Canadian Institute of Actuaries | Institut canadien des actuaires

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CIA Submission to the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) through their online submission tool (February 10, 2017).

**Only the questions to which the CIA responded are included in this document.*

Respondent Information

Q1a Please provide your information in the boxes below

Title	Mr.
Name	David Dickson
Company name	Canadian Institute of Actuaries (CIA)
Position/Role	President
Country	Canada

Q1b Which of the following best describes your area of responsibility in your organization?

Please select ONE only

Academic/industry expert
Administration
Board member
Compliance
Corporate reporting
Corporate strategy
Finance
General management
Government/regulatory affairs
Investment/asset management
Legal
Risk
Sustainability
Technology
Other (please specify)

Q1c Which of the following best describes your organization type?

Please select ONE only

Financial services sector, including asset owners
Non-financial sector
Non-Governmental Organization (NGO)
Academia
Industry/Trade association (Financial)
Industry/Trade association (Non-financial)
Other (please specify)

Q1d Please select your primary industry from the list below:

Please select ONE only

Asset management
Banking
Credit rating agency
Insurance (underwriting)
Pension plans, endowments, foundations, and other asset owners
Stock exchange
Other (please specify)

The Canadian Institute of Actuaries (CIA) is the national, bilingual organization and voice of the actuarial profession in Canada. Its 5,000+ members are dedicated to providing actuarial services and advice of the highest quality. The Institute puts the public interest ahead of the needs of the profession and those of its members.

Actuaries are risk management experts. They use mathematics, statistics, and probability to help ensure the financial security of society. Traditional actuarial practice areas include insurance (both life and property/casualty), investments, pensions, and enterprise risk management. Actuaries are bringing their skill set into non-traditional areas such as climate change, healthcare, and banking.

Q2 Which of the following best describes your perspective on the TCFD recommendations?

Please select ONE only

User of climate-related financial disclosures
Preparer of climate-related financial disclosures
Both a user and preparer
Other (please specify)

All Sector Recommendations and Guidance

The Task Force structured its recommendations around four thematic areas that represent core elements of how organizations operate: governance, strategy, risk management, and metrics and targets (see page 16 of the TCFD report). The Task Force believes it is important to understand the financial and strategic implications associated with climate-related risks and opportunities on organizations as well as the governance and risk management context in which organizations operate.

Q3a How useful are the Task Force´s recommendations and guidance for all sectors in preparing disclosures about the potential financial impacts of climate-related risks and opportunities?

Please select ONE only

Very useful
Quite useful
Neither/nor
Not very useful
Not useful at all
Don´t know

Q3b Please provide more detail on your response in the box below.

The CIA strongly endorses the approach taken by the TCFD. We recognize that forward-looking information given in the context of the financial reporting requirements will greatly facilitate informed investment, capital allocation, and underwriting decision-making. Drawing on the experience of insurance companies having to estimate risk-based capital requirements, we can add that the process of producing that forward-looking information should itself be of significant benefit to the preparers. For any entity that did not review climate risks from that perspective, that process will make them more informed about their own exposure. This benefit will go a long way to addressing concerns that may exist over the costs of developing these disclosures.

The blend of qualitative and quantitative disclosures should be monitored over time, to ensure that the expected move to greater quantitative disclosures actually occurs. Governments, regulators, and asset owners will be key in this process, together with a continuing monitoring role for the Financial Stability Board (FSB).

Supplemental Guidance

Q3c How useful is the Task Force´s supplemental guidance for certain sectors in preparing disclosures about the potential financial impacts of climate-related risks and opportunities? Please see the TCFD Annex for supplemental guidance.

Please select ONE only

Very useful
Quite useful
Neither/nor
Not very useful
Not useful at all
Don´t know

Q3d Please provide more detail on your response in the box below.

We are responding from the point of view of both preparers and users of the information. The supplemental guidance provides valuable elaboration, as well as more clarity, about the intent of these recommendations, which will support implementation. However, it appears that the all-sector guidance in the main report (repeated in the supplemental guidance) is not particularly pertinent to asset owners. For example, the guidance indicates that the asset owner would be encouraged to disclose impacts on its operating costs, capital expenditure, acquisitions, access to capital, etc. Although this is readily understood for a corporate (financial or non-financial) entity, it is less applicable at the asset owner level. We suggest that the overall structure (covering governance, strategy, risk management, metrics, and targets) be retained for asset owners, but that its base be suitably adapted using the concepts set out in the supplemental guidance.

Organizational Decision-Making

Q4a If organizations disclose the information consistent with the Task Force´s recommendations, how useful will that information be to your organization in making decisions (e.g., investment, lending, and insurance underwriting decisions)?

Please select ONE only.

Very useful
Quite useful
Neither/nor
Not very useful
Not useful at all
Don´t know

Q4b Please provide more detail on your response in the box below.

The CIA is a professional body, and as such, would not be a direct user of such information. Nevertheless, we do fully support the enhanced information and transparency inherent in these recommendations, which will be valuable to practicing actuaries, their clients, and the wider societies in which they operate. Better information will help the CIA adapt education requirements and optimize best practices, thus enabling actuaries to better adjust assumptions to a changing future. This enhanced information would be useful to properly reflect the climate-related risk in property and casualty pricing of products and individual risks, and for making appropriate investment decisions. Optimizing decisions may often depend on a correct assessment of how it affects others and how they may react as expounded by economist and Nobel Prize winner John Nash.

Additional Disclosures

Q5 What other climate-related financial disclosures would you find useful that are not currently included in the Task Force´s recommendations?

Please provide your response in the box provided.

None. As above, we encourage the TCFD to monitor disclosures and provide feedback from year one to ensure that the direction of travel from qualitative to quantitative is happening. This will require close cooperation between governments and regulators, and open dialogue with asset owners, corporate entities, and other key stakeholders. A more detailed review of the process could be planned to occur after five years. The shift from qualitative to quantitative disclosures is likely to be challenging due to the uncertainty surrounding climate change models and impacts on society at large, and we see no obvious need for additional disclosures, which could slow down implementation.

Scenario Analysis

Q6 The Task Force recommends organizations describe how their strategies are likely to perform under various climate-related scenarios, including a 2°C scenario (see page 16 of the TCFD report). How useful is a description of potential performance across a range of scenarios to understanding climate-related impacts on an organization´s businesses, strategy, and financial planning?

Please select ONE only.

Very useful
Quite useful
Neither/nor
Not very useful
Not useful at all
Don´t know

Q7 Please elaborate on your response above.

There exists a significant amount of uncertainty surrounding the extent of future climate-related impacts. As a result, a minimum of two scenarios would provide the user with far greater insight into the potential range of impacts and responses. A scenario does not represent a projection or a prediction, as the TCFD points out; it is an internally consistent storyline that illustrates a situation and potential consequential action and reaction. Providing only one such scenario provides the user with limited understanding of the possible range and need/opportunities for flexibility in management approach by the organization. Two scenarios that would encompass the main range of potential outcomes would provide valuable information and would allow for both interpolation and extrapolation. If entities like to use additional scenarios customized to their particular situation, they should be encouraged to do so and report accordingly.

As actuaries, we can draw your attention to the process applied to reporting pension expenses under IAS 19 (International Accounting Standard 19) using a common standard. Although actuaries can select different actuarial valuation methods for pension plan funding, IAS 19 prescribes the use of a common method for the accounting of pension liabilities. This harmonized accounting standard allows both for greater comparability and freedom for each company to make its own decisions as to the financing path to follow. Similarly to the IAS 19 concept, we believe that identifying standard climate-related scenarios for reporting purposes from the start would enhance comparability, recognizing that even with a single scenario, such as 2°C, there are many ways in which paths could unfold or come about. More importantly, we believe that if the TCFD, in consultation with climate experts, were to describe at least two scenarios in greater detail, this would enhance comparability of reported information and benefit users of climate-related financial disclosures. To let best scenarios emerge over time may take many years and may never happen unless some mechanism is put in place to standardize choices. We expand later on the methodological aspects of this process.

We also recognise that entities may be cautious about disclosing what may feel to them to be commercially sensitive, strategic, and operational information, or litigation risks. Working at an industry/sector level to develop a consistent scenario pathway (i.e., a shared view on the mapping of the climate scenario to the corresponding risks of transition and litigation) may assist with this, but ultimately asset owners and managers require such information in order to make sound assessments of capital allocation and/or underwriting decisions.

Q8 The Task Force recognizes that there are challenges around disclosing sufficient information to allow a better understanding of the robustness of an organization´s strategy and financial plans under different plausible climate-related scenarios. Some challenges may arise from unfamiliarity with scenario methodologies and metrics, insufficient practice standards, or cost. What do you view as effective measures to address potential challenges around conducting scenario analysis and disclosing the recommended information?

Please rank up to three most effective factors that apply.

Further work by industry trade groups and disclosure users on critical elements to be disclosed is needed to help overcome concerns that some information may be commercially sensitive	3
Reduce the cost of conducting and disclosing scenario analysis	
Additional methodologies and tools should be developed for use by organizations to enable more effective scenario analysis	2
Allow a year or two to phase-in scenario analysis and related disclosures	
Establish better practice standards around conducting and disclosing scenario analyses so that there are clearer rules of the road	1
We do not anticipate any difficulties	
Other (please specify)	
Not applicable	

Q9 Please provide more detail on your first choice in the box below.

In our view, the ideal goal would be the use of disclosed scenarios grounded in the work of recognized, mainstream, scientific agency(-ies) with formally validated models. The aim would be to provide a consistent high-level baseline for the reporting entities to aid comparability. In addition to the core 2°C scenario, we believe that it would be useful to specify other scenarios, again for enhanced comparability. At first glance, a second scenario reflecting current nationally determined contributions (NDCs) may help provide information as to expected impacts assuming full compliance with explicit commitments. We note that various experts have estimated the warming for such a scenario to be about 3.2°C which would make the range 1.2°C. But users of climate-related financial disclosures would benefit from both scenarios being defined in greater detail by climate experts as to the timeline over which stabilization of emissions would be expected to occur and the shape of the curve over which current temperatures will reach ultimate targeted values, since that would help ensure the reporting is based on common assumptions.

There is perhaps a parallel here with the standards for the accounting of pension liabilities, which are specified based on a harmonized methodology, under IAS 19, regardless of the actual funding mechanism adopted. Somewhat like financial climate impacts, pension expenses consist of a series of cash flows over a long period in the future that companies may manage differently, but the accounting standard generates comparable information on a “what if” basis, thanks to the common methodology. The standard is predefined in enough detail to ensure comparability, and is designed to reflect a changing market environment. In this case, we presume climate scientists would have to break down the global average temperature into expected changes in different locations, be it by geographical region or latitude.

Again, to support consistent disclosures, in time, corresponding assumption sets regarding elements including policy actions on emissions reductions and mitigation may

also need to be specified. Where such policies might produce economic benefits—for example, those involved in alternative energy sources or mitigation services—indicative supplementary information might also be supplied (e.g., in the form of projected renewable energy demand). Standard assumption sets would enhance comparability and help avoid overly optimistic assumptions on policy actions (e.g., policies producing economic benefits/minimizing costs to the reporting organization). In the absence of specified assumption sets, we agree that entities should be encouraged to put out their own sets of assumptions regarding these types of variables (for example, a local rate of carbon tax for a given scenario). The aim would be to particularize the effects of the scenario to the reporting entity. Consistent policy assumptions may emerge as best practices, but in any case, should be monitored on a regular basis.

We agree that there will need to be a continuous process to provide updated versions of key standard scenarios as climate, governmental actions and their public commitments, and modelling techniques evolve. Particular attention will need to be paid to measurable quantitative assumptions (or other variables) that are thought likely to lead to (or merely signal) "tipping-point" effects. The results of monitoring them should be fed back into the projection process in a way similar to what actuaries call the "actuarial control cycle", where emerging information continuously improves the model.

As we move toward greater quantitative disclosure, in order to understand the impact of more extreme weather and inundation events, it may be necessary for recognized meteorological and related agencies (or the Intergovernmental Panel on Climate Change (IPCC)) to develop models of event frequencies/intensities at local, regional, or national levels in a manner compatible with the overall global scenarios. This could be done in conjunction with the well-known catastrophe modelling firms working in the property and casualty insurance area. The property and casualty insurance industry has extensive experience and expertise in analyzing and quantifying the impacts of many climate-related events for underwriting purposes. It should be equally in the interest of relevant government agencies to cooperate in this effort (which should be encouraged), to underpin the reporting framework, and possibly as a collaborative measure between FSB and affected governments, accounting standards boards, and supranational agencies such as the World Bank.

In such a context, insurers, reinsurers, and their actuaries would expect to work with customers and governments to model the financial consequences of the projected frequencies/intensities of adverse climate events—either through property insurance or mortality/morbidity insurance.

It may also be necessary to model the projected growth in the value of property exposed directly to climatic events or via sea-level changes, and to consider changes in the profiles of consequential diseases in applicable regions. These models could be developed in terms of projections of changes in many aspects of insurance, healthcare, and pension costs.

The same parties could be expected to have appropriate competence to assist in the development of effective mitigation strategies and relevant and meaningful measures

(such as flood mitigation or land use and habitation planning in areas affected by floods, hurricanes, cyclones, or sea-level changes).

In all cases, leadership from TCFD and other decision-makers in defining common basic assumptions would leverage the value added by the contribution of actuaries in developing specific long-term financial projections consistent with the scientific scenarios, whether on the investment (asset valuation) side or on the liability (claim frequency/severity) side. By using sensitivity analysis, these projections could provide important planning information about the financial consequences of these uncertain future events. Actuaries would also be involved in assisting other companies in carrying out the long-term modelling and scenario analysis required.

Any of the financial measures set out above might also form a key input in influencing government policies in many dimensions. In particular, the comparison of impacts at 2°C or at a given NDC level may be seen as valuable information in deciding about new NDCs.

Metrics and Targets

Q10a The Task Force is recommending that organizations disclose the metrics they use to assess climate-related risks and opportunities in line with their strategy and risk management process. For certain sectors, the report provides some illustrative examples of metrics to help organizations consider the types of metrics they might want to consider. How useful are the illustrative examples of metrics and targets?

For illustrative examples see the following pages in the TCFD Annex
- Energy Group: pages 54-58
- Transportation Group: pages 66-70
- Materials and Buildings Group: pages 78-82
- Agriculture, Food, and Forest Products Group: pages 91-94

Please select ONE only.

Very useful
Quite useful
Neither/nor
Not very useful
Not useful at all
Don´t know

Q10b Please provide more detail on your response in the box below.

We believe that these suggestions are both comprehensive and balanced. We also agree that many entities will start this process in a more qualitative manner, moving towards disclosing quantitative balance sheet/profit impacts over time. Governments, regulators, and, in particular, asset owners will be key stakeholders in ensuring that this happens.

In the supplemental guidance for insurance companies under metrics and targets, a weather-related catastrophe could have broader impacts than just property damage. For example, a drought will impact agriculture and crop insurance results, and might result in product liability claims (e.g., seed varieties purporting to be drought-resistant). There also exist more general liability issues associated with climate-related conditions, as highlighted in the TCFD risk summary (transition risk – policy and legal).

Carbon-related Assets in the Financial Sector

Q11 Part of the Task Force's remit is to develop climate-related disclosures that would enable stakeholders to understand better the concentrations of carbon-related assets in the financial sector.

Beyond the metrics included in the Task Force's guidance, and supplemental guidance, what other metrics could be used to measure carbon-related assets in the financial sector?

We commented above (Q3d) on the main and supplemental guidance for asset owners. (To summarize, the supplemental guidance appears far more pertinent than the main guidance as far as asset owners are concerned.)

The main metric suggested in the supplemental recommendations is GHG-related [greenhouse gas], together with any other metric utilized in the investment decision-making process. As regards the latter, it may be that this itself, if monitored over time, will provide a good industry set of guidelines, emerging as best practices. This should therefore also be monitored and promoted by the TCFD.

Other examples that might arise may include, for example, the percentage of property in "high risk" areas (e.g., near sea level or located in flood plains). Another example might be the percentage of the portfolio with exposure to companies in the key sectors identified by the TCFD.

Q12 The Task Force is recommending that organizations provide key metrics used to measure and manage climate-related risks and opportunities. For example, the Task Force recommends that asset owners (including insurance companies) and asset managers report normalized greenhouse gas emissions (GHG) associated with investments they hold (for each fund, product, and strategy) using available data (see Annex pages 35 and 41).

Please describe your views on the feasibility of implementing the above recommendation

In terms of feasibility, asset owners are some distance from being able to implement this in full, which would itself require step change (i.e., good levels of compliance with the TCFD recommendations) from the entities in which they are investing, noting that these may not all be listed or public. We agree that this will therefore be a journey, not a sharp implementation.

Greenhouse Gas Emissions (GHG) Associated with Investments

Q13a How useful would the disclosure of GHG emissions associated with investments be for economic decision-making purposes (e.g., investing decisions)?

Please select ONE only

Very useful
Quite useful
Neither/nor
Not very useful
Not useful at all
Don't know

Q13b Please provide more detail on your response in the box below

Information is critical to the decision to be deliberately over or underweight in a key sector or asset type. This is true in general, and true specifically of GHG weightings. If an investor is overweight in GHG emissions but does not know it, it is effectively running unremunerated GHG risk. It is therefore very useful, to the extent that an informed investor wishes to weight their portfolio in this manner.

Remuneration

Q14 Which types of organizations should describe how performance and remuneration take climate-related issues into consideration?

Please select ALL that apply.

The Energy Group as recommended by the Task Force
Other non-financial sector organizations (please specify)
Financial sector organizations (please specify)
None

Adoption and Implementation

Q15 What do you view as the potential difficulties to implementing the disclosures?

Please select ALL that apply.

The information requested could be commercially sensitive
The time and cost of collecting the information
Climate-related disclosure is not part of our current regulatory requirements
Lack of experience with concepts and methodology
Multiple climate-related reporting frameworks currently exist
Other (please specify)

Political will, and the priorities directed to this issue by regulators, will be vital.

Efficient leadership as to the reference scenarios, timelines, and parameters will enable actuaries to provide preparers and users with more explicit answers and better-targeted support.

Q16 What drivers, if any, do you think would encourage you to adopt the recommendations?

Please select ALL that apply.

Requests from investors to disclose
Requests from clients or beneficiaries
Reputational benefits and goodwill from adoption
Inquiries or requests from debt or equity analysts
Adoption by industry peers
Other (please specify)

Pressure from financial regulators and supervisors would encourage the entities they supervise to manage and disclose their climate-related risks. We believe that the TCFD or the FSB should make more explicit the purpose for which the information is collected and the benefits it can provide; for example, in terms of preventing financial shocks, optimizing monetary policy, or guiding decision-makers as to the level or timing of mitigation or adaptation measures to be taken. As the scenarios will be predicated on future levels of emissions and warming, a mechanism should be put in place to regularly monitor emerging experience—i.e., net emissions as measured by reported GHG concentration (ppm [parts per million])—against initial assumptions, to continuously improve how the model fits with reality.

Q17 What support or actions would be helpful to you in implementing the disclosures within the next two years?

Not applicable, as we are a professional body.

Q18 The Task Force´s recommendations are focused on disclosure in financial filings; within what timeframe would your organization be willing to implement the recommendations in financial filings?

Please select ONE only.

We already report these disclosures in financial filings
In the next one to two years
In three to five years
We do not intend to implement the recommendations
Don't know (please explain)

As a professional body, it is not that we do not intend to implement, but the help we can provide will be driven by the decisions of the reporting entities using our services.

Additional Feedback

Q19 What additional feedback you would like to provide the Task Force on the recommendations?

Please provide your response in the box provided.

Actuaries are professionals that can play a vital role in climate-related disclosure. The experience and expertise of actuaries with modelling and making financial projections in a context of uncertainty is a fundamental part of their profession. It enables them to understand the difference between an uncertain future and an impossible future. We can help illustrate the possible outcomes the future may hide. We can also point to any fundamental disconnect between targets and the means with which to achieve them. We also know that small differences compounding over a long period may entail widely different outcomes.

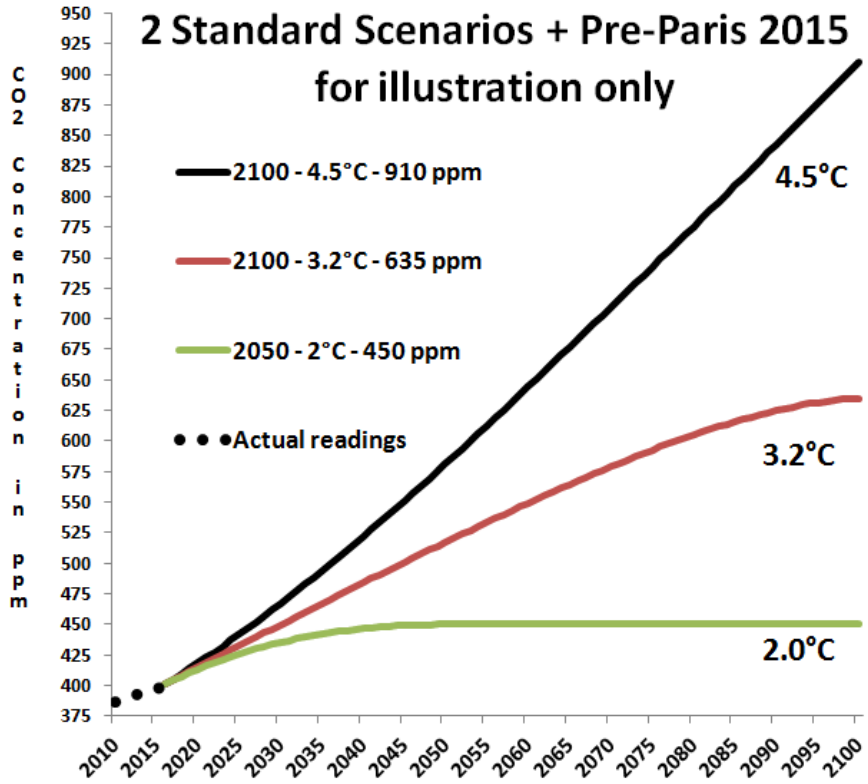
Climate scientists are suggesting relationships between the amount of accumulated CO_2 emissions and global warming. For example, limiting CO_2 concentration to 450 ppm or 500 ppm would have given probabilities of stabilizing global warming at 2°C (based on the fifth IPCC assessment report). This information is important when examining the impacts of investing in mitigation or adaptation measures. The quality of entities' disclosed assessments will depend on them having and using adequate information. This explains our recommendation that the TCFD provides leadership through, in time, being increasingly explicit in terms of the details of the standard scenarios.

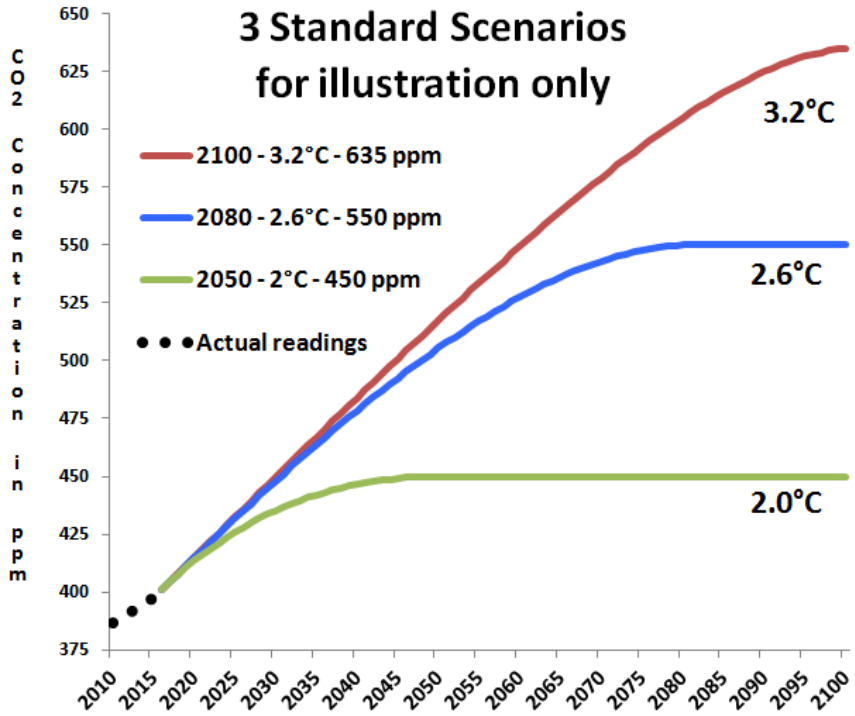
We note that Keeling Curves reports indicate a current CO_2 concentration of over 400 ppm. That means that in the 2°C scenario described above, the gap is less than 50 ppm or 100 ppm. Pure mathematics indicate that if concentration increases by 2 ppm or 3 ppm per year on average, it will hit the limit within 25 or 50 years in the first case and 17 or 33 years in the second case. Common sense indicates that if concentration is to stabilize at the indicated levels, net emissions must converge towards zero by the year targeted. Therefore, it is possible to have higher emissions in the short term, but at some point they must go below average. If one assumes that net emissions must be gradually decreasing, mathematical constraints restrict the multiple possible paths to a limited corridor. Each given set of ppm within that global corridor may nevertheless have a different impact on warming in different locations. Thus, curves mapping warming in degrees Celsius will need to be customized by climate scientists on the basis of appropriate climate data, since a global average of (for example) 3.2°C can mean less than 2°C for some and over 4°C for other regions.

Climate scientists should be encouraged to use their models to determine the specifics of each projected Keeling Curve in terms of the associated ppm concentrations, temperatures, and probabilities for a given timeline. In our opinion, the TCFD is well placed to play a proactive, constructive role in mobilizing the scientific community to fully specify standard scenarios. With this set of information, we believe that companies can translate it into financial terms with the aid of professionals such as actuaries.

As a picture is worth a thousand words, we have constructed from a purely mathematical point of view pro forma graphs illustrating what such curves mapping CO_2

concentrations in ppm could look like for the planet as a whole. Similar graphs can be constructed for mapping warming in degrees Celsius in different locations. These graphs help materialize alternatives in a visual manner even though they do not aim at reflecting any specific climate science input.





Thank you for completing this consultation. Your contribution is very much appreciated. If the Taskforce or PwC can contact you to clarify any of your answers, please click here.