



Quantification

CLIMATE-RELATED DISCLOSURES | WEBINAR 3

—
19 November 2024



Your KPMG hosts



Justin Ensor
Partner

jmentor@kpmg.co.nz



Alastair Marsden
Director

amarsden@kpmg.co.nz



Agenda

01. XRB Requirements

02. Framework for quantification

03. Capital budgeting with a focus on internal price of carbon



01



XRB Requirements

Climate Disclosure Standards

Current physical and transition impacts

Climate-related risks and opportunities reasonably expected

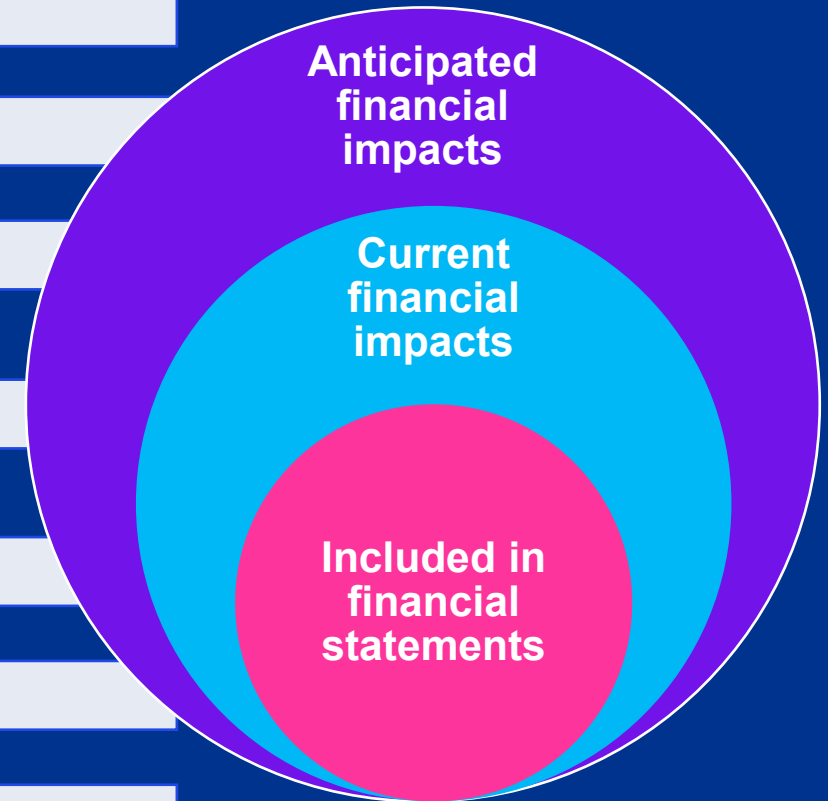
Time horizons over which ... reasonably be expected to occur

How ... input to internal capital deployment and funding decision-making processes

How transition plan ... align with internal capital deployment and funding decision-making processes.

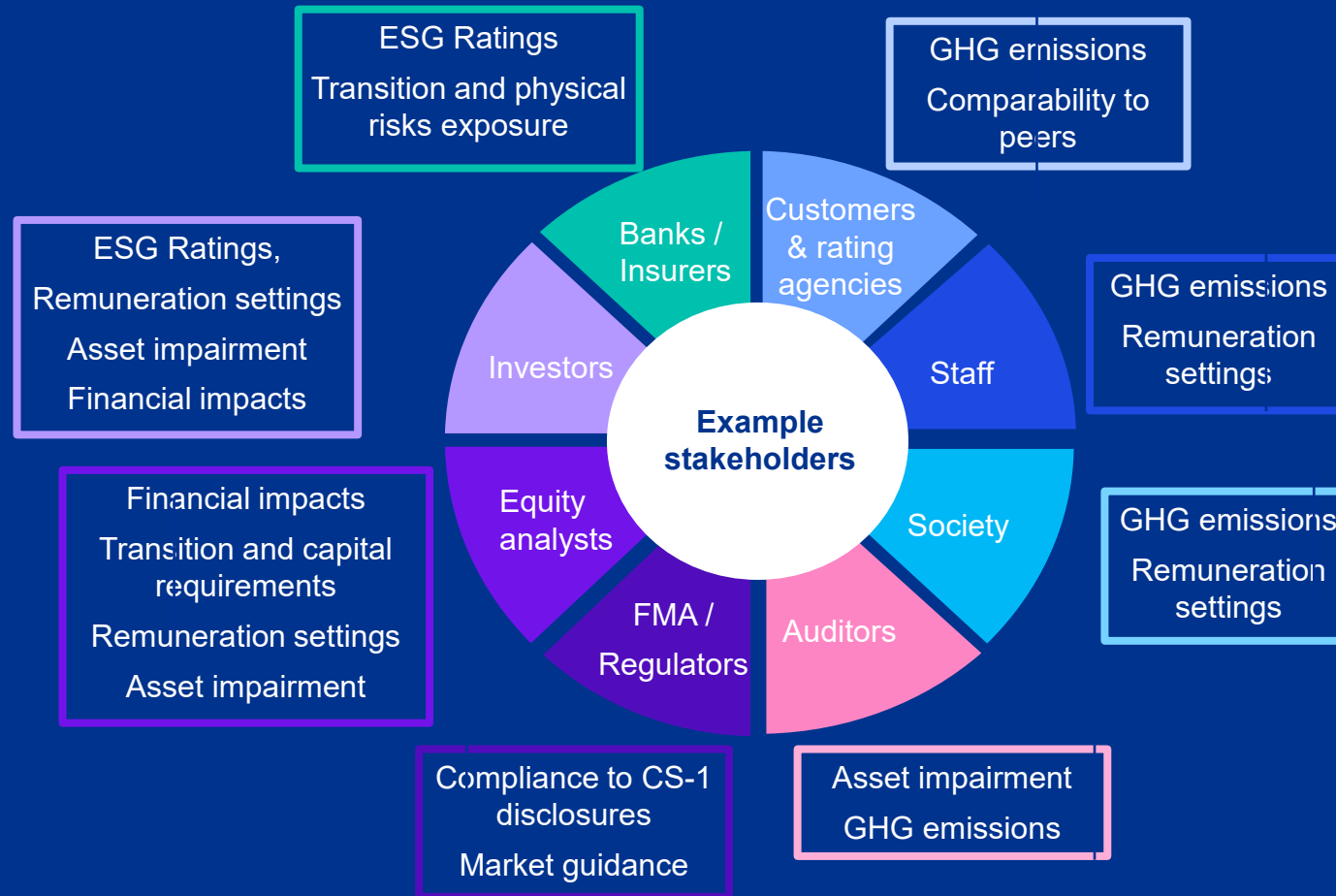
Amount of capital deployed

Internal emissions price



Primary users

There are a broad range of stakeholders [primary users] with an interest in the quantification of climate impacts.

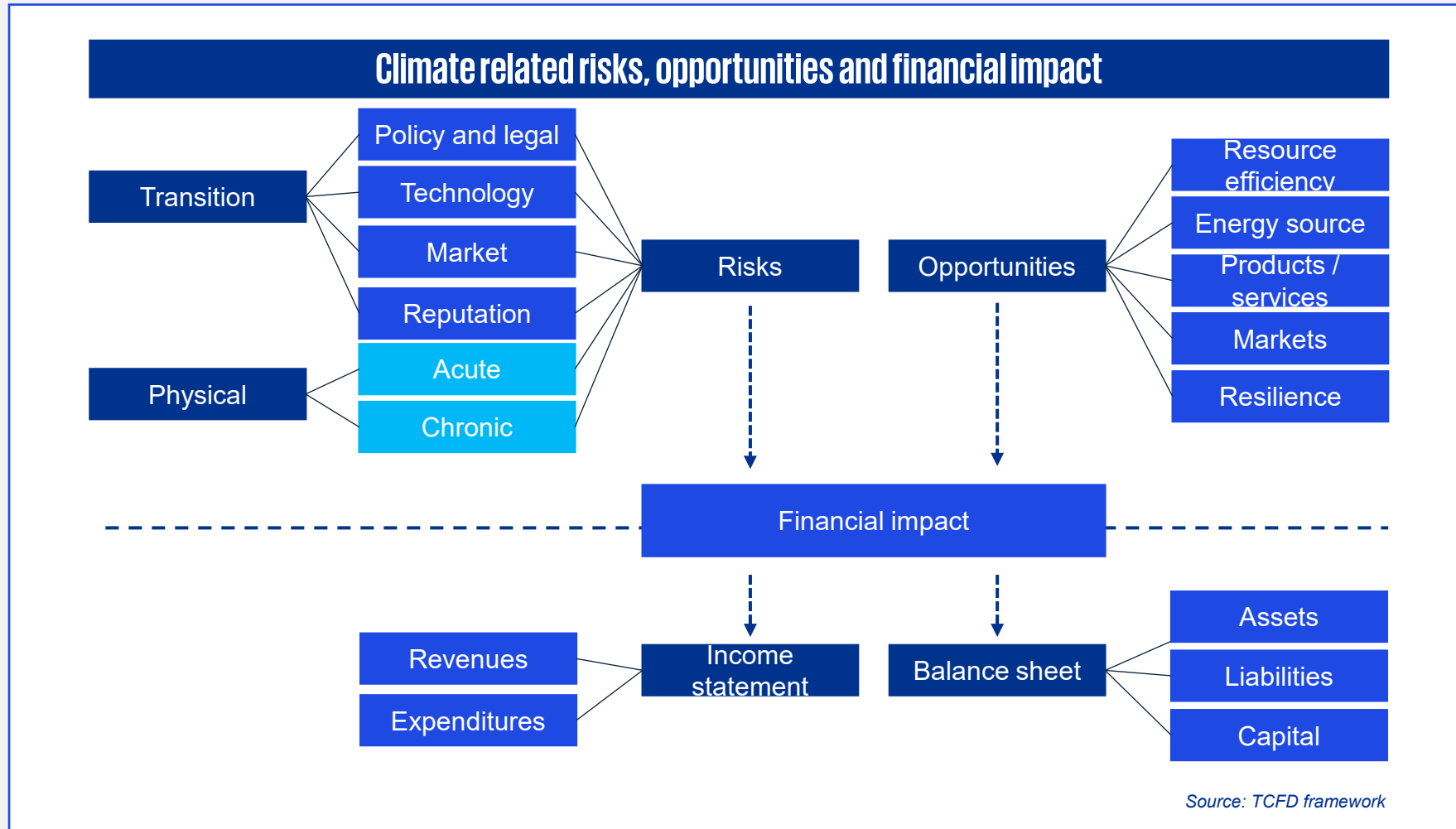


02



Framework for quantification

Framework for quantification



Impacts on cost of capital

Do companies with high exposure to climate risk have higher cost of capital and hence lower shareholder value (and higher expected forward-looking returns)?

Debt and Capital Structure

Studies in academic literature suggest that bad “CO₂” entities face:

- Less access to debt capital;
- More costly debt (if able to access debt capital); and
- Entities subject to climate risks and firms with high CO₂ emissions adopting lower gearing and dividend payout ratios.
- Consistent with statements from financiers of more restrictive debt finance to companies associated with high CO₂ emissions.

Empirical studies on expected returns for brown versus green stocks is mixed.

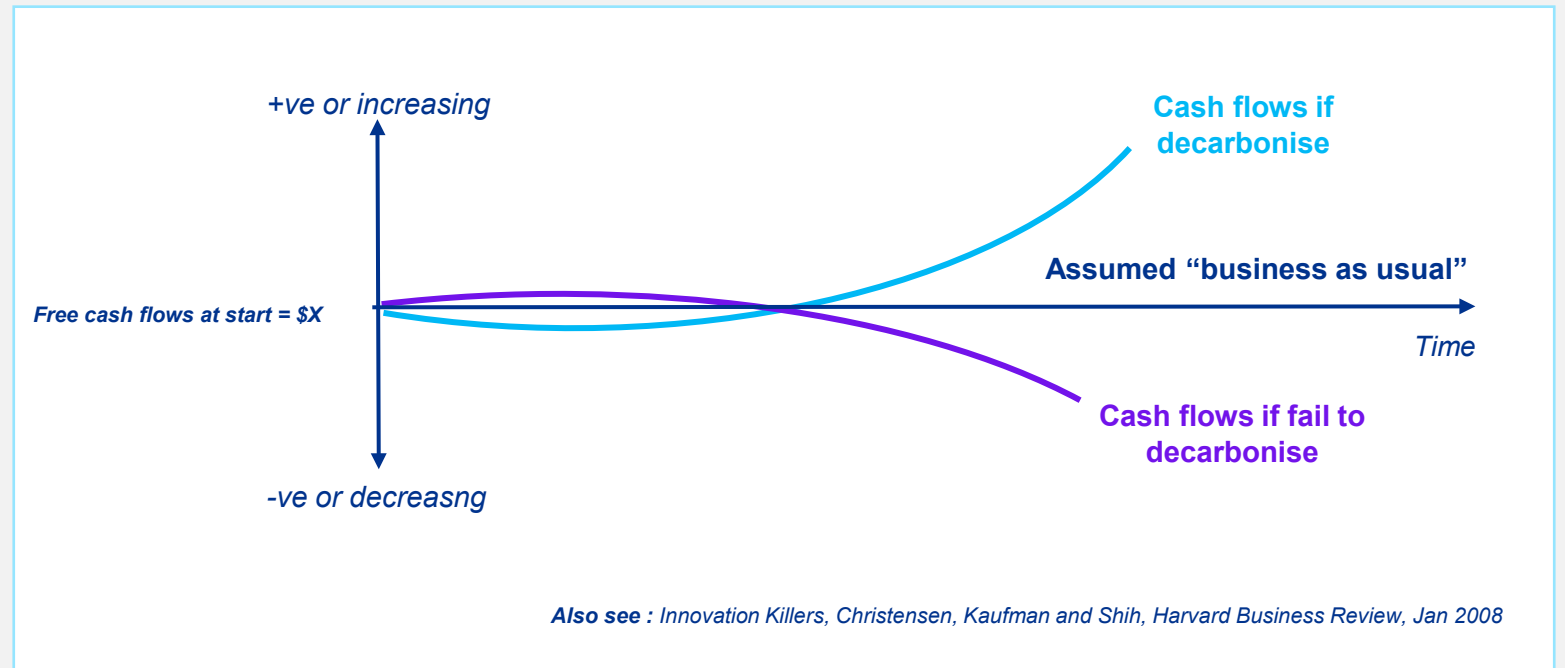
- For example, green stocks will outperform brown stocks reflecting lower volatility and less sensitivity to climate related shocks.
- On the other hand, investors have become more aware of CO₂ risk and a firm’s exposure to adverse climate related events (e.g., risks of customer boycotts, law-suits etc).
- In the transition phase we observe lower prices / lower returns for high CO₂ emitting firms.
- Eventually an equilibrium may be reached when high CO₂ emitting firms will have higher cost of capital and higher forward looking expected returns.
- See research paper by **Marshall et al., 2021, Financial markets and carbon dioxide emissions – paper for ACC in NZ.**

Capital budgeting



The underlying assumption for business- as-usual interpretations is that ‘current economic and social conditions will continue to flourish regardless of unfavourable biophysical conditions in Earth’s natural and climate systems.

TCFD 2017 Report.
<https://assets.bbhub.io/company/sites/60/2021/10/FINAL-2017-TCFD-Report.pdf>



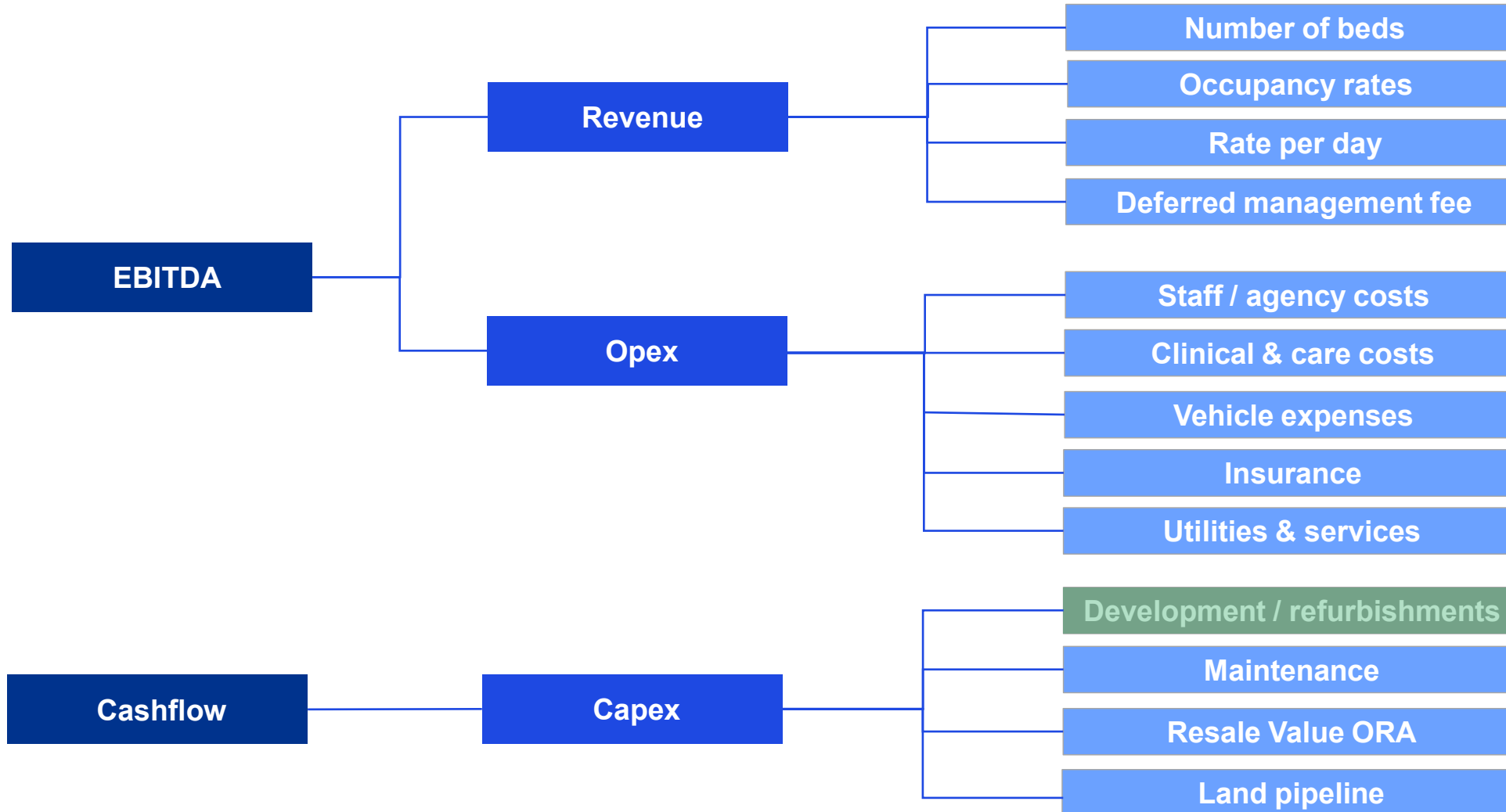
Approaches to quantification

- 1. Internal estimates – using your financial model as the starting point to estimate financial impacts.**
- 2. Econometric modelling – using third party econometric models to generate estimate of financial impacts.**

<https://kpmg.com/uk/en/home/services/products/climate-iq.html>



Identification of drivers – Internal quantification approach



Example – building resilience

- The company has determined that a risk / opportunity that is reasonably expected to occur relates to future proofing the buildings for floods and heat stress.
- Capex of \$20m required to deal with flooding and heat stress.
- Building valued at \$90m in last accounts.
- Expected value of building (after capex) is \$100m.
- Under a counterfactual if nothing is done, the building value could potentially fall to \$50m.
- Logical conclusion is to undertake the capex.

Disclosures

- \$20m gross capex or net impact \$10m or both
- \$(10)m potential impairment to property

03



Capital budgeting with a focus on Internal Price of Carbon

NZ CS 1

Capital budgeting is not a new process for companies. CS-1 is encouraging us to think more broadly around how climate-related impacts would impact significant capital allocation decisions.

Financial Impacts:
quantification of
climate scenarios
to meet new
Climate Standard
requirements



Climate-related risks and opportunities

14. An entity must include the following information when describing the climate-related risks and opportunities it has identified (see paragraph 11(c)):
 - (a) how it defines short, medium and long term and how the definitions are linked to its strategic planning horizons and capital deployment plans;
 - (b) whether the climate-related risks and opportunities identified are *physical* or *transition risks* or opportunities, including, where relevant, their sector and geography; and
 - (c) how climate-related risks and opportunities serve as an input to its internal capital deployment and funding decision-making processes.

22. An entity must disclose metrics for each of the categories below (see paragraph 21(a)):
 - (f) capital deployment: amount of capital expenditure, financing, or investment deployed toward climate-related risks and opportunities;
 - (g) *internal emissions price*: price per metric tonne of CO₂e used internally by an entity; and

Source: [Climate-related Disclosures » XRB](#)

Capital Budgeting with an Internal Price of Carbon (“ICP”)

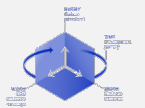
The internal carbon emissions price is a required disclosure metric under the Aotearoa New Zealand Climate Standard CS1

Definition under CS1

A monetary value of GHG emissions that an entity uses internally to guide its decision-making process in relation to climate-related impacts, risks and opportunities”.

Internal carbon pricing is the practice of assigning a cost to carbon emissions, usually per tonne of carbon (or equivalent greenhouse gas) emitted.

Source: [Climate-related Disclosures » XRB](#)



Conceptual framework for capital budgeting with an ICP

In the case of cost & benefit and net present value (“NPV”) analysis, a specific cost of carbon emissions is incorporated into the discounted cash flow (“DCF”) valuation:

$$\text{Project NPV} = -\text{Investment} + \sum_{t=0}^T \frac{\text{Revenues}_t - \text{Costs}_t - (\text{Carbon Price}_t \times \text{Carbon emissions}_t)}{(1 + \text{Discount rate})^t}$$

Discount rate = cost of capital

Examples where you might start with this framework:

- Analyse the costs of buying an EV vehicle versus a petrol vehicle.
- New versus old technology to reduce emissions from a manufacturing operation.

Approaches to set Internal Price of Carbon

1

Shadow pricing.

This entails setting a hypothetical cost of emissions, which is used to inform new investment decisions.

2

An implicit carbon price:

This is typically calculated after emission reduction targets are achieved based upon the abatement cost per ton of CO₂e to implement an emission reduction target.

3

An “internal carbon fee” or “tax”.

This is where an entity charges its business units for their emissions.

Benefits of an Internal Price of Carbon

1

Strategy:

Ensures that emissions are considered when making major business decisions (for example, to incentivise the deployment of new low carbon technologies)

2

Risk management:

Future-proof business models and strategies by building resilience for future changes in carbon regulations.

3

Resource Allocation:

Generates resources to finance decarbonisation projects.

4

Investor relations:

A signal to all stakeholders that the entity is serious about transitioning to the low-emissions economy, with greater access to debt and equity capital markets and a lower cost of capital.

Concluding statements

1. **Informs strategic decisions and impacts value**
2. **Financial quantification provide useful information for investors**
3. **Clearly map risks and opportunities to your value drivers**
4. **Make sure you document decisions**
5. **Get started early, not withstanding the extensions.**



Thank you



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