

# Chapter Zero:

**A climate change  
boardroom toolkit**



# About this toolkit

**This toolkit has been developed for Chapter Zero, the directors' climate forum, by The Berkeley Partnership working with the Hughes Hall Centre for Climate Change Engagement in Cambridge.**



Established in June 2019, Chapter Zero's goal is to help chairs and non-executive directors address the challenge of managing the transition to a net-zero carbon economy; protecting asset values, adapting to physical risks and reducing emissions. It is part of the World Economic Forum Climate Governance Initiative.

Chapter Zero is supported by Mark Tucker, Chair of HSBC; David Tyler, Chair of Domestic & General and The White Company; Sir John Kingman, Chair of L&G; and Sarah Bates, Chair of MerianGlobal Investors and Polar Capital Technology Trust; and Richard Gillingwater, Chair of SSE plc.

To have access to Chapter Zero's resources and events, enrol as a member by visiting

[www.chapterzero.org.uk](http://www.chapterzero.org.uk)



## The Berkeley Partnership

The Berkeley Partnership is an independent management consultancy, based in London and New York. Berkeley works with its clients on some of their biggest challenges and opportunities, developing strategies and leading programmes of transformational change. Berkeley has developed this toolkit on a pro bono basis as one of its Positive Social Action investments.

[www.berkeleypartnership.com](http://www.berkeleypartnership.com)



The Centre for Climate Change Engagement at Hughes Hall, Cambridge was formed in 2018 to engage non-executive directors of UK listed companies in better understanding the risks and opportunities presented by climate change by bringing the expertise and research of Cambridge University into the boardroom. It brings together investors, regulators and board members to debate how to accelerate change and manage risk.

[www.hughes.cam.ac.uk](http://www.hughes.cam.ac.uk)



# How to use this toolkit

This toolkit has been deliberately designed to provide an accessible resource to be used and dipped in-and-out of, rather than as a detailed ‘academic’ document to be read cover-to-cover.

Its aim is to help you to understand the key issues relating to climate change and the actions you can take to start addressing them. The main body of the toolkit has been kept short, sharp and to the point, but with drill downs and links to other resources (e.g. WEF and TCFD material) to enable you to access more detail if required.

With the above in mind, it is possible to **view and use this toolkit on your PC, tablet and even Smartphone** (if viewing in landscape) and there are links and buttons throughout to help you quickly navigate it, for example:

Hyperlinks such as the following will take you to published content online:

[TCFD recommendations](#)

The ‘**Contents**’ button will take you to the Contents page from where it is possible to drill down into the various sections:



The ‘**down arrow**’ button drills down into the Section indicated:



The ‘**process**’ icons (in Section 3) take you into specific Steps in the end-to-end process:



## Glossary of terms

<b>CBI</b>	Confederation of British Industry
<b>CDP</b>	Carbon Disclosure Project
<b>CO2</b>	Carbon Dioxide
<b>COP21</b>	21st yearly session of the Conference of the Parties (COP) to the 1992 United Nations Framework Convention on Climate Change (UNFCCC)
<b>GHG</b>	Greenhouse Gas
<b>H2O</b>	Water
<b>ICAEW</b>	Institute of Chartered Accountants in England and Wales
<b>IEA</b>	International Energy Agency
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>NED</b>	Non-Executive Director
<b>CH4</b>	Methane
<b>NOx</b>	Nitrogen Oxides
<b>PPM</b>	Parts per million
<b>SMART</b>	Specific Measurable Achievable Relevant and Timebound
<b>TCFD</b>	Taskforce on Climate Related Financial Disclosures
<b>WEF</b>	World Economic Forum
<b>WRI</b>	World Resources Institute



# About Chapter Zero

**It is increasingly clear that corporate board members need to explore the risks and opportunities that climate change poses to their firms, and make efforts to reduce their carbon footprints. All board members need to understand these issues to participate in the debate, both executives and non-executives.**

Chapter Zero was established to help this exploration by spreading awareness of climate change and the business risks it poses amongst chairs, committee chairs and other non-executive directors. This toolkit has been designed to help boards to hold informed and strategic discussions and respond effectively to the climate change challenge.

Climate change threatens the bottom line of businesses the world over, and companies find themselves under increasing environmental pressure from a variety of sources. The private sector is key to driving the necessary reduction in carbon emissions over the next decade, and to understand fully the risks to their balance sheets and supply chains.

Consumers are becoming much more climate-aware, and many investors demand higher standards of behaviour from the companies they lend to and invest in. Businesses that fail to address the climate challenge could, in a very short period of time, find themselves burdened with stranded assets and obsolete business models. Over-reliance on fossil fuels or other non-sustainable resources will, in the long run, stymie investment and hamper growth.

Regulators are also demanding change. Governments across the world have made commitments to drastically reduce greenhouse gas emissions. Firms may soon find themselves operating under stricter environmental regulations, and be compelled to disclose their environmental impact. Central banks are also growing increasingly concerned about the threat posed by climate change to financial stability, and are already asking financial sector participants to disclose their exposure to various climate-related risks.

Corporate boards are charged with safeguarding the long-term health of their business, and delivering value to shareholders and society at large. Boards that start to act now, that can get ahead of the curve on this issue, will be in a much better position to compete for customers and investment as society becomes ever more climate conscious.

**Use this toolkit now to assess where your companies are on this journey and to encourage informed debate in your boardrooms.**



**Chapter  
Zero**

The Directors' Climate Forum

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# Purpose and introduction

**Climate change is perhaps the greatest challenge the human race has ever had to tackle. As the World Economic Forum (WEF) recently said: “of all risks, it is in relation to the environment that the world is most clearly sleepwalking into catastrophe”**

Without prompt and decisive action, the human and ecological impact could be catastrophic and irreversible – and will affect us all. This is not somebody else’s problem.

**It will have a significant impact on business viability and shareholder value, including:**

- Major disruption to business operations and supply chains
- Profound impact on stakeholder sentiment, making it increasingly difficult for businesses to compete, secure investment and attract top talent if they’re not seen to be taking positive action
- Dramatic increase in resource costs and availability – and reduction in asset values
- New rules, regulations and board obligations relating to Greenhouse Gas (GHG) reduction, climate risk disclosure, etc.

However, for businesses that lead the way in transitioning to the low-carbon economy, there could be significant opportunities to achieve commercial and competitive advantage.

Non Executive Directors (NEDs), have the potential to make a huge contribution in addressing this challenge as well as a duty to ensure their boards are fulfilling their legal obligations in this area.

**The purpose of this toolkit is to arm NEDs with the evidence, if needed, to get this on senior management’s agenda and to show how, through a few clear steps, they can help their board(s) begin to tackle it...**



# Contents:

1. Why climate action is important & urgent for business



2. What difference NEDs can make



3. How to ensure your boards are prepared



This includes the **Board Readiness Check**



4. Where to go for more help and information



**Appendices**



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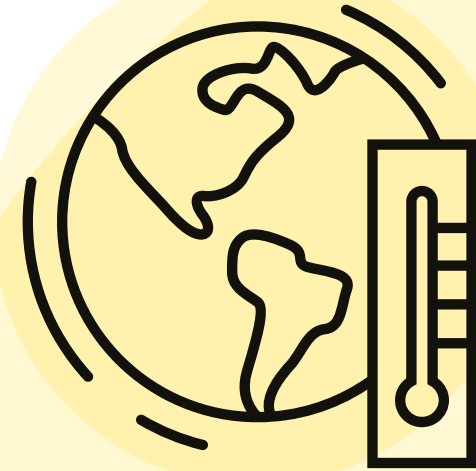
# 1. Why this is important and urgent

## Overview

**The purpose of this section is to demonstrate the importance of businesses acting as a matter of urgency to: (a) ensure they are well prepared for the effects that climate change could have on them; and (b) minimise their climate change impact. It aims to do so by:**

1. Clarifying what causes climate change, the current situation and related forecasts.
2. Exploring the significant human and environmental impact that climate change will have unless prompt and decisive action is taken.
3. Demonstrating why time is running out to avert the most extreme consequences of climate change - and to avoid triggering 'tipping points' which could cause climate change to move beyond our control.
4. Exploring the business impact of climate change and how businesses that don't prepare now are potentially placing their future performance and survival at risk.

The following slides have deliberately been kept high-level to make them quick and easy to consume the key points. Further reading sources are provided in Appendix A1.1.



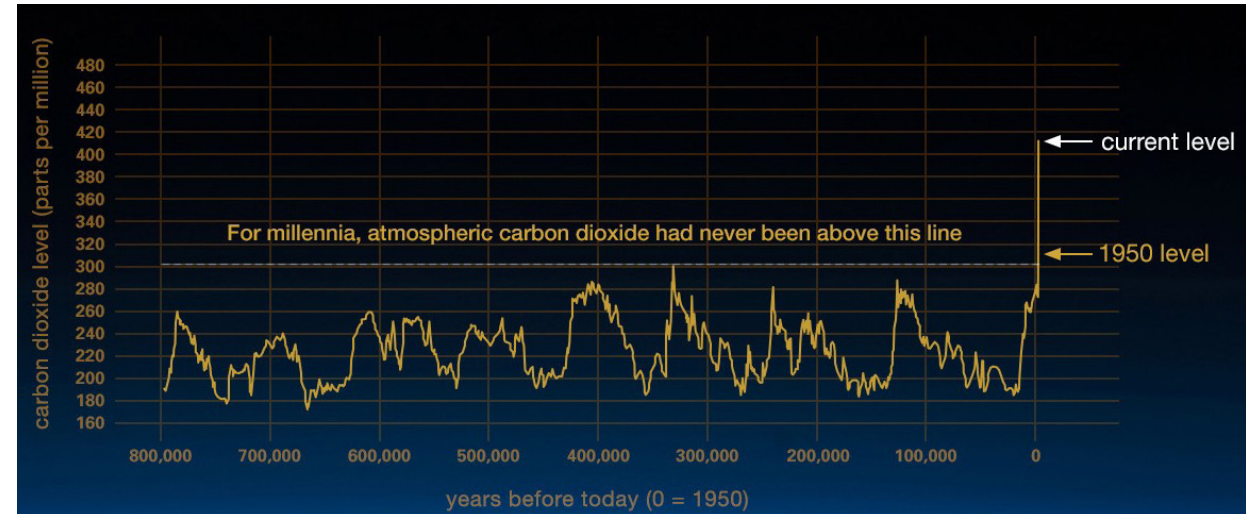
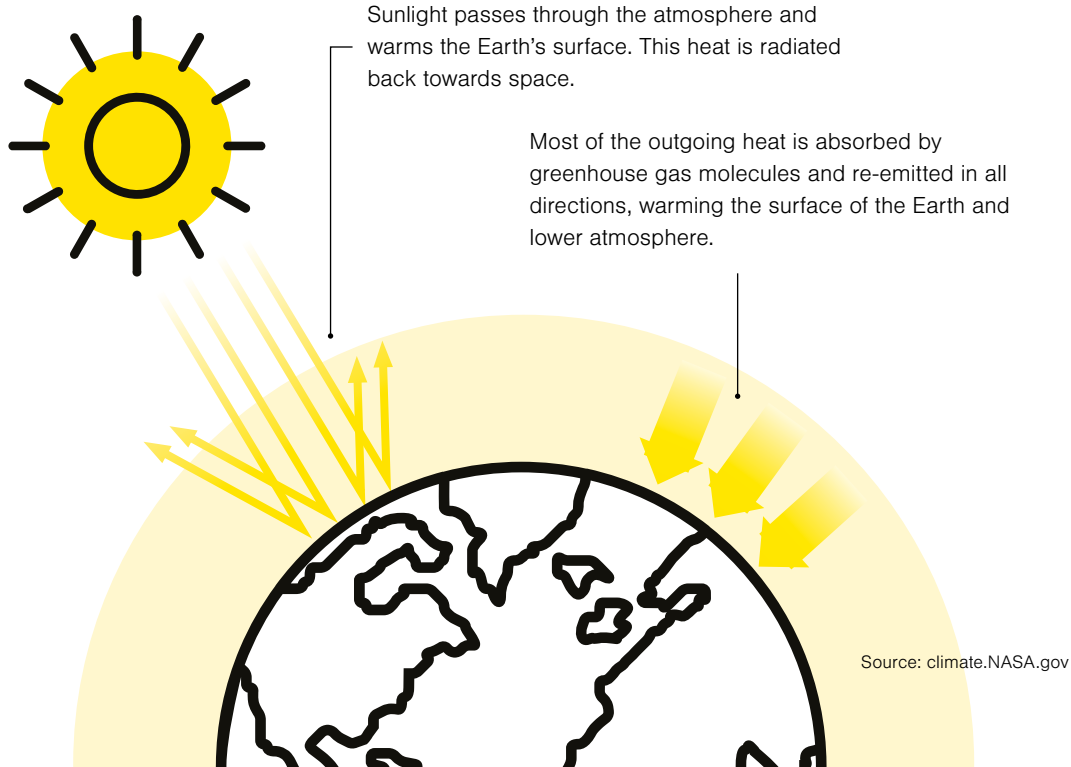
**Preventing climate breakdown requires rapid transitions of unprecedented scale in economic, social and political systems.**  
(IPPR, 2019)



# 1. Causes of climate change and current situation

## Greenhouse gases influencing climate change include:

- Water vapour (H<sub>2</sub>O)
- Methane (CH<sub>4</sub>)
- Carbon Dioxide (CO<sub>2</sub>)
- Nitrogen Oxides (NO<sub>x</sub>)



Source: climate.NASA.gov

In 2013, CO<sub>2</sub> levels passed 400ppm for the first time in recorded history and levels continue to rise, currently at 414ppm.

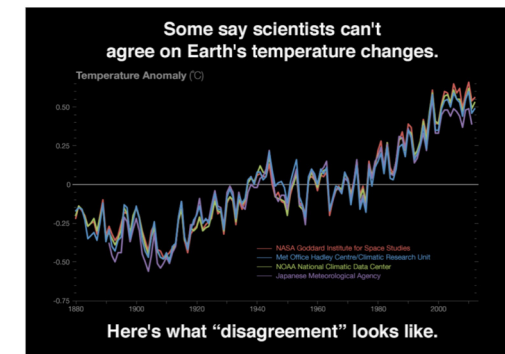
The last time there was this level of atmospheric carbon dioxide was the Pliocene era, 3-5 million years ago when the sea level was 5-40 metres higher and temperatures 3-4°C higher, with the north and south poles even warmer still at 10°C hotter than today.

Current temperatures are lower because temperature increase lags carbon dioxide levels. Without intervention, equivalent or higher temperature change should be expected.

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# 1. Causes of climate change and current situation

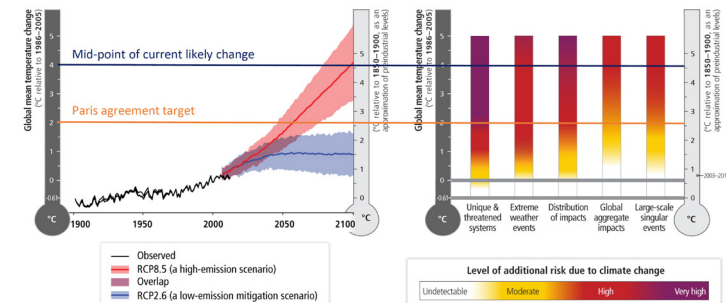
- Climate change is already affecting us, with an **average increase of c.1°C**.
- We have entered the '**Anthropocene**' period – so named due to the profound impact of human activity on global temperatures.
- The IPCC recently concluded that there is more than a **95% probability that human activities have warmed our planet** and while there are varying perspectives on the exact level of overall temperature increase, there is high agreement on the warming trend.
- The Paris Agreement on Climate Change** aims to keep global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit this even further to 1.5°C. The gap between 1.5°C and 2°C puts hundreds of millions of lives at stake<sup>3</sup>.
- Based on current projections and progress, we are **on track for increases in temperature of 3-5°C** (IPCC, 2018). While even a 2°C rise targeted by the Paris Agreement has been described as 'catastrophic', the implications of this 3-5°C rise are even more extreme.
- Overall, **every degree of warming costs temperate countries like the US and UK up to 1% of GDP**. The world would be \$20trn richer at 1.5°C than 2°C. A 4°C rise could wipe out the possibility of economic growth<sup>4</sup>.
- Compared to a trajectory of no climate change, the average projection is for a **23% loss in per capita earnings globally** (Hsiang, Burke and Miguel)<sup>4</sup>.



NASA CLIMATE 365

climate365.tumblr.com | go.nasa.gov/climate365

Click to enlarge



Source: IPCC WGII Box SPM.1 Figure 1.1

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# 1. The environmental impacts of climate change

## Extreme heat

21 of the warmest years on record have been in the last 23 years, the past 5 have been the warmest ever.

## Drought

At 2°C there would be aridification across 27% of land area by 2100<sup>3</sup>.  
At 3°C, Southern Europe and Africa would be in permanent drought<sup>4</sup>.

## Soil infertility

Topsoil is being lost 10 to 40 times faster than it is being replenished. Since mid 20th century 30% of the world's arable land has become infertile due to erosion, 95% of earth's land areas could be degraded by 2050<sup>1</sup>.

## Ocean acidification

25% of CO<sub>2</sub> emissions dissolve in oceans, making them more acidic, damaging marine organisms and ecosystems. Acidity has increased by 26% since the beginning of the industrial revolution and could hit 170% by 2100. Coral bleaching has increased 5-fold since 1980s<sup>2</sup>.

## Flooding (rain fall and sea levels)

Flooding has quadrupled since 1980 and doubled since 2004<sup>4</sup>.  
It is now estimated that New York City will suffer '500 year floods' every 25 years<sup>4</sup>.

## Rising sea levels

At 2°C, irreversible loss of polar ice sheets, with 87,000km<sup>2</sup> of land lost to sea rise by 2100<sup>3</sup>.  
At 3.2°C, Miami, Dhaka, Shanghai, Hong Kong and 100 other cities would be flooded<sup>4</sup>.  
70% of largest European cities have areas vulnerable to rising sea levels<sup>5</sup>.

## Fires

As with super-storms and hurricanes, climate change significantly increases the scale and frequency of wildfires.  
E.g. In 2018, a major California wildfire destroyed 4000 acres in one day and coined a new term 'fire tsunami', and 'Campfire', the deadliest in Californian history, destroyed several hundred square miles and killed dozens<sup>4</sup>.

## Super-storms and hurricanes

Climate change changes the frequency, duration, timing, coverage and intensity of these events.  
A single individual example was the summer of 2018, when 6 hurricanes and tropical storms emerged on the radar at once, 2 of these alone killed 150 and wreaked \$18bn of damage<sup>4</sup>.

## Reduced nutritional value of crops

Warmer temperatures increase the amount of sugars in crops such as rice and wheat. This means lower nutrient levels such as protein, iron, calcium and zinc, risking mineral deficiencies for millions e.g. 175m with zinc deficiency, 122m with protein deficiency, and 1 billion with iron deficiency<sup>4</sup>.

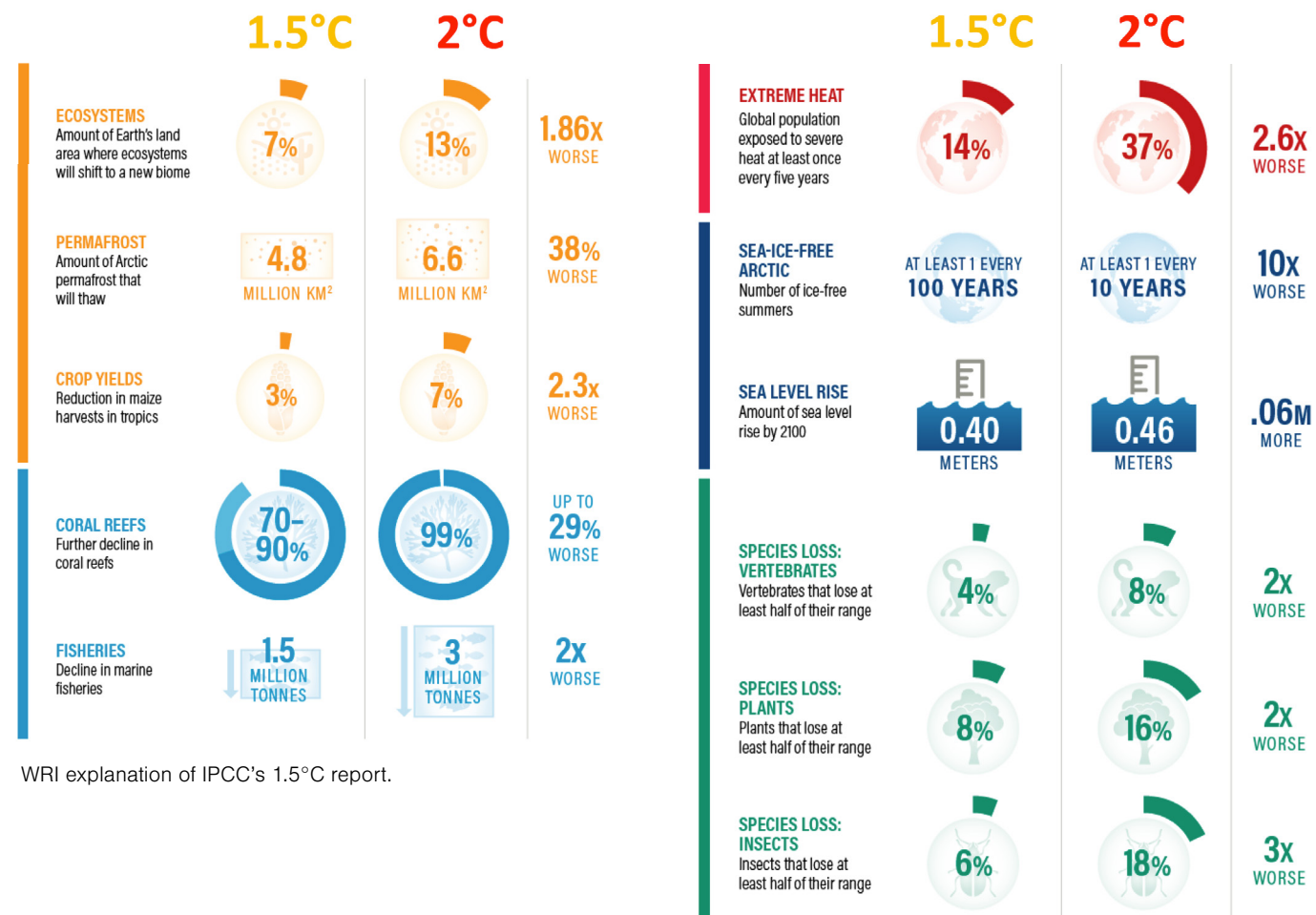
## Reduced biodiversity – 6th mass extinction

Vertebrate populations have fallen on average by 60% since the 1970s, exceeding 85% in some countries<sup>1</sup>.  
Insects could be extinct and coral reefs destroyed by the end of the century, with profound impacts on ecosystems<sup>1</sup>.  
UK is one of 'the most nature-depleted countries in the world'<sup>1</sup>.



# 1. The environmental impacts of climate change

The environmental impacts are significant but sensitive to levels of change and the **risks associated with 1.5°C are significantly less than those at 2°C.**



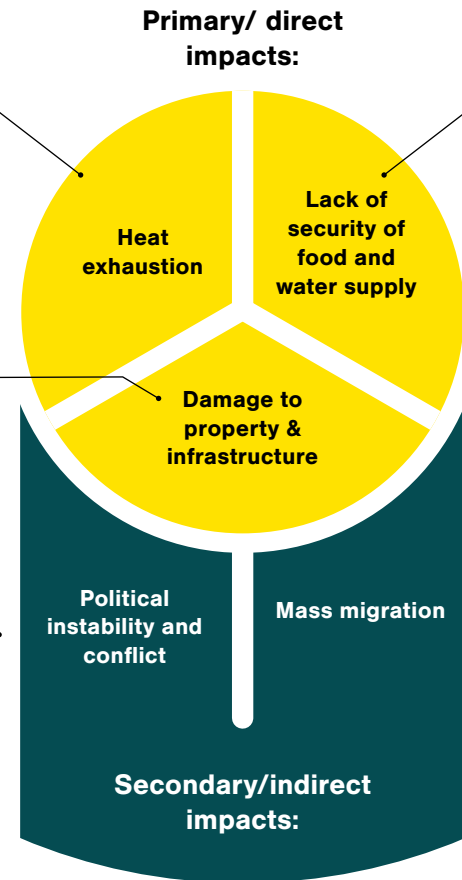
# 1. The human impacts of climate change

**Human impacts are at a local, systemic and socio-economic level. Factors include:**

- In 2017, 157 million more people experienced heatwaves than in 2000, creating a serious health burden and costing 153 billion work hours<sup>1</sup>
- In the UK, heat related deaths could reach 7500 p.a. by 2050<sup>1</sup>.
- At 4°C, the deadly European heatwave of 2003 that killed up to 2000 per day would be a 'normal' summer<sup>4</sup>.

- Flood damage in the UK alone now averages £1.1bn p.a.<sup>6</sup>.
- Extreme weather events in the US were responsible for \$326bn in 2017, nearly triple those of 2016<sup>1</sup>.
- Global cost of rising sea levels could be \$14trn per year in 2100<sup>6</sup>.
- If no action is taken to curb emissions, global damages from climate change are estimated to be between \$14trn - \$100trn per year – a wide range but even the lower estimate is 20% of all current GDP, with the higher end larger than all current GDP<sup>4</sup>.

- For every half degree of warming, societies will see 10-20% increase in the likelihood of armed conflict<sup>4</sup>.
- In Africa, climate change has already elevated the risk of conflict by >10%. By 2030, nearly 400,000 more deaths will be caused from climate related conflict<sup>4</sup>.
- The US military is 'obsessed' with climate change and its impacts on stability<sup>4</sup>.
- Drought and crop failure was linked to radicalisation by Boko Haram, ISIS and the Taliban<sup>4</sup>.



- Drought is reducing crop yields, leading to ill health and malnutrition, and reversing years of improvements in food production<sup>1</sup>.
- Flooding also affects food production – e.g. in 2017, two 'once in a generation' hurricanes in a week, Hurricanes Maria and Irma, hit Puerto Rico, flooding agricultural land making much of it unusable for a year<sup>4</sup>.
- In 2017, climate related disasters caused acute food insecurity for c. 39 million across 23 countries<sup>6</sup>.
- Under current trends, it is predicted that food production must increase by 60% by 2050, requiring a 77% increase in greenhouse gas emissions and further straining supply<sup>1</sup>.

- UN estimates that 200m could be forced into migration by 2050, dwarfing the recent 1m Syrian refugee crisis<sup>4</sup>.
- A fifth of the world's population could face mass migration by 2100 if climate change is not sufficiently curbed<sup>1</sup>.

# 1. Time is running out

**Urgent action is required to avert the most extreme consequences of climate change - and avoid triggering ‘tipping point’ events which could cause climate change to spiral sharply and irreversibly beyond our control...**

- Carbon in fossil fuels has been ‘locked up’ underground and out of our atmosphere for many millions of years. Burning fossil fuels releases their carbon into the atmosphere as CO<sub>2</sub>. Once they’ve been burned and the carbon released as CO<sub>2</sub>, the impact can’t be reversed – without highly expensive carbon capture technology which is not currently viable to scale to a level that will make a meaningful difference...
- ...Consequently, since temperature rises are directly correlated with CO<sub>2</sub> levels (see above), to limit global temperature rises to a certain level, there is a corresponding limit we need to place on the total amount of carbon we burn (a ‘carbon budget’)
- As shown under ‘environmental impacts’ above, keeping temperature rises to 1.5C could avert the most serious consequences of climate change. However, even in the highly optimistic scenario that global carbon emissions do not increase above current levels, we will have burned through the ‘1.5C carbon budget’ in just 12 years – and the ‘2C carbon budget’ in 30 years [WRI summary of IPCC report](#)
- So far, temperature rises have been driven by factors (emissions) which we can control. However, as our actions cause temperatures to rise still further, ‘tipping point’ events could be triggered which cause temperatures to spiral sharply and irreversibly beyond our control. Examples include:
  - >> The release of large amount of carbon dioxide and methane trapped in arctic permafrost as the ice melts (up to 1.8tr tons of carbon dioxide alone – more than that already suspended in the atmosphere, in addition to high volumes of methane which as a greenhouse gas is 30 times more potent than CO<sub>2</sub>).
  - >> Temperature induced rainforest die-back reducing the capacity of the planet to absorb CO<sub>2</sub> (photosynthesis in plants is a critical process in removing CO<sub>2</sub> from the atmosphere)
  - >> Melting of polar ice reducing the amount of solar energy reflected into space (i.e. higher rate of heat absorption)





# 1. The business impact

**Failing to prepare for climate change – or being unable to clearly demonstrate positive action – could have a significant impact on the sustainability, performance and risk profile of businesses.**

Challenges go across businesses and the relative importance will vary across industries. Global agencies and governments will be pushing a low-carbon transition (e.g. UK Government net-zero target) and so – quite apart from the moral imperative and customer pressure – businesses will have to cope with the significant impact of the low-carbon transition as well as the physical impacts that are already baked in. All challenges are worth considering in the context of competitor positioning even if they may not seem immediately relevant.

## Operation

**Supply chain disruption** – inability to source materials on time, reliably and at a manageable price (WEF: disruptions up 29% since 2012).

**Location of operations or services** – ongoing viability challenge given heat, extreme weather events, political instability and other impacts.

**Insurance** – reduced ability/increased cost to insure operations and services against extreme weather impacts.

**Employee view** – misalignment with employee demands for environmental action leading to reduced ability to attract and retain talent.

## Consumer & Customer Attitudes and Behaviour

### Sector stigmatisation and Consumer Feedback:

Consumer sentiment and preferences can change quickly due to raised awareness, e.g. response to Blue Planet plastics, and availability of other business models such as rental or shared ownership of items, e.g. car clubs.

**Consumer Behaviour:** Changes could manifest in reduction of overall demand, or moving to competitor equivalent or substitute products with lower environmental impact (e.g. electric cars).

## Investor Demands

**Green investors** are challenging organisations and pushing them harder to be more environmentally responsible – and this trend is expected to increase.

**More institutional investors** are challenging the long term viability of products and business models. They are expecting more focus and diligence from executives, including scenario analysis and climate-related disclosure of Governance, Strategy, Risk Management, and Metrics and Targets (Source: TCFD). E.g. Schroders have voted on over 60% more climate change and renewable energy shareholder resolutions in each of 2015-2017 compared to 2010.

## Regulatory, Policy and Legal

**Stricter and more demanding controls** – in April 2019, the UK government updated its list of civil penalties for breaches of climate change related regulations.

**Wider reaching remit with greater impact** – e.g. carbon price is set to rise significantly and will soon cover a quarter of global emissions. With higher costs, demands could fall, demand elasticity could lead to c.10% decrease in profits (Schroders).

**Risk of litigation for breaches or lack of progress:** In 2018, major litigation cases included Exxon Mobil, the Dutch government, the US government and RWE. Cases weren't all upheld, but illustrate a turn in sentiment against under performance or apathy.

**But there are opportunities too:**

Resource efficiency  
(energy, water, waste etc.)

New energy sources  
(renewables)

Access to government  
incentives

Better competitive  
positioning

New  
markets

New products and  
services

## 2. What difference NEDs can make



### Ensuring boards fulfil their obligations

As outlined in Section 1, the scale of the **risks and opportunities** which climate change poses to businesses are **simply too great to ignore**. As a NED, you can play a pivotal role in **helping your board(s) fulfil their obligations** to investors and other stakeholders by ensuring these risks and opportunities are properly assessed and adequately managed.



### Capitalising on the vital role already played by UK business

Although the UK represents a relatively small proportion of global GDP, **the often international influence of UK-led business and investment** on the global economy and therefore on emissions and climate-related value-at-risk is significant. What's more, the UK has, for many years, **led the world** in simultaneously delivering **significant growth alongside substantial reductions in GHG emissions\***. Consequently, as a NED on the board of one or more UK led businesses you have a vital role to play as well as a long established track record to build on.



### Using their network to broaden impact

NEDs typically have significant opportunity to **drive change in multiple businesses**, either because they sit on several boards and/or because they're able to influence change via their own network. It's critical that you **do not underestimate the impact of your voice** in driving this issue to the top of the agenda through some carefully targeted questions and through careful oversight of the actions your board(s) are taking.

**Section 3 gives further details on how....**

\* In the period 1990 – 2016 UK GDP grew 72% and emissions fell by 43%. By contrast, G7 GDP grew 62% whilst their total emissions fell by only 4% (Analysis by The Deloitte Academy of data from: United Nations Framework Convention on Climate Change (UNFCCC), World Bank, UK Office for National Statistics (ONS) and UK Department for Business, Energy and Industrial Strategy (BEIS))

# 3. How to ensure your boards are prepared

The next few slides provide a high level summary of the 5 key steps to take to help set businesses up for success both with respect to minimising their emissions footprint and being prepared for the impact of climate change.

Links are provided throughout these summary slides to help you navigate easily to more detailed content in the Appendix and online, should you require it.



# 3. Step 1 – Get it on the agenda

## Achieving recognition of the need to act: Key questions to ask

The aim of Step 1 is to achieve a sufficient recognition from the board that there might be some critical climate-related risks or opportunities which are not being addressed in order to secure agreement to a deeper conversation in Step 2.

You will know your own board(s) best, but the following questions might help achieve the above goal:

- The potential asset value-at-risk from climate change has been estimated to reach anything up to US\$43trillion by the Economist Intelligence Unit – with sectors ‘across the board’ affected\*. In addition, highlighting the urgency of the issue, a recent report by CDP\*\* found that more than 200 of the world’s largest listed companies forecast that climate change could cost them a combined total of almost \$1 trillion (£790 billion), with much of the pain due in the next five years. **Are we clear how our assets and value chain will be impacted?**
- The transition to a lower-carbon economy is estimated by the IEA to require around \$1 trillion of investments p.a. for the foreseeable future\*\*\*. **Are we clear how much we’ll need to invest? Are we missing opportunities to benefit from this transition?**
- When making investment decisions, investors increasingly evaluate: (a) Preparedness for climate change risks/opportunities and (b) Level of action to reduce GHG emissions. **Are we sure we are taking or demonstrating sufficient action to safeguard future access to capital?**
- As publicity and awareness continue to grow at pace, customers are increasingly choosing to buy from companies that are taking decisive action on climate change. **Are we sure we’re doing enough to keep their business? Are there growth opportunities we’re missing?**
- **Are we certain we are complying with climate-related regulation?** For example does our Section 172 statement provide sufficient disclosure of our climate-related risks and opportunities to our stakeholders? (For details of Section 172 obligations more broadly see Thomson Reuters reference -†below)
- **Are we reviewing this sufficiently regularly in our strategic planning?** ((a) to take account of new evidence and regulation as it emerges – and (b) to ensure we’re delivering on the goals we set)

\* The Economist Intelligence Unit, [The Cost of Inaction: Recognising the Value at Risk from Climate Change](#)

\*\* Carbon Disclosure Project (CPD), [World's biggest companies face \\$1 trillion in climate change risks](#)

\*\*\* International Energy Agency [World Energy Outlook Special Briefing](#) for COP21, 2015.

† Thomson Reuters Practical Law [Guidance on directors' duties: section 172 and stakeholder considerations](#)



# 3. Step 2 – Establish need for change

## a. Introduction

- Once the topic is on the board agenda, the next step is to **work with the board to**:
  - >> Recognise where the business is starting from (i.e. 'Current')
  - >> Understand the implications of this starting point in terms of business risk and performance
  - >> Specify where the board aims to be (i.e. 'Target') to minimise risk and maximise performance
- Especially, if this is the first time that the board has had a substantive discussion about the impact and implications of climate change (or if this discussion has not taken place for a while), there **may not be an opportunity (or support) for in-depth analysis in advance to inform the above**
- To cater for this, the **Board Readiness Check** has been developed to enable boards to **Self-Assess** their 'Current' state, understand its implications and, based on this, specify their intended 'Target' state\*

### Board Readiness Check



Please click on the image to open the Board Readiness Check

\* Note: The aim of the Board Readiness Check is only to (a) Get the board to recognise the need for action and specify an intended high level direction of travel re improvement -and (b) Provide a platform from which to initiate/direct the in-depth analysis and planning that will be needed to identify and implement specific improvements. The Self-Assessment does not aim to identify and plan specific improvements in detail

STEP 2 CONTINUES...

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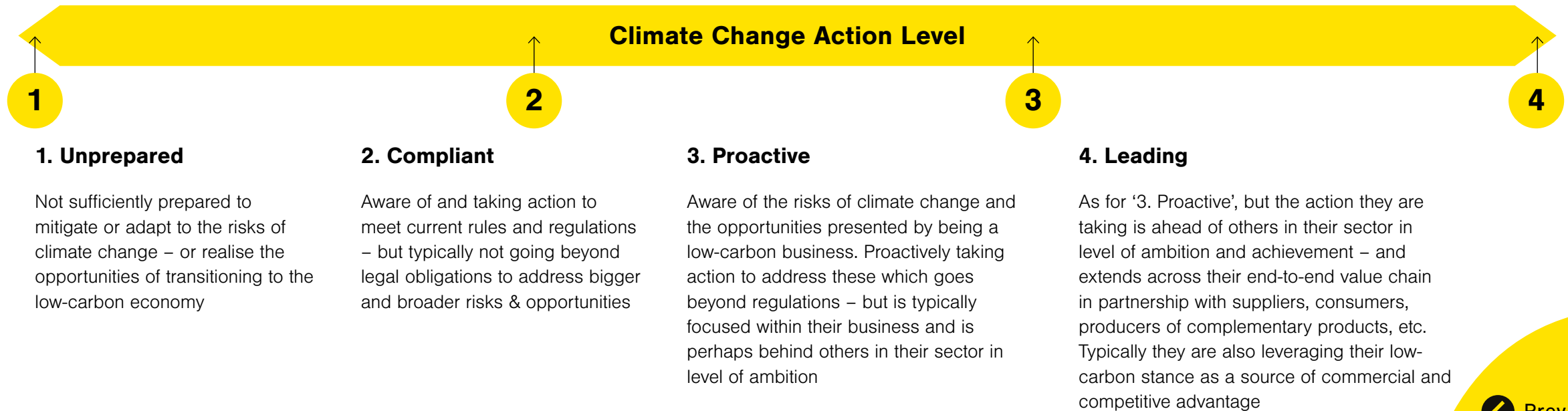
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# 3. Step 2 – Establish need for change

## b. How the ‘Self Assessment’ works – 4 key levels of attainment

Within the tool, there are a number of questions. Each question has a set of four sample answers each representing a stage on the continuum of Climate Change Action from ‘1. Unprepared’ to ‘4. Leading’. For each question, the user is asked which answer best represents ‘Current’ state and intended ‘Target’ state.

In broad terms, the **four stages** on the continuum are characterised as follows:



STEP 2 CONTINUES...

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# 3. Step 2 – Establish need for change

## c. How the ‘Self Assessment’ works – 5 areas of assessment

Within the tool, the questions asked are divided into the following 5 areas of assessment:



### A. Footprint: Understanding and improving your carbon footprint

Covers knowing what your carbon footprint is and its key drivers and taking measurable action to reduce it



### B. Compliance: Adhering to the rules on climate change

Covers being clear on duties and obligations under current climate change and emissions rules and regulations and being sighted on and prepared for policy/regulatory change



### C. Sentiment: Ensuring your business is in tune with stakeholder sentiment on climate change

Covers being clear on and aligned/ in tune with stakeholder sentiment on climate change. Stakeholder groups include: investors, customers (B2B), consumers, current/prospective employees



### D. Risk: Ensuring you're prepared for the impact of climate change on your business

Covers being clear on how the business and operations will be impacted by climate change in future and having governance, disclosures, plans and resources in place to mitigate any physical and transition risks (e.g. w.r.t supply chain, asset values, financial/ cost base, customer base, compensation claims, etc.). See [TCFD recommendations](#) for more details



### E. Opportunities: Ensuring your business benefits from the transition to a low-carbon economy

Covers being clear on and acting to realise opportunities to deliver enhanced business performance through the transition to a low-carbon economy (e.g. reducing operational cost (resource efficiency), gaining access to government incentives, leveraging positive impact on brand and reputation to achieve competitive advantage, etc.) (See also TCFD above).

STEP 2 CONTINUES...

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# 3. Step 2 – Establish need for change

## d. What outputs the Self Assessment provides – and how to use them

### i. Implications for 'Current' and 'Target' selections – by Section

1 Do we know what the carbon footprint of our business is - and what drives it?

Climate Action Level	
UNPREPARED	No. We get the concept of a carbon footprint in general terms, but we're not clear in specific terms what it is or how you measure it
COMPLIANT	We know in measurable terms, but only in sectors and facilities which are subject to emissions regulations such as the European ETS
PROACTIVE	We know in measurable terms for all aspects of our in-house operations - but we still struggle with end-to-end value chain
LEADING	We have a clear, measurable view for all aspects of our end-to-end value chain, both internally and externally

Based on the answers selected for each question, the Board Readiness Check returns **illustrative implications** to provide guidance on how the 'Current' and 'Target' selections made might impact the business. The **contrast** in 'Current' vs. 'Target' risk/performance may prompt the user to adjust their answers for 'Target' state ambition....

	Unprepared	Compliant	Proactive	Leading
Current State	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Target State	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

STEP 2 CONTINUES...

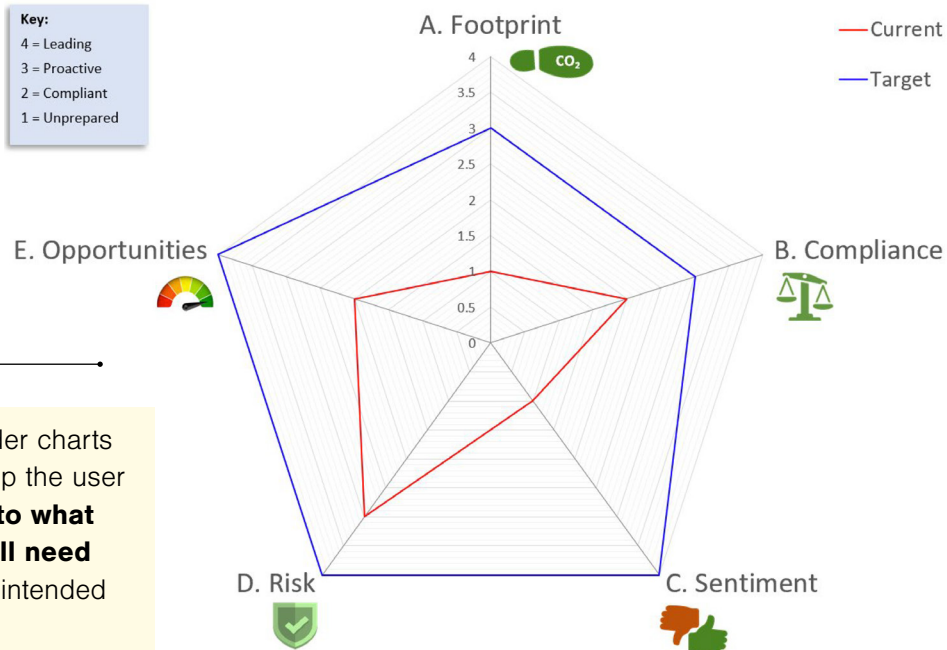
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# 3. Step 2 – Establish need for change

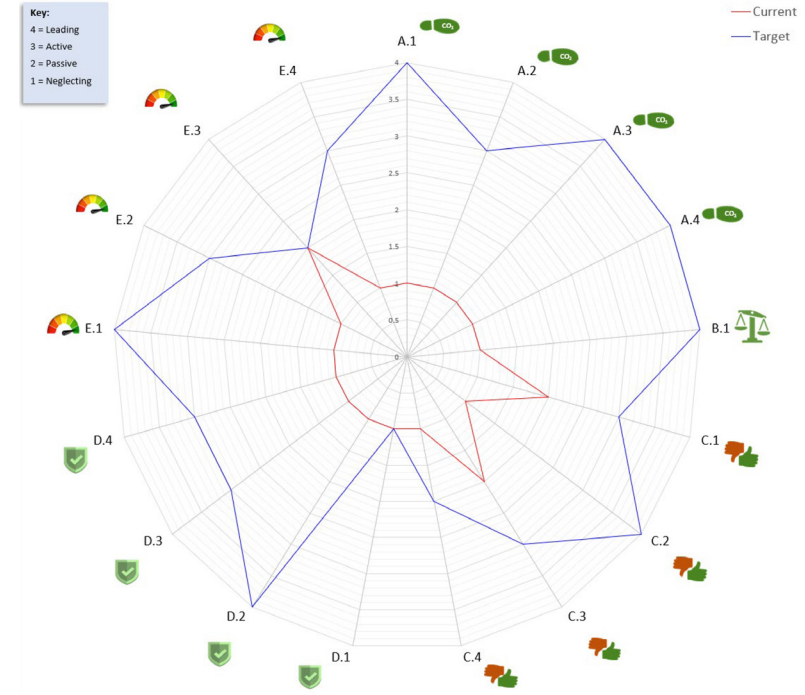
## d. What outputs the Self Assessment provides – and how to use them

### ii. Current vs. Target for each Section



'Current' vs. 'Target' spider charts are also produced to help the user understand **where and to what extent the business will need to change** to achieve its intended 'Target'

### iii. Current vs. Target for each Question



STEP 2 CONTINUES...

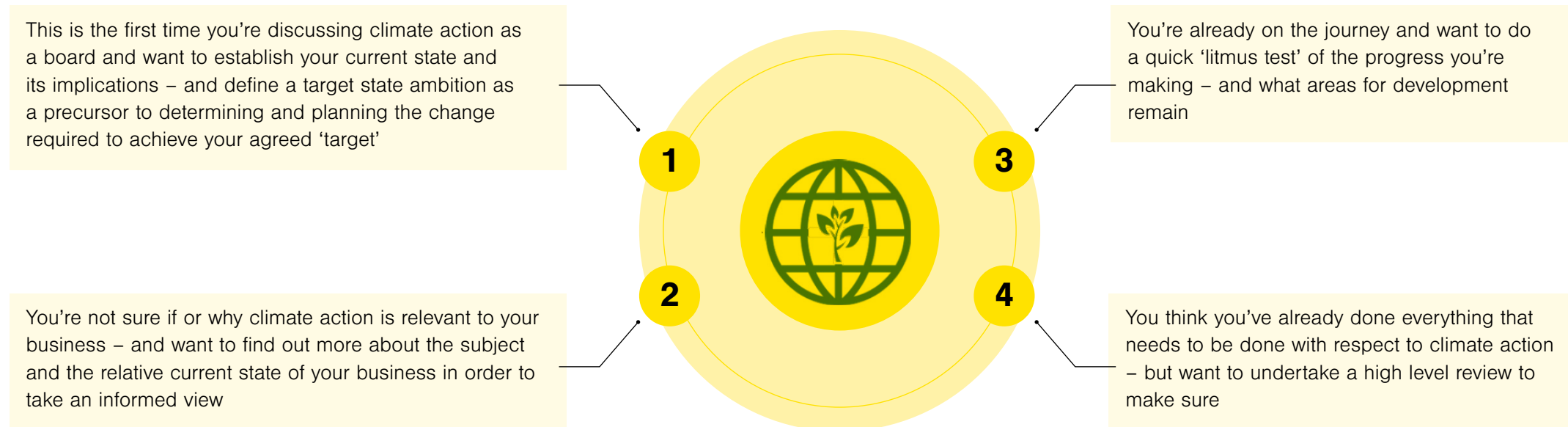
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# 3. Step 2 – Establish need for change

## e. When to use the ‘Self Assessment’ with the board

The Board Readiness Check can be used in a wide variety of different scenarios. Some examples.....



The next slide **explains how to use the Board Readiness Check with scenario (1) above in mind** (but is broadly applicable to the other scenarios too). Especially if you are getting a number of people to fill in the Board Readiness Check, you will probably need a facilitator to manage the process.

**STEP 2 CONTINUES...**

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# 3. Step 2 – Establish need for change

## f. How to use the ‘Self Assessment’ with the board

**1**

**Get each board member to fill in the Self-Assessment in the Board Readiness Check, based on their own personal understanding and views – prior to getting them together as a group to discuss it**

Doing this has the following benefits:

- i. By using the Self-Assessment they'll get familiar with the issues and potential implications of different choices
- ii. You'll get to see any key disparities in understanding of 'Current' state and intended 'Target' state
- iii. You'll know in advance where to prompt for evidence to back up claims (e.g. if someone has said they think they are '4. Leading' on 'A. Understanding and improving your carbon footprint' - and everyone else has said '1. Unprepared')

**2**

**Summarise what the aggregated results tell you:**

- i. Where is the board aligned on 'Current' state and where is it not?
- ii. What are the implications of 'Current' state in terms of business performance and risk? (i.e. need for action)
- iii. Where is the board aligned on 'Target' state and where is it not?

**3**

**Get the board together to:**

- i. Discuss the aggregate results above - and to align on (a) 'Current' state, (b) Implications of 'Current State' and consequent need for action/change and (c) Intended 'Target' state
- ii. Agree on action plan to undertake more detailed analysis and planning to identify specific improvements
- iii. Agree how to factor climate action into board level governance on an ongoing basis and monitor and report back on progress and achievement to the board

# 3. Step 3 – Define change & plan journey

A checklist of key things to check in on in Step 3 is provided below:

a. Evidence of a **comprehensive analysis** across **all areas** of the business – under a **range of temperature scenarios\***, with a **long term planning horizon (10+ years)** - and ideally across the **whole value chain** of:

i. Opportunities to reduce **Greenhouse Gas (GHG) emissions**



ii. Climate change related **risks** the business needs to mitigate/adapt to



iii. Climate change related **opportunities** the business could benefit from



b. Evidence that **key actions** (and triggers) have been identified and prioritised to address the findings from (a)

c. Evidence that action has been embodied into **SMART\*\* strategic objectives** for the business. An example of a SMART objective (Unilever Sustainable Living Plan): **By 2030** our goal is to **halve** the environmental footprint of the making and use of our products as we grow our business

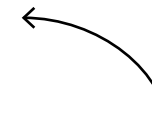


d. Evidence of a comprehensive, integrated assessment of the **change required** to deliver on the above action areas and objectives – again across all areas of the business and ideally the end-to-end value chain



e. Evidence of **defined strategic plans** and **business cases** to deliver the change over the short, medium and longer term (10+ years) – in all of the areas of change identified and as an **integral part of broader business/strategic planning**

f. Evidence that sufficient **resources have been allocated** to deliver the change






**Reminder:** Please click on the buttons to access more detailed content on the points indicated, should you need it....

\* When assessing climate related risks and opportunities. The drill down buttons for risks and opportunities provide details on how.

\*\* Specific, Measurable, Achievable, Relevant and Timebound

# 3. Step 4 – Embed & sustain the change

A checklist of key things to check in on in Step 4 is provided below:

- a. Evidence that leadership is **actively setting the right tone** to inspire the required change in culture and behaviours – **not just in what they say, but in what they do**
- b. Evidence that effective **corporate governance** has been put in place to oversee climate impact, risks, opportunities and action in line with WEF\* Principles 
- c. Evidence of comprehensive inclusion of climate related risks and opportunities within **financial disclosures** in line with TCFD\*\* recommendations 
- d. Evidence that corporate goals have been cascaded into the **performance targets and incentives of teams and individuals** to drive and align actions and behaviours
- e. Evidence of effective **communication and engagement** across all key stakeholder groups **underpinned by training, education and support** they needed to make the change happen 

**Reminder:** Please click on the buttons to access more detailed content on the points indicated, should you need it....

\* World Economic Forum

\*\* Taskforce of Climate related Financial Disclosures



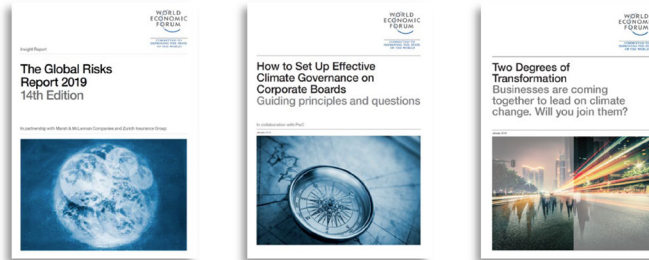
# 3. Step 5: Monitor & improve performance

A checklist of key things to check in on in Step 5 is provided below:

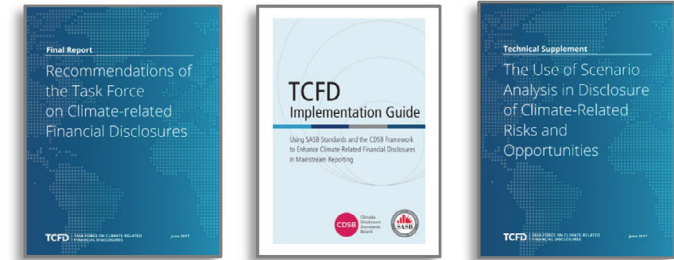
- a. Evidence that **targets are being actively monitored and met as part of BAU – and that they are not standing still** (i.e. they continue to be raised to create stretch and motivate continuous improvement)
- b. Evidence that leadership are actively **listening** to stakeholder suggestions and actively encouraging them and **incentivising** them to come up with **improvement ideas** (incentives do not need to be monetary – e.g. competitions to come up with the best ideas and/or make the biggest difference are a great way of making the topic front of mind – and getting people to positively engage)
- c. Evidence that levels of **ambition and achievement are being proactively compared** with those of peer and comparator organisations and adjusted accordingly
- d. Evidence of **proactive networking and collaboration** across the end-to-end value chain and with other businesses and stakeholders across sectors to share (and action) improvement ideas and innovations

# 4. Where to go for more help and information

## Organisations helping to drive and support climate action



The World Economic Forum (WEF) Climate Initiative provides **a global platform to help raise ambition and accelerate climate action** with a particular focus on collaboration across organisations and sectors. WEF also publishes a range of resources (e.g. re global risks, climate governance, etc.)



The Financial Stability Board (FSB) monitors and assesses vulnerabilities affecting the global financial system and proposes actions needed to address them. It formed the Task Force on Climate-related Financial Disclosures (TCFD) to develop **voluntary, consistent climate-related financial risk disclosures** for use by companies in providing information to investors, lenders, insurers, and other stakeholders. In addition to the **recommendations**, it also provides a **knowledge hub** to help businesses understand and implement them

Please click on any of the images below to access the websites of the organisations shown and/or their publications....

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## 4. Where to go for more help and information

### Organisations helping to drive and support climate action



SBT is a collaboration between CDP, the United Nations Global Compact (UNGC), World Resources Institute (WRI), and the World Wide Fund for Nature (WWF) which champions, supports development of and independently assesses and approves **SMART science-based targets set by businesses to reduce GHG emissions**



WRI's research **helps integrate environmental sustainability and business strategy** by providing practical guidance, tools and initiatives to help companies assess and reduce impacts along their entire value chains



The Carbon Disclosure Project (CDP) is a **not-for-profit charity that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts**. It also produces climate change related data, insights and articles (such as [\\$1 trillion impact of climate change risks](#))



The Institutional Investors Group on Climate Change is a European membership body **for investor collaboration on climate change**

Please click on any of the images below to access the websites of the organisations shown and/or their publications....



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## 4. Where to go for more help and information



**Chapter  
Zero**

The Directors' Climate Forum

Please contact [Chapter Zero](#) if you would like some information about organisations that may be able to help you or if you would like to access additional climate change resources.

### The **Berkeley** Partnership

Alternatively, feel free to contact [The Berkeley Partnership](#) if you would like some assistance with using this toolkit or support in facilitating your board-level discussion or shaping and mobilising your climate change initiatives.



# Appendices:

A1.1. Why this is important and urgent: Sources

A3.1. Reducing GHGs – Key areas of focus

A3.2. Business risks to consider

A3.3. Business opportunities to consider

A3.4. Strategic objectives and KPIs

A3.5. Defining a comprehensive portfolio of change

A3.6. Governance of climate-related change

A3.7. Climate-related Financial Disclosure

A3.8. Stakeholder communication and engagement

Note: The 'A' signifies Appendix. The first number refers to the section in the main body of the toolkit that this Appendix is referenced from

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# A1.1. Why this is important and urgent: Sources

1. Institute for Public Policy Research (IPPR), 'This is a Crisis: Facing up to the age of Environmental Breakdown', February 2019: <https://www.ippr.org/research/publications/age-of-environmental-breakdown>
2. Open University, 'Our Blue Planet' 2019.
3. Intergovernmental Panel on Climate Change (IPCC) 'Global Warming of 1.5°C', October 2018: [https://report.ipcc.ch/sr15/pdf/sr15\\_spm\\_final.pdf](https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf)
4. Wallace-Wells, D. The Uninhabitable Earth, 2019
5. World Economic Forum (WEF) Global Risks Report 2019: [http://www3.weforum.org/docs/WEF\\_Global\\_Risks\\_Report\\_2019.pdf](http://www3.weforum.org/docs/WEF_Global_Risks_Report_2019.pdf)
6. House of Commons library paper on Flood defence spending as at 2014: <https://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN05755>



**Back to page 5:** Causes of climate change and current situation



**Back to page 6:** The environmental impacts of climate change



**Back to page 8:** The human impacts of climate change



**Back to page 10:** The business impact



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# A3.1. Reducing GHGs – Key areas of focus

## Product development

- **Product Design/Replacement:** Design (or replace) products/services and their packaging to minimise Greenhouse Gas (GHG) footprint in their production, distribution, use and disposal - ideally in collaboration with partners and stakeholders throughout the value chain (e.g. raw material suppliers, manufacturers, distributors, consumers, producers of complementary products and services\* etc.)
- **In silico R&D:** Use of AI to simulate product and manufacturing to reduce the impact that comes with real world development/testing

## Sourcing

- **Production:** Partner with suppliers to apply the methods elsewhere on this slide to their own operations to reduce their GHG footprint
- **Shipment:** Review where raw materials, components and supplies are sourced from and how they are shipped. Evaluate options to change sourcing location (e.g. closer to consumption) and shipment approach (e.g. air to ship) to reduce GHGs

## Operations

- **Energy efficiency:** Evaluate options to improve efficiency of capital goods, equipment, lighting (e.g. type used; use of sensors and timers to control when lighting/equipment is on; use of Building Energy Management Systems to monitor and optimise energy usage; etc.)
- **Waste:** Evaluate options to reduce waste and increase recycling (e.g. paperless office, avoiding disposables, reducing packaging, etc.)
- **Renewables:** Switch to renewable energy sources, install renewable energy generation in facilities (e.g. solar)
- **Travel:** Encourage use of communications technology such as Zoom, Skype, etc. to replace the need for business travel; incentivise employees to reduce GHG footprint in commuting (walking, cycling, public transport, car share, etc.)
- **Supply chain:** Review how materials, supplies and finished products are produced and moved within the business (e.g. between factories, warehouses, distribution centres, stores, etc.) to minimise GHG impact (number, size and method of movement)
- **Investment:** Review investments to ensure they are focused on low GHG businesses/ventures

## Sales and distribution

- **Downstream distribution:** Engage with customers, distributors, franchisees and others who handle, distribute and sell your products downstream of your operations to ensure they are minimising GHG impact through the measures outlined in the rows above
- **Sales and marketing:** Consider the GHG impact on sales and marketing activities (e.g. limiting physical marketing materials and travel and shifting more to digital)

## Use and disposal

- **Post sale:** Work with consumers and waste management/recycling companies to evaluate and incentivise the use and disposal of your products and packaging in a way which minimises GHG impact (e.g. amount used, recycling schemes, etc.)

See [SBT value chain best practice](#) for further insight inc. chart on p.16 identifying key potential focus areas by sector. [See CDP sector research](#) for sector specific insight and case studies. See page 50 onwards of [SBT sectoral decarbonisation](#) for sector specific GHG reduction ideas

\* An example might be a producer of washing powder collaborating with a producer of washing machines to co-develop (and possibly co-market) washing powder and machines which are capable of being used together effectively at lower temperatures - thus saving the consumer money and reducing the 'GHG impact' of both products

# A3.2. Business risks to consider

The below summarises TCFD guidance on key physical and transition risks to consider. See [TCFD final report](#) p.5-8 for more details. To ensure complete/integrated adaptation and mitigation, risks should be assessed **across the entire value chain** (investors, suppliers, own operations, distributors, franchisees, customers, consumers, etc.) – and **against a range of temperature scenarios** as further elaborated in the [TCFD implementation guide](#) and [TCFD's 'use of scenario analysis'](#)

	Type	Risk	Potential financial impact
Transition*	Policy and Legal	<ul style="list-style-type: none"> <li>Increased pricing of GHG emissions</li> <li>Enhanced emissions-reporting obligations</li> <li>Mandates on/regulation of existing products</li> <li>Exposure to litigation</li> </ul>	<ul style="list-style-type: none"> <li>Increased operating costs (e.g. higher compliance costs, increased insurance premiums)</li> <li>Write-offs, asset impairment, and early retirement of existing assets due to policy changes</li> <li>Increased costs and/or reduced demand for products and services resulting from fines and judgments</li> </ul> <p>See also <a href="#">Section 172 considerations (UK)</a> and <a href="#">Hutley Opinion (Australia)</a> as examples of legal risk</p>
	Technology	<ul style="list-style-type: none"> <li>Substitution of existing products and services with lower-emissions options</li> <li>Unsuccessful investment in new technologies</li> <li>Costs to transition to lower-emissions tech</li> </ul>	<ul style="list-style-type: none"> <li>Write-offs and early retirement of existing assets</li> <li>Reduced demand for products and services</li> <li>Research and development (R&amp;D) expenditures in new and alternative technologies</li> <li>Capital investments in technology development</li> <li>Costs to adopt/deploy new practices and processes</li> </ul>
	Market	<ul style="list-style-type: none"> <li>Changing customer behaviour</li> <li>Uncertainty in market signals</li> <li>Increased cost of raw materials</li> </ul>	<ul style="list-style-type: none"> <li>Reduced demand for goods and services due to shift in consumer preferences</li> <li>Increased production costs due to changing input prices (e.g. energy, water) and output reqs (e.g. waste treatment)</li> <li>Abrupt and unexpected shifts in energy costs</li> <li>Change in revenue mix and sources, resulting in decreased revenues</li> <li>Re-pricing of assets (e.g. fossil fuel reserves, land valuations, securities valuations)</li> </ul>
	Reputation	<ul style="list-style-type: none"> <li>Shifts in consumer preferences</li> <li>Stigmatisation of sector</li> <li>Increased stakeholder concern or negative stakeholder feedback</li> </ul>	<ul style="list-style-type: none"> <li>Reduced revenue from decreased demand for goods/services</li> <li>Reduced revenue from decreased production capacity (e.g. delayed planning approvals, supply chain interruptions)</li> <li>Reduced revenue from negative impacts on workforce management/planning (e.g. employee attraction/retention)</li> <li>Reduction in capital availability</li> </ul>
Physical**	Acute (event driven)	<ul style="list-style-type: none"> <li>Increased severity of extreme weather events such as cyclones and floods</li> </ul>	<ul style="list-style-type: none"> <li>Reduced revenue from decreased production capacity (e.g. transport difficulties, supply chain interruptions)</li> <li>Reduced revenue and higher costs from negative impacts on workforce (e.g. health, safety, absenteeism)</li> <li>Write-offs and early retirement of existing assets (e.g. damage to property and assets in “high-risk” locations)</li> </ul>
	Chronic (due to longer term shifts)	<ul style="list-style-type: none"> <li>Changes in precipitation patterns and extreme variability in weather patterns</li> <li>Rising mean temperatures</li> <li>Rising sea levels</li> </ul>	<ul style="list-style-type: none"> <li>Increased operating costs (e.g. inadequate water supply for hydroelectric plants or to cool nuclear &amp; fossil fuel plants)</li> <li>Increased capital costs (e.g. damage to facilities)</li> <li>Reduced revenues from lower sales/output</li> <li>Increased insurance premiums and potential for reduced availability of insurance on assets in “high-risk” locations</li> </ul>

\* The risks associated with transitioning to a lower-carbon economy

\*\* Risks resulting from climate change which could impact on businesses

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# A3.3. Business opportunities to consider

The below summarises TCFD guidance on key opportunities which may emerge from successfully mitigating and adapting to climate change\*. See [TCFD final report](#) p.5-8 for more details. To maximise synergies/efficiencies, opportunities should be assessed **across the entire value chain** – and **against a range of temperature scenarios** as further elaborated in the [TCFD implementation guide](#) and [TCFD's 'use of scenario analysis'](#)

Type	Opportunity	Potential financial impact
<b>Resource efficiency</b>	<ul style="list-style-type: none"> <li>• Use of more efficient modes of transport</li> <li>• Use of more efficient production and distribution processes</li> <li>• Use of recycling</li> <li>• Move to more efficient buildings</li> <li>• Reduced water usage/consumption</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced operating costs (e.g. through efficiency gains and cost reductions)</li> <li>• Increased production capacity, resulting in increased revenues</li> <li>• Increased value of fixed assets (e.g. highly rated energy efficient buildings)</li> <li>• Benefits to workforce management and planning (e.g. improved health and safety, employee satisfaction) resulting in lower costs</li> </ul>
<b>Energy source</b> (lower-emissions alternatives)	<ul style="list-style-type: none"> <li>• Use of lower-emission sources of energy</li> <li>• Use of supportive policy incentives</li> <li>• Use of new technologies</li> <li>• Participation in carbon market</li> <li>• Shift toward decentralised energy generation</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced operational costs (e.g. through use of lowest cost GHG reduction)</li> <li>• Reduced exposure to future fossil fuel price increases</li> <li>• Reduced exposure to GHG emissions and therefore less sensitivity to changes in cost of carbon</li> <li>• Returns on investment in low-emission technology</li> <li>• Increased capital availability (e.g. as more investors favour lower-emissions producers)</li> <li>• Reputational benefits resulting in increased demand for goods/services</li> </ul>
<b>Products and services</b>	<ul style="list-style-type: none"> <li>• Development/expansion of low emission goods and services</li> <li>• Development of climate adaptation &amp; insurance risk solutions</li> <li>• Development of new low emissions products or services through R&amp;D and innovation</li> <li>• Ability to diversify business activities</li> <li>• Shift in consumer preferences</li> </ul>	<ul style="list-style-type: none"> <li>• Increased revenue through demand for lower-emissions products and services</li> <li>• Increased revenue through new solutions to adaptation needs (e.g. insurance risk transfer products and services)</li> <li>• Better competitive position to reflect shifting consumer preferences, resulting in increased revenues</li> </ul>
<b>Markets</b>	<ul style="list-style-type: none"> <li>• Access to new markets</li> <li>• Use of public-sector incentives</li> <li>• Access to new assets &amp; locations needing insurance coverage</li> </ul>	<ul style="list-style-type: none"> <li>• Increased revenues through access to new and emerging markets (e.g. partnerships with governments, development banks, etc. to support shift to lower-carbon economy)</li> <li>• Increased diversification of financial assets (e.g. green bonds and infrastructure)</li> </ul>
<b>Resilience</b> (ability to respond to climate change)	<ul style="list-style-type: none"> <li>• Participation in renewable energy programs and adoption of energy efficiency measures</li> <li>• Resource substitutes/diversification</li> </ul>	<ul style="list-style-type: none"> <li>• Increased market valuation through resilience planning (e.g. infrastructure, land, buildings)</li> <li>• Increased reliability of supply chain and ability to operate under various conditions</li> <li>• Increased revenue through new products and services related to ensuring resiliency</li> </ul>

\* Necessarily, some of the opportunities overlap with actions to reduce GHG emissions on the previous slide, since reducing GHGs frequently delivers business as well as environmental benefits



# A3.4. Strategic objectives and KPIs

A **balanced-scorecard of SMART\* climate objectives and metrics** should drive reduction in Greenhouse Gas (GHG) emissions as well as driving improvement in the financial performance and risk profile of the business as it adapts to climate change....

## Reducing Greenhouse Gas (GHG) Emissions

The [Science Based Targets \(SBT\) initiative](#) champions, supports development of and independently assesses and approves SMART science-based targets set by businesses. A science-based target means a greenhouse gas (GHG) emissions reduction target which is in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement – to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C.

As further outlined in the [SBT Target Setting Manual](#), reduction targets are set between 5 –15 years into the future, with interim milestones to chart progress. Reductions targeted cover 3 ‘Scopes’:

- **Scope 1** emissions are direct emissions from owned or controlled sources
- **Scope 2** emissions are indirect emissions from the generation of purchased energy
- **Scope 3** emissions are all indirect emissions (not included in scope 2) that occur in the value chain\* of the reporting company, including both upstream and downstream emissions

Just a few UK companies who’ve already committed to SBTs....



\* Emissions along the value chain often represent a company’s biggest greenhouse gas impacts – e.g. according to GHG Protocol, Kraft Foods found that value chain emissions comprise more than 90 percent of the company’s total emissions.

## Climate-related Financial Performance and Risk

### Risk

Value at Risk (VaR) has long been used by financial firms to measure portfolio risk. It is now increasingly used as a measure of risk posed by climate change to businesses in general. When used in relation to climate change, it’s aim is to quantify how much a business can expect to lose in asset values over a defined time frame at a defined level of probability (or confidence interval) under a defined temperature rise scenario (e.g. what is maximum reduction in asset values I can expect - with 95% or 99% confidence – over the next 15 years under a 3°C scenario). Setting SMART VaR reduction targets could help businesses measurably drive progress in reducing climate exposure. For a broader consideration of Enterprise Risk Management (ERM) relevant to climate change, which includes reference to VaR, see:

[ERM by COSO and WBCSD](#)

### Efficiency

Setting SMART cost reduction targets will help maximise efficiency as the business transitions to the lower-carbon economy (e.g. in relation to reducing energy use, reducing unit energy costs, access to government incentives, cheaper access to capital by virtue of ‘green credentials’, etc.). Although harder to track, metrics could extend to avoiding cost (e.g. acting now to prepare supply chains for climate change could be a lot less costly than waiting until the issues start hitting & prices of lower risk assets rise)

### Growth

In addition to efficiency, setting SMART targets to drive the business to grow through its transition to a low-carbon future is also important. Such targets could, for example, focus on growing contribution of low-carbon products and services, growing contribution from market segments that only buy from low-carbon suppliers, etc.

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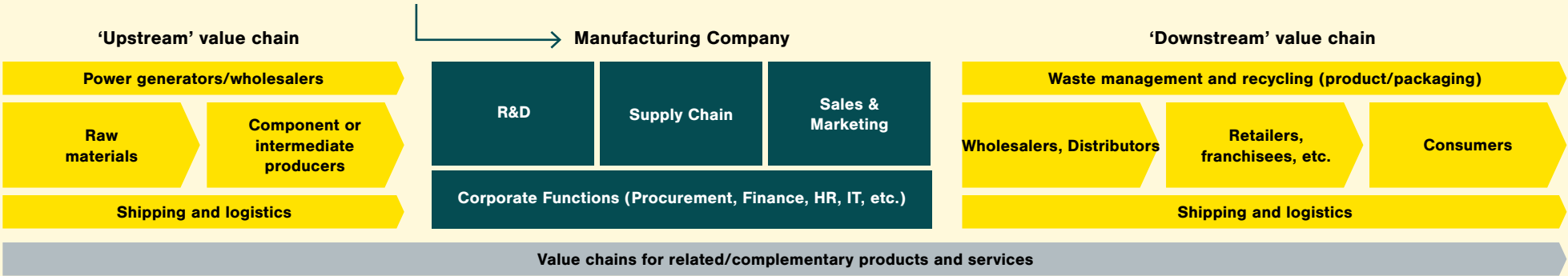
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# A3.5. Defining a comprehensive portfolio of change

Key ‘lenses’ to apply in checking that the portfolio of change is comprehensive and well integrated....

Lens	Evidence to check for
1. Action scope	Change is being undertaken to address all action areas – GHG reduction, climate-risk mitigation and climate opportunity realisation (see Appendices A3.1, A3.2 & A3.3)
2. Business scope	Change is being undertaken by all business areas/functions (in service of delivering defined, stretching targets which are aligned across the value chain)
3. Collaboration	Positive collaboration is taking place across the value chain* – and indeed between value chains of related/complementary products and services. Such collaboration is vital, not only to realise synergies** – but also to avoid action in one area unintentionally creating or adding to problems in another***
4. Type of change	All types of change are being applied – <b>Product</b> (e.g. changing products and services to reduce GHG creation in their production, shipment, use and recycling); <b>Process</b> (e.g. reengineering supply chains), <b>Technology</b> (e.g. use of BEMS to reduce energy consumption); <b>People/Behaviours</b> (e.g. increased recycling, reduced travel, etc.)

For example, in a **typical manufacturing company**, action would be expected in all of the below value chain – and indeed across them....



\* Emissions along the value chain often represent a company's biggest greenhouse gas impacts – e.g. according to GHG Protocol, Kraft Foods found that value chain emissions comprise more than 90 percent of the company's total emissions.

**\*\* Examples of cross-value chain synergies in reducing GHGs:**

- R&D working with Waste Management companies to produce products that are easier to recycle
- R&D working with Supply Chain to create products that require less energy to make and ship
- Supply Chain working with Retailers to increase efficiency and reduce waste in factory to shelf distribution
- Co-development of solutions across related/complementary sectors to reduce emissions (e.g. electronics sensors and controls company working with a managed offices/workspace company to co-define solutions to reduce energy consumption)

**\*\*\* Example of failure to collaborate ‘shifting the problem’:**

- R&D developing a product using materials which require less energy during finished goods manufacturing in-house - but which are higher energy to extract and transport and which result in waste which is higher energy to dispose of/recycle after the products are used

# A3.6. Governance of climate-related change

Governance should be in place to provide effective board level oversight of all aspects of the analysis, planning, implementation and operationalisation of climate-related change. The World Economic Forum (WEF) has created a number of principles to guide boards in putting the appropriate governance in place. These are summarised below. Many of them are touched on in other sections of this toolkit:

1. Climate accountability on boards	The board is ultimately accountable to shareholders for the long-term stewardship of the company. Accordingly, the board should be accountable for the company's long-term resilience with respect to potential shifts in the business landscape that may result from climate change. Failure to do so may constitute a breach of directors' duties.
2. Command of the (climate) Subject	The board should ensure that its composition is sufficiently diverse in knowledge, skills, experience and background to effectively debate and take decisions informed by an awareness and understanding of climate-related threats and opportunities
3. Board structure	As the stewards for long-term performance and resilience, the board should determine the most effective way to integrate climate considerations into its structure and committees
4. Material risk and opportunity assessment	The board should ensure that management assesses the short-, medium- and long-term materiality of climate-related risks and opportunities for the company on an ongoing basis. The board should further ensure that the organisation's actions and responses to climate are proportionate to the materiality of climate to the company
5. Strategic & organisational integration	The board should ensure that climate systemically informs strategic investment planning and decision-making processes and is embedded into the management of risk and opportunities across the organisation.
6. Incentivisation	The board should ensure that executive incentives are aligned to promote the long-term prosperity of the company. The board may want to consider including climate-related targets and indicators in their executive incentive schemes, where appropriate. In markets where it is commonplace to extend variable incentives to non-executive directors, a similar approach can be considered.
7. Reporting and disclosure	The board should ensure that material climate-related risks, opportunities and strategic decisions are consistently and transparently disclosed to all stakeholders – particularly to investors and, where required, regulators. Such disclosures should be made in financial filings, such as annual reports and accounts, and be subject to the same disclosure governance as financial reporting.(See <a href="#">TCFD recommendations</a> for further guidance)
8. Exchange	The board should maintain regular exchanges and dialogues with peers, policy-makers, investors and other stakeholders to encourage the sharing of methodologies and to stay informed about the latest climate-relevant risks, regulatory requirements etc.

For more detail on these principles and the questions to ask to assess alignment with them, please refer to [WEF Principles](#)

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# A3.7. Climate-related Financial Disclosures

Climate change poses **significant financial challenges and opportunities**, now and in the future. The expected transition to a lower-carbon economy is estimated to **require around \$1 trillion of investments a year** for the foreseeable future\* – and create a **global asset value-at-risk ranging from \$4.2 trillion to \$43 trillion\*\*** between now and the end of the century. This risk is expected to apply “across the board” with a **very wide variety of sectors and asset types affected**.

To help identify the information needed by investors, lenders, and insurance underwriters to **appropriately assess and price climate-related risks and opportunities**, the Financial Stability Board established an industry-led task force: the Task Force on Climate-related Financial Disclosures (TCFD) to define a consistent approach to climate-related financial disclosures

In summary, to provide investors, lenders and underwriters with the required information, the TCFD recommends that companies include climate related financial disclosures in their mainstream (i.e. public) annual financial filings and that these disclosures should cover the following four elements:

- 1. Governance:** The organisation’s governance around climate-related risks and opportunities
- 2. Strategy:** The actual and potential impacts of climate-related risks and opportunities on the organisation’s businesses, strategy, and financial planning
- 3. Risk Management:** The processes used by the organisation to identify, assess, and manage climate-related risks
- 4. Metrics and Targets:** The metrics and targets used to assess and manage relevant climate-related risks and opportunities

They further recommend disclosures assess the resilience of an organisation’s strategy, taking into consideration **different climate-related scenarios**, including a 2°Celsius or lower scenario – in order to ensure better understanding of the potential spectrum of implications of climate change on the organisation and thereby provide more decision-useful, climate-related financial information. TCFD also provides **guidance on how to approach scenario analysis** – including tools and data to use, analytical choices, challenges and benefits, etc.\*\*\*

In most G20 jurisdictions, **companies with public debt or equity have a legal obligation to disclose material information in their financial filings—including material climate-related information**. Given that climate-related issues are or could be material for many organisations, TCFD recommendations should be useful to G20 based companies in complying more effectively with existing disclosure obligations.

For full details of the recommendations, refer to [TCFD recommendations](#)

\* International Energy Agency [World Energy Outlook Special Briefing](#) for COP21, 2015.

\*\* The Economist Intelligence Unit, [The Cost of Inaction: Recognising the Value at Risk from Climate Change](#)

\*\*\* TCFD, [The Use of Scenario Analysis in Disclosure of Climate-related Risks and Opportunities](#)

# A3.8. Stakeholder communication & engagement

Broad based communication and engagement across the full gamut of stakeholders is vital to **embed the change across the value chain**. Such engagement will also **increase pressure on others in your sector to act** – and could lead to **commercial/competitive advantage** if you are a first or early mover. Areas of action could include:

Employees	<ul style="list-style-type: none"> <li>• Build <b>awareness of the importance/urgency</b> of action to address climate change to mobilise for action</li> <li>• Help them understand (through signposting, training and support) the <b>actions they can take to make a difference</b> (e.g. recycling, travel, etc.)</li> <li>• Introduce <b>incentives/gamification</b> (e.g. competitions for coming up with the best ideas or making the biggest difference) to make the topic front of mind – and encourage people to positively engage</li> </ul>
B2B Customers	<ul style="list-style-type: none"> <li>• Build awareness of the <b>action your business is taking to reduce GHG impact and climate-risk</b> – why it's important and how it makes a difference to their business (e.g. sourcing from a low-carbon supplier improves their low GHG credentials) and sourcing from a 'climate-change prepared' supplier reduces their risk profile</li> <li>• Based on the above, <b>encourage them to buy from businesses that are taking decisive action</b> on the above (which will not only help increase pressure to act across your sector – but (if you are an early mover) could give you competitive advantage)</li> <li>• Provide information and guidance on <b>how to handle/use/dispose of your products in a way which minimises GHG impact</b> – and engage with them <b>on how your products and packaging could be further improved</b> to make it easier for them to reduce their own GHG footprint</li> </ul>
Consumers	<ul style="list-style-type: none"> <li>• As for 'B2B customers', build awareness, encourage them to buy from businesses taking decisive action on climate-change – and give guidance on how to use/handle/dispose of products in a 'low-carbon' way. As with employees competitions/gamification (e.g. coming up with the best improvement ideas, etc.) could encourage positive engagement</li> </ul>
Investors	<ul style="list-style-type: none"> <li>• As for B2B Customers, but with the goal of <b>encouraging investment in low GHG and climate-change prepared businesses</b></li> </ul>
Influencers	<ul style="list-style-type: none"> <li>• Engage with news agencies and organisations promoting GHG reduction or climate-readiness (e.g. CDP, SBT, TCFD, etc.) to <b>share positive stories</b> about the steps you have taken and the results you've achieved in GHG reduction and climate-change readiness. Where relevant become <b>accredited</b> (e.g. commitment to GHG reduction targets with SBT). Not only does such action <b>increase pressure for others to act</b> – it may also <b>positively reinforce your standing/credentials with customers, consumers and investors</b></li> </ul>
Policy makers	<ul style="list-style-type: none"> <li>• Engage to encourage <b>tightening of policy and extension of incentives to favour businesses taking decisive action</b> to reduce GHGs, manage climate-change risk – and transition to the lower-carbon economy</li> </ul>

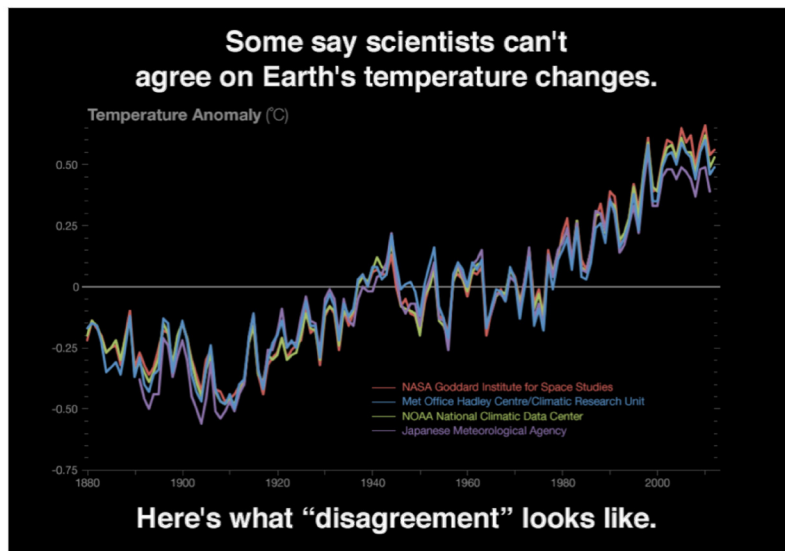
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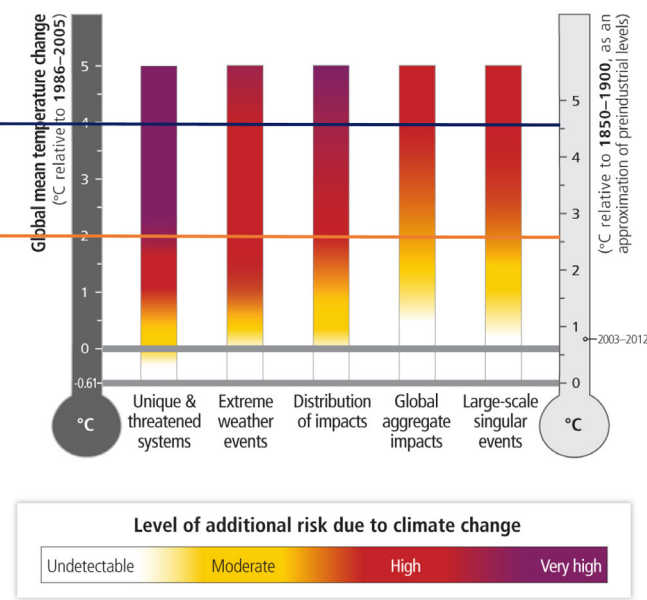
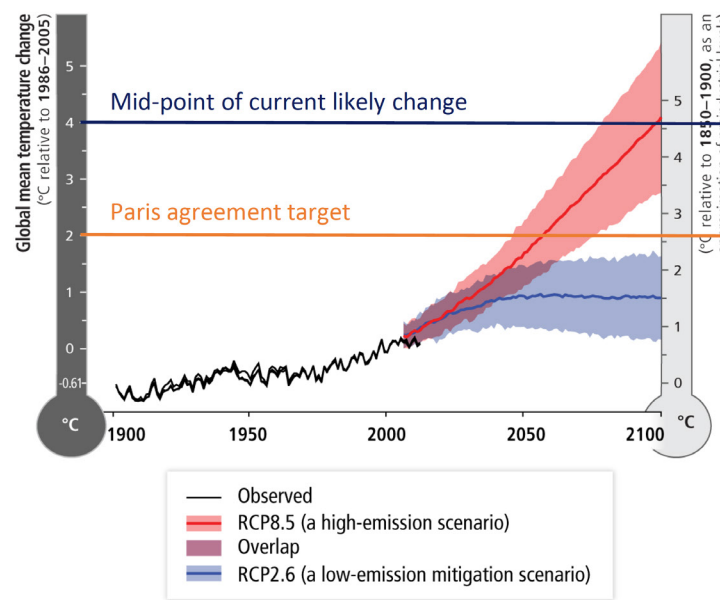


# 1. Causes of climate change and current situation



 **CLIMATE 365**

[climate365.tumblr.com](https://climate365.tumblr.com) | [go.nasa.gov/climate365](https://go.nasa.gov/climate365)



Source: IPCC WGII Box SPM.1 Figure 1.1

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toolkit useful.**