



CLIMATE LEADERS COALITION
ON A MISSION TO REDUCE EMISSIONS IN NEW ZEALAND



thinkstep
anz

Masterclass Series

presented by Climate Leaders Coalition

Assessing climate change risks and opportunities
with thinkstep-anz

Masterclass

Assessing climate risk for business



Goal for today

Help your organisation assess the risks and opportunities from climate change

Time	Description
10:00	Welcome
10:05	Planning
10:10	Assessing risks and opportunities
10:20	Ranking risks and opportunities
10:25	Using the outputs
10:30	Disclosures
10.35	Final thoughts
10:40	Q&A
11:00	Close

Core Elements of Recommended Climate-Related Financial Disclosures

Governance

The organisation's governance around climate-related risks and opportunities

Strategy

The actual and potential impacts of climate-related risks and opportunities on the organisation's business, strategy and financial planning

Risk Management

The processes used by the organisation to identify, assess and manage climate-related risks

Metrics and Targets

The metrics and targets used to assess and manage relevant climate-related risks and opportunities



— Planning

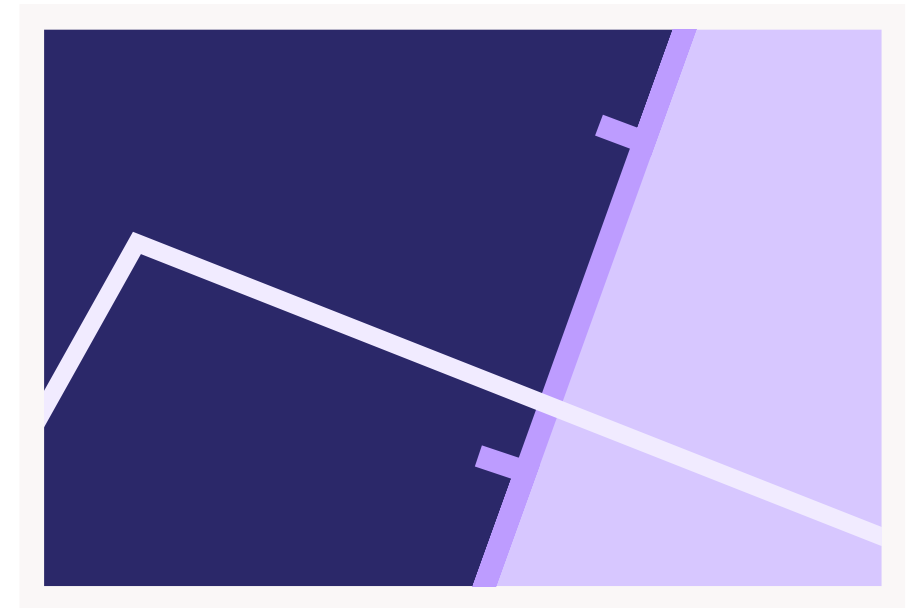
Initial questions

Who is in the team?

- Executive and governance
- Sustainability
- Risk
- Finance
- Operations/Asset management
- People/HSE
- Communications
- Legal/Corporate Affairs

What's our scope and boundary?

All operations, all geographies, the entire supply chain, all at once or staged?





1. XRB

- Useful life of assets or infrastructure
- Availability of data

2. ISO14091

- Lifetime of the system at risk
- Timescales over which the impacts of climate change become critical
- Lead time for adapting to address impacts



3. Business planning/investment horizons

- Short-term – 1 to 3/5 years
- Mid-term – 3/5 to 10 years
(match 2030 or 2050 emission reduction targets)
- Long Term 10 to 50 years
(match 2030 or 2050 emission reduction targets and/or asset lifetimes)

IPCC scenarios:

Near term: 2021-2040

Mid-term: 2041-2060

Long-term: 2081-2100

NIWA regional scenarios:

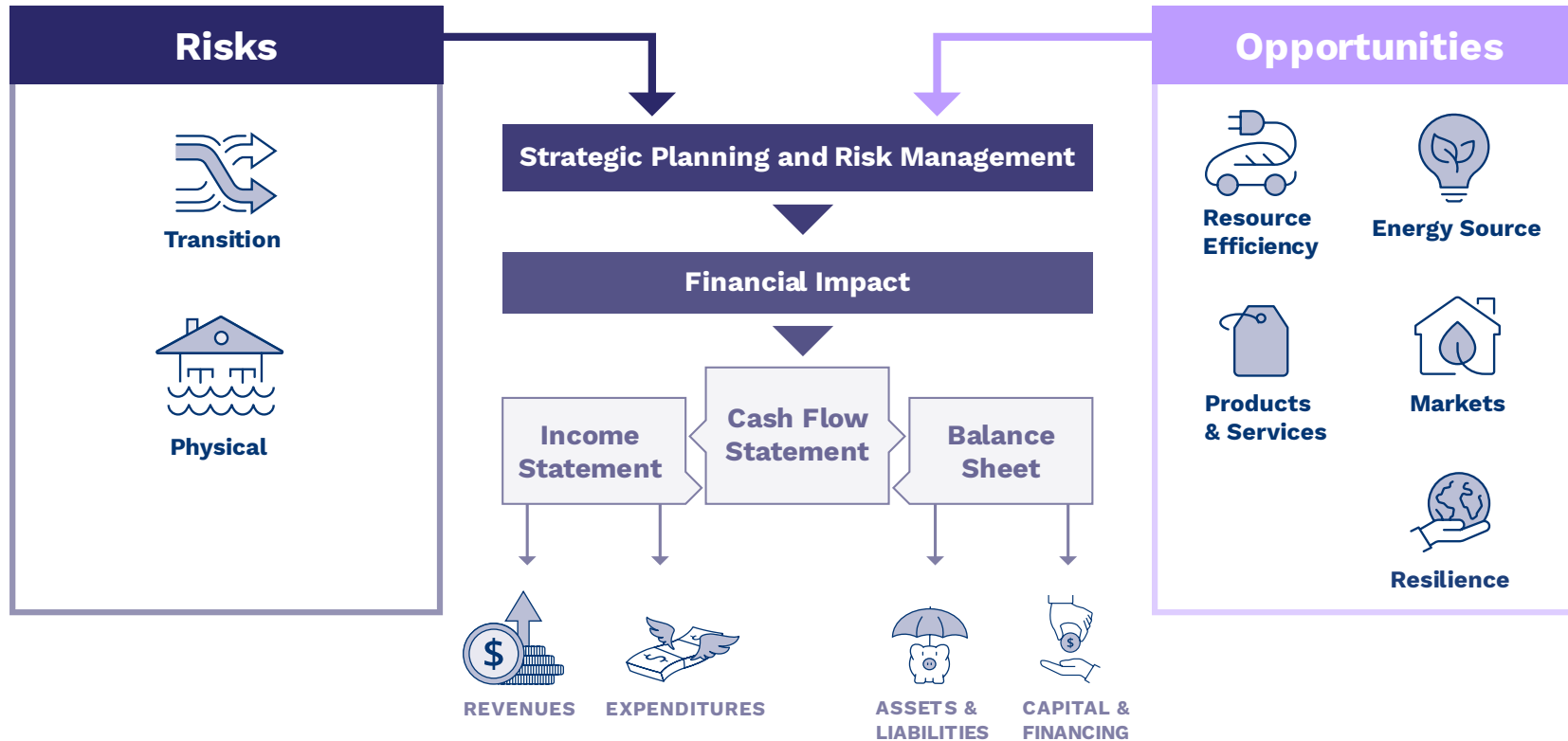
Near term: 2016-2035

Mid-term: 2046-2065

Long-term: 2081-2100

Assessing Risks and Opportunities

Assessing risks and opportunities



A methodology to assess risks

‘A climate risk assessment describes the potential impact of climate change on societies, economies and the environment’ (ISO14091: 2021)

Use Existing Risk/HSE processes

Note different language

→ Hazard – a potential source of harm

→ Impact – effect on natural and human systems

Risk Assessment Matrix					
Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	Low	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	Extreme	Extreme
Possible	Low	Low	Medium	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	High

Examples of physical hazards

Risk Assessment Matrix					
Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	Low	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	Extreme	Extreme
Possible	Low	Low	Medium	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	High

Hazard	Impacts	Risk Rating
More storms (frequency and intensity) including tropical cyclones*	Disruption to supply chains	High
	Disruption to journey to work	Medium
River and pluvial flooding: changes in frequency and magnitude in rural and urban areas	Disruption to assets (buildings)	Extreme
	Damage to stock	High
	Disruption to journey to work	Medium

Examples of transitional hazards

Risk Assessment Matrix					
Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	Low	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	Extreme	Extreme
Possible	Low	Low	Medium	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	High

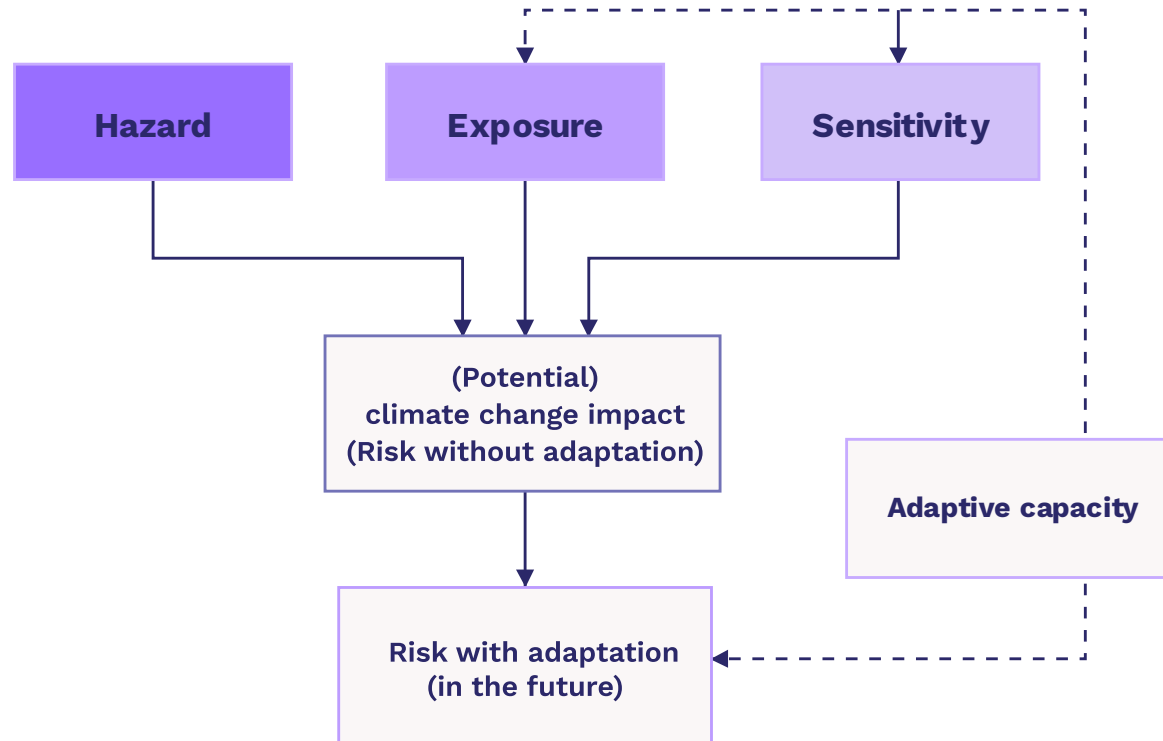
Hazard	Impacts	Risk Rating
Increasing climate policy and regulation	Additional resourcing requirements and costs	Medium
	Potential reputational damage	Low
Increasing price for carbon	Increasing costs of offsetting to meet targets	Low
Competitor gains access to new, more energy-efficient technology	Competitor has lower operating costs - more attractive investment proposition	High
	Competitor able to undercut others in the same market	High

Ranking Risks and Opportunities

Ranking risks

Hazard	Impacts	Risk Rating
River and pluvial flooding: changes in frequency and magnitude	Damage to assets (buildings)	Extreme
	Damage to stock	High
	Damage to journey to work	Medium
More storms (frequency and intensity) including tropical cyclones	Damage to supply chains	High
	Damage to journey to work	Medium
Competitor gains access to new, more energy-efficient technology	Competitor has lower operating costs – more attractive investment potential	High
	Competitor can undercut others	High
More climate policy and regulation	More resources needed, increased costs	Medium
	Reputational damage	Low
Higher price for carbon	Higher offsetting costs to meet targets	Low

Language of adaptation planning



The dotted line means that adaptation actions have been implemented.

(ISO 14091 2021)

Example with commentary

Climate related 'hazard'	Impacts	Risk Rating	Observation	Adaptation(s)
Increased water stress	Crop loss	High	Already experiencing water stress and major regional droughts	Increase access to and security of water supply Research and develop drought-resistant varieties
	Reduced protection	High	As above	As above
	Reduced crop yield	High	As above	As above
Increasing climate-related policy and regulation	Increased cost of compliance	Medium	Increased consent application costs. TCFD requirements need more resources.	Increase compliance budgets and gain resources needed
	Reduced operational capacity	Low	Reallocating existing resources to respond to extra needs	Crop loss
	Reduced profit		No impact to date	
	Reputational damage		No impact to date	

Using the outputs



Engage and inform leadership and governance



Facilitate external review and audit



Inform climate-related strategy – what to include, where to focus, when to act



Improve access to capital



Basis for scenario analysis and adaptation planning



Support disclosures – transparent, consistent, connected

— Disclosures

Disclosures – mandated companies



Table 1. Top climate-related financial risks for Meridian Energy

Top Risks			
Risk drivers	Extreme rainfall in hydro catchments	Negative demand disruption - emissions intensive industries	Increase in electricity spot price volatility
Type	Physical	Transition	Transition
Scale	Medium	Medium	Medium
Likelihood	About as likely as not	About as likely as not	Likely
Timeframe	Long-term (30 years)	Long-term (30 years)	Medium-term (5-10 years)
Impacts	Increasing intensity of extreme rainfall events in hydro catchments.	Sudden drop in electricity demand as emissions-intensive industries are disrupted by emissions climate change legislation or shifting consumer preferences for sustainable goods and services.	As New Zealand increases its share of generation, it may lead to higher level spot price volatility.
Financial Implications	Increase in intensity of extreme rainfall events may require the lowering of dam water levels (reducing assets' generating capacity) and/or the strengthening of dam structures.	Reduced electricity demand may negatively impact on Meridian's revenue, for example if the dairy industry was curtailed due to climate action policy.	Increased costs of commodity risk may increase the percentage of grid-renewable electricity generation.
Quantification	-\$11 million	-\$12 to -\$17 million	-\$1 to -\$40 million
Methodology	Estimated potential financial impact is an annualised figure over a 30-year time horizon of estimated civil construction costs and negative revenue impacts.	Estimated potential financial impact is an annualised figure over a 30-year time horizon, calculated by modelling the impact of a step-change reduction in demand and comparing it to our Evolution scenario. There is significant uncertainty to this calculation.	Estimated potential financial impact is estimate, an annual cost, and informs costs of current risk instruments and in on magnitude of potential changes to spot price volatility.
Management response	Probable Maximum Flood values are reviewed once every ten years to incorporate climate change.	Meridian supports of climate action policy that would increase electricity demand in other sectors, in particular the use of electricity in the transport and industrial heat sectors of the economy.	Meridian has a mature commodity risk that includes specific limits for allowab to spot electricity price risk. Within that the cost of mitigation is traded-off agc impact of accepting the risk.

RISKS & OPPORTUNITIES.

Climate-related risks and opportunities identified over the short, medium and long-term

An overview of Genesis' highest rated climate-related risks and opportunities are included below. Recognising that the climate scenario is dynamic and unknown to a certain extent, the classification represents Genesis' current assessment of the risk landscape. The impact rating corresponds to a defined Genesis risk management matrix. The risks below are discussed in more detail on pages 9-14.

Event	Transition risks			Physical risks		
	1. Regulation	2. Market	3. Technology	4. Chronic	5. Chronic	6. Acute
Risk/opportunity	Risk & some opportunity	Risk & some opportunity	Opportunity & some risk	Risk	Risk & opportunity	Risk
Timeframe	Short-term (1-10 years)	Short to Medium-term (1-20 years)	Short to Medium-term (1-20 years)	Short-term (1-10 years)	Long-term (gradual increase in likelihood over next 20-30 years)	Long-term (gradual increase in likelihood over next 20-30 years)
Impact rating	Moderate	Moderate - High	High	Moderate	High	High

	RISKS	OPPORTUNITIES
	CHANGES IN TEMPERATURE	
RISK RATING	M Scenario 1: 1.5°C IN 2050	M Scenario 2: 3°C IN 2050
DESCRIPTION	Periods of drought reduce catchment inflows. Increasing average temperatures and the incidence of hot days may reduce geothermal plant output and/or the reliability of air-cooled plant and equipment increasing output variability, and potentially reducing geothermal generation capacity.	The increased differential in terms of access to debt between high performing ESG companies and low performing ESG companies results in savings on debt instruments such as sustainability linked loans / green bonds and improved credit ratings. Potential uplift of share price valuation.
LIKELIHOOD	Likely	Likely
IMPACTS	Reduction in inflows and increased ambient temperature leading to decreased generation and revenue.	Reduced costs.
TIME PERIOD	S M L	S M L
FINANCIAL IMPLICATIONS	Medium	Medium
METHODOLOGY	Drought impact calculated through increasing prior worst observed drought with price impacts assumed based on market prices observed during drought periods. Impacts on geothermal stations assessed through existing observed temperature impacts on generation.	From a debt perspective, we have considered possible savings from preferential debt rates on sustainability-linked loans and bonds, as well as the impact a potential downgrade of our credit rating due to poor ESG performance could have on our debt costs.
MANAGEMENT RESPONSE	Continue overarching portfolio management to manage drought as it impacts the catchment over time - including through using contracts or length of the portfolio. Geothermal station impacts will be managed through considering station modification options and cooling.	Continue to communicate key ESG factors in our communications and Investor Relations programmes. Further develop our green debt portfolio.

TIME PERIOD:

- S Short-term 1-5 years
- M Mid-term 5-10 years
- L Long-term 10+ years

LIKELIHOOD:

Likely: Will probably, or is expected, to occur within a 3-10 year timeframe

Possible: Has the potential to occur

Unlikely: Unlikely to occur

FINANCIAL IMPACT:

High: Greater than \$75m

Medium: Greater than \$750k

Low: Less than \$750k

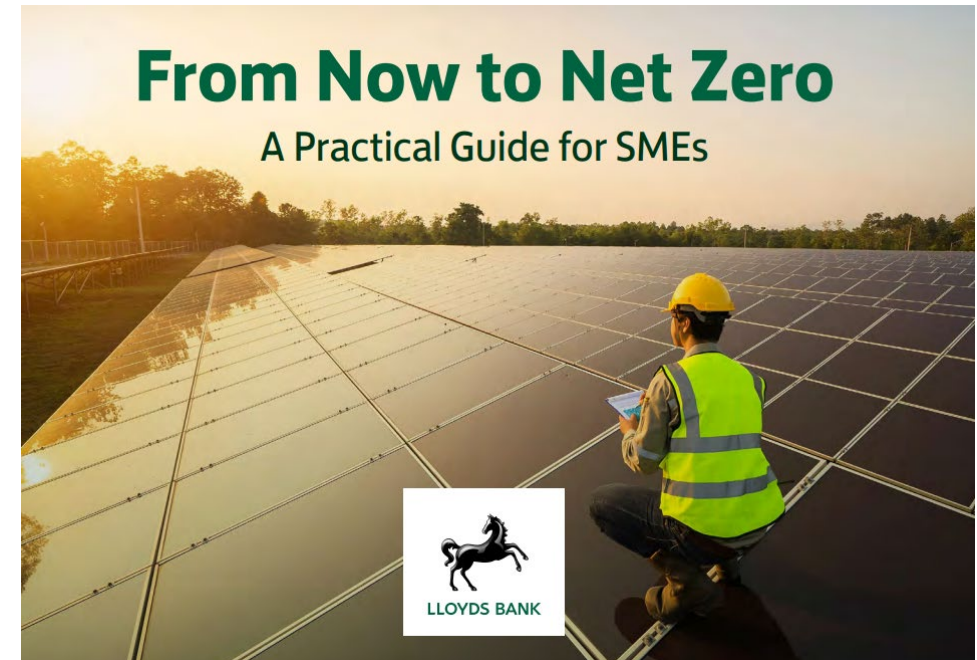
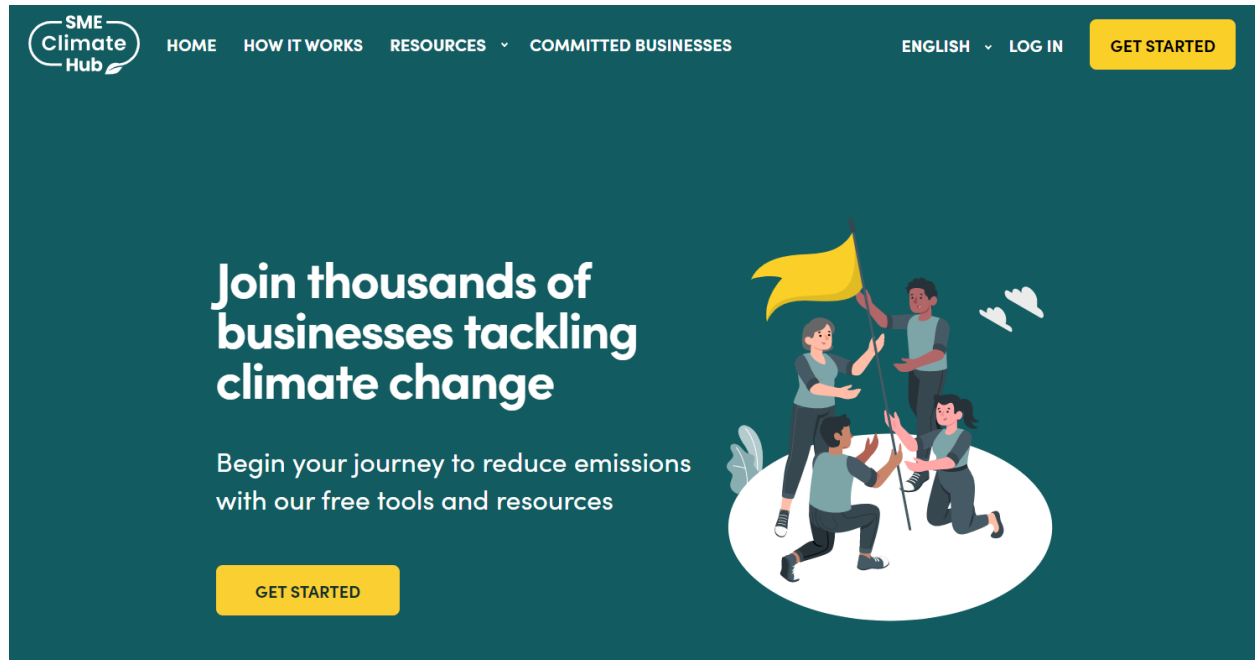
RISK RATING:

- H High
- M Medium
- L Low

The combination of impact and likelihood to determine risk ratings is shown in the table to the right. Note this is a simplified version of the more detailed internal risk matrix used by Mercury to classify risk.

LIKELIHOOD	IMPACT		
	Low	Medium	High
Likely	M	M	H
Possible	L	M	H
Unlikely	L	M	M

Example Disclosures | Task Force on Climate-Related Financial Disclosures (fsb-tcfd.org)
 MERCURY 2022 ANNUAL REPORT (adobe.com)
 FY22 Climate Risk Report.pdf (genesisenergy.co.nz)



[Committed businesses - SME Climate Hub](#)
[From now to net zero \(lloydsbank.com\)](https://lloydsbank.com)

[Masterclass Assessing climate risk for business](#)

Disclosures – where might they be going?



“Some companies have made commitments to net-zero emissions without clear pathways to achieve those goals, putting them at risk of negative market reactions when investors realize the goals are not achievable. Others have yet to even create a governance framework to address the issue or assess their current GHG emissions, the essential first steps to decarbonization and sustainability according to the Task Force on Climate-related Financial Disclosures (TCFD).”

[Committed businesses - SME Climate Hub](https://www.lloydsbank.com/sme-climate-hub)
[From now to net zero \(lloydsbank.com\)](https://www.lloydsbank.com/sme-climate-hub)

Final thoughts



- Strongly support the XRB recommendation that this is approached at the sector level (= business associations for SMEs)
- Take it in stages
- Start with issues you know you can make progress on
- Build a realistic roadmap
- You don't need to do it all at once
- Build on success

TCFD, *Recommendations of the Task Force on Climate-related Financial Disclosures*, June 2017

— Thank you



Q&A



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