



Adaptation to Climate Change

Adaptation Strategies at the national
and city levels in Thailand
JCCI International Seminar 2026



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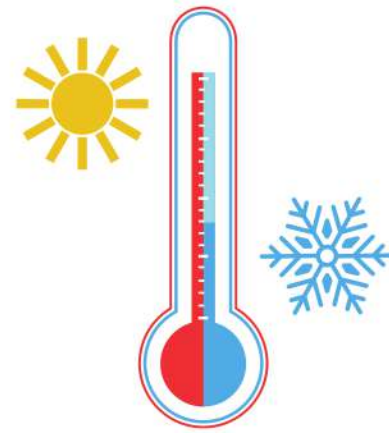
THAILAND'S CLIMATE CHANGE SITUATION



Temperature

Year 2023

- Average maximum: 33.25 °C
- Average minimum: 23.50 °C
- Average maximum increased by 1.25 °C compared to 1951
- Average minimum increased by 1.25 °C compared to 1951



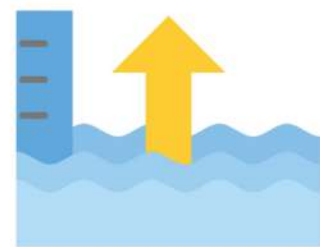
Precipitation

Average increase



- In 2022, rainfall totaled 2,011 mm
- 389 mm higher than the normal standard
- Throughout the year, average rainfall exceeded the normal standard in 10 months

Sea Level



Estimation of the Upper Gulf of Thailand will rise by 0.94 – 1.05 mm per year under RCP4.5 and by 1.07 – 1.18 mm per year under RCP 8.5

Energy



Final energy consumption increased

- In 2022, final energy consumption reached 81,948 ktoe
- Fossil fuels accounted for 88.3% of final energy consumption

Renewable energy consumption increased

- In 2022, renewable energy consumption was 11,524 ktoe, up 10.2% from the previous year
- Main sources for heat production included solar energy, biomass, municipal waste, and biogas, totaling 6,294 ktoe or 54.6%



Population

- 66.1 million
- 22nd most populous country in the world

Economic



In 2022, GDP grew by 2.5%, up from 1.6% in 2021

- Gross Domestic Product (GDP) valued at 17,373 billion baht
- The growth was driven mainly by the tourism

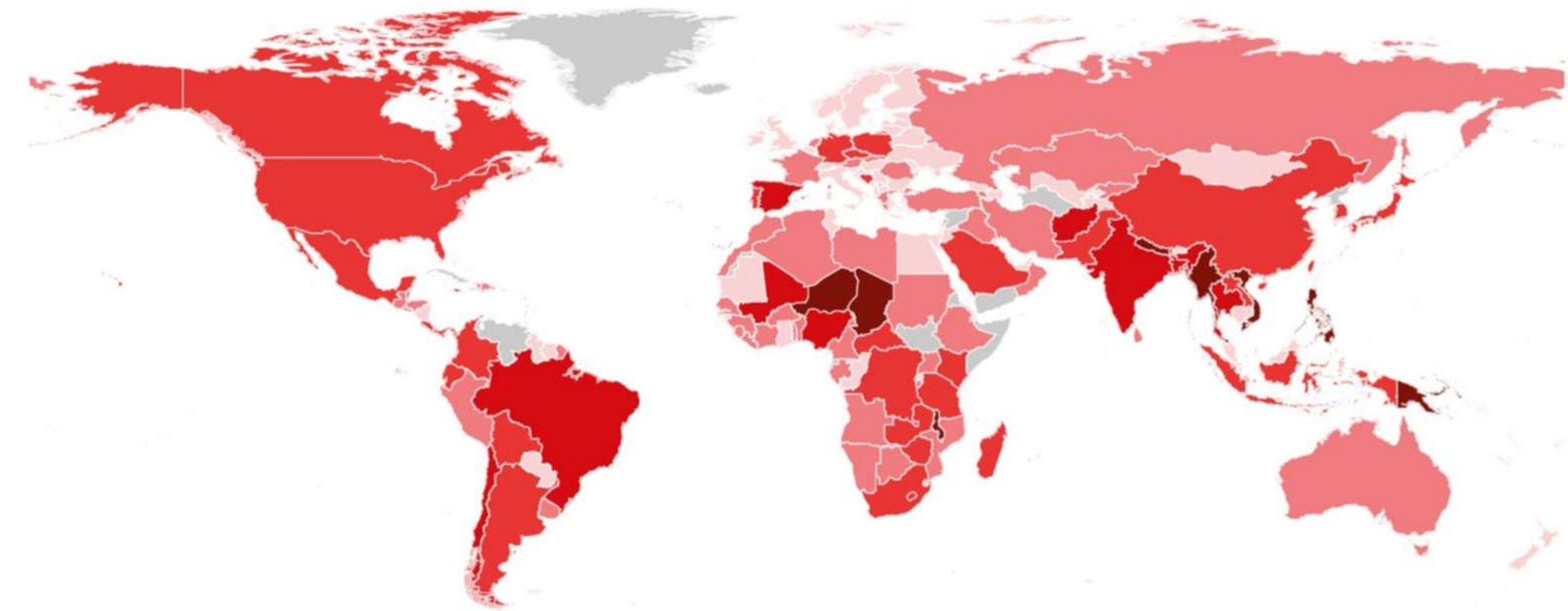
Tourism



- The number of international tourists increased
- In 2022, the average spending per international tourist was 2,058 USD/person/trip

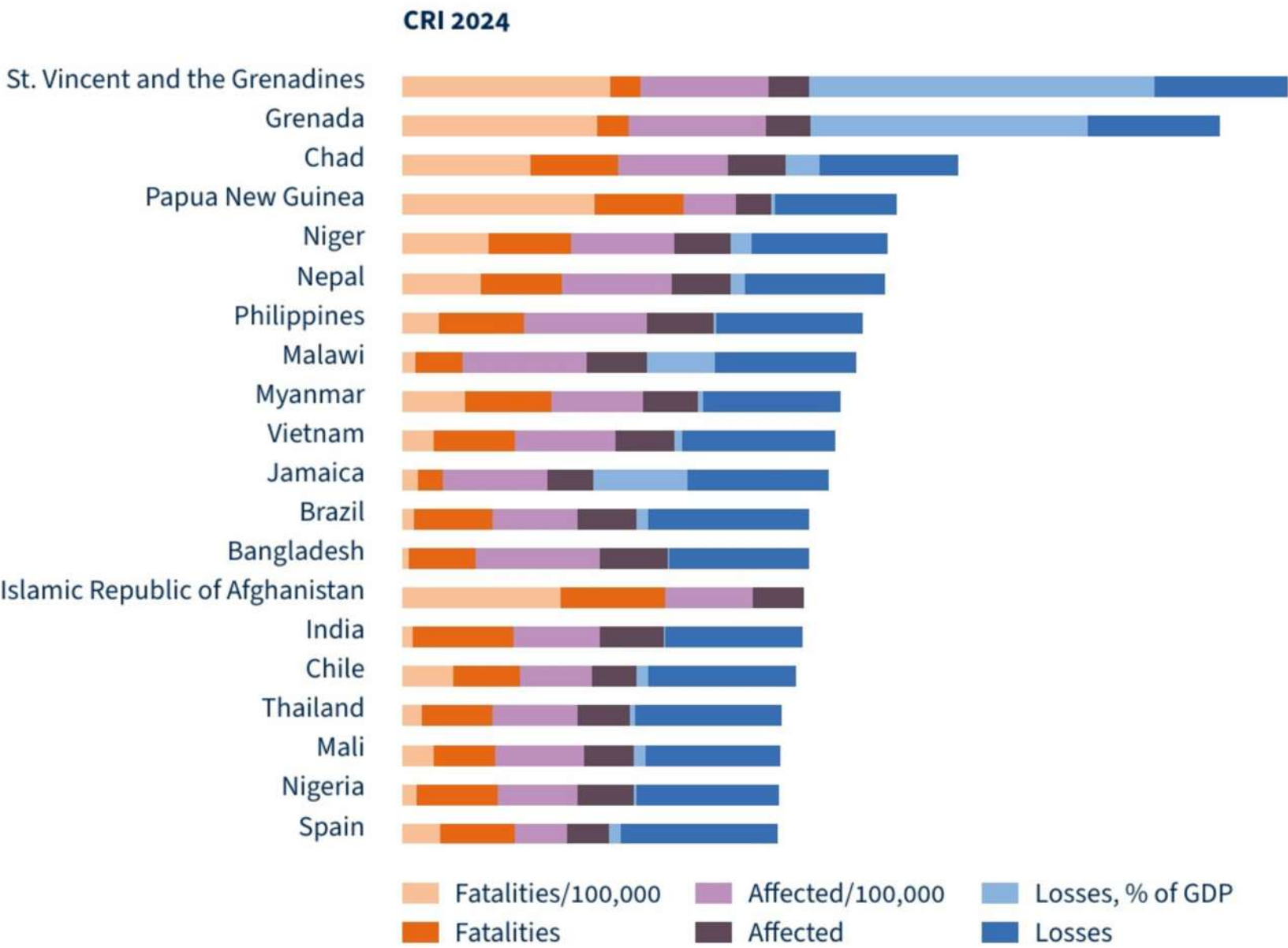
World Map of the Global Climate Risk Index 2024

Climate Risk Index:
Most Affected Countries 2024



>100
51-100
21-50
11-20
1-10
No Data

Figure 10: The 20 most affected countries in 2024



HEAT

Nakhon Ratchasima, Ubon Ratchathani,
Buri Ram, Si Sa Ket, Khon Kaen, Surin,
Roi Et, Nakhon Si Thammarat,
Udon Thani, and Nakhon Sawan.

REPRESENTATIVE CONCENTRATION PATHWAY

The RCP 8.5 scenario projects severe and widespread impacts on ecosystems, society, and the economy. These include significant sea level rise, more intense extreme weather events, loss of biodiversity, and serious consequences for food and water security.

FLOOD

Nakhon Ratchasima, Nakhon Sawan,
Khon Kaen, Kamphaeng Phet, Nakhon
Si Thammarat, Ubon Ratchathani,
Chiang Mai, Chiang Rai, Buri Ram,
and Suphan Buri.



Source: Thailand's National Adaptation Plan: NAP

DROUGHT

Nakhon Ratchasima, Khon Kaen,
Ubon Ratchathani, Udon Thani,
Nakhon Sawan, Roi Et,
Sakon Nakhon, Buri Ram,
Si Sa Ket, and Chaiyaphum.



Mae Sai, Chiang Rai





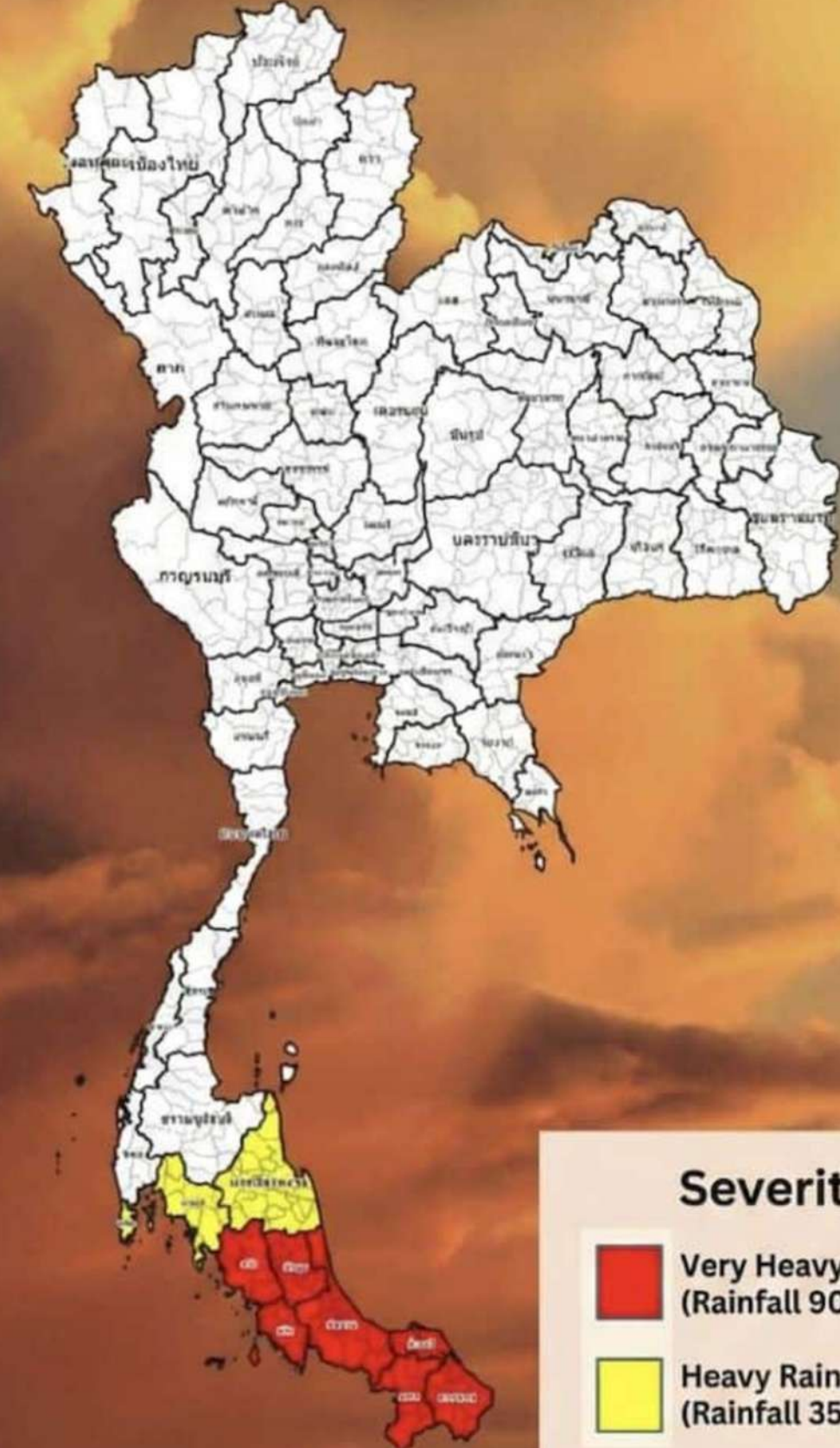
**Hat Yai flood hit by the heaviest rainfall
in 300 years**



Map Showing **Areas at Risk of Heavy to Very Heavy Rainfall**, Valid for November 23, 2025, from 18:00 Today to 18:00 Tomorrow

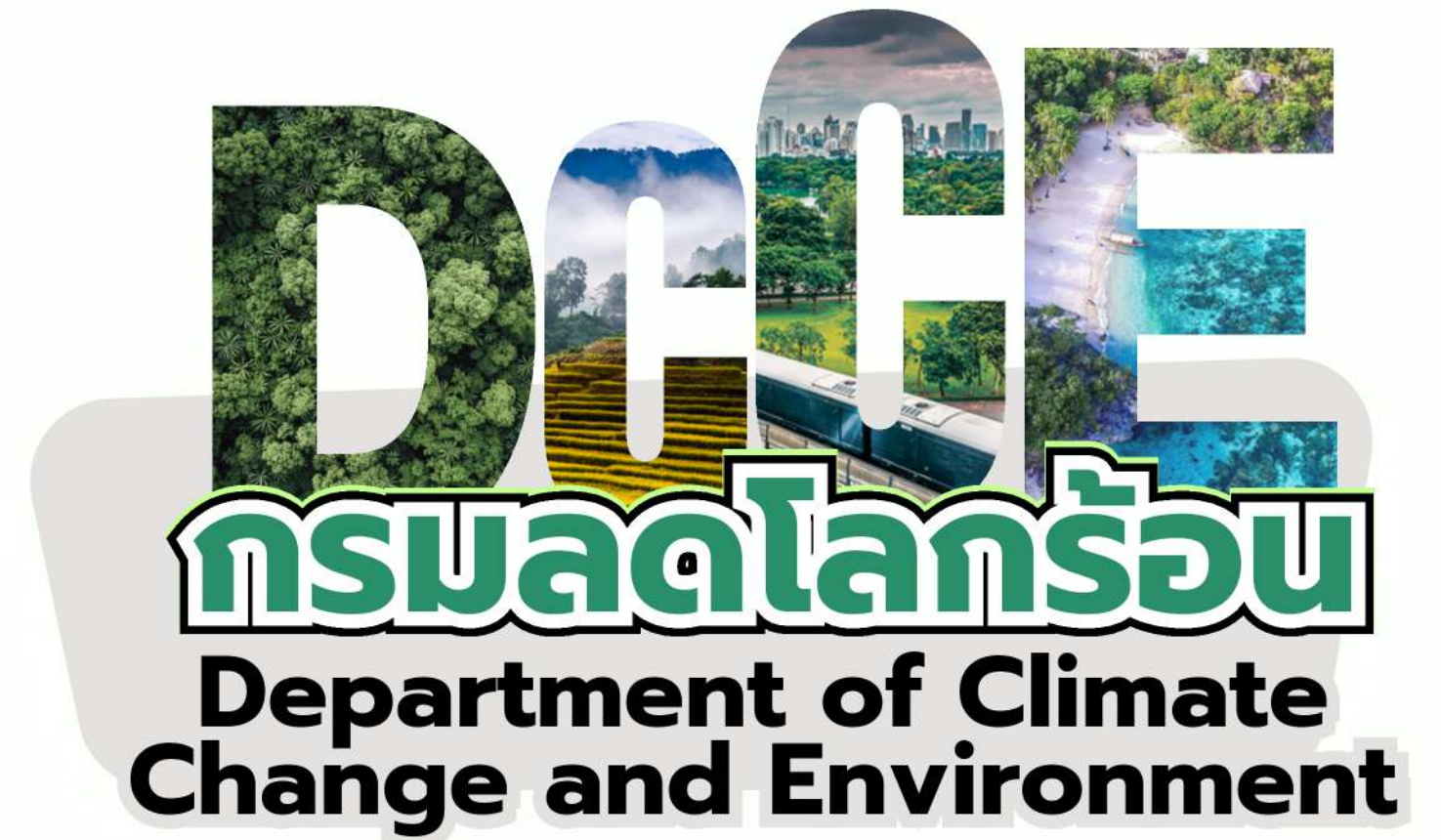


Thaiger



Severity Level

-  **Very Heavy Rain**
(Rainfall 90.1 mm and above)
-  **Heavy Rain**
(Rainfall 35.1 to 90.0 mm)



NATIONAL CLIMATE CHANGE POLICIES AND OPERATION



National Policies and Plans

Level 1

National Strategy (2018 – 2037)

Strategy 5:
Eco-Friendly
Development
and Growth

Level 2

Master Plans under National Strategy

National Reform Plan

- Climate Change Law
- GHG Inventory

**13th National
Economic & Social
Development Plan
(2023-2027)**

Level 3

Climate Change Master Plan 2015 - 2050

Adaptation

Mitigation

Capacity
Building

NDC Action Plan

Thailand aims to achieve **carbon neutrality by 2050** and
reach **net zero emissions by 2065**

Energy

Transport

IPPU

Waste

Agriculture

Forests

**BCG
Model**

**National Adaptation Plan
(NAP)**

Thailand's Climate Change Master Plan 2015 - 2050



Vision 2050

"Thailand is resilient to the impacts of climate change"

Agriculture and Food Security
Natural Resource
Human Health
Tourism
Human Settlement and Security
Water Management

Adaptation

Mitigation

3 Main Approaches

Enabling Environment

Power Generation
Transportation
Industry
Building Energy Consumption
Waste Management
Agriculture
Forest
Urban Management



Research Studies and Technologies
CC Local Knowledge and Public Awareness

Climate Change Implementing Mechanism
International Collaboration/Cooperation



Thailand's National Adaptation Plan: NAP

* Submission to the UNFCCC since April 11, 2024

Vision

Thailand is resilient and adapt to the impacts of climate change to achieve sustainable development

Mission

- Establish the climate resilience into the national development
- Enhance capacities and awareness at all level
- Develop database, research, knowledge, and technology



Framework and guideline for the related agencies to be able to integrate climate adaptation issues into sectoral plans and strategies.

SUSTAINABLE DEVELOPMENT GOALS

Covering 5 dimensions:

People and Society, Economy, Environment, Peace and Tranquility, and Partnerships for Cooperation



6 GOALS SECTORS

Thailand's National Adaptation Plan: NAP



Target:

Water resource management



Increased Water security and decreased losses and damage from water-related disasters

Agriculture and Food security



Productivity and food security maintained amidst climate change risks and impacts

Tourism



Strengthened capacity of the tourism sector towards climate-resilience and sustainable development

Health



Effective public health systems to manage risks and reduce impacts from climate change established

Natural resources



Sustainable management of biodiversity resources to respond to climate change impacts

Human settlement and security



Enhanced capacity of Individuals, communities, and cities, to adapt to climate change impacts appropriately according to the local context

Guideline:

1. Upstream
2. Midstream & Downstream
3. Downstream
4. Support mechanisms

1. Cropland
2. Livestock farm
3. Fisheries and aquaculture
4. Support mechanisms

1. Natural attractions
2. Man-made attractions
3. Support mechanisms

1. Prevention of climate change impacts on health
2. Support mechanisms

1. Terrestrial ecosystems
2. Wetland ecosystems
3. Marine and coastal ecosystems
4. Support mechanisms

1. Metropolises & Cities
2. Towns & communities
3. Support mechanisms





Previous action

พิธีลงนามบันทึกความเข้าใจความร่วมมือ

การบูรณาการเพื่อขับเคลื่อนการดำเนินงานด้านการปรับตัวต่อการเปลี่ยนแปลงสภาพภูมิอากาศ
ภายใต้แผนการปรับตัวต่อการเปลี่ยนแปลงสภาพภูมิอากาศแห่งชาติ

วันที่ 25 กุมภาพันธ์ 2568

ที่ (หอประชุม) อาคาร 100 ปี รัฐบาล

Inter-Ministerial Memorandum of Understanding (MoU) Strengthening Thailand's National Capacity to Tackle Global Crises Aligning Global Adaptation Goals with National Implementation

" ประเทศไทยเติบโตอย่างยั่งยืนด้วยเศรษฐกิจคาร์บอนต่ำและมีภูมิคุ้มกันต่อการเปลี่ยนแปลงสภาพภูมิอากาศด้วยการมีส่วนร่วมของประชาชน "



กรมการเปลี่ยนแปลงสภาพภูมิอากาศและสิ่งแวดล้อม



DCCE THAILAND



www.dcce.go.th



Sustainability Framework under the MoU on Climate Adaptation Cooperation

1. **Embedding climate resilience and preparedness** across national policies, strategies, and sectoral plans.
2. **Developing, implementing, monitoring, and reviewing the National Adaptation Plan (NAP)** and its corresponding action plans in alignment with the global goals adaptation under international frameworks. (e.g. UNFCCC).
3. **Building human capacity and facilitating cross-sectoral knowledge exchange** on climate resilience and adaptive best practices at national and subnational level.
4. **Engaging in public communication to raise awareness of climate risks and empower all communities** to act and adapt to climate change effectively.
5. **Promoting research, innovation, data systems, and knowledge** related to climate risks and adaptation practices.
6. **Supporting climate adaptation actions** in accordance with agency mandates, while strengthening collaboration under international cooperation frameworks, including the mobilization of climate finance.
7. **Empowering vulnerable groups and strengthening community resilience** to climate hazards and disasters through awareness-raising, capacity-building, risk reduction, damage prevention, and early warning systems.
8. **Fostering complementary activities** that contribute to the realization of the objectives of this Memorandum of Understanding.



Six-Year Period (2025–2031) (B.E. 2568–2574)





6 GOALS SECTORS

Action Plan on Adaptation

Steps taken in the development of the action plan



Identifying impacts and prioritizing risk areas by sector.



Setting objectives, indicators, measures, plans, projects, budgets, timelines, and identifying responsible agencies for implementing adaptation actions in risk areas.

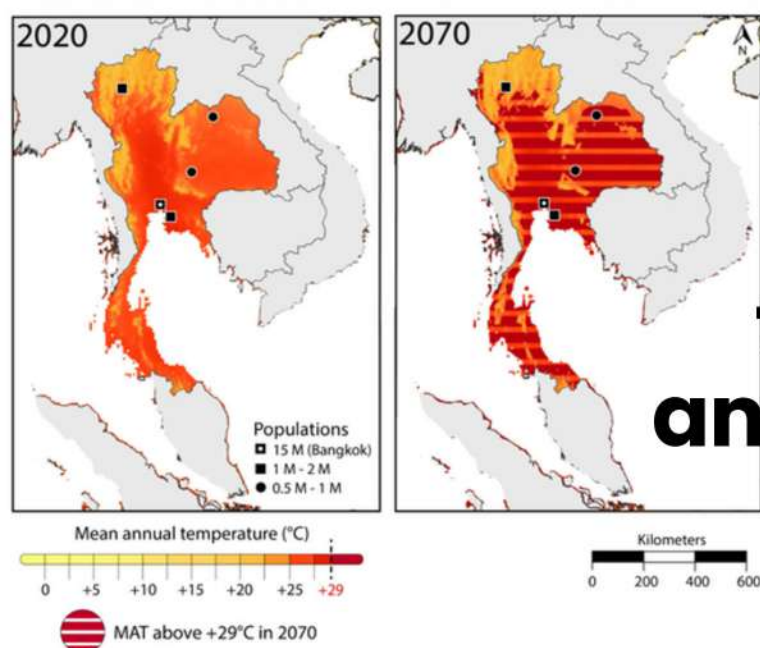


Developing recommendations and approaches to drive the implementation of the action plan in collaboration with relevant agencies, including institutional structures, financial mechanisms, monitoring and evaluation, capacity building, and more.

**Collaboration
with sectoral focal
points from 6 sectors**

Next step

for Climate Change Adaptation Implementation in Thailand



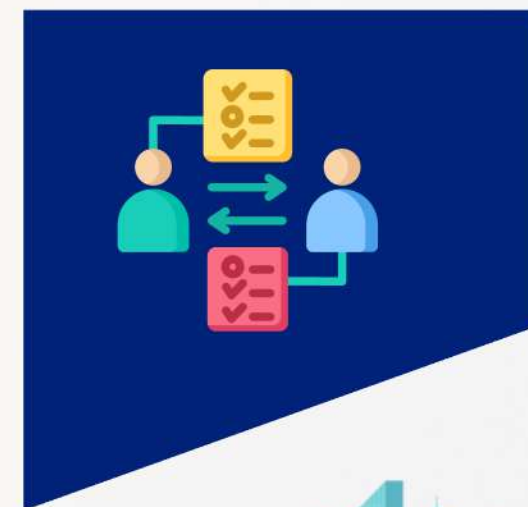
**Update of
the risk map
and risk profile**



**Enhancement of
the climate data/
information center**



**Assessment of
loss and damage**



**Establishing
a national
M&E system**



Draft Climate Change Act

Enabling Environment

To Create and Develop an Enabling Investment Environment

Tools and Mechanisms

To Establish Economic and Financial Tools and Mechanisms to Foster Investment

Private Investment Budget

To Encourage the Participation of the Private Sector and to Carry Out Measures in Line with the Established Plan

Government Investment Budget

To Integrate Government Budget Allocation to Ensure the Achievement of Stated Goals

Monitoring and Evaluation

To Continuously Enhance and Develop Implementation Based on the Evaluation Results

Policy and Plan

Chapter 1

General Provisions

Chapter 3

The National Committee on Climate Change Policy

Chapter 2

Thailand's National Targets for the Implementation of Climate Change Actions

Chapter 5

Climate Change Master Plan

Chapter 12

Climate Change Adaptation

Adaptation

Chapter 4

Climate Change Fund
*Comprehensive Measures to Promote Implementation

*Including support mechanisms

Greenhouse Gas Reduction

Chapter 6

Greenhouse Gas Information

Chapter 7

NDC Action Plan on Mitigation

Chapter 8

Carbon Emissions Trading System

Chapter 9

Carbon Border Adjustment Mechanism

Chapter 10

Carbon Tax

Chapter 11

Carbon Credit

Chapter 13

Standards for the Classification of Economic Activities with Consideration for Climate Change and Environment

Financial Mechanism

Chapter 14

Penal Provisions

Draft Climate Change Act B.E.

Part 1

The development of data and knowledge to support planning and drive actions to strengthen resilience against climate change

- **Develop and disseminate information on climate change**, including climate data, risk and impact information related to climate change, as well as guidelines and examples for adaptation
- **Assess risks and impacts**, and send the assessment results to relevant government agencies to define preventive and response measures, and inform the public according to the roles of the respective agencies

Article 12 Climate Change Adaptation

Part 2

The development implementation of National Adaptation plan

- **Develop of the National Adaptation plan**
- **Develop of the adaptation guidelines for specific areas** where certain areas or sectors are identified as being or potentially affected by climate change
- **Development of sector-specific adaptation action plans**
- **driving, monitoring, and reporting on the implementation of the adaptation plan**

Chapter 12

Adaptation to Climate Change

Part 1: Climate information and knowledges

1 Climate database (TMD)

- Observed climate information, climate monitoring, short-term and medium-term weather forecasts as well as climate projection
- TMD (the same as German Weather Service (DWD)) has the authority to develop Climate database

2 Climate risk and impact assessment in 6 sectors (DCCE)

- DCCE will work with relevant agencies to develop the assessment
- DCCE has the authority to access relevant information from government agencies and private sector (just in case) for climate risk and impact assessment
- DCCE disseminates to relevant government agencies and public

3 Adaptation policy and practices (DCCE)

4 Adaptation Implementation, Monitoring and Evaluation (DCCE)

Others

Water

Agri

Tourism

Health

Natural

Human

Sectoral level

Chapter 12

Adaptation to Climate Change

Part 2: Climate change Adaptation Plans

1 National Adaptation Plan (NAP) (Long-term plan)

- Climate risk assessment
- Long-term targets that align with GGA
- Adaptation options
- The period of NAP implementation will be decided in process

Note :

- Current NAP is applied until 2037
- NAP review is every 5 years

2 Adaptation Action Plan (AAP) (Short-term plan)

- NCCC assigns sectoral focal points to support the implementation under AAP



กรมอนามัย
DEPARTMENT OF HEALTH



- DCCE with sectoral focal points and relevant agencies will : priority areas/indicators/programme/project/budget/agencies



Challenges of Adaptation Implementation in CC Act



National Level

1. Developing appropriate adaptation targets and indicators in AAP
2. Capacity on Climate risk and Impact assessment
3. Establishing institutional bodies that cooperate with 6 sectors for implementation and M&E



Provincial and Local level

1. There is no mandatory for provincial or local authorities to formulate adaptation plan
2. Capacity on NAP Process (Stakeholder engagement, Identify risk, Adaptation options, Implementation, Monitoring and Evaluation)
3. Supporting adaptation Finance on ground

Plans at the provincial level

Bangkok Climate Change Master Plan



THE BANGKOK MASTER PLAN ON CLIMATE CHANGE 2013-2023



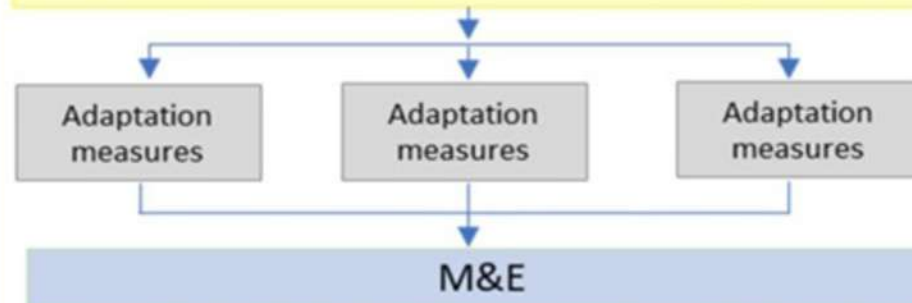
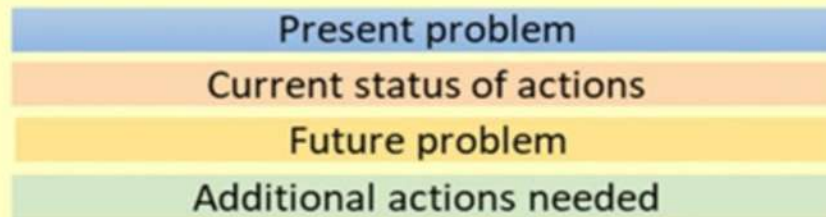
Bangkok Metropolitan Administration (BMA)

Scope of the Bangkok Master Plan

The Bangkok Master Plan on Climate Change 2013-2023 covers the whole geographical area of BMA, in the following sectors:

- (1) Environmentally sustainable transport;
- (2) Energy efficiency and alternative energy;
- (3) Efficient solid waste management and wastewater treatment;
- (4) Green urban planning; and
- (5) Adaption planning.

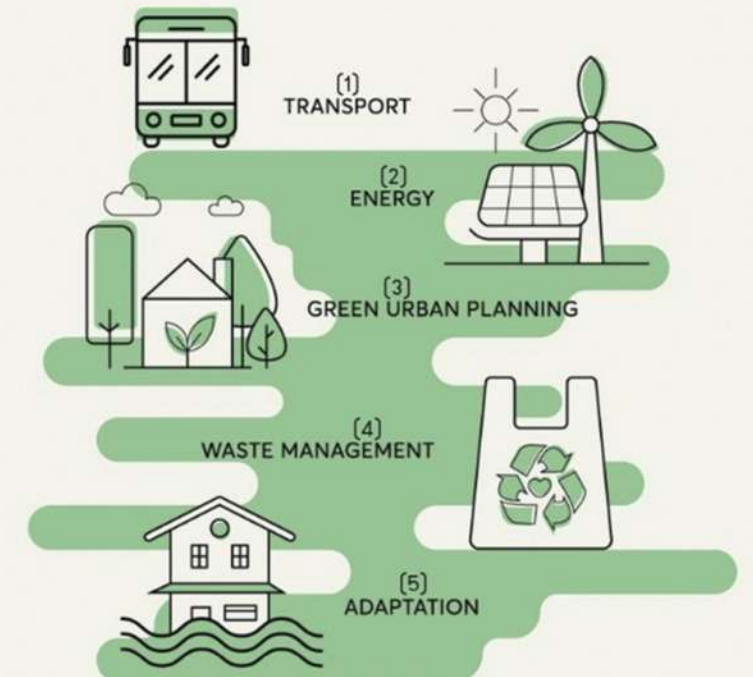
Rationale and priority setting



Executive Summary Bangkok Master Plan on Climate Change 2021-2030

8 June 2022

"The Bangkok Master Plan On Climate Change 2021-2030"





Bangkok Climate Action



- Promotion of **EV car**
- Improvement of connectivity of **public transportation**



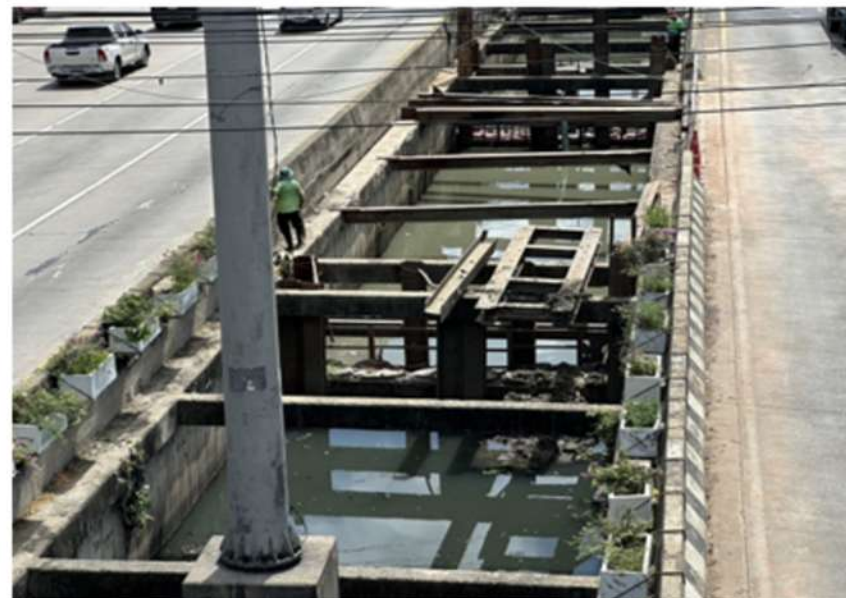
- Promotion of **renewable energy (Solar PV)**
- Improve and install high efficiency equipment



- Promoting **waste separation at source**
- Establishment of **wastewater treatment plants**



- Planting trees and **increasing green space**
- **Increasing new public parks**



- Developing **flood prevention and control systems**



- Developing of **water retention and water storage**



- **Nature-based solutions**

Environmentally Sustainable cities



- **DCCE is the NFP for AWGESC & ASEAN Working group of Environmentally sustainable cities**
- The one mission of DCCE is to enhance the capability of the local administration in climate change and environment management with a focus on climate resilience cities

Promote the participation of local administrative organizations

Developing Tools and Mechanisms for Sustainable City Environmental Assessment

Empower successful and replicate their best practices in other cities

Environmentally Sustainable cities



1. Promoting the participation of local administrative organizations

2. Developing Tools and Mechanisms for Sustainable City Environmental Assessment

Livable Cities	Good Quality of Life	Sustainable Environment	Good Governance
• Urban planning • Infrastructure • Disaster planning	• Health • Education • Culture	• Waste • Green Area • Natural Resources • Biodiversity • Energy • Air pollution • Water	• Vision • Transparency • Partnership



3. Empower successful and replicate their best practices in other cities

Plans at Provincial level

Capacity building for Provincial Office of Natural Resources and Environment in development of climate change work plan at provincial level project



Output

1. Provincial mitigation action plan
2. Provincial adaptation action plan

Measures relating to Urban management in the Provincial Adaptation Plans



Infrastructures and
physical adaptation
measures



Capacity building,
improving climate
literacy, and
increasing public
awareness



Enhancing
accessibility for
the early warning
systems



Land use planning



Social protection
measures



Disaster mitigation
and prevention
measures



CARBON^{LOW}
community

THANK YOU ADAPTATION

PLAN TO ACTION

Ministry of Natural Resources and Environment

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