Global Climate Technology and Technology Transfer Mechanism

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Dr. Surachai Sathitkunarat

President of the Office of the National Higher Education, Science, Research and Innovation Policy Council, Thailand & Executive Director, The APEC Center for Technology Foresight

Outline

1. About NXPO
   - Higher Education, Science, Research and Innovation (HESRI) System
   - NXPO, as National Designated Entity (NDE)

2. Climate technology perspectives

3. Technology Transfer Mechanism

1

About NXPO


nxpo
OFFICE OF NATIONAL HIGHER EDUCATION
SCIENCE RESEARCH
AND INNOVATION POLICY COUNCIL
NDE
Thailand National
Designated Entity

Policy level

Capital management level

Operational level

Office of National Higher Education Science Research and Innovation Policy Council

Ministry of Higher Education, Science, Research and Innovation

The Higher Education Commission
The Higher Education Standards Committee

The National Science, Technology, and Innovation Policy Committee

The Fund Management Committee

OPS

The Higher Education Development Fund

The Science, Research and Innovation Promotion Fund

TSRI

The Nine Capital Managements

PMUA PMUB PMUC NRCT TCELS NIA HSRI NAT ARDA

Group of higher education institutions in accordance with the Ministerial Regulations

- Group 1: World-class research development group
- Group 2: Technology development and innovation promotion group
- Group 3: Local community or other community development group
- Group 4: Wisdom and moral development group with religious principles
- Group 5: Production and development of professional personnel and specific fields

A total of 174 higher education institutions

Group 1 17 places | Group 2 19 places | Group 3 48 places

Group 4 2 places | Group 5 18 places | Not yet grouped 70 places

The research and innovation system comprises 261 places.

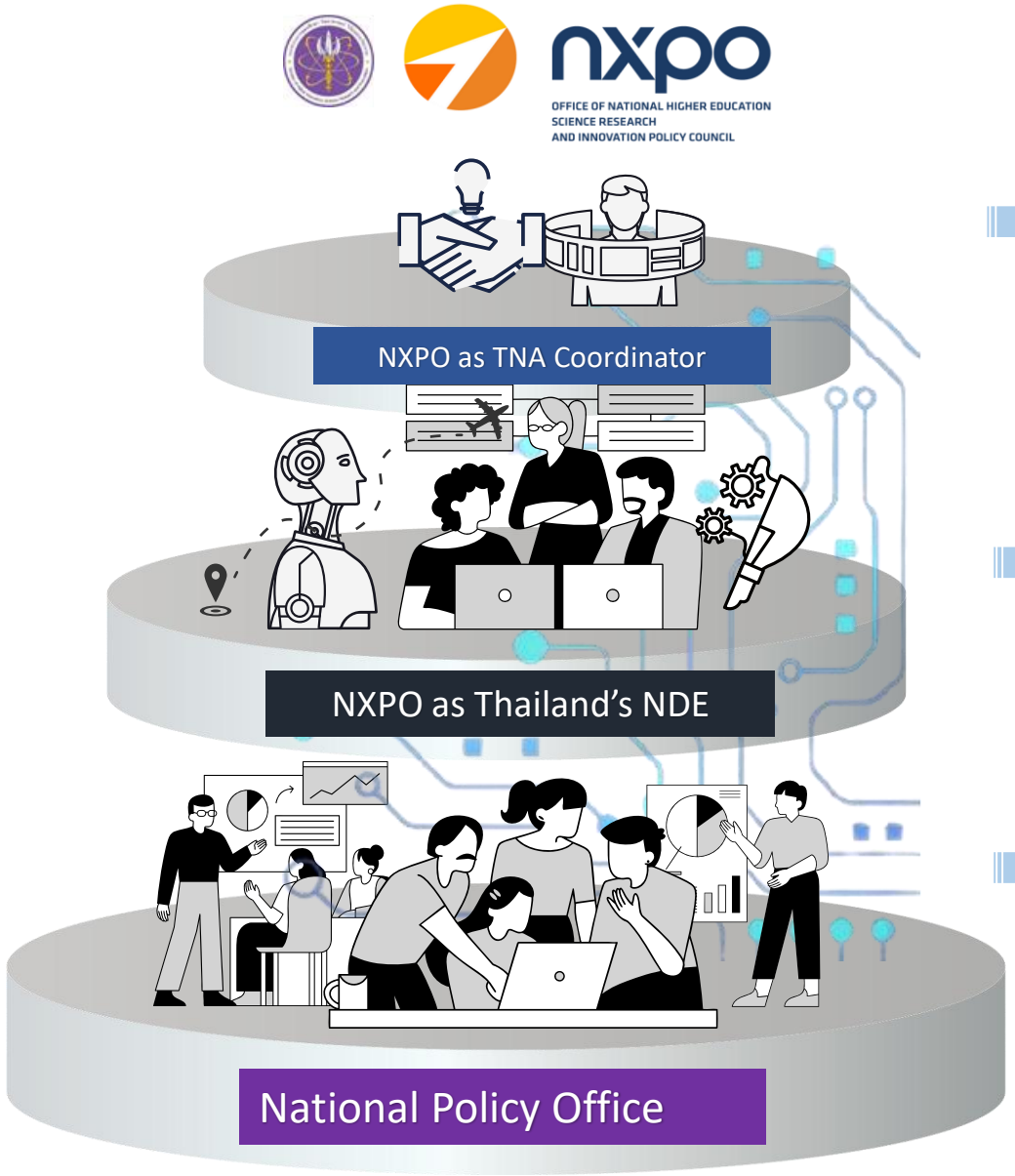
170 institutions of public and private higher education | 79 state research institutes | 12 foundations/ non-profit organizations | Private sector/ civil society

Divided by the policy announcement

- Research and Innovation Unit
- Metrology, Standards, Testing, and Quality Service Units
- Knowledge Management and Utilization Unit

Positioning

NXPO on Climate Change in Thailand



NXPO as TNA Coordinator

- Selected for the first round of global TNA in 2012 and second edition launched in May 2025.
- TNA adopted to National Plan and Framework of International contribution (technology development & transfer)

NXPO as Thailand's NDE

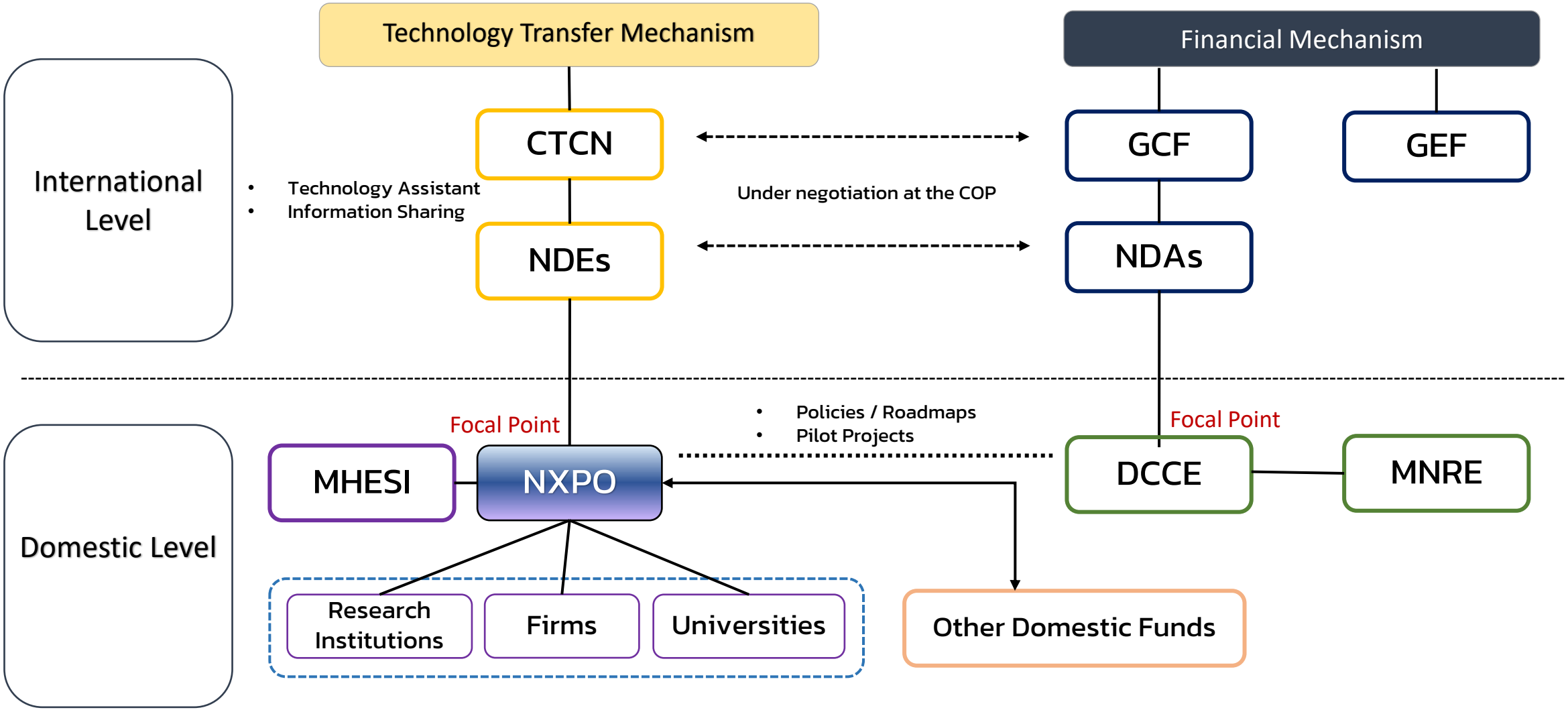
- Technical Assistance Projects
- Knowledge Sharing
- Collaboration Networking both in Thailand UNFCCC and other International organization

National Policy Office

- National policy office addressing higher education, science, research and innovation
- Design strategies and measures
- Propose law and regulation amendments
- Maintain public access of databases on HESRI

Note: NDE: National Designated Entity / TNA: Technology Need Assessment

Mechanism Linking Technology Transfer & Financial Mechanisms Under UNFCCC



CTCN – Climate Technology Centre and Network
NDEs – National Designated Entity
GCF – Green Climate Fund
GEF – Global Environment Facility
NDAs – National Designated Authorities
MHESI – Ministry of Higher Education, Science, Research and Innovation
DCCE – Department of Climate Change and Environment
MNRE – Ministry of Natural Resources and Environment

NDE Thailand's role in driving Net Zero Emission Innovation and Technology at the international and national levels

MEMORANDUM OF UNDERSTANDING

Between

THE OFFICE OF NATOINAL HIGHER EDUCATION SCIENCE RESEARCH AND INNOVATION POLICY COUNCIL

And

THE NATIONAL INSTITUTE OF GREEN TECHNOLOGY

Outcome

- Catalyst Climate Innovation
- Manpower and Technology ownership
- Intervention/Initiative Program for Net Zero Emission Pathway

1 Thailand's role in innovation and technology

- Second-ranked globally in Technical Assistance (TA) and Technology Needs Assessment (TNA).
  - Received a budget support of approximately 1,200,000 USD + 500,000 USD
- NDE prototypes for developing countries
  - Participated in all key meetings and proactively proposed ideas with supporting initiatives for national implementation
  - Represented the NDE in the evaluation of CTCN activities
  - Presented roles at the NDE Forum and preparatory meetings for COP
- Recommendations presented during the meeting and in the SB report

2 Facilitating access to innovation and resources for Thailand

- Bilateral & Networking
  - RD & D program 2 program for demonstration scale
  - Connecting mechanism with Finance Mechanism & NDC

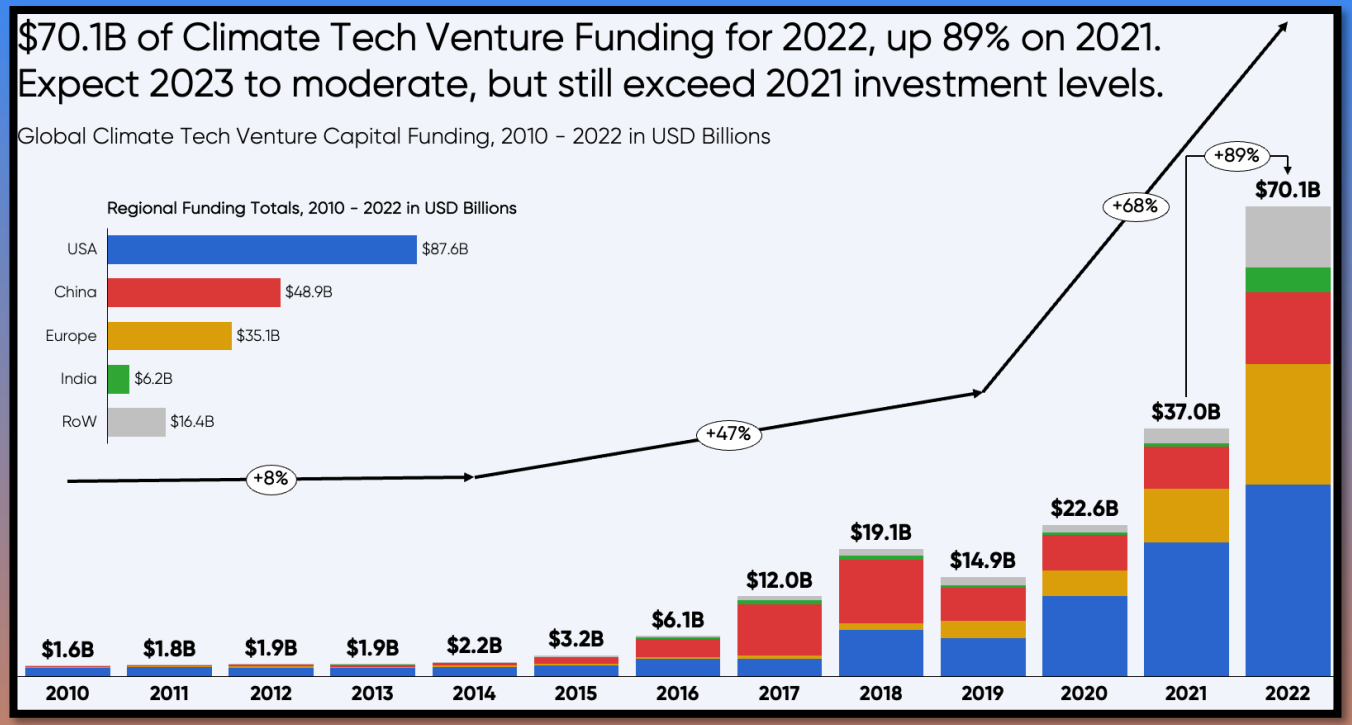
3 National innovation policy initiatives

- Innovation Zone COP28
  - Proposes an initiative in collaboration with the DCCE to creating opportunities for the private sector at COP28 and within the Thai private sector network.
- Initiative Program/Climate Tech. Roadmap
  - Saraburi Sandbox
  - Net Zero Campus
  - Net Zero Consortium

2

Climate technology perspectives

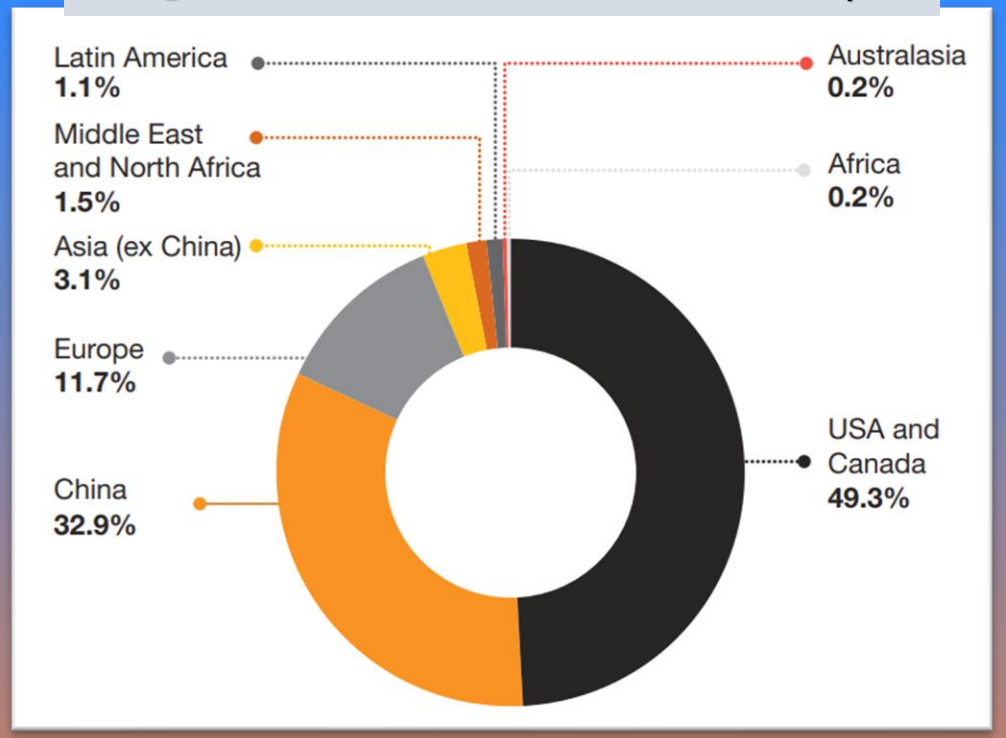
CLIMATE TECHNOLOGY MARKET & INVESTMENT



Source: HolonIQ. (2023, January 3). Defying gravity, 2022 Climate Tech VC funding totals $70.1B, up 89% on 2021.

"From 2013 to 2019, total investment reached USD 59.4 billion. Between 2025 and 2035, the market is expected to grow significantly, reaching USD 220.3 billion by 2035."

Regional Investment in Climate Tech Startups



Source: The State of Climate Tech 2020 The next frontier for venture capital (2020)

- United States and Canada received USD 29 billion or 49.3% of the global total.
- China ranked second, attracting USD 20 billion, which accounts for 32.9% of global investment.
- Europe accounted for 11.7%, which is roughly one-third of China's investment volume.

CLIMATE TECHNOLOGIES TREND

- ❑ Attract $2 trillion annually to clean energy technologies and infrastructure
- ❑ Contribute to mititgate 40% of global greenhouse gas emissions by 2050.

Five key climate technologies

Annual investment by 2025, billion USD

	Electrification	Agriculture	Power Grid	Hydrogen	Carbon Capture
Annual Investment	700–1,000	400–600	200–250	100–150	10–50 Billion USD
	• Electric-vehicle batteries • Battery-control software • Efficient building systems • Industrial electrification	• Zero-emissions farm equipment • Meat alternatives • Methane inhibitors • Anaerobic manure processing • Bioengineering	• Long-duration storage • Advanced controls • Software and communications • Vehicle-to-grid integration • Building-to-grid integration	• Low-cost production • Road-transport fuel • Ammonia production • Steel production • Aviation fuel	• Pre- and postcom-bustion capture technologies • Direct air capture • Bioenergy with carbon capture and storage • Biochar • CO_2-enriched concrete

Source: McKinsey

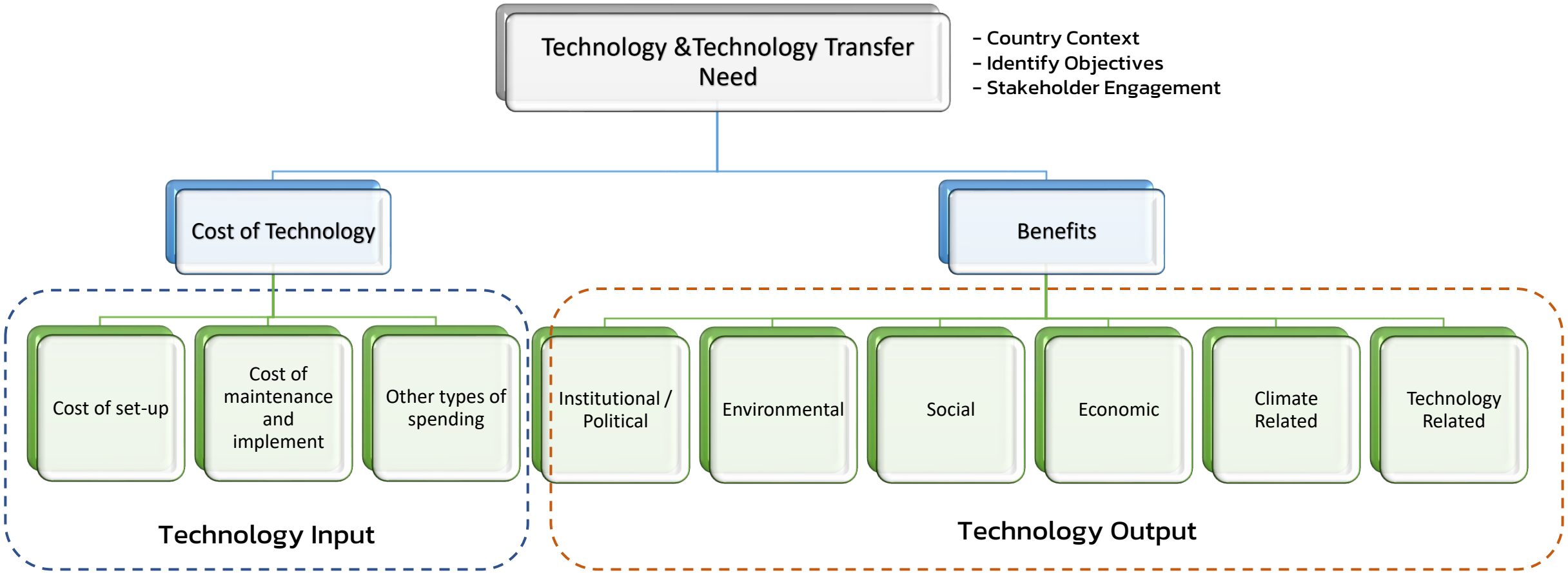
CLIMATE TECHNOLOGY AND TECHNOLOGY WAR

A strategic front in the US-China tech war–shifting from an environmental issue to one of national security and economic power, driven by competition in solar, EVs, and batteries.

3

Technology Transfer Mechanism

Climate Technology Criteria & Assessment



Source:
1. UNEP DTU Partnership. (2016). Determining technologies for climate change adaptation. NDC Partnership.
2.UNEP DTU Partnership. (2016). Identifying and prioritising technologies for mitigation. NDC Partnership.

Key Barriers to Climate Technology Transfer

Economic and Financial Barriers

High initial costs, limited access to financing, and inadequate financial incentives hinder technology adoption.

Market and Demand Barriers

Underdeveloped markets and low demand for climate technologies reduce incentives for investment and innovation.

Policy, Legal, and Regulatory Barriers

Lack of coordination among institutions and insufficient organizational capacity affect the implementation of climate technologies.

Institutional and Organizational Barriers

Lack of coordination among institutions and insufficient organizational capacity affect the implementation of climate technologies.

Technical Barriers

Inadequate infrastructure, lack of technical standards, and limited technical expertise pose challenges to technology deployment.

Information and Awareness Barriers

Insufficient information dissemination and low awareness among stakeholders hinder the acceptance and use of new technologies.

Cultural and Behavioral Barriers

Resistance to change, cultural preferences, and behavioral patterns can obstruct the adoption of climate-friendly technologies.

Intellectual Property Rights (IPR) and Knowledge Barriers

Restrictions related to IPR and limited knowledge sharing can prevent access to and utilization of climate technologies.

UNEP DTU Partnership. (2019). *Overcoming barriers to the transfer and diffusion of climate technologies* (2nd ed.).

THANK YOU

Dr. Surachai Sathitkunarat

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

Director – National Designated Entity (NDE Thailand)

Executive Director – APEC Center for Technology Foresight (APEC CTF)

319 Chamchuri Square Building, 14th Floor Phayathai Road, Patumwan Bangkok, 10330 Thailand

Tel: + 66 2109 5432

Fax: +66 2160 5439

Email: surachai@nxpo.or.th