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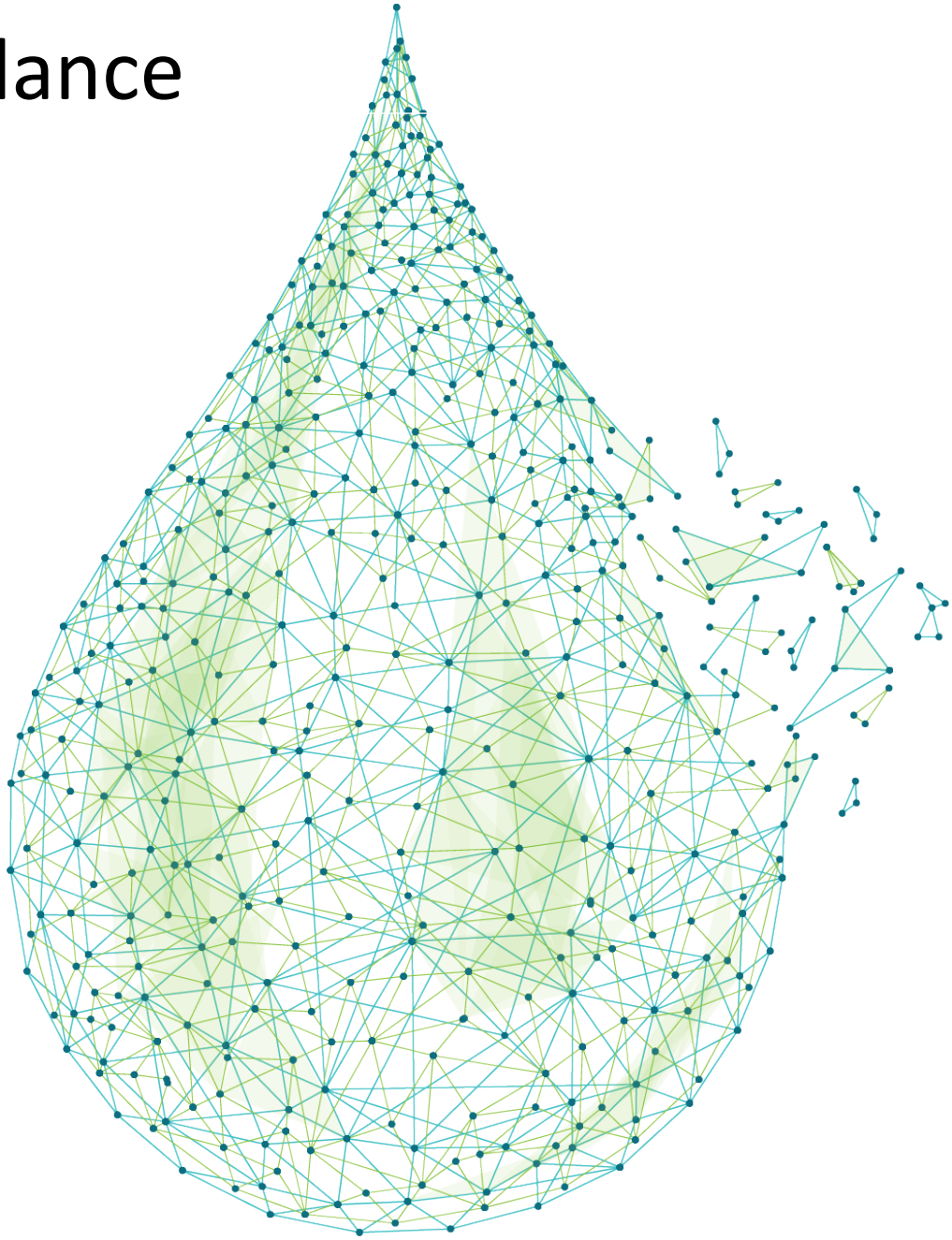
JSE Climate Disclosure Guidance



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JSE Guidance and Requirements: Understanding the distinction

This paper is issued as a guidance tool that may be used by issuers on a voluntary basis to:

- assist local companies to navigate the global ESG landscape;
- provide for South Africa's specific ESG challenges;
- improve the quality of ESG information available to enable more informed investment decisions;
- drive improved ESG performance, accountability, and business leadership.

The paper does not constitute disclosure or reporting obligations for issuers pursuant to the provisions of the JSE Listings Requirements.

EXECUTIVE SUMMARY

By 1992 at the Rio Earth Summit, it was already established that "human influence on the climate system is clear and growing, with impacts observed across all continents and oceans".[1] Since then, the scientific and economic understanding of the impacts and risks of climate change has grown substantially. Climate-related risks and the expected transition to a low-carbon economy affect all economic sectors and industries and therefore financial markets are increasingly pricing these risks as well as looking to identify and measure new investment opportunities.

Globally, investors are recognising this and are demanding higher quality, consistent data to inform their investment strategies and decisions. This requires a dramatic improvement in climate-related disclosures globally. Where companies are already advancing on this topic, with unprecedented support for climate action including setting science-based targets and net zero emissions commitments, they require support to make sure that this is being effectively communicated to investors. To help issuers integrate and communicate climate-related information in alignment with current best practices, the following three stage process is proposed:

Step 1 - Disclosure diagnosis and context: The first step to ensuring that climate-related issues are sufficiently addressed by your organisation, is understanding the relevance of climate change and taking stock of your current disclosure practices. To help issuers understand the key climate-related issues for their business, this guidance provides a basic overview of the evolution of climate-related disclosures and the current financial, political and legal landscape (see chapters 1 & 5). To help issuers evaluate their current disclosure, this guidance also provides a checklist (annex 1) which helps issuers determine whether or not they are providing sufficient information to investors on this topic.

Step 2 - Integration of climate-related risks and opportunities: The second step for organisations that have recognised the need for action on climate, is to integrate climate-related aspects into their risk assessment and strategy development processes (see chapter 2). Climate change poses both risks and opportunities to all organisations. This integration should be done from the top of the organisation and should filter down through policies, processes and strategy.

Step 3 - Disclosure of climate-related practices and data: The third step is communicating the organisation's understanding through its disclosure of climate-related practices, strategy and objectives to investors and stakeholders (see chapters 3 & 4). The Financial Stability Board (FSB) established the Task Force for Climate-Related Financial Disclosures (TCFD) to develop recommendations for more effective climate-related disclosures. Through this Task Force, the FSB aimed to identify disclosures that could promote more informed investment, credit, and insurance underwriting decisions and, in turn, enable stakeholders to better understand the concentrations of carbon-related assets in the financial sector and the financial system's exposures to climate-related risks. This includes a growing focus on whether the climate targets a company is setting are aligned with a climate trajectory towards net zero emissions before 2050.

This three stage cyclical process can and should be undertaken by any company, regardless of size or sector. It is recognised that each company is at a unique phase of its reporting practice evolution and this guidance aims to help all companies, even those with limited reporting experience or limited resources. It is recommended that all issuers perform each of these steps, however the depth and detail of each stage of the process may vary.

[1] *IPCC, Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, 2014*

A MESSAGE FROM THE JSE GROUP CEO, DR. LEILIA FOURIE

by Dr Leila Fourie,

Group CEO JSE

Over the course of its 134 year history, the JSE has evolved and developed in tandem with the market that it supports. The capital markets environment has shifted considerably over this period in response to changes and developments in the trading and regulatory sphere. Sustainable Development is rapidly becoming a defining feature of the global economy and financial markets will reflect this.

Investor interest in environmental, social and governance (ESG) issues continues to grow, placing business front and centre in driving the shift towards stakeholder capitalism. Within this, there is an exciting opportunity for stock exchanges to play a leading role. The JSE recognises the need to create an enabling environment for better disclosure practices to thrive. As a business, ESG principles are closely aligned with our corporate objectives to grow shared prosperity.

The exchange has long been recognised for its pioneering role in promoting strong governance and sustainability / ESG disclosure globally, through such initiatives as its progressive listings requirements incorporating the King Codes, its 2004 SRI Index (the first such index owned by an exchange and the first of its kind in emerging markets), the JSE was a signatory to the UN-backed Principles for Responsible Investment (PRI), a member and past chair of the World Federation of Exchanges' (WFE) Sustainability Working Group and its activities as a founding partner of the Sustainable Stock Exchanges (SSE) initiative. More recently, we took on the role of co-chair of the SSE Committee on Climate Disclosure Guidance, as well as co-chair of the Global Investors for Sustainable Development Alliance (GISD), and member of the Net Zero Service Providers Alliance (NZSPA).

The SSE (2015) and WFE (2018) have both produced "model" ESG Guidance for exchanges to adapt to their context to help local issuers improve their disclosure. While the JSE is considered to have held existing requirements for sustainability/ESG disclosure through its links to the King Codes on corporate governance, no detailed guidance to assist listed companies on sustainability/ESG reporting has previously been issued. This document succeeds in laying out the wide range of benefits to sustainability/ESG disclosure guidance.

We recognise the need for clear guidance that:

1. *helps local companies to navigate the ESG landscape;*
2. *reflects South Africa's unique sustainability challenges;*
3. *assists in driving improved ESG performance, accountability, and business leadership; and*
4. *contributes to enhanced transparency and consistency.*

In response to the rapidly evolving landscape of sustainability standards and frameworks, this guidance provides JSE-listed issuers with guidelines specifically tailored to the South African context, whilst being fully cognisant of global best practice. It is intended that this Disclosure Guidance will serve as an umbrella for sub-topic guidance as needed, with the first such guidance on Climate Disclosure, to be released at the same time.

The JSE Sustainability Disclosure Guidance is aligned with, and draws on, the most influential global initiatives on sustainability/ESG and climate change disclosure – including the GRI Sustainability Reporting Standards, the Taskforce on Climate-related Financial Disclosures (TCFD) recommendations, the IFRS's ISSB[2]'s prototypes, and the Value Reporting Foundation's Integrated Reporting Framework – as well as an extensive range of other frameworks and standards (Annex 1) and the ESG guidance of various peer exchanges.

This Disclosure Guidance is not intended to replace any of these global initiatives, but rather seeks to help companies navigate the landscape of reporting standards without being onerous, and to provide explicitly for the South African context. This guidance document takes into account the many hundreds of ESG metrics currently available and highlights those metrics that are generally well-established, universal, industry-agnostic and that we believe to be material in the South African context.

It is our hope that this set of guidance documents will be a valuable resource and tool to all our listed companies regardless of size or sector and we look forward to receiving your comments and feedback as we refine this work in preparation for the final document to be published in 2022.

I would like to thank our Chief sustainability Officer, Shameela Soobramoney, and Jonathan Hanks from Incite, and his team, for their work in supporting this guidance note. I would also like to thank the International Finance Corporation (IFC) for their support of this project through partial sponsorship as well as through technical expert input via their global network.

I look forward to the consultation process and to receiving your valuable inputs for this important endeavour.

[2] *International Financial Reporting Standards and the International Sustainability Standards Board*

INTRODUCTION

While climate change is often seen as a defining obstacle among sustainability issues**, the consequences of it can amplify other sustainability issues, such as inequality, poverty and food availability, water and resource scarcity.** Not addressing it can carry a far greater cost than dealing with it today. The estimated financial impacts related to climate change have led investors, policy makers and financial service providers to request additional data from issuers to effectively assess and price risks in the market.

South Africa's National Climate Change Response White Paper, 2011 recognised that the corporate sector has a fundamental role to play in the country's response to climate change and that private sector funding would play an important role in achieving national climate change goals. Treasury has also recognised that improved disclosure of environmental and social performance is necessary for efficient capital allocation and the pricing of risk and that strengthening the resilience of the financial systems depends on integrating environmental and social factors into risk management systems.[3]

As noted by the Sustainable Stock Exchange (SSE) initiative, stock exchanges are in a unique position to advance climate disclosure by providing guidance to issuers and the wider markets. The Johannesburg Stock Exchange (JSE) plays a leading role in the SSE initiative, which brings together various UN agencies, the UN Global Compact and the UNEP Finance Initiative and the Principles of Responsible Investment (PRI). In June 2021, the SSE released a Model Guidance on Climate Disclosure to support stock exchanges to guide issuers on climate-related disclosures.

This Guidance, which is based on the core principles set out in the SSE Model Guidance, consists of five chapters:

- Chapter 1: Climate Disclosure – setting the stage
- Chapter 2: Risks and opportunities
- Chapter 3: Disclosure content
- Chapter 4: Disclosure presentation and validation
- Chapter 5: Education and resources

The Guidance builds on the Task Force for Climate-Related Financial Disclosures (TCFD), which released its recommendations in 2017, enhancing them with additional guidance in 2021. While numerous organisations are already utilizing the TCFD Recommendations, the JSE believes that this Climate Change Disclosure Guidance is relevant in addition to the TCFD. In particular, the Guidance provides local context relating to recent policy and regulatory developments such as those contained in the King IV Guidance Paper on Responsibilities of Governing Bodies in Responding to Climate Change. As discussed below, the King IV Guidance Paper includes important differences to the TCFD Recommendations that are important to consider particularly in light of the increasing urgent need for climate action.

The Guidance complements the JSE's Sustainability Disclosure Guidance, which provides an overarching approach to disclosure on sustainability issues, including climate change.

3 National Treasury, Financing a Sustainable Economy: Technical Paper, 2021.

CHAPTER 1: CLIMATE DISCLOSURE – SETTING THE STAGE

The first step to ensuring that climate-related issues are sufficiently addressed by your organisation is recognising the changing landscape and identifying your organisation's current progress. Climate change science is constantly growing and issuers are encouraged to continually update their knowledge on this topic. This chapter provides an overview of key trends, and chapter 5 provides further resources to help stay up-to-date on this topic.

1.1 Key trends

There are three key trends that indicate a need for accelerated action on climate change, namely a rapid change in investment trends, new policy and regulation integrating climate-related disclosures, and increased legal and reputational risks related to climate.

Changing investment trends

Studies (see annex 3) suggest that climate-related financial risks are not just limited to fossil fuel or high carbon sectors but exist across industries and asset classes. As a result, both investors and issuers are adapting an increasingly long-term outlook for more efficient and risk-adjusted allocation of capital and need to set out their strategies in response to this economic transition.

Investors and asset managers are increasingly shifting their investments towards companies that are better positioned on climate change and often assume poor corporate disclosure will mean a company is poorly prepared for the climate transition. As a result, investments are being diverted away from those companies seen to have poor disclosure on their climate-related strategies and risk-management and towards those seen as leaders. There is also a high level of coordination between investors in both measuring companies' climate performance and interlinked engagement with companies on climate action. These trends are taking place in both active and passive (index) funds.

Impending changes to policy and regulation

A 2019 whitepaper[4] written by the PRI highlighted the dramatic increase in attention paid by financial policy makers to sustainability issues in recent years. The PRI's Responsible Investment Regulation Map found over 730 hard and soft law policy revisions across approximately 500 policy instruments within the world's 50 largest economies to support, encourage or require investors to consider long-term value drivers, including ESG factors. This trend has only accelerated, with the 2021 TCFD status report indicating a number of governments beginning to embed the recommendations in policy and guidance and moving toward requiring TCFD disclosures through legislation and regulation.

More recently, in November 2021, the IFRS Foundation Trustees' Technical Readiness Working Group (TRWG), which was formed to undertake preparatory work for the formation of a new International Sustainability Standards Board (ISSB), published a Climate-related Disclosures Prototype.[5] The ISSB is

[4] *PRI, Taking stock: Sustainable finance policy engagement and policy influence, 2019*

[5] *IFRS Technical Readiness Working Group, Climate-related Disclosures Prototype, 2021*

expected to consult publicly on a climate-related financial disclosure standard when it starts its work, but this Guidance draws on the Prototype in order to align with emerging standards as far as possible.

In South Africa, changes to policy and regulation that address sustainability issues in the financial sector include:

- The 2011 amendment to Regulation 28 of the Pension Fund Act, 1956 that requires "appropriate consideration to any factor which may materially affect the sustainable long-term performance of a fund's assets, including factors of an environmental, social and governance character."[6]
- The Financial Sector Conduct Authority's (FSCA) Guidance Notice 1 of 2019 on the Sustainability of Investments and Assets in the Context of a Retirement Fund's Investment Policy Statement, which provide guidance on the FSCA's expectations for compliance with Regulation 28, and disclosure and reporting requirements for retirement funds on sustainability factors.[7]

Markets need to prepare themselves for changes to policy and regulation globally to ensure stability and resiliency of financial markets. Issuers and investors can be prepared for regulatory changes aligned with ambitious climate-related policy goals and in doing so will gain competitive advantage and strategic opportunities.

Legal and reputational risks

Both issuers and investors are increasingly cognizant of the legal and reputational risks related to the failure to act on climate change. As of January 2020, the total number of climate change legal cases filed globally reached approximately 1,444 for the year, continuing an upward trend of such cases.[8] The most recent climate change litigation update by Norton Rose Fulbright notes "the growing demand from consumers for environmentally sustainable goods and services is prompting ever increasing scrutiny from consumer advocates and regulators into misleading and fraudulent corporate climate claims or commitments."

While litigation can indeed be a reputational risk as well, reputational risks associated with climate change are also on the rise. In the climate change context, McKinsey & Company define reputation risk as "the probability of profitability loss following a business's activities or positions that the public considers harmful." A damaged reputation can for example, impact sales, through consumer boycotts or local community protests. Knock on effects include damage to its investor relationships, and adjusting opinions of potential future employees.

Further, not only are customers and civil society pushing for climate action from companies, but so are shareholders. Shareholder resolutions are increasingly addressing climate-related topics and putting pressure on issuers to make significant changes to business strategies and operations.

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[6] *National Treasury, Amendment of Regulation 28 of the Pension Funds Act, 2011*

[7] *FSCA, Guidance Notice 1 of 2019 on the Sustainability of Investments and Assets in the Context of a Retirement Fund's Investment Policy Statement, 2019*

[8] *Norton Rose Fulbright, Climate change litigation update, 2020*

Recent developments in South Africa

As in other jurisdictions, the pace and scale of South Africa's response to climate change has accelerated in recent years. Significant developments include:

- The publication of National Treasury's Financing a Sustainable Economy: Technical Paper in October 2021. The Paper identifies "the need to develop or adopt additional methodologies…to include specifically the identification, management and disclosure of climate-related risks" as one of four "immediate practical priorities and focus areas for the South African financial sector".[9]
- The establishment of the Presidential Climate Commission in 2020 to provide independent expert advice on the country's climate change response and facilitate a common vision for a net-zero and climate resilient economy and society by 2050.
- The July 2021 release of the King IV Guidance Paper on Responsibilities of Governing Bodies in Responding to Climate Change to support boards and other governing bodies in their response to climate change.[10]
- The introduction of the National Climate Change Bill to parliament in October 2021. The Bill aims to provide a coordinated and integrated response to climate change and its impacts by, among other things, setting a national greenhouse gas (GHG) trajectory and setting carbon budgets for high emitters.
- The introduction of the carbon tax, which came into effect on 1 June 2019 after President Cyril Ramaphosa signed the Carbon Tax Act into law. The tax had an introductory base rate of R120 per ton of CO2 equivalent before various allowances were taken into consideration.
- The submission of the updated Nationally Determined Contribution (NDC) under the Paris Agreement in September 2021 that sets a new target range of 398-510 Mt CO2 equivalent for 2025 and 350-420 Mt CO2 equivalent for 2030. This is compared to the target range of 398-614 Mt CO2 equivalent for 2025 and 2030. Whereas the initial NDC expected emissions to decline from 2035, the updated NDC expects emissions to decline from 2025.
- The release of a draft South African Green Finance Taxonomy in June 2021, which provides a catalogue of assets, projects and sectors that can be defined as "green" in accordance with international best practice and national priorities.
- The development of a working draft of a document outlining Principles and Guidance for Minimum Disclosure of Climate Related Risks and Opportunities, which is expected to be released shortly. It aims to guide reporters and create a platform for building a common understanding between regulators and industry on disclosure.[11]

[9] *National Treasury, Financing a Sustainable Economy: Technical Paper, 2021*

[10] *Institute of Directors, King IV Guidance Paper: Responsibilities of Governing Bodies in Responding to Climate Change, 2021*

[11] *Climate Risk Forum, Draft Principles and Guidance for Minimum Disclosure of Climate Related Risks and Opportunities, 2021*

1.2 What is the TCFD?

The Financial Stability Board (FSB) established the Task Force for Climate-Related Financial Disclosures (TCFD) in 2015 to develop recommendations for more effective climate-related disclosures to support informed capital allocation.

The TCFD's recommendations, which were released in 2017 and enhanced in 2021, are structured around four thematic areas (Table 1.1) that represent core elements of how organisations operate: governance, strategy, risk management, and metrics and targets. The four thematic areas are intended to interlink and inform each other, and therefore issuers will also find an overlapping of information between these four categories. The TCFD recommendations are also incorporated into IFRS' draft Climate-related Disclosures Prototype.

Table 1.1 TCFD recommendations and Supporting Recommended Disclosures

Recommendations and Supporting Recommended Disclosures

Governance	Strategy	Risk Management	Metrics and Targets
Disclose the organization's governance around climate-related risks and opportunities.	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	Disclose how the organization identifies, assesses, and manages climate-related risks.	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.
Recommended Disclosures	**Recommended Disclosures**	**Recommended Disclosures**	**Recommended Disclosures**
a) Describe the board's oversight of climate-related risks and opportunities.	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	a) Describe the organization's processes for identifying and assessing climate-related risks.	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
b) Describe management's role in assessing and managing climate-related risks and opportunities.	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	b) Describe the organization's processes for managing climate-related risks.	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
	c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

Source: Page 14 of the TCFD recommendations

Since the publication of these milestone recommendations, the TCFD has issued four status reports, most recently in October 2021, describing the alignment of companies' reporting with the TCFD recommendations. The number of organisations expressing support for the TCFD has grown significantly, spanning across 89 countries. Financial institutions responsible for assets of more than US$194 trillion, including the largest asset managers and asset owners in the world, support the TCFD.

On the corporate side, support for TCFD has grown to include companies representing more than US$25 trillion in market capitalization. There were 21 South African TCFD supporters as of October 2021, half of which declared their support in 2021 suggesting a growing trend. Local supporters include several of the largest asset managers and several of the largest listed companies.

1.3 How to get started

To get started in evaluating the climate-resiliency of your organisation, issuers may wish to use the TCFD Checklist found in annex 1, which is based on the recommended disclosures of the TCFD. Issuers can use this checklist to self-diagnose their published information and determine whether an investor could or

could not answer the questions listed in the checklist. Where issuers establish that sufficient information is provided in their current disclosures to answer a question on the checklist, they may wish to indicate where that information can be found, using the checklist as a map for easy identification of TCFD-recommended information. If it is determined that report users cannot answer a question on the checklist using publicly available information, issuers should consider including additional information in their public disclosures. This guide will help issuers determine what information will help investors and other users of reports answer the questions on the TCFD Checklist, help identify where issuers may wish to disclose this information, and how they may wish to present it.

1.4 Differential reporting

Climate risk is relevant for companies of all sizes and sectors but the depth and detail of reporting that investors expect will not be the same for all companies. There is a growing expectation from investors that larger companies and especially those in industries that are highly exposed to the risks of climate change (both physical and/or transition) such as extractives, energy, agriculture, steel, cement, tourism and travel will provide more detailed disclosures. In these cases the TCFD Checklist should be used to ensure that all disclosure recommendations are met. However, smaller companies in less vulnerable industries and/or those with fewer resources available for reporting procedures, may wish to use the results of the checklist exercise to map a plan for future disclosures. Progress can be disclosed so that investors are aware of the issuer's plans.

Issuers that chose to map a plan towards full disclosure may wish to use an existing staged process (see Box 3.1: Benchmarking climate transition readiness with the Transition Pathway Initiative (TPI)). It is important to note, however, that a staged approach should only be considered when limited resources do not permit an organisation to integrate all the recommendations of the TCFD from the start. Issuers in climate-vulnerable industries should consider either immediate alignment or an accelerated progression (within 1-2 years).

1.5 The intended audience for this guidance

The primary objective of this guidance is to support JSE-listed companies in considering how they can integrate the TCFD recommendations into their disclosure processes in conjunction with the King IV Guidance Paper on Responsibilities of Governing Bodies in Responding to Climate Change[12]. The starting point for this guidance is that all companies regardless of sector need to consider and disclose information on how the impact of climate change and the economic transition to net zero will impact their business and how their business will impact on the wider environment and society.

In accordance with the King IV Report on Corporate Governance for South Africa, 2016, a stakeholder-inclusive approach is encouraged where the governing body "balances the needs, interests and expectations of material stakeholders in the best interests of the organisation over time".[13]

[12] *Institute of Directors, King IV Guidance Paper: Responsibilities of Governing Bodies in Responding to Climate Change, 2021*

[13] *Institute of Directors, King IV Report on Corporate Governance for South Africa, 2016, p41*

CHAPTER 2: RISKS AND OPPORUNITIES

The second step for organisations that have recognised the need for action on climate is to integrate climate-related risks and opportunities into their governance, strategy and risk management processes. In order to do this, it is important that the board and senior-level management recognise the climate-related risks and opportunities that are relevant to their organisation, their industry, their supply chain and their geographic location. To help organisations with this task, this chapter identifies key climate-related risks and opportunities, as well as providing guidance on practices used to evaluate the risk and opportunities most relevant to an organisation.

While many organisations will already be considering various opportunities and risks associated with climate change, the TCFD recommendations offer a framework for these risks and opportunities that enables global consistency. The Task Force's recommendations serve to encourage organisations to evaluate and disclose, as part of their annual financial filing preparation and reporting processes, the climate-related risks and opportunities that are most pertinent to their business activities. The risks and opportunities recommended for consideration by the TCFD are those which have a financial impact and should therefore also be reflected in the organisation's financial statements (Figure 2.1).

Figure 2.1 - Climate-related risks, opportunities, and financial impact

Source: Page 8 of the TCFD recommendations

The TCFD approach of addressing risks and opportunities is closely aligned to that set out in the King IV Guidance Paper on Responsibilities of Governing Bodies in Responding to Climate Change, which states that "climate risk governance should encompass both the potential positive and negative effects of the same risks on the achievement of organisational objectives."[14] However, as explored further in *2.4 Materiality assessment* below, the King IV Guidance Paper also recommends that organisations consider and report on their impact on the wider environment and society, not just those that have a financial impact on the organisation.

2.1 Climate opportunities

Efforts to mitigate and adapt to climate change can and are producing substantial opportunities for organisations and their investors. In fact, the financial impact of climate opportunities may outweigh

[14] *Institute of Directors, King IV Guidance Paper: Responsibilities of Governing Bodies in Responding to Climate Change, 2021*

climate risks. In a 2019 study by CDP[15], it was found that 225 of the world's 500 largest companies reported climate-related opportunities representing potential financial impacts of over US$2.1 trillion - more than twice the financial impact estimation from climate risks (US$970 billion). Additionally, the report found that more than half of all reporting companies in the study identified potential opportunities that could have a substantive or strategic impact on their business.

Climate-related opportunities may come through the implementation of new resource efficiency and cost savings programs, the adoption of low-emission energy sources, the development of new products and services, access to new markets, and building resilience along the supply chain. TCFD identified several areas of opportunity (see Figure 2.1 for an overview) that organisations should assess and evaluate.

In the same way that organisations identify potential negative impacts associated with climate risks, the financial impact of new climate opportunities should be identified and reflected in disclosures. Companies should disclose the governance structures and strategies developed to identify and assess climate-related opportunities such as cost savings strategies or product development to meet new market demands. These opportunities should also be measured for financial impact and appear in disclosures of metrics and targets.

2.1.1 Financing opportunities

Increasingly, the financial sector is creating new opportunities when climate-related data is made available. The growth of the green bonds market is an example of these growing financing opportunities in "green" that issuers can take advantage of. The green bond market continues to reach new records quarter after quarter. For example, in 2020 the Climate Bonds Initiative noted 60% average annual growth in green bond issuance since 2015[16] with a cumulative US$1 trillion milestone[17] reached in December 2020 and a doubling of issuance in the first half of 2021 compared to the same period of 2020[18]. Transition finance, which supports high emitting companies shift towards a climate-neutral or climate-positive position, is another emerging trend.

These shifting dynamics are also evident in global stock markets and therefore important for issuers to provide relevant disclosure on. Non-financial sector organisations should evaluate what new opportunities for financing related to climate-alignment exist (such as green bonds). Financial sector organisations can address this opportunity from a product-opportunity perspective.

There remains a significant financing gap in South Africa. An International Finance Corporation (IFC) study estimated that R8.9 trillion in investment would be needed between 2015 and 2030 to fund South Africa's commitments under the Paris Agreement. This translates to around R600 billion each year, whereas a 2021 report by the Climate Policy Initiative, Bertha Centre & GreenCape tracked climate finance of only R62 billion in 2017 and 2018.[19]

[15] *CDP, Major Risk or Rosy Opportunity: Are companies ready for climate change? 2019*
[16] *CBI, Record $269.5bn green issuance for 2020: Late surge sees pandemic year pip 2019 total by $3bn, 2021*
[17] *CBI, $1Trillion Mark Reached in Global Cumulative Green Issuance: Climate Bonds Data Intelligence Reports: Latest Figures, 2020*
[18] *CBI, Sustainable Debt Market: Summary H1 2021, 2021*
[19] *Climate Policy Initiative, Bertha Centre & Green Cape. South African Climate Finance Landscape 2020, 2021*

2.2 Climate risks

The Task Force in its work evaluating risks related to climate found two key categories of risk that report preparers should be considering:

1. Risks related to the *transition* to a lower-carbon economy; and
2. Risks related to the *physical* impacts of climate change.

Within a scenario of climate transition, companies may face risks relating to policy and legal changes, new or obsolete technologies, changing market behaviours and reputational risks. These risks have been found to impact a company financially through both its income statement, revenues and expenditures, its balance sheet and through its assets, liabilities, capital and financing. Examples of these risks were identified by the Task Force (see Figure 2.1 for an overview) and may be used to initiate a risk-assessment in order to identify potential climate-related risks threatening your company. A materiality analysis (see section 2.4 of this chapter) can and should be conducted to illustrate how materiality is determined and what risks are determined to financially impact an organisation.

While climate change is a global challenge, it also has unique local implications. Whether an issuer is operating in one or many countries, they should consider both global and domestic risks confronting their operations. Within the markets where we operate, there are also specific risks and opportunities that companies should consider when conducting initial risk and opportunity analysis.

2.3 Climate governance

A key aspect of ensuring that climate-related risks and opportunities are sufficiently integrated into an issuer's internal processes is through its governance mechanisms. Users of climate-related financial disclosures are interested in understanding the role an organisation's board plays in overseeing climate-related issues as well as management's role in assessing and managing those issues. Such information supports evaluations of whether climate-related issues receive appropriate board and management attention. While good governance should intrinsically include climate governance, since climate data can be both new and complex, boards may require additional mechanisms to grapple with the scientific, macroeconomic and political uncertainty of climate change.

In addition to the other guidance and requirements provided by the JSE on corporate governance requirements and best practices, including the JSE's Sustainability Disclosure Guidance, issuers should consider to what extent their current corporate governance accounts for and takes into consideration climate-related risks and opportunities. The Task Force considers governance, as well as risk management, to be essential information required by investors to assess an organisation's financial and operating results. As such, the recommended disclosures pertaining to risk management and governance are recommended to be disclosed in the annual financial filings of all listed companies.

The King IV Report on Corporate Governance for South Africa 2016 recommends that organisations should take responsibility for the environmental impacts of their activities and acknowledges climate change as among the challenges testing the leadership of organisations. The King IV Guidance Paper on Responsibilities of Governing Bodies in Responding to Climate Change highlights how the relevant King IV principles can be applied in the context of responding to climate change.

The main principles in the King IV Guidance Paper are summarised as follows[20]:

- "Organisations are exposed to risks arising from climate change, particularly physical risk and transition risk. How the organisation experiences these risks depends on firstly, how these risks materialize and secondly, what actions are taken to mitigate them. Physical risk arises from the impacts of climate change. The response from Governing Bodies will mitigate or potentially lessen the risks, but the risks arise regardless. Transition risk arises outside the organisation.
- Governing Bodies have a critical role to play in responding to climate change which is an imperative and no longer optional.
- Governing Bodies must ensure that business strategy and decision-making include a broader, integrated consideration of social, economic, and environmental (including climate change) performance and impacts. This incorporates an assessment of externalities (see below), as well as determining risks and opportunities for both the short and long term.
- Insofar as environmental and climate change reporting and performance is concerned, Governing Bodies should consider the principle of 'externalities'. In simple terms, externalities refer to societal costs not included in the cost of production resulting in costs that do not reflect the true impact on society or the environment.
- While accountability remains with the Governing Body, responsibility for the management and monitoring of risk and impact must be delegated to management with defined indicators and targets to measure and assess performance.
- Governing Bodies should make every effort to mitigate their organisations' contribution to climate change (reduce the organisation's impact on the drivers of climate change).
- The Governing Body should ensure that the organisation is transparent about its response to climate change and disclose quantitative and qualitative information which could affect a user's decisions, irrespective of whether a common reporting framework exists or not."

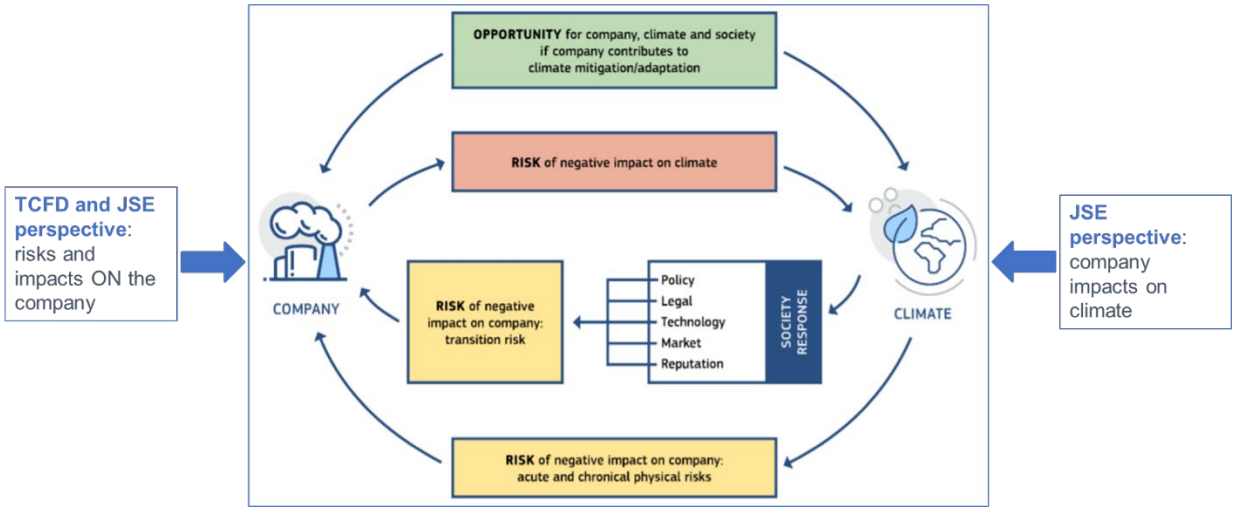
2.4 Materiality assessment

The Task Force recommendations are based on the belief that climate-related issues are or could be material for many organisations, and its recommendations should be useful to organisations in complying more effectively with existing disclosure obligations. It also notes, however, that climate-related risk is a non-diversifiable risk that affects nearly all industries, and therefore many investors believe it requires special attention.

The TCFD recommendations primarily relate to information deemed "financially material". The JSE Climate Disclosure Guidance supports the recommendation of the King IV Guidance Paper on Responsibilities of Governing Bodies in Responding to Climate Change that governing bodies recognise the concept of double materiality, which considers both the impact on enterprise value and the organisation's impact on wider environment and society (see Figure 2.2). This is also in alignment with the JSE's Sustainability Guidance document.

[20] *Institute of Directors, King IV Guidance Paper: Responsibilities of Governing Bodies in Responding to Climate Change, 2021*

Figure 2.2 – Double Materiality Perspective



Source: *: Adapted from EU Guidelines on reporting climate-related information*

It is noted that over time materiality will change and that time horizons impact whether or not information is relevant to a decision. The Task Force encourages organisations where climate-related issues could be material in the future to begin disclosing climate-related financial information outside financial filings to facilitate the incorporation of such information into financial filings once climate-related issues are determined to be material. A materiality matrix can be used to illustrate how a company has considered climate-related matters.

Companies who do not find climate-related risks or opportunities material to their organisation are encouraged to report the means by which they came to this conclusion, and the time horizon used.

2.5 Scenario analysis

The TCFD recommends conducting a scenario analysis (see box 1.1) to help identify and effectively assess the potential implications of a range of plausible future conditions due to the uncertainty of climate-related changes. Scenarios are hypothetical constructs that consider how the future might look if certain trends continue or certain conditions are met. Scenario analysis is not an exercise in forecasts, predictions or sensitivity analyses, but rather in evaluating resilience to different possible future scenarios. For example, while governments have agreed upon the target of limiting global average temperature rise to well below 2ºC, and preferably to 1.5 ºC, above pre-industrial levels, corporations should consider the impact on their business in the scenario that this target is met, or not. This analysis can be qualitative, relying on descriptive, written narratives, or quantitative, relying on numerical data and models, or a combination of both.

While climate change can impact organisations both today and in the future, the implications often vary over time in severity and conditions. A scenario analysis is a method for developing strategic plans that are more flexible or robust and has become a useful tool for businesses to understand the strategic implications of climate-related risks and opportunities. While this is an important step to the TCFD, it is also often the stage for which companies have the least experience. It is important to note, that while the initial process of developing a scenario analysis may be challenging, it pays dividends in the years

ahead. After the first analysis, only adjustments will be needed on a yearly basis; revisiting the whole process is less often required.

Organisations have numerous resources available to them, including the TCFD's Guidance on Scenario Analysis for Non-Financial Companies (2020), the TCFD's Knowledge Hub, among others (see section 5.1 of Chapter 5). For example, the TCFD's guidance on scenario analysis provides a detailed step-by-step guide on how to conduct a scenario analysis and provides a detailed analysis on available scenarios and models. The same guidance also provides a list of key messages that organisations should understand about scenario analysis. If issuers have not worked on a scenario analysis before, they may wish to use the many resources available through the TCFD.

Box 1.1 Tips on conducting a scenario analysis

The Centre for Climate and Energy Solutions (C2ES) launched a report in 2018 that identifies best practices companies are employing when they conduct a TCFD recommended scenario analysis. They include:

- **Make use of publicly available scenarios and leverage them by customizing corporate scenario exercises around company-specific risks and opportunities.** Stakeholders are familiar with the parameters and assumptions in publicly available scenarios, but companies need to explain how the scenarios were modified and used to stress test their particular portfolio and circumstances.
- **Focus scenario exercises and disclosures on a few key variables associated with long-term climate-related risks and opportunities that could have a material impact on the business.** Stakeholders want to understand how companies manage the uncertainty and long-term risks of climate change. A scenario analysis is not intended to be a predictive exercise, nor an exhaustive one. Rather, it provides an opportunity to evaluate potential strategies compatible under a range of outcomes to make companies more financially resilient.
- **Use a range of scenarios when conducting a scenario-based risk analysis, including those that do not meet 2ºC.** Exploring a broad range of futures and testing those against a company's strategy will help illustrate financial resilience under a variety of climate-related outcomes. Beyond assessing the risks and opportunities related to an energy transition, companies should also consider the physical impacts of climate change and analyse them along the entire value chain.
- **Scenario exercises should be reviewed on a regular basis as part of a strategic management process.** Outcomes from scenario exercises are unlikely to change significantly from year to year if assumptions and inputs remain stable, but companies should regularly monitor signposts that might indicate a potential need to change strategy or positioning on a regular basis.

Source: Center for Climate and Energy Solutions (C2ES) report titled "Using Scenarios to Assess and Report Climate-Related Financial Risk" (2018)

To conduct a scenario analysis, companies may wish to follow the following (simplified) three stage process:

1. **Identify appropriate scenarios** - Each organisation has the choice of using "out-of-the-box" scenarios or developing their own. In either case, it should choose the scenarios that align with the organisation's underlying assumptions and the key risks and opportunities of its sector or industry. The scenarios used should be clearly explained. It is also important that organisations recognise the importance of consistent and comparable disclosures and therefore existing scenarios will help ensure consistency with scientific data underpinning the exercise. Scenarios aim to evaluate a

company's resilience to what 'may' happen, therefore, more than one scenario will help identify resilience in the various possible futures.

2. **Set the boundaries of your scenario analysis** - Before analysing the impact of climate-change in the scenarios chosen, organisations may wish to set boundaries to their analysis. This simple process determines how far your analysis will extend. While smaller organisations may feel that an analysis of the direct operations sufficiently covers the climate-related risks and opportunities within each scenario, given that many significant impacts and vulnerabilities are found in the supply chain, it will be beneficial for most larger companies and all financial-sector companies to expand their analysis beyond their headquarters. Boundaries may be set for financial institutions to include their portfolio, and all large organisations should consider including their supply chain and customers.
3. **Analyse both transitional and physical risks within the scenarios chosen** - Once the scenarios are chosen and boundaries are set, the organisation undergoes an exercise of evaluating its physical and transitional risks. This exercise can also be used to identify the opportunities that may appear within the scenario. Mapping the severity and likelihood of the risks enables the organisation to develop a strategic plan for future scenarios.

2.5.1 Scenario selection

When conducting a scenario analysis for the first time, organisations have a plethora of resources to help develop in-house scenarios or to make use of publicly available scenarios. Publicly available scenarios may be used as they are, be adapted, or used to help create an in-house scenario, or combined scenarios. However, it is important to remember that investors require consistent and comparable disclosure.

There are a number of publicly available scenarios which organisations can use to conduct a scenario analysis or to act as guidance for developing in-house scenarios, such as the Intergovernmental Panel on Climate Change (IPCC), the International Energy Agency (IEA) and the Network for Greening Financial System (NGFS) scenarios (see box 2.1). While the aforementioned scenarios are the most prominent and widely used scenarios in the public domain, other organisations, such as the International Renewable Energy Agency, and the Deep Decarbonization Pathways Project (DDPP) among others, have published their own scenarios, which provide a different narrative and outlook to those listed above. Some of these groups have taken a specific focus, such as using 100% renewable energy, or built a regional specific model that takes a deeper look into the energy mix for specific countries (such as the DDPP).

Organisations should choose scenarios that best align with their own underlying assumptions in managing climate risks and opportunities and should also align with the country's Nationally Determined Contributions (NDCs) under the Paris Agreement. NDCs are refreshed every five years in accordance with the Paris Agreement. The sum of all countries' NDCs, however, fail to achieve a 2°C temperature goal, so companies using NDCs as another basis of scenarios should understand both NDC pathways and limitations.

South Africa formally ratified the Paris Agreement in November 2016. Its NDC was updated in September 2021 with a new target range of 398-510 Mt CO2 equivalent for 2025 and 350-420 Mt CO2 equivalent for 2030. This is compared to the target range of 398-614 Mt CO2 equivalent for 2025 and 2030. Whereas the initial NDC expected emissions to decline from 2035, the updated NDC expects emissions to decline from 2025. Climate Action Tracker rated South Africa's initial NDC as "insufficient", which means that warming would reach over 2°C and up to 3°C if all countries were to follow this approach. The Climate

Action Tracker assessment of the updated NDC is still pending, but in July 2021, Climate Action Tracker noted that the Presidential Climate Commission's recommendation, which was subsequently adopted in the updated NDC, was close to 1.5°C compatible.[21]

In addition to the NDC, South Africa's Long-term Adaptation Scenarios, which were released in 2013, present a range of possible future climate conditions over three time periods: 2015-2030, 2040-2060 and 2080-2100 that can be considered.[22]

Box 2.1 IPCC, IEA and NGFS scenarios

Intergovernmental Panel on Climate Change (IPCC)

The IPCC has developed a new basis for the construction of comparable scenarios across research and modelling groups — Representative Concentration Pathways (RCPs) and Shared Socioeconomic Pathways (SSPs). RCPs are "emissions scenarios" that include time series of emissions and concentrations of the full suite of greenhouse gases, aerosols, and chemically active gases, as well as land use/land cover. RCPs are used to develop climate projections by informing physical climate system models; these models, in turn, project how the physical climate may change under different levels of radiative forcing driven by greenhouse gas concentrations. SSPs were developed to complement the RCPs with varying socioeconomic challenges to adaptation and mitigation. The combination of SSP-based "socioeconomic scenarios" and RCP-based climate projections provides an integrative framework for climate impact and policy analysis. The following table outlines the RCPs:

Mean Temperature and Full Range Associated with Each RCP

Scenario	Atmospheric carbon dioxide concentrations in 2100	Temperature increase to 2081–2100 relative to a 1850–1900 baseline		Global mean sea level rise for 2081–2100 relative to a 1986–2005 baseline	
		Average	Likely range	Average	Likely range
RCP2.6	421ppm	1.6°C	0.9–2.3°C	0.40m	0.26–0.55m
RCP4.5	538ppm	2.4°C	1.7–3.2°C	0.47m	0.32–0.63m
RCP6.0	670ppm	2.8°C	2.0–3.7°C	0.48m	0.33–0.63m
RCP8.5	936ppm	4.3°C	3.2–5.4°C	0.63m	0.45–0.82m

The SSPs describe five alternative socioeconomic futures over the course of the 21st century assuming no explicit policies to mitigate or adapt to climate change, as follows:

- sustainable development (SSP1);
- middle-of-the-road development (SSP2);
- regional rivalry (SSP3);
- inequality (SSP4); and
- fossil–fuelled development (SSP5).

International Energy Agency (IEA)

In contrast to the IPCC approach, the IEA focuses on energy and emission scenarios. The IEA's World Energy Model runs three main scenarios describing the future energy mix:

[21] *Climate Action Tracker, South Africa's Presidential climate commission recommends stronger mitigation target range for updated NDC: close to 1.5°C compatible, 2021.*

[22] *Department of Environmental Affairs, Long Term Adaptation Scenarios for South Africa, 2013.*

- **Current Policies Scenario (CPS):** This scenario considers policies that are in place at the preceding year of publication (i.e., mid-2019 for the 2019 World Energy Outlook), without any additional government policy intervention.
- **Stated Policies Scenario (SPS):** This scenario is designed to explore all policies enacted in the preceding year, plus the policies that have been firmly communicated or committed to by national authorities. The SPS scenario assumes that there is a slow implementation of these policies, based on the IEA's assessment of the many political, institutional, and societal barriers that exist to a rapid transition.
- **Sustainable Development Scenario (SDS):** This scenario assumes the world is successful in achieving Sustainable Development Goals by 2030. The SDS holds the temperature rise to below 1.8°C with a 66% probability without reliance on global net-negative CO2 emissions.

In May 2021, the IEA released a new Net Zero Emissions by 2050 Scenario (NZE) based on detailed modelling of the energy sector. The NZE looks to hold energy-related and industrial process CO2 emissions to 2030 in line with reductions in 1.5°C scenarios.

The Network for Greening Financial System (NGFS) Scenario

The Network for Greening the Financial System (NGFS), a group of over 80 central banks, including the South African Reserve Bank, focused on addressing climate risks, worked with an academic consortium from the Potsdam Institute, IIASA, University of Maryland, Climate Analytics and the Swiss Federal Institute of Technology (ETHZ). It set out 3 reference scenarios and 5 additional scenarios that cover a comprehensive range of transition pathways and climate outcomes, meeting the needs of the financial sector. The scenarios include multiple IAMs (REMIND, GCAM, and MESSAGE), climate models (on the physical risk side) and macro models (added in phase II) to provide more complete macro pathways. NGFS consulted the wider scientific and financial communities to ensure the scenarios are robust, effective, and usable, and will continue to evolve the scenarios, increasing sectoral and geographic granularity of emissions/energy data, and adding more climatic events, regulatory policy indicators, and macro variables.

As central banks and supervisors globally will likely ask the institutions they supervise to use these scenarios, who in turn could make the same request upon their corporate clients, there will likely be a net efficiency to the financial system using these scenarios and working with NGFS to ensure their robustness and usefulness.

Sources: UN SSE, with data from the TCFD Technical Supplement titled "The use of scenario analysis in disclosure of climate-related risks and opportunities" and the NGFS website.

2.5.2 Simplified approach for first time scenarios

For those companies starting a scenario analysis for the first time, the steps and guidelines available may seem overwhelming and daunting. Choosing existing scenarios, or using aspects of existing scenarios, are often the easiest way to begin a scenario analysis, and after scenarios are chosen the process may become much more clear. As an important aspect of the TCFD recommendations, companies should always choose a simplified scenario over no scenario. In order to simplify the process, companies can ask themselves three key questions:

- **Would the business be profitable if** countries were successful in achieving the goals of the Paris Agreement and there is an orderly transition to a low-carbon economy?
- **Would the business be profitable if** there is an abrupt and disorderly transition as countries belatedly catch up on climate goals?
- **Would the business be profitable if** there is a failure to transition?

2.6 Just transition

South Africa, which is the world's 12th largest GHG emitter[23], is highly exposed to the risks resulting from the transition to a low emission economy due to its reliance on fossil fuels, including coal-fired power and related mining activity. The Paris Agreement incorporated the notion of a "just transition", which originated in the labour movement, to signal the importance of minimising the negative impacts and maximising the positive opportunities for communities and workers as part of the shift toward a low emission economy. Given the importance of the just transition to South Africa, it will be critical for issuers to pay increasing attention to the related risks and opportunities.

In mid-2021, the TCFD undertook a public consultation on its Proposed Guidance on Climate-related Metrics, Targets, and Transition Plans and the associated Measuring Portfolio Alignment: Technical Supplement. Similarly, the IFRS' Climate-related Disclosures Prototype calls for the disclosure of information that allows users to understand the impact of climate-related risks and opportunities on management's strategy, including its transition plans. Specific requirements include disclosure of how climate-related targets will be achieved, the resources required, assumptions regarding the use of offsets, and the direct and indirect mitigation and adaption efforts being undertaken.[24]

Issuers should be cognisant of these developments It is also recommended that they incorporate disclosure of related social issues into their TCFD reporting to reflect the importance of these dynamics in the local context. Some recommended metrics are as follows:

- Does the issuer have a just transition plan that commits to stakeholder engagement with workers and communities?
- How many engagements have been undertaken with affected parties by group, geography etc?
- How many workers in the past year have been retrained/retrenched/compensated due to their decarbonisation plans?
- How do lobbying activities and those of associations and membership group align with the objectives of the Paris Agreement?
- How is executive remuneration aligned to the transition plan?
- Do climate scenarios include impacts on workers and communities?
- How much capital or expenditure is deployed toward climate adaptation or climate mitigation projects?

[23] *Global Carbon Atlas, 2019*

[24] *IFRS Technical Readiness Working Group, Climate-related Disclosures Prototype, 2021,, p9*

CHAPTER 3: DISCLOSURE CONTENT

The third step for organisations that have recognised the need for action on climate is to communicate their action and intentions through climate-related disclosures. The TCFD recommendations for disclosure are the current best practice in determining what information relating to climate should be reported on. Many companies may already be reporting on some or all of the recommended disclosures, but should ensure that this information is accessible and easy to find. Report preparers can initially use the TCFD Checklist (annex 1) as a means of taking stock of where this information can be found, and provide it as a map in their TCFD or climate-related reporting. The recommended disclosure content within the TCFD publications has also been mapped with most major reporting frameworks (annex 2). Further discussion on frameworks can be found in chapter 4 of this guidance.

3.1 Investor-useful information

Investors want to understand how a company is positioning itself strategically in light of its climate-related risks and opportunities. They frequently indicate that climate-related risks and opportunities have a significant impact on their investment decisions. In a 2019 TCFD survey, investors rated information on the resiliency of a company's strategy and how its strategy might be affected by or changed to address potential climate related issues, as very useful.[25] In the 2021 TCFD consultation, 90% of investors indicated that it would be helpful for report preparers to disclose climate-related impacts on financial performance and financial position.[26]

Companies reporting on climate should be aware that investors are looking for information that gives them confidence that companies understand climate-related issues, how they impact the business and what action they are taking as a result. According to the King IV Report, the board should ensure that reports allow stakeholders to make informed assessments of performance and the prospects over the short-, medium- and long-term.

Many investors with diversified portfolios are also asking for consistent data across all companies they invest in to be able to apply consistent methodologies to inform the level of investment they are making in each company. Therefore in order to ensure that the efforts put in by report preparers have the desired impact in informing shareholders of the climate-resiliency of their company, information should be shared in a standardised format and include the content that investors are looking for.

Box 3.1	Benchmarking climate transition readiness with TPI

The Transition Pathway Initiative (TPI) is a global initiative led by asset owners and supported by asset managers. Aimed at investors and free to use, it assesses companies' preparedness for the transition to a low-carbon economy, supporting efforts to address climate change. Through robust and independent research, the tool aims to empower investors to

[25] See Table A5-5 in Appendix 5 in the 2020 TCFD Status Report

[26] *TCFD, 2021 Status Report*

assess the alignment of their portfolios with the goals of the Paris Agreement and to drive real world emission reductions through actions.

Using publicly disclosed company information, the TPI does the following assessments:

- Evaluates and tracks the quality of companies' management of their greenhouse gas emissions and of risks and opportunities related to the low-carbon transition;
- Evaluates how companies' planned or expected future carbon performance compares to international targets and national pledges made as part of the Paris Agreement;
- Publishes online the results of this analysis through a publicly-available tool hosted by its academic partner, the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science (LSE).
- The TPI complements existing initiatives and frameworks, by aligning with prevailing disclosure initiatives and with investors' climate change and sustainability expectations. It is also being aligned with the requirements of the TCFD and is used for the disclosure assessment of the Climate Action 100+ Net Zero Company Benchmark - an assessment of the world's largest corporate greenhouse gas emitters on their progress in the transition to the net zero future.

How investors can use the TPI

Investors are using the TPI for a broad range of activities, including ESG integration, active ownership, informing proxy voting, exclusions, product creation due diligence, and demonstrating commitment to environmental sustainability.

How listed companies can use the TPI

Companies can use the analysis already conducted by TPI on their own company, or if they have not been evaluated by TPI, they can use the analysis of a competitor or similar industry analysis to determine the baseline scenario analysis. Additionally, companies are also using TPI for other ESG-related exercises such as helping suppliers to align climate policies across a global value chain.

The TPI's 4 level staircase can also be used to help companies chart a pathway of constant progression and set objectives for their climate-related disclosure journey.

TPI's four levels of TCFD alignment

Source: Page 4 of Transition Pathway Initiative's report "How can investors use the transition pathway initiative? Version 1.0 - 11 January 2016"

Source: SSE initiative, with data from The Transition Pathway Initiative website and the Climate Action 100+ website.

3.2 Reporting on opportunities and use of taxonomies

TCFD recommends that where relevant, organisations should provide climate-related opportunity metrics such as revenue from products and services designed for a lower-carbon economy. Some of the opportunities created by the climate transition impact financial statements primarily through cost reductions and efficiency creation, such as resource efficiency and energy sources. Opportunities that the corporation is taking advantage of should be reported to investors not only to indicate a strategic alignment with climate-resiliency but also to indicate expected future savings or efficiency increases. Other opportunities, however, also provide new revenue to the business, often referred to as "green revenues". By introducing new products or services, or accessing new markets, organisations may tap into new revenue streams that are climate-aligned. Reporting on climate-related opportunities will often mean breaking down the revenues associated with certain activity segments that enable climate mitigation or adaptation.

One significant challenge in reporting opportunities is defining which product and service categories to identify. A solution for this can be found in the growing development of green and sustainable finance "taxonomies" by various regulators. The EU has been pioneering in this regard, while a draft South African Green Finance Taxonomy was released in June 2021. The green finance taxonomy provides a catalogue of assets, projects and sectors that can be defined as "green" in accordance with international best practice and national priorities. Benefits to the financial sector include greater clarity and certainty in selecting and issuing green financial instruments and greater regulatory support.

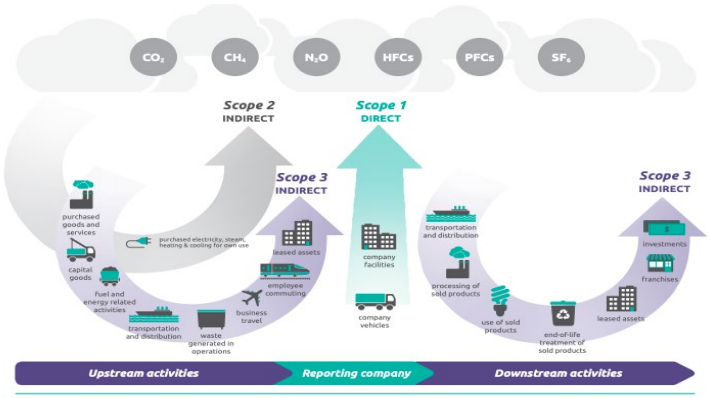
3.3 Carbon emission reporting

Carbon reporting standardises into one metric the combined climate impact in CO2 equivalent units for the measurement of the release of all gases linked to the greenhouse effect and climate change. Also referred to as carbon footprinting, this activity measures what amount of these gases an organisation is responsible for through a system which classifies emissions as scope 1, 2 or 3, depending on the source of the emissions (Figure 3.1). As per the GHG Protocol Corporate Accounting and Reporting Standard[27], scope 1, 2 and 3 emissions can be broadly understood as:

- **Scope 1 (Direct GHG emissions):** Emissions that occur from sources that are owned or controlled by the company. For example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.; emissions from chemical production in owned or controlled process equipment.
- **Scope 2 (Electricity indirect GHG emissions):** Emissions from the generation of purchased electricity, steam, heat and cooling consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the company. Scope 2 emissions physically occur at the facility where electricity is generated.
- **Scope 3 (Other indirect GHG emissions):** Emissions that are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. Some examples of scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; business travel and employee commuting, and use of sold products and services. For stock exchanges, scope 3 emissions will include business travel (emissions of means of transport).

[27] *The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard (revised edition), 2004*

Figure 3.1: Overview of GHG Protocol scopes and emissions across the value chain



Source: Greenhouse Gas Protocol, Corporate Value Chain (Scope 3) Accounting and Reporting Standard, 2011

GHG emission calculation is now an integral part of many corporations' reporting, and is used to set targets, identify opportunities and show progress. Many reporting frameworks provide guidance on reporting and measuring GHG emissions, such as SASB's Implementation Supplement which provides an overview of SASB's approach to GHG emissions and related topics in the SASB Standards. It also offers guidance for reporting entities that wish to disclose Scope 1, 2, or 3 emissions.

GHG Protocol (Figure 3.1) has been widely adopted by many companies to measure GHG emissions and has been referenced by many standards and frameworks including TCFD, the Global Reporting Initiative (GRI), the Carbon Disclosure Project (CDP) and the Sustainability Accounting Standards Board (SASB).

3.4 Setting targets

To achieve climate-resilient markets and net-zero emissions issuers will need to set both attainable and impact-driven targets, based on widely understood and accepted definitions. The TCFD recommends that organisations describe their climate-related targets such as those related to GHG emissions, water usage, energy usage, etc. in line with the anticipated regulatory requirements or market constraints. It also recommends that, where relevant, the internal carbon price that is used to measure impact and set targets be disclosed. While some JSE-listed companies use the carbon tax to determine an internal carbon price, the current tax rate is significantly below the level estimated to be required in order to achieve the goals of the Paris Agreement.

Organisations should also align their climate-related targets with other goals such as efficiency or financial goals, financial loss tolerance, avoidance of GHG emissions through the entire product life cycle, or net revenue goals for products and services designed for a lower-carbon economy. A major and growing focus for many companies and investors is in the setting of emissions targets that are aligned with the trajectory towards net zero emissions before 2050, which according to the scientific community, is needed to achieve keeping global average temperature increases below 1.5°C. To ensure that targets align with climate-science, resources such as the Science Based Targets initiative (SBTi - see box 3.2) can be consulted or used to validate the process.

It is important that common definitions are used when setting climate-related targets. First and foremost, issuers should always refer to the relevant law and guidance provided by their regulatory authority, using this guidance as a supplement to legal requirements. Climate data can also be available in pre or post issuance documents of bond issuers. Investors are interested in consistency across companies as well as within companies. Trend lines, or proof of progress are more useful than static targets or long-off objectives. Therefore, companies should endeavour to show how they have progressed over time on the climate-related targets chosen. Whether providing historical data to show this trendline or setting up new programs to collect this data moving forward, it is important to set targets that can be measured progressively and that allow to monitor progress and update information on climate-related science, and investor and reporting requirements.

TCFD and global data vendors recommend providing the following details when describing targets:

1. Definition of target, and if an emissions reduction target is set, which scopes (1,2 and 3) are covered.
2. Whether there are absolute and intensity-based targets. For the intensity-based targets, include the details of the denominator used and its associated changes over the equivalent time.
3. Time frames over which the target applies.
4. Base year from which progress is measured.
5. Whether there has or will be use of offsets in achieving the target, with associated details.
6. Details regarding how and why the specific target/s were determined.
7. Key performance indicators used to assess progress against target.

Linking these targets to remuneration should also be considered. The King IV Guidance Paper proposes that remuneration should be linked to the performance of sustainability and ESG targets, including those relating to climate change.

Box 3.2	Setting Science Based Targets

The Science Based Targets initiative (SBTi) is a collaboration between CDP, the United Nations Global Compact (UNGC), World Resources Institute (WRI), and the World Wide Fund for Nature (WWF) and one of the We Mean Business Coalition commitments. Central to SBTi's mission is ensuring that companies have the tools they need to set targets in line with climate science, recognising that the science itself is nuanced and dynamic. Due to the complexity of the science, the SBTi plays an important role by conducting in-depth research and analysis, as well as consulting with scientists and sustainability professionals, in order to develop science-based targets (SBT) and setting methods that are transparent, robust, and actionable.

Methods endorsed by the SBTi are instructive frameworks that may be used by companies to set emissions reduction targets consistent with the best available climate science. These methods are constructed from three main elements: a greenhouse gas budget, a set of emission scenarios, and an allocation approach. The SBTi's procedure for developing a method begins with determining a representative set of emissions scenarios that are considered plausible, responsible, objective, and consistent and that are aligned with specific temperature goals (1.5˚C - 2˚C of global warming). In general, SBTi scenarios must not exceed the GHG budget associated with the temperature goal prior to reaching global net-zero emissions, in addition to meeting other criteria. An allocation approach is used to translate the resulting global or sector-specific emissions pathway into practical requirements that align company emissions with the pathway.

The Science Based Targets initiative has also developed methodologies to support net-zero targets. In 2019 SBTi launched a process to develop the first science-based global standard for corporate net-zero targets, to ensure that companies' net-zero targets translate into action that is consistent with achieving a net-zero world by no later than 2050. In July 2021, in response to the increasing urgency for climate action, SBTi launched a new strategy that increased the minimum target ambition from "well below 2°C' to '1.5°C' above pre-industrial levels.

Source: SSE initiative, with data from the Science Based Targets initiative website – www.sciencebasedtargets.org

3.4.1 Targeting net-zero emissions

A number of public and private organisations globally have begun committing to decreasing or offsetting all scope 1, 2 and 3 emissions to achieve what's referred to as "net-zero emissions". Recognising the importance of keeping global warming to 1.5°C, companies are increasingly adopting net-zero climate targets. Achieving net-zero emissions means that your organisation either emits no greenhouse gas emissions or offsets its emissions, for example, through actions such as tree planting or employing technologies that can capture carbon before it is released into the air.

Many countries have announced the timeline for achieving carbon neutrality since 2019 and started to explore the pathways in achieving the goal. South Africa's Low-Emission Development Strategy, which was released in February 2020, initiated the country's path to "ultimately moving towards a goal of net zero carbon emissions by 2050." Work is now underway under the auspices of the Presidential Climate Commission to realise this vision. Such national goals will influence the actions and decision-making process for financial institutions and listed companies. Therefore, the timeline, goals, and pathways to achieve carbon reduction for each individual company, including the models and tools used, would be relevant for disclosure.

CHAPTER 4: DISCLSOURE PRESENTATION AND VALIDATION

Issuers have several frameworks or formats to present the information recommended for disclosure by the TCFD. By using the TCFD Checklist (annex 1), together with the guidance in previous chapters, issuers should now have an idea of what information they are already disclosing and what disclosures they are missing. This chapter of the guidance helps issuers to align TCFD recommendations with disclosure frameworks to enhance efficiency, as well as providing guidance on how and where to disclose climate-related data.

4.1 Frameworks for disclosure

Issuers should aim to follow the JSE Sustainability Disclosure Guidance's key principles for useful ESG data and an effective ESG report to ensure they achieve high-quality and decision-useful disclosures that enable users to understand the impact of climate change on organisations.

- **Accurate:** The organisation should report information that is correct and sufficiently detailed to allow an assessment of the organisation's impacts.
- **Balance:** The organisation should report information in an unbiased way and provide a fair representation of the organisation's negative and positive impacts.
- **Clarity:** The organisation should present information in a way that is accessible and understandable.
- **Comparability:** The organisation should select, compile, and report information consistently to enable an analysis of changes in the organisation's impacts over time and an analysis of these impacts relative to those of other organisations.
- **Completeness:** The organisation should provide sufficient information to enable an assessment of the organisation's impacts during the reporting period.
- **Material:** *in terms of enterprise value and/or impact on society and the environment*. The reporting organisation should disclose sustainability/ESG information that is reasonably capable of making a difference to the conclusions drawn by:
  - providers of finance concerning the ability of the organisation to create long term value for the organisation (the focus of the integrated report); and
  - stakeholders more broadly concerning the organisation's most significant impacts on the economy, environment, and people, including impacts on their human rights (the focus of additional disclosure such as a sustainability or ESG report)
- **Reliable:** The reporting organisation should gather, record, compile, analyse, and report information and processes used in the preparation of the report in a way that they can be subject to internal examination and third-party assurance, and that establishes the quality and materiality of the information.
- **Stakeholder inclusive:** The reporting organisation should identify its stakeholders and explain how it has responded to their reasonable expectations and interests.

- **Sustainability context:** *recognising critical environmental thresholds and social pressures* The organization should report information about its impacts in the wider context of sustainable development.
- **Timeliness:** The organisation should disclose information on a regular schedule and make it available in time for information users to make decisions.
- **Verifiability:** The organisation should gather, record, compile, and analyse information in such a way that the information can be examined to establish its quality.

While companies have several frameworks at their disposal for disclosing climate, as well as social and corporate governance information, most, if not all, have now been mapped and aligned to the TCFD recommendations to ensure consistency and efficiency. It has been recognised that consistency among reporting frameworks is essential to ensure information provided by companies is decision useful. To this end, several initiatives have been launched to ensure consistency among reporting frameworks. In 2020, the CDP, CDSB, GRI, IIRC and SASB released a statement of intent that presented a summary of alignment discussions and a commitment towards working together towards a comprehensive corporate reporting system.[28]

To help map issuers' current disclosure formats to the TCFD, annex 2 indicates alignment of indicators between main reporting frameworks, including the IFRS' Climate-related Disclosures Prototype, to the TCFD. If issuers already report using GRI and CDP, for example, they can use annex 2 as a cross-reference when completing the TCFD Checklist (annex 2), and may wish to include this in their map of TCFD information. Issuers are encouraged to use the metrics recommended by the TCFD to ensure consistency throughout the market and globally. The JSE Sustainability Disclosure Guidance also includes a set of suggested metrics that address climate change that are aligned with this document.

4.2 Data verification and assurance

Information disclosed in external reports should follow internal assurance procedures to ensure the data is accurate, appropriate, and reliable. Issuers may consider engaging external consultants to undertake assurance procedures to improve the credibility of their data with third party audit and external support may be essential if the capacity does not exist internally. As climate-related disclosures become more common and are included in mainstream financial filings, the governance process should be similar to those used for existing public financial disclosures and should therefore include a review by the chief financial officer and audit committee or equivalents.

An internal assurance process can ensure accurate and better data, leading to better decision-making and performance for the issuer. This process can be undertaken using the existing internal audit, risk and data control verification systems already developed for mainstream financial reporting processes. If internal systems are not currently sufficient for the task, a company may decide that it is in its long-term best interest to invest in building capacity in this area. This information is often reported by the company in the governance section of the TCFD recommendations.

In addition to internal assurance procedures, an external audit can add trust, credibility and recognition to the organisation's reporting practices. Accounting, engineering and specialist service firms are the

[28] *CDP, CDSB, GRI, IIRC and SASB, Statement of Intent to Work Together Towards Comprehensive Corporate Reporting*

most common third-party assurance providers. In order to decide the type and level of assurance, it is important for companies to consider recommended standards for assurance within their sector, as well as stakeholder expectations. Additional resources on assurance procedures can be found in Table 5.1.

The King IV Guidance Paper on Responsibilities of Governing Bodies in Responding to Climate Change notes that assurance should contribute to consistent and reliable reporting and that the presentation of climate change information should "ultimately meet the requirements of being auditable or capable of being subject to assurance being expressed thereon."[29]

4.3 Location and timing of climate-related disclosure

The purpose of disclosing climate-related information is that investors and other market participants and stakeholders can access and use the information provided by issuers for their own internal decision-making processes. Information determined to be financially material (see section 2.4 of Chapter 2) and legally required, will be disclosed within organisations' mainstream financial filings. Both primary accounting standard setting bodies, the International Accounting Standards board (IASB) and the Financial Accounting Standards Board (FASB) have issued standards to address risks and uncertainties affecting companies. The International Accounting Standard (IAS) 37 "Provisions, Contingent Liabilities and Contingent Assets" and the Accounting Standards Codification (ASC) 450 "Contingencies" both provide guidance on how to account for and disclose contingencies such as those discussed in this guidance. In addition, IAS 36 "Impairment of Assets" and ASC 360 "Long-lived Asset Impairment" provide additional guidance on long-lived assets that may be impacted by climate-change.

The TCFD recommends that organisations provide climate-related financial disclosures in mainstream financial filings. Similarly, the suggested practices in the King IV Guidance Paper on Responsibilities of Governing Bodies in Responding to Climate Change is that climate risk impacts on governance, the business model, strategy, risk management, and performance and prospects are disclosed in the Annual Report and Integrated Report, not in a separate Sustainability Report, and that the climate change disclosures in the financial statements are consistent with those in other reports. The JSE supports the TCFD's recommendation and the King IV suggested practices.

It is recognised, however, that some climate-related information may not be compatible with the current reporting requirements or deemed financially material. When this is the case, organisations may wish to disclose certain elements in other official company reports that are issued at least on an annual basis and are widely distributed and available to investors and other stakeholders. The reports should be subject to internal governance processes that are the same or substantially similar to those used for financial reporting. Ideally, climate data and financial data should be reported at the same point in time and cover the same reporting boundaries and time periods to aid comparison and analysis.

[29] *Institute of Directors, King IV Guidance Paper: Responsibilities of Governing Bodies in Responding to Climate Change, 2021*

CHAPTER 5: EDUCTAION AND RESOURCES

This guidance acts as a starting point for all issuers to evaluate and update their current disclosure practices to ensure their resilience to climate-related issues. It provides three important stages of disclosure and a diagnostic TCFD Checklist to help issuers begin their journey to climate-resiliency. It is essential, however, that issuers see this as an ongoing journey and aim to improve upon and update knowledge on this topic on an ongoing basis. This chapter provides issuers with a series of resources they can use to continually update their climate-related knowledge and know-how, as well as to support those report-preparers looking to deepen their climate-related disclosure.

5.1 Resources for updating scientific knowledge

There are a number of resources available for organisations to maintain up-to-date information on this constantly evolving topic. As both the science behind climate-related issues as well as the reporting requirements evolve and grow, organisations should ensure they are working with the most up-to-date information. To do this, a number of resources are available, through the TCFD as well as many other financial service providers, NGOs, UN agencies, and local and international organisations.

To further assist in your disclosure journey, the following resources (Table 5.1) can help those companies that wish to delve deeper or access specific resources on a particular stage of this journey. For additional resources, all capital market stakeholders are encouraged to access the TCFD knowledge hub at tcfdhub.org

Table 5.1 Additional resources for TCFD implementation

Related Section of this Guidance	Author	Title
1 Setting the Stage	International Energy Agency (IEA)	Energy Technology Perspectives 2017
1.4 - Differential Reporting	A4S (Accounting for Sustainability)	TCFD Top Tips for Finance Teams
1.4 - Differential Reporting	A4S (Accounting for Sustainability)	Maturity Map for TCFD
2.1 Climate Opportunities	International Energy Agency (IEA)	ETP Clean Energy Technology Guide
2.1.1 Financing Opportunities	FTSE Russell (LSEG)	Sustainable Bond Market at a Glance
2.1.1 Financing Opportunities	Climate Bonds Initiative (CBI)	Guidance and Data on the Green Bond Market Globally
2.1.1 Financing Opportunities	FTSE Russell (LSEG)	Case Study: Smart Beta meets Smart Sustainability
2.2 Climate Risks	TCFD	TCFD Guidance on Risk Management Integration and Disclosure
2.2 - Climate Risks	SASB & CDSB	Climate Risk: from Principles to Practice
2.2 - Climate Risks	S&P Trucost	Interplay of Transition and Physical Risk Report
2.3 Climate Governance	CDSB	Webinar: Directors Duties and Liabilities around Climate Risk
2.3 Climate Governance	King IV	Guidance Paper: Responsibilities of Governing

		Bodies in Responding to Climate Change
2.4 - Materiality Assessment	CDSB	Materiality and TCFD
2.4 - Materiality Assessment	SASB	Materiality Map
2.4 - Materiality Assessment	Integrated Reporting <IR>	Materiality background paper for <IR>
2.5 - Scenario Analysis	TCFD	Scenario Analysis and Climate-Related Issues
2.5 - Scenario Analysis	TCFD	TCFD Guidance on Scenario Analysis for Non-Financial Companies
2.5 - Scenario Analysis	C2ES	Using Scenarios to Assess and Report Climate-Related Financial Risk
2.5 - Scenario Analysis	UNFCCC	NDC Registry
2.5 - Scenario Analysis	IPCC	IPCC Emission Scenarios
2.5 - Scenario Analysis	IEA	IEA Scenarios
2.5 - Scenario Analysis	International Renewable Energy Agency (IRENA)	IRENA Scenarios
2.5 - Scenario Analysis	International Institute for Applied Systems Analysis (IIASA)	Shared Socioeconomic Pathways (SSP) Database
2.6 Just transition	CDP	Climate Transition Plans
2.6 Just transition	TCFD	Guidance on Metrics, Targets, and Transition Plans
3.1 - Investor useful information	Transition Pathway Initiative (TPI)	The TPI Tool
3.1 - Investor useful information	Portfolio Alignment Team	Measuring Portfolio Alignment Assessing the Position of Companies and Portfolios on the Path to Net Zero
3.2 Reporting on opportunities and use of taxonomies	National Treasury	Draft South African Green Finance Taxonomy
3.2 Reporting on opportunities and use of taxonomies	European Commission	EU taxonomy for sustainable activities
3.3 - Setting Targets	Science Based Targets initiative (SBTi)	Sector Guidance
3.3 - Setting Targets	International Energy Agency (IEA)	Achieving Net-zero Emissions by 2050 - World Energy Outlook 2020
3.3 - Setting Targets	TCFD	Guidance on Metrics, Targets, and Transition Plans
3.3 - Carbon emission reporting	The Greenhouse Gas Protocol	A Corporate Accounting and Reporting Standard (revised edition)
3.3 - Carbon emission reporting	SASB	SASB Implementation Supplement – Greenhouse Gas Emissions and SASB Standards
3.4 - Setting Targets	Science Based Targets initiative (SBTi)	Sector Guidance
3.4 - Setting Targets	International Energy Agency (IEA)	Achieving Net-zero Emissions by 2050 - World Energy Outlook 2020
4.1 - Frameworks for Disclosure	Corporate Reporting Dialogue	Driving Alignment in Climate-related Reporting
4.1 - Frameworks for Disclosure	CDSB, TCFD Knowledge Hub	Alignment with Other Frameworks
4.1 - Frameworks for Disclosure	CDP	CDP Technical Note on the TCFD
4.1 - Frameworks for Disclosure	European Commission	Guidelines on Reporting Climate-related Information
4.1 - Frameworks for Disclosure	IFRS	Climate-related Disclosures Prototype

4.2 - Data Verification and Assurance	Chartered Accountants in England and Wales (ICAEW) and the WBCSD	A Buyer's Guide to Assurance on Non-financial Information
4.2 - Data Verification and Assurance	CDSB	CDSB Position Paper: Positions on Relevance & Materiality, Organisational Boundaries and Assurance
All	TCFD Hub	Case Studies on How Organisations are using the TCFD Recommendations
All	Bloomberg	A guide to the Task Force on climate-related disclosures
All	CDSB and SASB	TCFD Good Practice Handbook
All	CDSB and SASB	TCFD Implementation Guide
All	CPA Canada	Enhancing Climate-related Disclosure by Cities: A Guide to Adopting the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)
All	TCFD	Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures (2021)
All	A4S (Accounting for Sustainability)	Numerous Case Studies on Applying TCFD
All	South Africa Climate Risk Steering Group	South Africa Sustainable Finance Initiative
All	Trade & Industrial Policy Strategies	Just Transition Knowledge Portal
All	Presidential Climate Commission	Just Transition Framework
All	Department of Environmental Affairs	Climate Change Information Portal

Source: UN SSE with additional South Africa-relevant resources

ANNEX 1: TCFD CHECKLIST

The TCFD recommendations give companies a list of disclosures that should be included in mainstream financial reports when deemed financially material. As such, all of the recommendations in the below checklist should ideally be found in the company's mainstream financial filings. Potentially further detail may be provided in supplementary reports including sustainability reports. If information is not provided then an explanation outlining the rationale for not covering it would be helpful. Issuers are encouraged to use this checklist to determine whether or not the information recommended for disclosure by the TCFD can be found in their current reporting content. The checklist was compiled by the SSE initiative using the TCFD recommendations to help issuers diagnose their current reporting and create a path towards full alignment with TCFD recommendations.

Issuers can use this checklist to determine whether the informational needs of investors pertaining to climate are addressed by current disclosures. Where sufficient data to answer a question is not currently available in public reports, report preparers should focus on ensuring this information is added to their disclosure content. Where the issuer determines insufficient financial materiality to deem including this information in the mainstream financial filings, the report preparers should explain at a minimum how this decision was made and what time horizons were being used in supplemental reports such as a sustainability report. Where sufficient data is provided in public reports to answer a question, report preparers are encouraged to also indicate where it can be accessed within their current disclosure so that it is easy to find. This checklist can therefore be used as a map for investors looking for the following data.

Table A: TCFD Checklist

Does current disclosure answer the question?		Location of data
GOVERNANCE		
a) Board oversight of climate-related risks and opportunities		
ALL	Are board and/or board committees (e.g., audit, risk, or other committees) informed about climate-related issues? • Does the company recognise climate change as a relevant risk and/or opportunity for the business? • Is there a board member or committee with explicit responsibility for oversight of the climate change policy?	
ALL	Do board and/or board committees consider climate-related issues when reviewing and guiding: • major plans of action, • risk management policies, • business plans, • annual budgets, • strategy, • performance objective, monitoring implementation and performance, and • overseeing major capital expenditures, acquisitions, and divestitures.	
ALL	How does the board monitor and oversee progress against goals and targets for addressing climate-related issues?	

b) Management's role in assessing and managing climate-related risks and opportunities		
ALL	Does the organisation have assigned climate-related responsibilities to management-level positions or committees? If so, how do such management positions or committees report to the board or a committee of the board and do those responsibilities include assessing and/or managing climate-related issues?	
ALL	How are managers informed about climate-related issues?	
ALL	How do managers monitor climate-related issues?	
STRATEGY		
a) Identification of climate-related risks and opportunities over the short, medium, and long term.		
ALL	How does the organisation define short-, medium-, and long-term time horizons? Does this take into consideration the useful life of the organisation's assets or infrastructure and the fact that climate-related issues often manifest themselves over the medium and longer terms?	
ALL	What specific climate-related issues that could have a material financial impact on the organisation have been identified for each time horizon (short, medium, and long term)? • Is this consistent with climate change policy and positions taken by trade associations of which the organisation is a member?	
ALL	Is a materiality analysis used to determine which risks and opportunities could have a material financial impact on the organisation?	
ALL	Is a scenario analysis used to determine which risks and opportunities could have a material financial impact on the organisation?	
ALL	Are risks and opportunities considered by sector and/or geography?	
b) The impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning		
ALL	How do climate-related risks and opportunities impact on businesses and strategy in the following areas: • Products and services, • Supply chain and/or value chain, • Adaptation and mitigation activities, • Investment in research and development, • Operations (including types of operations and location of facilities).	
ALL	What are the time period(s) used, and how are climate-related risks and opportunities prioritized as inputs into the financial planning process?	
Insurance	How do potential impacts of climate-related risks and opportunities influence client, cedent, or broker selection?	
Insurance	Are specific climate-related products or competencies under development, such as insurance of green infrastructure, specialty climate-related risk advisory services, and climate-related client engagement?	
Asset Owners	How are climate-related risks and opportunities factored into relevant investment strategies?	
Asset Managers	How are climate-related risks and opportunities factored into relevant products and investment strategies?	

Asset Managers	How might the transition to a lower-carbon economy affect each product or investment strategy?	
Non Financial Orgs	How are climate-related risks and opportunities integrated into current decision making and future strategy formulation through (where applicable): • research and development (R&D) and adoption of new technology; • existing and committed future activities such as investments, restructuring, write-downs, or impairment of assets; • critical planning assumptions around legacy assets, for example, strategies to lower carbon-, energy-, and/or water-intensive operations; • how GHG emissions, energy, and water issues, if applicable, are considered in capital planning and allocation; this could include a discussion of major acquisitions and divestments, joint-ventures, and investments in technology, innovation, and new business areas in light of changing climate-related risks and opportunities; and/or • the organisation's flexibility in positioning/repositioning capital to address emerging climate-related risks and opportunities.	
c) The organisation's strategy resilience, taking into consideration different climate-related scenarios, including a 2°C or lower scenario (ideally 1.5°C).		
ALL	Has the organisation conducted a scenario analysis that evaluates how resilient their strategies are to climate-related risks and opportunities?	
ALL	Does the analysis include a 2°C or lower scenario (ideally 1.5°C)?	
ALL	What time horizons are considered in the organisation's climate-related scenario analysis?	
ALL	How will climate-related risks and opportunities (as listed in table 1 and 2 or the TCFD recommendations) affect the organisation's strategies, and how may strategies change to address potential climate-related risks and opportunities?	
Insurance	Is a climate-related scenario analysis conducted for underwriting activities? If so, what scenario and what time frame is used?	
Asset Owners	How are climate-related scenarios used to inform investments in specific assets?	
Non Financial Org's	Where an organisation has more than one billion U.S. dollar equivalent (USDE) in annual revenue, is a more robust scenario analysis conducted? This should include assessing the resilience of strategies against a range of climate-related scenarios, including a 2°C or lower scenario and, where relevant to the organisation, scenarios consistent with increased physical climate-related risks and the implications of different policy assumptions, macro-economic trends, energy pathways, and technology assumptions used in publicly available climate-related scenarios.	
RISK MANAGEMENT		
a) Climate-related risk management processes		
ALL	How does the organisation determine the relative significance of climate-related risks in relation to other risks?	
ALL	Are existing and emerging regulatory requirements related to climate change (e.g., limits on emissions) considered a risk by the organisation?	
ALL	How is the potential size and scope of identified climate-related risks determined?	
ALL	How does the organisation define or classify risk and risk-related terms? (Is a taxonomy used?)	

Insurance	How are climate-related risks on re-/insurance portfolios identified and assessed (by geography, business division, or product segments)? Does this assessment include the following: • physical risks from changing frequencies and intensities of weather-related perils; • transition risks resulting from a reduction in insurable interest due to a decline in value, changing energy costs, or implementation of carbon regulation; and/or • liability risks that could intensify due to a possible increase in litigation?	
Asset Owner + Managers	What engagement activities are undertaken with investee companies to encourage better disclosure and practices related to climate-related risks to improve data availability and asset owners' ability to assess climate-related risks?	
Asset Manager	How are climate-related risks identified and materiality assessed for each product or investment strategy? What resources and tools are used in the process?	
Non-Financial Org's	What key metrics related to GHG emissions, energy, water, land use, and, if relevant, investments in climate adaptation and mitigation that address potential financial aspects of shifting demand, expenditures, asset valuation, and cost of financing are used? (Have the illustrative examples in the TCFD Implementation Guide tables 3-6 been taken into consideration?)	
b) Managing climate-related risks.		
ALL	How are decisions to mitigate, transfer, accept, or control climate-related risks made?	
ALL	How is materiality determined for the risks listed in table 1 of the TCFD recommendations?	
Insurance	What key tools or instruments, such as risk models, are used to manage climate-related risks in relation to product development and pricing?	
Insurance	What are the range of climate-related events considered and how are the risks generated by the rising propensity and severity of such events managed?	
Asset Owner	How is the positioning of the total portfolio considered with respect to the transition to a lower-carbon energy supply, production, and use?	
Asset Manager	How are material climate-related risks managed for each product or investment strategy?	
c) Processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.		
ALL	How are climate-related risks integrated into their overall risk management?	
METRICS AND TARGETS		
a) Metrics used to assess climate-related risks and opportunities in line with its strategy and risk management process		
ALL	What are the key metrics used to measure and manage the climate-related risks and opportunities found in table 1 and 2 of the TCFD recommendations?	
ALL	Where climate-related issues are material, are related performance metrics incorporated into remuneration policies?	
ALL	What internal carbon prices are used for measuring impact and setting targets?	
ALL	What climate-related opportunity metrics such as revenue from products and services designed for a lower-carbon economy are used?	
Banks	To what extent is lending and other financial intermediary business activity aligned with a well	

	below 2°C scenario?	
Insurance	What is the aggregated risk exposure to weather-related catastrophes of the organisation's property business (i.e., annual aggregated expected losses from weather-related catastrophes) by relevant jurisdiction?	
Insurance	To what extent are insurance underwriting activities aligned with a well below 2°C scenario?"	
Asset Owner	What metrics are used to assess climate-related risks and opportunities in individual funds or investment strategies, and how do these metrics change over time?	
Asset Manager	What metrics are used to assess climate-related risks and opportunities in each product or investment strategy, and how do these metrics change over time?	
Asset Owner + Managers	To what extent are assets owned or managed or funds and investment strategies, where relevant, aligned with a well below 2°C scenario?	
b) Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.		
ALL	What are the Scope 1 and Scope 2 GHG emissions and, if appropriate, Scope 3 GHG emissions and the related risks of the organisation, according to GHG Protocol methodology? • Are Scope 3 emissions deemed materially relevant, and how was this determined • Are GHG emissions data externally verified?	
ALL	What are the historic GHG emissions and trends?	
Banks	What are the GHG emissions for lending and other financial intermediary business activities where data and methodologies allow for calculation?	
Insurance	What is the weighted average carbon intensity or GHG emissions associated with commercial property and speciality lines of business, where data and methodologies allow for calculation?	
Asset Owner	What is the weighted average carbon intensity, where data are available or can be reasonably estimated, for each fund or investment strategy?	
Asset Manager	What is the weighted average carbon intensity, where data are available or can be reasonably estimated, for each product or investment strategy?	
Asset Owner + Managers	What are the GHG emissions for assets owned or under management, where data and methodologies allow for calculation?	
c) Targets used to manage climate-related risks and opportunities and performance		
ALL	What are the key climate-related targets such as those related to GHG emissions, water usage, energy usage, etc. in line with anticipated regulatory requirements or market constraints or other goals? • What are the long-term quantitative targets for reducing GHG emissions? • What interim targets have been set? • Are targets consistent with cross-industry, climate-related metric categories?	
ALL	Does the organisation have climate-related targets pertaining to: • efficiency or financial goals, • financial loss tolerances, • avoided GHG emissions through the entire product life cycle, or • net revenue goals for products and services designed for a lower-carbon economy?	

ALL	Are climate-related targets absolute or intensity based?	
ALL	What time frames are applied to each climate-related target?	
ALL	What is the base year used for each climate-related target?	
ALL	What key performance indicators are used to assess progress against each climate-related target?	

Source: SSE initiative, adapted from TCFD recommendations

ANNEX 2: Alignment of recommended disclosures with other frameworks

GOVERNANCE RECOMMENDED DISCLOSURES		
Describe the board's oversight of climate-related risks and opportunities.	EU NFRD	3.2 (Table 2)
	G20/OECD Principles of Corporate Governance	5.a.4, 5.a.9, 6.a, 6.d.1, 6.d.2, 6.d.3, 6.d.4, 6.d.7, 6.e.2, 6.f
	CDP Climate Change Questionnaire 2021	C1.1b
	GRI 102: General Disclosures	102-18, 102-19. 102-20, 102-26, 102-27, 102-29, 102-31, 102-32
	CDSB Climate Change Reporting Framework	4.16, 4.17
	CDSB Framework for Reporting Environmental Information & Natural Capital	REQ-03
	International Integrated Reporting Framework	3.4, 3.41, 4.8, 4.9
	IFRS Climate-related Disclosures Prototype	4a-f
Describe management's role in assessing and managing risks and opportunities.	EU NFRD	3.2 (Table 2)
	GRI 102: General Disclosures	102-29, 102-31, 102-32
	CDP Climate Change Questionnaire 2021	C1.2, C1.2a
	CDSB Climate Change Reporting Framework	2.8, 2.9, 4.12, 4.13, 4.16, 4.17
	CDSB Framework for Reporting Environmental Information & Natural Capital	REQ-01, REQ-03
	IFRS Climate-related Disclosures Prototype	4(g)
STRATEGY RECOMMENDED DISCLOSURES		
Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.	EU NFRD	3.4 (Table 4)
	G20/OECD Principles of Corporate Governance	5.a.7, 5.a.8
	CDP Climate Change Questionnaire 2021	C2.1a, C2.3, C2.4, C2.4a

	CDSB Climate Change Reporting Framework	4.6, 4.9, 4.10, 4.11, 4.14
	CDSB Framework for Reporting Environmental Information & Natural Capital	REQ-02, REQ-06
	GRI 102: General Disclosures	102-15
	International Integrated Reporting Framework	3.5, 3.17, 4.6, 4.7, 4.23, 4.24, 4.25, 4.26
	IFRS Climate-related Disclosures Prototype	5, 6
Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning.	EU NFRD	3.1 (Table 1)
	G20/OECD Principles of Corporate Governance	5.a.2, 5.a.7, 5.a.8
	CDP Climate Change Questionnaire 2021	C2.3a, C2.4a, C3.1, C3.2a, C3.3, C3.4, C3.4a, C-FS3.7, C-FS3.7a,
	GRI 201: Economic Performance	201-2
	CDSB Climate Change Reporting Framework	2.8, 2.9, 2.10, 4.6, 4.7, 4.9, 4.10, 4.11, 4.12, 4.13, 4.14
	CDSB Framework for Reporting Environmental Information & Natural Capital	REQ-01, REQ-02, REQ-06
	International Integrated Reporting Framework	3.3, 3.5, 3.39, 4.12, 4.23, 4.28, 4.29, 4.34, 4.35, 4.37
	IFRS Climate-related Disclosures Prototype	7, 8, 9
Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	EU NFRD	3.1 (Table 1)
	CDP Climate Change Questionnaire 2021	C3.2, C3.2a
	CDSB Climate Change Reporting Framework	4.7
	IFRS Climate-related Disclosures Prototype	10
RISK MANAGEMENT RECOMMENDED DISCLOSURES		
Describe the organisation's processes for identifying and assessing climate-related risks.	EU NFRD	3.4 (Table 4)
	G20/OECD Principles of Corporate Governance	5.a.2, 5.a.7
	CDP Climate Change Questionnaire 2021	C2.1, C2.2, C2.2a, CFS2.2b, C-FS2.2c, C-

		FS2.2f
	GRI 201: Economic Performance	201-2
	CDSB Climate Change Reporting Framework	4.6, 4.7, 4.8, 4.9, 4.11
	CDSB Framework for Reporting Environmental Information & Natural Capital	REQ-01, REQ-02, REQ-03
	IFRS Climate-related Disclosures Prototype	11a-b
Describe the organisation's processes for managing climate-related risks.	EU NFRD	3.4 (Table 4)
	G20/OECD Principles of Corporate Governance	5.a.2, 5.a.7
	CDP Climate Change Questionnaire 2021	C2.1, C2.2, CFS2.2f
	CDSB Climate Change Reporting Framework	4.12, 4.13, 4.16, 4.17
	CDSB Framework for Reporting Environmental Information & Natural Capital	REQ-01, REQ-02, REQ-03
	International Integrated Reporting Framework	4.23, 4.24, 4.25, 4.26, 4.40, 4.41, 4.42
	IFRS Climate-related Disclosures Prototype	11c
Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.	EU NFRD	3.4 (Table 4)
	G20/OECD Principles of Corporate Governance	5.a.2, 5.a.7 6.d.1, 6.f
	CDP Climate Change Questionnaire 2021	C2.1, C2.2
	CDSB Climate Change Reporting Framework	4.6, 4.7
	CDSB Framework for Reporting Environmental Information & Natural Capital	REQ-01, REQ-02, REQ-03, REQ-06
	International Integrated Reporting Framework	2.7, 2.8, 2.9
	IFRS Climate-related Disclosures Prototype	11d
METRICS AND TARGETS RECOMMENDED DISCLOSURES		
Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.	EU NFRD	3.5
	G20/OECD Principles Of Corporate Governance	6.d.1, 6.d.7
	CDP Climate Change Questionnaire 2021	C1.3, C4.2, C4.2a, C4.2b, C4.5, C9.1

	GRI 102: General Disclosures	102-30
	CDSB Climate Change Reporting Framework	2.36, 2.37, 2.38, 4.14, 4.15
	CDSB Framework for Reporting Environmental Information & Natural Capital	REQ-01, REQ-04, REQ-05, REQ-06
	International Integrated Reporting Framework	3.52, 3.53, 4.30, 4.31, 4.32, 4.38, 4.53
	IFRS Climate-related Disclosures Prototype	12, 13
Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	EU NFRD	3.3 (Table 3)
	CDP Climate Change Questionnaire 2021	C5.1, C6.1, C6.3, C6.5, C7.1, C7.9, C-FS14.1, C-FS14.1a, C-FS14.1b, C-FS14.1c
	GRI 102: General Disclosures	102-29, 102-30
	GRI 201: Economic Performance	201-2
	CDSB Climate Change Reporting Framework	4.19.1, 4.19.2, 4.29, 4.30, 4.31, 4.32, 4.33
	CDSB Framework for Reporting Environmental Information & Natural Capital	REQ-04, REQ-05
	IFRS Climate-related Disclosures Prototype	13a, 14
Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.	EU NFRD	3.3 (Table 3)
	CDP Climate Change Questionnaire 2021	C4.1, C4.1a, C4.1b, C4.1c, C4.2, C4.2a, C4.2b,
	CDSB Climate Change Reporting Framework	4.12, 4.13, 4.14, 4.15
	CDSB Framework for Reporting Environmental Information & Natural Capital	REQ-01
	International Integrated Reporting Framework	4.53, 4.60, 4.61, 4.62
	IFRS Climate-related Disclosures Prototype	15

Source: SSE initiative, compiled from TCFD Hub, CDP, IFRS and the European Commission

ANNEX 3: RECENT STUDIES ON POTENTIAL AGGREGATED FINANCIAL IMPACTS OF CLIMATE CHANGE

Year of report	Report title and author	Estimated impact found
2007	Stern Review, The Economics of Climate Change (Cambridge University Press)	• Equivalent to losing at least 5% of global GDP in perpetuity • With a wider range of risks and impacts, estimates of damage could rise to 20% of GDP or more
2014	The Economic Risks of Climate Change in the United States (Risky Business)	• $238bn - $507bn worth of U.S. coastal property below sea level by 2100 • Average annual losses from hurricanes and other coastal storms along the Eastern Seaboard and the Gulf of Mexico will rise by $42bn to $108bn
2015	Global non-linear effect of temperature on economic production (Nature)	• Unmitigated warming is expected to reduce global incomes by ~23% by 2100
2015	The cost of inaction: Recognising the value at risk from climate change (The Economist Intelligence Unit)	• Average expected loss to the total global stock of manageable assets of $143tr is expected to be $4.2tr by 2100 (present value)
2015	The Economic Consequences of Climate Change (OECD)	• 1.0 – 3.3% reduction in global annual GDP by 2060 • 2.0 – 10% reduction in global GDP by 2100
2016	'Climate value at risk' of global financial assets (Nature Climate Change)	• Mean estimate of present value at risk from climate change, 2015 – 2100, is 1.77% of the value of global assets, and possibly as much as 16.86%
2018	Temperature and Growth: A Panel Analysis of the United States (Federal Reserve Bank of Richmond)	• Rising temperatures could reduce U.S. economic growth by up to one-third over the next century.
2021	Dasgupta Review of the Economics of Biodiversity (HM Treasury)	• Estimates suggest 1.6 Earths would be required to maintain the world's current living standards

Source: Adapted from Impax Asset Management's report titled "Physical Climate Risks Designing a resilient response to the inevitable impact of climate change, 2020 " with additional examples added by the SSE initiative