Center for ESG Research

CDSB Climate Disclosure Standards Board

How can companies considering TCFD recommended scenario analysis provide disclosures that help investors: a short guide

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Since the launch of the Task Force on Climate-Related Financial Disclosures' (TCFD) recommendations in June 2017[1], there has been much debate about how companies can disclose relevant information in a meaningful way. One of the main purposes of the initiative was to identify the type of information needed by the financial sector (banks, insurance companies, asset managers and asset owners) to evaluate risks and opportunities in the transition to a low-carbon economy.

Some first attempts of TCFD-aligned disclosures have been seen in 2017/18 management reports[2]. However, Climate Disclosure Standards Board (CDSB) research shows that most companies do not yet disclose forward-looking information that has considered scenario analysis[i] or demonstrate their resilience or the potential financial impacts from a future 2°C scenario[ii][3].

Disclosures of scenario analysis was recommended by the TCFD for a number of reasons, including demonstrating resilience of the business model and strategy to climate change and identifying potential financial risks and opportunities. This guide offers companies a potential starting point when embarking on analysis of the potential financial risks and opportunities from climate change scenarios. However, this guide limits its scope to companies using existing sources of 2°C scenario data, and focuses on the disclosure needs of investors as the primary audience of management reports. The guide also does not look at the full spectrum of possible future outcomes upon a probability distribution curve[4] that companies could use when conducting scenario analysis.

This guide proposes a two-stage process to create key outputs from scenario analysis to be disclosed within mainstream reports that help investors in comparing and aggregating company data to portfolio-level data. This would require companies to quantify and monetise the most relevant risks and opportunities using predefined likelihood eventualities from existing 2°C scenario data using existing sources such as the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change (IPCC).

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[i] In this guide we use existing scenarios and based on these make sensitivity testing of how resilient the company is towards these scenarios. Thus, scenarios and sensitivity analyses are used by companies in a complementary manner.

[ii] Note that in this guide, we assume that companies at this initial stage are likely to work with the minimum required 2°C scenario. We note that TCFD recommends working with other scenarios (e.g. 1,5, 4 or 6 degree Celsius scenarios) to illustrate the company's resilience, which the companies may also choose to disclose. Much of the feedback received from investors and analysts on this guide is that if this kind of reporting is to be decision-useful for them, it is important that the reporting across companies is comparable and can be aggregated. They indicate that it is most likely to happen if the used scenarios are the same across companies – as well as the factors considered. Some investors and analysts indicate that factors should be standardised at least per sector. We suggest a development of sector-factors could be considered once scenario disclosures have been prepared by a sufficient number of companies to establish a minimum common ground. We foresee that this could happen at the earliest in 2019, but perhaps even later dependent on the scenario reporting practices of various sectors.

How to determine what information is useful for the financial sector and markets

What format is useful for the financial sector and what should it comprise? This guide highlights a brief and practical way for companies establishing investor-useful climate risks and opportunities reporting.

The first step to take in providing meaningful climate-related risk and opportunity disclosures is to understand how investors will use this kind of information. The information provided must, at a minimum, be comparable and capable of aggregation, as investors need to consider the net risk profile of the entire portfolio of investments to make informed decisions. Narrative reporting alone does not provide comparable information that is capable of aggregation.

In this context, this guide offers a two-stage process:

- How to identify climate change impact factors and related timeframes to create a high-level risk/opportunity assessment; and
- How to quantify and monetise the most relevant factors to ensure they are presented in a meaningful way to investors.

Stage 1: Identifying the risks and the timing

An investor perspective

Identifying risks and opportunities is the basis for investors to understand what will ultimately have an impact on the profit of the investment. While disclosures around risks and opportunities are considered in their own right, it is important to connect them to wider risks and opportunities across the rest of the investment portfolio. If an investor chooses to buy a range of investments with a similar risk profile, the investor's entire portfolio will end up with a disproportionate level of risk. If this is compared to a portfolio where the risks and opportunities are diversified, several different incidents would have to take place before the entire portfolio is significantly affected.

To mitigate risk clusters within a portfolio, investors generally spread out their investments by geography, sector, market capitalisation, as well as taking into account more conventional macro-economic risk factors, such as GDP, interest rates, FX-rates, inflation, among other areas. As highlighted[5] by the Chair of the Financial Stability Board Mark Carney, the TCFD explains that this should also happen with regards to climate-related risks and opportunities. Some of the risks identified in the TCFD report include new tax policies, acute and chronic extreme weather events (e.g. cyclones, storms, hail, flooding, drought, extreme heat, wildfires, and sea level rise), new regulations intervening on fossil fuels use, 'stranded assets'. More details can be found on the TCFD Knowledge Hub[6].

A company perspective

The TCFD[7] recommends use of a 2°C or lower scenario to align with the goals of the Paris Agreement, referencing some of the scenarios provided by the IEA[8] and the IPCC. Based on these scenarios, companies can identify and assess the risks and opportunities most relevant to their business.

Risks and opportunities should be evaluated by taking into account the magnitude of impact, likelihood and timeframe. The IEA, IPCC and other scenario providers have already defined the likelihood of the consequences from climate change. For example, the IEA states that its Sustainable Development Scenario[9] is aligned with the IPCC's RCP[10] 2.6, which has a greater than 66% chance of keeping global temperatures lower than 2°C by the end of the century. Organisations could initially focus on impacts within these scenarios with a high likelihood. This would allow them to focus on and evaluate the risks and opportunities against the magnitude of impact and timeframes. A simplified risk and opportunity evaluation could be represented and disclosed as shown in *Figure 1*:

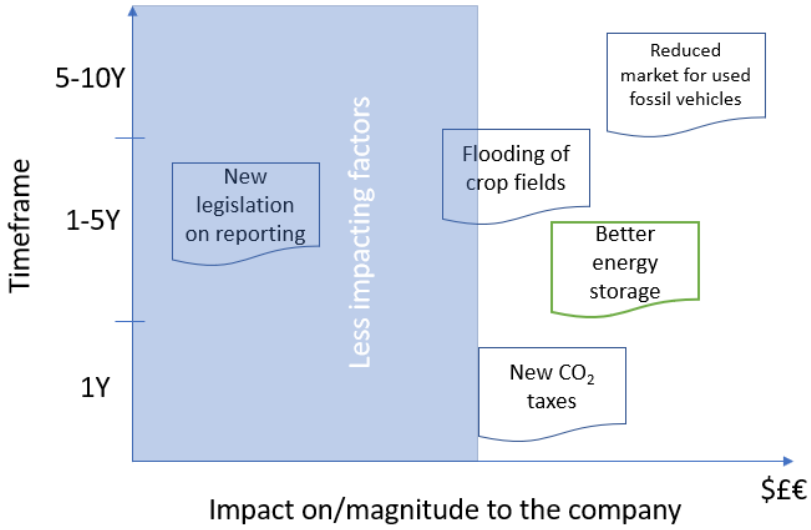

Figure 1: Risks and opportunities assessment of climate risk factors with a high likelihood defined by a 2°C scenario

A simple diagram such as *Figure 1* can allow organisations to determine the **magnitude** of the identified risks and opportunities, as well as the potential **timeframe** of their occurrence. The high **likelihood** would already be defined by the IEA, IPCC or other scenario provider which can be combined with the company-assessed timeframe of the impact. This can then be used to determine whether the risks (and this only concerns the risks) should also be considered for inclusion within the provisions, contingent liabilities or whether they should not be included in the balance sheet at all (IAS 37[11]). Alternatively, if the impact affects the value of assets, the risk/opportunity impacts should be included in the impairment assessments (IAS 36[12])[13].

As a first step, when identifying risk/opportunity factors, one does not need to overcomplicate scenarios by attempting to cover all possible outcomes, as **identifying specific factors that could influence a company's business is a more important first step**. For instance, a food company might identify the increased likelihood of flooding and damages to crops as one of their key risks, alongside a ban on the use of diesel vehicles in countries where their distribution is most dependent on road transport. Similarly, the company could identify its key opportunities to be found in innovative automation technologies. This allows a focused analysis on the key factors in the next stage of the process which looks to monetise the potential impacts and present it in a meaningful way to investors.

Stage 2: Monetising and presenting the risks/opportunities

Once the key risks and opportunities have been identified, organisations need to present it in a meaningful way to investors. This stage does not require new processes or practices, as there are lessons to be taken from conventional business risk analyses.

The current wording of an example of forward-looking sensitivity guidance in the mainstream report to investors could be used by companies to understand what "meaningful" investor climate-related information could look like, as shown in *Figure 2*[14]:

SENSITIVITY GUIDANCE

The Group's guidance for 2017 is subject to considerable uncertainty, not least due to developments in the global economy, the container freight rates and the oil price.

The Group's expected underlying result depends on a number of factors. Based on the expected earnings level and all other things being equal, the sensitivities for the calendar year 2017 for four key value drivers are listed in the table below:

Sensitivities for 2017

Factors	Change	Effect on A.P. Moller - Maersk's underlying result
Oil price for Maersk Oil*	+ / - 10 USD/barrel	+ / - USD 0.26bn
Bunker price	+ / - 100 USD/tonne	- / + USD 0.4bn
Container freight rate	+ / - 100 USD/FFE	+ / - USD 1.1bn
Container freight volume	+ / - 100,000 FFE	+ / - USD 0.1bn

*) Sensitivity estimated on the current oil price level.

Figure 2: Example of forward-looking financial sensitivity guidance

The critical point to emphasise is that the sensitivity guidance is provided per risk factor, all other things being equal. This means that investors have a chance to evaluate, for instance, whether portfolios are heavily dependent on oil price sensitivity or freight rate sensitivity. This method can be adapted to assess the identified risk/opportunity factors using climate change scenarios, as shown in *Figure 3*.

This would help investors evaluate whether portfolios are heavily exposed to specific physical climate risks (e.g. flooding in their manufacturing countries), uncertain regulatory changes (e.g. new carbon taxes) or other market volatilities (e.g. a reduced second-hand market for used fossil fuel vehicles). If one factor has more than one impact which potentially counteract each other, the impacts should be included individually and shown as a gross financial impact. This would allow the investor to evaluate how to aggregate the impacts for the portfolio. If the company foresees that they will mitigate some of the impacts with new products, using renewable energy sources, moving to new facilities, etc., this should also be included as well and shown with the gross financial impacts.

Following more conventional business risk sensitivity guidance, a climate change sensitivity guidance could be disclosed in a table similar to *Figure 3* within the mainstream report:

	Next year		Next 5 years, accumulated		Next 10 years, accumulated	
Factors	**Change**	**Effect on company's Net result**	**Change**	**Effect on company's Net result**	**Change**	**Effect on company's Net result**
Change of taxes on direct emissions	+/- 10 USD/tonnes of CO2e (scope 1)	-/+ 320 m USD	+/- 10 USD/tonnes of CO2e (scope 1)	-/+ 1,480 m USD	+/- 10 USD/tonnes of CO2e (scope 1)	-/+ 2,738 m USD
Flooding of fields with damage to crops results in crops prices increase			+ 25 USD/metric tonnes crops cost	- 1,375 m USD	+ 25 USD/metric tonnes crops cost	- 2,600 m USD
Reduced energy cost due to better energy storage from renewable sources			- 25% of energy cost	+ 4,125 m USD	- 25% of energy cost	+ 8,000 m USD
Reduced market for used fossil fuel vehicles results in impairment of fleet					- 50% of value at the end of vehicle ownership / lease period	- 12.500 m USD

Figure 3: Mock example of climate risk/opportunity sensitivity guidance

As an organisation builds further knowledge and understanding of scenarios, it may wish to analyse the wider resilience of its business model and strategy, as recommended by the TCFD. This could include analysing a wider range of scenarios beyond the IEA or IPCC, as well as looking into the probability distribution of specific impacts. Disclosures associated with these analyses could require more narrative as well as potentially several tables as shown in the mock example in *Figure 3*.

Producing a similar climate-related sensitivity guidance, with its analysis and monetisation, typically requires collaboration across several departments of an organisation. Functions included in the process could be: financial modelling/planning; tax and accounting; production; strategy; sustainability; and enterprise risk management. Since the outcome of the work may overlap with sensitivity guidance reporting, it may be beneficial that the team producing the sensitivity guidance reporting also takes a lead role in the production of this work. This would provide a more coherent, coordinated and potentially integrated approach to reporting across the management report.

As a new topic for many companies, scenario analysis of climate change impacts will initially be more complex and time-consuming. This would need to be appropriately considered when integrating the project within the reporting cycle. Any work will need to begin early in the reporting cycle to allow all parties in the reporting team to gather a common understanding of the topic and how best to integrate the disclosure within the management report. Reporting teams also need to consider whether further assistance from additional departments or external advisors are required.

Conclusion

This paper presents a practical two-stage process that uses existing financial and accounting standards and methods, as well as the TCFD recommendation on scenario analysis, to create a disclosure we have described as *climate-related risk/opportunity sensitivity guidance*. In the first stage, the climate impact factors and timeframes must be identified, using well-established techniques in risk and opportunity assessments. In the second stage, the key factors will have to be quantified and finally monetised. At this stage, as risk and opportunity factors, timing and impacts have been individually identified, investors can begin to use the sensitivity guidance to evaluate the entire investment portfolio's net climate risk/opportunity profile.

Appendix – Factors potentially to be considered

This Appendix provides a high-level overview of potential base factors a company could consider when starting scenario analysis of climate change impacts. Since companies vary significantly depending on the industry, geography, and other circumstances, this is a non-exhaustive list and does not comprise a minimum requirement list. This overview is provided to assist companies that find it difficult to define a starting point when defining which scenario(s) to work with, and what factors to consider. It is expected in time, when more analysis has been performed and scenario analysis disclosures made, it may be possible to determine minimum required factors, potentially per sector. This will enable reporting to be more comparable, and decision-useful for investors[15].

- Market and technology shifts:
  - Oil price (remember to coordinate with the regular sensitivity reporting to avoid double counting);
  - New technologies; and
  - Old technologies to be phased out.

- Policy and legal:
  - Environmental taxes[16];
  - New/different reporting demands; and
  - Bans and restrictions of combusting or emitting specific substances.

- Physical risks:
  - Physical changes in weather patterns, both extreme (acute) and climatic shifts (chronic) in areas where:
    - operations are located;
    - production of raw materials/ ingredients are grown;
    - customers or end users are situated; and
  - Changes in transportation possibilities (e.g. new water passages, closed or damaged infrastructure such as main roads, etc.).

Invitation to comment

CDSB and the Author welcome discussion about and input to this work. If you would like to comment on the on this short guide, please contact us at info@cdsb.net. For further information, please consult www.cdsb.net.

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[15] See more in TCFD Technical Supplement for the Use of Scenario Analysis in Disclosure of Climate-related Risks and Opportunities. https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-TCFD-Technical-Supplement-062917.pdf
This supplement also suggests considering reputational risks and opportunities. Since these are not as tangible to consider as the market, legal, and physical risks, we have not included them in our inspirational list; however, the company may choose to do so.

[16] Further information can be found on Government websites detailing tax changes and average values reported in World Bank's state of Carbon markets (most are below $25/tCO2e). Data from the World Bank relating to the taxes needed to stay within to meet the commitments under the Paris agreement can be found here: World Bank and Ecofys (2018) State and Trends of Carbon Pricing 2018 (May), World Bank, Washington, DC. Doi: 10.1596/978-1-4648-1292-7. License: Creative Commons Attribution CC BY 3.0 IGO.