



● We will begin shortly.

Climate Scenario Analysis

Session 2: Transition Risks and Opportunities

25 August 2021

Organised by:

CENTRE FOR
SUSTAINABLE
CORPORATIONS

Delivery Partner:

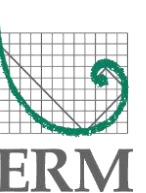


An Initiative By:



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The business of sustainability



House Rules



Please close down other unnecessary applications to ensure your device is running smoothly.



We have disabled audio and video for all attendees to allow the panellist to share information without any additional network hassles.



If you wish to comment or ask a question, please use the chat function. A Q&A section at the end of the webinar is dedicated to answer queries.



We encourage you to share your feedback about the webinar in a short survey at the end of this webinar.



If you have any additional questions, or would like to connect directly with the ERM team, you can reach out to me by email: pralabh.bhargava@erm.com

Speaking today



Presenter

Trista Chen

Partner,
ERM

.....
**Transaction Advisory Services to
ESG/ sustainable finance and financial sector**



Presenter

Pralabh Bhargava

Senior Consultant,
ERM

.....
**Corporate Sustainability and
Climate Change**

About ERM



ERM - A Global Leader in Sustainability

ERM is the leading pure play sustainability and climate change consulting company globally, bringing 50 years of deep subject matter expertise.



Support sustainability movement with The SustainAbility Institute by ERM

Global think tank & advisory who inspire and enable business to lead the way to a sustainable economy.



Preparing TCFD Scenario Analysis Supplement

ERM was the sole consultant engaged by TCFD to prepare a technical supplement on the use of scenario analysis in relation to climate-related financial risks and opportunities.

ERM sets ambitious Net Zero target for 2025

22 April 2021

To mark this Earth Day, ERM is announcing its commitment to achieving Net Zero carbon emissions across its operations by 2025

50

Years of history

>50%

of the Global Fortune 500



160

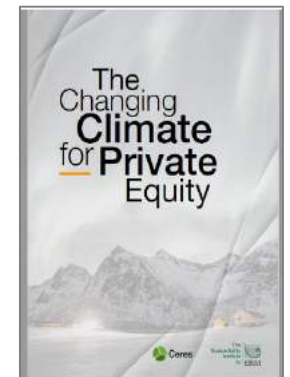
Office

40

Countries

5,500+

Experts



What will we cover

By the end of the today's session you will be able to:

- Understand the drivers and financial impact of transition risks and opportunities
- Understand the need for scenario analysis
- Understand our methodology for developing scenario analysis

Up Next

- **Understanding impact of financial transition risks and opportunities**



Trista Chen

Partner, ERM

Transition risks: where does it fit into the TCFD framework?

1



Ensure Governance

Integrate scenario analysis into strategic planning and/or enterprise risk management frameworks. Assign oversight to relevant board committees/sub-committees. Identify which internal (and external) stakeholders to involve and how.

2



Assess materiality of Climate-related risks



What are the current and anticipated organizational exposures to climate-related risks and opportunities? Do these have the potential to be material in the future? Are organizational stakeholders concerned?

3



Identify and define range of scenarios



What scenarios (and narratives) are appropriate, given the exposure? Consider input parameters, assumptions, and analytical choices. What reference scenario(s) should be used?

4



Evaluate business impacts



Evaluate the potential effects on the organization's strategic and financial position under each of the defined scenarios. Identify key sensitivities.

5



Identify potential responses



Use the results to identify applicable, realistic decisions to manage the identified risks and opportunities. What adjustments to strategic/financial plans would be needed?

6

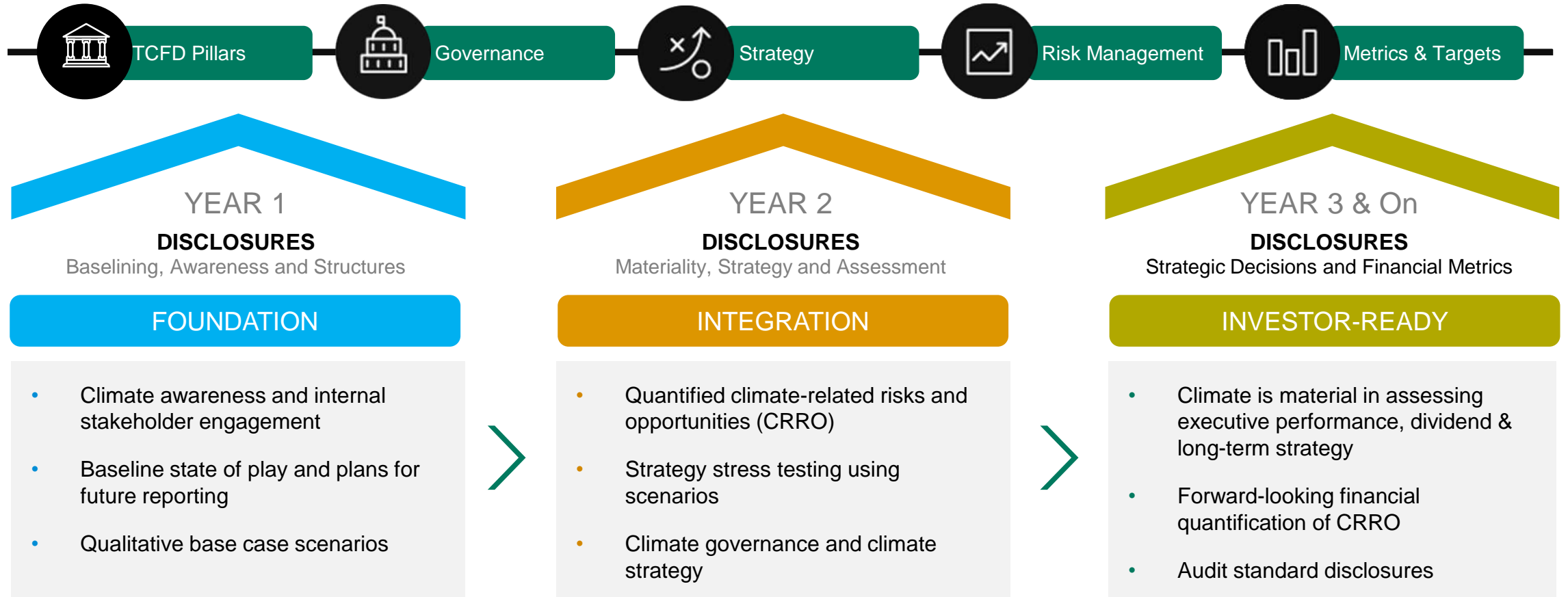


Document and Disclose

Document the process; communicate to relevant parties; be prepared to disclose key inputs assumptions, analytical methods, outputs, and potential management responses.

Decoding TCFD disclosure

ERMs three phase approach



Disclosure Timeframe: 3-5 years depending on urgency and ambition

Up Next

- **Transition Risk Recap**

What do the transition risks mean?



Trista Chen

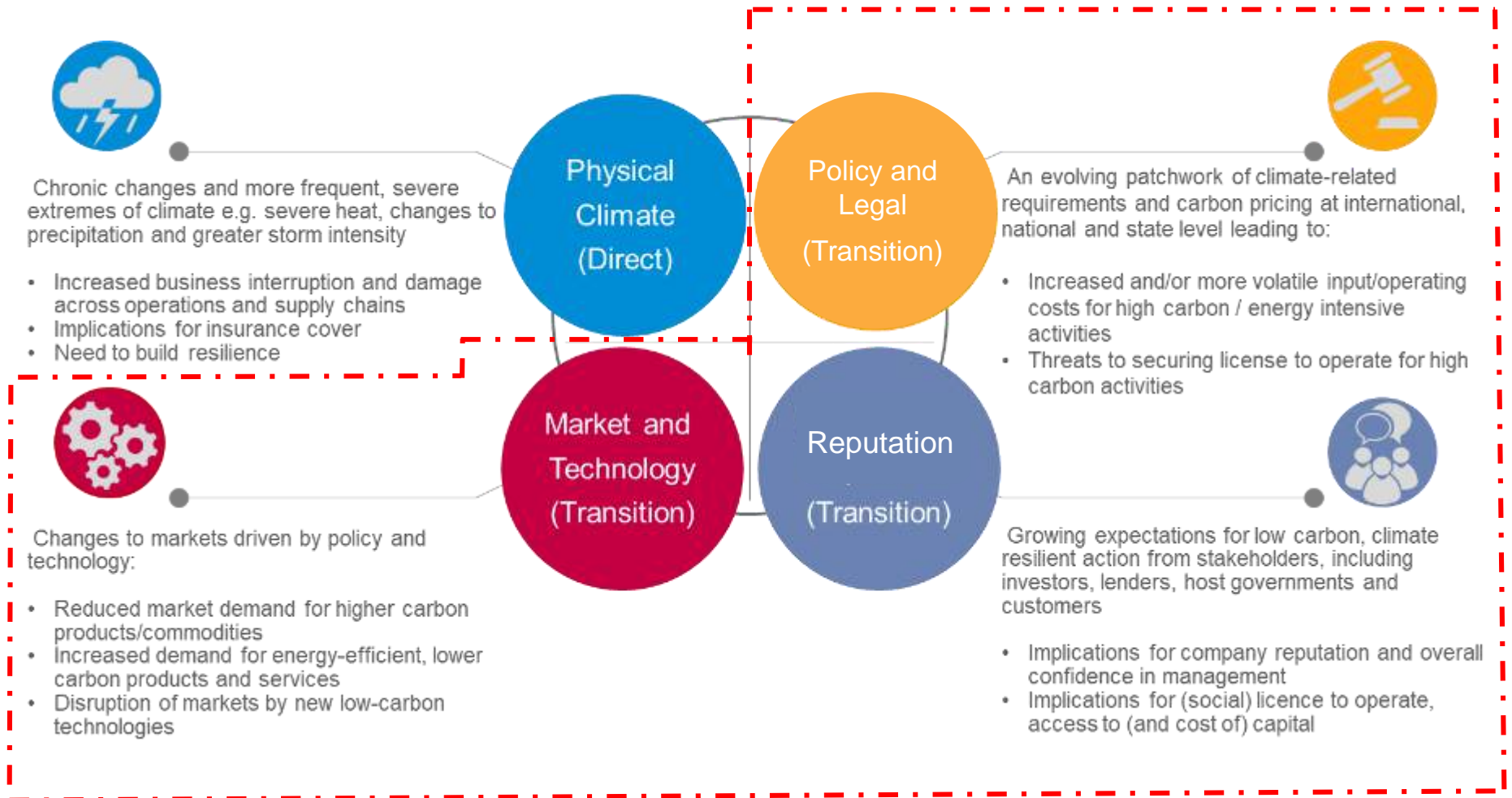
Partner, ERM

Decoding TCFD disclosure

ERMs three phase approach

Transition risks

include market and technology shifts, and the development of new policies and regulations under different scenarios (for instance to meet the requirements of the Paris Agreement), compared to a baseline scenario.



Market and Technology: Greener choices are driving change

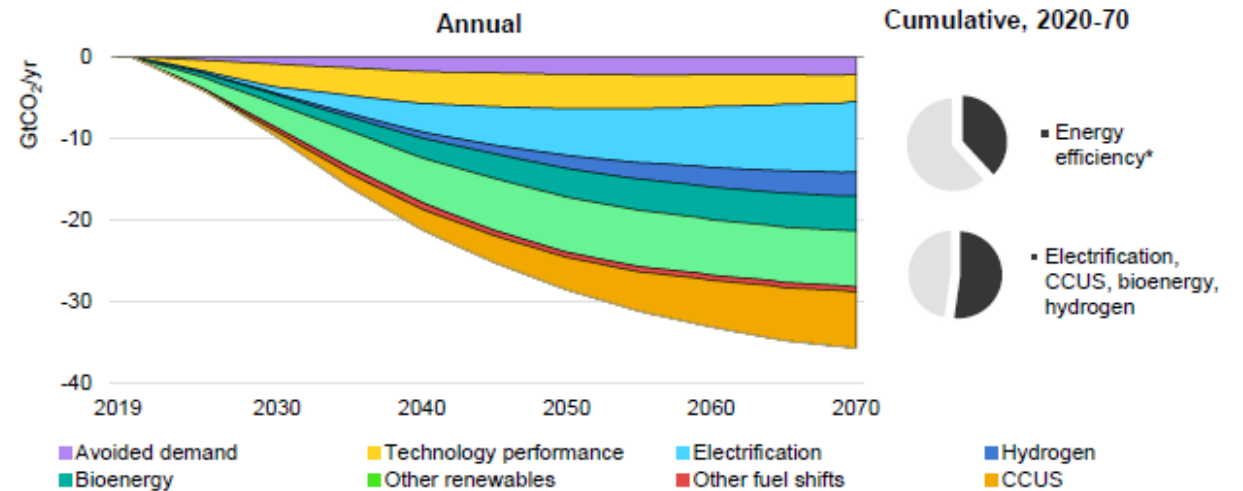
Market opportunity for lower-carbon products and services

Consumer demand shifts to less carbon intensive products and services

Increased demand for raw materials linked to low-carbon transition and technologies

Non-regulatory driven energy and material efficiency gains; changes in energy mix

Reduction in emissions by measure in SDS relative to STEPS



IEA 2020. All rights reserved.

* Energy efficiency includes enhanced technology performance as well as shifts in end-use sectors from more energy-intensive to less energy-intensive products (including through fuel shifts).

Notes: CCUS = carbon capture, utilisation and storage. See ETP model documentation for the definition of each abatement measure. *Hydrogen* includes low-carbon hydrogen and hydrogen-derived fuels such as ammonia.

Policy: International climate policy developments



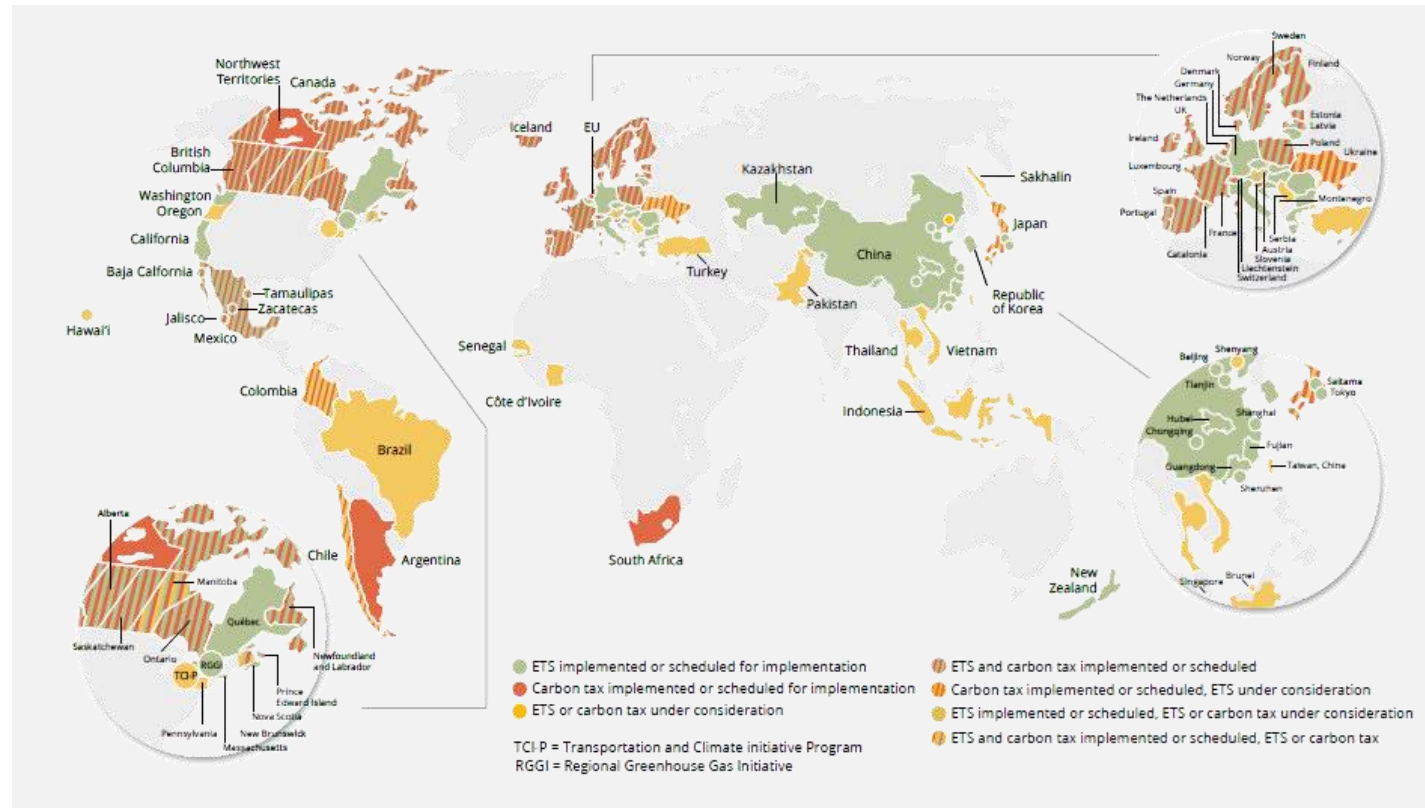
191
Countries

ratified the 'Paris Agreement', with a goal to limit warming to <math><2^{\circ}\text{C}</math>



192*
Countries

(98% of global GDP) will have national plans to reduce GHG emissions to 2025 or 2030



64

Carbon pricing initiatives (such as carbon taxes or emission trading schemes) are in place globally or scheduled

Which covers

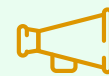
21.5%

of global emissions



858
Companies

with Science Based Targets to reach Net Zero emissions



>2,000
Companies

have announced that they are already using or plan to introduce internal carbon pricing

* Eritrea has submitted its first NDC, but has not yet become a Party to the Paris Agreement.

Policy: International climate policy developments



The New York Times

China's Pledge to Be Carbon Neutral by 2060: What It Means

Under international pressure to do more to address global warming, Xi Jinping made a surprise commitment to drastically reduce emissions. Now comes the hard part.

Joe Biden's \$5T climate plan: Net zero emissions by 2050

Democratic presidential candidate Joe Biden is pitching a \$5 trillion-plus climate action proposal that he says would lead to an economy with a net zero emission of carbon pollution by 2050.

Singapore Banks, MAS Formalise Steps on Environmental Risk Management

Indonesia pushes ahead with carbon tax scheme

Published date: 08 June 2021

The Indonesian government is working on amending the country's tax law, which will include a new carbon tax scheme aimed at increasing state revenue from several industries.

NEWS NATIONAL

Brunei to introduce mandatory carbon reporting in 2021

The National Council on Climate Change launches its first policy document to reduce greenhouse gas emissions

Rasidah Hj Abu Bakar
© JULY 25, 2020



A European Green Deal

Striving to be the first climate-neutral continent

The European Parliament on March 10 backed a **Carbon Border Adjustment Mechanism** which would place a charge on the carbon content of emissions-intensive **goods imported into the EU** from 2023.

Legal: Climate related litigation risk is real

WSJ Wall Street Journal

Exxon's Climate-Change Accounting Goes on Trial

A win for Exxon could insulate the company from similar suits and would represent another blow for climate-change lawsuits. Federal judges ...

21-Oct-2019



Climate Capital Royal Dutch Shell PLC (+ Add to myFT)

Dutch court orders Shell to accelerate emissions cuts

Ruling sets a precedent for other companies that could face similar lawsuits

B Bloomberg.com

Pension Fund Sued for Not Being Green Enough Settles ...

\$41 Billion Pension Fund Settles Australian Climate Change Lawsuit. By ... Retail Employees Superannuation Trust also pledged to "enhance its ... More than 700 such lawsuits were filed globally over the past five years, ...

01-Nov-2020

LAW

Climate change litigation is global phenomenon



Protests have also been held to encourage action to prevent climate change.
DANIEL LEAL-OLIVAS/AF/GETTY

Legal actions over failure to act on climate change have kicked off in at least 28 countries, according to a report published this week.

Most have been launched against governments, but companies have also been targeted for failing to incorporate climate change into their decision-making or failing to disclose risks to shareholders.

Citizens, non-governmental organisations, businesses and even local governments have taken businesses and governments to court for failing to protect them from the effects of climate change, according to the report from the Grantham Research Institute on Climate Change and Environment.

Poll for the audience

When do you think Malaysia could have a carbon price and what will be the starting point?

- Never, Malaysia would look to deploy other policies
- By 2030, starting at ~\$5/t looking at some of the ASEAN countries
- By 2030, starting at >\$5/t
- Somewhere between 2030 – 2040, starting at ~\$5/t
- Somewhere between 2030 – 2040, starting at >\$5/t
- Beyond 2040, I don't see Malaysia facing global pressure before then



Up Next



- **Understanding Financial Impact**

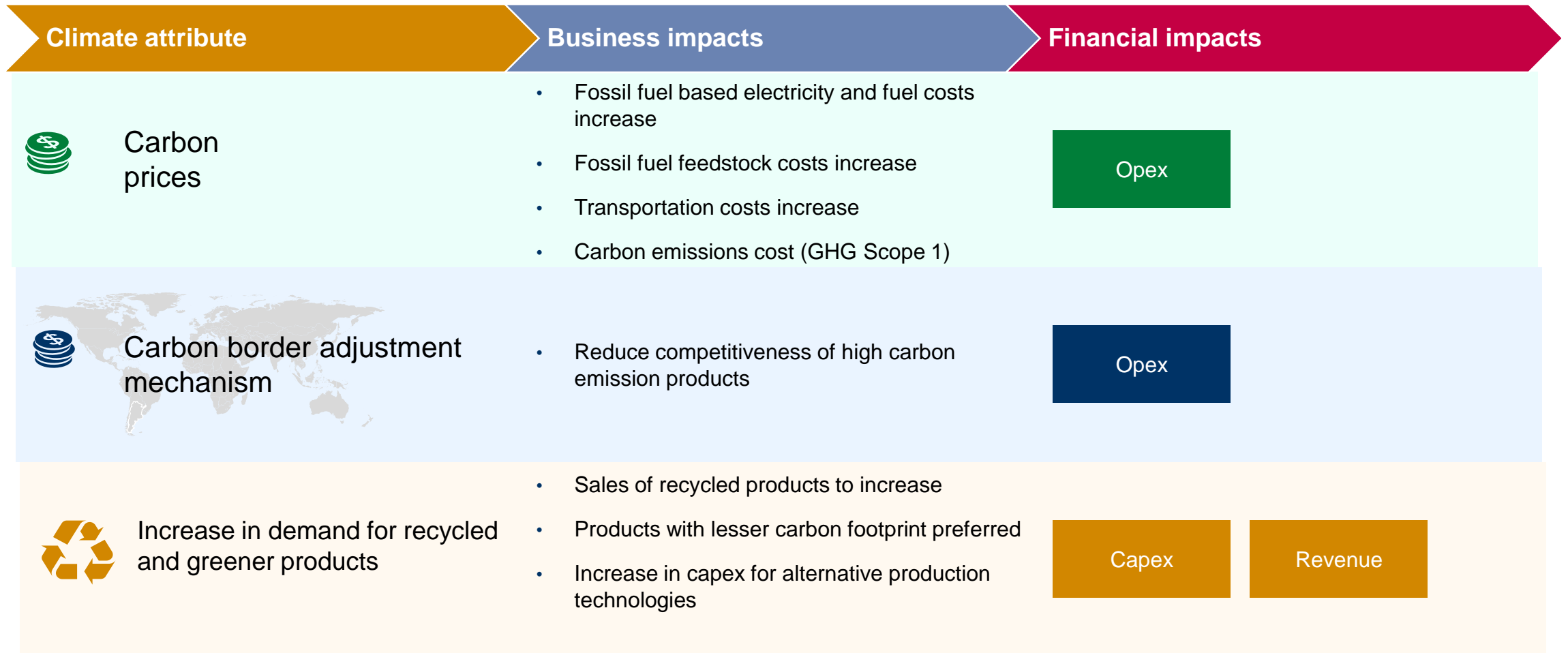
Linking transition risk-related drivers to financial impact



Pralabh Bhargava
Senior Consultant, ERM

Key drivers and their financial impact

Policy and legal	Market
Technology	Reputation



Poll for the audience

Which is the key climate-change related driver that you feel could have the largest impact on your business' bottom line?

- Future carbon prices
- Carbon border adjustment mechanism
- Market demands for lower emission products
- Greener sources of energy including green hydrogen
- Maturity of technology
- Reputation



Poll for the audience

Hydrogen is being coined as an important source for energy transition. Which sector do you feel it will play the most significant role?

- Refinery and petrochemicals
- Steel
- Transportation
- Power
- Energy storage
- Buildings



Up Next



- **Scenario Analysis**



Pralabh Bhargava
Senior Consultant, ERM

What is scenario analysis?

What is a scenario?

- A scenario describes a path of development leading to a particular outcome.
- Scenarios are 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.
- They are hypothetical constructs, not forecasts, predictions or sensitivity analyses.

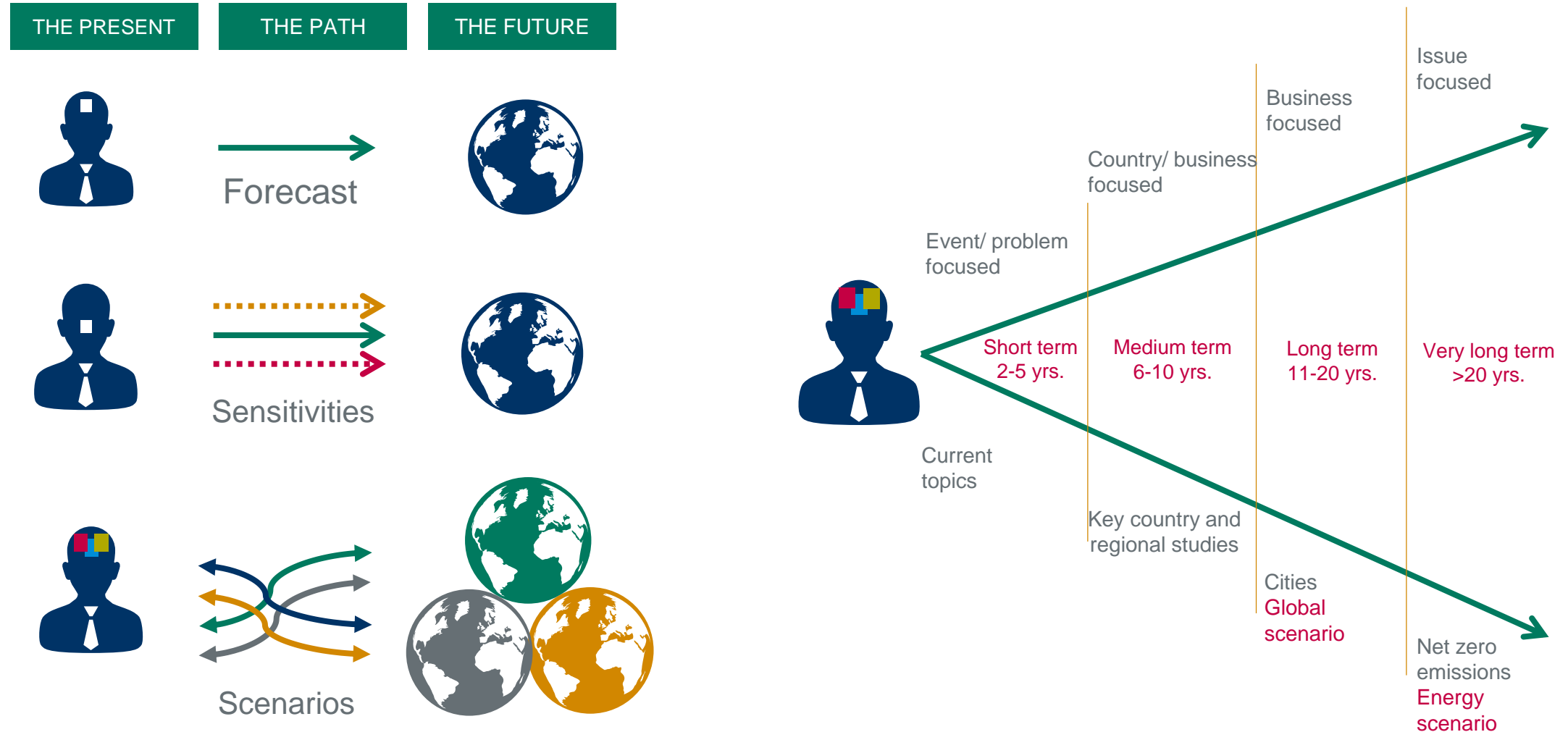
What is scenario analysis?

- Scenario analysis is a tool to enhance critical strategic thinking.
- A key feature of scenarios is that they should challenge conventional wisdom about the future.
- In a world of uncertainty, scenarios are intended to explore alternatives that may significantly alter the basis for “business-as-usual” assumptions.

The purpose of scenario analysis is to consider and better understand how a business might perform under different future states (i.e., its resiliency/robustness)

In the case of climate change, climate-related scenarios allow an organization to explore and develop an understanding of how the physical and transition risks and opportunities of climate change might plausibly impact the business over time

Scenarios improve judgment in the face of radical uncertainty and explore the breadth of possibilities



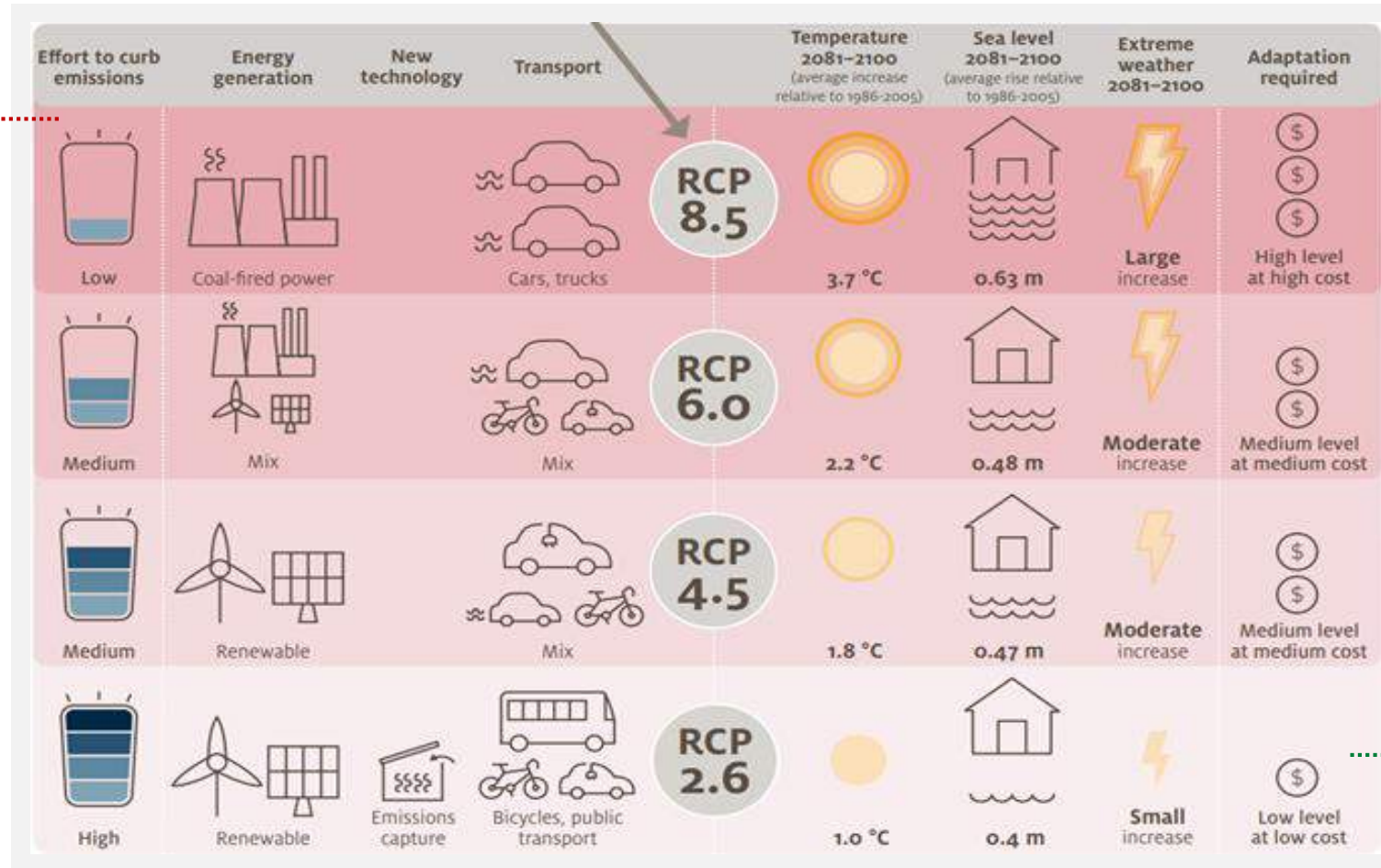
Climate risks and opportunities are...

>4°C 'Business As Usual'

<2°C Rapid low-carbon transition

Business as usual (BAU) scenario: greenhouse gas (GHG) emissions increase, temperatures increase. How will increasing physical climate risks impact my portfolio? Will there be any new opportunities to capture?

- Highly uncertain
- Play out over time
- Bring the potential for disruptive system change
- Complex and multi-dimensional

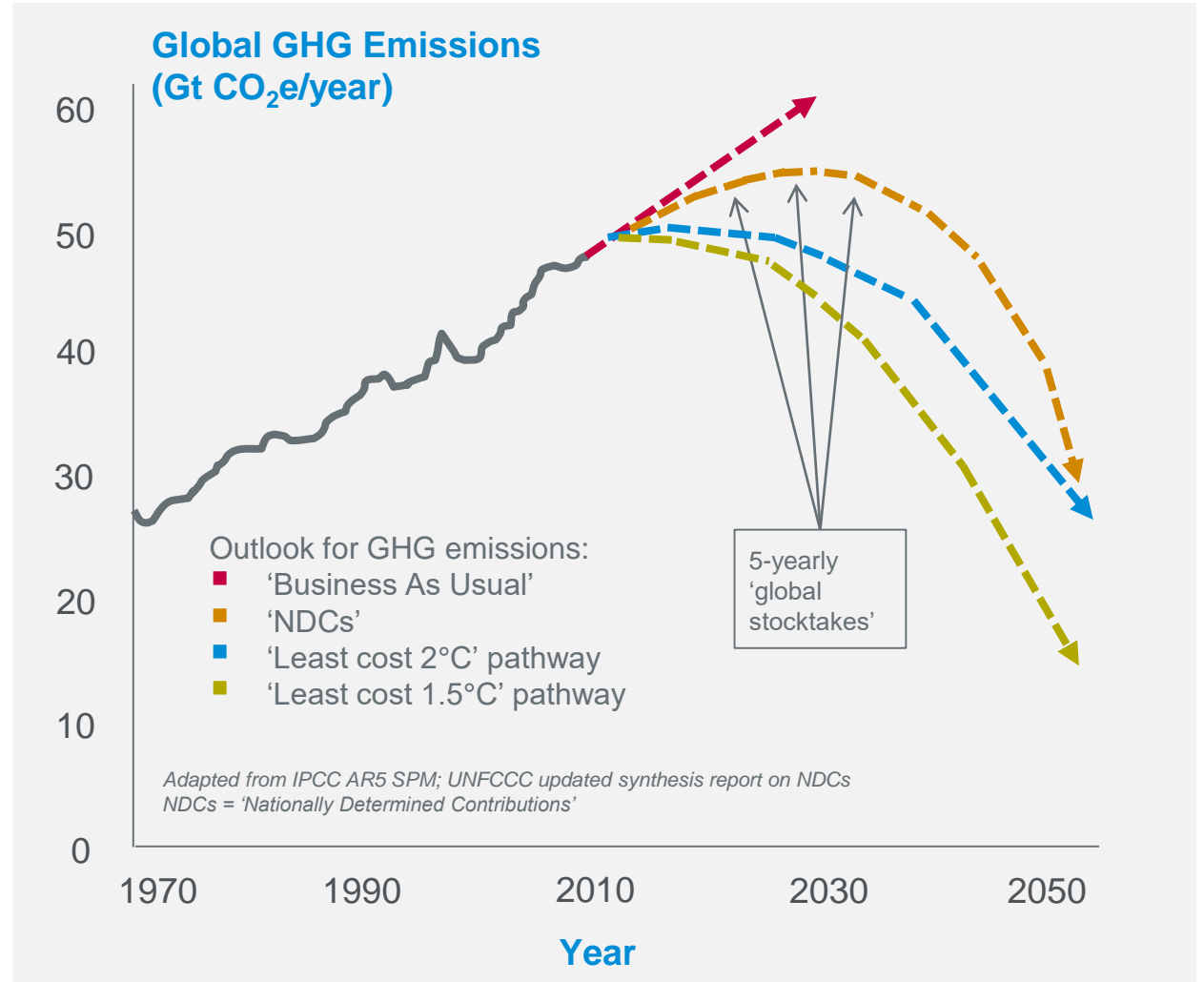
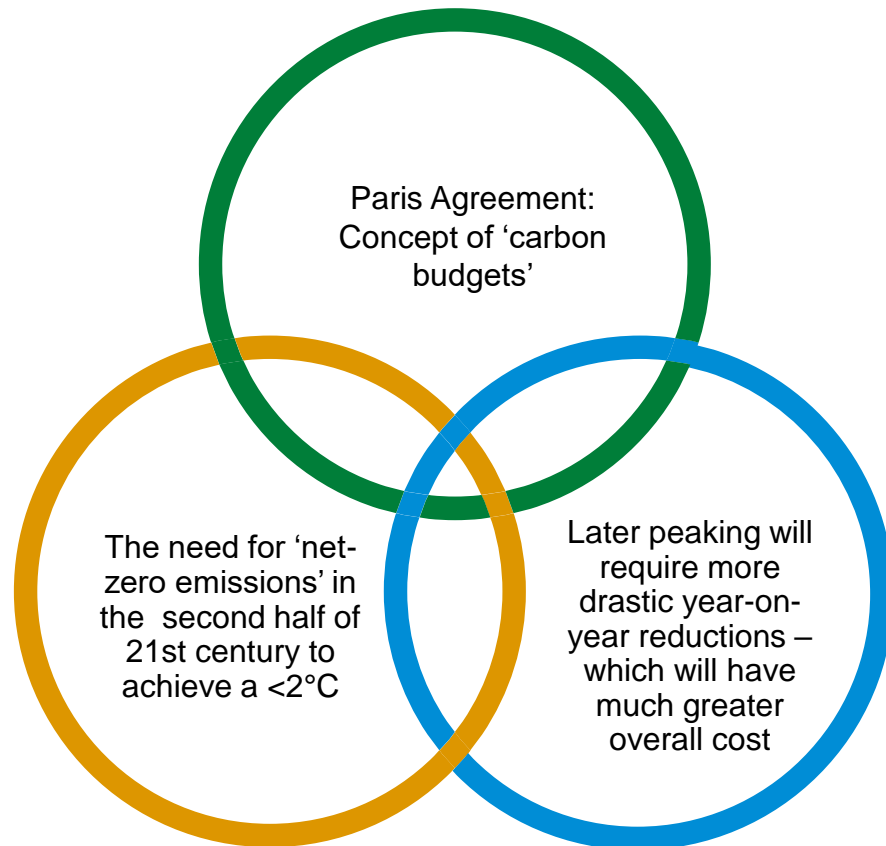


Low carbon economy scenario (<2°C): accelerated shift towards clean energy and low carbon technologies.

How will this impact my current assets/products and future investment decisions?

...which makes scenarios helpful

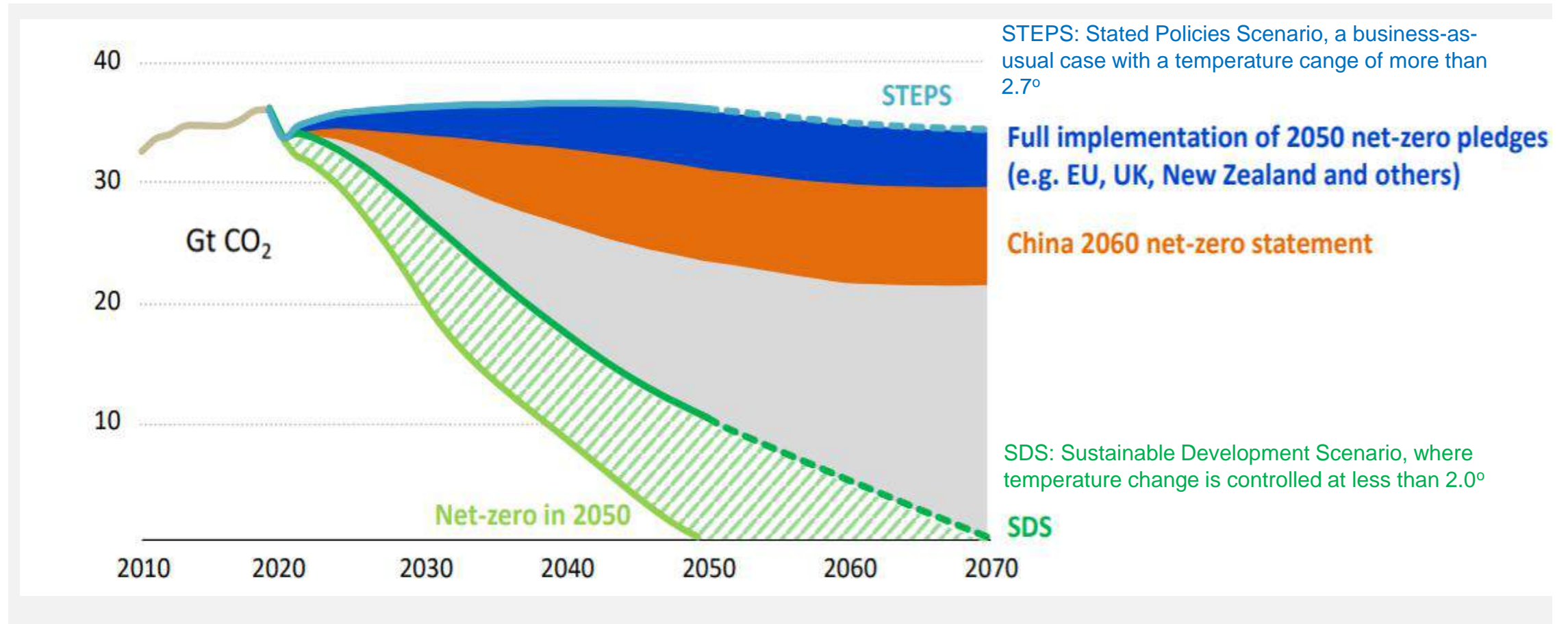
Deep emissions reductions are required to deliver <math><2^{\circ}\text{C}</math>



Several off the shelf scenario frameworks are available in the market

Scenario provider	Year	Name	Sector	Est. implied temp. rise	Basis
IEA	2020	NZE2050 (Net zero emissions 2050)	Energy	1.5°C	Outlines necessary technology, policies and behaviour change necessary to bring about net-zero emissions by 2050.
		SDS 2020 (Sustainable Development Scenario)	Energy	1.8°C (66%) 1.65°C (50%)	Takes in to account climate goals to achieve net-zero by 2070
		STEPS (Stated Policies Scenario)	Energy	2.7-3.3°C	Takes in to account stated and announced policies
		Delayed Recovery Scenario (DRS)	Energy	<2.7°C	STEPS with a delayed recovery from pandemic
IPCC	2014	RCP (Representative Concentration Pathways)	All sectors	1.0°C (RCP 2.6) 1.8°C (RCP 4.5) 2.2°C (RCP 6.0) 3.7°C (RCP 8.5)	RCPs outline pathways according to different levels of radiative forcing in the CMIP5
IPCC	2018	SR15	All sectors	1.5°C	Set of P1-4 pathways to meet 1.5°C target, building on RCP 1.9
NGFS	2020	Orderly	All sectors	<2°C	Both orderly and disorderly have alternate scenarios with limited or full carbon dioxide removal
		Disorderly	All sectors	<2°C	Higher transition risk than for Orderly scenario
		Hot-house World	All sectors	3°C+	Only current policies implemented, not NDCs
OECD	2020	One Climate Earth Model	All sectors	1.5°C	Minimal carbon di oxide removal
PRI Inevitable Policy Response (IPR)	2020	Forecast Policy Scenario	All sectors	1.5°C	Based on the inevitable policy response to meeting the Paris Agreement.

Comparison of the impact across commonly used scenarios



Example: Logic for methodology development for portfolio analysis

1
Select relevant sectors and geographic focus



Or Regional?

2
Select relevant scenarios



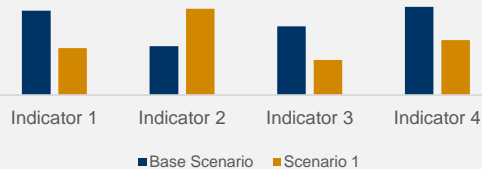
3
Identify Material Issues For Each Sector

Market and Technology Shifts

Reputation

Policy and Legal

4
Calculate Difference Between Base Case and Selected Scenarios to Establish The 'Envelope' of Risk / Opportunity



5
Weight Material Issues Identified

Negative weighting for risk, positive for opportunity

INDICATOR INFLUENCE WEIGHTING KEY	
High Risk Weight	-1.00
Moderate Risk Weight	-0.50
Low Risk Weight	-0.25
Neutral / Limited Weight	0.00
Low Opportunity Weight	0.25
Moderate Opportunity Weight	0.50
High Opportunity Weight	1.00

Scenario Indicators Relevant to Sector	Influence Weighting
Indicator 1	-0.25
Indicator 2	-1.00
Indicator 3	-0.50
Indicator 4	1.00
Indicator 5	-
Indicator 6	-
Indicator 7	-1.00
Indicator 8	1.00
Indicator 9	-1.00
Indicator 10	-1.00
Indicator 11	-0.50

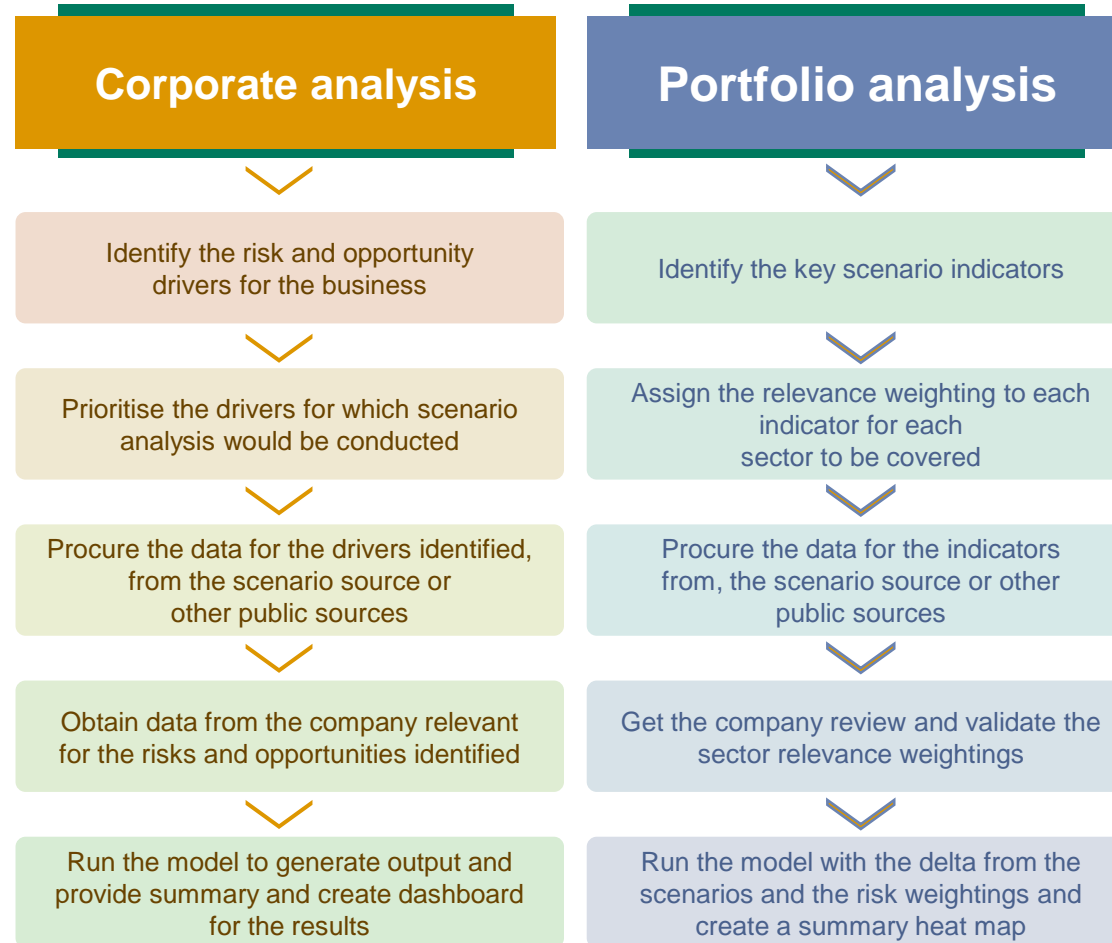
6
Develop Insights From Risk / Opportunity Heatmap



- *Insight 1*
- *Insight 2*
- *Insight 3*

ERM has developed several ready to use methodologies/ scenarios that can be deployed by clients – for example

- This approach deep dives into drivers impacting various segments of the business
- Depending on scope, the analysis objectives range from estimating impact on individual products to the company as a whole



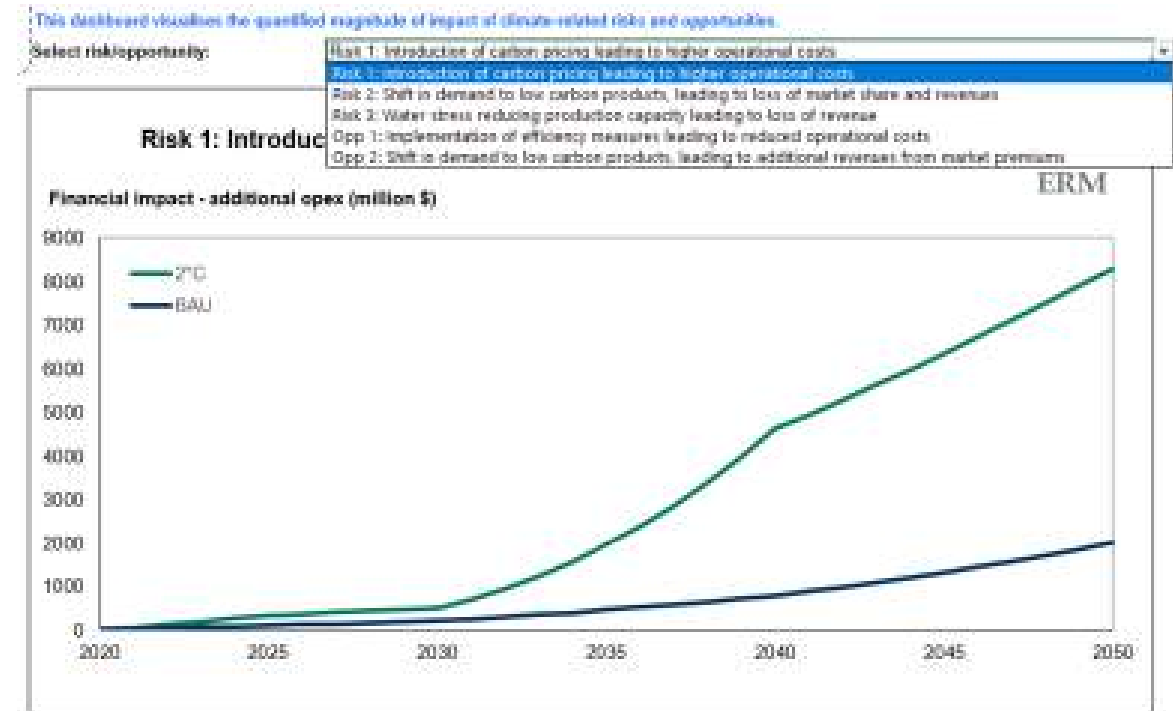
Portfolio level analysis where ERM provides a view on relative risks and opportunities across different sectors using different elements and time frames.

Output Example: Corporate

For example, a Company identified the introduction of a carbon price as a risk to the business. It would potentially lead to additional operational costs. Using scenario analysis, we are able to estimate the additional cost on the business between 2020 and 2040 under each scenario.

Risk / Opp	Impact	Scenario	2020	2021	2022	20XX
Risk 1 Introduction of Carbon Pricing	Additional Opex	BAU	\$12m	\$27m	\$44m	Etc.
		2°C	\$12m	\$62m	\$121m	Etc.

Dashboard of quantified risks and opportunities



Output Example: Portfolio

Climate Portfolio Screen can support:

- As a primary screen to understand where and when potential climate-related risk and opportunity could emerge in the portfolio
- Build capacity / engagement with investment teams and ultimately portfolio company management teams
- Catalyse further, more granular assessment to inform investment decision-making and strategic asset allocation
- Support dialogue with investors, regulators and other stakeholders

For illustrative purposes only

Sector	Global Net Risk and Opportunity Rating		
	2025	2030	2040
Power Production - Fossil Fuels Segment			
Oil & Gas - Oil Segment			
Marine Transport & Infrastructure			
Air Transport & Infrastructure			
Gas Distribution & Transmission			
Oil & Gas - Gas Segment			
Road Transport & Infrastructure			
Automobiles & Components			
Construction Materials			
Packaged Foods, Meat, Beverages and Food Retail			
Real Estate			
Health Care			
Chemicals			
Industrial Conglomerates & Machinery			
Other utilities			
Construction, Engineering & Building Products (ex cement)			
Metals & Mining (excl. Coal)			
Power Distribution & Transmission			
Electrical Equipment			
Semiconductors & Semiconductor Equipment			
Rail Transport & Infrastructure			
Power Production - Low Carbon Segment			

Risk score colour key						
Higher Opp.	Mod. Opp.	Lower Opp.	Limited	Lower Risk	Mod. Risk	Higher Risk

Question for the audience

A company generating coal-based power in Malaysia, with emissions of 1Mtpa, is earning MYR100 Mn in revenues and MYR40 Mn EBITDA (operating profits), resulting in an operating margin of 40%. Assuming that by 2030, a MYR20/t CO₂ carbon price is introduced, what would be the operating profits and the margins of the company by 2030? Consider that the company is only able to pass-through 50% of the additional costs to customers?

- 20 Mn, 20%
- 30 Mn, 27%
- 30 Mn, 30%
- 40 Mn, 36%
- 40 Mn, 40%
- None of the above

Up Next



- **Key messages**



Pralabh Bhargava
Senior Consultant, ERM

Summary of Key Messages

- ✓ Global transition toward a future **Paris agreement-compliant world** will need changes in the way we conduct our business and ourselves
- ✓ Different **climate attributes** will present themselves as a risk or an opportunity depending on how a company is placed in its climate change journey. These attributes will have different set of impact on the financial metrics of a company
- ✓ Assessing the risks and opportunities from these drivers **across different publicly available scenarios** help in understanding the **business resilience and future strategy**
- ✓ The more detailed the studies we perform, we can **deliver increased quantification** to support financial decision making



Up Next

- Q&A



Thank you



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Tell us Your thoughts



- **Survey**