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ClimateWise Transition Risk framework: functioning and results

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UNIVERSITY OF CAMBRIDGE
INSTITUTE FOR SUSTAINABILITY LEADERSHIP

University of Cambridge Institute for Sustainability Leadership (CISL)

Centre for Sustainable Finance

- ClimateWise
- Banking Environment Initiative
- Investment Leaders Group

Working with over 50 global financial institutions across banking, insurance and investment, we provide the insight needed to challenge current assumptions and lead change

ClimateWise network and engagement

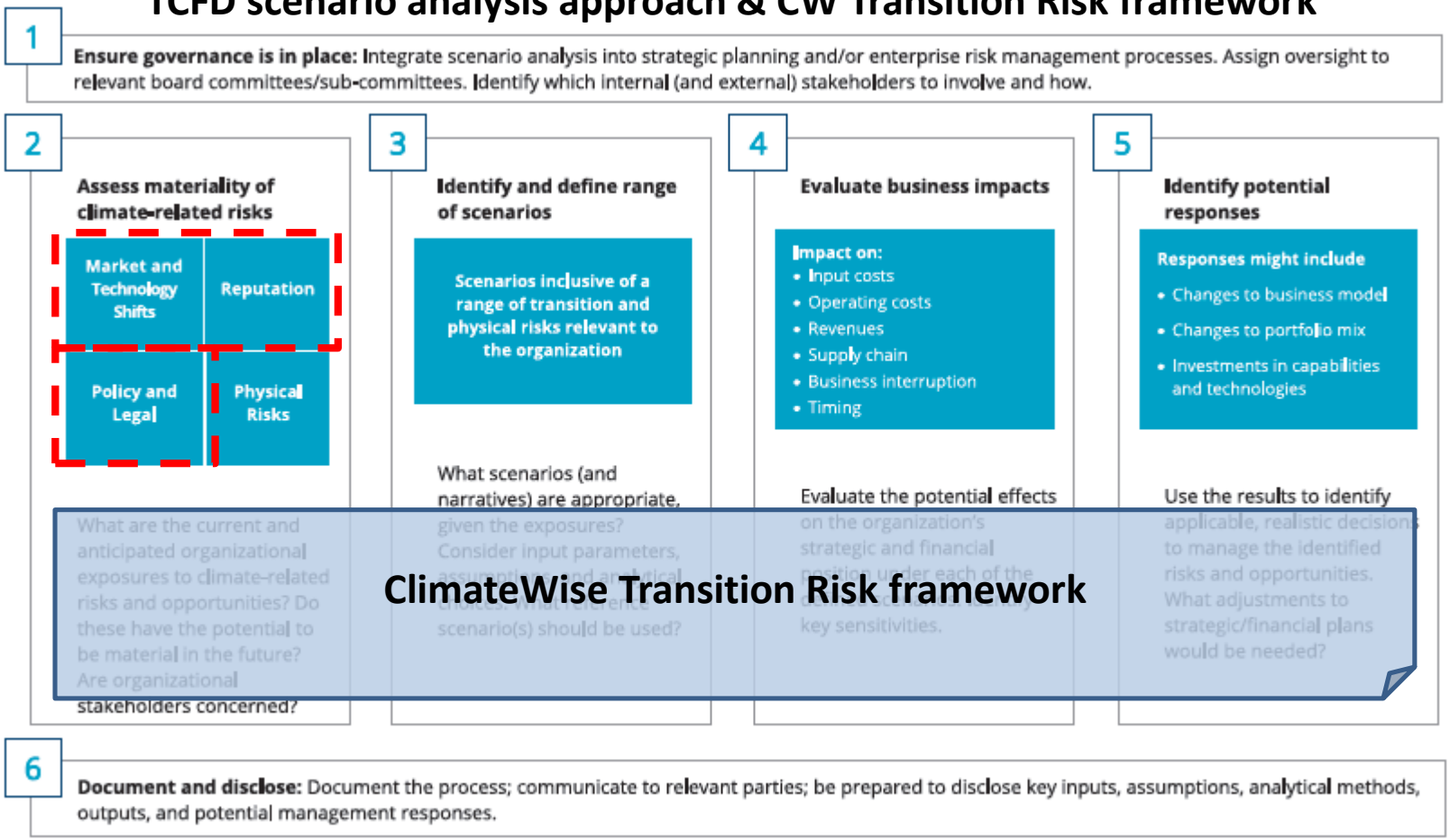
ClimateWise is a global network of leading insurers, reinsurers, brokers and industry service providers who share a commitment to reducing the impact of climate change on society, as well as the insurance industry.

The ClimateWise **Transition Risk framework** has been **tried-and-tested**, applying it to **three real-life portfolios** of:

- two of the world's largest insurance companies
- one of the global top five investors in infrastructure

ClimateWise Transition Risk framework supports the TCFD approach

TCFD scenario analysis approach & CW Transition Risk framework



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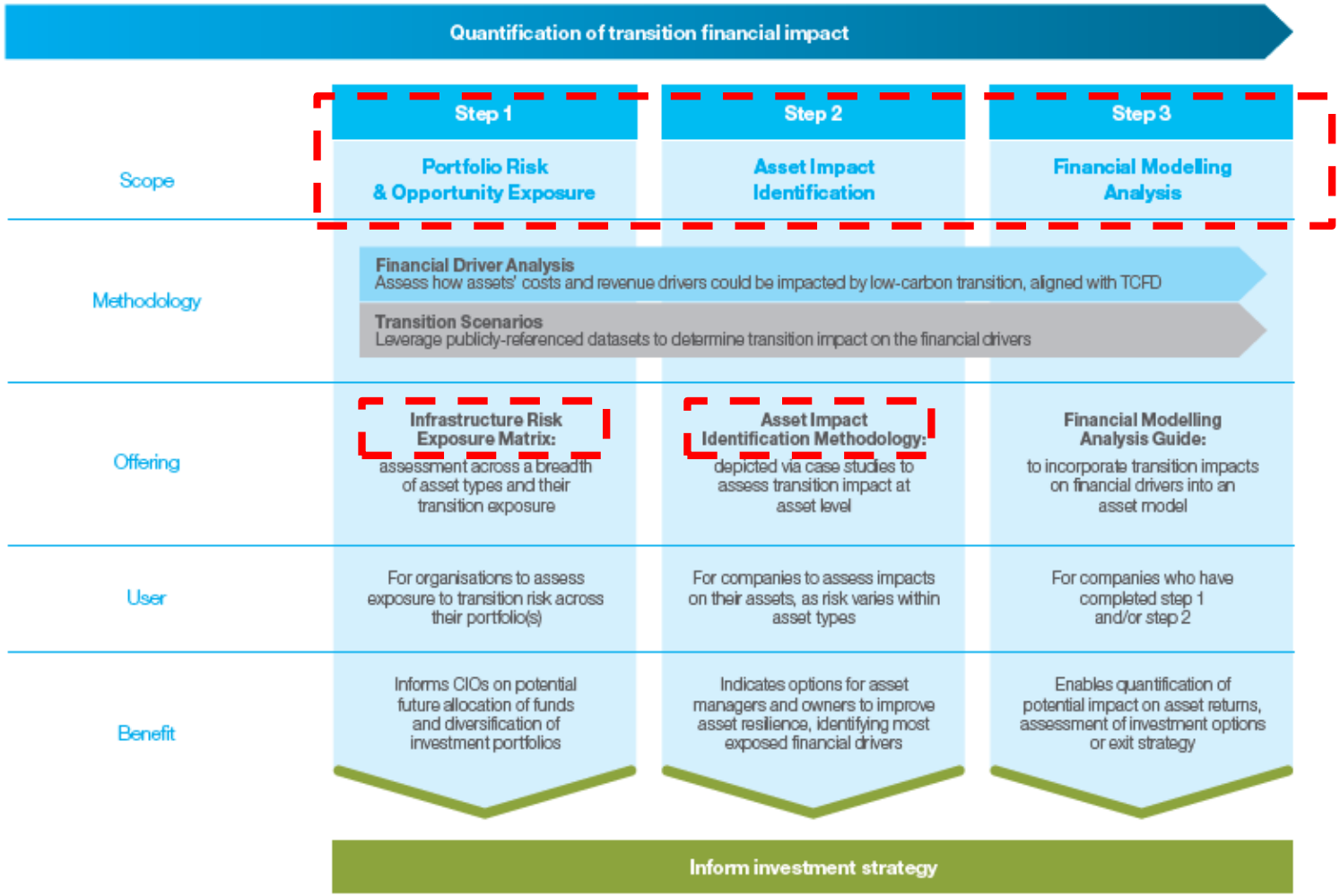
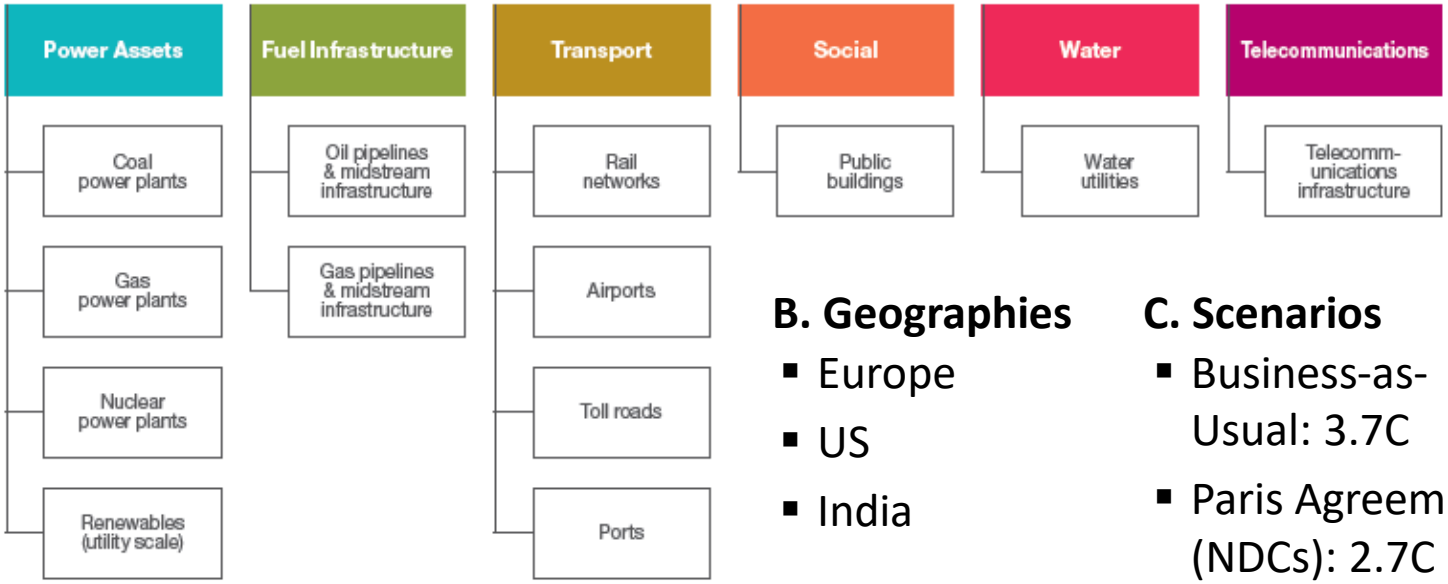
The framework aims to enhance understanding of low carbon transition impacts on infrastructure investments



5 key components of the framework

A. Infrastructure assets in scope



B. Geographies

- Europe
- US
- India

C. Scenarios

- Business-as-Usual: 3.7C
- Paris Agreem. (NDCs): 2.7C
- 2C scenario

D. Timeframes

- 2020
- 2030
- 2040

- ➢ Tried-and-tested (3 real-life portfolios) + feedback from regulatory bodies and industry stakeholders
- ➢ Assumptions/data sources in clear text (no black box)
- ➢ Open-source with possibility to customise

E. Financial drivers

Financial impacts	Transition risk	Financial drivers
Revenue	Market and technology shifts	Consumer and market demand (eg number of cars on the road)
CapEx	Emerging policy and legal requirements/ Mounting reputational pressures	Property, plant or equipment related costs (eg emission reduction technologies)
OpEx	Emerging policy and legal requirements	Regulatory and compliance costs (eg emissions monitoring, carbon pricing)

Step 1 - Portfolio Risk & Opportunity Exposure

Step 1(a): assess infrastructure asset types most exposed to the low carbon transition

Infrastructure Risk* Exposure Matrix (extract)

NOT EXHAUSTIVE

Infrastructure Risk Exposure Matrix						
Transition risk by infrastructure asset type				Paris Agreement (NDCs)		
Sector	Sub-sector	Asset Types	Geography	2020	2030	2040
Power Generation	Coal	Coal-fired power plants	U.S.	Minimal	Med Risk	Med Risk
			EU	Med Risk	Med Risk	High Risk
			India	Low Risk	Med Risk	Med Risk
	Gas	Gas-fired power plants	U.S.	Minimal	Minimal	Minimal
			EU	Minimal	Low Risk	Low Risk
			India	Minimal	Minimal	Minimal
	Nuclear	Nuclear power plants	U.S.	Med Risk	Med Risk	Med Risk
			EU	Med Risk	Med Risk	Low Risk
			India	Low Opp	Med Opp	Med Opp
	Renewables	Utility-scale wind and solar farms	US	Low Opp	Med Opp	Med Opp
			EU	Low Opp	Med Opp	Med Opp
			India	Low Opp	Med Opp	High Opp

High Risk | Med Risk | Low Risk | Minimal | Low Opp | Med Opp | High Opp

In the Power Generation sector (Paris Agreement-NDCs scenario):

- EU is exposed to a medium risk for Coal-fired power plants (25-50% variation of financial drivers vs business as usual scenario)
- There is minimal risk associated with gas-fired power generation (<10% variation of financial drivers vs business as usual scenario)

Note: (*) Considered Transition risks, as defined by the G20 Financial Stability Board's TCFD: Market and Technology Shifts, Reputation, Policy and Legal

Step 1(b): assess portfolios exposure

Infrastructure Risk* Exposure Matrix

Infrastructure Risk Exposure Matrix

Transition risk by infrastructure asset type				Paris Agreement (NDCs)			2°C Scenario		
Sector	Sub-sector	Asset Types	Geography	2020	2030	2040	2020	2030	2040
Power Generation	Coal	Coal-fired power plants	U.S.	Minimal	Med Risk	Med Risk	Med Risk	High Risk	High Risk
			EU	Med Risk	Med Risk	High Risk	Med Risk	High Risk	High Risk
			India	Low Risk	Med Risk	Med Risk	Low Risk	Med Risk	High Risk
	Gas	Gas-fired power plants	U.S.	Minimal	Minimal	Minimal	Minimal	Low Risk	Med Risk
			EU	Minimal	Low Risk	Low Risk	Low Risk	Med Risk	High Risk
			India	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
	Nuclear	Nuclear power plants	U.S.	Med Risk	Med Risk	Med Risk	Med Risk	Low Risk	Low Risk
			EU	Med Risk	Med Risk	Low Risk	Med Risk	Low Risk	Low Risk
			India	Low Opp	Med Opp	Med Opp	Low Opp	Med Opp	Med Opp
	Renewables	Utility-scale wind and solar farms	US	Low Opp	Med Opp	Med Opp	Low Opp	Med Opp	High Opp
			EU	Low Opp	Med Opp	Med Opp	Low Opp	Med Opp	Med Opp
			India	Low Opp	Med Opp	High Opp	Low Opp	Med Opp	High Opp
Oil & Gas Infrastructure	Oil	Pipelines and associated midstream infrastructure	U.S.	Med Risk	Med Risk	Med Risk	Med Risk	Med Risk	High Risk
			EU	Low Risk	Med Risk	Med Risk	Low Risk	Med Risk	High Risk
			India	Minimal	Minimal	Minimal	Minimal	Minimal	Low Risk
	Gas	Gas distribution infrastructure	U.S.	Minimal	Low Risk	Low Risk	Low Risk	Med Risk	High Risk
			EU	Minimal	Med Risk	Med Risk	Low Risk	Med Risk	High Risk
			India	Minimal	Low Risk	Low Risk	Minimal	Low Risk	Low Risk
Transportation	Aviation	Airports	U.S.	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
			EU	Minimal	Minimal	Minimal	Minimal	Med Risk	Med Risk
			India	Minimal	Minimal	Minimal	Low Risk	Med Risk	Med Risk
	Roads	Toll roads	U.S.	Minimal	Minimal	Minimal	Minimal	Minimal	Low Risk
			EU	Minimal	Minimal	Minimal	Minimal	Minimal	Low Risk
			India	Minimal	Low Risk	Low Risk	Low Risk	Low Risk	Med Risk
	Shipping	Ports	U.S.	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
			EU	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
			India	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
	Mass Transit Systems	Railways, subways, trams (excludes buses)	U.S.	Minimal	Low Opp	Low Opp	Minimal	Low Opp	Low Opp
			EU	Minimal	Minimal	Minimal	Minimal	Minimal	Low Opp
			India	Minimal	Minimal	Minimal	Minimal	Minimal	Low Opp
Social	Buildings	Hospitals, schools, nursing homes, military	U.S.	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
			EU	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
			India	Minimal	Minimal	Minimal	Minimal	Minimal	Low Risk
Water	Water utilities	Water treatment, desalination facilities, sewers/tunnels	U.S.	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
			EU	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
			India	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Telecommunications	Telecommunications infrastructure	Television broadcast towers, wireless communications towers, cable systems, satellite networks	U.S.	Minimal	Minimal	Minimal	Low Risk	Minimal	Minimal
			EU	Minimal	Minimal	Minimal	Low Risk	Minimal	Minimal
			India	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal

Portfolio Risk* & Opportunities exposure

(real-life portfolios)

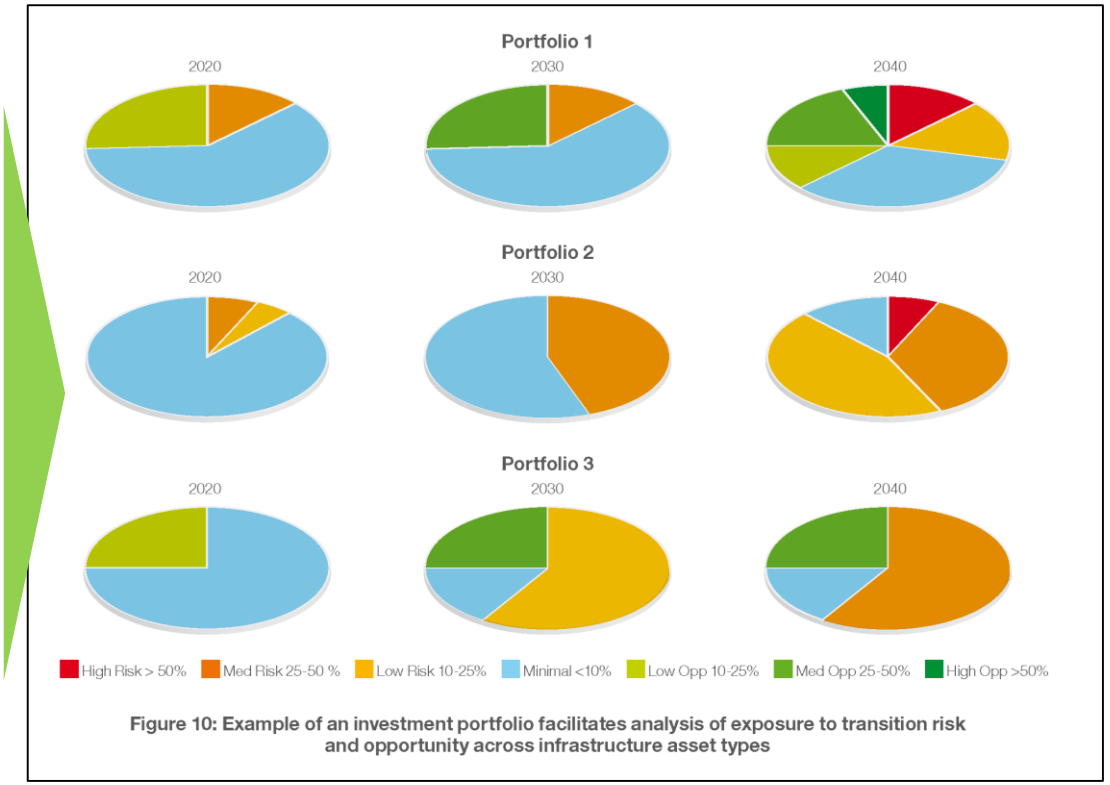


Figure 10: Example of an investment portfolio facilitates analysis of exposure to transition risk and opportunity across infrastructure asset types

Note: (*) Considered Transition risks, as defined by the G20 Financial Stability Board's TCFD: Market and Technology Shifts, Reputation, Policy and Legal

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Step 1 (c): identify exposed assets in the portfolio to inform for future investment strategy

Information for CIOs to support guidelines on investment strategy

EXAMPLE

Company type	Country	Paris Agreement (NDCs)	2°C scenario
Gas distribution	EU country	Up to medium risk	Up to medium risk

Investment guidance	Investment strategy	Asset managers
Although it is relatively low risk, the timing of when the asset is most at risk will depend on the time frame for reducing power-sector emissions. In the 2°C scenario, gas generation benefits from the accelerated retirement of coal generation.	Monitor national policy and market developments to avoid potential risk	Investigate options for adapting the gas pipeline for distribution of hydrogen. This could mitigate risks from a fall in pipeline utilisation due to a transition to low carbon alternatives.

Identify the assets in the portfolio that are highlighted as having high financial risk or opportunity accounting **for transition risk** and **material value in the portfolio**.

The results can be used to:

a) inform **future portfolio investment strategy** – including allocation of funds or divestments

b) select assets for **more granular assessment** in Steps 2 and 3 of the framework

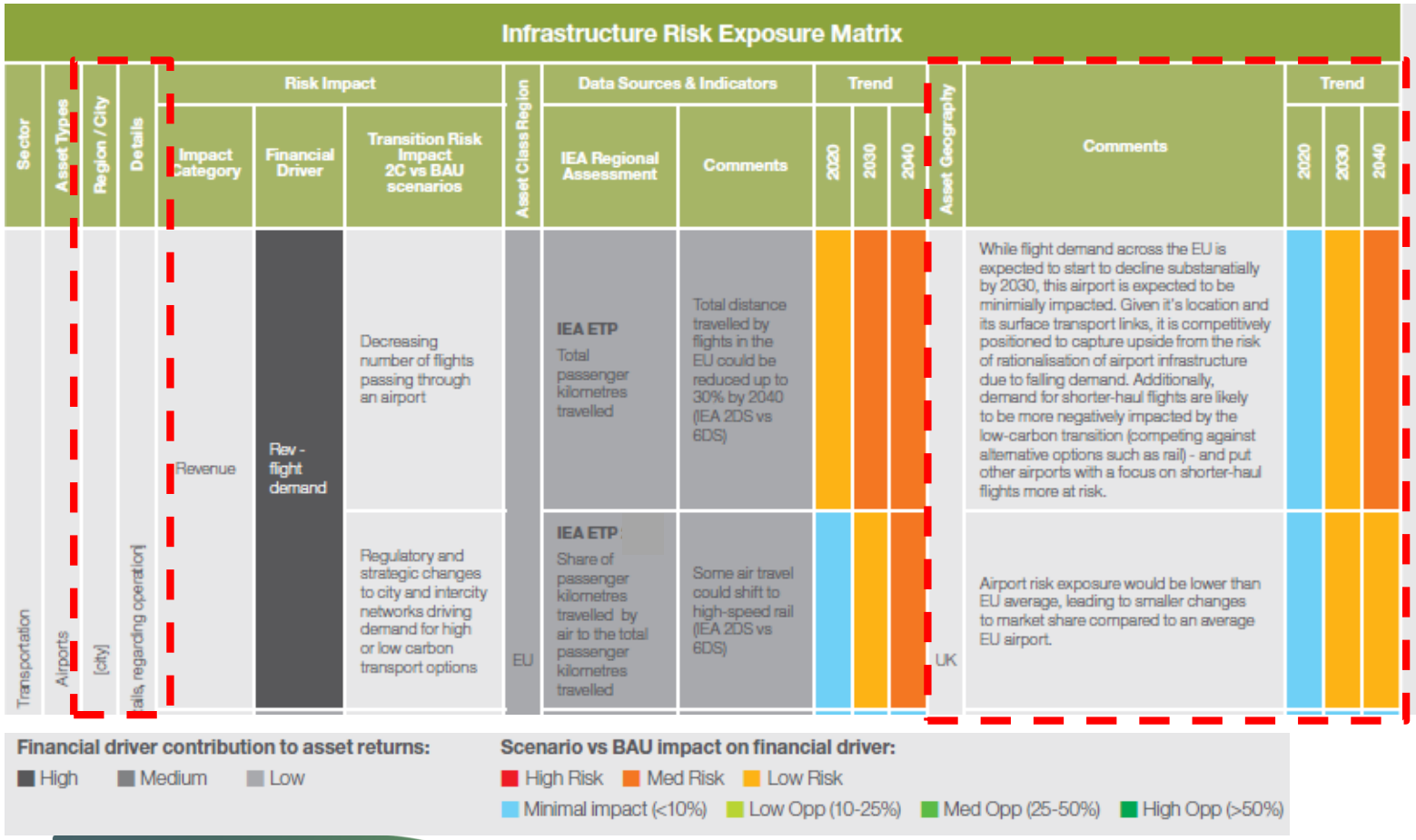
Step 2 - Asset Impact Identification

&

Step 3 - Financial Modelling Analysis

Step 2: assess the financial impact from the low carbon transition at an asset-by-asset level

Asset Impact Identification Methodology



Risks vary considerably between assets of the same type (geography, carbon intensity, market positioning…)

Investors can gain **benefits** in conducting an **asset-level specific analysis** applying/ customising the Infrastructure Risk Exposure Matrix per each specific asset

Step 3: allow investors to incorporate the potential impacts of transition risk directly into their own financial models

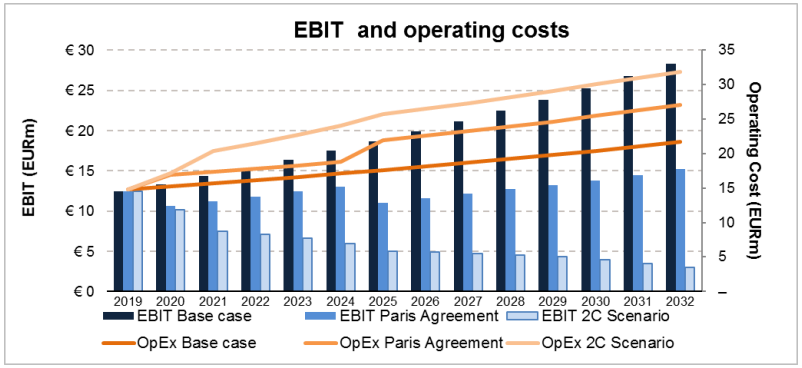
Step 3(a) Interpolate financial drivers in the model

Risk Impact			Scenario data sets
Impact Category	**Financial Driver**	**Methodology**	**IEA Regional Assessment**
Revenue	Rev - Utilisation of gas distribution infrastructure	(1) Quantify changes in natural gas demand (IEA PA vs BAU scenario) to determine macro risk	**IEA WEO** Natural gas demand (Total Primary Energy Demand)
Cost	CapEx & OpEx - Emission reduction requirements	(1) Review existing government policies and future projections	**National NDCs Paris Agreement Target** Emission reduction requirements and estimated associated costs
	OpEx - Carbon pricing	(1) Incorporate latest views on carbon pricing outlook by country	**Government ETS** Historic data set of carbon pricing; government policy to achieve Paris Agreement target **IEA WEO** Carbon pricing assumption

Asset managers can **incorporate risks** to financial drivers of revenue and costs **into their own asset financial model**, referring to the outputs from:

- Infrastructure Risk Exposure Matrix,
- Asset Impact Identification Methodology
- relevant scenario data sets

Step 3(b): Assess financial materiality



Asset managers and owners could then assess how the low carbon transition could **impact** a variety of **the asset's financial metrics** and leverage the work to consider exit strategies where risk is high, or develop investment options to improve asset resilience

Future evolution

- **Annual update of existing framework** (assumptions, data-sets…) for releasing in Q1 of each year

- **Extension** of the **Transition Risk framework** for:
  - new Sectors → **Real Estate**
  - new Geographies → **China**
  - new Climate scenarios → **1.5C and 6C**
  - new Timeframes → **2025** (instead of 2020)

Contacts and further information

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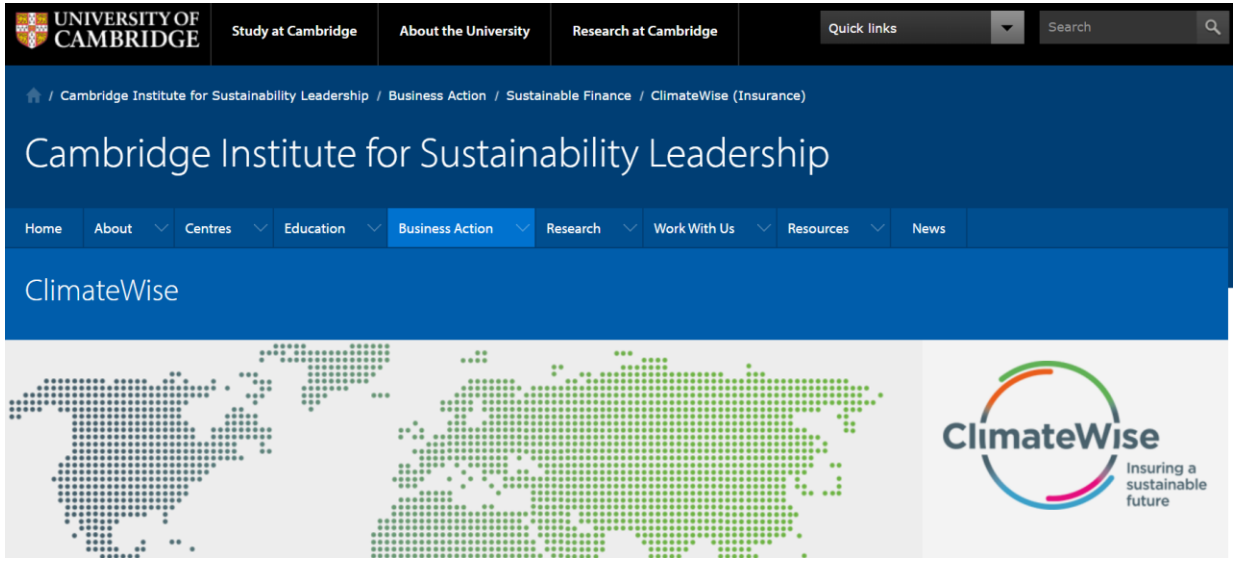

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