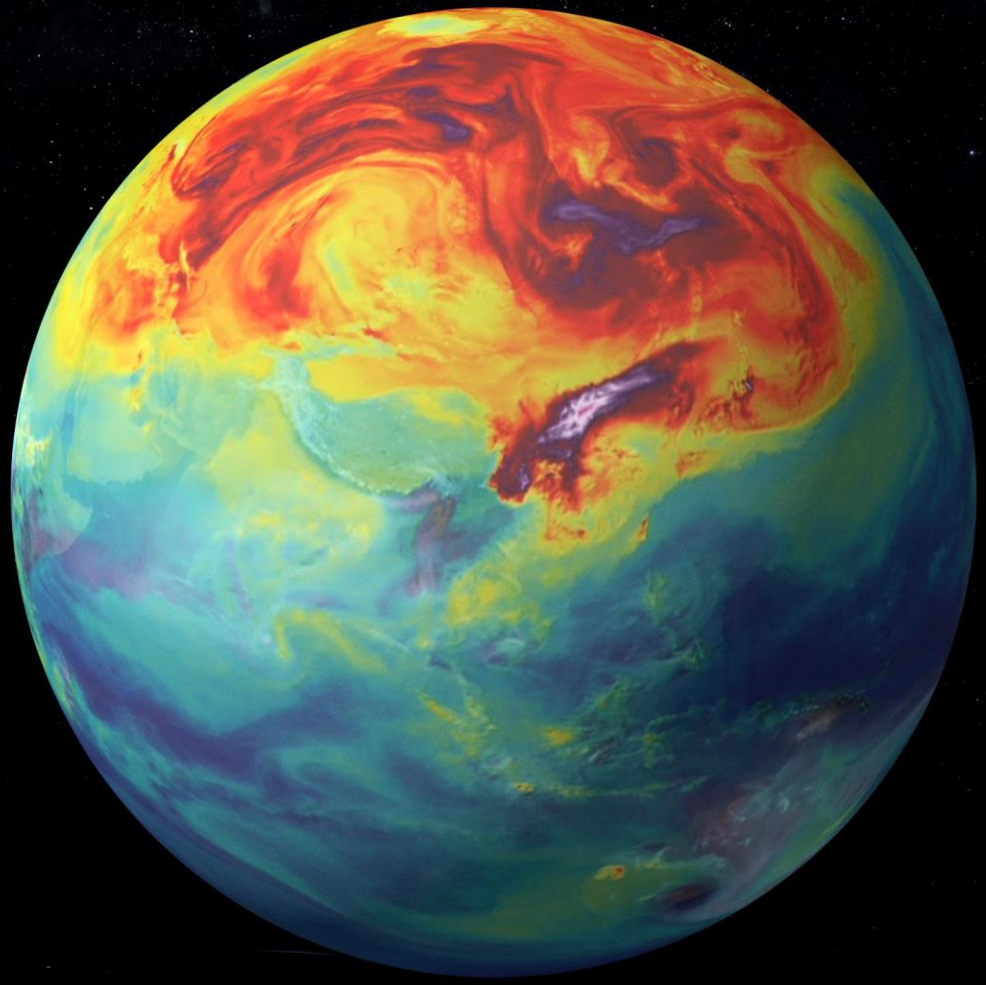
Navigating Risks and Capturing Opportunities

In the Warming World

18 Feb 2025



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Selected Experiences

Current Roles
- Co-founder of P24 Solutions
- Educator on Climate Strategy
- Advisor on Business Strategy
- Executive director at Noburo Platform

P24 solutions

noburo wealth·being

Selected Professional Experience
- 2 years in Climate Strategy
- 5 years in FinTech
- 15 years in Corporate Finance
- Partner at Creagy
- Head of Investment Banking at Krungthai Bank
- Thailand Country Head at Goldman Sachs
- Associate VP in Derivatives at BNP Paribas

CREAGY

ธนาคารกรุงไทย KRUNGTHAI BANK

Goldman Sachs

BNP PARIBAS

Educational Background
- Financial Engineering, University of Michigan at Ann Arbor
- Industrial Engineering, Georgia Tech
- Chemical Engineering, Chulalongkorn University

UNIVERSITY OF MICHIGAN

Georgia Institute of Technology

Chula Chulalongkorn University

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Selected Experiences

Current Roles
- Partner at P24 Solutions
- Educator on Marketing Strategy
- Advisor on Marketing & Business Strategy
- Strategy Advisor at OSC

P24 solutions

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Selected Professional Experience
- 2.5 years as CMO at VISTRA
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- 10 years in Marketing & Innovation
- Summer Associate at Goldman Sachs

VISTRA

Cargill

L'ORÉAL

Goldman Sachs

Educational Background
- MBA at INSEAD (France)
- Chemical Engineering, Chulalongkorn University
- Financial Economics, Ramkhamhaeng University

INSEAD

Chula Chulalongkorn University

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Education Background

- Master in Engineering, Technology Management for Innovation, The University of Tokyo (Japanese Government Scholar)
- Bachelor in Engineering, Computer Engineering, Kasetsart University (1st Class Honor)

Professional Background

- Consultant, Deloitte Consulting, CDI (Japan)
- Management Team ITTP Company Limited (Personal Loan & Nana-Finance)
- Founder of Social Project "light me up project"
- Speaker & Guest Lecturers for leading university in Thailand

AGENDA

	Content
1	Climate Change
2	Implications to Business : Risks and Opportunities
3	Climate Strategy & Resilience
	Break
4	Climate Conquest : Business Simuation
5	Journey to Net Zero : 6-STEP Framework

The Future is Uncertain

A broad spectrum of plausible pathways and outcomes can impact your business

Extreme drought

Significant economic downturn

Devastating wildfires

Increased frequency of cyclones

Emerging technology

Innovations in agriculture

Heavy rain and floods

Loss of biodiversity

Increased water scarcity

Political unrest

Expansion of EV use

Enhanced energy efficiency meaures

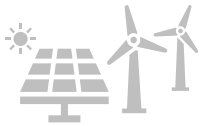
Sever income inequality

Ocean acidification

Increased frequency of heat waves

Shifts in trade patterns

Growth in RE



High carbon tax

Sustainable urban planning

LOSER

Accelerated sea level rise

Collapse of coal reef

Displacement and migration

Stranded fossil assets

Enhanced global cooperation

Climate Conquest

A climate strategy simulation game for executives v.7

By P24 solutions

P24

TEAMS

COMPANIES

OBJECTIVES

Navigate your company through the deep uncertainties of climate change to **enhance resilience, reduce impact, and maximize Asset Value by 2050.**

2024
Company Set Up

CHOOSE AN INITIAL COMPANY PROFILE

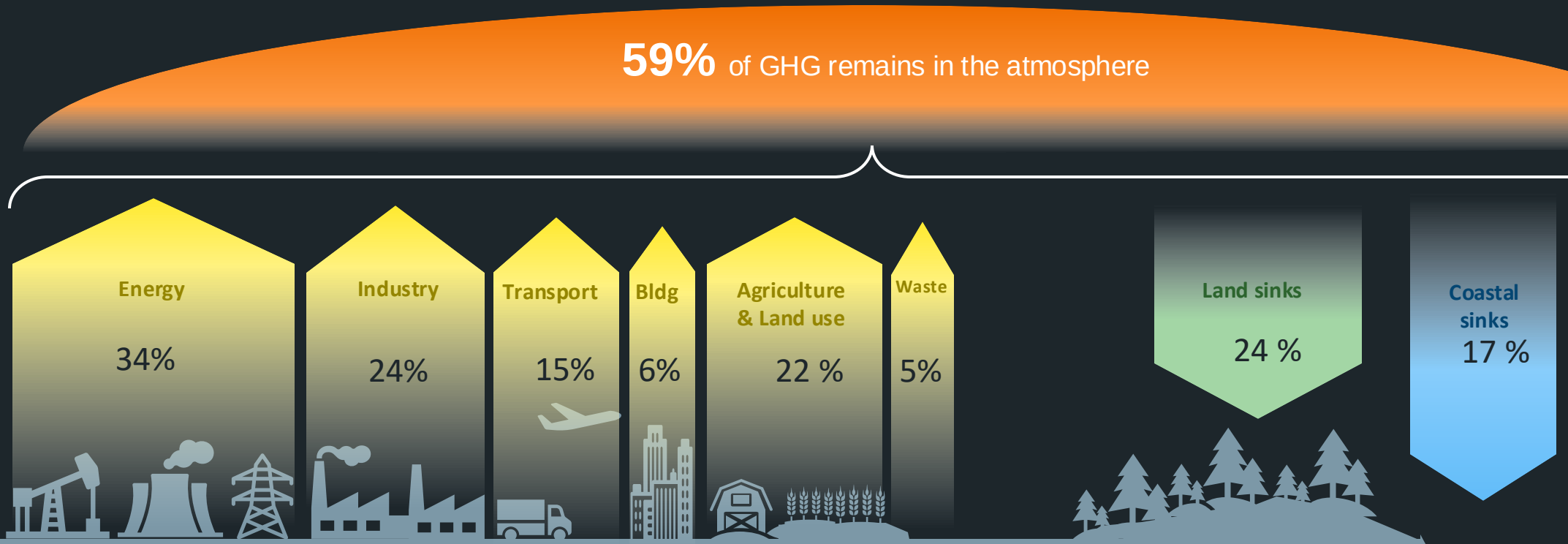
P	E	C	B
Profit Pioneer	**Eco-Innovator**	**Community Champion**	**Balance Builder**
			
Highly profitable	Climate tech start-up	Committed to all stakeholders	Focus on diversification
Carbon-intensive	About to go to market	Niche green products	Moderately profitable

PART 1

CLIMATE CHANGE


Causes
MEINHART

Global Net Anthropogenic GHG Emissions



Emissions from burning coal, natural gas, and oil for electricity and heat.

Emissions from fossil fuels burned on-site for energy, as well as emissions from chemical and metallurgical processes.

Emissions from fossil fuels burned for road, rail, air, and marine transportatio n.

Emissions from construction and other

Emissions from agricultural practices, deforestation, and land-use changes.

Emissions from waste treatment and disposal, including methane emissions from landfills, and others

Source: Project Draw Down

How Much GHG is Emitted By Things We Do

Making Things

29%

8% 8% 4%

Plugging In

26%

Growing Things

22%

Getting Around

16%

Keeping Warm & Cool

7%

Source: How to avoid Climate Disaster: The Solution We Have And The Breakthrough We Need


Effects

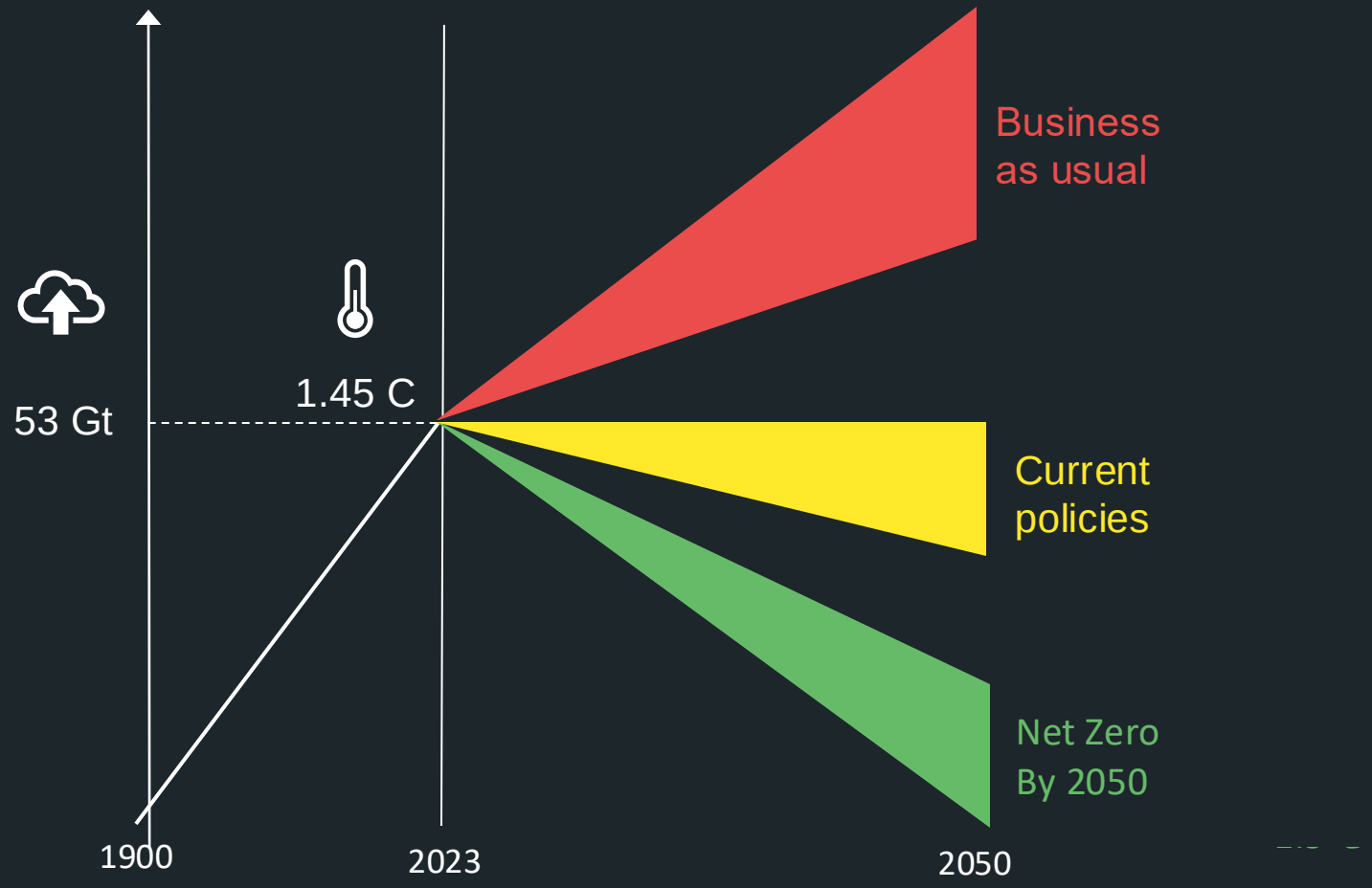
Long-term Climate Impact at Different Temperature Anomaly

Temperature Anomaly

The deviation of global mean temperature from pre-industrial levels (1850 –1900)

	Impact in 2100	Impact in 2100	Impact in hundreds years	
	1.5℃	**2℃**	**3℃**	**4℃**
Wildfire 	41% more burned	62% more burned	97% more burned	More frequent and extreme
Drought 	2 months average	4 months average	10 months average	More frequent and extreme
Food 	Wheat and rice production suffers	**Agriculture yield fall rapidly**	Local fish species go extinct	**High Level of food insecurity**
Sea level 	48 cm	56 cm	**Near complete melting of Greenland ice sheet**	**9m**
Ocean 	**70-90% decline of coral reefs**	**All coral reef lost**	Marine ecosystem may collapse	Half of species face local extinction

Our actions in next the two decades will define the future for generations



Source: TCFD, Climate Action Tracker, UN Climate Summit, Swiss Re Institute, the Consensus Project

Responses

Paris Agreement

Global temperature goals

In 2015, **over 190 countries agreed** to take action to limit the global mean temperature rise by 2100 from pre-industrial levels.

Year

2100

Well below 2°C

Efforts to limit to 1.5°C

Aim to limit the temperature increase to well below 2°C above pre-industrial levels and make efforts to limit it further to 1.5°C.

Enhance resilience and adaptation to climate impacts

Align financial flows to achieve the objectives

Net Zero

Targets based on sciences

To achieve the goal of limiting warming to **1.5°C**, global CO2 emissions must reach **net zero by 2050**

CO_2 CO_2

Achieving net zero means balancing the amount of greenhouse gases emitted with the amount removed from the atmosphere, either through natural processes or technological solutions.

NDCs

National Determined Contributions

Each country sets its own targets for reducing emissions and outlines its plans in the form of NDCs.

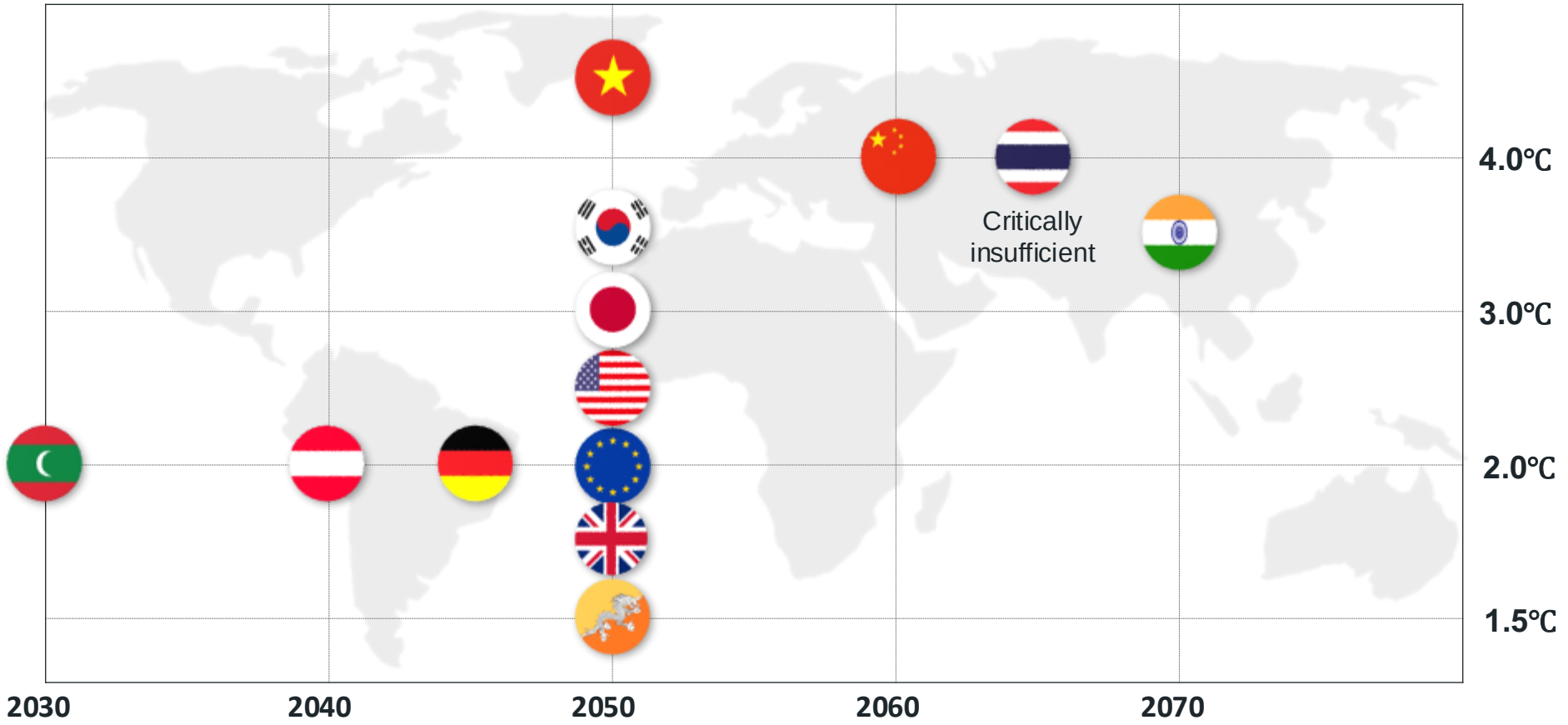
Net-Zero Year

Action Plans

Countries specify the year by which they aim to achieve net-zero emissions.

NDCs include detailed strategies, policies, and measures that countries will implement to reduce emissions and achieve their climate goals.

Country-Specific NDC Commitments: Targets and Actions within National Contexts



Temperature Alignment

Temperature alignment refers to the goal of capping the rise in global average temperature to specific limits above pre-industrial levels by the century's end. The Climate Action Tracker assesses the effectiveness of these commitments, rating them based on current policies, actions, and NDCs.

Net Zero Commitment

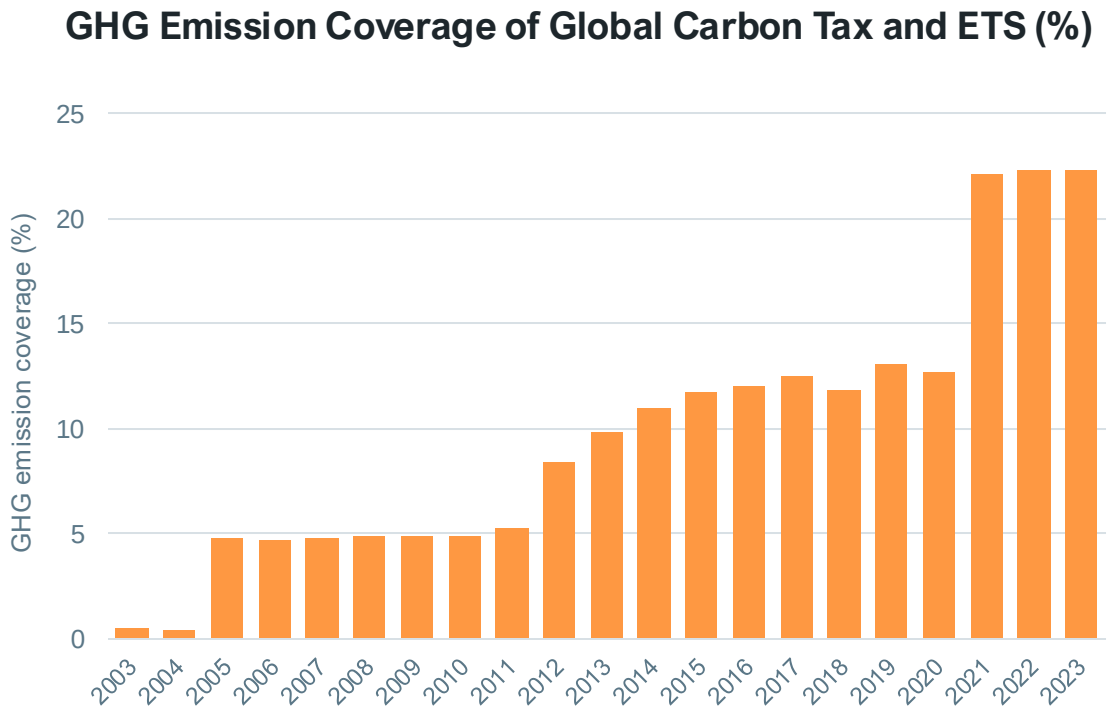
A country's net zero commitment, as stated in its Nationally Determined Contribution (NDC), outlines its pledge to balance the amount of emitted greenhouse gases with the amount that is removed from the atmosphere by a specific year, aiming to significantly reduce its contribution to global warming.

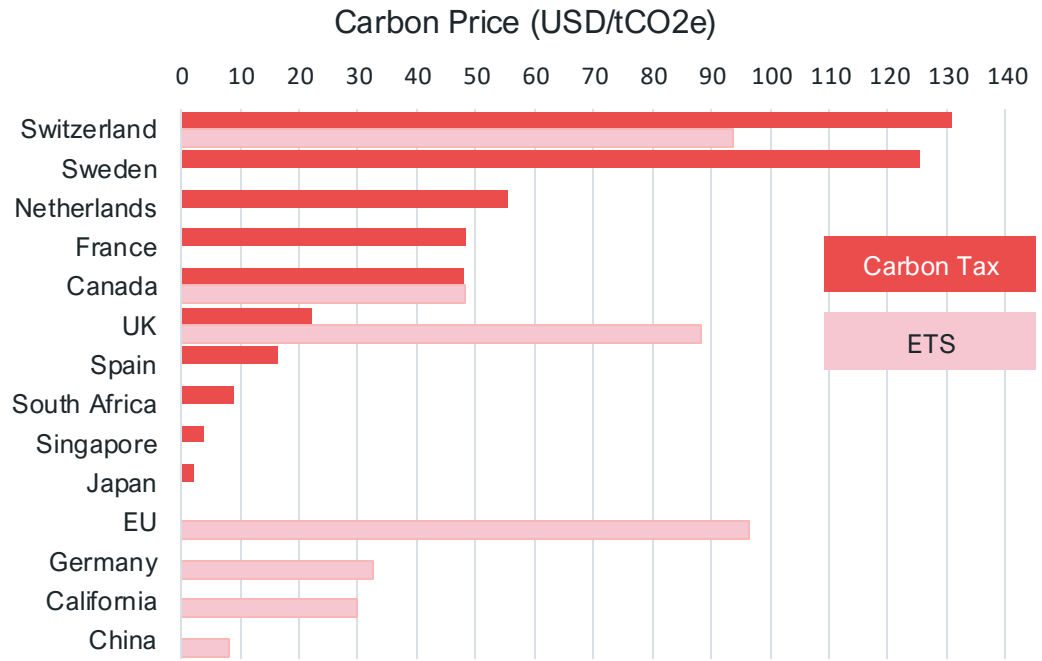
Source: Climate Tracker, average between policies and action and NDC ratings

Governments drive GHG emissions by utilizing carbon pricings

Less than 25% of global emissions are subject to carbon pricing, with avg $2 / ton CO_2

Thailand is implementing the Climate Change Act to align with the Paris Agreement. The Act will introduce carbon pricing mechanisms, including an Emissions Trading System (ETS) and carbon taxes. Expected to be enforced at least within 3-4 years, it aims to reduce greenhouse gas emissions and improve climate resilience.





Source: Norton Rose Fullbright, Nation

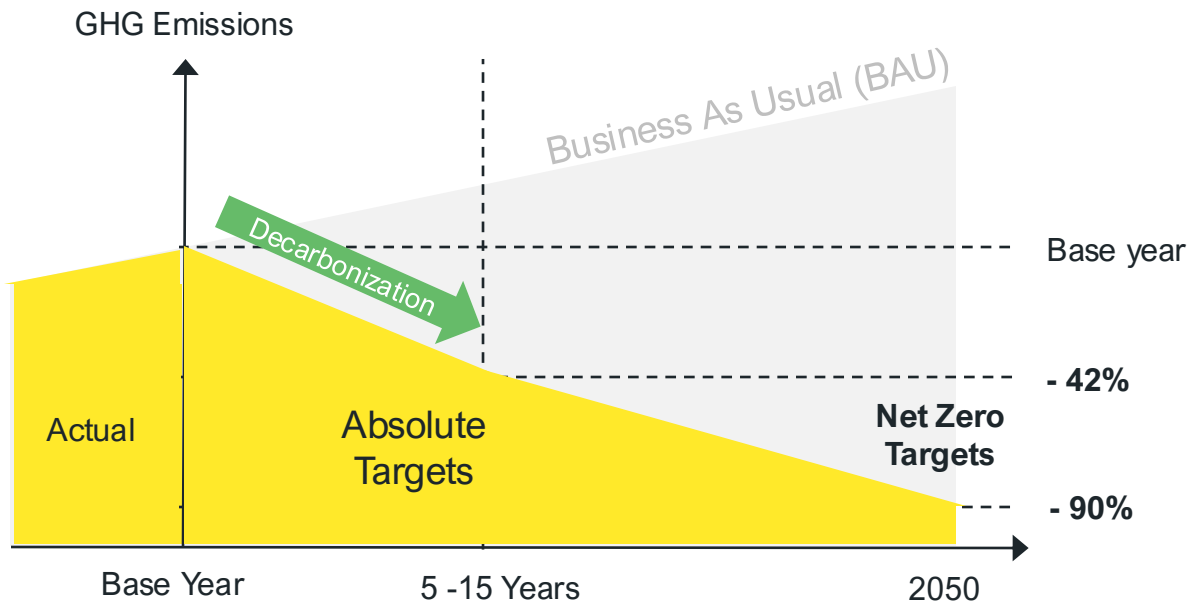
Growing Adoption of Science-Based Targets in the Private Sector

Over 5,000 companies have committed to SBTs, still less than 5% of total emissions

Net Zero claims: For a company's Net Zero targets to be credible, they should commit to the Science-Based Targets initiative (SBTi), which verifies alignment with the latest climate science and Paris Agreement objectives (Science Based Targets).

Near-term targets: Most sectors aim to halve emissions within the 5-15 years.

Net Zero targets: Achieving Net Zero involves reducing emissions by over 90% from the baseline.



Source: SBTi

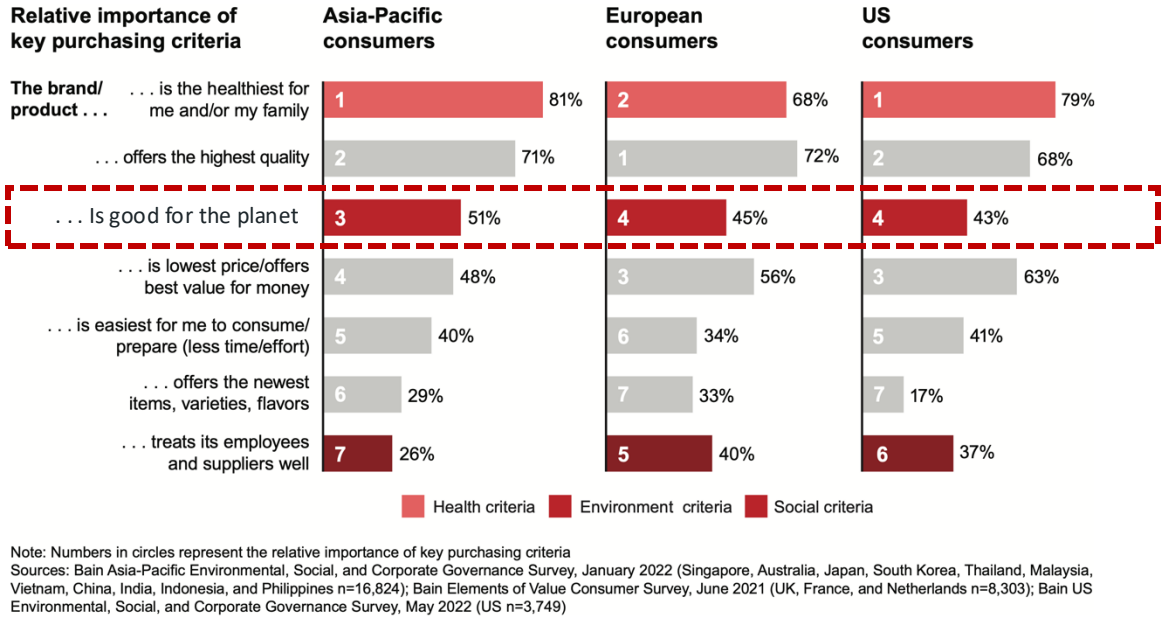
Selected major Thai companies committed to science-based targets

MINOR INTERNATIONAL · Thai Union · INDORAMA VENTURES · ThaiBev · SET The Stock Exchange of Thailand · SCBX · CENTRAL PATTANA · C.P. GROUP · SCG · CPF · EGCO GROUP · true · CP ALL · FRASERS PROPERTY · HomePro · KCE ELECTRONICS Public Company Limited · NRF

Consumer demand is critical for driving sustainable market shifts

65% said they want to buy purpose-driven brands that advocate sustainability, yet only about 26% actually do so

Globally, nearly 50% of consumers are highly concerned about sustainability and climate change

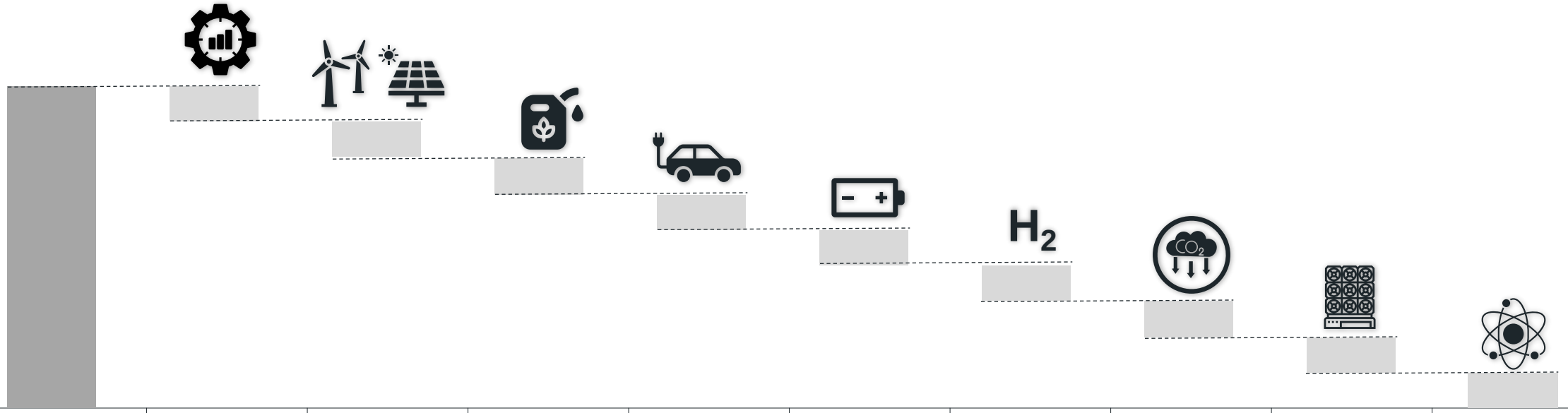


Note: Numbers in circles represent the relative importance of key purchasing criteria
Sources: Bain Asia-Pacific Environmental, Social, and Corporate Governance Survey, January 2022 (Singapore, Australia, Japan, South Korea, Thailand, Malaysia, Vietnam, China, India, Indonesia, and Philippines n=16,824); Bain Elements of Value Consumer Survey, June 2021 (UK, France, and Netherlands n=8,303); Bain US Environmental, Social, and Corporate Governance Survey, May 2022 (US n=3,749)

Examples of low carbon products

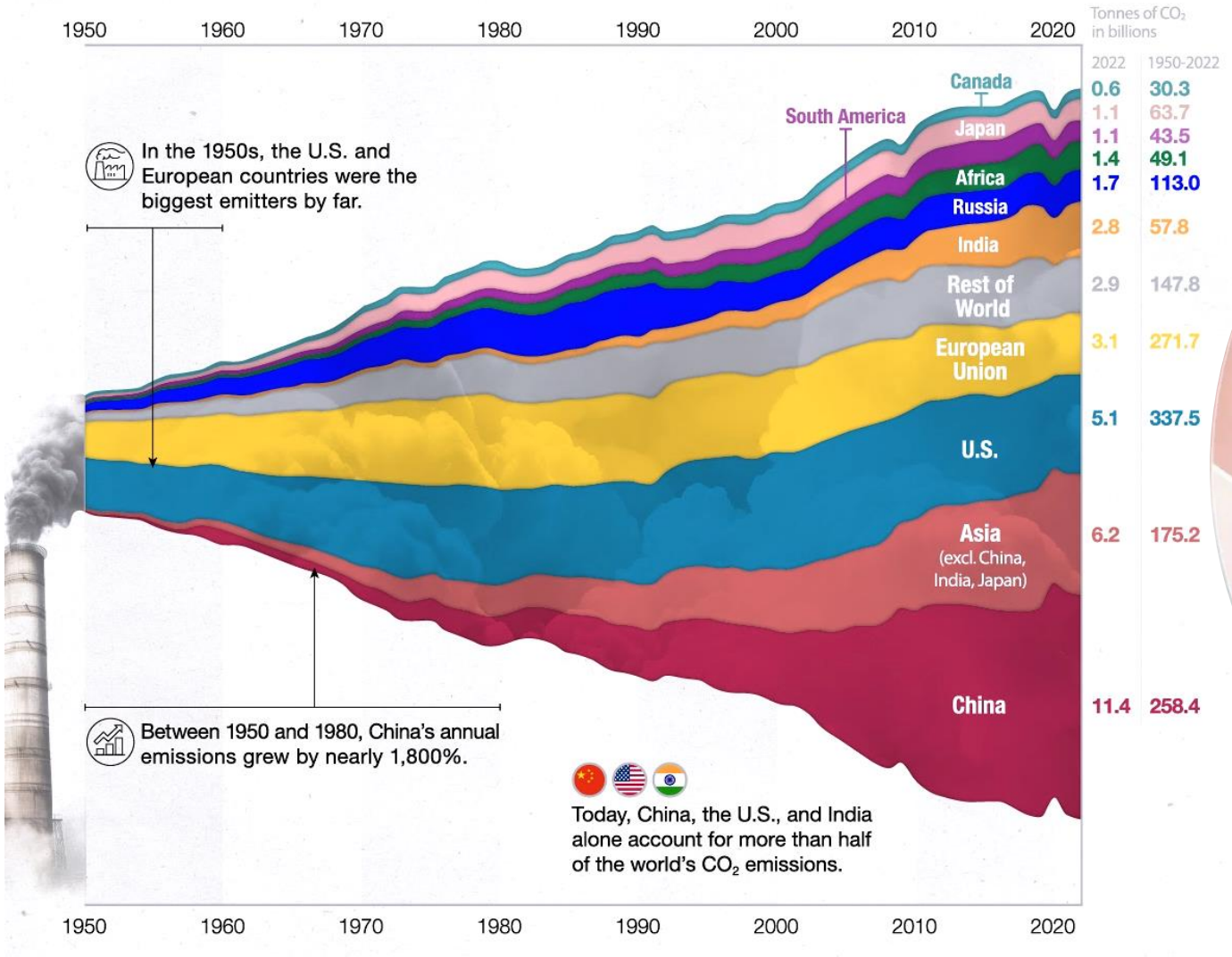
Source: Bain & Co, Havard Business Review

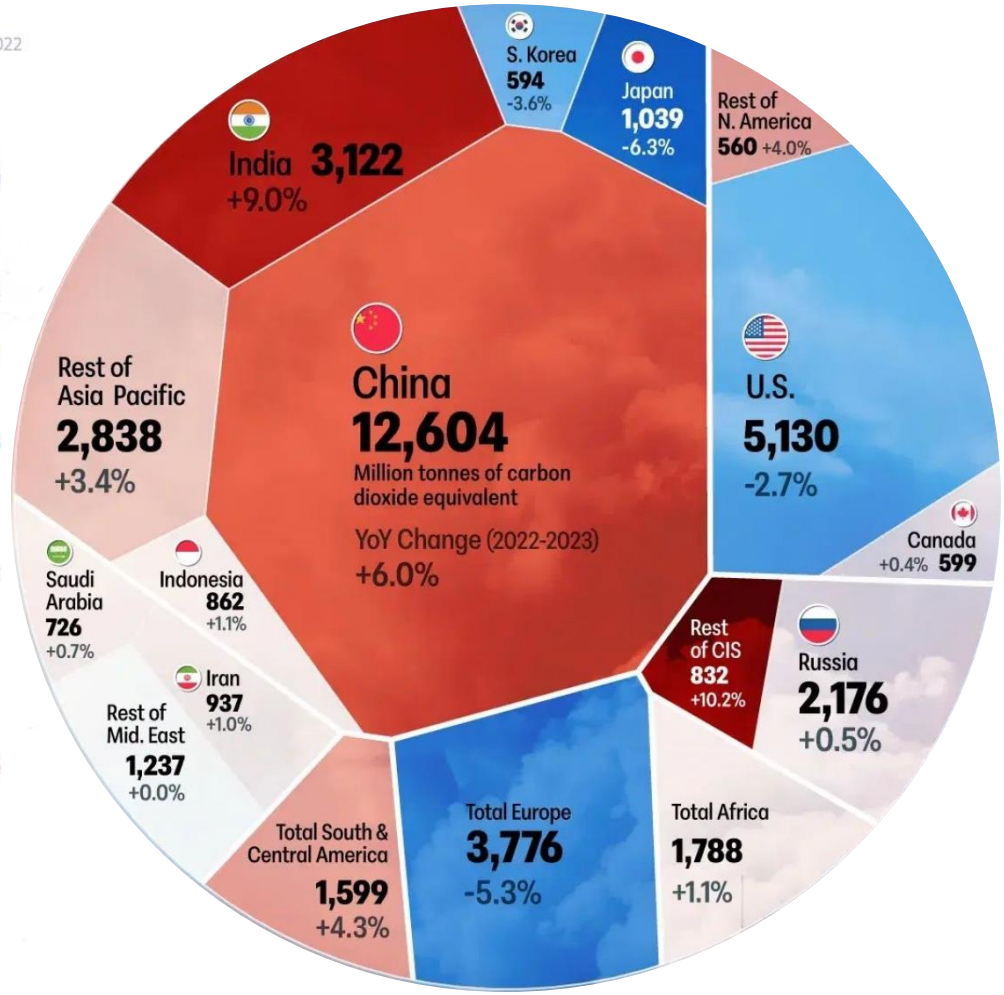
Technology break-throughs and rapid adoptions required



Selected Technology	Energy& Resource Efficiency	Renewable Energy	Biofuels	EV	Battery	Green Hydrogen	Carbon Capture (CCUS)	Direct Air Capture (DAC)	Nuclear fusion
Readiness	🟢	🟢	🟡	🟡	🟡	🟡	🟡	🟡	🔴
Feasiblity	🟢	🟢	🟡	🟡	🟡	🔴	🔴	🔴	🔴

Despite all the efforts, global emissions continue to grow led by China and india

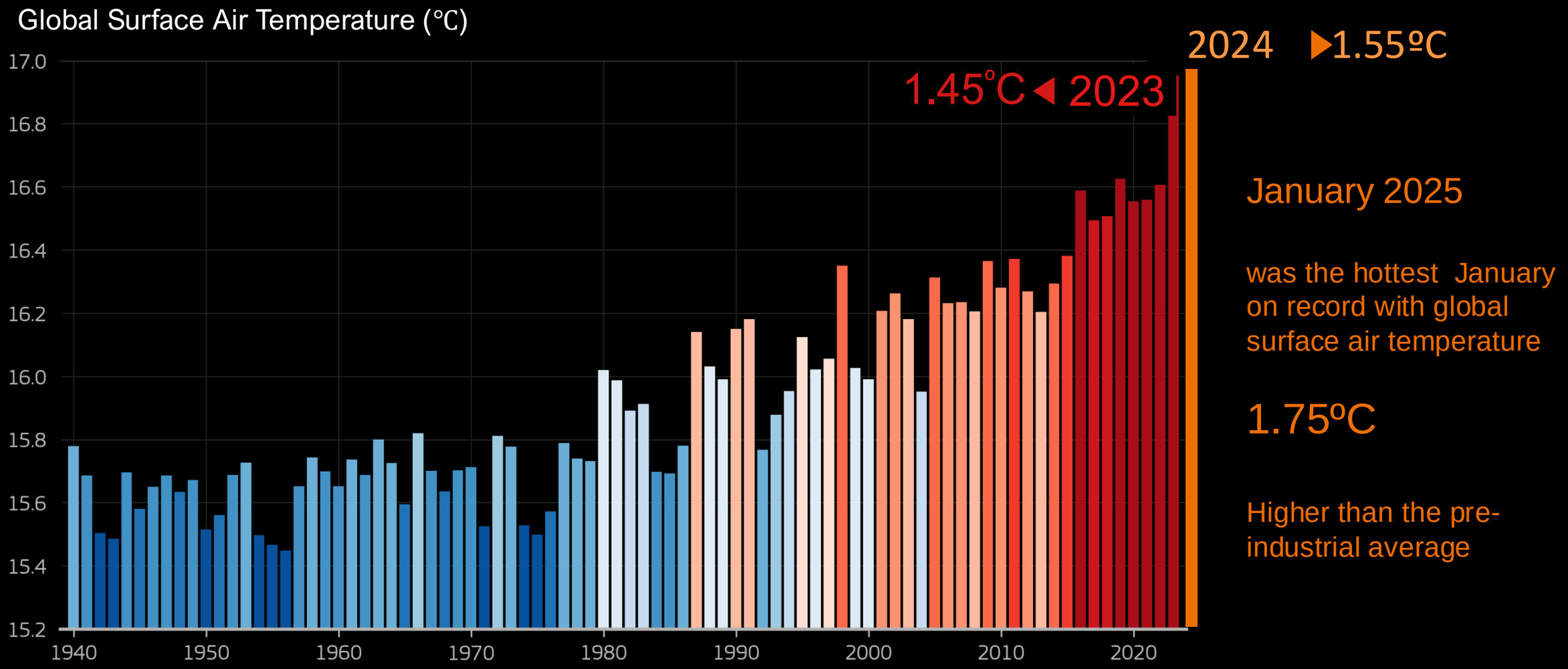




Source: Energy institute, Statistical Review of World Energy 2024, Berkley Earth, Global Carbon Project

2023 was the hottest year on record.
2024 will break the record.

Temperature vs pre-industrial



January 2025

was the hottest January on record with global surface air temperature

1.75ºC

Higher than the pre-industrial average

Source: C3S/ECMWF

Top 10 Risks

Global Risks Report 2025

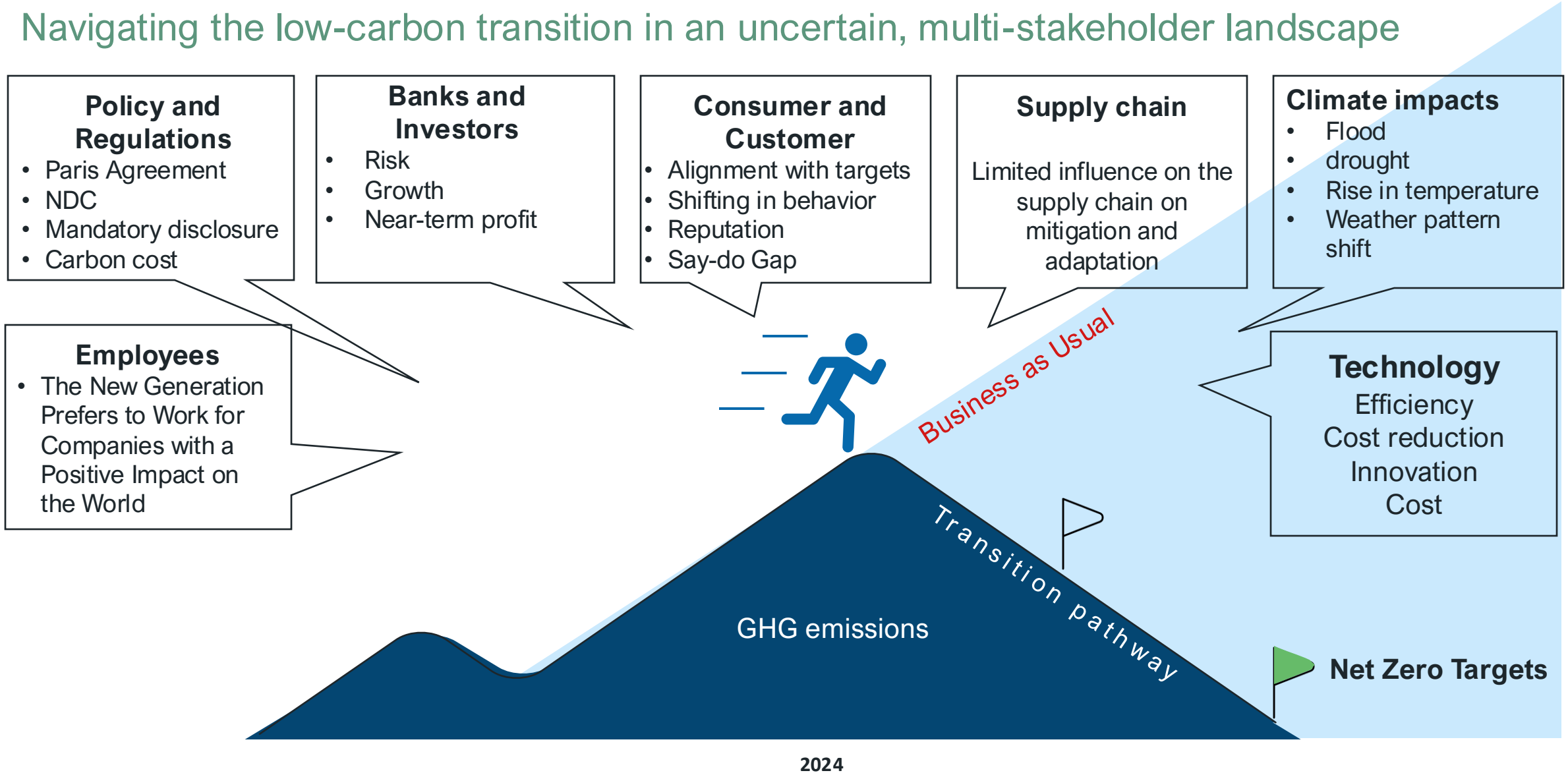
Source

Part 2

IMPLICATIONS TO BUSINESS

Implications for business

Navigating the low-carbon transition in an uncertain, multi-stakeholder landscape



Climate Change in Business Context

Boundary
Climate policy
Carbon credits
Industry
Best practices
Customer
CBAM
Climate finance
Value-chain
Brand image
Carbon accounting
Consumer
Investors
Technology
Emissions
Scenario analysis
Waste
The public
Risks
NDCs
Green financing
Opportunities
Global goals
Standards
Biodiversity
Carbon market
Emissions
ESG
ETS
IFRS S2
Climate science
Flood
GRI
SBTi
SDGs
Inflation
TCFD

Characteristics of climate leaders

1

Integration

Of “risks and opportunities” into corporate strategy

Integrated climate risks and opportunities into core business strategy, risk management, decision-making processes, and governance structures across the organization.

2

Impact

To the environment

The extent to which a company's climate actions and initiatives contribute to measurable reductions in greenhouse gas emissions, climate resilience, and positive environmental outcomes.

3

Ambition

Strong climate ambition

Setting ambitious and science-based climate goals that align with limiting global warming to 1.5°C or well below 2°C as well as demonstrating continuous improvement in addressing climate change

Source: Global Scan Sustainability Leadership Report 2023


Physical Risk


Transition Risk


Opportunities

Defining climate-related risks and opportunities

Physical Risk

Refer to risks from the physical impacts of climate change

Acute

Extreme weather events such as

- Floods
- Heavy rainfall

- Cyclones
- Droughts

- Heatwaves
- Wildfires

Chronic

- Changing weather patterns
- Rising mean temperature

- Rising sea levels

Transition Risk

Refer to risks associated with achieving a lower-carbon economy.

Policy and Legal

- Increased pricing of GHG emissions
- Enhanced reporting obligations
- Mandates on existing products Exposure to litigation

Technology

- Substitution of existing products
- Investment in new tech
- Costs to transition

Market

- Changing customer behavior
- Uncertainty in the market signals
- Increased cost of raw materials

Reputation

- Shifts in consumer preferences
- Stigmatization of sector
- Increased stakeholder concern

Opportunities

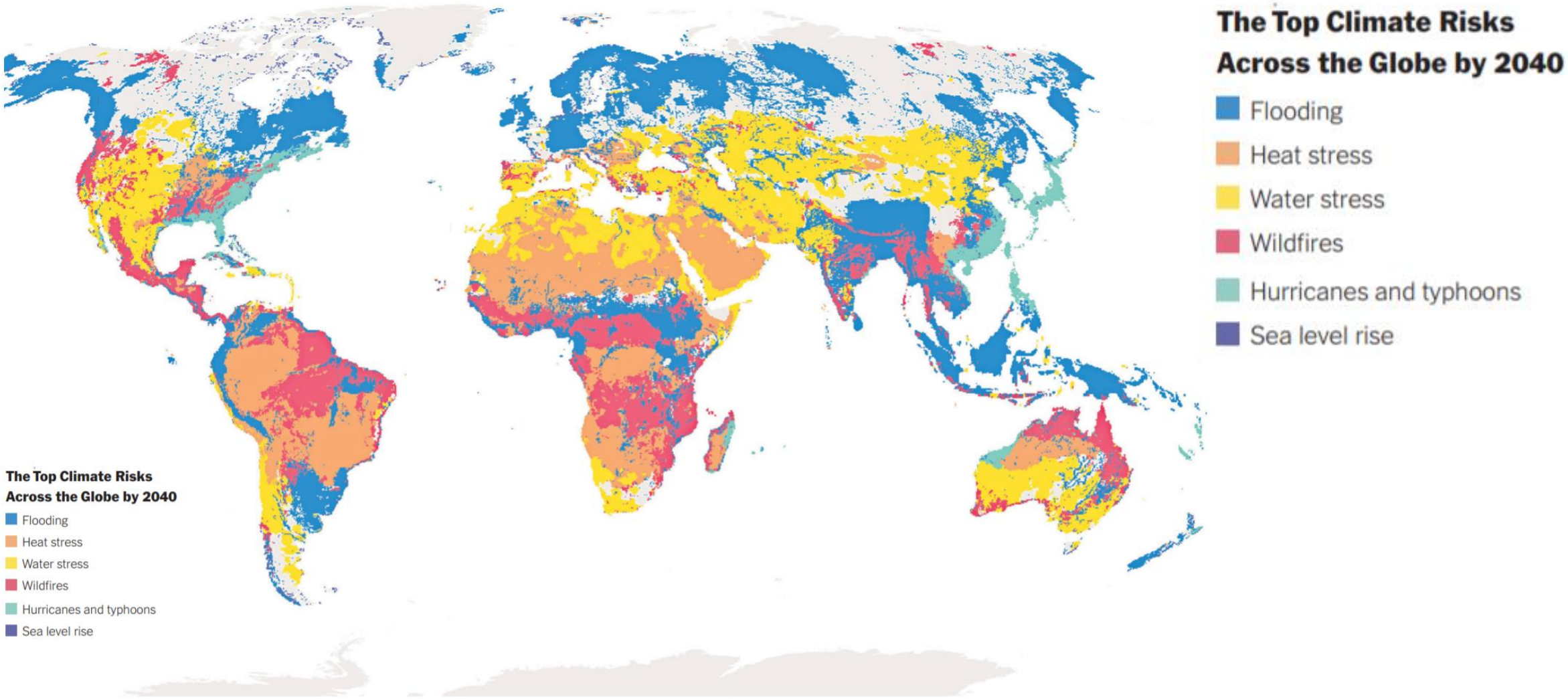
Refers to benefits from adopting sustainable practice

Resource Efficiency	• Efficient modes of transport, buildings, and operations • Recycling
Energy Source	• Renewable energy • Policy incentives • Carbon market
Products & Services	• Low-carbon goods and services
Markets	• Access to new markets • Access to new assets
Resilience	• Resource substitutes • Diversification • Adaptation

PHYSICAL RISK

Physical Risk

Direct physical impacts of a warming world



Source: https://www.nytimes.com/2021/03/25/learning/whats-going-on-in-this-graph-global-climate-risks.html

Flood

Acute risk

Climate change is expected to increase the frequency and severity of flooding events. The IPCC reports that for each degree of global warming, the proportion of the global population exposed to flood risk increases by at least 6.7%.

Thailand is highly exposed to flood risks

Location: Thailand

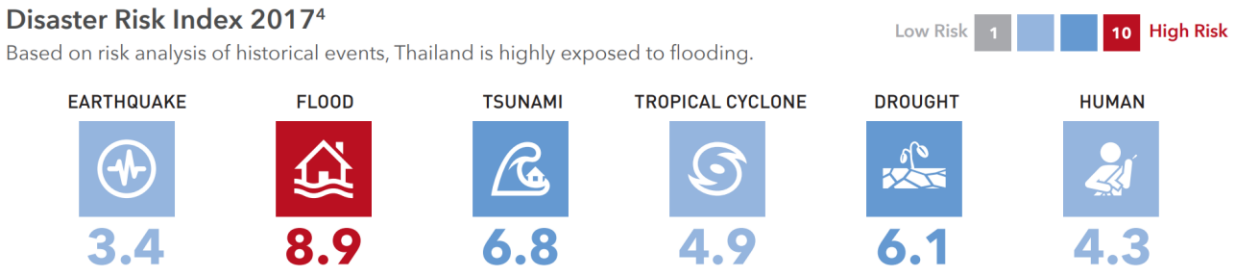
Year: 2011

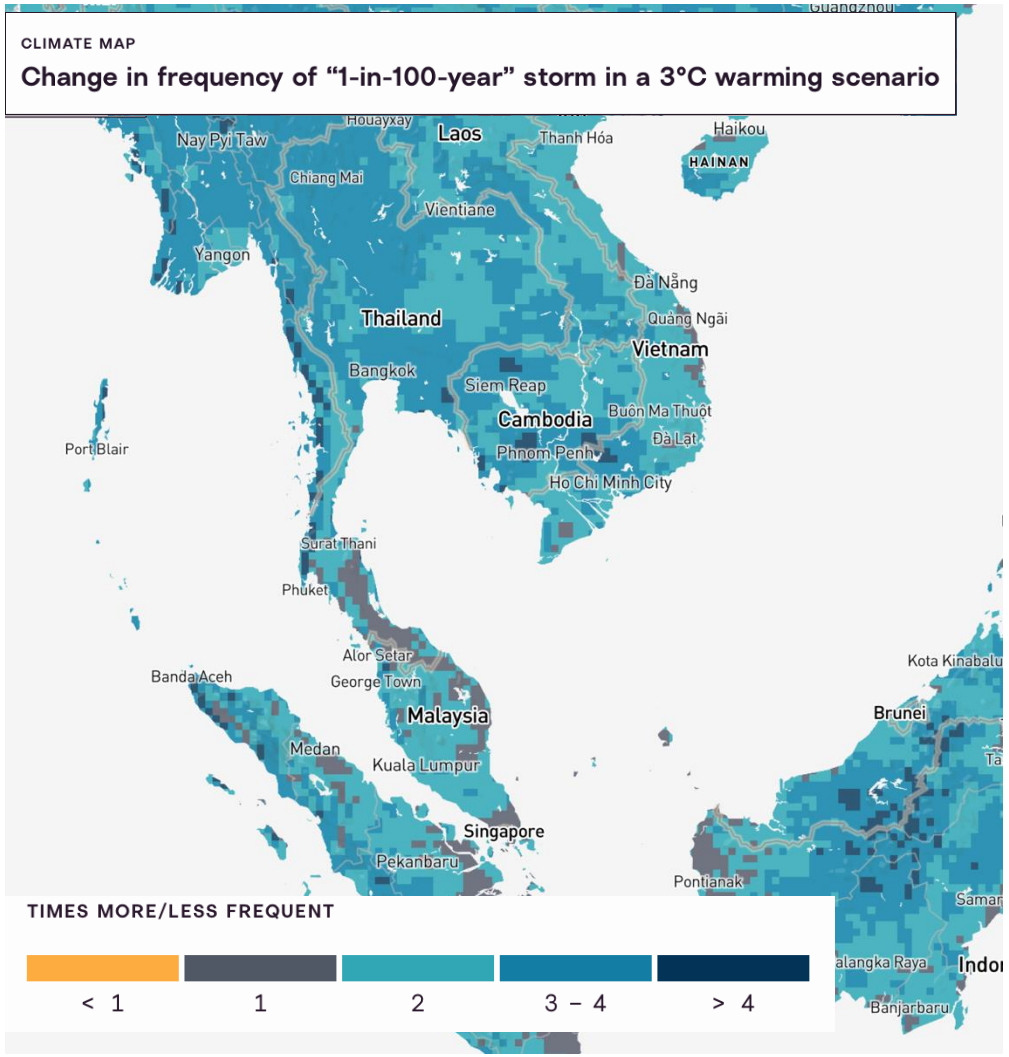
Damage: THB 1.425 Trillion

Deaths: Over 800 lives

People Affected: ~ 13.6 Million

Equity Market: SET index fell 24%





Source: Probable futures

Drought & Water Stress

Chronic risk

Droughts represent a significant chronic risk, exacerbated by climate change, leading to water scarcity, agricultural losses,and disruptions in water-dependent industries.

Location: South Africa, Malawi, Mozambique

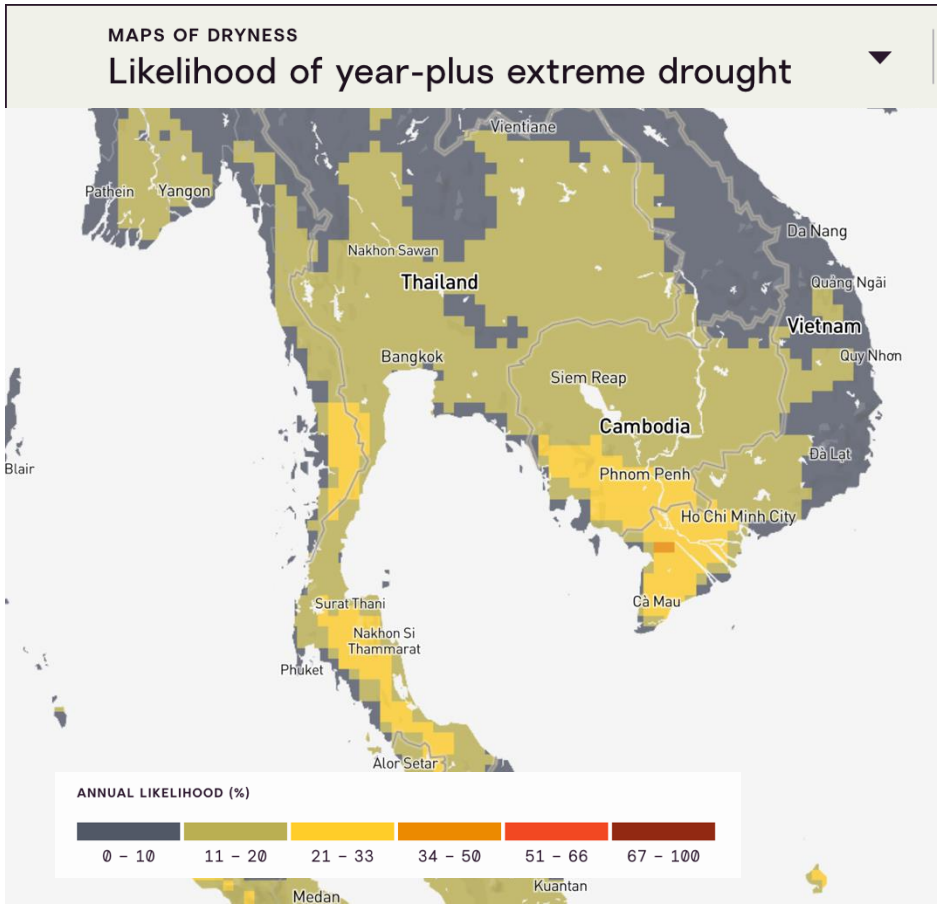
Year: 2016

Damage: > $5 Billion

People Affected: Over 40 million people affected by food shortages due to crop failures and loss of livestock

Agriculture: Reduction in yield up to 50%

Aspect	Impact
Agricultural Outputs	• Reductions in crops • Variability in drought resilience • Severe impacts in North, Northeast, and West Thailand • Supply shortages lead to price increases
Manufacturing Supply Chains	• Affects upstream and downstream industries • Reduced capacity and higher costs • Reduce electricity output



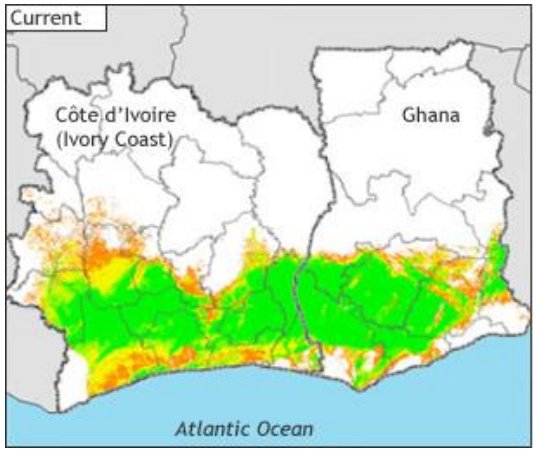
Source: Probable futures

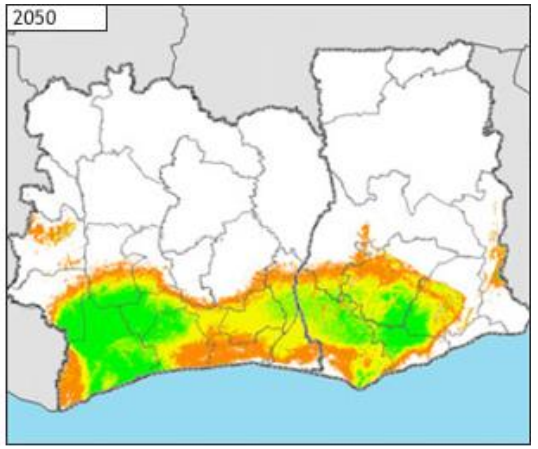
Change in Weather Pattern

Chronic risk

Chocolate prices soared as changing climate patterns worsen cocoa crisis

- The global cocoa market is currently facing a severe supply deficit. The International Cocoa Organization (ICCO) forecasts a nearly 11% decline in global supply for the 2023/24 season.
- The primary cocoa-producing nations, Ivory Coast and Ghana, have been severely hit by adverse weather conditions and disease outbreaks.
- Cocoa prices have been volatile. They have tripled due to a supply shortage and concerns about reduced production.
- Climate change poses a significant long-term challenge to cocoa production, requiring adaptation strategies and investment in resilient farming practices.





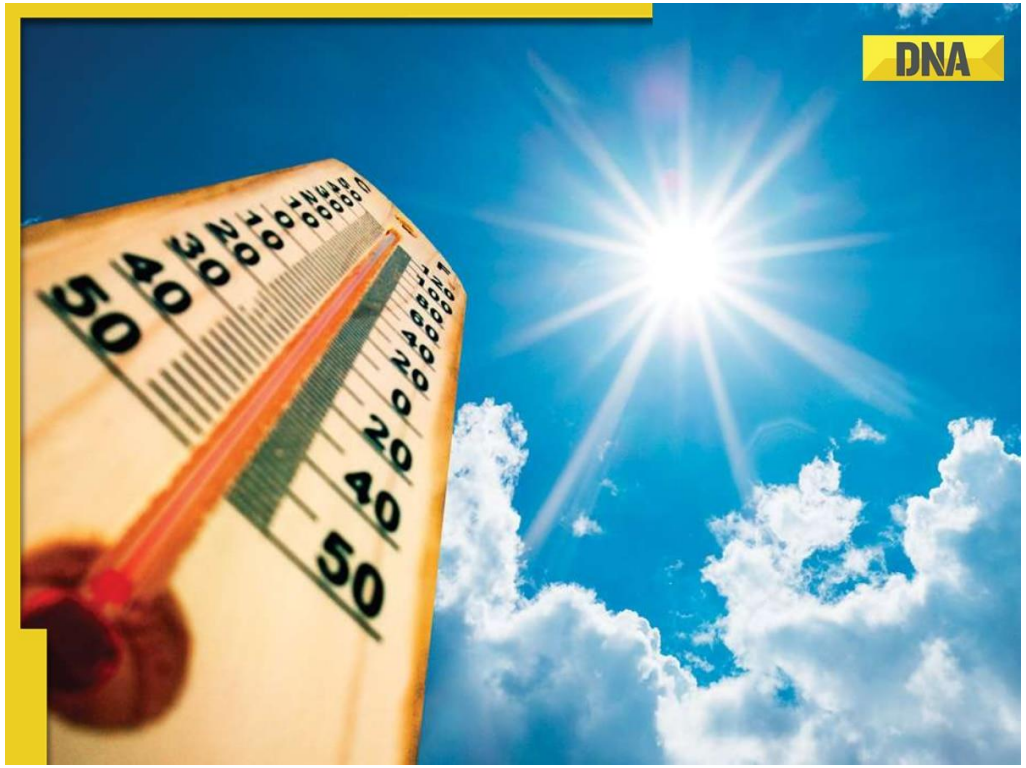
Source: Probable futures

Rising Mean Temperature

Chronic risk

The global mean temperature is projected to rise by up to 4.8°C by 2100 under high emission scenarios, exacerbating heatwaves, droughts, and energy demand for cooling.

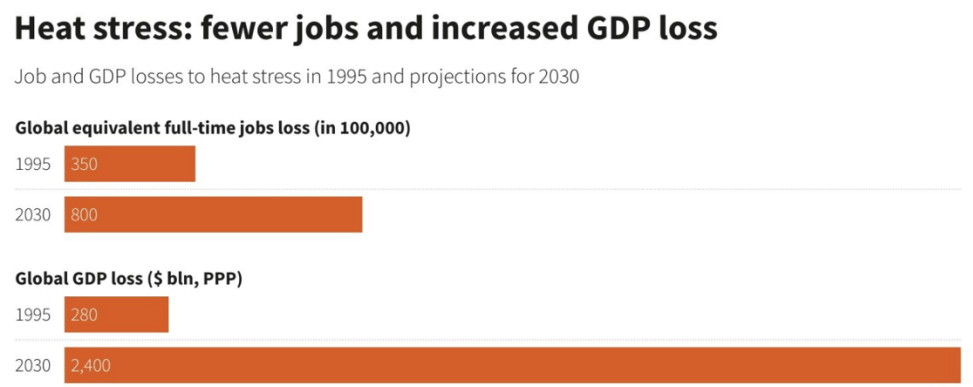
Rising temperature may reduce humans' ability to work to half by 2050:



According to a Lancet report, the ability to work will be reduced to half by 2050 if the average temperature rises by 2 degrees. By 2050, the number of heat-related deaths will rise 370 times. A 50% labor loss can be expected due to the heat.

Occupational Heat Stress and Climate Change

Heat stress Index (°C)	Level	General effect of heat index on health
27–32	Caution	Fatigue possible with prolonged exposure and/or physical activity
32–41	Extreme caution	Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity
42–54	Danger	Sun stroke, heat cramps or heat exhaustions likely, and heatstroke possible with prolonged exposure and/or physical activity
Above 54	Extreme danger	Heat/sunstroke highly likely with continued exposure



Rising Sea Levels

Chronic risk

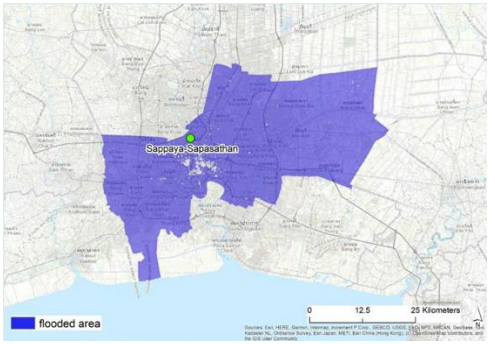
Sea level rise refers to the long-term increase in the average level of the world's oceans. Sea levels are projected to rise by up to 1 meter by 2100, posing significant risks to coastal communities, infrastructure, and ecosystems.

Greenland Ice Sheet

Melt streams on the Greenland Ice Sheet on July 19, 2015. Ice loss from the Greenland and Antarctic Ice Sheets and alpine glaciers has accelerated in recent decades.

Bangkok

More than 96% of Bangkok's land area is below the level to which sea water could rise should a 10-year flood occur in 2030



A geographical illustration of the potential impact of sea-level rise and coastal flooding in Bangkok in 2030, under the RCP8.5 scenario.

The Maldives

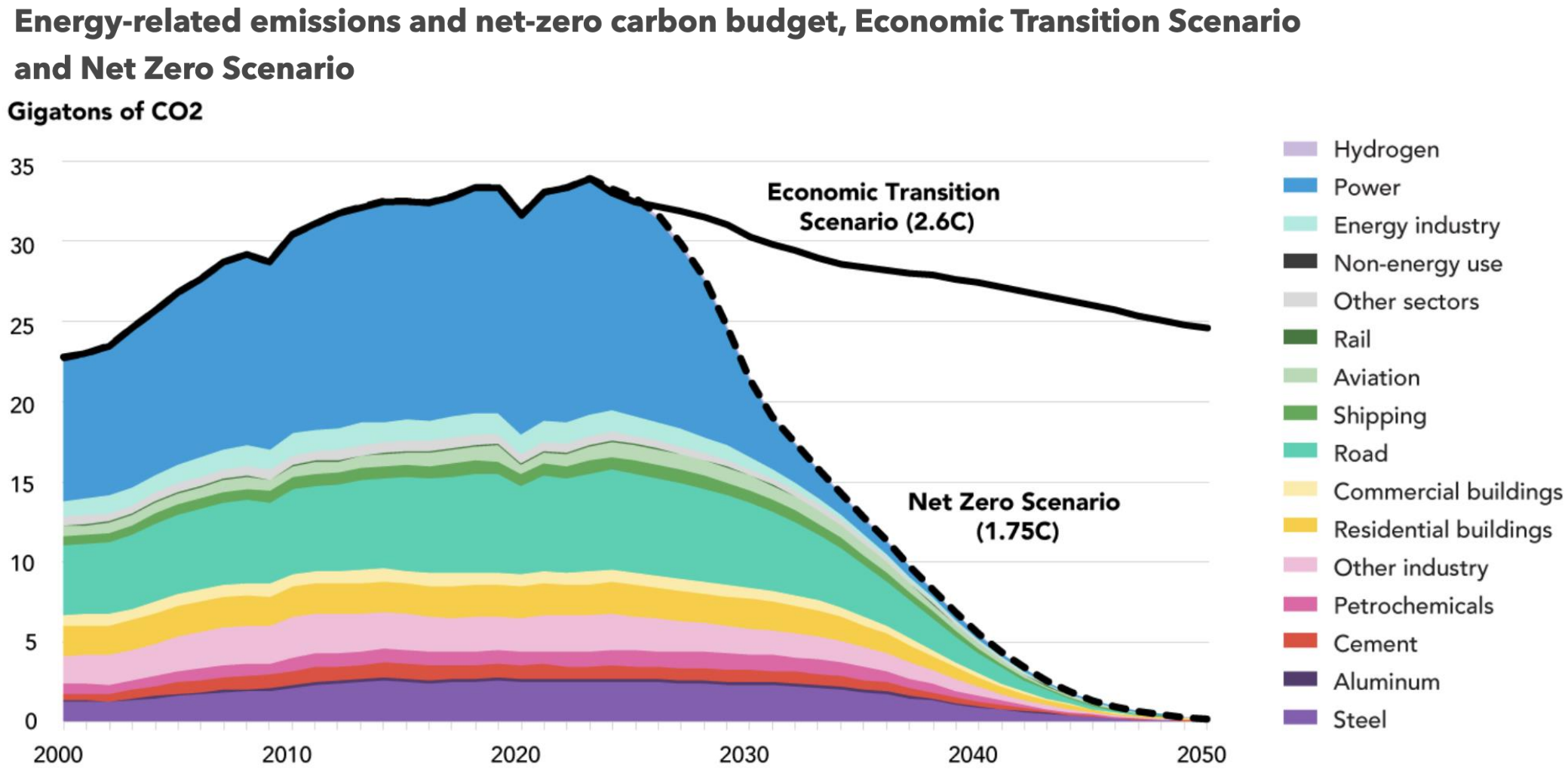
The Maldives, with an average elevation of only 1.8 meters above sea level which is projected to increase by 0.5 to 1 meter by 2100, enhancing its risk of sinking

Source: Probable futures

TRANSITION RISK

Transition Risks

Risks associated with achieving a low carbon economy



Source: Bloomberg NEF

Carbon price risk

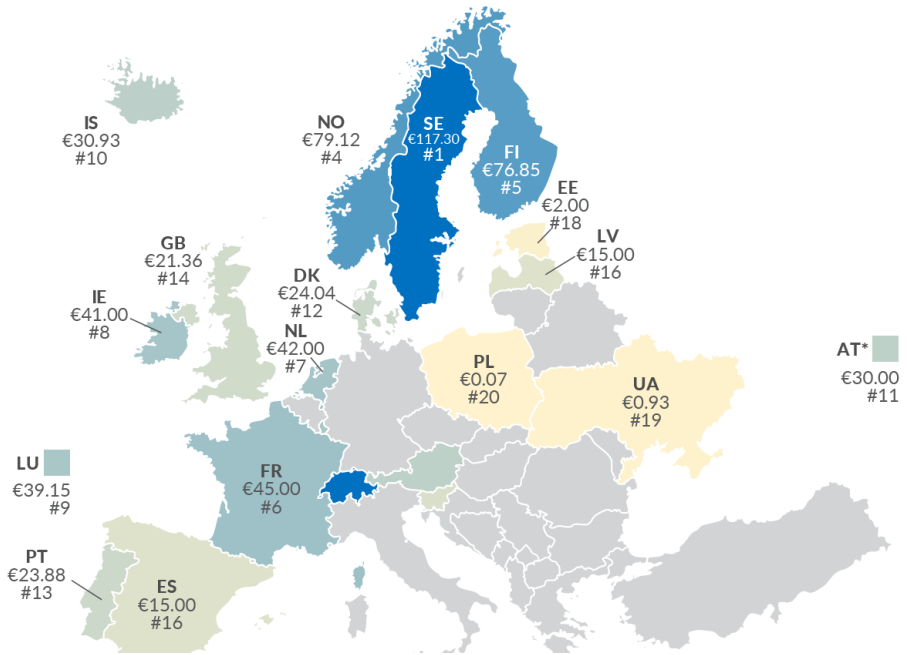
Policy and legal risks

Carbon Tax

Individual EU member states may implement carbon taxes to address emissions from sectors not covered by the ETS, such as transportation and heating.

Carbon Taxes in Europe

Carbon Tax Rates per Metric Ton of CO_2e, as of April 1, 2022



ETS

Established in 2005, the EU ETS is a cap-and-trade system targeting large emitters in sectors such as power generation, manufacturing, and intra-European aviation. It sets a cap on total emissions and allows companies to buy and sell emission allowances.

EU Carbon Permits Price (€ / tCO_2e)

source: tradingeconomics.com

Source: Trading Economics, TaxFoundation

Stranded Assets

Market risk

Market risks are the possibility of market participants experiencing losses due to factors that affect the overall performance of the financial markets. These risks are systemic, which means they affect the entire market or market segments. Asset stranding is the most famous example of climate-related market risks. Stranded assets have suffered from devaluation or become liabilities. The abrupt shift in market's perception of the assets are reaction of the market to disaster events, climate policies, and social trends.

- Under the scenario where governments deliver on policies and pledges, oil and gas demand will drop **45% by 2050.**[1]
- Under a net zero scenario, oil & gas demand will drop **75% by 2050.**[1]

Decade long underperformance of fossil-related energy stocks

S&P 500

P/E 25

Energy ETF

P/E 8

Stigmatization of sector

Reputation risk and market risk

Reputation risk and sector stigmatization refer to negative public perception that can harm a company or industry's image, operations, and financial performance. For sectors like coal, this risk stems from increasing environmental concerns and societal shifts towards sustainability and cleaner energy alternatives.

The coal industry has faced significant reputation and valuation challenges in recent years.

Peabody Energy's Bankruptcy

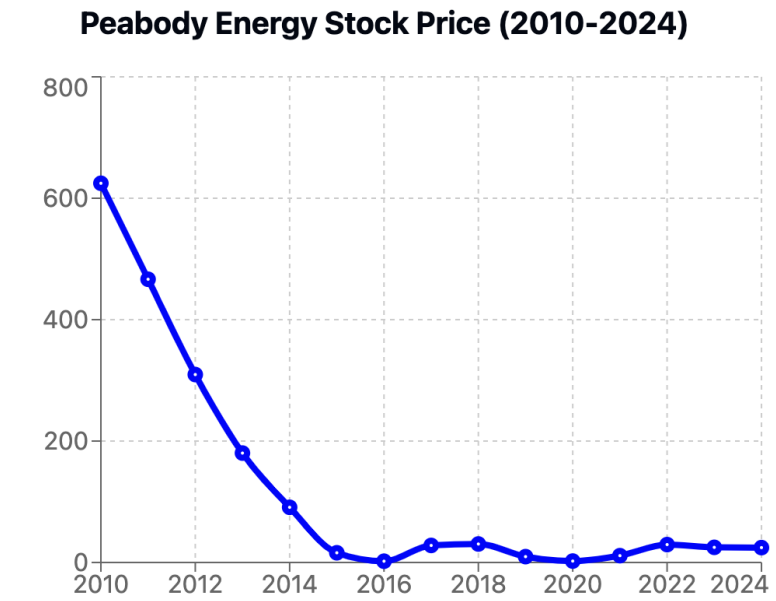
2010s: Faced increasing pressure from cheap natural gas and growing renewable energy sector

2016: **Filed for Chapter 11 bankruptcy protection**

Cited "unprecedented" industry downturn

2017: Emerged from bankruptcy after major restructuring

2019-2020: Continued struggles with declining coal demand and COVID-19 pandemic impacts



Note: Prices are adjusted for splits and approximate for end of each year. 2024 price is as of September.

Source: carbon tracker

Greenwashing

Reputation risk

As companies increasingly advertise their green credentials, the risk of greenwashing becomes a significant reputational chalenge. The European Commission found that 42% of environmental claims were exaggerated, false, or deceptive

Background: VW admitted in 2015 to installing software in diesel engines to cheat on emissions tests.

Consequences:

Share Price: Dropped nearly 30% in the days following the scandal's exposure.

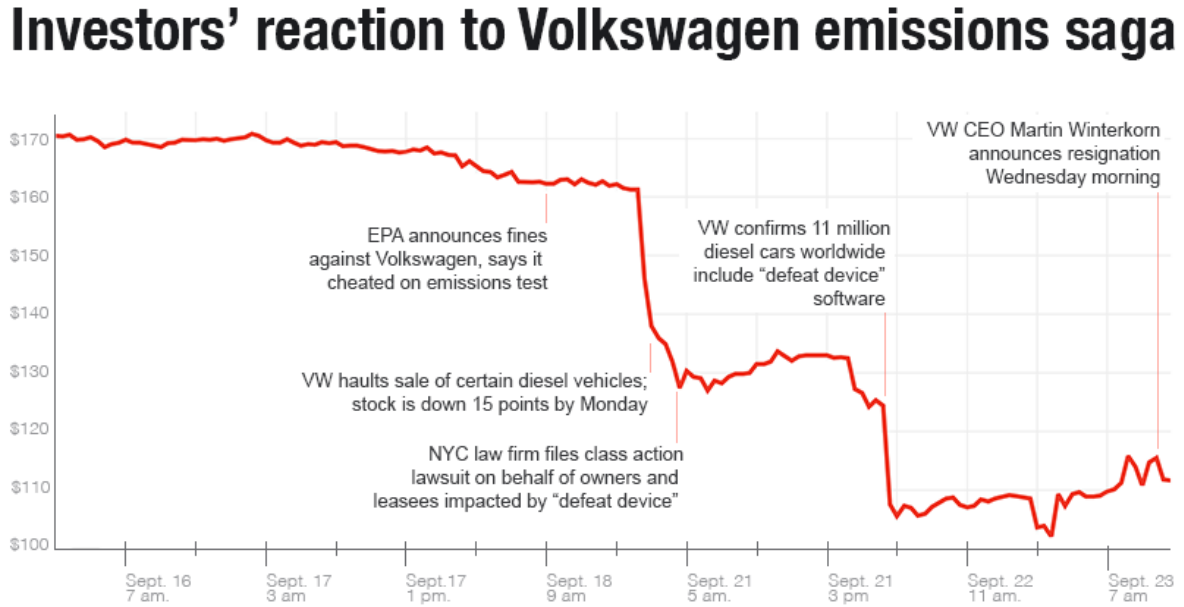
Fines and Costs: VW faced over $30 billion in fines, vehicle buybacks, and settlements.

Sales Impact: Initial sales decline, particularly in the U.S., but VW has since recovered, shifting focus to electric vehicles.

Reputation: Significant damage to brand trust and environmental credibility, leading to a major overhaul in corporate governance and sustainability commitments.

German automaker Volkswagen has seen its stock price tumble about 30% since the Environmental Protection Agency announced that the automaker manipulated software to hide the emissions its cars produce.

#Dieselgate



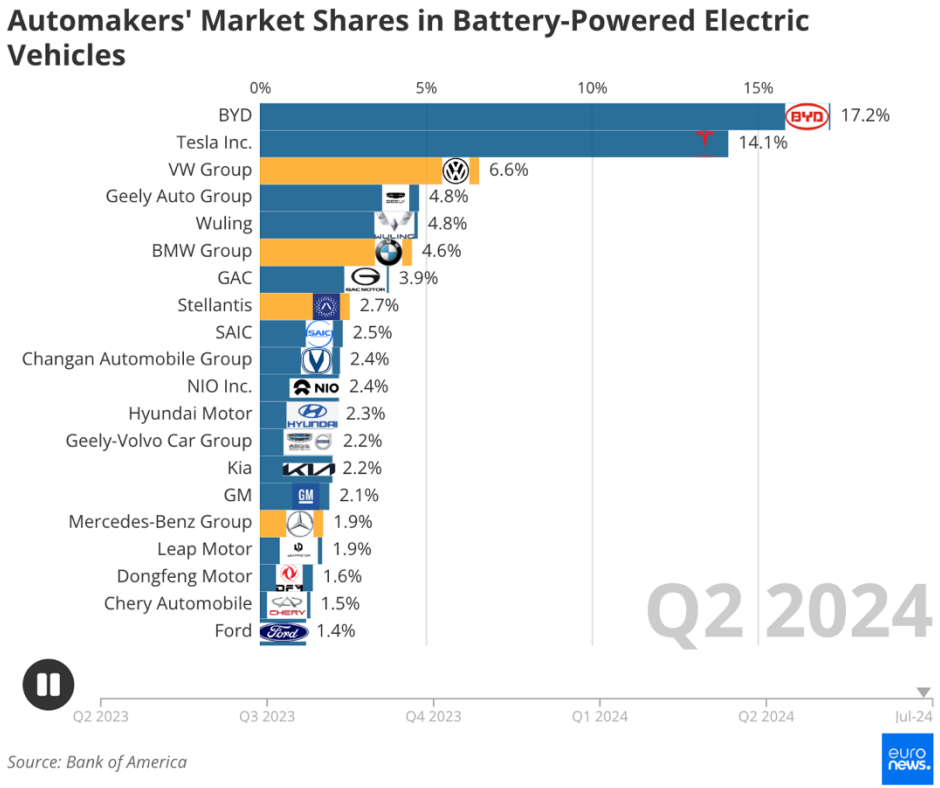
Low carbon technology and changing in customer behavior

Market & technology risk

Technology risk in the automotive sector involves the threat of traditional combustion engine vehicles being replaced by lower emission alternatives, such as electric vehicles (EVs). This shift is largely driven by growing climate change awareness among consumers and stringent environmental regulations, compelling automakers to innovate or risk obsolescence.

Big automakers are being forced to rethink their EV plans

- Founded in 2003, Tesla disrupted the automotive industry with high-performance electric vehicles, appealing to a growing consumer base concerned with climate change.
- Tesla quickly captured significant market share globally and become the most valuable car maker in the world
- In response, global automotive giants are accelerating their own EV strategies to compete in the evolving market landscape.



Germany's auto industry prepares for job losses in electric transition

- Germany's auto industry is transitioning towards electric vehicles (EVs), which could result in the loss of 186,000 jobs over the next decade.
- Volkswagen is closing three plants in Germany, and Audi is halting production in Belgium.
- High energy costs in Europe, which are four times higher than in China and the US, are a significant challenge for the industry

OPPORTUNITY

Green building

Resource efficiency and energy source

Greenest building in the world

Leading the Way in Green Building Innovation: Showcasing best practices with a comprehensive approach to sustainable design and urban resilience, incorporating several innovative strategies and technologies

- **Design Construction**
  - Net-zero energy
    e.g., solar PV (230 MWh/yr)
  - Water conservation
    e.g., rainwater collecting, grey water & black water treatment
  - Material selection
    e.g., avoiding the use of materials contain chemicals harmful to humans & environment
- **Energy Efficiency**
  - High-performance windows
  - Super-insulated building envelope
  - Energy recovery ventilators
- **Sustainability Certifications**
  - Living building challenges
  - LEED Platinum

Decarbonization

Resource efficiency, energy source, and supply chain engagement

Walmart report that it has benefited from the mitigation strategy by more than $1 Billion annually.

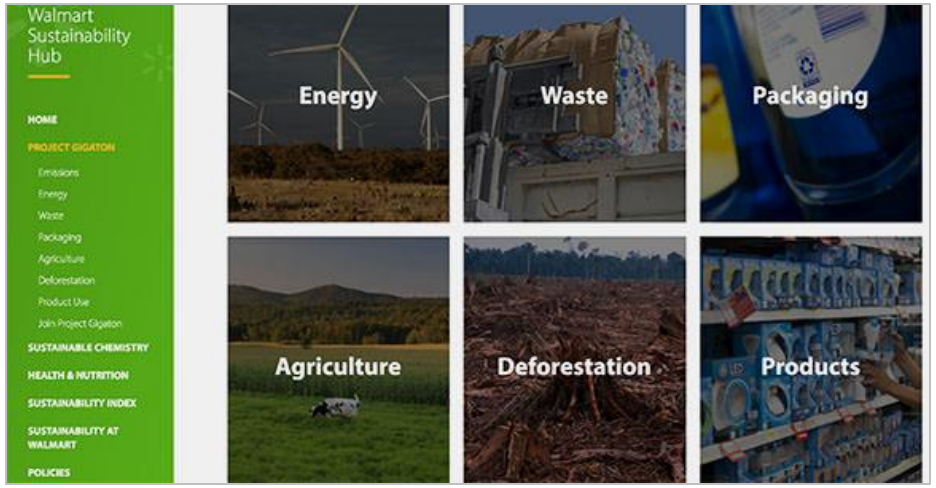
Walmart helped its supplier delivered a 1 Billion tCO_2e reduction so far

Engaging with the supply chain presents a significant opportunity for companies to drive climate action and resilience. This approach not only fosters collaboration and innovation but also enhances the company's brand image, customer loyalty, and access to green investments.

Launched in 2017, Walmart initiated Project Gigaton to inspire suppliers to reduce greenhouse gas emissions .Over 4,500 suppliers have engaged, reporting more than 1,000 million metric tons of reduced emissions:

Project Gigaton equips suppliers with:

- Education,
- Emission calculation tool
- Target setting assistance
- Decarbonization solutions
- Supplier financing programs



Planted-Based Food

Products and Services

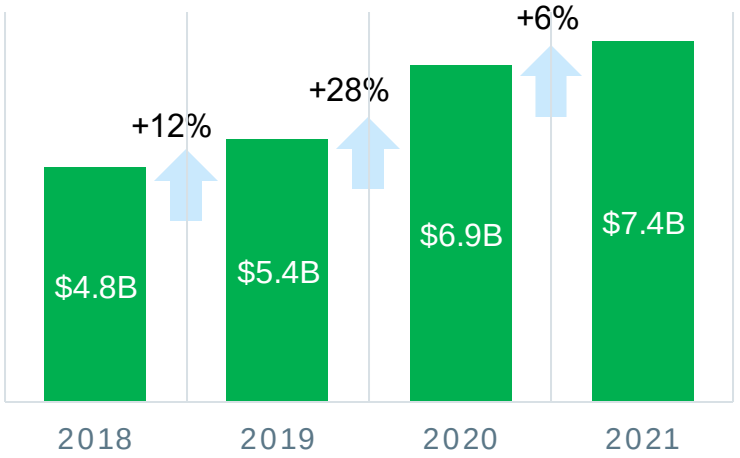
Low-emission products and services provide environmentally friendly alternatives to traditional offerings, reducing greenhouse gas emissions, aligning with shifting consumer preferences towards eco-friendly options, and enhancing brand reputation and competitiveness in a sustainability-conscious economy.

Plant-based foods market could make up to 7.7% of the global protein market by 2030[1]

- By 2050**USD**, dietary changes towards plant-based diets could free up several million square kilometers of land.
- Environmental footprint is the crucial reason why many young generation choose plant-based product over animal-based product.
- In 2022, the global market for plant-based foods was valued at approximately **9.84 billion**.

From 2019 and 2022, prior to the COVID-19 pandemic, the sales growth of plant-based foods in U.S. exceeded that of both animal-based foods and total food.

Growth of plant-based market in U.S.

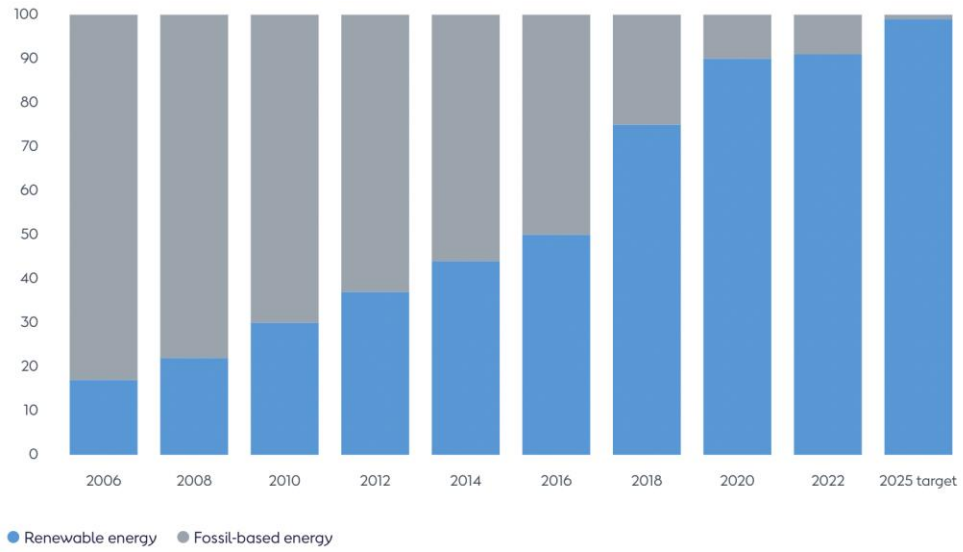


Business Transformation

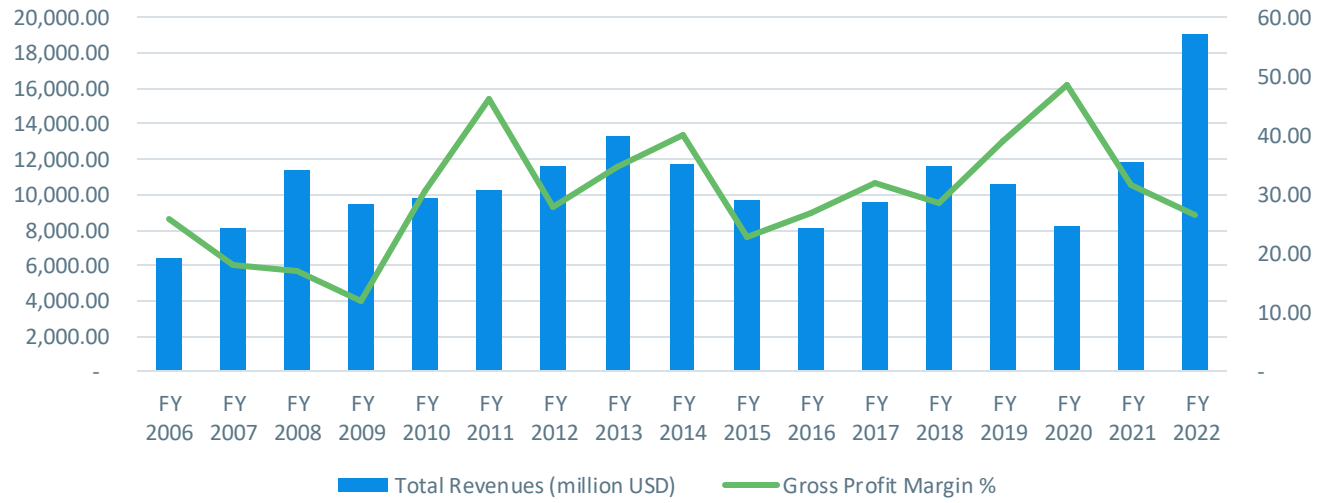
Resilience

formerly known as DONG Energy (Danish Oil and Natural Gas), dramatically shifted its business model from fossil fuels to become a global leader in offshore wind energy. This pivot involved divesting its upstream oil and gas business and investing heavily in wind power, reducing its carbon emissions by over 80% since 2006. Ørsted has been recognized as one of the most sustainable companies globally.

Share of renewable energy (Since 2006)



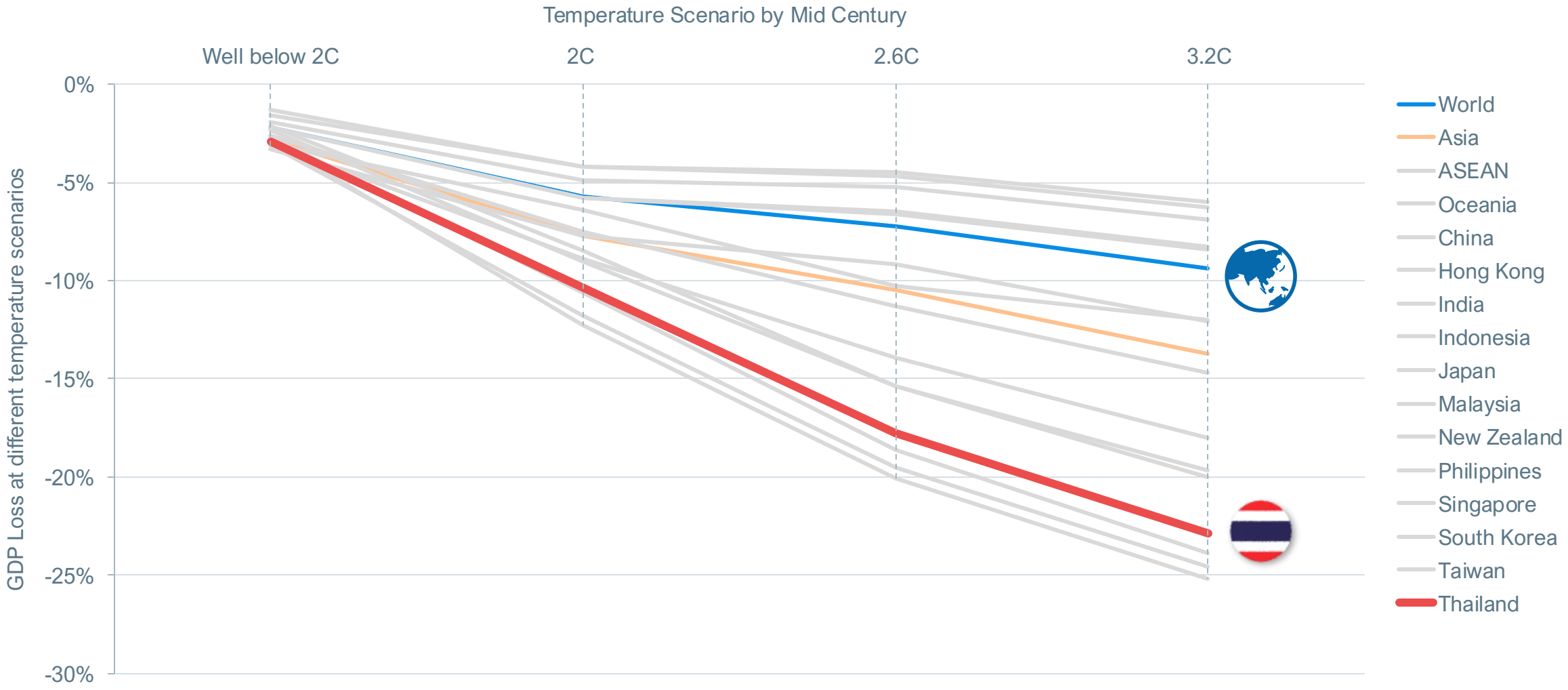
Financial performance (since 2006)



Source: Company's public disclosure

THAILAND CONTEXT

Thailand is highly vulnerable to physical risk



Source: SwissRe, Moody's Analytics, Probable Future

Impacts of Climate Risks to Economy and Financial System

MOODY'S

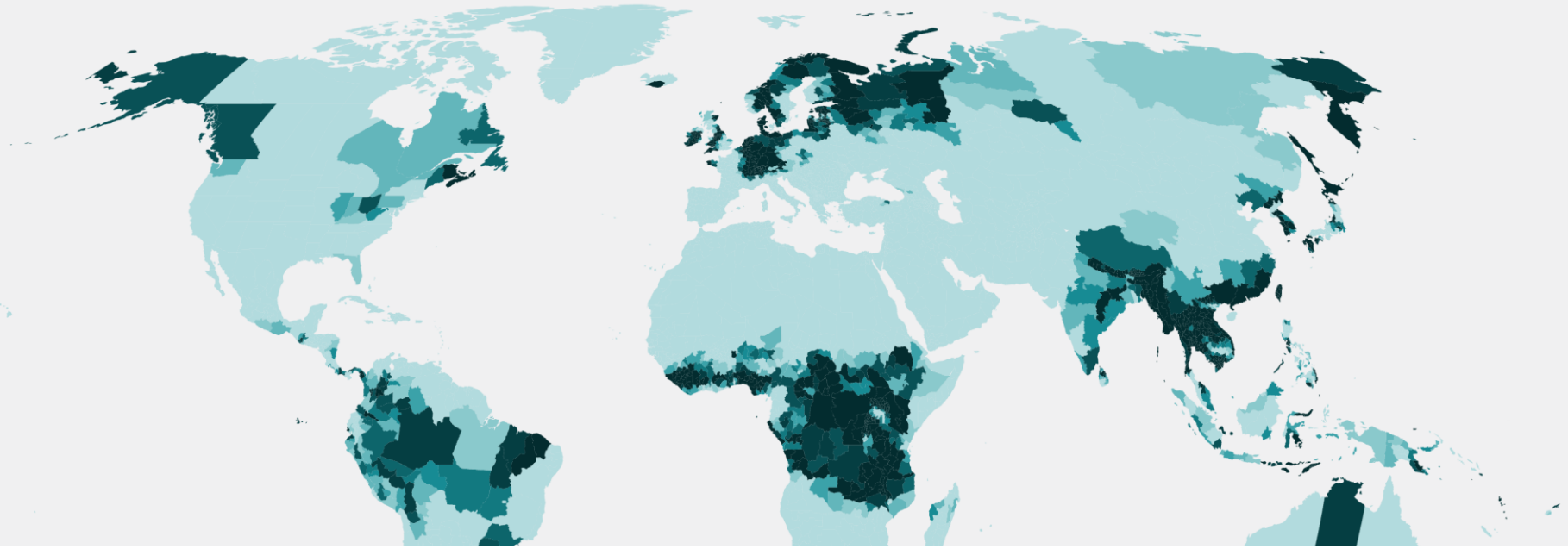
Financing the transition | **Measuring climate losses** | Climate and creditworthiness | Net zero vs current policies | Climate investment scenarios | Finding a solution

Percent of GDP with high risk for extreme precipitation **in 2040**

Click on land to zoom. Press ESC to zoom out.

0 20% 40% 60% 80%

High risk – High and rising exposure
Red flag – Most highly exposed with high potential for negative impacts



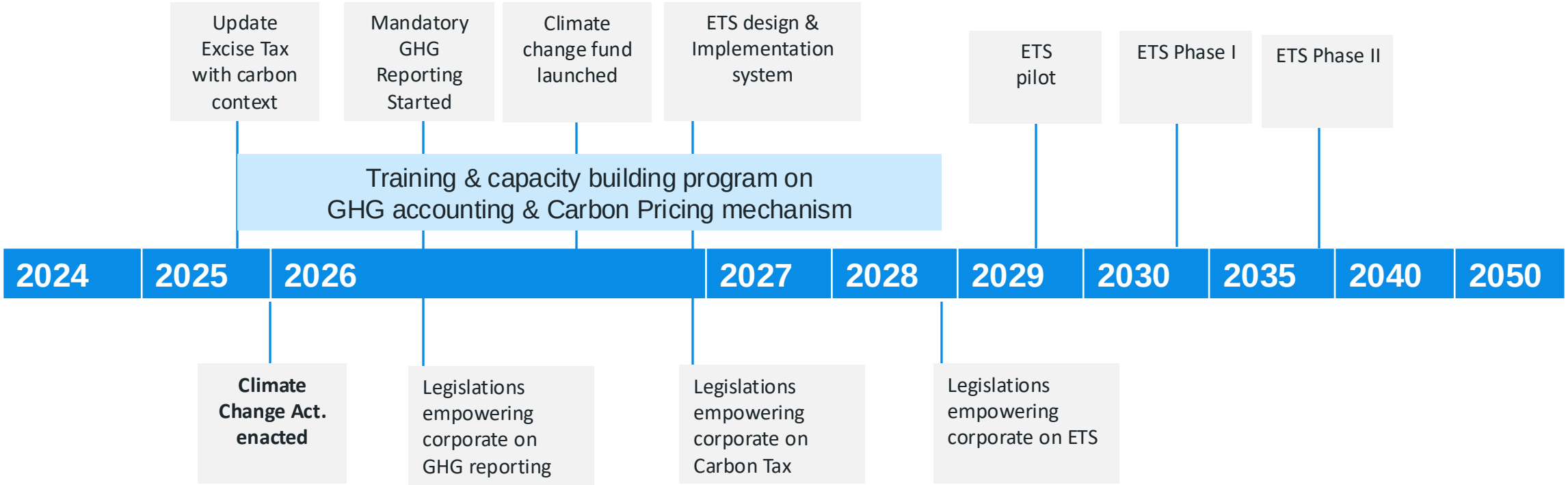
Source: Moody's

Thailand Climate Change Act.

Anticipated to be implemented within 1 - 3 years

Thailand's draft Climate Change Act is currently under development, with public hearings conducted in early 2024 and the final version expected to be submitted to the cabinet by June 2024. The act aims to establish mechanisms for reducing greenhouse gas emissions, including mandatory reporting and an emissions trading system, and is anticipated to be implemented within 1–3 years, depending on the legislative process.

Expected Timeline



Source: Norton Rose Fullbright, Green and Blue Planet Solutions

The Carbon Border Adjustment Mechanism (CBAM)

A cross-border carbon tax to prevent carbon leakage for selected import sectors

The Carbon Border Adjustment Mechanism (CBAM) is an EU policy to prevent “carbon leakage,” where companies shift carbon-intensive production to regions with weaker climate policies. CBAM requires importers to buy certificates priced according to the EU Emissions Trading System (ETS) carbon rate, aligning import carbon costs with EU standards and encouraging global emissions reduction.

Sector	 Cement	 Steel	 Aluminum	 Fertilizer	 Sector	 Sector

1 October 2023

Transitional Period (~ 2.25 years)

- “Learning Phase”
- CBAM Importers are required to report a set of data including embedded emissions
- There is **no payment** yet
- **No verification** on embedded emission is required

1 January 2026

Definitive Period

2026 – 2033 (8 years)

- **Third Party Verification** on embedded emission is required
- Embedded Emissions for CBAM Goods will gradually be covered by the CBAM Obligation
- Free Allocation under EU ETS is gradually phased out

1 January 2034

Beyond 2034

- 100% of Embedded Emissions of the CBAM Goods will be covered by CBAM Certificates
- **No Free Allocation** will be given under the EU ETS for these goods

Source: EU Commision

Leading Thai companies recognized the potential severity

Once again, Thailand is very vulnerable to climate risk

		Banking	Energy and Utilities	Food & Bev	Energy and Utilities	Electronics	Construction Materials	Agro-industrial and Food	Retail	Food and Beverage
	Report	TCFD 22 CDP 22	TCFD 22	TCFD 22	TCFD 22	TCFD 22	TCFD 22	TCFD 23	TCFD 22	TCFD 22
Physical risk	**Acute**	Drought or flood (S)	Extreme heat and water stress (E)	Extreme heat and water stress (E)	Drought (N, E)	Extreme weather (E)	Flood (E)	flood (E)	Flood	Extreme heat (E)
	Chronic	Changing precipitation patterns (L) (Li)				Changing precipitation patterns (E)		Rising mean temperature (E)		
Transition risk	**Policy & legal**	Carbon pricing mechanisms (S)	Carbon pricing mechanisms (E)	Carbon pricing Mechanisms (N)	Change in climate related law regulations (N)	Renewable energy regulation (E)	Carbon tax, CBAM (N)	Carbon pricing Mechanisms (E)	Regulations on plastics	Carbon pricing Mechanisms (E)
	Technology	Substitution of products (L) (Li)	Change in low-carbon technologies (E)		Change in low-carbon Technology (N, E)	Substitution of existing products (E)	Technology transitioning	Installation of low carbon technology (E)		
	Market	Change in customer behavior (S-L)	Decreasing demand (E)		Change in customer behavior (N)	Highter cost of raw materials (E)	Increasing demand for low-carbon products (N)	Higher cost of raw materials (E)		Customer climate requirements for suppliers (E)
	Reputation	Lending to businesses that are not environmentally friendly (E)	Stranded asset (E)		Change in stakeholder behavior (E)	Stigmatization of sector (E)	Stakeholder's higher expectation (E)			Increasing stakeholder concern (E)

Magnitude of impacts

- High
- Moderate
- Low
- Not classified

Time horizon
(L) Long-term
(M) Medium-term
(S) Short-term

Likelihood
(C) Virtually certain
(VL) Very likely
(Li) Likely
(ML) More likely than not
(AL) About as likely as not
(U) Unlikely
(VU) Very unlikely

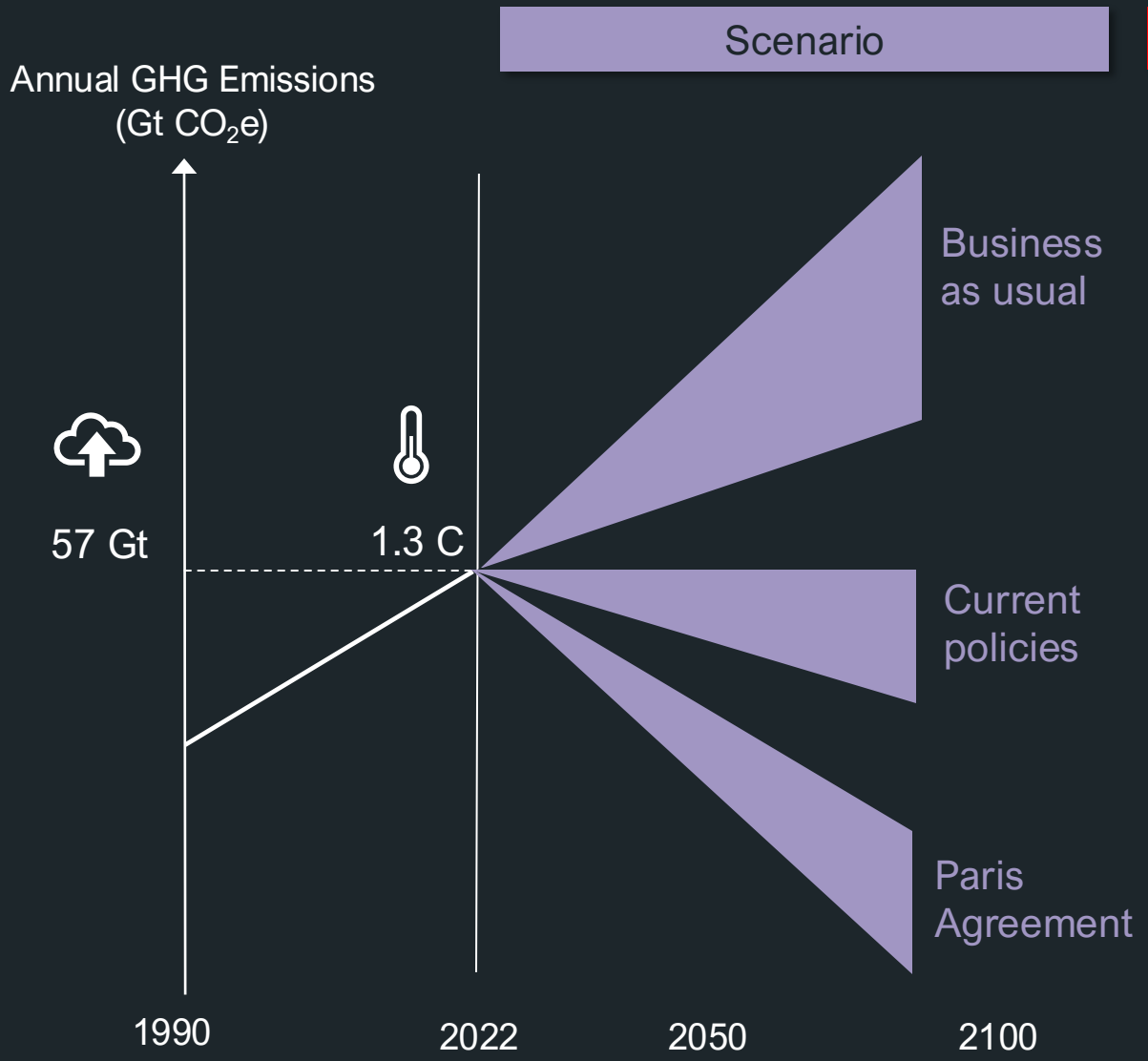
Impact Assessment
E = Qualitative
N = Quantitative

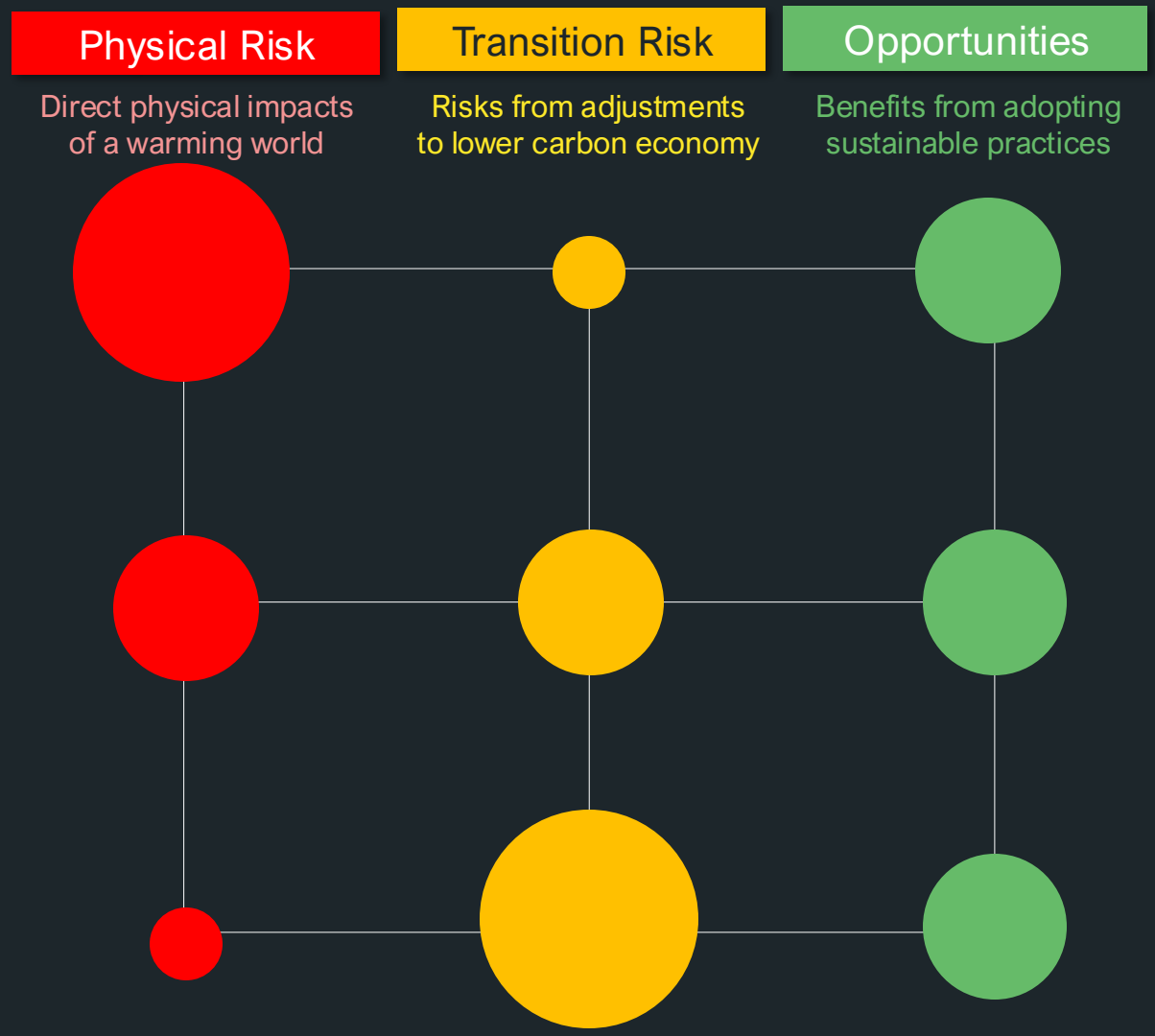
Source: Public disclosure

Part 3

CLIMATE STRATEGY

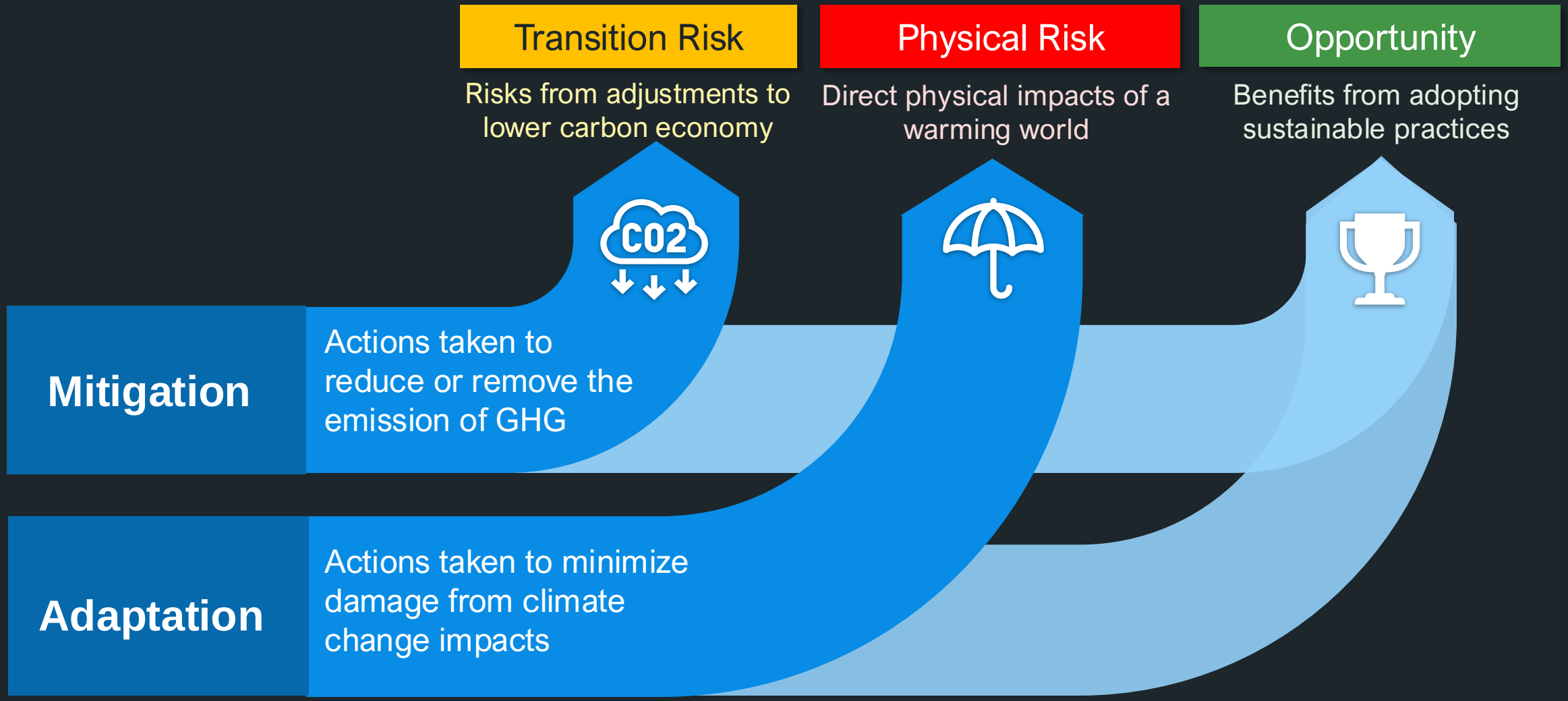
Scenario Analysis



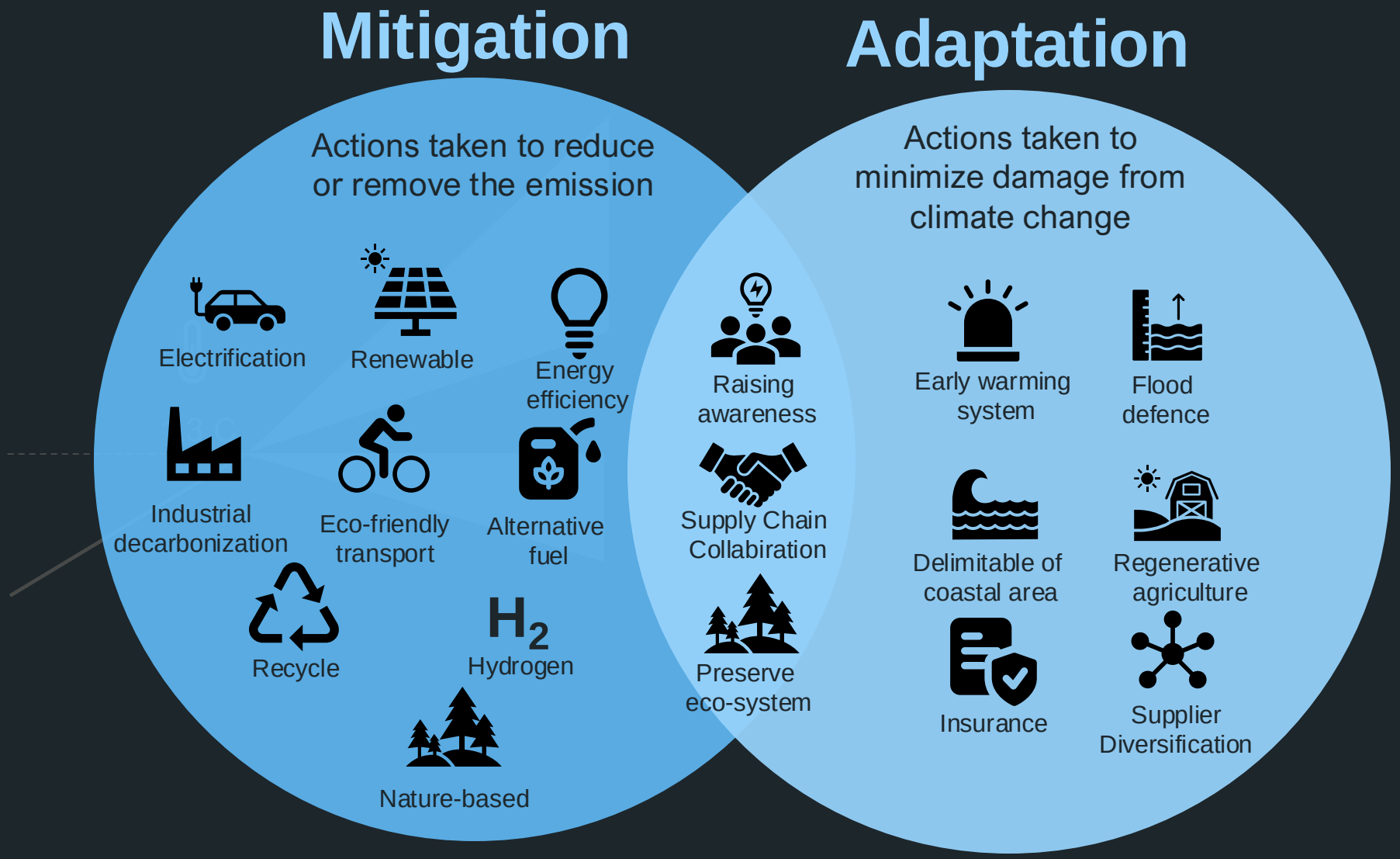


Source: Climate Action Tracker

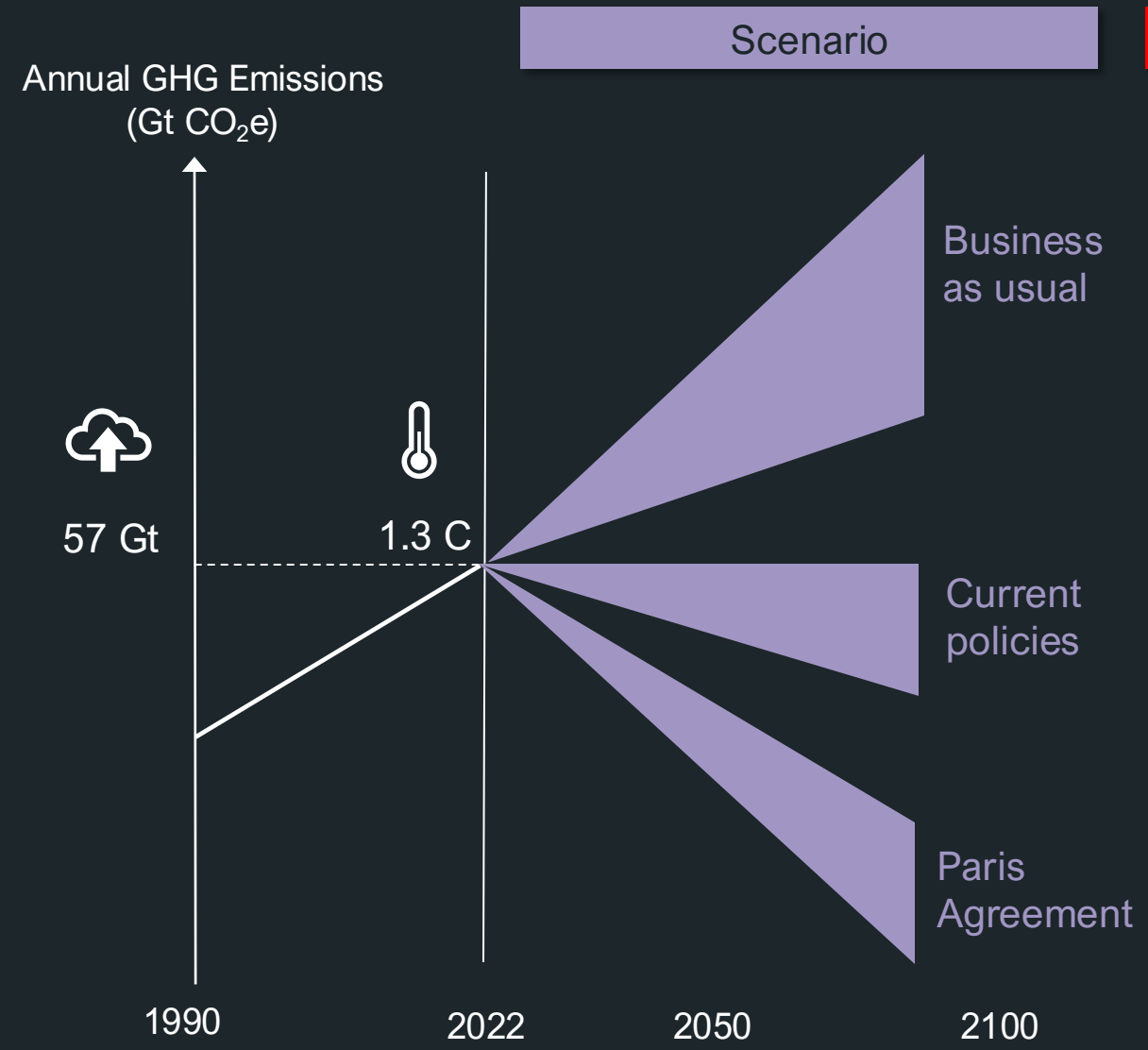
Response: Mitigation & Adaptation

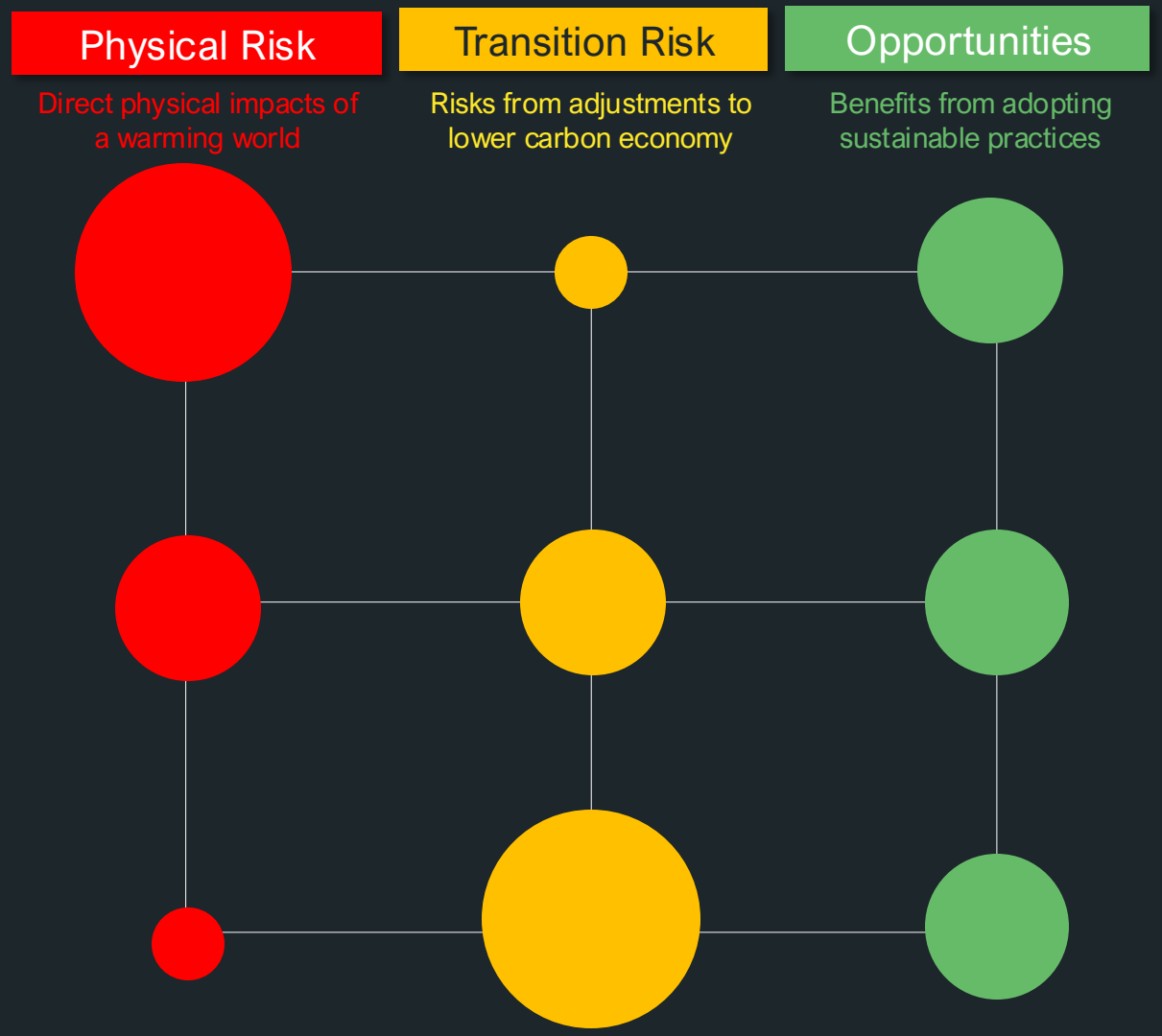


Response: Mitigation & Adaptation



Resilience





Source: Climate Action Tracker

Part 4

CLIMATE CONQUEST

Climate Conquest

A climate strategy simulation game for executives v.7

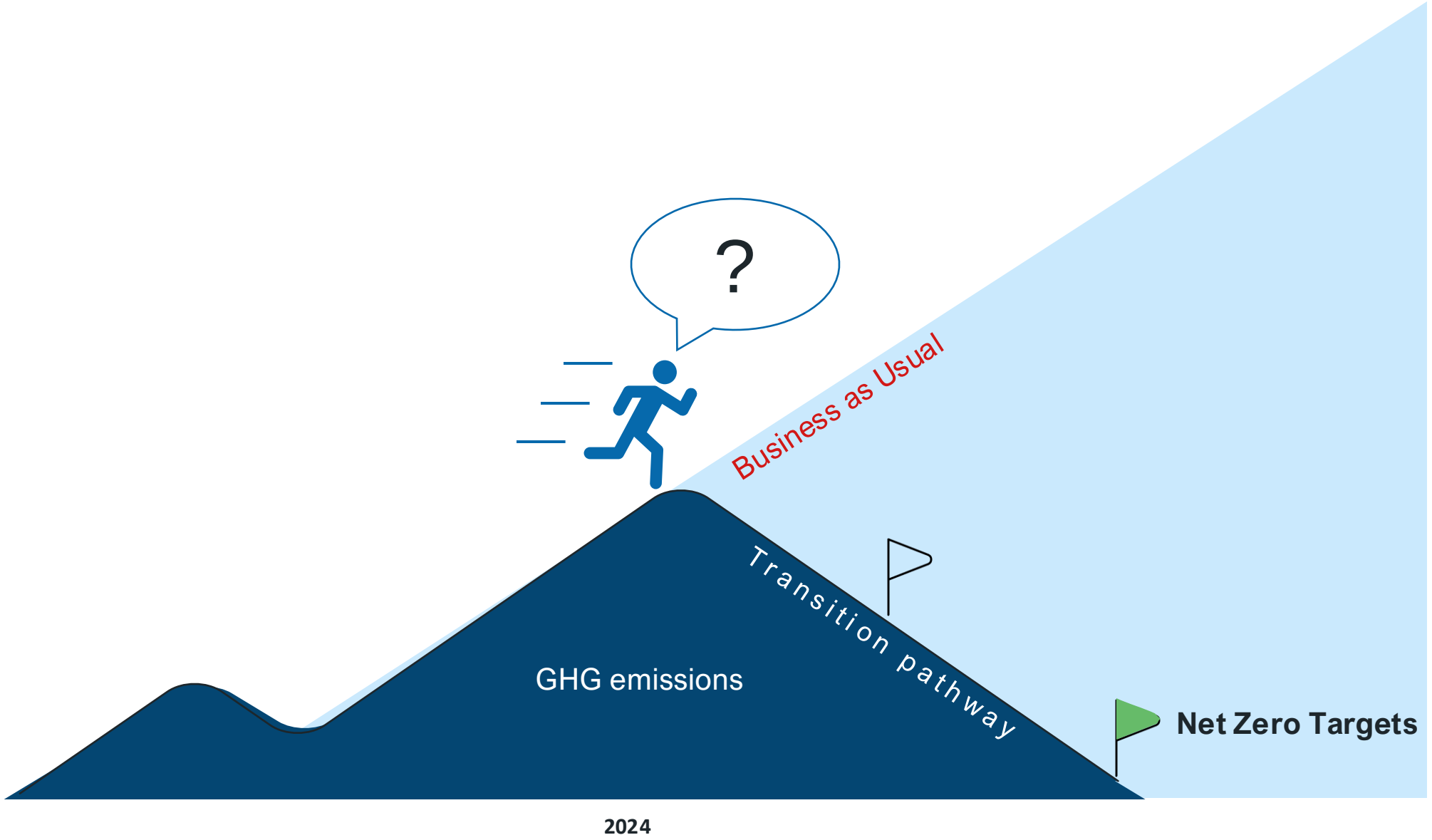
By P24 solutions

P24

Part 5

JOURNEY TO NET ZERO : 6-STEP FRAMEWORK

Where are you in the journey?



The journey is an iterative cycle, focusing on near-term priorities while staying on course toward long-term objectives

Net Zero Transition Cycle

1 Measure Emissions	2 Assess Risk and Oppotunity	3 Set Targets	4 Formulate Strategy	5 Implement Actions	6 Communicate

• Scope 1, 2, and 3
• Product footprint
• Verification
• Other impacts to nature
• Data quality management
	• Climate change, policies, regulations, and trends
	• Stakeholders
	• Risks and Opportunities
	• Scenario analysis
	• Resilience
		• Net zero ambitions
		• Emissions reduction targets
		  - NDC
		  - Regulatory
		  - SBTi
		  - Customer
		• Other related metrics and targets
			• Mitigation
			• Adaptation
			• Supplier Engagement
			• Products and services
			• Innovation
			• Financial planning
				• Governance, and integration
				• Strategy implementation
				• Performance tracking
				• Continuous improvement
					• Regulatory report
					• Disclosure for investors
					• Customers' expectation
					• Sustainable marketing

Carbon accounting	**Scenario Analysis**	**Climate targets**	**Climate strategy**	**Climate Actions**	**Disclosure Standards**
GREENHOUSE GAS PROTOCOL GHG Protocol Agricultural Guidance GHG Protocol Land Sector and Removals Guidance	ipcc NGFS Central Banks and Supervisors Network for Greening the Financial System	Thailand's Long-term Greenhouse Gas Emission Development Strategy SCIENCE BASED TARGETS DRIVING AMBITIOUS CORPORATE CLIMATE ACTION	TCFD TPT Transition Plan Taskforce	13 CLIMATE ACTION	IFRS S2 TCFD CDP

STEP 6

COMMUNICATE

Communicating climate strategy and actions

Key stakeholders and objectives determine the content of the disclosure

Regulators

SEC has introduced the ONE Report framework, mandating sustainability and governance disclosure for listed companies. This move, aligning with global trends towards increased transparency, imposes evolving mandatory requirements for climate-related disclosure to ensure accountability and promote sustainable investment.

Investors

With the global surge in ESG funds and green financing, disclosures that meet sustainability criteria attract significant investment. ESG and green finance assets, now at $35.3 trillion globally, favor companies with robust ESG practices and climate commitments, channeling capital towards sustainable growth, including in Thailand.

Customers

Globally, consumers and commercial customers prioritize sustainability, driving demand for eco-conscious companies, while large firms mandate green practices from suppliers to reduce supply chain impacts, making climate action disclosures critical for aligning with these preferences, fostering loyalty, and enhancing market share.

Talents

A commitment to sustainability, evidenced through transparent climate-related disclosures, is increasingly important for attracting and retaining top talent. Surveys show that 70% of employees are more likely to choose to work for a company with a strong environmental agenda.

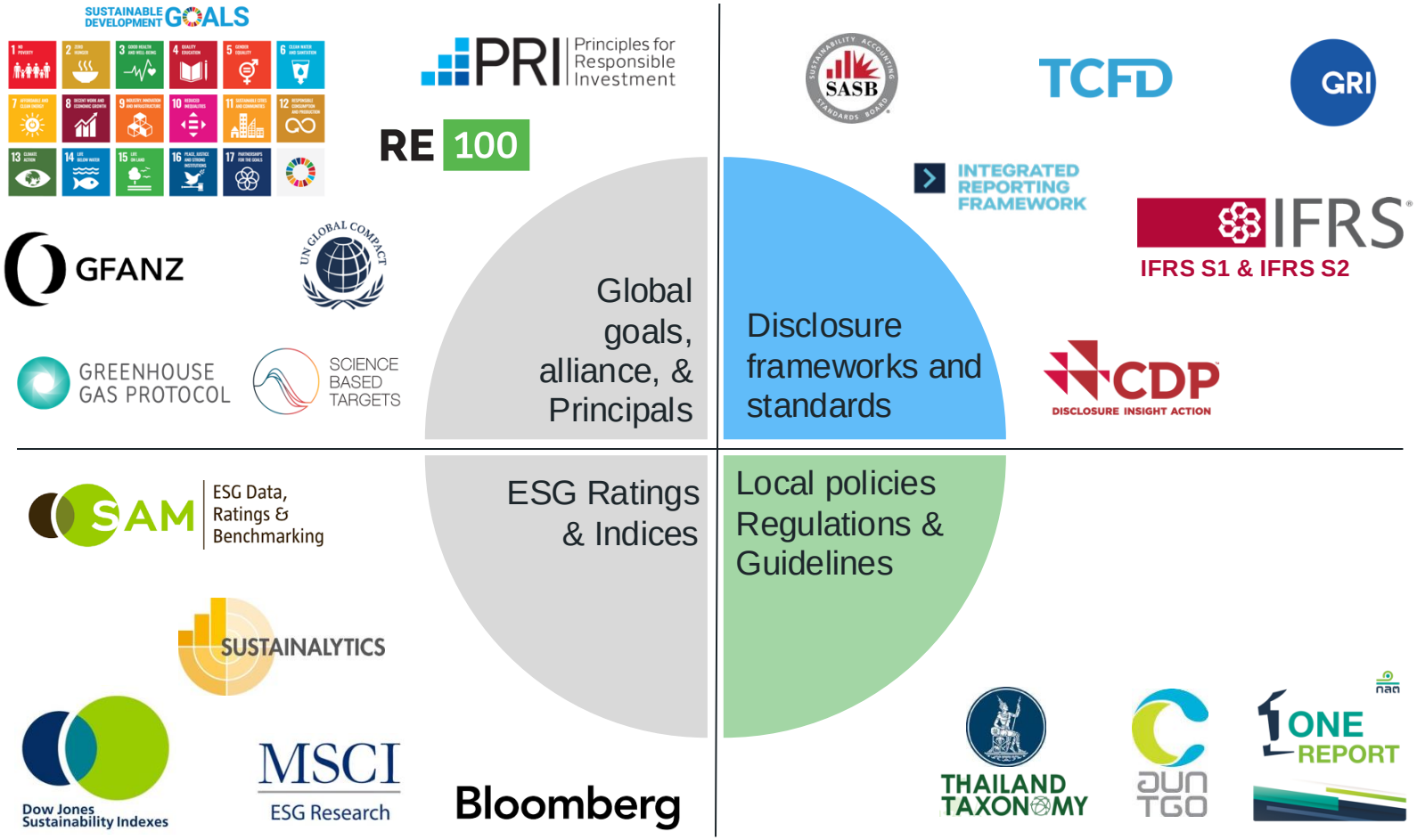
Investors Pay Premium for Climate Disclosure

We also documented that the stock market responds favorably to such disclosures. In the days following a shareholder-induced disclosure of climate-change risks, **the disclosing firm's stock price increases by 1.21% on average** (on a market-adjusted basis). This suggests that investors value higher transparency with respect to climate change risks and that disclosure tends to benefit disclosing companies. Put differently: Investors dislike uncertainty and are willing to pay a premium for less opaque companies.

Harvard Business Review (2023)

There are numerous climate standards and frameworks in use

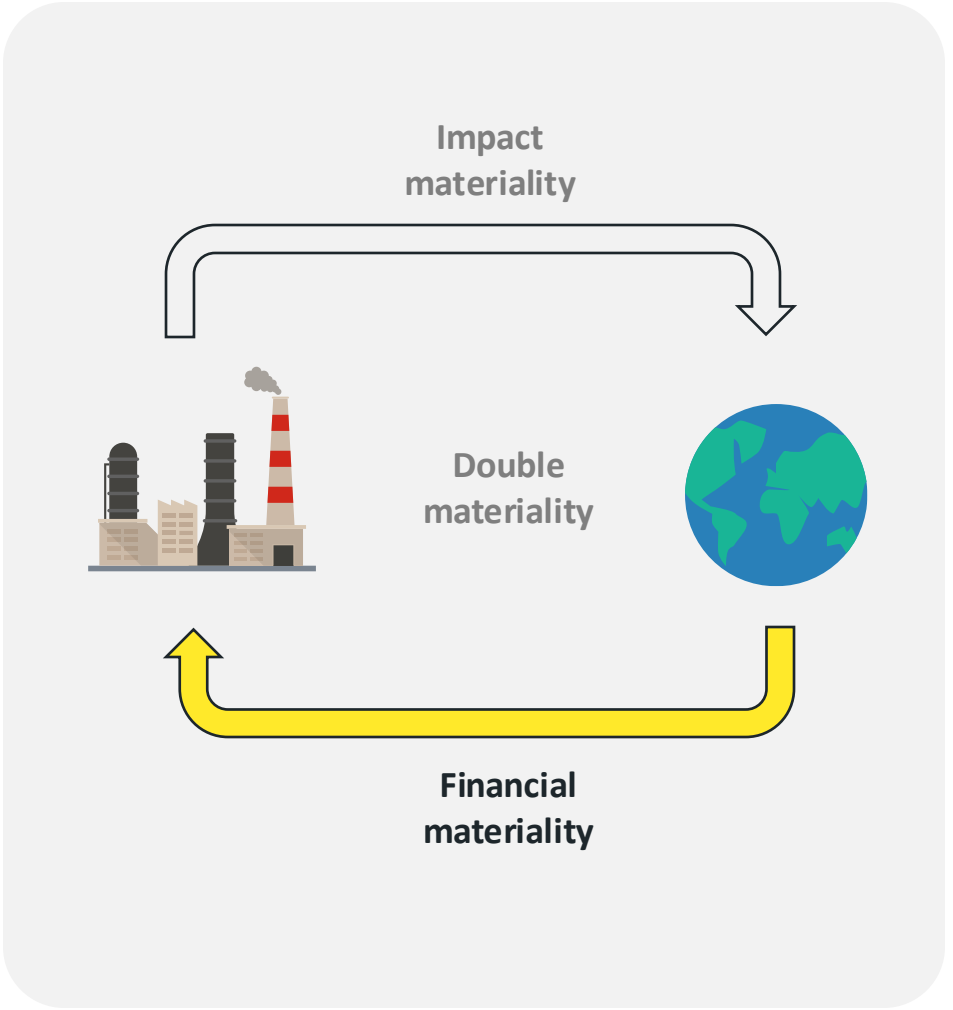
The nature of the business and key stakeholders determine which are applicable



Relevant Climate-Related Disclosure Standards

This assignment focuses on climate-related disclosure standard for capital markets

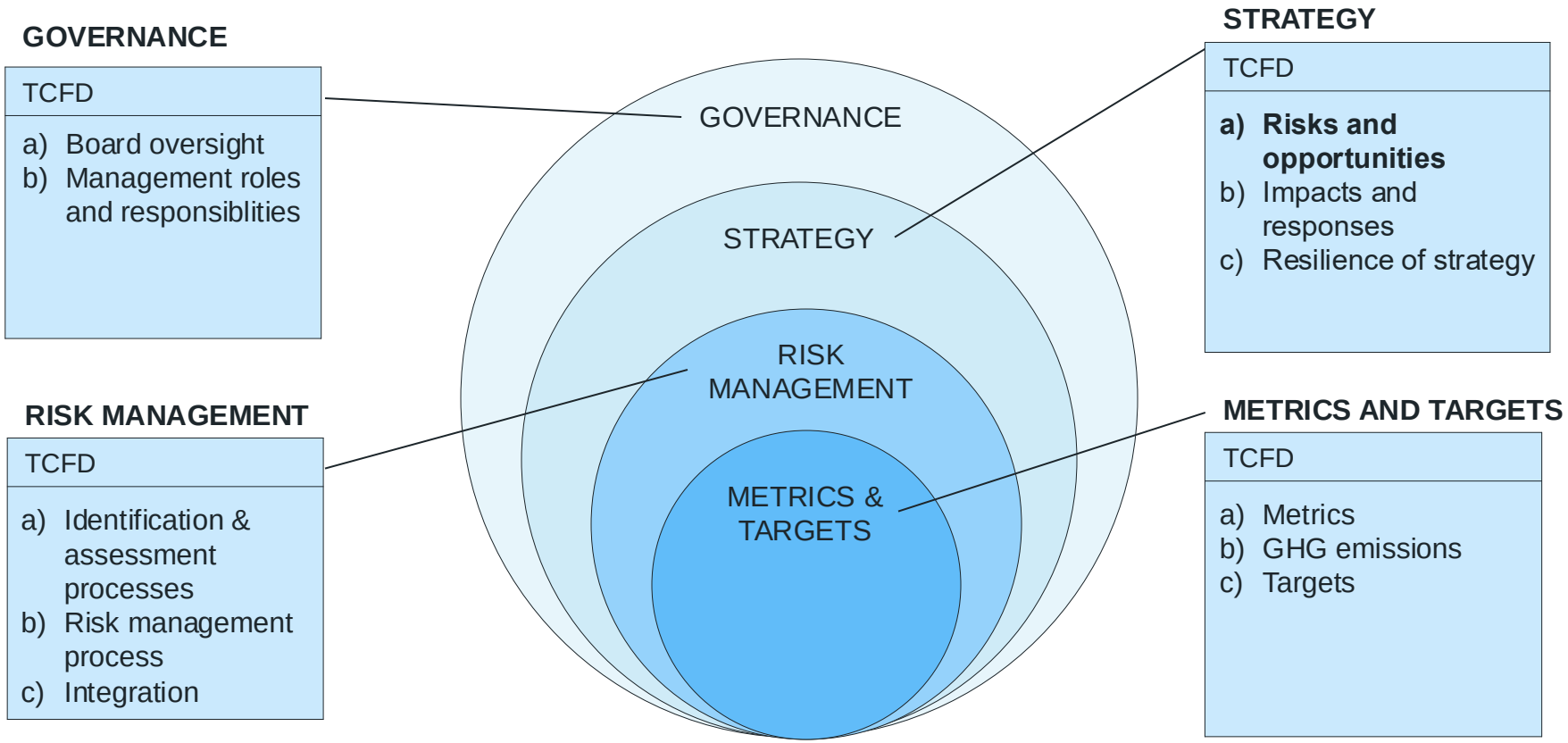
Broader ESG focus	IFRS S1 Sustainability-related financial disclosures	GRI Sustainability information disclosures and reporting
Climate-focus	IFRS S2 TCFD Climate-related financial disclosures	CDP Climate Change Climate information disclosures and reporting
	Financial materiality	**Double materiality**



TCFD

The Foundational Framework of Climate-Related Disclosure

The Task Force on Climate-related Financial Disclosures (TCFD) was established in 2015 to develop consistent climate-related financial risk disclosures. Its recommendations help companies provide critical information to investors and stakeholders about their climate-related risks and opportunities. TCFD has gained widespread adoption globally, with over 3,800 supporters as of 2023. It has become mandatory in several jurisdictions, including the UK, New Zealand, and Switzerland, with more countries and regions moving towards required TCFD-aligned reporting.



IFRS S2 was built on TCFD

IFRS S2 prescribes elements required to be disclosed

Following the disbandment of TCFD by the Financial Stability Board (FSB) in 2023, the IFRS Foundation has assumed responsibility for monitoring the adoption of TCFD recommendations, integrating these into IFRS S1 and IFRS S2. Entities that have previously adopted TCFD recommendations are well-positioned to transition to IFRS S2 compliance. Similarly, entities adopting IFRS S2 will inherently align with the core principles of the TCFD recommendations.

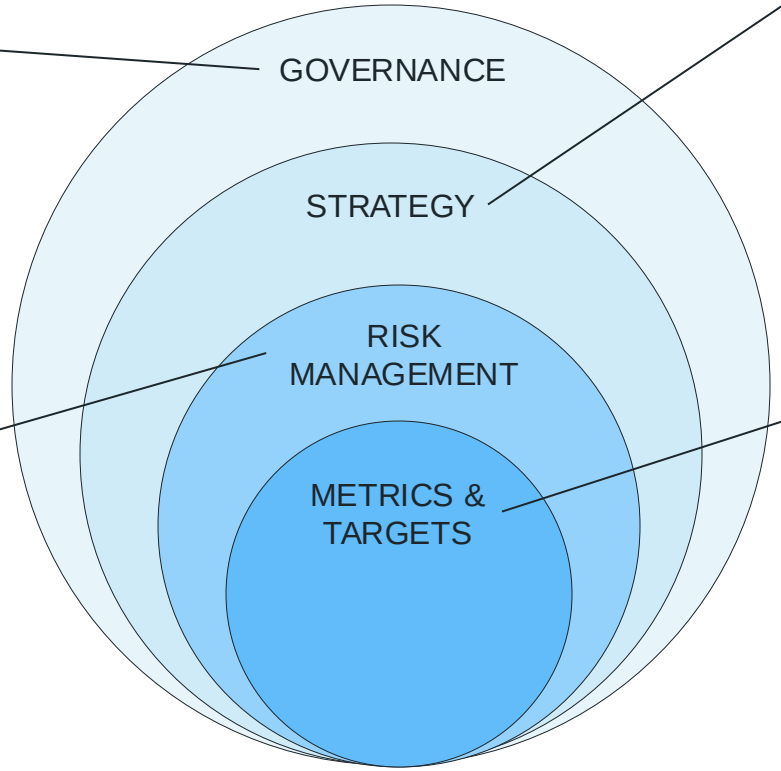
GOVERNANCE

TCFD	IFRS S2*
a) Board oversight b) Management roles and responsiblities	• Identity • Roles & mandates • Oversight • Monitoring • Integration • Competency • Remuneration

RISK MANAGEMENT

TCFD	IFRS S2*

a) Identification & assessment processes
b) Risk management process
c) Integration
	• Processes for
	  ○ Identification
	  ○ Assessment
	  ○ Prioritization
	  ○ Monitoring
	  ○ Opportunity
	• Integration with ERM



STRATEGY

TCFD	IFRS S2*
a) Risks and opportunities b) Impacts and responses c) Resilience of strategy	• Risk and opportunities • Effects to business model and value chain • Financial effects • Responses & plans • Scenario analysis • Resilience assessment • Industry-based disclosure topics

METRICS AND TARGETS

TCFD	IFRS S2*
a) Metrics b) GHG emissions c) Targets	• GHG emissions • Relevant metrics • Vulnerability • Carbon pricing • Targets and monitoring • Carbon credits • Industry-based metrics

“Strategy” Pillar is the Core of S2

It enables users to understand strategy for managing climate-related risks and opportunities

Climate-related strategy and risk management are central to investor concerns in climate disclosure. Investors prioritize understanding how companies integrate climate considerations into their overall business strategy and how they identify, assess, and manage climate-related risks. This focus stems from the need to evaluate a company's long-term resilience and adaptability in the face of climate change.

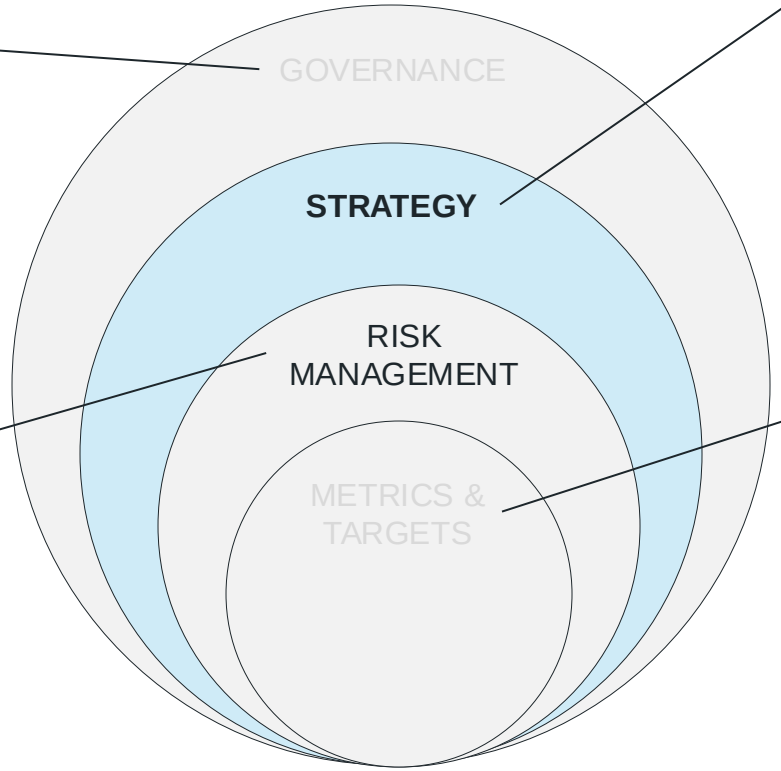
GOVERNANCE

TCFD	IFRS S2*
a) Board oversight b) Management roles and responsiblities	• Identity • Roles & mandates • Oversight • Monitoring • Integration • Competency • Remuneration

RISK MANAGEMENT

TCFD	IFRS S2*

a) Identification & assessment processes
b) Risk management process
c) Integration
	• Processes for
	  ○ Identification
	  ○ Assessment
	  ○ Prioritization
	  ○ Monitoring
	  ○ Opportunity
	• Integration with ERM



STRATEGY

TCFD	IFRS S2*
a) **Risks and opportunities** b) **Impacts and responses** c) Resilience of strategy	• **Risk and opportunities** • **Effects to business** model and value chain • Financial effects • Responses & plans • Scenario analysis • Resilience assessment • Industry-based disclosure topics

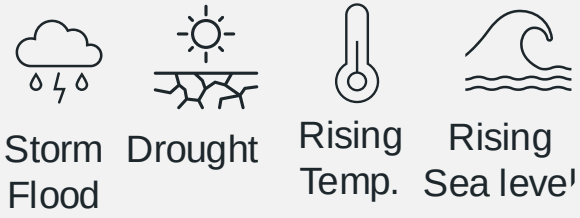
METRICS AND TARGETS

TCFD	IFRS S2*
a) Metrics b) GHG emissions c) Targets	• GHG emissions • Relevant metrics • Vulnerability • Carbon pricing • Targets and monitoring • Carbon credits • Industry-based metrics

“Strategy” Pillar is the Core of TCFD and IFRS S2

It enables users to understand strategy for managing climate-related risks and opportunities

Risk



Opportunity

Resilience

Capacity to adapt
Availability of resources

Scenario analysis

A company needs to use climate-related scenario analysis when reporting on climate resilience

Current and anticipated effects on financials, business model, value chain

Effects (Impacts)

Time horizons: Short Medium Long

Response

IFRS SUSTAINABILITY DISCLOSURE STANDARD

IFRS S2 Climate-related Disclosures

PTT GLOBAL CHEMICAL

JUNE 2024

Sustainability is our business

STEP 1

MEASURE EMISSIONS

Measure Emissions

GHG Accounting

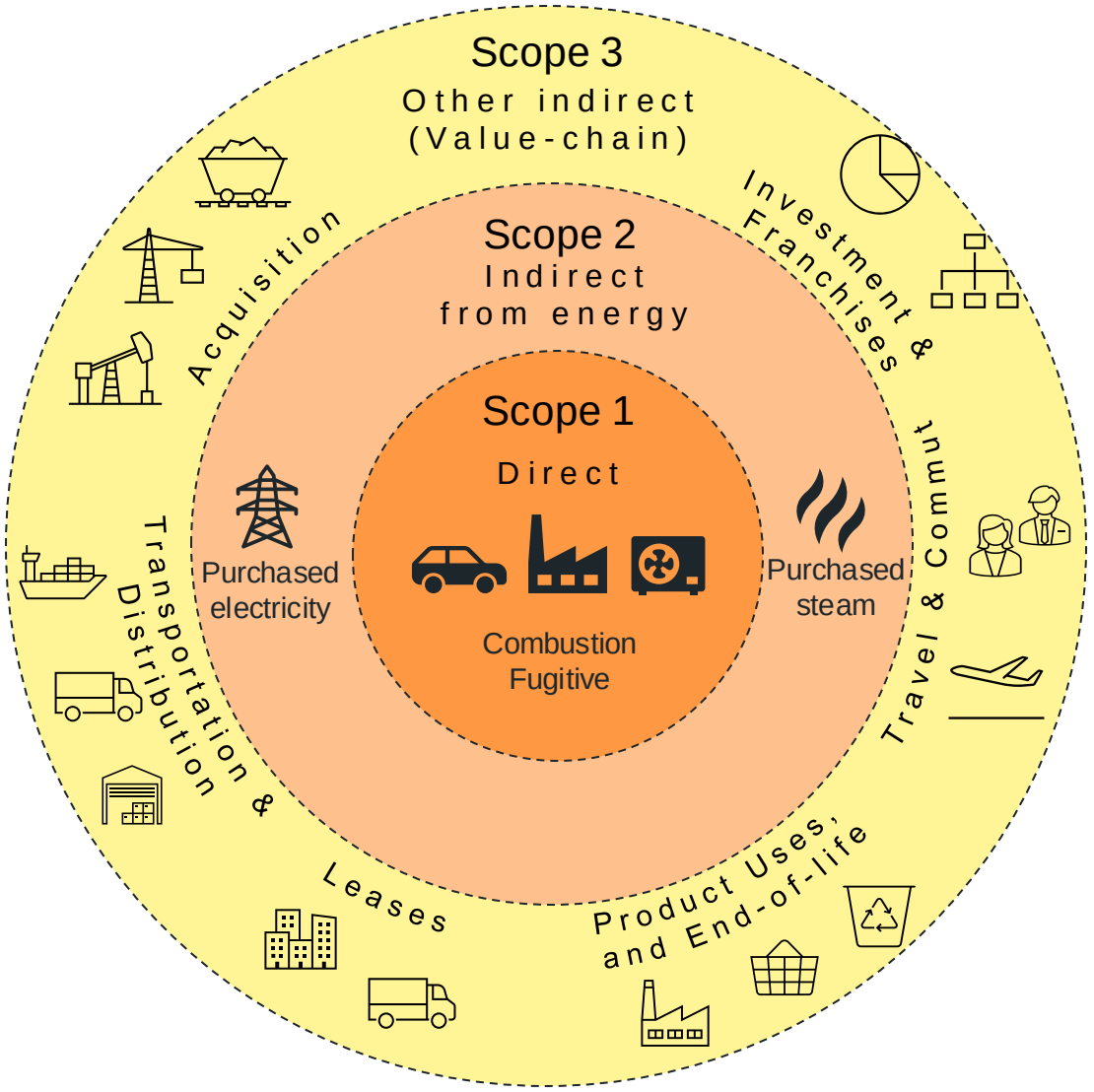
GREENHOUSE GAS PROTOCOL

Key Objectives

1. **Quantify and track emissions** Quantify GHG emissions consistently.
2. **Identify reductions** Pinpoint and mitigate emission sources.
3. **Ensure compliance** Meet regulatory and reporting standards.
4. **Set sustainable goals** Align with net-zero and sustainability targets**.**
5. **Enhance transparency** Build trust with stakeholders.

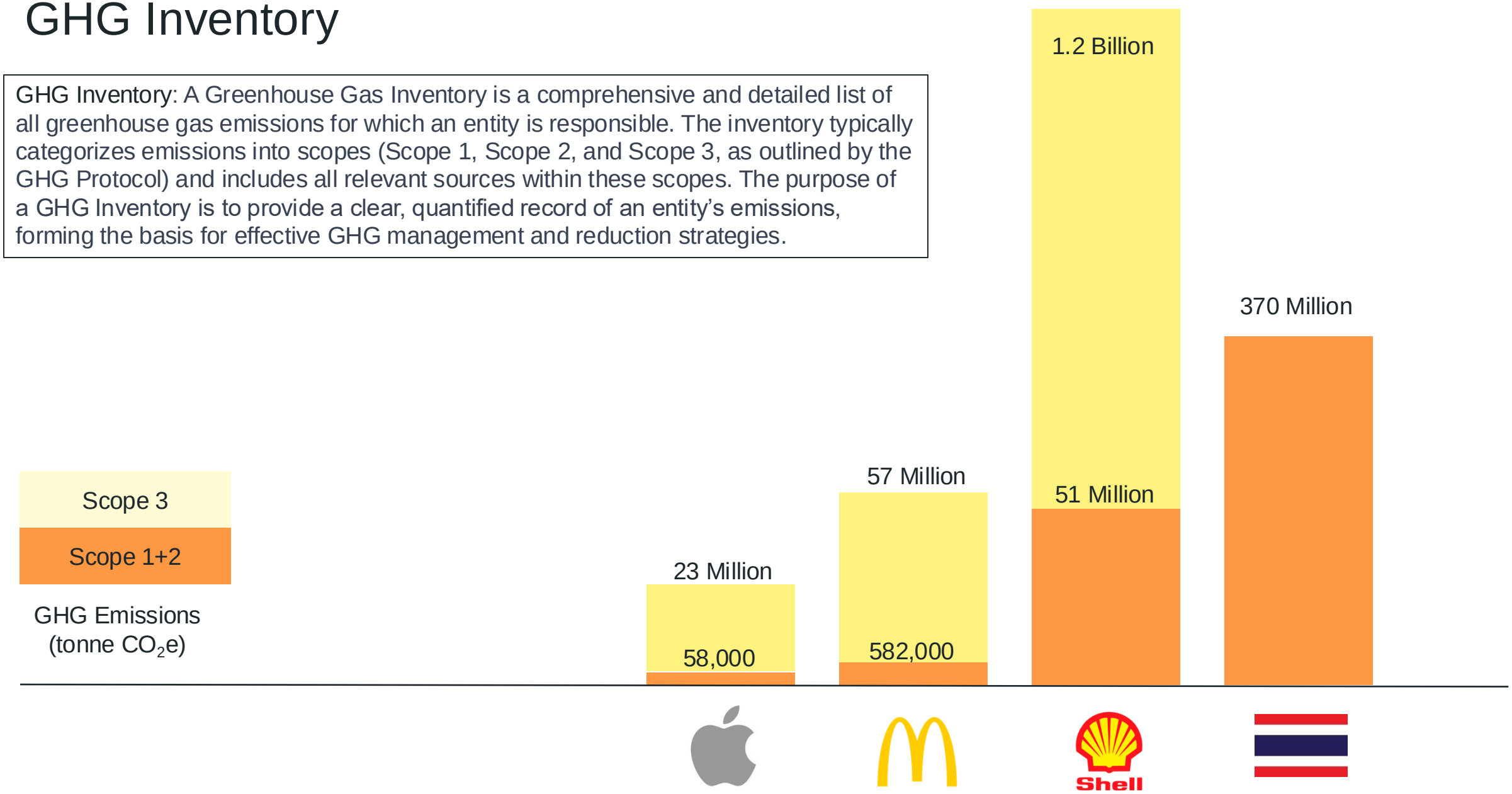
Key Actions

- **Scope 1, 2, and 3:** Quantify GHG emissions across all three scopes
- **Verification:** Obtain third-party verification
- **Relevant Metrics:** Track additional environmental metrics such as water usage and waste generation
- **Hotspots:** Identify areas with the highest emissions or greatest potential for reduction
- **Data Quality Management:** Implement robust data collection, management



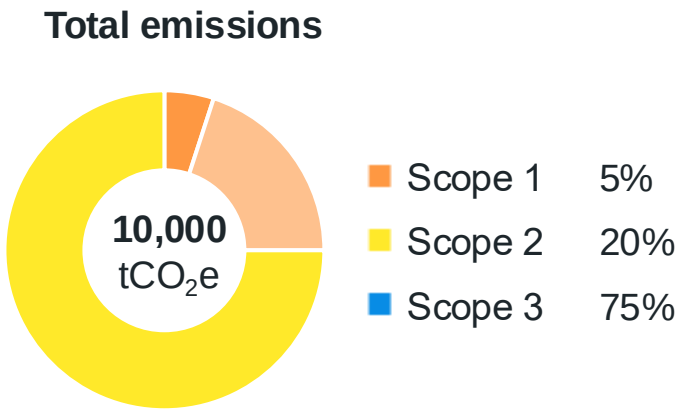
GHG Inventory

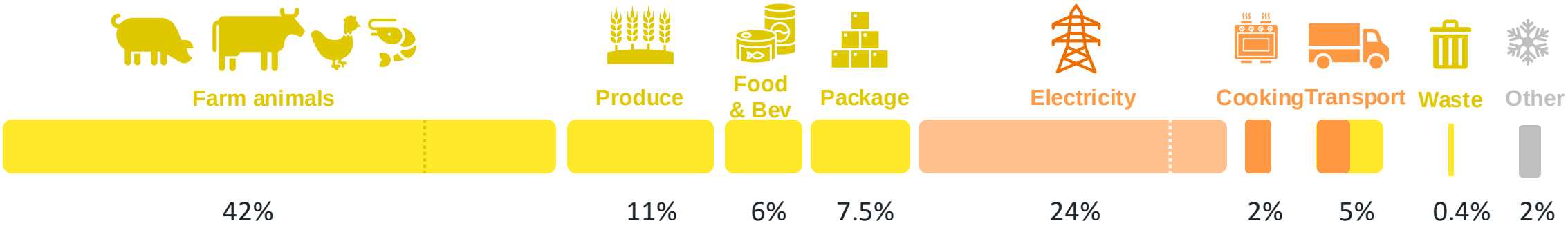
GHG Inventory: A Greenhouse Gas Inventory is a comprehensive and detailed list of all greenhouse gas emissions for which an entity is responsible. The inventory typically categorizes emissions into scopes (Scope 1, Scope 2, and Scope 3, as outlined by the GHG Protocol) and includes all relevant sources within these scopes. The purpose of a GHG Inventory is to provide a clear, quantified record of an entity's emissions, forming the basis for effective GHG management and reduction strategies.



Case Study: Hotpot Restaurant's GHG Inventory

Illustrative Example





Scope 1 & 2

Illustrative Example

Boundary	Category			Source/Activity		Influence	Emissions (tCO_2e)
Scope 1	Stationary combustion	1		Cooking in restaurants	LPG		
500 tCO_2e		2		Cooking in factory and office	LPG		
	Mobile combustion	3		Trucks	Diesel		
		4		Passenger cars	Gasoline		
	Fugitive emissions	5		Air conditioning systems	Refrigerants		
		6		Air conditioning systems	Refrigerants (R-22)		
		7		Septic tank and fire extinguisher	CH_4 and CO_2		
Scope 2	Purchased electricity	8		Appliances in restaurants	Electricity from grid		
2,000 tCO_2e		9		Appliances in factory	Electricity from grid		
		10		Appliances in office	Electricity from grid		

Scope 1 & 2 Hotspot

Illustrative Example

Boundary	Category			Source/Activity		Influence	Emissions (tCO_2e)
Scope 1	Stationary combustion	1		Cooking in restaurants	LPG		
500 tCO_2e		2		Cooking in factory and office	LPG		
	Mobile combustion	3		Trucks	Diesel		
		4		Passenger cars	Gasoline		
	Fugitive emissions	5		Air conditioning systems	Refrigerants		
		6		Air conditioning systems	Refrigerants (R-22)		
		7		Septic tank and fire extinguisher	CH_4 and CO_2		
Scope 2	Purchased electricity	8		Appliances in restaurants	Electricity from grid		
2,000 tCO_2e		9		Appliances in factory	Electricity from grid		
		10		Appliances in office	Electricity from grid		

Hot spot

STEP 2

ASSESS RISKS AND OPPORTUNITIES

Considerations of Climate Risks and Opportunities

Is Climate Change a risk to our company? Or is it an opportutnity?

How should we assess the impacts of climate change?

How do we monitor climate risks and opportunities?

How to response to the future risks and pursure potential opportutnies?

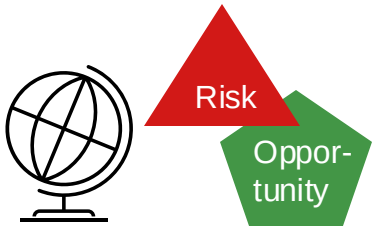
Climate Risk and Opportunity Management

The diagram presents a strategic approach to managing climate-related risks and opportunities, guiding organizations through a systematic process to enhance resilience and sustainability. By integrating scenario analysis, internal engagement, and risk management processes, it ensures a comprehensive response to climate challenges, driving forward-looking business strategies.

Use of scenario analysis Apply diverse future scenarios to inform all stages of the process, enhancing the robustness of strategies.

Internal engagement Foster organization-wide collaboration and commitment to integrate climate considerations into all decision-making.

Integration Fully incorporate climate risk and opportunity management processes into the existing risk management framework and culture.



Identify

Assess
And prioritize

Strategize

Implement
& Monitor

- Understand the global context of climate change.
- Acknowledge its impact on business and sustainability.

- Identify potential climate-related risks and opportunities.
- Use initial screenings based on current knowledge and exposure.
- Determine the relevance of each climate risk and opportunity.

- Assess the financial impacts of identified risks and opportunities.
- Prioritize based on risk tolerance, materiality, and strategic fit.

- Set specific climate metrics and targets.
- Develop responses including decarbonization, adaptation plans, products & services, and resource & financial planning.

- Execute direct and indirect mitigation and adaptation strategies.
- Monitor progress against targets, adjust tactics as needed, and loop back to assessment.

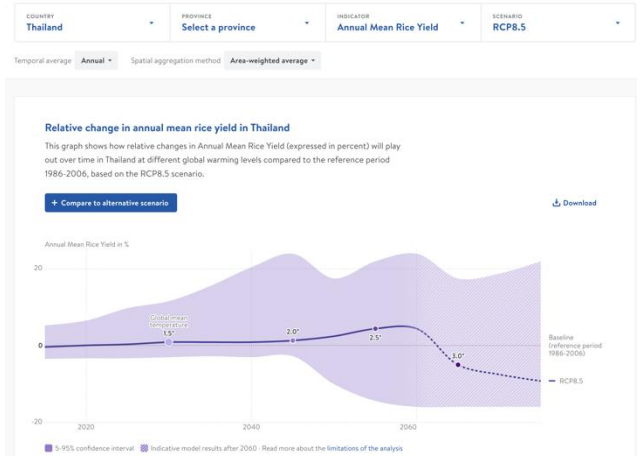
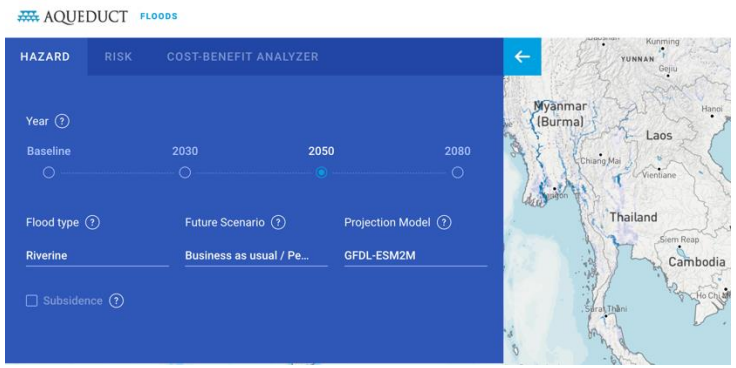
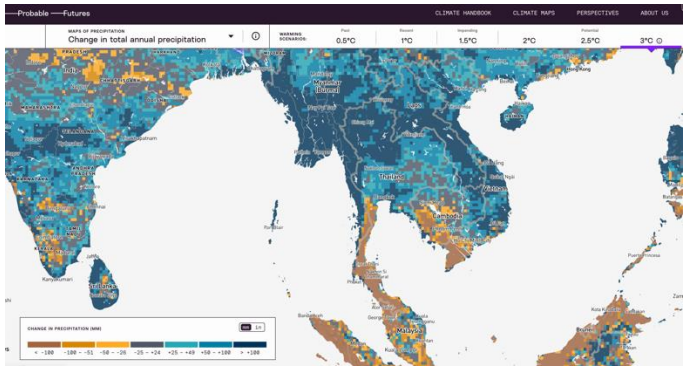
Response

Climate Scenarios

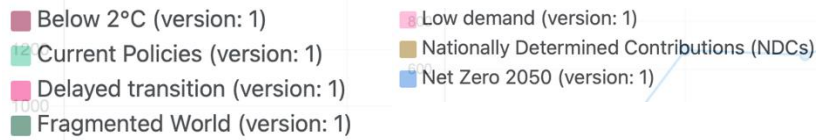
Use of "what if" to model possible futures based on emissions and responses

Scenario	Narrative	Assumptions	Integrated Assessment Model (IAM)	Output
What if.	The narrative links the historical trend with scenario logic of the plausible future to create a compelling storyline.	Important metrics are quantified to reflect the scenario narrative.	A specialized model, consists of an energy-economic model, a climate and environmental models, represents how different systems work and interact.	The scenario assumptions drive the evolution of the plausible future, which is quantitatively reflected in the scenario outputs.
Business As Usual	High emissions & economic growth with minimal climate mitigation.	• Continued reliance on fossil fuels • High economic/population growth	Utilizes climate and economic models to project the outcomes of continued high emissions and growth without significant mitigation efforts.	• **5°C by 2100** • Sea level rise > 1 meter • Extreme droughts, floods, and heatwaves • Substantial negative impacts on global biodiversity and water resources
Stated Policies	Current policy intentions & implementations.	• Gradual increase in renewables • Implementation of announced policies	Models energy demand and supply based on current policies, reflecting moderate transition efforts.	• **2.7°C by 2100** • Renewable mix: 40% by 2040 • Carbon price: $20-40 by 2040 in major economies • Incremental efficiency improvement
Net Zero by 2050	Ambitious global efforts to achieve net-zero CO2 emissions by 2050.	• Rapid decarbonization • Widespread adoption of renewable energy	Combines climate models with economic and energy systems to assess pathways to achieve net-zero emissions.	• **1.5°C by 2100** • Net-zero by 2050 • Renewable mix: up to 70% by 2050 • Carbon prices > $100 by 2030 in major economies

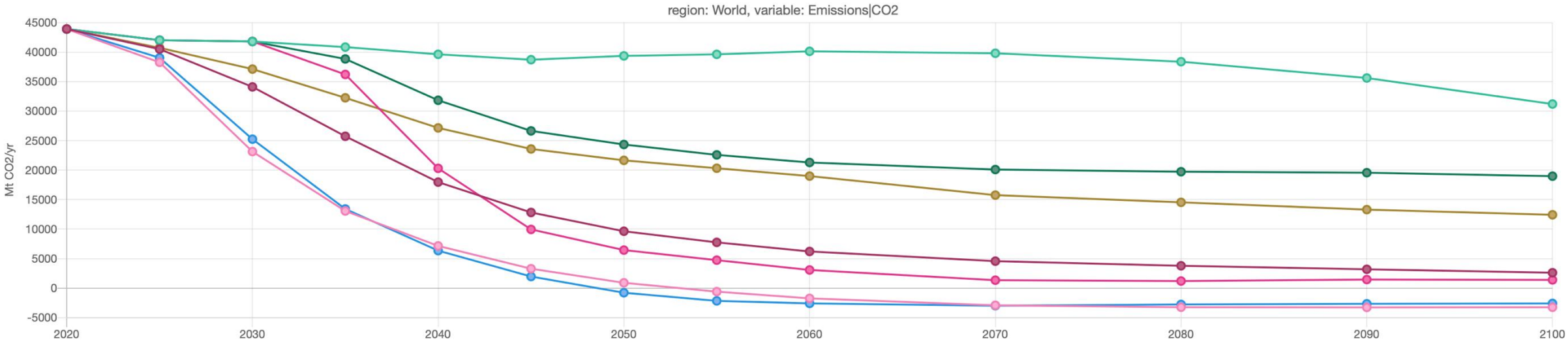
Physical Scenario: Example

Climate Impact Explorer	Aqueduct	Probable Futures
Link	Link	Link
A tool by the World Resources Institute that assesses water-related risks (e.g., scarcity, floods) globally.	An online platform providing localized projections of climate impacts like temperature, rainfall.	A platform providing accessible climate scenario visualizations, aiming to raise public awareness.
Useful for water risk assessments in corporate sustainability, urban planning, and policy.	Best for understanding localized climate risks for adaptation planning and awareness.	Ideal for educational purposes, public communication, and high level risk assessment
		

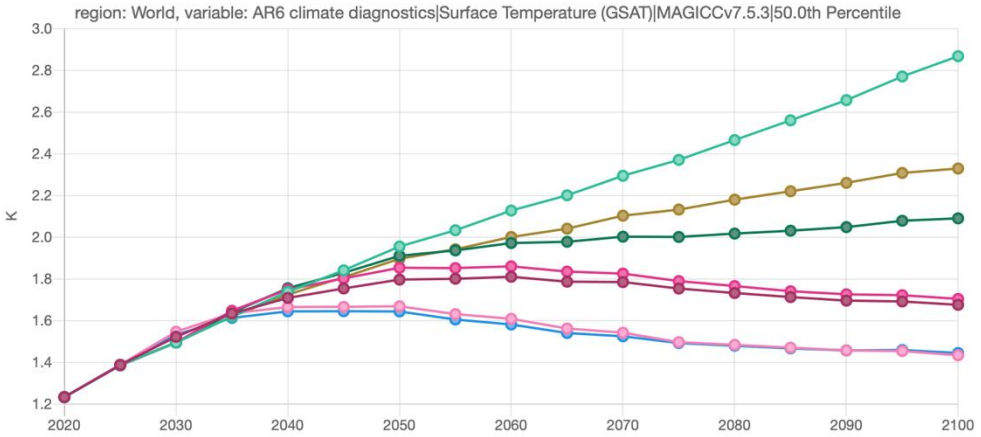
Transition Scenario: Example



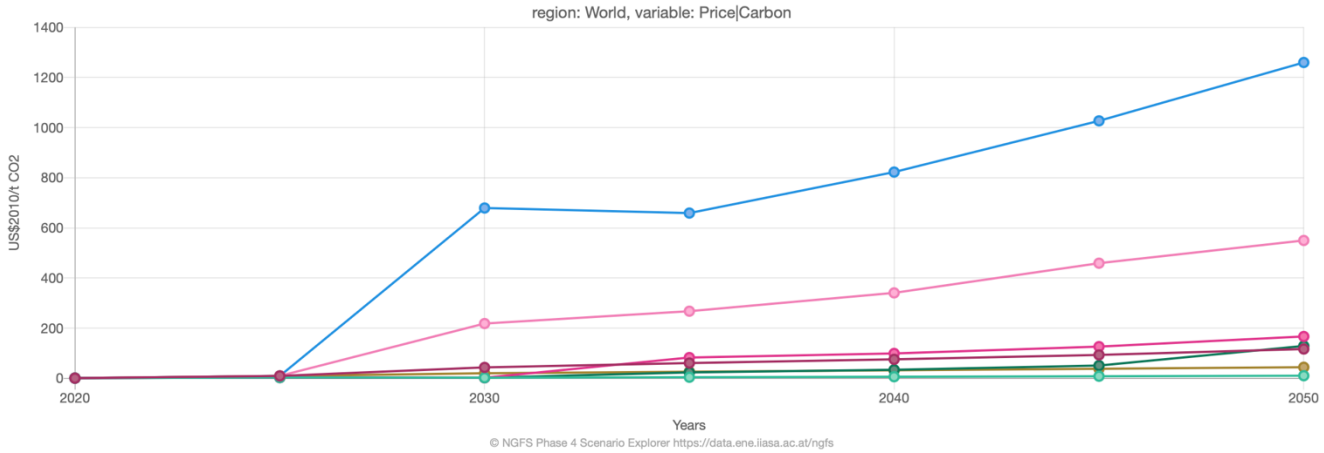
CO_2 Emissions



Global Mean Temperature



Carbon Price

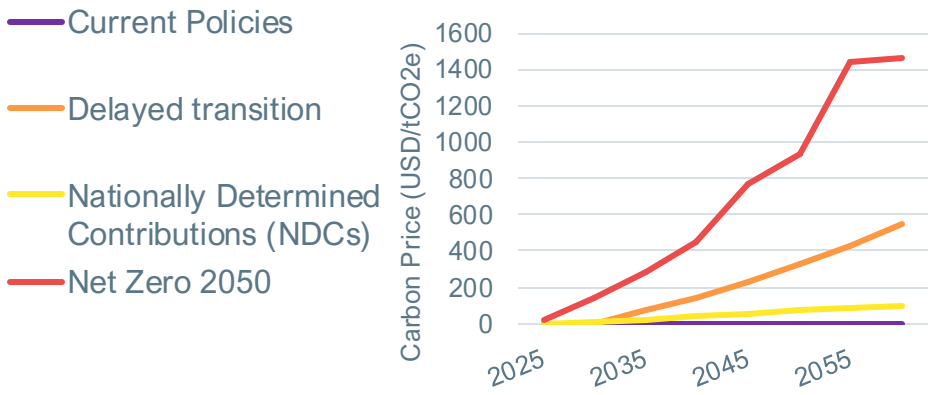


Source: NGFS

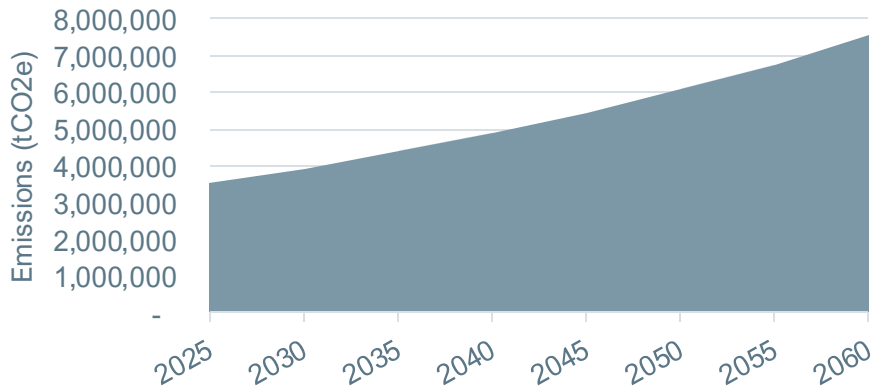
Carbon Price Risk (BAU Case)

Illustrative example

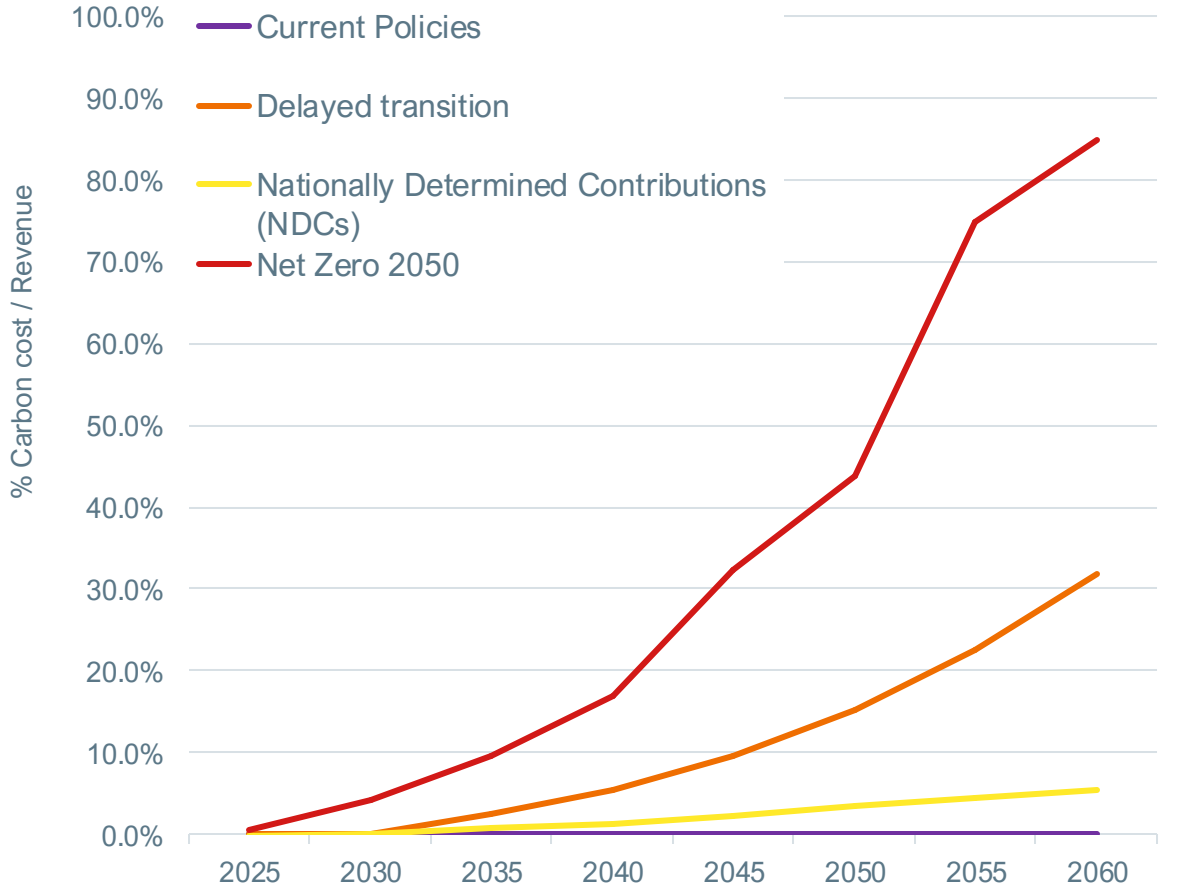
NGFS Scenario Outputs
SE Asia Carbon Price (USD/tCO_2e)



Projected Scope 1 Emissions
BAU Case (2.2% growth rate)



Carbon Cost as % of 2023 Revenue
BAU Case (2.2% Growth Rate)



Source: Probable futures

Case Study: Risks and opportunities assessment

Illustrative Example

Physical risk	Acute
	Chronic
Transition risk	Policy & legal
	Market
Opportunity	Resource efficiency
	Energy source
	Products and services
	Stakeholder engagement

Case Study: Risks and opportunities assessment

Illustrative Example

		Identify				Assess & Prioritize		
		Risk and opportunties	**Operation**	**Logistics**	**Supplier**	**Time Horizon**	**Impact**	**Priority**
Physical risk	Acute	Disruption from extreme weather events	●	●	●	Medium	■■■	✓
	Chronic	Extreme variability in weather patterns			●	Long	■■■	
		Rising mean temperature	●		●	Long	■■	
		Water scarcity			●	Long	■■	
Transition risk	Policy & legal	Regulation on products and services	●	●	●	Medium	■■	
		Carbon pricing mechanisms	●	●	●	Medium	■■■	✓
	Market	Increased cost of raw materials	●		●	Medium	■■■	✓
		Changing customer behavior	●			Medium	■■■	✓
Opportunity	Resource efficiency	Transition to efficient store / buildings	●			Medium	■■■	
		Recycling, circularity, food waste mgmt	●		●	Short	■■	✓
		Reduce energy consumption	●	●	●	Short	■■	✓
	Energy source	Use of lower-emission sources of energy	●	●	●	Short	■■	✓
	Products and services	Customer awareness and participation	●			Short	■■	✓
		Sustainable / low-carbon products	●			Medium	■■	
	Stakeholder engagement	Supporting suppliers' climate strategies		●	●	Medium	■■■	✓

Where to Start: Ask AI

Example of Prompts

Gemini Advanced
1.5 Pro with Deep Research

- Your role is the risk manager at [XYZ] Company. You are assigned to identify climate-related risks and opportunities, including physical risk, transition risks and opportunities. You would thoroughly identify and qualitatively assess the risks and opportunities that aligned with TCFD categories. Please also suggest appropriate climate scenarios for each risk.

Claude

- Develop a 3-Horizon analysis of the [XYZ] Industry in South East Asia, which critical decarbonization technologies, capabilities, key challenges need to scale up to deliver the most likely Horizon 3 scenarios? Provide report in Table format

---

ChatGPT

Please develop a detailed decarbonization plan for [XYZ] Company to align with SBTI targets

---

STEP 3

SET TARGETS

Set Climate Ambitions and Targets

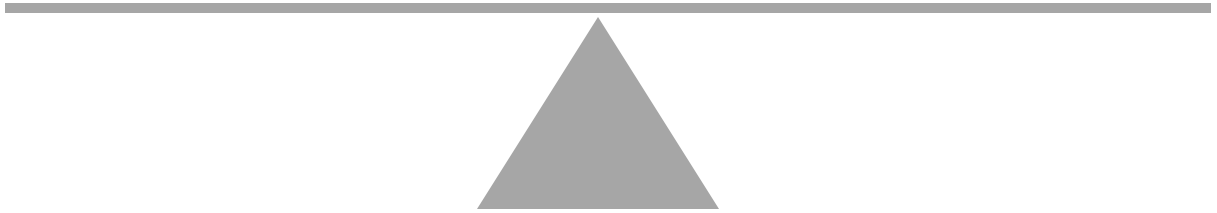
A balancing act: Integrate feasibility with ambition for sustainable, credible targets

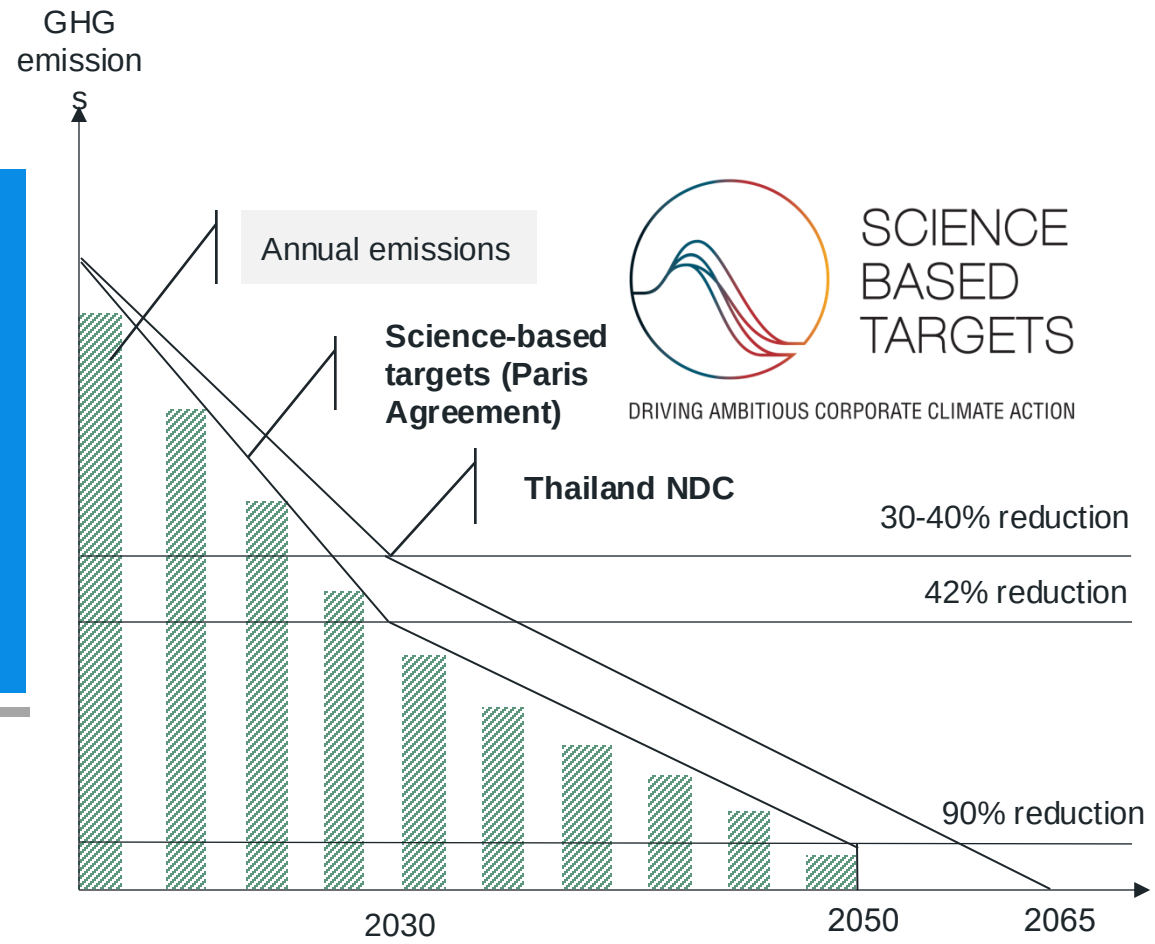
Cost - benefit analysis

- Ensure targets are economically **viable**.
- **Prioritize** impactful, cost-effective actions.
- Take into account **risks and opportunities**

Stakeholder Expectations

- **Reputation**: Align with customer and investor demands.
- Stay ahead of **regulation** and Market trends
- Consider **Long-term Sustainability**
- SBTi, NDCs, Peers

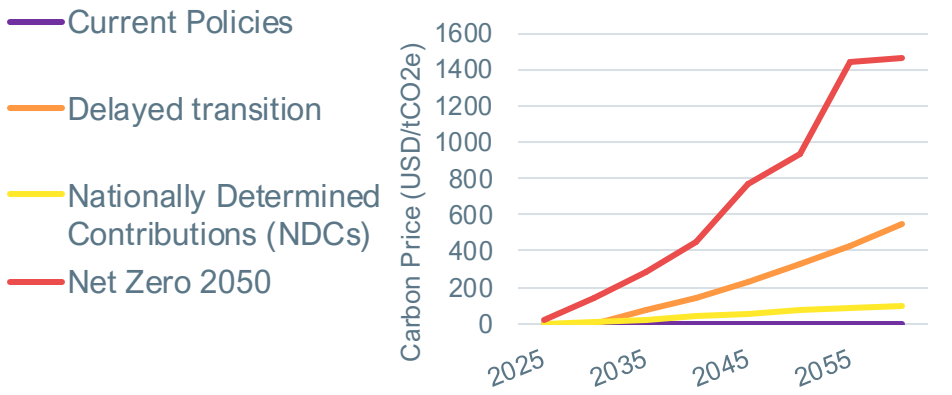




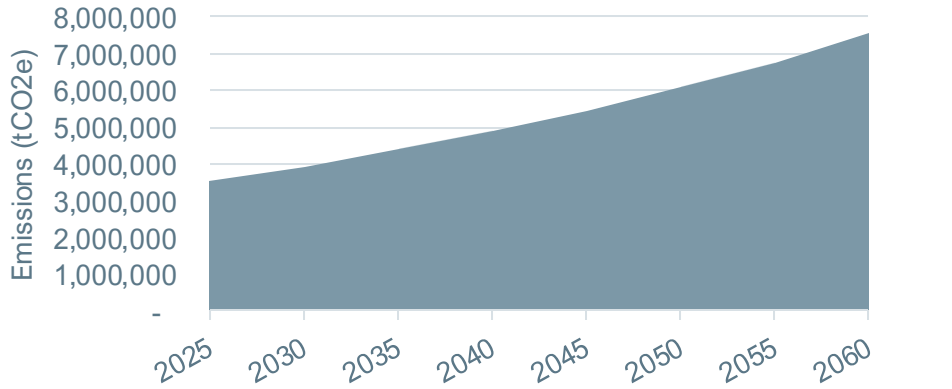
Carbon Price Risk (BAU Case)

Illustrative example

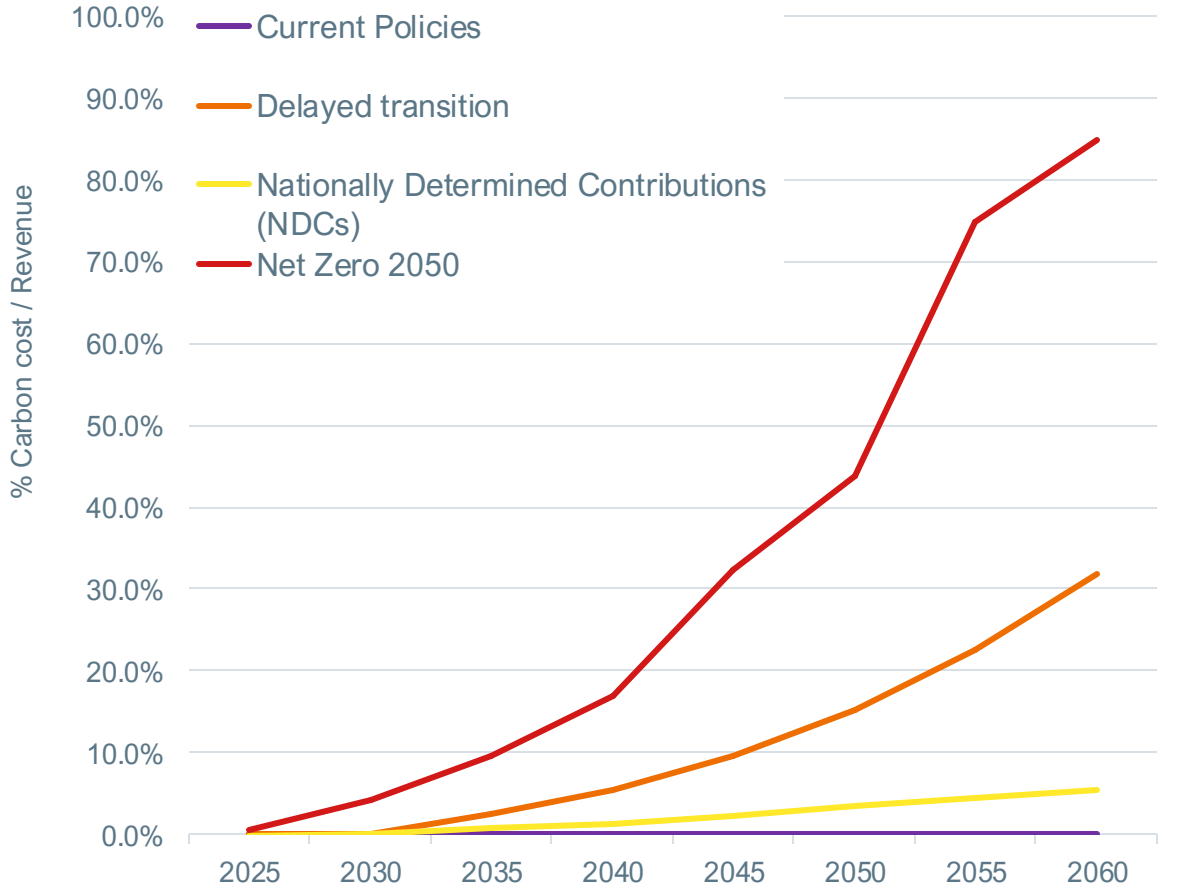
NGFS Scenario Outputs
SE Asia Carbon Price (USD/tCO_2e)



Projected Scope 1 Emissions
BAU Case (2.2% growth rate)



Carbon Cost as % of 2023 Revenue
BAU Case (2.2% Growth Rate)

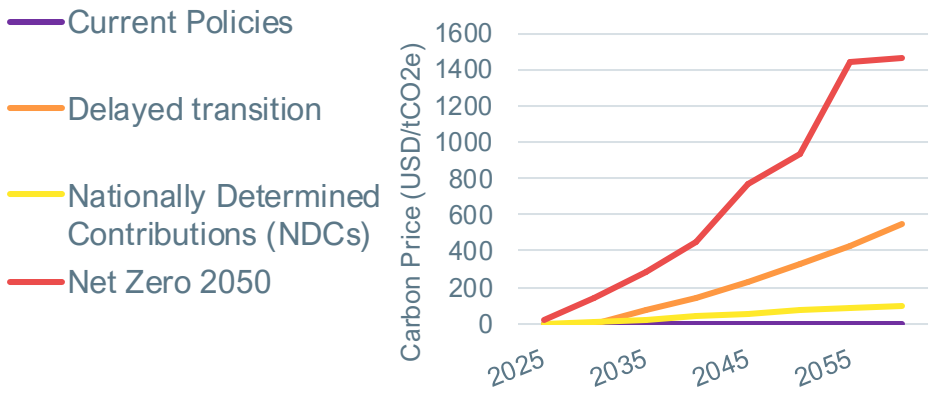


Source: Probable futures

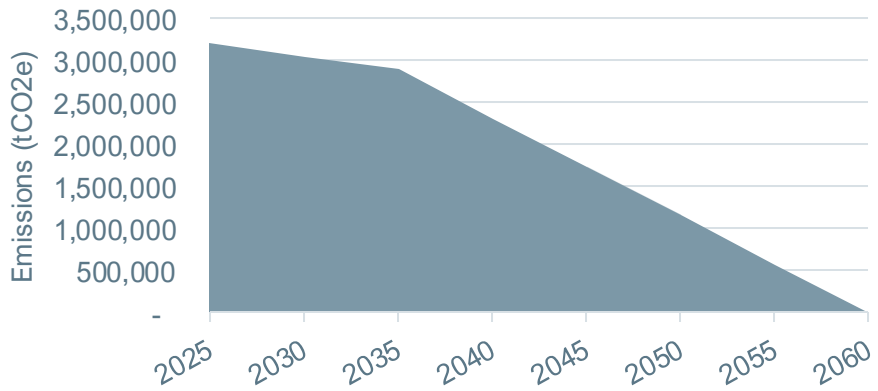
Carbon Price Risk (Net Zero Case)

Illustrative example

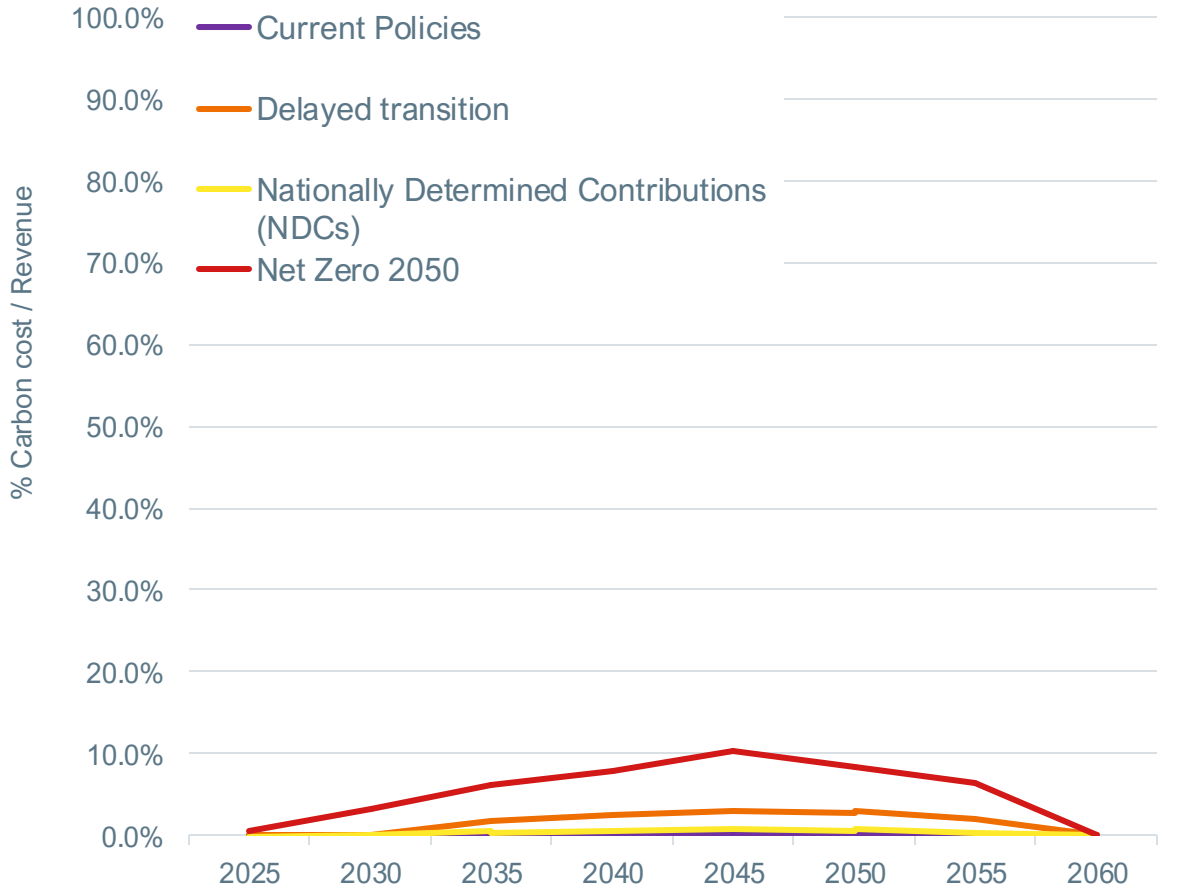
NGFS Scenario Outputs
SE Asia Carbon Price (USD/tCO_2e)



Projected Scope 1 Emissions
NZ 2060 Case (2.2% growth rate)



Carbon Cost as % of 2023 Revenue
NZ 2060 Case (2.2% Growth Rate)



Source: Probable futures

STEP 4

FORMULATE STRATEGY

Integrated Climate Risk and Opportunity Management

The diagram presents a strategic approach to managing climate-related risks and opportunities, guiding organizations through a systematic process to enhance resilience and sustainability. By integrating scenario analysis, internal engagement, and risk management processes, it ensures a comprehensive response to climate challenges, driving forward-looking business strategies.

Use of scenario analysis Apply diverse future scenarios to inform all stages of the process, enhancing the robustness of strategies.

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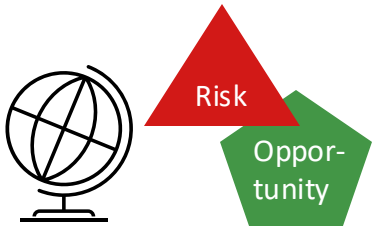
Integration Fully incorporate climate risk and opportunity management processes into the existing risk management framework and culture.



Identify

- Understand the global context of climate change.
- Acknowledge its impact on business and sustainability.

Assess Impact

- Identify potential climate-related risks and opportunities.
- Use initial screenings based on current knowledge and exposure.
- Determine the relevance of each climate risk and opportunity.

Strategize

- Assess the financial impacts of identified risks and opportunities.
- Prioritize based on risk tolerance, materiality, and strategic fit.

Implement & Monitor

- Set specific climate metrics and targets.
- Develop responses including decarbonization, adaptation plans, products & services, and resource & financial planning.

- Execute direct and indirect mitigation and adaptation strategies.
- Monitor progress against targets, adjust tactics as needed, and loop back to assessment.

Response

Components of a comprehensive climate strategy

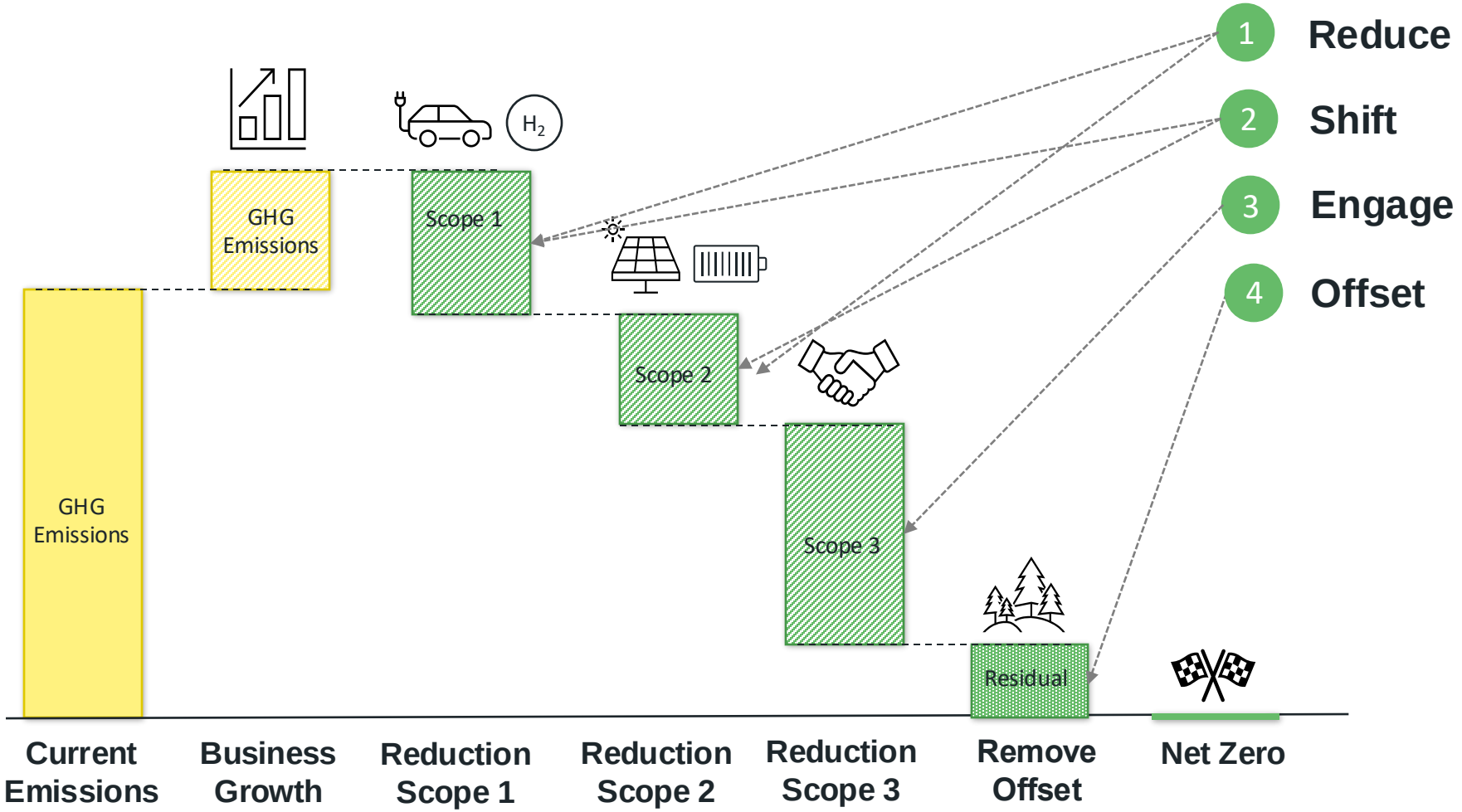
A climate strategy refers to a comprehensive action plan that outlines how an organization intends to address climate-related risks and opportunities and pivot its existing assets, operations, and entire business model towards a trajectory that aligns with its climate ambitions and targets, enabling the transition towards a low-carbon and climate-resilient future.

	Strategy	Define clear and measurable objectives for the climate strategy, prioritizing actions based on their potential impact, feasibility, and cost-effectiveness.	Objective
1	Mitigation	Develop strategies and roadmaps to reduce emissions across operations, supply chain, and product lifecycle through energy efficiency, renewable energy, process improvements, and other decarbonization initiatives.	Net zero emissions
2	Adaptation	Identify and implement measures to increase resilience and adapt to the physical impacts of climate change, such as extreme weather events, sea-level rise, resource scarcity, and supply chain disruptions.	Climate resilience
3	Engagement	Develop a comprehensive approach to engage and collaborate with key stakeholders, including suppliers, customers, employees, investors, and local communities, to drive collective action and align climate efforts.	Full alignment
4	Products and Services	Innovate and develop new sustainable products, services, and business models that contribute to a low-carbon future, meet evolving customer demands, and align with the organization's climate strategy.	Low-carbon ready
5	Innovation	Explore opportunities to transform the organization's business model or products and services to align with a low-carbon economy, creating new revenue streams and competitive advantages.	Competitive Advantages
6	Financial planning	Allocate financial resources, explore green financing options, and align investment decisions with the organization's climate transition plan, including cap ex, research and development, and strategic investments.	Robust financials

MITIGATION STRATEGY

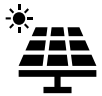
Mitigation Plan

AKA Decarbonization Plan

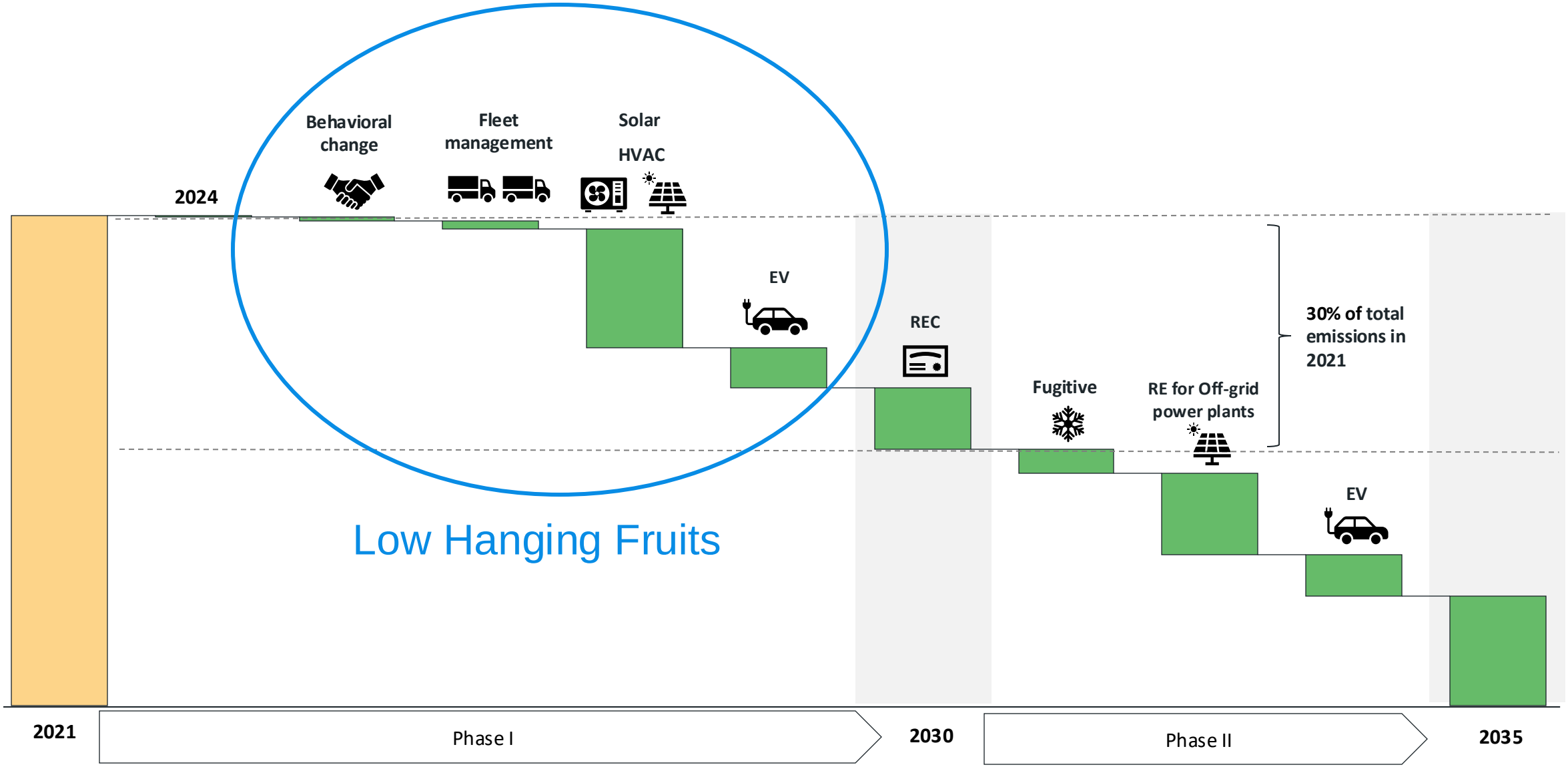


Example of Mitigation Solutions

Scope 1 + 2

Solution	 Fleet Optimization	 Switch to EV	 Behavioral Change	 Upgrade HVAC	 Install Solar	 REC
Boundary	Scope 1	Scope 1	Scope 2	Scope 2	Scope 2	Scope 2
Source	Fuel consumption of vehicles	Fuel consumption of vehicles	Electricity consumption in buildings	Electricity consumption in buildings	Electricity consumption in facilities	Any Scope 2 emissions
Technology readiness	● Fleet management software	● Uncertainty of battery technology	● Incentive program	● Available	● Available	● Available
Cost	● Software cost is relatively low	● • High battery price and insurance cost	● Minimal cost to incentivize behavior	● Packback period: 2-4 years	● Packback period: < 6 years	● Current market price ~ 200 THB/tCO2
Potential reduction (% total emissions from source)	5-10% • Reduce emissions from fleets • Potential is subject to existing practices	50-70% • Remove Scope 1 • emissions from fuel consumption • Increase Scope 2 emisisons from electricity	5-10% • Potential is subject to existing practices	20-30% • Potential is subject to existing equipment's	100% • Potential is subject to available installation areas	100% • Potential is subject to market supply of REC • Currently abundant

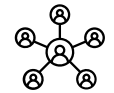
Case Study: Decarbonization Roadmap



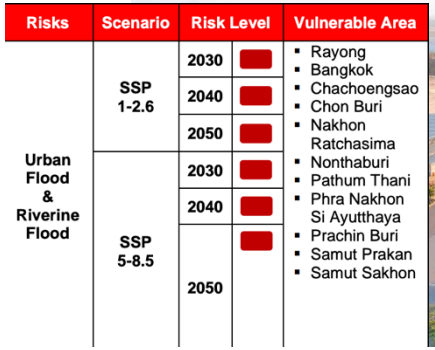
ADAPTATION STRATEGY

Adaptation Strategy

Own Operation and Supply Chain

1	2	3	4	5	6
Prepare	**Protect**	**Insure**	**Engage**	**Diversify**	**Innovate**
					
Anticipate and plan for potential climate impacts to minimize disruptions.	Implement physical measures to safeguard assets and operations.	Mitigate financial risks through appropriate insurance coverage.	Collaborate with suppliers to ensure resilience throughout the value chain.	Spread risk by expanding operations and sourcing across different regions and products.	Develop new technologies, processes, and business models.
• **Assess risk** • Develop **early warning systems** for extreme weather events • Create detailed **emergency response plans** for each location • **Train staff** on climate resilience and emergency procedures	• Install **flood-defences** • **Improved drainage** systems • **Upgrade HVAC** systems to handle extreme heat • Implement **water-efficient** technologies	• **Obtain comprehensive insurance** for all properties at risk • Consider **business interruption insurance** to cover losses from temporary closures	• **Work with suppliers** to implement climate-smart agricultural practices • **Support suppliers** in their own climate adaptation efforts	• Explore **new locations** in less climate-vulnerable areas • Develop menu items using **climate-resilient inputs** • **Diversify** suppliers and **avoid** suppliers with high climate risk	• Invest in research fand development

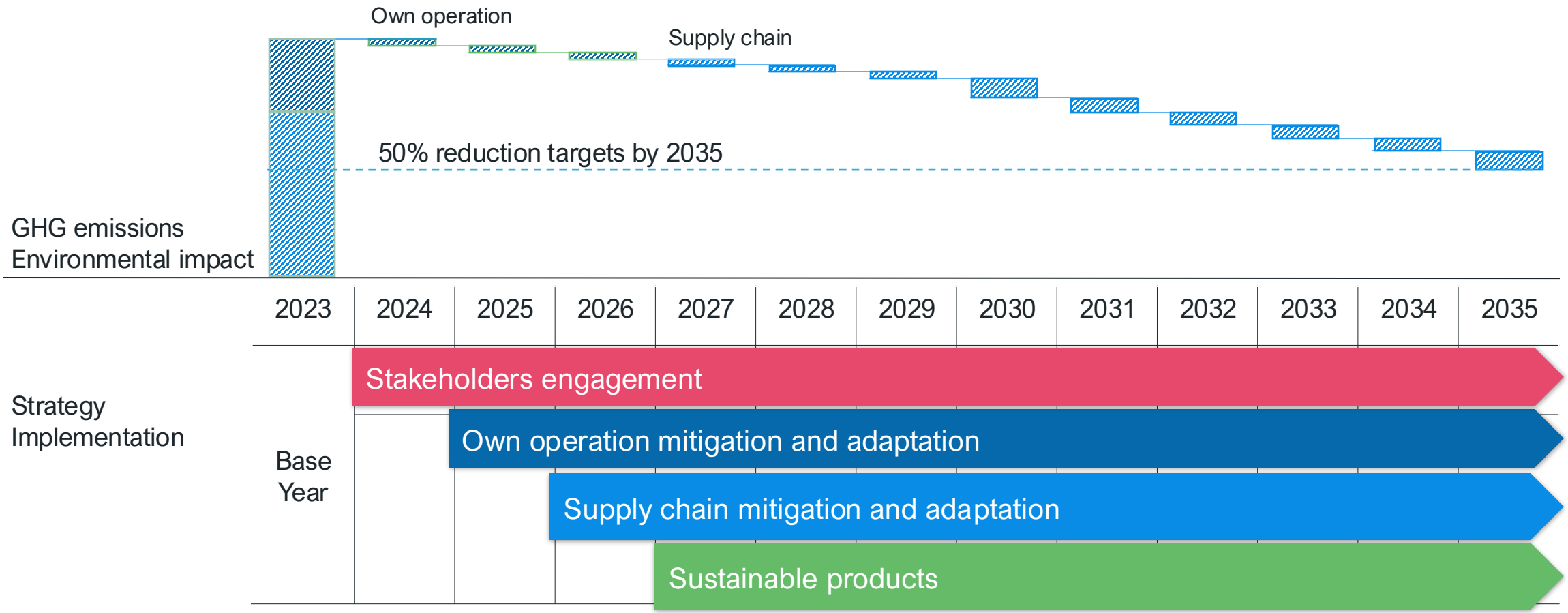
Flood

Company	Coca-Cola	FRASERS PROPERTY
Risk	Water Stress	Flood
	 	 
Impact	• Vulnerability to water scarcity affecting production in drought-prone regions • Supply chain delays due to limited water access for bottling plants	• Structural damage leading to asset devaluation • Increased insurance premiums • Safety concerns for tenants and • Compliance with regulatory standards
Solution	• Investment in local watershed replenishment initiatives to ensure sustainable water access • Upgraded production technology to reduce water usage per unit • “Water Replenish” program to offset total water use and support ecosystem balance	• Engagement and education • Raised building foundations in high-risk zones to prevent flood ingress • Enhanced drainage infrastructure with regular maintenance and high-capacity pumps for rapid water removal • Diversifying portfolio and location analysis
Source	https://www.coca-cola.com/th/th/sustainability/water-stewardship	https://www.frasersproperty.co.th/storage/download/sustain/climate/20240517-fpt-tcfd-report-2023.pdf

STRATEGY

ROADMAP

Illustrative Roadmap



STEP 5

IMPLEMENT ACTIONS

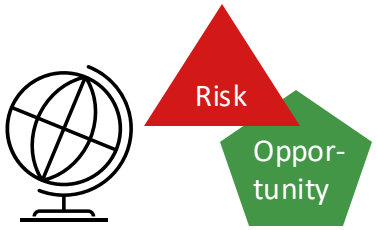
Integrated Climate Risk and Opportunity Management

The diagram presents a strategic approach to managing climate-related risks and opportunities, guiding organizations through a systematic process to enhance resilience and sustainability. By integrating scenario analysis, internal engagement, and risk management processes, it ensures a comprehensive response to climate challenges, driving forward-looking business strategies.

Use of scenario analysis — Apply diverse future scenarios to inform all stages of the process, enhancing the robustness of strategies.

Internal engagement — Foster organization-wide collaboration and commitment to integrate climate considerations into all decision-making.

Integration — Fully incorporate climate risk and opportunity management processes into the existing risk management framework and culture.



Identify

- Understand the global context of climate change.
- Acknowledge its impact on business and sustainability.

Assess Impact

- Identify potential climate-related risks and opportunities.
- Use initial screenings based on current knowledge and exposure.
- Determine the relevance of each climate risk and opportunity.

Strategize

- Assess the financial impacts of identified risks and opportunities.
- Prioritize based on risk tolerance, materiality, and strategic fit.

Implement & Monitor

- Set specific climate metrics and targets.
- Develop responses including decarbonization, adaptation plans, products & services, and resource & financial planning.

- Execute direct and indirect mitigation and adaptation strategies.
- Monitor progress against targets, adjust tactics as needed, and loop back to assessment.

Response


ACT NOW
extinction rebellion

STEP 6

COMMUNICATE


Mother
Nature
Needs a status report

THANK YOU

Climate Awareness | Climate Literacy | Climate Strategy

P24

solutions

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