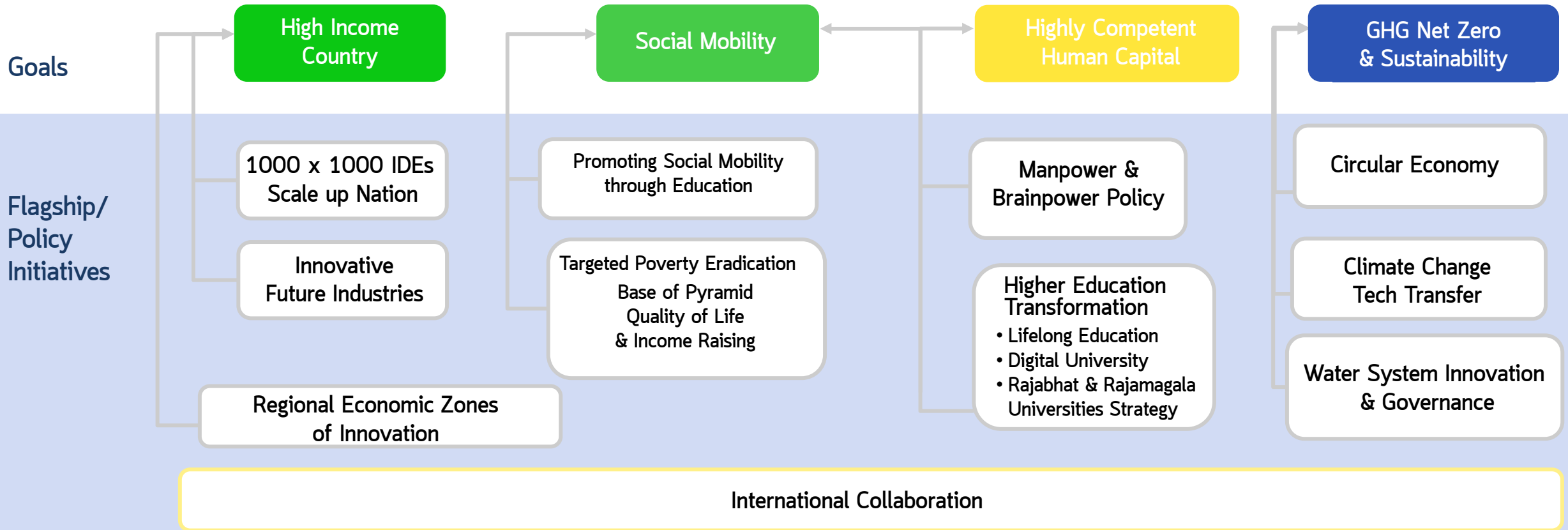
The executive board of the PMU-A



Program Management Unit on Area Based Development (PMU-A)



# NXPO Flagship & Policy Initiatives





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# THANK YOU



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