Climate scenario planning

Summary

There is growing recognition of the potential impact of climate change on the longer-term success of organisations. This includes both the physical impacts of climate change (i.e. global temperature rise, rising sea levels, increased extreme weather), and the impacts of the necessary transition to a low carbon global economy (i.e. emissions regulations, carbon pricing, and technological developments). This is particularly relevant to the carbon intensive sectors in which Rolls-Royce currently operates.

To support our understanding of climate change related risk and opportunity we have utilised scenario planning to assess the resilience of our business model and strategy to differing levels of physical climate change and different policy responses. We have utilised the Taskforce on Climate Related Financial Disclosures (TCFD) methodology in developing three distinct and plausible scenarios, one of which aligns to a 1.5°C trajectory.

Introduction to scenario planning

Scenarios are a way of exploring the future. They can help companies better understand and prepare for a particular future. They are not forecasts or projections, but are forward-looking story-based explorations of alternative, plausible future states. To be effective, scenarios should be plausible, distinctive, consistent, relevant and challenging.

Climate related scenarios take established climate change science (such as the work of the Intergovernmental Panel on Climate Change) and apply these projections within a business context to explore how a business model or strategy may react or be impacted.

Rolls-Royce has used scenario planning as part of its strategic planning and risk management processes since 2016, with a set of three company-level scenarios used regularly in strategic decision making. These company-level scenarios assess a range of traditional business factors. Whilst these factors are not specifically focused on climate, they are now underpinned and informed by our work on climate scenario planning.

Methodology

Rolls-Royce adopted the scenario analysis methodology outlined within the TCFD technical supplement. A summary of the methodology followed and outcomes of each stage are detailed below:

1. Ensure governance is in place

Sustainability and climate change are core components of the Rolls-Royce approach to governance. The climate scenarios analysis was undertaken with oversight from the Board

Safety, Ethics and Sustainability Committee (Safety & Ethics Committee at the time), input from the executive-level Environment & Sustainability Committee, and with technical support from the independent external Environmental Advisory Board. This exercise was delivered jointly by the company sustainability and strategy teams.

2. Assess materiality of climate-related risks

As an organisation operating in carbon intensive sectors, climate change presents a material impact to a number of areas of the Rolls-Royce business strategy and model: nine key elements of focus were identified to be assessed:

1. **Brand value and reputation:** External perception of Rolls-Royce; relationships with external stakeholders;
2. **Customers and markets:** Changes in demands (requirements, market size, pricing);
3. **Access to capital:** Funding availability (investors and governments); relationships with investors and other external stakeholders;
4. **Services and aftermarket:** Risks or opportunities related to through-life management;
5. **Technology acquisition:** What technologies may become more relevant or obsolete;
6. **Supply chain:** Development and resilience; physical disruption; materials demand and availability;
7. **Operations:** Our own facilities and locations;
8. **People:** Ability to attract and retain talent; perception of Rolls-Royce as an employer in a low carbon economy;
9. **Global strategy:** Footprint choices; international relationships; carbon pricing; product range and portfolio.

3. Identify and define range of scenarios

Three distinct and plausible scenarios were developed, based on credible external scenarios and peer-reviewed data sets, tailored to Rolls-Royce's circumstances as necessary to enable appropriate consideration of potential impact on the business strategy and model. Each of these scenarios included a range of transition and physical risks relevant to the organisation, including, for example, an assessment of global temperature change, international policy response and carbon pricing, as well as company specific factors such as the global oil price and societal views of air travel.

Each scenario presented a challenging alternative future context for the sectors in which Rolls-Royce operates. See "Scenarios developed" for more information.

4. Evaluate business impacts

Through a comprehensive 'wind-tunnelling exercise', the exposure of the company to potential change was assessed. In each scenario the nine elements of the business strategy and model identified were considered in turn. Conducted by the strategy, enterprise risk, business continuity and sustainability teams, with inputs from a range of subject matter experts including the technology, operations, supply chain, human resources, brand and external communications, investor relations, group property, and environment teams, this involved a range of perspectives and inputs to consider the potential impact upon each element.

5. Identify potential responses
As part of a consideration of the potential impact of each scenario upon elements of the business strategy and model, potential responses and mitigating actions were also considered. See “Outcomes” for more information.

6. Document and disclose
The outcomes of this climate scenarios exercise was discussed in detail at the executive-level Environment & Sustainability Committee and with the Board Safety, Ethics and Sustainability Committee. The primary intent of this exercise was to better inform strategic planning and decision making, rather than prioritising external disclosure, to maximise the value of the climate scenarios assessment.

This statement acts as a key disclosure on the process and outcomes of the scenario exercise, the results of which have also informed our wider company reporting.

Scenarios developed

Three distinct and plausible scenarios were developed, based on credible external scenarios and peer-reviewed data sets, tailored to Rolls-Royce’s circumstances. A summary of these scenarios is detailed below:

Alignment (<2°C temperature rise)
Strong international alignment to limit global temperature rise to 2°C (the Paris climate goal), or 1.5°C as recognised by most recent science, in an orderly manner. Governments around the world adopt strict product and behavioural standards, high carbon pricing and strategic investments in low carbon alternatives. Pressure from society is relentless and there is acceptance of the need to control carbon emissions and a willingness to pay for low carbon solutions.
Published scenario alignment: RCP 4.5 – 2.6; Sustainable Development Scenario; SSP1

Fragmentation (2-4°C temperature rise)
Progress towards a low carbon economy is fragmented and inconsistent. There is a failure to agree common international policies and commitments. Some economies take a proactive stance with strict regulations, and increasingly regions, countries and even cities implement their own policies. National economic interests compete with climate commitments in unpredictable ways.
Published scenario alignment: RCP 6.0; New & Existing Policy Scenario; SSP3

Volatility (>6°C temperature rise)
Extreme temperature rises and isolated catastrophic weather events result in stringent reactive emissions regulations and policy, although not globally co-ordinated. Extreme carbon pricing is applied, and the pressing need to adapt to violent climate change, especially in protecting infrastructure, dominates investment decisions.
Published scenario alignment: RCP 8.5; Current Policy Scenario; SSP5 & SSP4

Outcomes

The findings of the exercise on climate scenario planning identified a range of potential plausible impacts on the business model and strategy as a result of climate change, many of which relate to the existing company Principal Risks, such as supply chain disruption and business continuity, talent attraction and retention, market shock and competitive environment. Under each scenario climate change acted as a forcing function to accelerate and exacerbate the risk.

As a result, climate change has been recognised a standalone Principal Risk. This refers specifically to the impact of climate change on future revenue generation and was identified in part as a result of this climate scenarios exercise. The risk description reads as follows:

> *Understanding the impact of climate change and recognising the carbon impacts of our products increases our susceptibility to physical and transitional climate-related risks. We will need to transition our products and services to a lower carbon economy. Failure to consider changes in atmospheric conditions could result in changes in maintenance and overhaul requirements, affecting revenues generated by our in-service fleet and jeopardising the viability of a services-based business model. Failure to transition from carbon-intensive products and services, and operations, at pace could impact our ability to win future business; achieve operating results; attract and retain talent; secure access to funding; realise future growth opportunities; or force government intervention to limit emissions.*

The climate scenario planning exercise also identified significant business opportunity in the transition to a low carbon global economy, particularly the need for low and zero carbon technologies to enable and accelerate the transition, which Rolls-Royce is well placed to provide. This has led to our ambition to reach net zero carbon by 2050, ratified through our involvement in the UN Business Ambition to 1.5°C campaign.

The findings of the climate scenario planning continue to be utilised and embedded within our strategic planning and decision making. We recognise there is further opportunity to formalise this integration.

The climate scenarios themselves are subject to review at regular intervals, at least as frequently as every two years, to ensure they remain distinct, plausible and relevant.