

From Oversight to Foresight: Climate-Related Scenario Governance for Board Risk and Capital Decisions

An IFRS Licensed Educational Partner Workshop

Date & Location:

August 5th, 2026

for the Thai Institute of Directors

Victor Club



Session leaders:

Hon. Ryan Frazier

CEO of Frazier Global and
Strategic Advisor

Salzburg Global Fellow

Series 7, 63, IFRS FSA Credential



A licensed IFRS Education Provider

Dr. Supattana Wichakul

Acting Managing Director
Climate and Sustainability Business
Unit of TEAM Group



From Oversight to Foresight:

Climate-Related Scenario Governance for Board Risk and Capital Decisions

An IFRS Licensed Educational Partner Workshop

'This presentation contains copyright material of the IFRS Foundation and Frazier Global. All rights reserved. Published by Frazier Global under licence from the IFRS Foundation. Reproduction and use rights are strictly limited. For more information about the IFRS Foundation and rights to use its material please visit www.ifrs.org'.

Disclaimer: To the extent permitted by applicable law the International Accounting Standards Board and the IFRS Foundation expressly disclaims all liability howsoever arising from this publication or any translation thereof whether in contract, tort or otherwise (including, but not limited to, liability for any negligent act or omission) to any person in respect of any claims or losses of any nature including direct, indirect, incidental or consequential loss, punitive damages, penalties or costs.

Information contained in this publication does not constitute advice and should not be substituted for the services of an appropriately qualified professional.



The Foundation has trade marks registered around the world ('**Trade Marks**') including 'IAS®', 'IASB®', 'ISSB®', 'IFRIC®', 'IFRS®', the IFRS® logo, 'IFRS for SMEs®', IFRS for SMEs® logo, the 'Hexagon Device', 'International Financial Reporting Standards®', NIIF® and 'SIC®'. Further details of the Foundation's Trade Marks are available from the Licensor on request.

Meet Your Workshop Leaders



Hon. Ryan Frazier

CEO and Strategic Advisor,
Frazier Global



Dr. Supattana Wichakul

Acting Managing Director,
Climate and Sustainability
TEAMG



**Asst. Prof. Pornphisud
Mongkhonvanit**

President of Siam Technology
College



Ditthayanan Punyaratabandhu

SET ESG Experts Pool &
Sustainability Execution Advisor

Welcome to the boardroom.

Siam Industrial Group PCL

For this session,
SIG is real.
Your committee is real.
Your decisions are real.

YOUR MANAGEMENT TEAM TODAY



Hon. Ryan Frazier

Global Chief Governance, Strategy
& Sustainability Officer



Dr. Supattana Wichakul

Managing Director, Climate Action



Ditthayanon (Bubby) Punyaratabandhu

Head of Regulatory Affairs

YOU ARE

The Board of Directors

Your table = your board committee.

COMMITTEE A

Risk Committee

What could go wrong?
How bad — how fast?

COMMITTEE B

Audit Committee

Is data credible?
Is disclosure defensible?

COMMITTEE C

Strategy & Capital

Does strategy hold
under climate uncertainty?

BEFORE WE BEGIN

- 1 Find your committee. That is your board role for the entire session.
- 2 Your SIG background handout is your reference document. Keep it with you throughout.
- 3 Management will brief you. Your job is to challenge, question, and decide — not approve automatically.
- 4 For this session, SIG is real. The governance decisions you make here are real.

ALSO PRESENT — SIG SENIOR LEADERSHIP



Art

Chairman
of the Board



Ploy

Chief Executive
Officer



Som

Chief Financial
Officer



Will

Chief of
Group Legal

AGENDA

<u>Time</u>	<u>Session</u>
13:00 – 13:30	Registration & Networking
13:30 – 13:40	Welcome & Introduction
13:40 – 13:50	The Regulatory and IFRS S2 Landscape
13:50 – 14:10	Draft Climate Change Act, National GHG Infrastructure, & Board Oversight
14:10 – 14:30	The Board's Strategic Mandate and Climate Scenario Governance
14:30 – 14:40	BREAK
14:40 – 14:55	Board Case Study — Directed Reading: Siam Industrial Group (SIG)
14:55 – 16:35	Board Exercise: Governance in Practice: Management Brief Committee Deliberation Debrief
16:35 – 16:45	Board Takeaways, Capital Allocation Policy, & Governance Maturity Assessment
16:45 – 17:00	Closing Remarks and additional Q&A



“

**Ok, everyone, let's
get moving along!**

”

Art
Board Chair

Today's Objective

By the end of today, you will be able to help **your board to better** govern climate-related decisions — asking sharper questions of management, connecting climate risk to capital allocation, and reaching a defensible decision aligned to strategy and risk appetite.

1 INTERROGATE

Ask management the questions that separate a credible climate analysis from a reassuring one.

ASSESSED IN: Committee deliberation

2 CONNECT

Link climate risk to capital allocation, strategy, and your board's risk appetite.

ASSESSED IN: The capital decision

3 ASSESS

Judge where your own board sits today — and name the one move that raises its game.

ASSESSED IN: Maturity self-assessment

You'll know you met it if **you can walk into your next board meeting and raise the level of the climate conversation.**

The Board's Job Is Judgment, Not Technique

You do not need to be a climate scientist. Oversight is a judgment role, not a technical one.

DELEGATE TO MANAGEMENT

The technical work. Sound management practice.

- Collecting emissions data and calculating the greenhouse gas (GHG) inventory
- Selecting climate data providers and modeling vendors
- Building scenario models and running the analysis
- Engineering flood defenses and adaptation designs
- Computing impairment severity and asset-life adjustments
- Implementing abatement projects and reporting performance upward

NEVER DELEGATE

THE JUDGMENT — your work in the room

- › Understanding what a scenario is — and is not
- › Asking sharp, well-framed questions
- › Judging whether assumptions are credible or convenient

THE ACCOUNTABILITY — yours regardless

- › Setting climate strategy and risk appetite
- › Approving the capital allocation policy
- › Owning the disclosure and the commitments made to stakeholders
- › Holding executives accountable for outcomes

Delegating execution is sound management. Delegating accountability is the trap.

From oversight to foresight

How this board will think today — governance, risks, and capital decisions.

1

Mandate & competence

A named board owner who can challenge management

2

Strategic foresight

Scenarios that price value at risk & opportunities

3

Risk integration

Defined risk appetite and early triggers

4

Capital & accountability

Capital that follows the foresight

Each discipline moves the board from reacting to what happened toward governing what could happen.

Why Climate Governance Sits in The Boardroom

“If your largest institutional investor asked you today: what climate scenario did you use to stress-test your five-year capital plan — what would you say?”

THE LEGAL REALITY

In Thailand, this is not new law. Under the Securities and Exchange Act, directors of listed companies must perform their duties with **responsibility, due care and loyalty**.

A director is protected where the decision was made in good faith, in the best interests of the company, and on information the director honestly and reasonably believed to be sufficient.

Securities and Exchange Act B.E. 2535 (1992), Division 2 — Duty and Responsibility of Director and Executive - Corporate Governance Code for Listed Companies 2017 (Securities and Exchange Commission, Thailand) - Commonwealth Climate & Law Initiative / Oxford Sustainable Law Programme (2024)

THE FINANCIAL STAKES

7%

of annual earnings at risk by 2035 for companies that delay

WEF / Alliance of CEO Climate Leaders, Dec 2024

\$1.2T

annual physical climate costs for S&P Global 1200 by 2050

WEF / S&P Global, Sept 2025

12%

of large companies comprehensively measuring climate risk

BCG / CO2 AI Climate Survey, Sept 2025

THE BOARD'S ROLE

Management conducts the analysis & assessment.
The board challenges, decides, and owns the outcome.

Governance — Board oversight — non-delegable

Strategy — How climate affects business model & capital

Risk Management — Identifying, assessing, prioritising risks

Metrics & Targets — Measuring performance over time

Source: IFRS S2 — International Sustainability Standards Board, 2023

THREE QUESTIONS EVERY BOARD MUST BE ABLE TO ANSWER

01

What are our material climate-related risks and opportunities — and has management identified them credibly?

Risk Committee lens

02

Have we stress-tested our strategy under multiple climate scenarios reflecting the range of plausible futures we face?

Audit Committee lens

03

Are our capital allocation decisions climate-resilient — and can we defend them to investors, auditors, and regulators?

Strategy & Capital lens



“

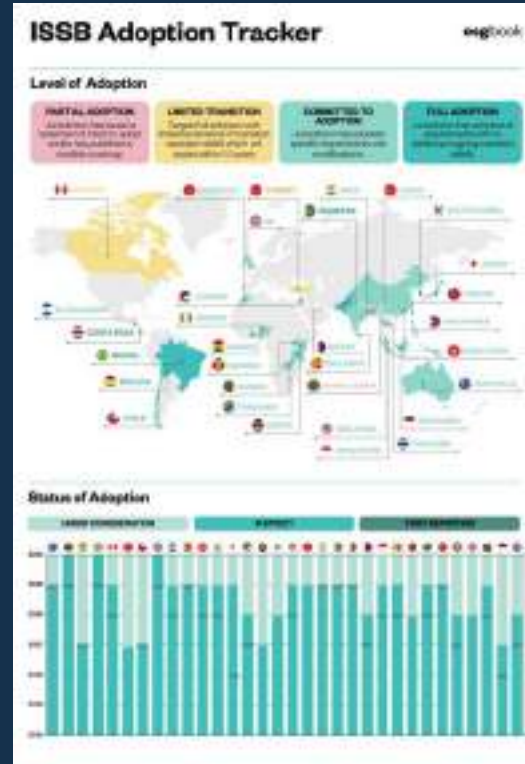
**Bubby, can you talk
us through the
evolving regulatory
landscape
including IFRS S2?**

”

Ploy
CEO

The standard is becoming the market default

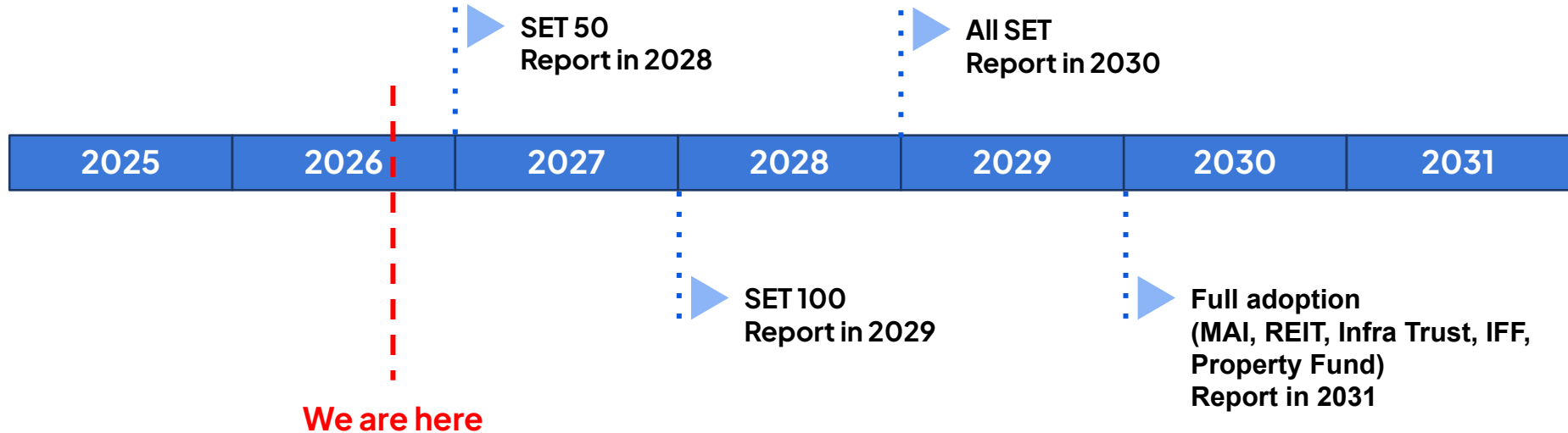
40+ Jurisdictions Adopting ISSB Standards



Source: ESG Book — ISSB Adoption Tracker

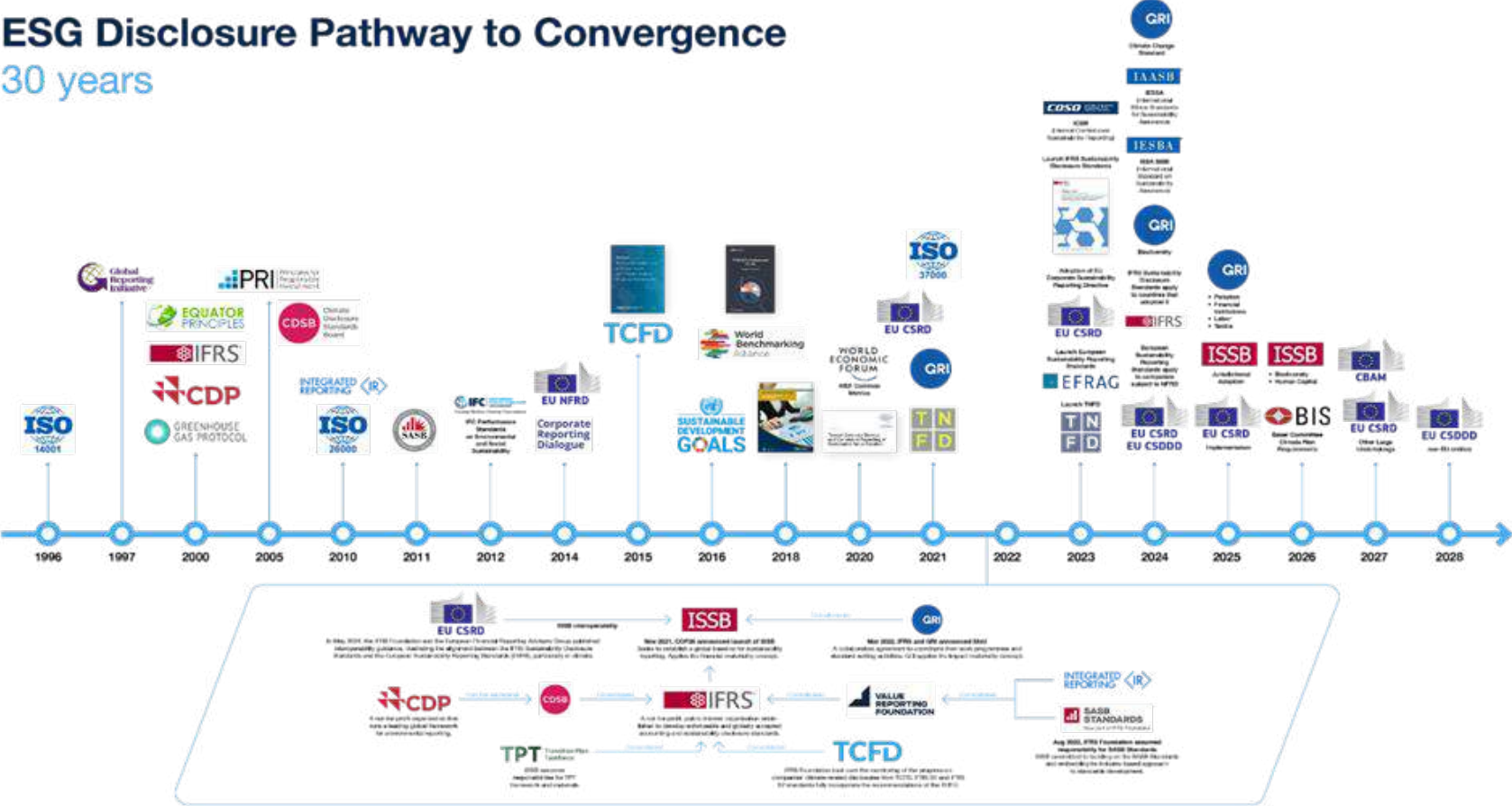
Regulatory Landscape

The Thai SEC will make ISSB-aligned sustainability disclosures mandatory.

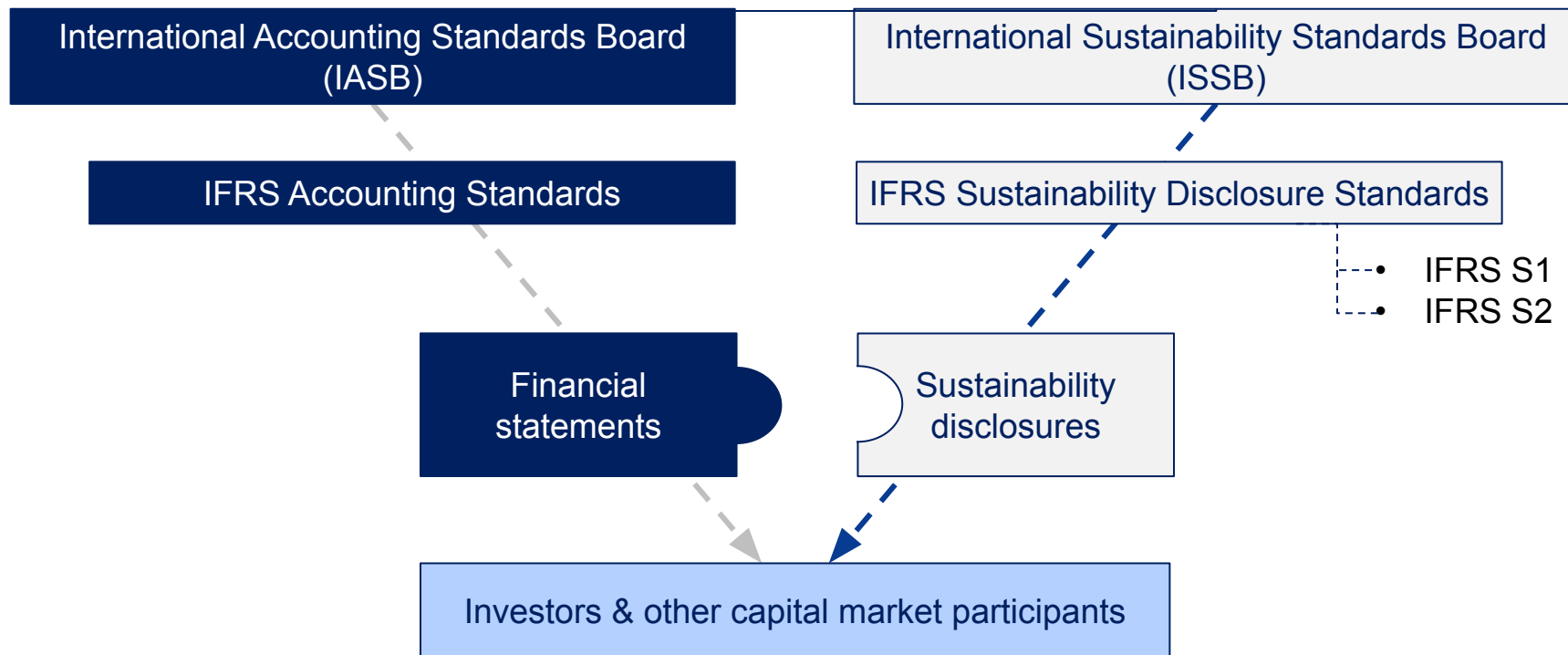


ESG Disclosure Pathway to Convergence

30 years



IFRS Foundation



Complementary objectives



Note: The diagram is not intended to represent relative proportions of reported information.

The **ISSB Standards** represents a significant step towards harmonizing sustainability reporting globally. By providing a clear and consistent framework, it empowers companies to disclose material information that drives informed decision-making and contributes to a more sustainable future.

IFRS S1 & S2 are the cornerstones of this effort:



IFRS S1

General Requirements for Disclosure of **Sustainability-related** Financial Information

Provides general requirements for disclosing sustainability-related financial information, focusing on information material to investors.

Emphasizes the interconnectedness of sustainability and financial performance.



IFRS S2

Climate-related Disclosures

Provides general requirements for disclosing climate-related financial information, focusing on information material to investors.

Emphasizes the interconnectedness of climate and financial performance.



GOVERNANCE



STRATEGY



RISK MANAGEMENT



METRICS & TARGETS

Governance processes, controls and procedures the entity uses to monitor and manage sustainability and climate-related risks and opportunities

Approach the entity uses to manage sustainability and climate-related risks and opportunities

Enabling understanding of the entity's risk profile including how the entity identifies, assesses, prioritises and monitors sustainability and climate-related risks and opportunities

Performance in relation to sustainability and climate-related risks and opportunities, including progress towards targets the entity has set or is required to meet by law or regulation

Describe **the board's oversight** of climate-related risks and opportunities

Describe **the management's role** in assessing and managing climate-related risks and opportunities

Describe the **impact** of climate-related risks and opportunities on the organization's **businesses, strategy, and financial planning**
Describe the resilience of the organization's strategy, taking into consideration different **climate-related scenarios**, including a 2°C or lower scenario

Describe the organization's process for **identifying and assessing climate-related risks**

Describe how processes for identifying, assessing and managing climate-related risks are **integrated into the organization's overall risk management**

Disclose the metrics used by the organization to assess climate-related risks and opportunities **in line with its strategy and risk management process**
Disclose **Scope 1, Scope 2**, and, if appropriate, **Scope 3 greenhouse gas (GHG) emissions**, and the related risks

In their own words — why ISSB standards matter to the investors who hold your shares:

Leading Global Asset Managers on ISSB Disclosure

“ BlackRock (\$14.04 Trillion AUM)

Standardized disclosure of sustainability-related data supports investors in making informed decisions. The **International Sustainability Standards Board (ISSB) standards, IFRS S1 and IFRS S2**, represent one such approach to standardization that we find useful in our analysis.

Source: BlackRock Investment Stewardship Global Principles for Benchmark Policies, effective January 2026

“ Vanguard (\$12 Trillion AUM)

To guide their presentation of information in a way that is consistent, comparable, and decision-useful, *companies should also adhere to broadly accepted industry-specific **investor-aligned reporting frameworks**, such as those promulgated by the **International Sustainability Standards Board**. Companies should also disclose both historical data and forward-looking information so that the market has context for what companies have done, what they plan to do, and how their governance practices enable successful decision-making.*

Source: Vanguard-Advised Funds Proxy Voting Policy, effective January 2026

“ Capital Group (\$3.3 Trillion)

We encourage disclosure of material ESG risks and opportunities faced by portfolio companies and recognize the compliance and operational burdens that companies face in navigating different reporting regimes. As such, as a baseline, we welcome and encourage disclosure aligned to the **ISSB Standards**, subject to a company's judgment on which elements of the standards are material to its business.

Source: Capital Group ESG Policy Statement 2026

“ Neuberger Berman (\$567 Billion)

We recognize that reporting in accordance with the recommendations of the **Task Force on Climate-related Financial Disclosure (TCFD) and the International Sustainability Standards Board (ISSB)**, which includes the Sustainability Accounting Standards Board (SASB), is mandatory in many jurisdictions and encourage companies where it is not mandatory to look to those frameworks to assist them in disclosing their approach to managing financially material risks.

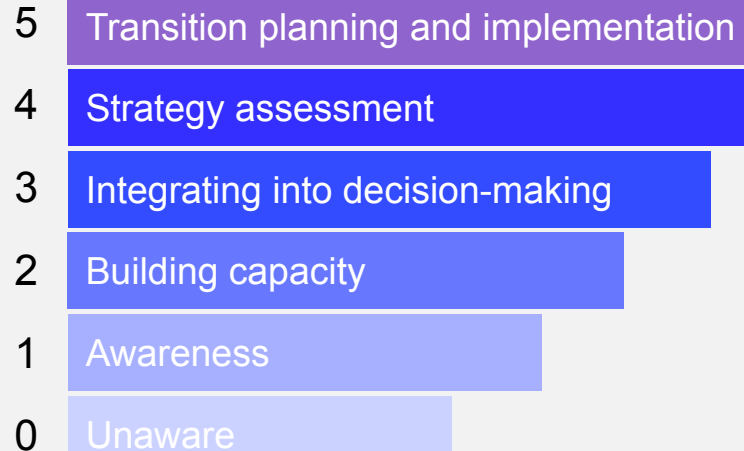
Source: Neuberger Berman Governance and Proxy Voting Guidelines 2025

FTSE Russell ESG Scores

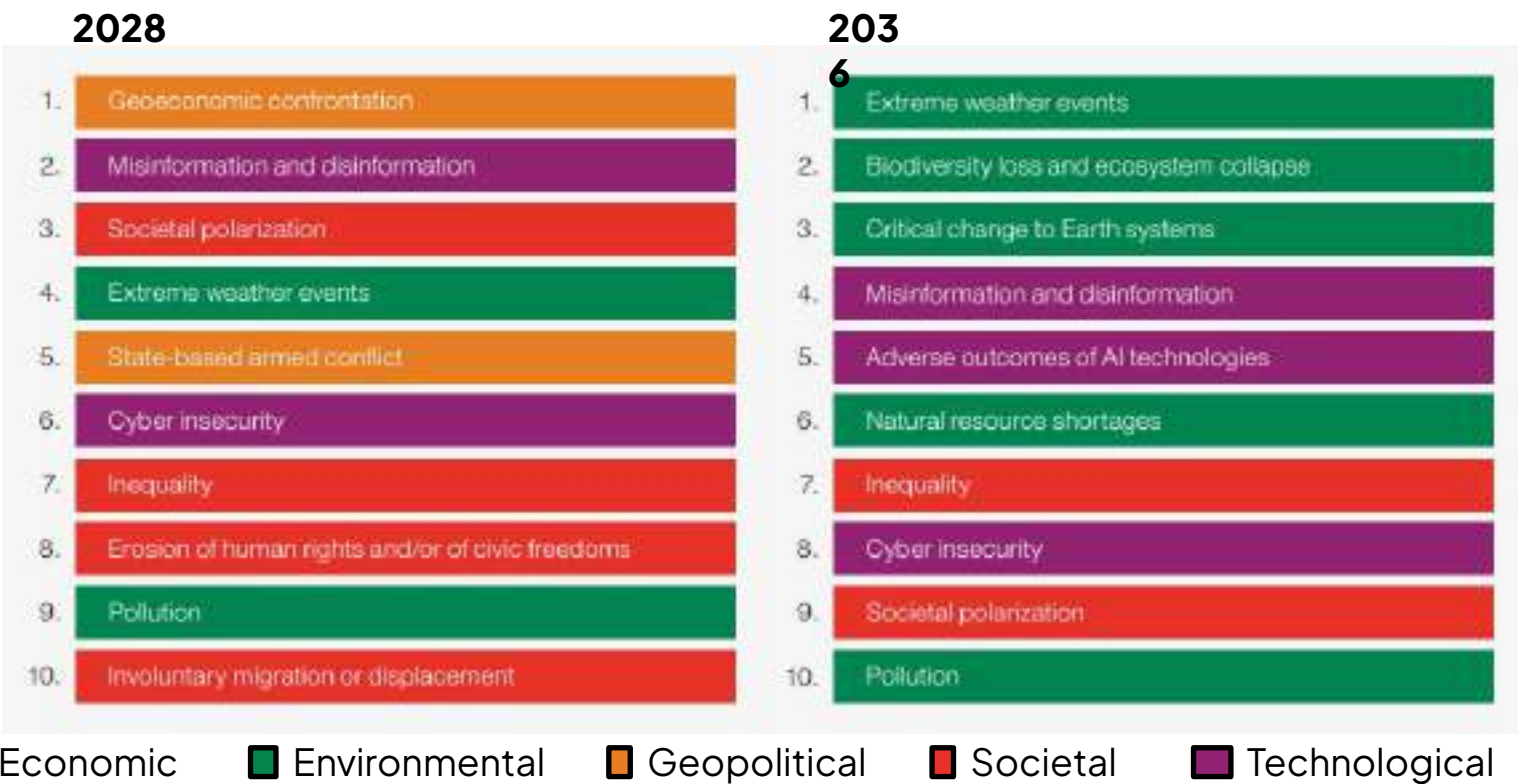


Transition Pathway Initiative (TPI)

- Carbon performance
- Management quality



Global Risk Report 2026



Financial impacts from natural catastrophes

220 B USD

Global economic loss in 2025



37 B USD

Tropical cyclones 2025

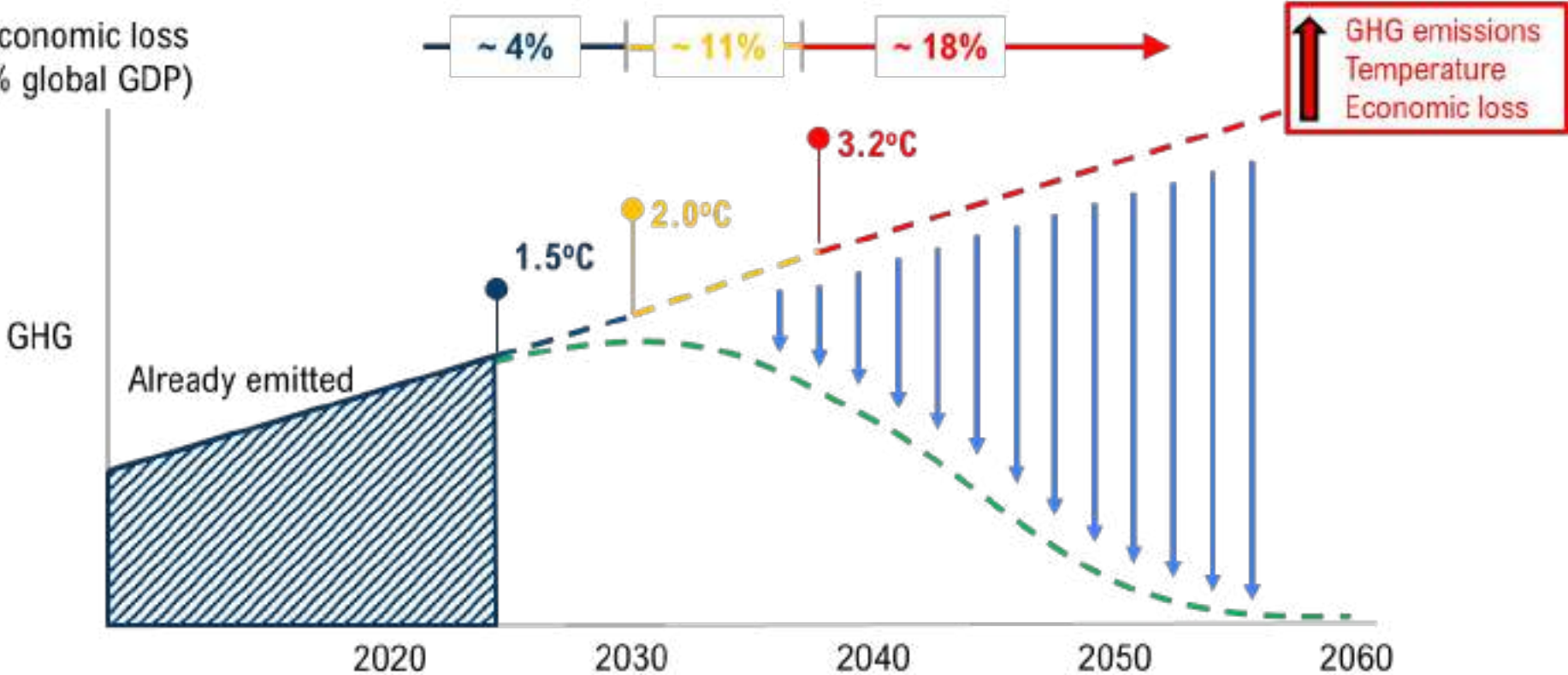
25 B THB

Southern Thailand floods 2025



Why do we need to aim for net zero?

Economic loss
(% global GDP)



Key global regulations

EU

- Fit for 55 package
- Renewable Energy Directive III
- Emissions trading scheme
- Carbon Border Adjustment Mechanism (CBAM)
- Corporate Sustainability Reporting Directive (CSRD)

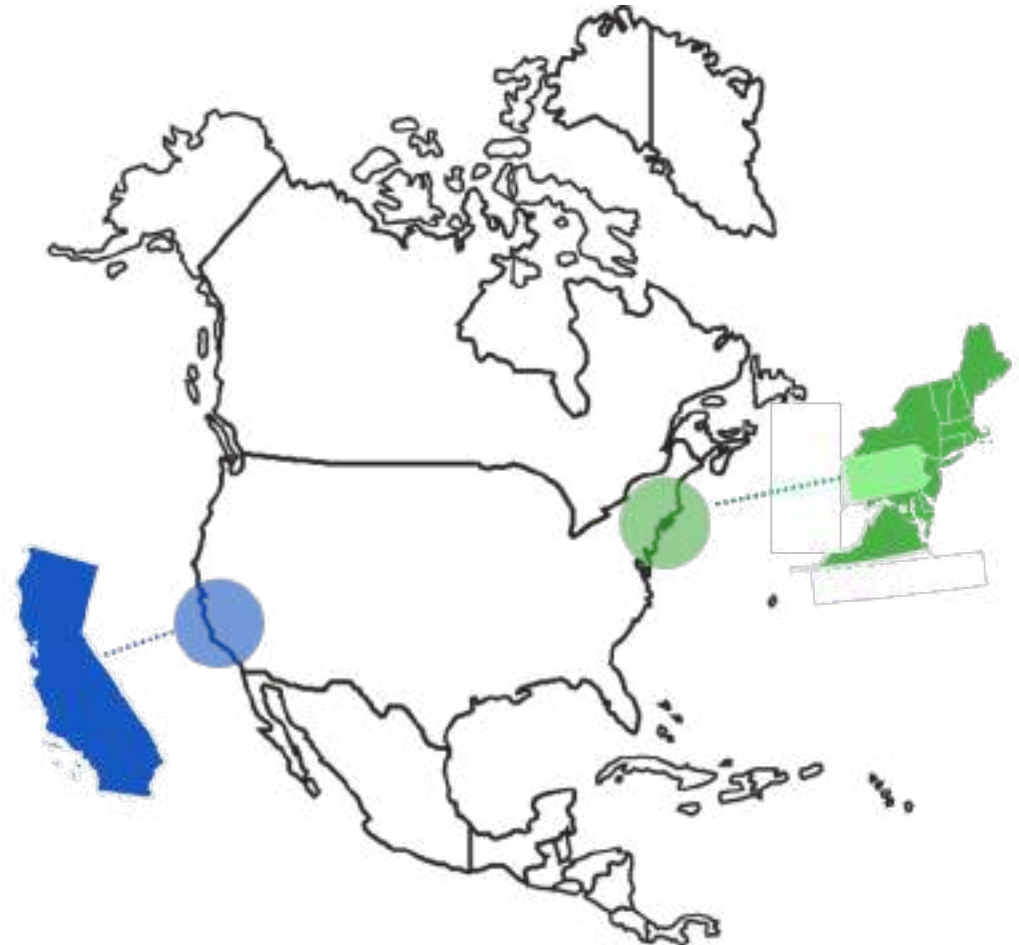
UK

- Climate Change Act & Scotland Act
- Carbon budgets
- Emissions trading scheme
- UK CBAM (1 January 2027)
- Streamlined Energy and Climate Reporting (SECR)



Key global regulations

- Canada
 - Federal Output-based Pricing System
 - Greenhouse Gas Pollution Pricing Act
 - GHG Offset Credit System
- USA
 - RGGI cap-and-invest
 - CA cap-and-trade
 - EPA regulations (HFCs, transportation, power plants, MSW landfills)
- Mexico
 - Carbon tax
 - Emissions trading scheme
 - Certified emission reduction credits



Key global regulations

China:
Ecological and
Environmental Code
Emissions trading scheme

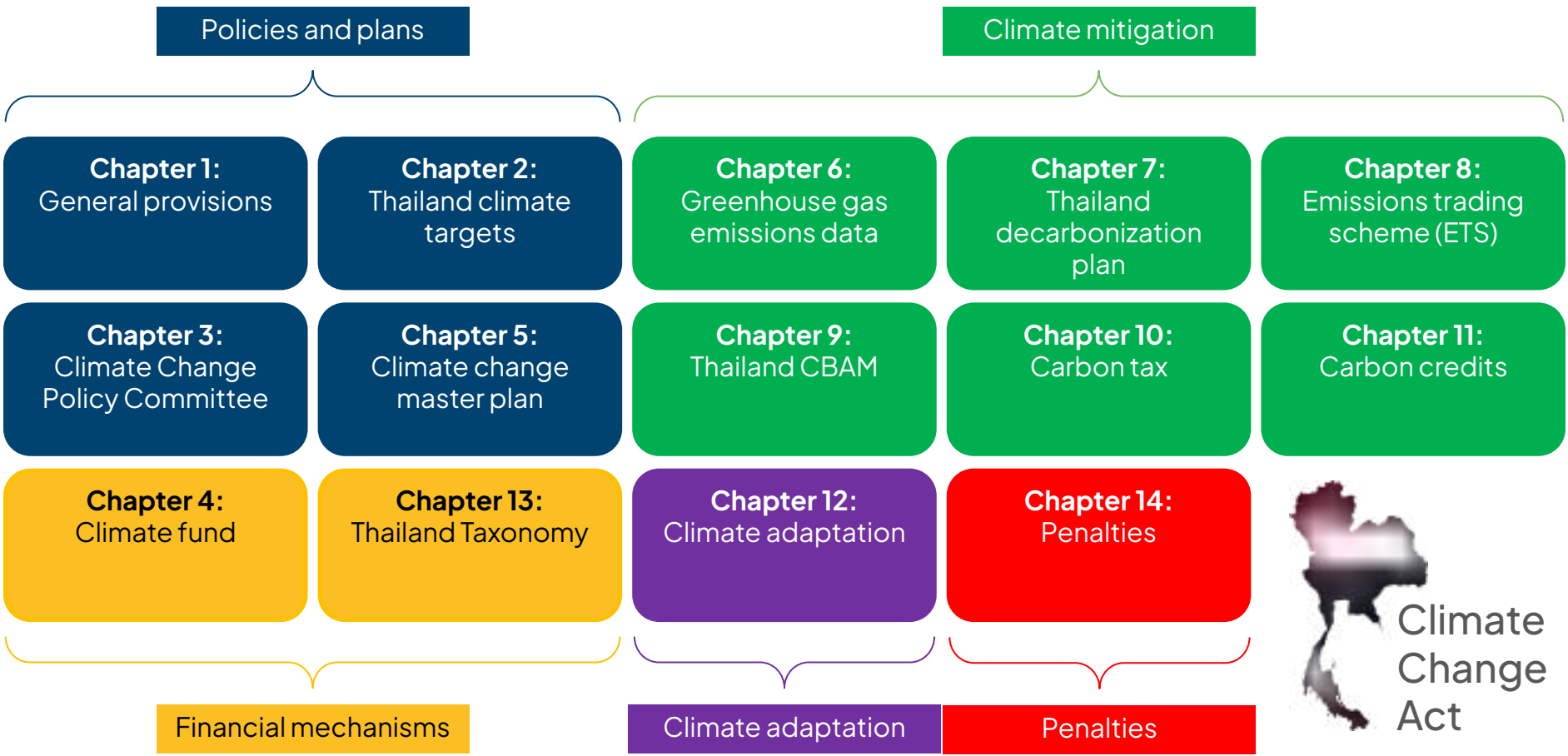
Indonesia:
Emissions trading scheme
(power sector)



Japan:
Green Transformation (GX)

Korea:
Emissions trading scheme

Australia:
Safeguard Mechanism &
Australia Carbon Credit Unit



Climate
Change
Act



“

**Dr. Supattana, Thailand’s
Department of Climate Change
and Environment (DCCE) will
regulate companies to disclose
GHG data?**

**What do Directors need to
know?**

”

Will
Chief of Legal

Draft Climate Change Act B.E.

Governance

Law enforcement, monitoring,
and oversight.



Building Capacity

for Thailand's competitiveness
and sustainable economic
development



Just Transition

Supporting an equitable transition for
both the public and private sectors



Enhancing Adaptive Capacity

and building resilience to
climate change



Draft Climate Change Act B.E.

1st Central
Legal
Hearing
(Public
Consultation)

Apr
2024

Legal Subcommittee
approves the
principles of the
draft law for
submission to the
National Climate
Change Policy
Committee

May - Oct
2024

2nd Public Hearing
before submission to
the National Climate
Change Policy
Committee,
which approves the
principles and
forwards them to the
Cabinet

Nov - Dec
2024

Jan - Mar
2025

Publication of hearing
results and the
impact assessment
report on the draft law
Coordinate with the
Ministry of Finance
to request establishment
of the Climate Fund
under the Revolving
Fund Management
Act B.E. 2558 (2015)

May - Jun
2025

Ministry of Finance
proposes; Cabinet
approves fund
establishment without
remitting revenue to
the state treasury
Ministry of Natural Resources
and Environment proposes;
Cabinet approves the
principles of the
draft law for review
by the Council of State

Jul - Sep
2025

Cabinet approves
the principles of
the draft law for
consideration by
the Council of State
Council of State
review completed
(Fast Track)
before submission
to the parliamentary
process

Council of
State reviews the draft
law
and holds the 3rd
public hearing

Apr
2026

Resubmit to the
Cabinet for
consideration before
proceeding to the next
steps according to the
type of law

To be
determined

**Expected to pass
Parliament and
officially enter into
force in Mid 2027**

Draft Climate Change Act B.E.

Policy and Plans

Chapter 1 บททั่วไป
General Provisions

Chapter 2 เป้าหมายการดำเนินงานด้านการ
เปลี่ยนแปลงสภาพภูมิอากาศของประเทศไทย
National Climate Change
Performance Targets

Chapter 3 คณะกรรมการนโยบายการเปลี่ยนแปลง
สภาพภูมิอากาศแห่งชาติ
National Climate
Change Policy Committee

Chapter 5 แผนแม่บทรองรับการเปลี่ยนแปลง
สภาพภูมิอากาศแห่งชาติ
National Climate
Change Master Plan

GHG Mitigation

Chapter 6 ข้อมูลก๊าซเรือนกระจก
GHG Data Reporting

Chapter 7 การลดก๊าซเรือนกระจก
Greenhouse Gas Mitigation

Chapter 8 ระบบซื้อขายสิทธิใน
การปล่อยก๊าซเรือนกระจก
Emissions Trading System

Chapter 9 กลไกการปรับราคาคาร์บอนข้าม
พรมแดน CBAM

Chapter 10 ภาษีคาร์บอน
Carbon Tax

Chapter 11 คาร์บอนเครดิต
Carbon Credit

Chapter 14 บทกำหนดโทษ
Penalties

Adaptation

Chapter 12
การปรับตัวต่อการเปลี่ยนแปลง
สภาพภูมิอากาศ
Climate Change Adaptation

Financial Mechanisms

Chapter 4 กองทุนภูมิอากาศ
Climate Change Fund

Chapter 13 มาตรฐานการจัดกลุ่ม
กิจกรรมทางเศรษฐกิจด้าน
การเปลี่ยนแปลงสภาพภูมิ
อากาศและสิ่งแวดล้อม
Thailand Taxonomy

Draft Climate Change Act

Chapter 6, Part 1
Reporting of Activity Data for the National GHG Inventory (Thailand GHG Inventory) Sections 43-51

Chapter 6, Part 2
GHG Mandatory Reporting at Organization Level
Sections 52-65

Authorized to collect data

1. Ministry of Agriculture and Cooperatives
2. Ministry of Interior
3. Ministry of Natural Resources and Environment
4. Ministry of Energy
5. Ministry of Transport
6. Ministry of Industry
7. Other relevant government agencies for designated sectors, as approved by the Cabinet

*If the data has already been certified by the relevant government agency responsible for its collection, no further certification or verification is required, to avoid duplication of process

Report sector-level activity, emission, removal, and GHG reduction data

Department of Climate Change and Environment

Calculated via the TOES system

Compile the National GHG Inventory

Department of Climate Change and Environment

Request GHG emissions data according to prescribed standards

Entities subject to GHG emissions data reporting

Set standards for
GHG emissions data reporting

Data Verification

TGO

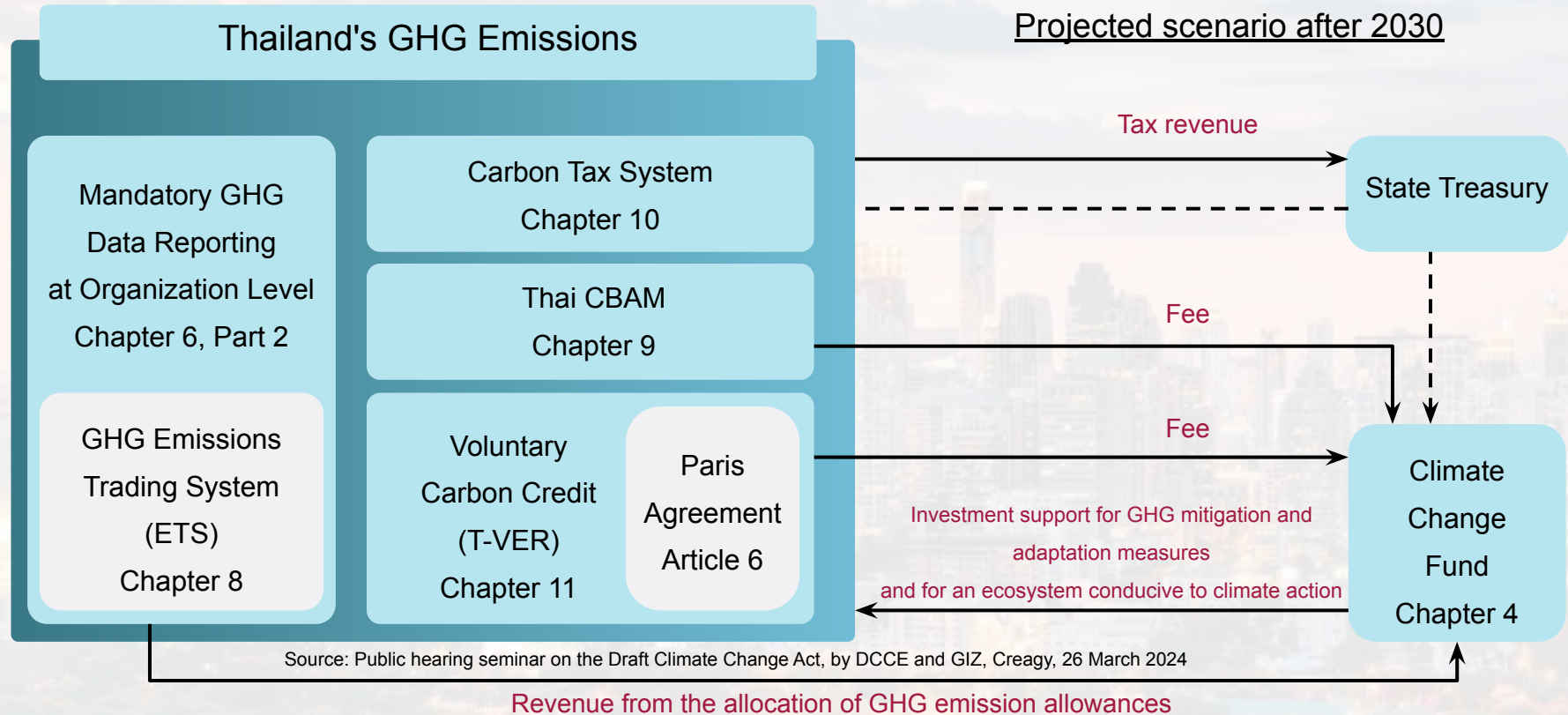
Verified and certified entity-level GHG emissions data report

Department of Climate Change and Environment

Calculate baseline and set standard values

Establish mandatory/promotional mechanisms to reduce GHG emissions

Fundamentals of Climate Change, the Global Warming Situation, and National Policy



"Carbon pricing จะส่งผลต่อโครงสร้างต้นทุนและการจัดสรรเงินลงทุนของบริษัท "

Draft Climate Change Act

“Carbon เป็นทั้งต้นทุน (Carbon Cost) และโอกาส (Carbon Asset)”

Bid for GHG emission allowances from DCCE according to the specified reserve allocation

Option 3

Auction proceeds from DCCE allocation and reserve allowances



Climate Fund

Option 2

Carbon Credit Market



Sell in the carbon market

Voluntary GHG Reduction Projects*

- T-VER
- Premium T-VER

Option 1

Allowance Trading Market



Sell remaining allowances

Purchase carbon credits to offset according to the prescribed criteria

Buy allowances to offset the excess

GHG emissions exceeding allowance

Entities emitting GHG beyond the prescribed cap may choose an option to offset their emission allowances

GHG Emissions Reduced

Actual GHG Emissions

Actual GHG Emissions

7 Industry Groups (Pilot Phase)



Iron and Steel



Aluminum



Power Generation



Glass



Paper and Pulp



Cement



Chemicals and Petrochemicals



Threshold
25,000 tCO₂e or more



Implementation Plan

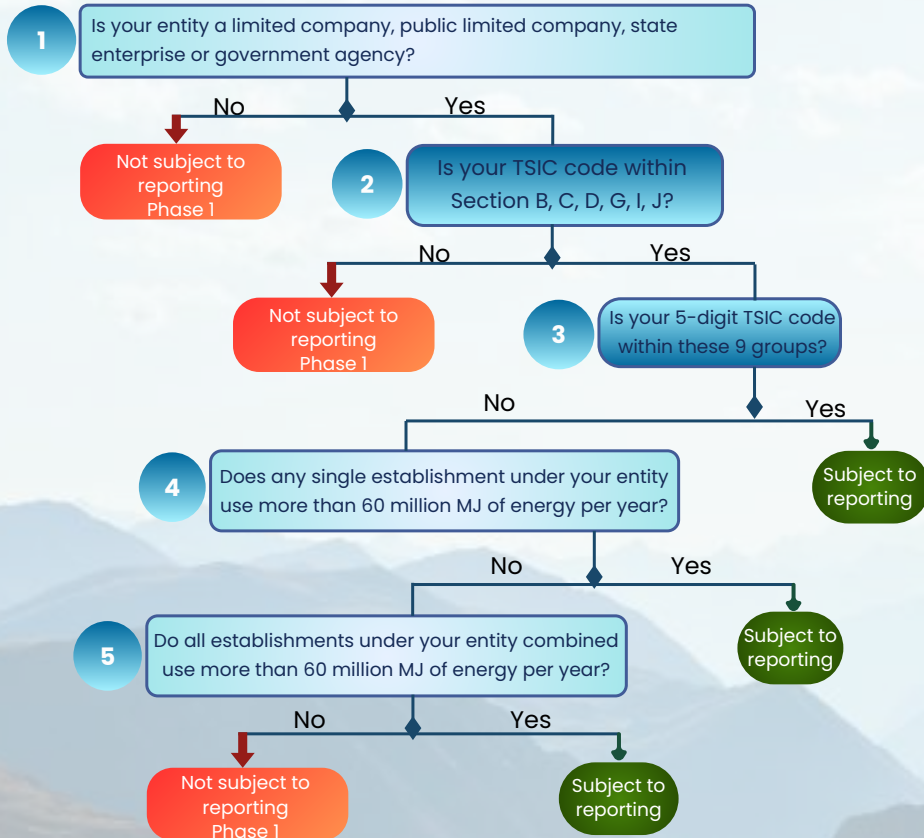
Pilot phase expected to begin in
2029-2030

Phase 1 implementation in 2031-2035

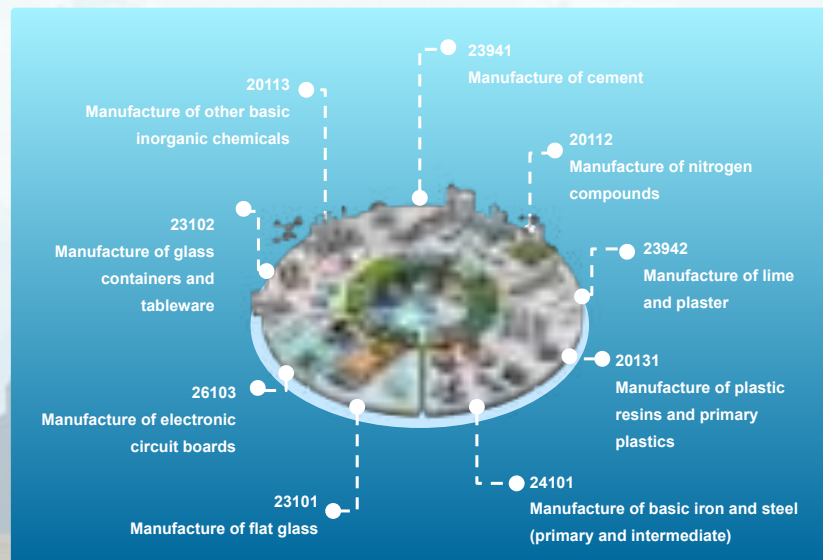
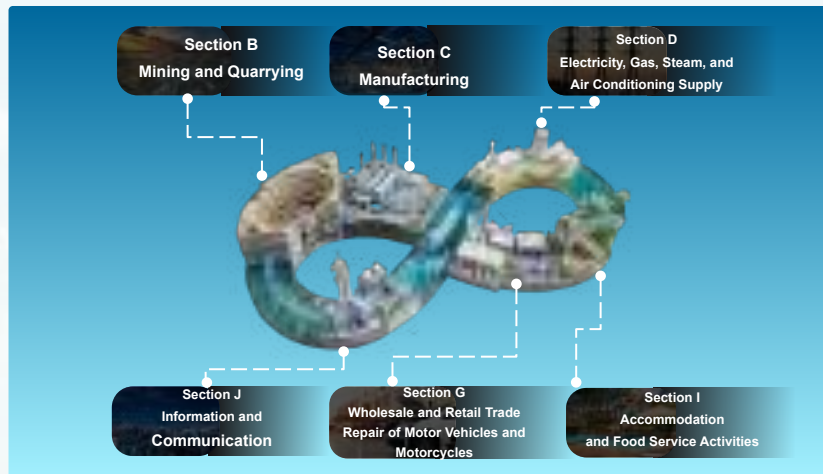
1. Who Must Report?

Are you subject to mandatory reporting?

Start



• Note: Joule (J) is a unit of energy, where 1 megajoule = 1,000,000 joules



3. How to Report?

Data Reporting Method

Case 1 Directly from the production process

Has an establishment that directly emits GHG from the production process

Requirement

- 1. Report separately for every establishment
- 2. Report combined GHG for the entire entity



Pun Rungrueng Co., Ltd.

- 1. Separate reports: Factory A, B, C
- 2. Combined report: Entire company (factories+buildings+warehouse)

Case 2 Uses more than 60 million MJ of energy

Has ≥1 establishment using >60 million MJ/year of energy

Requirement

- 1. Report separately for establishments exceeding the threshold
- 2. Report combined GHG for the entire entity



Thai Kaona Co., Ltd.

- 1. Separate reports: Factory A, B (exceeding threshold)
- 2. Combined report: Total entity energy 165 million MJ/year (incl. buildings+warehouse)

Case 3 Combined multiple establishments

No single establishment exceeds the threshold, but the combined total does

Requirement

- 1. Report combined GHG for the entire entity

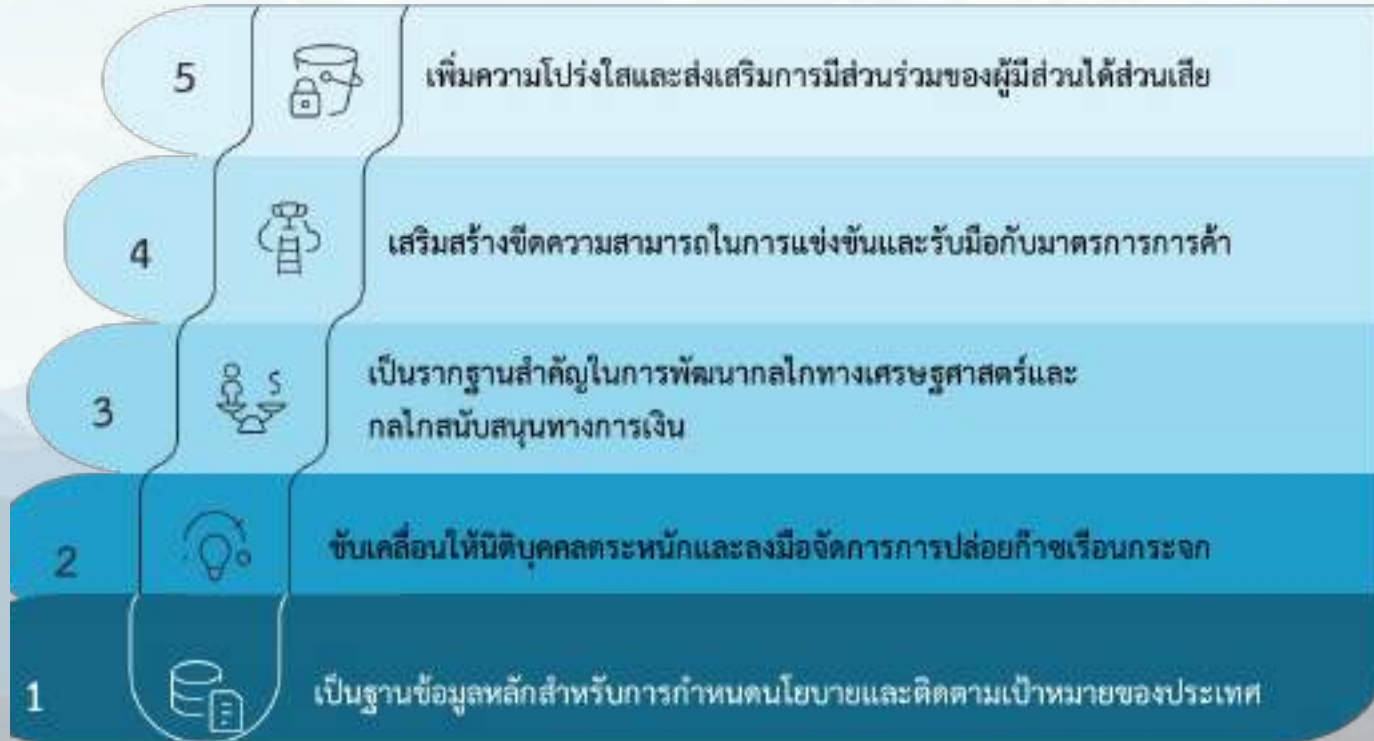


Lek Lao Dee Co., Ltd.

- 1. Combined report: Total entity energy 125 million MJ/year (incl. buildings+warehouse)

The Importance of the Mandatory GHG Reporting System for Entities

It aims to serve as a data infrastructure that enables Thailand and organizations to lay the foundation for sustainable low-carbon economic growth





**Other Government Agencies
with useful data,
reducing duplication of data entry**



Verification Process



GHG Reporting Dashboard
(Reporting scope under
the Act)



Entities subject to reporting under
the Climate Change Act,
Chapter 6



General Data

Activity Data
(AD)



Data Storage
/Calculate Engine



A database for screening entities
for allocation/trading of allowances under the ETS, per Chapter 8

Reporting Standards Related to Carbon Footprint

REQUIREMENTS/REFERENCE STANDARDS FOR CFO ASSESSMENT



Category 1: Direct GHG emissions and removals

Category 2: Indirect GHG emissions from imported energy

Category 3: Indirect GHG emissions from transportation

Category 4: Indirect GHG emissions from products used by an organization

Category 5: Indirect GHG emissions associated with the use of products from the organization

Category 6: Indirect GHG emissions from other sources



ประเภทที่ 1 การปล่อยและดูดซับก๊าซเรือนกระจกทางตรงขององค์กร (SCOPE 1: Direct GHG emissions and removals)

ประเภทที่ 2 การปล่อยก๊าซเรือนกระจกทางอ้อมจากการใช้พลังงาน (SCOPE 2: Energy indirect GHG emissions)

Scope 3: Other indirect GHG emissions:

- 3.4 การขนส่ง และการกระจายสินค้าต้นน้ำ
- 3.6 การเดินทางเพื่อธุรกิจ
- 3.7 การเดินทางของพนักงาน
- 3.9 การขนส่ง และการขายสินค้าปลายน้ำ

- 3.1 การซื้อวัตถุดิบ และบริการ
- 3.2 สินค้าประเภททุน

3.3 กิจกรรมที่เกี่ยวข้องกับเชื้อเพลิงและพลังงาน

โดยไม่ได้คำนวณประเภทที่ 1 และ 2 แล้ว

- 3.5 การปล่อยของเสียที่เกิดจากการดำเนินงานกิจกรรมขององค์กร
- 3.6 การใช้สินทรัพย์ที่เช่า

- 3.10 การแปรรูปสินค้าขององค์กรจำหน่าย
- 3.11 การใช้ของผลิตภัณฑ์ที่ขาย
- 3.12 การกำจัดของผลิตภัณฑ์ที่จะส่งคืนหรือจำหน่าย
- 3.13 การปล่อยก๊าซจากสินทรัพย์ที่เช่าปลายน้ำ
- 3.15 การลงทุน

3.14 แฟรนไชส์



GREENHOUSE
GAS PROTOCOL

Scope 1: Direct GHG emissions and removals

Scope 2: Energy indirect GHG emissions

Scope 3: Other indirect GHG emissions:

- 3.4 Upstream transportation and distribution
- 3.6 Business travel
- 3.7 Employee Commuting
- 3.9 Downstream transportation and distribution

- 3.1 Purchased goods and services
- 3.2 Capital goods
- 3.3 Fuel- and energy related activities not included in scope 1 or scope 2
- 3.5 Waste generated in operations
- 3.8 Upstream leased assets

- 3.10 Processing of sold products
- 3.11 Use of sold products
- 3.12 End-of-life treatment of sold products
- 3.13 Downstream leased assets
- 3.15 Investments

3.14 Franchises

BOARD TAKEAWAYS

What Every Board Director Should Know About Thailand's Climate Change Act

Climate governance, carbon strategy, and regulatory readiness for the boardroom

“

How might the
company be
impacted
financially?

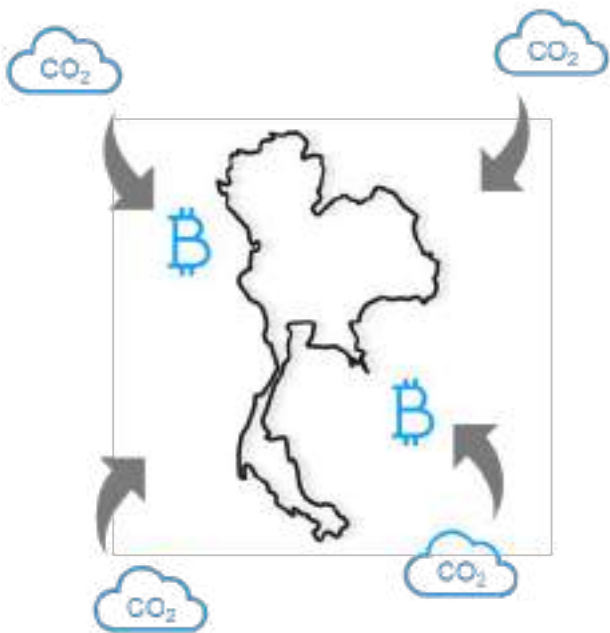
”

Som
CFO



Impacts to OPEX

Chapter 9
Thailand CBAM



Chapter 10
Carbon tax

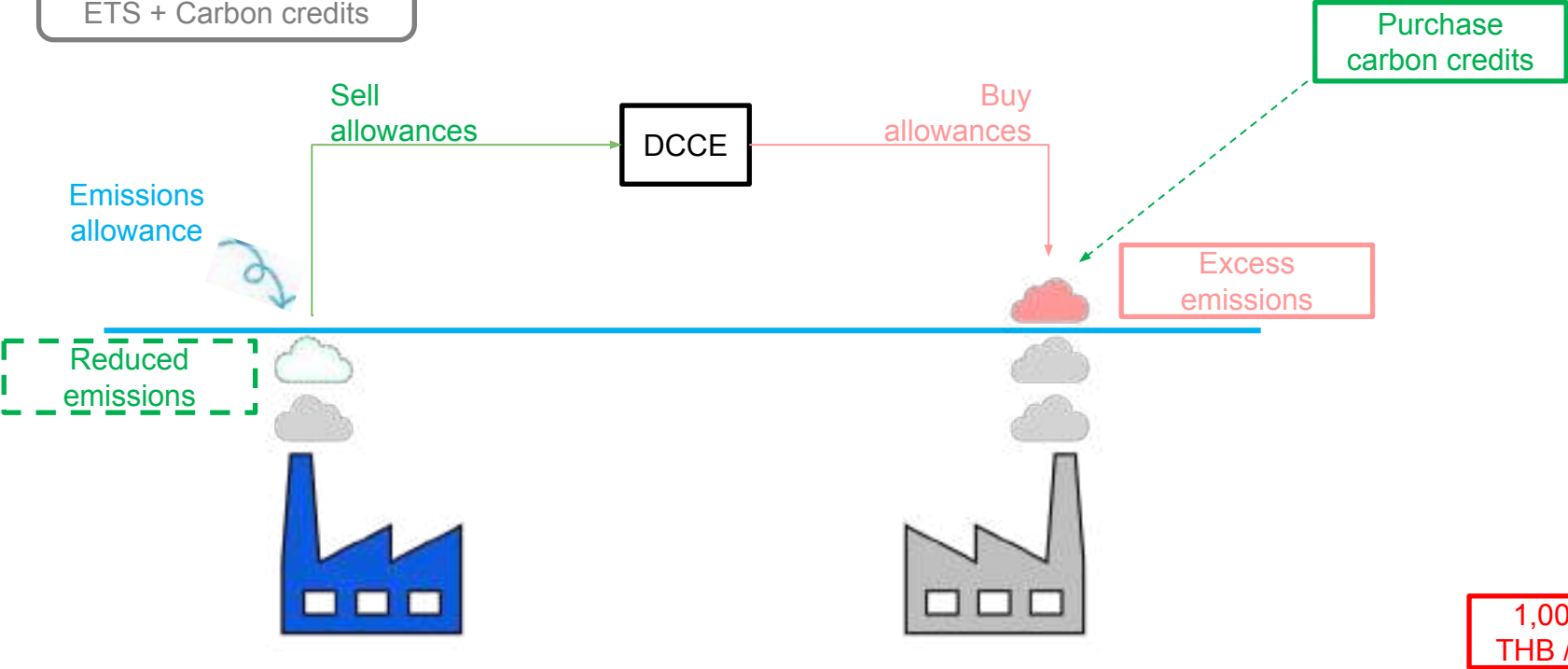


200 THB / ton → 1,000+ THB / ton

Indicative trajectory. Rates under the draft Act are not yet set

Impacts to OPEX or CAPEX

Chapters 8 + 11
ETS + Carbon credits



Indicative trajectory. Rates under the draft Act are not yet set

Physical risks from climate change

Chapter 12

Climate adaptation

Acute

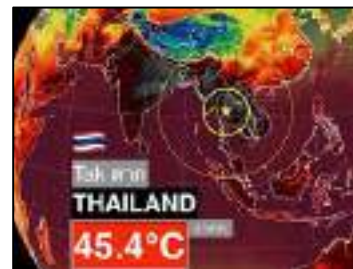
- Short-term
- Driven by events



Convective storms



Flooding



Heat waves



Wildfires

Chronic

- Longer-term
- Shift in patterns



Changes in currents



Changes in precipitation



Rising sea levels

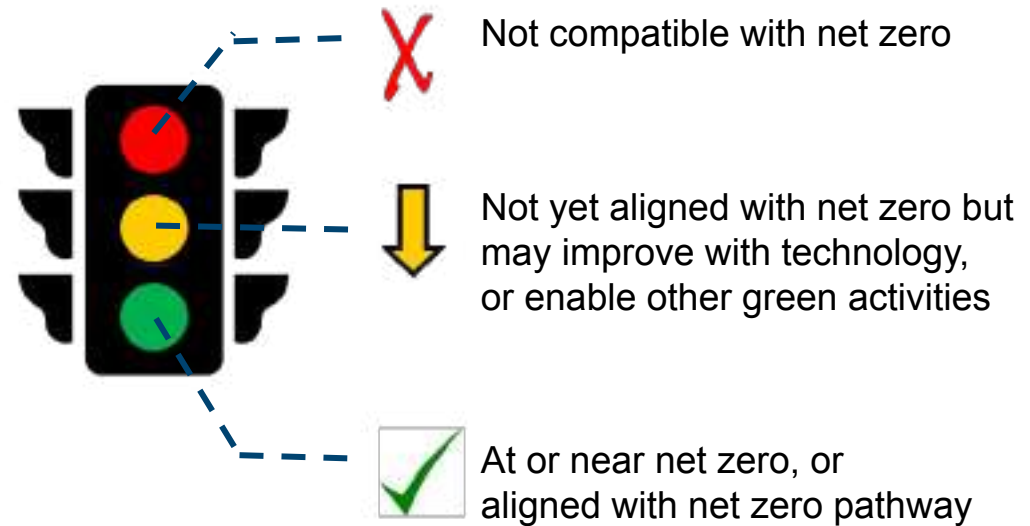
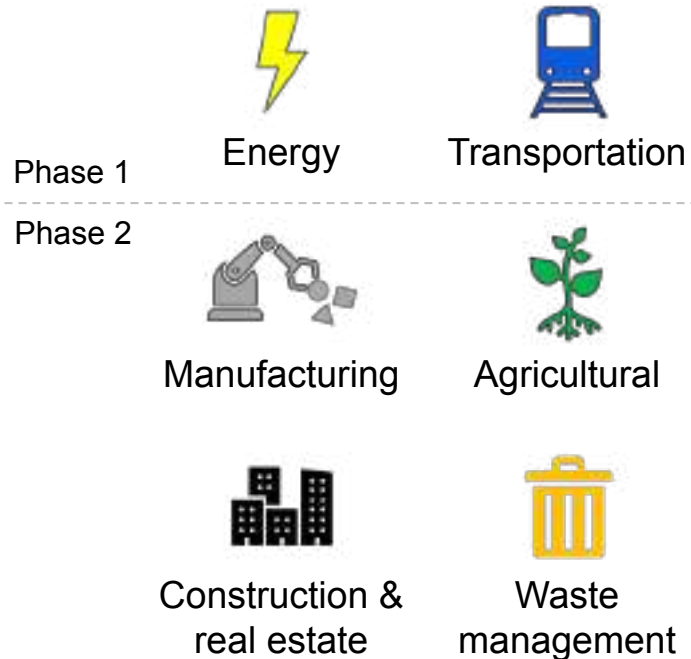


Droughts

Access to financing

Chapter 13

Thailand Taxonomy



5 KEY TAKEAWAYS

Climate is moving from environmental issue to business regulation

1



Climate change is becoming a business regulation, not just an environmental issue

Climate considerations are moving into the core of corporate governance, business strategy, investment decisions, and regulatory compliance.

2



Carbon data will become a strategic business asset

Organizations must establish reliable, verifiable GHG data systems that support compliance, investor confidence, and business decision-making.

3



Carbon will have a financial impact

Future business performance will increasingly be influenced by carbon pricing mechanisms, including Carbon Tax, Emissions Trading System (ETS), CBAM, and carbon markets.

4



Supply chain pressure will reach every business

Even companies not directly regulated will be required by customers, investors, financial institutions, and international markets to disclose and reduce emissions.

5



Boards should act before regulations become mandatory

The Board should oversee climate governance, integrate climate risks into corporate strategy, ensure data readiness, and monitor emerging regulatory developments.

Five questions to open the climate governance conversation



Are we prepared for mandatory GHG reporting and IFRS aligned disclosure?



Do we know our carbon footprint and future carbon costs?



Could climate change regulations affect our business model or supply chain?



Do we have a Board-level governance structure for climate-related risks?



Are we turning climate compliance into a competitive advantage?

"The question is no longer whether Climate Change will affect business.

The question is whether Boards are prepared to govern through it."



“

Ryan, why is this relevant for board consideration?

And, Climate Resilience vs Scenario Analysis? Sounds like Buzzwords...

”

Art
Board Chair

Management Briefing: How Climate Scenario Governance Flows to the Board

FULL BOARD

IFRS S2 — Board Accountability — Non-Delegable (Para 5–6)

Reviews & Challenges

Interrogates committee findings. Asks the questions management has not answered.

Approves or Returns

Approves or Denies management's capital and risk position — or returns with formal guidance.

Owns the Strategy & Disclosure

Takes accountability for strategy, climate resilience, disclosure submitted to investors and regulators.

Sets Risk Appetite

Establishes the boundaries within which management is authorised to act.

Committee presents findings & recommendations to full board

COMMITTEE

IFRS S2 — Governance Body Oversight (Para 6a i–v)

DESIGNATED BOARD COMMITTEE

The board designates one committee to receive management's climate scenario analysis and resilience assessment and carry out the oversight function on behalf of the full board.

Challenge

Scenario adequacy, data credibility, assumptions, and red flags

Guide

Issue formal guidance to management on gaps and improvements needed

Recommend

Bring findings and a clear recommendation to the full board

Returns analysis to management if insufficient — with formal written guidance

Larger boards may route through multiple committees. IFRS S2 permits any structure — what matters is documented oversight.

Management presents findings & recommendations to committee

MANAGEMENT

IFRS S2 — Management Responsibility (Para 6b)

1

Scoping

Identify material climate risks & opportunities across transition and physical risk categories

2

Pathways

Develop impact and calculation pathways for selected risk items and financial line items

3

Scenarios

Select plausible climate scenarios (e.g. NGFS) and collect relevant internal and external data

4

Calculation

Quantify financial impacts under each scenario across short, medium, and long-term horizons

5

Integration

Incorporate findings into financial modelling, resilience assessment, strategy, capital plans, and board reporting

IFRS S2 Implications

An entity shall disclose information that enables users of general purpose financial reports to **understand the resilience of the entity's strategy and business model to climate-related changes, developments and uncertainties**, taking into consideration the entity's identified **climate-related risks and opportunities**.



Reference: S2.22

S2

IFRS S2
Strategy

The entity shall use **climate-related scenario analysis to assess its climate resilience** using an approach that is **commensurate with the entity's circumstances**.

ISSB Standards require disclosure of the effects of sustainability and climate -related risks and opportunities on its:

- Business model and value chain
- Strategy and decision-making
- Financial position, financial performance, and cash flows – the financial effects.

In the short, medium and long term.

What is Climate-related Scenario Analysis?

- Not intended to represent a full description of the future, but rather to highlight central elements of a possible future and to draw attention to the key factors that will drive future developments.
- Hypothetical yet plausible constructs, not forecasts, predictions or sensitivity analyses.
- For example, an entity performing a scenario analysis might identify effects on a **resource or relationship that it depends on (ex. Data centers and water stress regions)**. The scenario analysis might provide an understanding of how that **risk could result in changes to the future cash flows or access to finance**.

**IFRS Sustainability-related risks and opportunities and the disclosure of material information.*

Reference: TCFD, NGFS.net Scenarios Portal

Scenario Analysis

Scenario analysis is a process for identifying and assessing a potential range of outcomes of future events under conditions of uncertainty.

It allows a company to explore and develop an understanding of how climate-related risks and opportunities might affect its strategy and business model over time and its capacity to adjust or adapt.



Key
Terminology

vs

Climate Resilience

Climate resilience is a company's capacity—strategically and operationally—to manage climate-related risks and benefit from climate-related opportunities, including its ability to respond and adapt to the transition and physical risks related to climate change.



Reference: Appendix A to the IFRS Sustainability Disclosure Standards.

Using the Results of Scenario Analysis to Assess Climate Resilience

An entity must **interpret scenario analysis results** to assess its climate resilience, meaning the implications for its **strategy and business model**, and its **capacity to adapt**. Responses to scenario analysis results might include:

Changes to Business Model

Changes to Portfolio Mix

Investments in Capabilities and
Technologies



“

Can you walk us
through what are
climate scenarios?

”

Will
Chief of
Group Legal

Climate Scenarios: What They Are & What Makes a Good One

A **scenario** is a plausible, internally consistent description of how the future may develop — based on assumptions about key forces like technology, prices, and policy. Because future emissions and human choices cannot be predicted, analysts use a range of them.

What makes a good scenario — five tests

Plausible & grounded. Events are credible and supported by scientific, economic, and social data.

Distinctive. Combines different key factors — not a variation on a single theme.

Internally consistent. Strong internal logic; factors interact, and every action has a reaction.

Relevant. Provides insight into the strategic and financial implications of climate change.

Challenging. Tests conventional wisdom and business-as-usual assumptions about the future.

Reference: TCFD Guidance on Scenario Analysis for Non-Financial Companies; TCFD Technical Supplement — The Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities

Three Lenses on Major Climate Scenario Families

The Intergovernmental Panel on Climate Change tells you about the physics. The International Energy Agency tells you about the market. The Network for Greening the Financial System tells you about the money.

IPCC



PHYSICAL LENS — warming outcomes

SSP1-2.6 ~1.8°C

SSP2-4.5 ~2.7°C

SSP3-7.0 ~3.6°C

SSP5-8.5 ~4.4°C

Range by 2100 1.4–4.4°C

IEA



TRANSITION LENS — policy ambition

NZE 1.65°C — net zero 2050

STEPS ~2.5°C — stated policy

CPS ~2.9°C — current policy

NGFS



BOTH LENSES — for finance

Orderly / Net Zero ~1.4°C

Disorderly / Delayed ~1.7°C

Hot House / Current ~2.9°C

Too Little, Too Late ~2.4°C

*NGFS published short-term scenarios through 2030 on 7 May 2025, focused on the 2025–2030 window as "decision useful" for institutional investors and corporate financial planning.

Not three forecasts competing to be right. Three instruments reading the same journey. *Your first question to management is which ones did you use, and why those?*



Real World Example

ThaiBev IFRS S2 Report 2025

ThaiBev has identified timeframes for climate-related physical and transition risks in line with the timeframes used for business operations. These timeframes are as follows: short term (0-3 years), medium term (3-10 years), and long-term (10 years).

PHYSICAL RISKS

LOW EMISSIONS PATHWAY:
SSP1-2.6/ RCP 2.6 – limiting warming to below 2°C.

INTERMEDIATE EMISSIONS PATHWAY: SSP2-4.5/ RCP 4.5 – global temp. rises by 2.5 – 3 °C.

HIGH EMISSIONS PATHWAY
SSP5-8.5/ RCP 8.5– no additional mitigation measures implemented, increase in temp. of about 4.3 °C by 2100.

TIMELINE:

- 2020-2030 (Near-term)
- 2030-2040 (Medium-term)
- 2050 (Long-term)

TRANSITION RISKS

IEA STEPS: Stated policies scenario, expects a 2.5–3.3°C rise in global temp. by 2100. This scenario acts as a **base case**.

IEA APS: (Carbon pricing only): Announced pledges scenario includes all recent major announcements (as of Sept. 2022) for 2030 climate targets and longer-term net zero pledges.

IEA NZE 2050 (Carbon pricing only): Sets a narrow but achievable pathway for the global energy sector to achieve Net-Zero GHG emissions by 2050.

TIMELINE:

- 2030 (Near-term)
- 2050 (Long-term)

“

Ok, climate scenarios surface material risks and opportunities which could affect our financial position, financial performance, and cash flows, right?

”

”



Som

**Chief Financial
Officer**

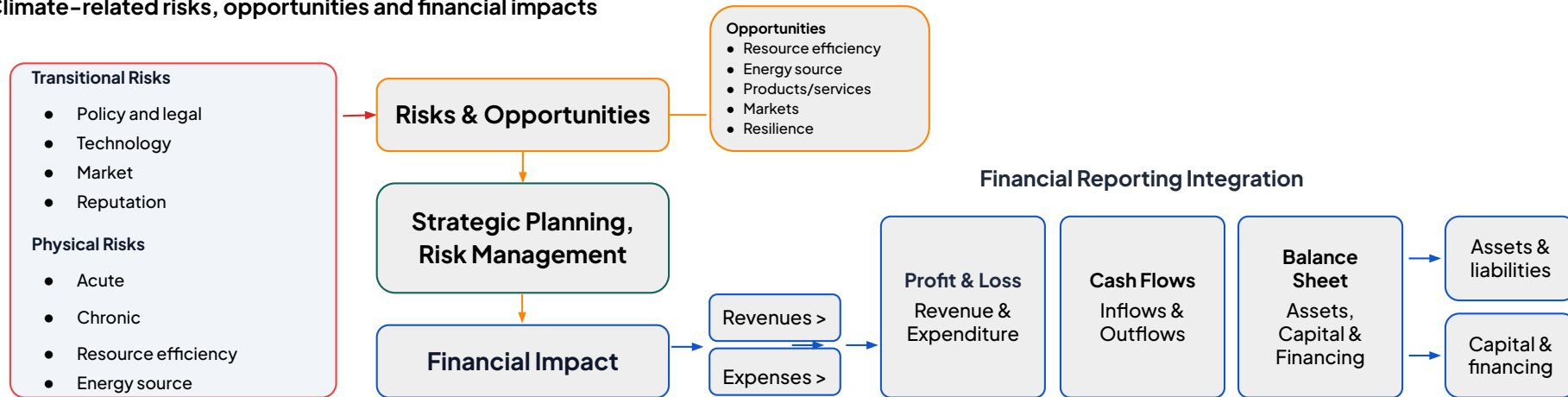


“
And, these climate risks connect to what investors look for in our financial statements?
”

Play
CEO

Integrating Climate Risks into Financial Planning and Reporting

Climate-related risks, opportunities and financial impacts



IFRS S2 Paragraph 15: Overview of Financial Effects – Overview: Mandates the disclosure of both the current and anticipated effects of climate-related risks and opportunities. Entity Shall Disclose Effects On: (a) Entity’s financial position, financial performance, and cash flows. Entities must report these impacts for the current reporting period, as well as outline expectations over the short, medium, and long term.



“

Let's take a 10 minute
BREAK before our Board
Scenario Governance
Exercise.

”

Art
Board Chair

Board Exercise: Governance in Practice — *Siam Industrial Group*

- Read SIG Board Workbook



1. Review Case Study & Brief

Management brief and review the case study *Siam Industrial Group*.

2. Collaborative Completion

Work as a Committee to discuss your thoughts and committee considerations/questions.

3. Share Findings

Select a spokesperson.
Prepared to share group findings.

*Expanded application of the Director workshop led by Frazier Global at Salzburg Global Seminar Corporate Governance Forum — *Global Uncertainty & Volatility: Building Corporate Resilience in a Contested Future* — October 2025, Schloss Leopoldskron.

Management Briefing: The Regulatory & Investor Landscape

Directors, the regulatory environment SIG operates in has fundamentally changed. Three forces are converging simultaneously — and each one carries board-level governance consequences.

SET DISCLOSURE TIMELINE

2026	We are here IFRS S2 preparation underway
2028	SET 50 Mandatory ISSB-aligned reporting
2029	SET 100 Full disclosure required
2030	All SET Every listed company on exchange
2031	MAI / REIT Full MAI and fund adoption

Source: Thai SEC / SET ISSB Adoption Roadmap

THAI CLIMATE CHANGE ACT

Ch. 8	Emissions Trading System Cap-and-trade at ฿1,000+/ton
Ch. 9	Thailand CBAM Carbon border adjustment
Ch. 10	Carbon Tax ฿200/ton now → ฿1,000+/ton
Ch. 11	Carbon Credits Verified offset system
Ch. 12	Climate Adaptation Mandatory resilience planning

Source: Thai Climate Change Act, 2026 Draft

CARBON PRICING (effective blended)— SIG IMPACT

Every ฿100/tCO₂e carbon price increase adds ฿5 billion in SIG's annual

฿200/t Carbon tax — assumed in force

฿400/t Net-zero medium-term trajectory

฿1,000/t Net-zero 2050 scenario long-term

฿1500/t Delayed Transition scenario **Long-term**

Sources: Thai Climate Change Act Ch.10; NGFS Phase 4, 2024

REAL INVESTOR QUESTIONS

Institutional investors are already asking SIG's management:

- How will you adjust strategy to achieve Scope 1 GHG reduction targets?
- How much CapEx is dedicated to GHG reduction this year?
- Your operations face flood and water stress risk. What is the mitigation plan?
- How will you balance growth with emissions reduction?

Source: Workshop PPTX Slide 29 — Verified investor questions

BOARD IMPLICATION: These are not future pressures. They are the operating environment SIG faces today. Your governance decisions determine whether SIG is ahead of this curve or behind it.

Management Briefing: The Situation Facing Siam Industrial Group

You are on SIG’s board. Before your management team presents their climate scenario analysis, you need to understand the company you are governing. Your SIG background document is in front of you. This slide is the brief. The document is the detail.

SIG AT A GLANCE	
Sector	Heavy Manufacturing Cement & Building Materials Petrochemicals Packaging
Revenue (FY2025)	฿600 billion
EBITDA (FY2025)	฿85 billion (~14% margin)
Net Profit (Baseline)	฿45 billion
Market Capitalisation	฿810 billion
Map Ta Phut Complex	฿27.2B EBITDA — 32% of group total
Employees	40,000 across Thailand
Outstanding Debt	~฿300 billion

WHY SIG CANNOT SIMPLY DECARBONIZE			
SIG’s core processes involve chemical transformation where GHG emissions are an unavoidable by-product of the industrial reaction itself — not merely the energy used. Cement calcination releases CO ₂ as a direct chemical reaction. Petrochemical cracking generates process emissions that cannot be eliminated by switching fuel sources.			
GHG EMISSIONS BASELINE — FY2025			
Scope 1 — Direct	~45M tCO ₂ e	~18%	Highest Carbon Tax ETS exposure
Scope 2 — Energy	~5M tCO ₂ e	~2%	Grid decarbonization risk
Scope 3 — Value Chain	~200M tCO ₂ e	~80%	Partial EU CBAM exposure
SCOPE 1+2 COMBINED	~50M tCO ₂ e	—	EVERY ฿100/t = ฿5B annual cost
KEY BOARD EXPOSURE FLAGS — FROM YOUR HANDOUT			
EU CBAM	฿6.3B annual cost impact — 2026 implementation. 7% erosion on EU export margin.		
Flood — Bangkok HQ	Riverflood score 0.8 (Severe). ฿150M per 12-hour production stoppage.		
Heat — All Sites	90% of assets at Severe heat risk today. 100% Extreme by 2050 (SSP5-8.5).		

HANDOUT: Your SIG background document contains the full company narrative, detailed GHG baseline, physical risk data by facility, and regulatory exposure table. Reference it throughout the simulation.



“

**Let’s look closer at
the numbers from
our climate
analysis.**

”

Play
CEO

Integrated Financial Impact — Transition Risk in Baht

Management's scenario-adjusted P&L · EBITDA bridge to net income · Moderated Thai carbon pricing · Source: Entelligent SAFE™

Scenario-Adjusted Net Income — Annual P&L by Pathway

SCENARIO	BLENDED CARBON PRICE	CARBON EXPENSE	ADJ. EBITDA	ADJ. NET INCOME
Current Policies <i>SSP3-7.0 · hot house</i>	฿200/t	฿10B	฿75B	฿37B
Net Zero 2050 <i>SSP1-2.6 · orderly · med</i>	฿400/t	฿20B	฿65B	฿29B
Net Zero 2050 <i>SSP1-2.6 · orderly · long</i>	฿1,000/t	฿50B	฿35B	฿5B
Delayed Transition <i>SSP2-4.5 · shock peak</i>	฿1,500/t	฿75B	฿10B	(฿18.75B)

Baseline income statement walk — reconciles to ฿45B net profit

EBITDA	- D&A	- Interest (~4.6% x ฿300B)	- Tax (20%)	= Net profit
฿85B	฿15B	฿13.75B	฿11.25B	฿45B

European Union Carbon Border Adjustment Mechanism — Cement Exports Only
฿6.3B per year against ฿90B EU exports (7% of EU export revenue, 1.05% of total). A margin charge on the EU export book, not a standalone cost added to group carbon expense. Scope covers cement, iron and steel, aluminium, fertilisers, hydrogen and electricity. Chemicals and polymers were removed from scope — SIG's petrochemicals and packaging are not currently exposed. The liability accrues on 2026 imports; certificate purchase opens 1 February 2027 and the first annual declaration is due 30 September 2027.

Clinker Kilns — Stranded Asset Check (Isan Kilns 1 & 2)
Breakeven ฿480/tCO₂e = ฿400 margin per ton of clinker ÷ 0.83 tCO₂e emitted per ton of clinker. Viable through medium (฿400/t). Stranded at ฿1,000/t — triggers IFRS S1 connected-information disclosure (121-24, B42(c)).

▲ **P/E Compression — Without Disclosure**

฿90-180B

SIG trades at ~18x today (฿810B market cap ÷ ฿45B net profit). A de-rate to 16x destroys ฿90B; to 14x destroys ฿180B. Three forces compound: investor risk premium, FTSE Russell index weighting, and lender credit spreads on ฿300B debt.

■ **Green Opportunity — First Mover**

+฿8-12B

~10-14% of ฿85B EBITDA — a return on invested capital, not free upside. Solar generation (own + JV) sold under long-term PPAs; build-and-hold or develop-and-sell-down. Plus low-carbon products, avoided Scope 2, green finance. Offsets ~16-24% of the ฿50B Net Zero 2050 long-term carbon cost — does not erase it.

Physical Risk Intelligence — WTN Asset-Level Heatmap

Example: 10 SIG Facilities · Weather Trade Net 90m Resolution · Historical Baseline & 2050 SSP5–RCP8.5 Projections

Facility	River flood	Heat Wave	Drought	Ext. Rainfall	Wildfire	Overall
SIG Isan Cement Plant 1	0.6	0.7	0.6	0.4	0.6	0.5
SIG Northern Cement Plant	0.4	0.7	0.5	0.4	0.5	0.5
SIG Olefins (Map Ta Phut)	0.3	0.6	0.3	0.6	0.4	0.4
SIG Tank Terminal (Map Ta Phut)	0.3	0.6	0.3	0.6	0.4	0.4
SIG Chemicals Map Ta Phut	0.7	0.7	0.5	0.5	0.5	0.5
SIG Head Office Bangkok	0.7	0.7	0.5	0.5	0.5	0.5
SIG Eco Services (Saraburi)	0.6	0.7	0.5	0.4	0.5	0.5
SIG Central Cement Plant (Saraburi)	0.3	0.7	0.5	0.5	0.5	0.5
SIG Isan Cement Plant 2	0.3	0.6	0.2	0.5	0.2	0.3
SIG Packaging (Map Ta Phut)	0.3	0.6	0.3	0.6	0.4	0.4
→ Portfolio Peak · 2050 RCP8.5	0.9	1.0	0.7	0.7	0.6	0.6

 **Heat Waves — Portfolio-Wide Crisis**

90% of all SIG assets at Severe heat risk today. By 2050 under SSP5–RCP8.5, 100% reach Extreme (score 1.0). 15% industrial cooling electricity increase — equivalent to ฿1.3B/year additional OpEx by 2030.

100% Extreme by 2050

 **Riverflood — Bangkok Hub Critical**

WTN 90m maps place SIG Head Office Bangkok (Bangsue) at 0.7–0.8 (Severe) with projected flood depths exceeding 2 metres in a 100–year event. Each 12–hour production halt: ฿150M in revenue and recovery costs.

฿150M per 12-hr stoppage

 **Drought — Northeast Facilities**

SIG Isan Cement Plant 1 and NE chemical facilities face compounding drought (0.6 Severe) and chronic heat stress. Water-intensive production curtailment risk threatens the Isan region's material EBITDA contribution.

Production curtailment risk

Extreme (0.8–1.0) Severe (0.6–0.8) High (0.4–0.6) Moderate (0.2–0.4) Low (0–0.2)

Integrated Financial Impact — Physical Risk & Combined Exposure

Value at Risk by pathway · Adaptation capital · The two distinct climate exposures the board must govern · Source: WTN + Entelligent SAFE™

Physical Risk — Value at Risk by Pathway (one-time / near-term)

PHYSICAL COMPONENT	Net Zero 2050 SSP1-2.6 · orderly	Delayed Transition SSP2-4.5 · disorderly
Business interruption (Bangkok flood)	Minimal	฿225M
Asset impairment (× ฿120B — net book value, 10 assessed facilities)	฿3.6B (3%)	฿9.6B (8%)
TOTAL VALUE AT RISK	฿3.6B	฿9.825B

Bangkok hub is HQ + data center (reroutable 48hr), not production — ฿225M interruption is modest vs. impairment. Current Policies (BAU, SSP3-7.0) for comparison: ~฿450M interruption + ~฿14.4B impairment ≈ ฿15B total physical VaR workbook range: ฿12-15B) — highest of three pathways. Closes the inversion: BAU is cheapest on transition but the most expensive on physics.

Management Recommendation — Adaptation Capital

฿4B program

+ ฿500M Phase 1 (Bangkok)

MGMT: APPROVE

3.3% of the ฿120B assessed facility base (not group property, plant and equipment). Protects ฿9.825B Delayed Transition VaR — ฿2.46 (non NPV) of value protected per ฿1 spent. Phase 1 flood defense for immediate approval; full program reduces severity at named sites (engineering validates facility coverage).

Key Board Sensitivity

฿5.0B

Every ฿100/tCO₂e carbon price increase adds ฿5.0B in annual carbon cost (50M tCO₂e Scope 1+2 base). Are the board's CapEx decisions stress-tested against this sensitivity?

The Two Climate Exposures — Different Units

TRANSITION recurring annual P&L (Net Zero 2050 long-term)

฿50B/year carbon net income ฿45B → ฿5B

PHYSICAL one-time balance sheet

฿9.825B one-time Delayed Transition VaR



Members of the Committee, the floor is yours.

Play
CEO

Collaborative Completion

Work as a Committee to discuss your thoughts and committee considerations/questions.

Share Findings

Select a spokesperson.
Prepared to share group findings.

Five Marks of a Question That Bites

Small changes turn a soft question into one management must actually answer.

Open Invites an explanation, not a yes or no.

Specific Names the asset, the scenario, or the assumption — not “climate” in general.

Evidence-seeking Asks how they know, not whether they feel sure.

Non-technical Stays at the level of outcomes, capital, and accountability.

Followed up Has a second question ready: *show me; how do you know; what would change your mind?*

SOFTER → SHARPER

“Are we exposed to climate risk?”

→ **“At what carbon price does our margin turn negative — and how confident are we in that assumption?”**

“Is our climate data good?”

→ **“Would our Scope 1 and 2 data pass a limited assurance engagement today?”**

“Are we resilient?”

→ **“Is our strategy viable across all three scenarios, or only the comfortable one?”**

“Are we investing enough?”

→ **“Does our adaptation spend address the value at risk, or is it a down payment?”**

None of these requires you to run the model. All of them make the question harder to wave away.

Capital Allocation Under Climate Scenarios

Management assesses, the board governs: Three Tests Every Board Should Apply Before Approving Material CapEx

TEST 1

ROBUSTNESS

Does this capital decision earn acceptable returns or protect value under ALL three scenarios — BAU, NZ 2050, Delayed Transition?

TEST 2

PHASE

Can the commitment be staged with explicit decision gates so the company adjusts as scenarios resolve.

TEST 3

HEDGE

Can the worst-scenario outcome be offset through contracts, insurance, or paired investments?

PROTECTIVE CAPITAL — \$4B Adaptation

Protects \$9.825B at risk — \$2.46 protected per \$1 spent. Defends existing value.

GENERATIVE CAPITAL — Green Opportunity

\$8–12B EBITDA on invested capital — must clear SIG's cost of capital (WACC) to create value. Solar via JV under long-term PPAs (build-and-hold or sell-down).

Then provide guidance on the source of funds for what you approve: debt headroom, a sustainability-linked loan or green bond, or a phased mix.

Take home: Is our capital stress-tested against scenarios, or against historical averages?

Now the Board Speaks.

Each committee shares its conclusions with the full board — one spokesperson each. Before you vote, ask the capital questions: were management's numbers stress-tested against every scenario, or only the comfortable one? Do these allocations align with our strategy — or should the strategy change? And where do they sit within our risk appetite?

1

QUESTION FOR SENIOR MANAGEMENT

What is the first question your committee would ask management about SIG's climate-related scenario analysis?

Your question should:

Challenge an assumption or judgment in management's analysis
Seek information management has not provided but should

2

QUESTION FOR SENIOR MANAGEMENT

What is the second question your committee would ask management about SIG's climate-related scenario analysis?

Your question should:

Probe the credibility or completeness of the data presented
Identify a governance gap, disclosure risk, or missing analysis

3

GUIDANCE FOR MANAGEMENT

What is the one action your committee is directing management to take before the next board session?

Your guidance should:

Be specific — not 'improve reporting' but what, by when, to whom
Reflect your committee's specific oversight mandate

4

CAPEX POSITION & RATIONALE

Adaptation capital (฿4B): support or oppose (฿500M Phase 1)?

SUPPORT**OPPOSE**

Green opportunity (฿8–12B): proceed now or hold?

PROCEED**HOLD****Your rationale must address:**

Whether the data supports each position, and what would change either one?

WORKSHOP WRAP-UP

Transition to Action: Workshop Conclusion

Synthesizing committee insights, aligning strategic mandates, and establishing next steps for scenario-ready governance for risk and capital decisions.

The Board Readiness Ladder

Score your board 1 to 4 on each discipline. Anchored to the four pillars of the Task Force on Climate-related Financial Disclosures (TCFD). Lowest = 0 Highest = 16.

Discipline / anchor	1 Blind spot	2 Compliance	3 Integrated	4 Foresight
Mandate & competence <i>Governance pillar</i>	Off the board agenda	Received in reports only	Owned by a named committee	Board is literate and challenges management
Strategic foresight <i>Strategy pillar</i>	Single plan, one future	Generic scenario narrative	Scenarios inform strategy	Scenarios quantify earnings and value at risk
Risk integration <i>Risk management pillar</i>	Outside the risk register	Listed but not managed	Inside enterprise risk, with an owner	Defined appetite and early triggers
Capital & accountability <i>Metrics & targets pillar</i>	No link to capital	Targets without funding	Capital reflects stated targets	Capital and disclosure follow the foresight

Write Your Capital Allocation Policy Clause

One Standing Rule You Could Submit to Your Own Board on Monday

A WORKED EXAMPLE

Any capital expenditure above [£X] requires board review of its performance under at least three climate scenarios before approval.”

Draft one policy clause that would force scenario stress-testing into your own board’s capital decisions — a rule you can propose Monday. A policy clause beats a good intention.

Final Key Takeaways

- **Boards govern; management assesses.** Challenge inputs, test conclusions. The board's contribution is skepticism and guidance, not forecasting.
- **Two exposures, two ledgers.** Transition risk hits the income statement; physical risk hits the balance sheet. Govern separately.
- **The deliberate inversion.** Business as usual is cheapest on transition, most expensive on physics. Doing nothing has a measurable cost.
- **Path matters more than destination.** Orderly transition is hedgeable; disorderly shocks aren't.
- **Disclosure is no longer voluntary.**
 - **SEC roadmap:** Scope 1+2 and limited assurance.
 - **FTSE Russell:** Scores climate governance from public disclosures.
- **Investors are pricing this.** An illustrative two-point de-rate on 18x destroys \$90B of market value — more than twenty years of the adaptation program.
- **Stress-test every material CapEx.** Apply Robustness, Phase, Hedge — the framework, not the project.
- **Take home:** “Is our capital stress-tested against scenarios, or historical averages?”

Questions?



Guidance for Directors when you return to your organizations

- Take what you've learned back to your organization and team
- Reference Appendix climate-related scenario governance questions, maturity, and policies considerations

Continue the conversation

Connect with any of the workshop leaders below to discuss board implementation, business support, or academic collaboration.

Hon. Ryan L. Frazier

CEO,
Frazier Global
ryan@frazierglobal.com

Dr. Supattana Wichakul

Acting Managing Director,
TEAMG
supattana_w@team.co.th

Ditthayanan Punyaratabandhu

SET ESG Experts Pool &
Sustainability Execution
Advisor
ditthayanan@outlook.com

Asst. Prof. Pornphisud Mongkhonvanit

President,
Siam Technology College
president@siamtechno.ac.th

APPENDIX SLIDES

Key questions, maturity frameworks, and actionable toolkits for directors to guide board-level climate risk discussions.



“

Don't forget these...

”
Art
Board Chair

The Questions Every Board Should Ask About Climate Risk

Questions that separate a board that governs climate risk from one that is briefed on it.

DATA CREDIBILITY & ASSURANCE

- › Who will provide limited assurance over our Scope 1 and 2 emissions data — and would our data pass today?
- › Is the climate data given to this board reconciled with what we submit to regulators — and who owns it?

PHYSICAL RISK

- › Which sites are most vulnerable to heat, drought, and flood — are our impairment assumptions conservative?
- › What would a major write-down mean for our debt covenants, credit rating, and insurance premiums?
- › Are insurance and risk-transfer arrangements aligned with 2030–2050 hazards, or are we underinsured?
- › Where we depend on a resource under stress — water, power, supply chain — what is our contingency?

TRANSITION RISK

- › How sensitive are our margins to the carbon price? At what level does profitability turn negative?
- › Are carbon-price assumptions benchmarked against the regulatory trajectory — or optimistic?
- › If lenders price transition risk into our credit spreads, what pressure does that create?
- › Where asset lives and climate scenarios diverge, do we disclose the inconsistency — or revise assumptions?
- › Is our capital allocation stress-tested against scenarios, or against historical averages?

Take them to your own boardroom.

The Questions Every Board Should Ask About Climate Risk

Where oversight becomes capital allocation — the questions the board alone must answer.

RESILIENCE & CAPITAL ALLOCATION

- › Is our strategy viable across all scenarios — or only the comfortable one? At what trigger point are we vulnerable?
- › Does our adaptation investment address the value at risk, or is it a down payment? What does full protection cost?
- › Do we approve the immediate tranche now, or wait for validation? What is the cost of waiting?
- › Are mitigation options funded in the capital plan, or do they compete with the adaptation spend?
- › Do these capital allocations align with our strategy — or is the strategy itself what needs to change?
- › Where do these decisions sit within our risk appetite — and do we have a set policy to judge them against?

GREEN OPPORTUNITY

- › What is the capital, the horizon, and the return on invested capital — does it clear our cost of capital (WACC)?
- › Is the revenue contracted, or exposed to market prices? Who are the counterparties, and is their credit strong?
- › Does the opportunity compete with our protective / adaptation capital, or can both be funded?

From Oversight to Foresight.

Your Pocket Question Card

Five questions for any climate decision — and four follow-ups for any answer.

- 1 “What scenario is this based on, and who chose it?”
- 2 “What breaks first, and at what threshold?”
- 3 “Who is accountable if the assumption is wrong?”
- 4 “How would we know if the assumption failed?”
- 5 “Does this clear our cost of capital — and does it fit our risk appetite?”

AND FOR ANY ANSWER: How do you know? · Show me. · What is the worst case? · What would change your mind?

Any answer can sound good once. The board's leverage is the second question.

Integrating Climate Risks into Financial Planning and Reporting

RISK CATEGORY	HOW THE RISK MATERIALIZES	SHORT-TERM FINANCIAL IMPACTS	LONG-TERM BUSINESS IMPACTS
Climate extremes: floods, heatwaves, storms, etc.	Physical damage to assets, downtime, infrastructure failure	Repair costs, business interruption losses, higher insurance premiums	Asset devaluation, increased cost of capital, loss of insurability
Water scarcity & stress	Reduced availability for industrial use, operational restrictions	Production interruptions, higher water sourcing and treatment costs	Relocation risk, stranded assets, reduced operational resilience
Biodiversity loss & land-use change	Delays in permitting, land access restrictions, ecosystem degradation	Project delays, mitigation and offsetting costs	Increased regulatory scrutiny, loss of social license to operate
Regulatory & policy changes	Stricter environmental limits, new disclosure obligations	Higher CAPEX/OPEX, compliance and monitoring costs	Transition risk, reduced competitiveness, market access barriers
Supply chain environmental exposure	Disruption of raw materials due to climate or regulatory impacts	Input price volatility, supplier failure	Systemic supply chain reliability, contractual and reputational risk
Environmental liabilities	Contamination, legacy impacts, non-compliance lawsuits	Fines, remediation costs, legal expenses	Long-term balance sheet exposure, stranded liabilities
Energy transition risk	Carbon pricing, energy price volatility, technology shifts	Increased operating costs, retrofitting investments	Asset stranding, changes in business models

Resilience

- (a) the **entity's assessment of its climate resilience as at the reporting date**, which shall enable users of general purpose financial reports to understand:
- (i) the **implications, if any, of the entity's assessment for its strategy and business model**, including **how the entity would need to respond to the effects identified in the climate-related scenario analysis**;
 - (ii) the **significant areas of uncertainty considered in the entity's assessment** of its climate resilience;
 - (iii) the entity's **capacity to adjust or adapt its strategy and business model to climate change over the short, medium and long term**, including:
 - (1) the availability of, and flexibility in, the **entity's existing financial resources to respond to the effects identified in the climate-related scenario analysis**, including to address climate-related risks and to take advantage of climate-related opportunities;
 - (2) the entity's **ability to redeploy, repurpose, upgrade or decommission existing assets**; and
 - (3) the **effect of the entity's current and planned investments in climate-related mitigation, adaptation and opportunities for climate resilience**; and

Reference: S2.22 (a)(i)(ii) *Reference: S2 Paragraphs 22 (iii)(1)(2)(3)*

5 Scenarios Mapping Potential Futures



Scenario	Near term, 2021–2040	Mid-term, 2041–2060	Long term, 2081–2100
SSP1–1.9 (Most Optimistic)	1.5°C (1.2 to 1.7)	1.6°C (1.2 to 2.0)	1.4°C (1.0 to 1.8)
SSP1–2.6 (Next Best)	1.5°C (1.2 to 1.8)	1.7°C (1.3 to 2.2)	1.8°C (1.3 to 2.4)
SSP2–4.5 (Middle of the Road)	1.5°C (1.2 to 1.8)	2.0°C (1.6 to 2.5)	2.7°C (2.1 to 3.5)
SSP3–7.0 (Dangerous/Regional Rivalry)	1.5°C (1.2 to 1.8)	2.1°C (1.7 to 2.6)	3.6°C (2.8 to 4.6)
SSP5–8.5 (Avoid at All Costs)	1.6°C (1.3 to 1.9)	2.4°C (1.9 to 3.0)	4.4°C (3.3 to 5.7)

■ Best estimate (Very likely range)

The Parameters: Five Scenarios of Global Ambition



CPS

[\(Current Policies\)](#)

The Baseline.

A narrow reading of only existing, codified laws. High fossil reliance and slower technology adoption.

STEPS

[\(Stated Policies\)](#)

The Trajectory.

Current laws plus officially tabled policies and sector targets. A gradual, unforced transition.

APS

[\(Announced Pledges\)](#)

The Bridge.

Assumes all national energy and climate commitments (NDCs) are met in full and on time.

ACCESS

[\(Energy Services\)](#)

The Normative Mandate.

A data-driven roadmap to achieve universal electricity by 2035 and clean cooking by 2040.

NZE

[\(Net Zero by 2050\)](#)

The 1.5°C Threshold.

Radical, immediate decarbonization. A highly ambitious, capital-intensive pathway.

BRIEFING		Navigating Climate Pathways (Transition & Physical) >> NGFS					87	
* Commonly used scenarios	Orderly			Disorderly	Hot House World		Too Little, Too Late	
	Net Zero 2050*	Low Demand	Below 2 °C	Delayed Transition*	NDCs	Current Policies*	Fragmented World	
°C Ambition	1.4 °C	1.1 °C	1.8 °C	1.7 °C	2.3 °C	3.0 °C	2.4 °C	
Policy/ Timeframe Ambition	Immediate & Smooth	Immediate & Smooth	Immediate & Smooth	Delayed	Nationally Determined Contributions	None – Current Policies	Delayed & Fragmented	
Technology Change	Fast Change	Fast Change	Moderate Change	Slow/Fast Change	Slow Change	Slow Change	First Slow, Then Fragmented	
Carbon Dioxide Removal (CDR)	Medium-High Use	Medium Use	Medium-High Use	Low-Medium Use	Low-Medium Use	Low Use	Low-Medium Use	
Regional Policy Variation	Medium Variation	Medium Variation	Low Variation	High Variation	Medium Variation	Low Variation	High Variation	