

ADDRESSING CLIMATE-RELATED RISKS TO CORPORATE DISCLOSURE

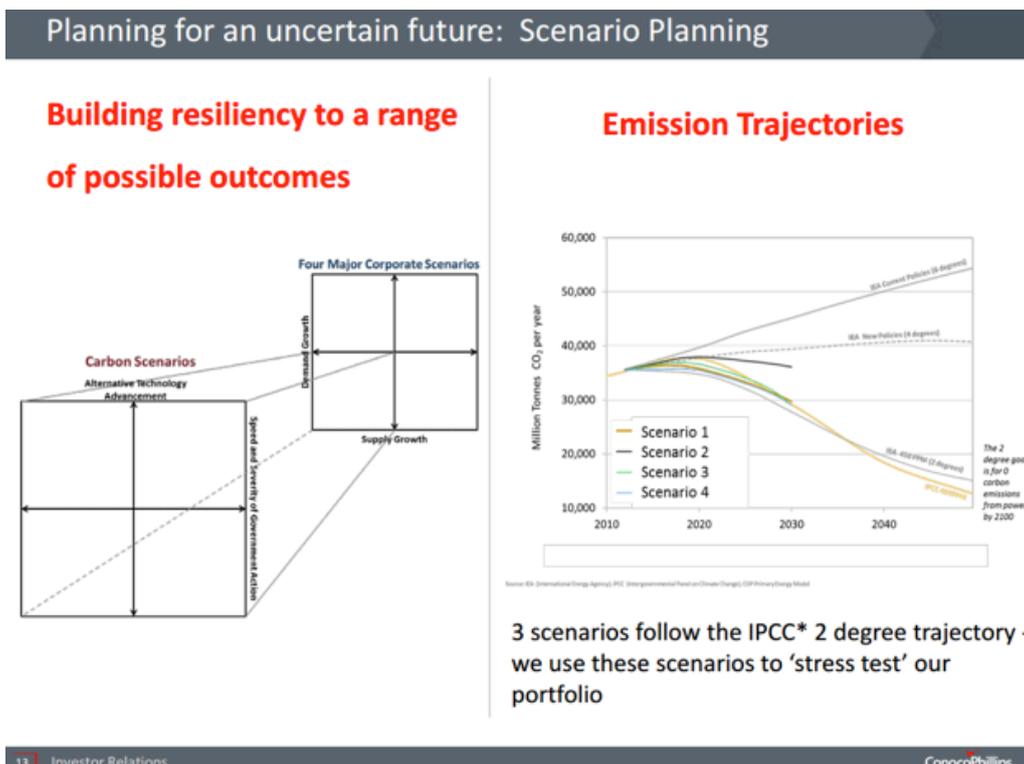
Markets, policymakers, and regulators are calling for improved climate-related disclosure for fossil fuel companies:

- Investors: Carbon Asset Risk shareholder resolutions filed in 2015 called for company analysis of their business alignment with 2°C and received unprecedented support.
- Industry: 96% of respondents to FSB TCFD Phase I agreed that scenario analysis is a key component of disclosure.
- Policymakers & Regulators: Central banks across Europe have conducted or commissioned analyses of systemic financial risk from climate change.

Leading companies are demonstrating some of what is possible but standards are needed to make those disclosures comparable and complete:

- Many companies mention climate risk, but those discussions have lacked consistency, comparability and failed to focus on the critical business impacts, such as: strategy, capital expenditure, demand, and price.
- Fundamental assumptions are not transparent, limiting usefulness.

Example: ConocoPhillips is stress testing, but neither assumptions nor outcomes are transparent



“Stress testing” with scenario or sensitivity analysis can help assess the degree of alignment with climate targets



Stress testing, built off better disclosure and a price corridor, could act as a time machine, shining a light not just on today’s risks, but on those that may otherwise lurk in the darkness for years to come.” -- Mark Carney, 29th September 2015



- Climate change mitigation efforts may affect the supply, demand and price of fossil fuels.
- Climate targets imply a limit to future emissions and a budget for producing carbon.
- A sensitivity analysis can examine the impact that a single factor, commodity prices for example, has upon cash flows.
- Stress-testing, via scenario analysis, for example, can illuminate potential financial impact while standardising what needs to be disclosed.
- The use of central scenarios or standardised sensitivity test points further aids in comparability.

A stress test is...

- Analysing (and managing) possible financial impact from a given set of conditions.
- A range of existing tools, including bottom-up or top-down approaches and scenario (multi-factor) or sensitivity (single-factor) analysis. It is important to pick the right tool for the job. We have focused here on scenarios and sensitivity analysis.
- Applicable for different purposes, including solvency and liquidity analysis and could analyse impact at a system or business unit level. Such purposes could also include an analysis and comparison of cash flows under different commodity prices.

A scenario-based stress test is not...

- A forecast: it is built to test a business or system under specified conditions.
- An expression of likelihood/probability: Issuers can express disbelief in the scenario since the purpose is to provide information. The market can assess the probabilities.

A sensitivity analysis does not...

- Require modeling or projection of the future—it proceeds directly to testing the impact that a single variable such as commodity price or production level has on cash flows.
- Provide a full analysis of cash in/out flows of a company, but it does not identify likely changes in cash in-flows to changes in the variable examined.

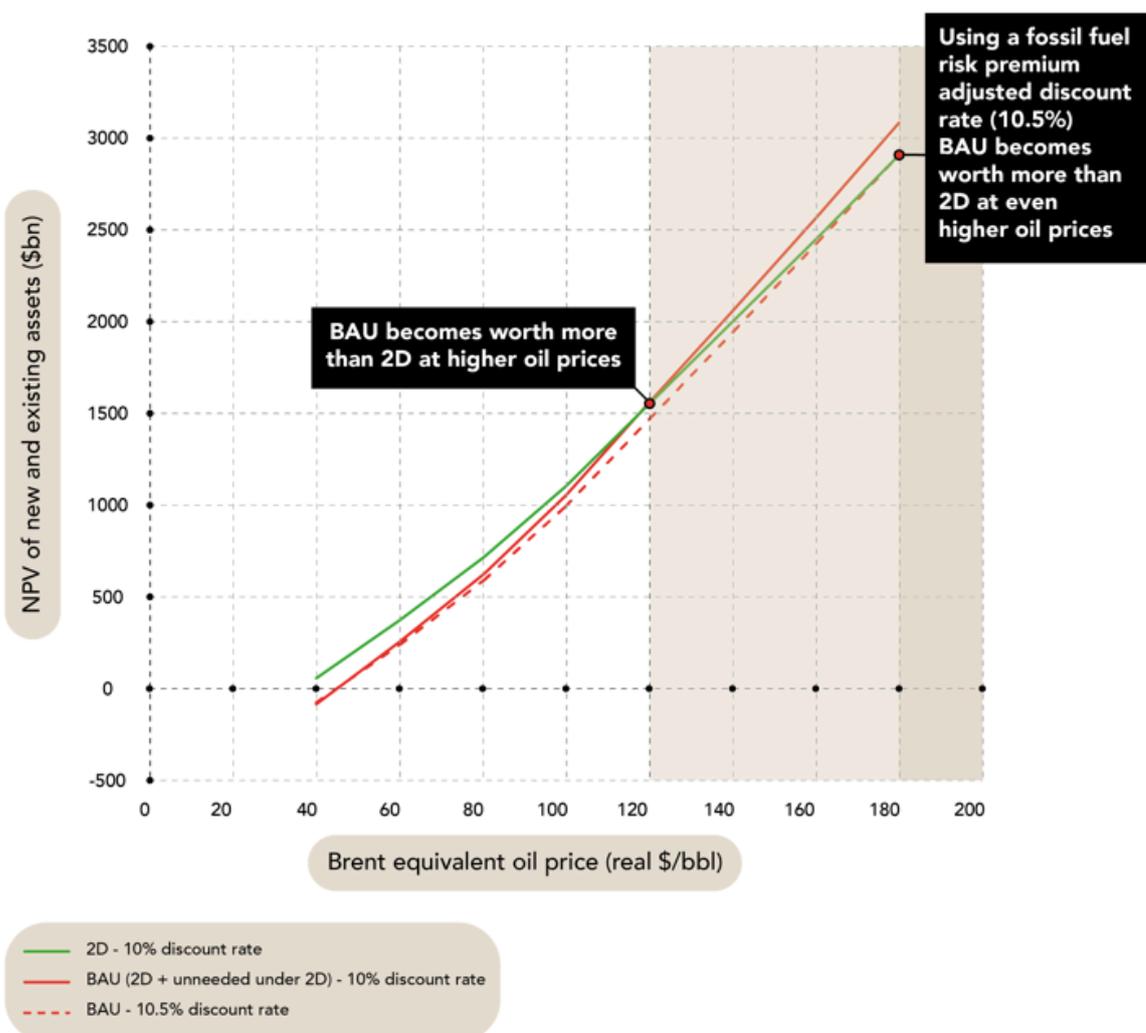
Framing a climate-related stress test

- Focus on carbon intensive industries and the financial impact on a company.
- Key focus is on how the 2°C climate target departs from the company’s planning case.
- The carbon budget presents a reference point of constrained future demand.
- Scenario(s) are derived from reference point to allow companies to undertake stress test.

How can scenario and sensitivity analysis satisfy principles of decision-useful disclosure?

- Consistency and comparability flow from a single reference scenario.
- Focusing on 2°C-demand pathway(s) provides a forward-looking view of the impact of climate goals focused on carbon intensive companies.
- Comparing to company planning case yields simple and understandable disclosure of company (mis) alignment.
- Disclosures could then be linked to changes in demand and price assumptions and outlooks, and changes in cash flows and portfolio NPVs.
- Sensitivity analysis does not necessarily connect to scenarios, but provides transparency on the cash flow impact of expected changes in commodity prices.
- Selecting tools that are fit for purpose can keep things simple for all parties.

Example: of sensitivity analysis used to test an upstream portfolio against two scenarios: (a) business-as-usual scenario and (b) 2°C demand scenario.



Source: Rystad Energy, CTI analysis

There are many benefits to stress-testing and disclosure

- Market Efficiency – Provides comparable disclosure that allows markets to understand the degree of alignment and better price risk.
- Board debate – Producing the outputs and consequent boardroom discussion (given they should appear in the financial statements signed off by them) promotes internal debate.
- Improved Resilience - Uses multiple scenarios / sensitivity analysis to enhance risk management and resilience of the business model.
- Policy effectiveness – Energy sector response to developments is a useful indicator of whether policy is sufficient to deliver climate targets and/or whether it is taken seriously.

Stress-test disclosure may take many forms

Disclosure	Detail	Purpose(s)
Cost of Supply/ Production Cost Curve	Disclosure of the distribution of break-even prices along a cost curve (defined as oil/gas price that delivers NPV = 0 of future free cash flows at a discount rate of 10%) by volumes of existing and potential projects covering proven, probable, and possible reserves.	Provides forward-looking view of potential high-cost production and volumes at risk in a low-demand/low-price scenario.
Sensitivity Analysis	Sensitivity of existing and potential projects (proven, probable, and possible reserves) to a range of oil/gas prices and discount rates (i.e., \$40-\$180; 9%-11%).	Provides view of value of potential production at different oil prices; would tie to any oil/gas price output from stress test.
Alignment	List of projects over last three years that have been evaluated for FID. Split between sanctioned and deferred/cancelled, including break-even price band and capex amounts	Provides indicator of direction of travel in project costs, establishes project level detail disclosure, and could tie into any output from 2C stress test that identifies degree of project alignment with 2C scenario.
Carbon Content	Embedded carbon content of expected production and/or proven, probable, and possible reserves on a lifecycle basis; annual lifecycle emissions attributable to company projects	Identifies annual and potential future company level contribution to future carbon emissions. Indicates emissions required over a timeframe to deliver expected revenues, to allow comparison with a carbon budget.
Planning assumptions	Long-term price and demand forecast; average hurdle rates deployed on recent projects sanctioned; carbon price employed (and whether operational or life cycle); projected asset lifetime (potentially segmented across break-even price bands).	Provides baseline management assumptions that may allow investors to understand robustness of planning activities and revenue streams.