

The journey to 2°C Readiness:

The Strategic Approach to Climate Action

12 July 2018

Speakers



Charles Henderson

Lead, Corporate Climate
Change Risks and
Opportunities



Jeff Swartz

Director, Climate Policy and
Carbon Markets



Dr. Nico Kröner

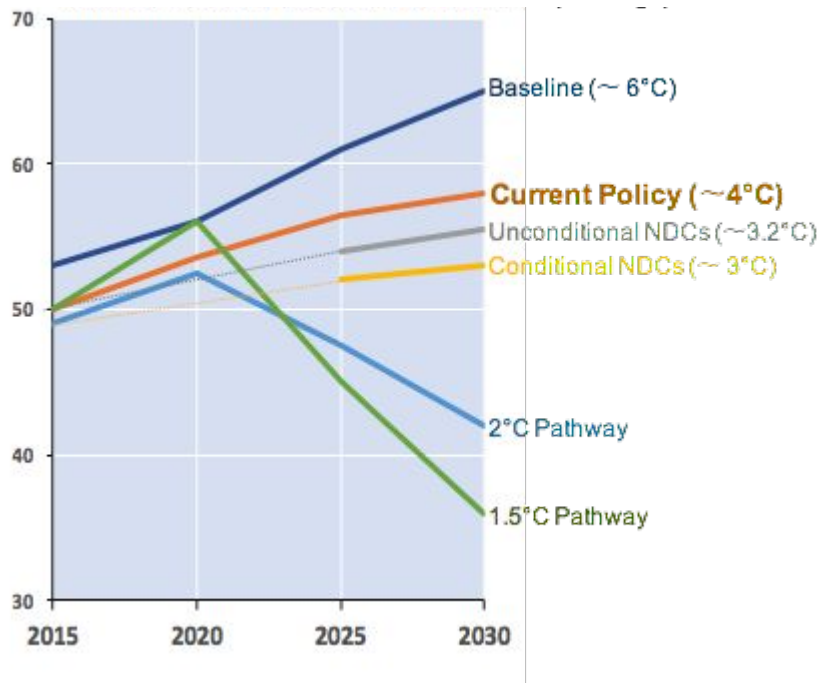
Product Development
Manager, Climate Risks and
Opportunities

Agenda

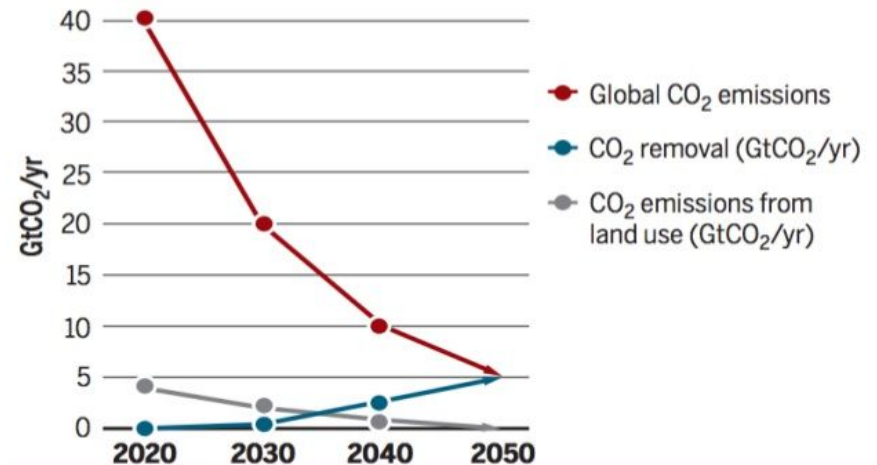
Context and Introduction (Charles Henderson)	10 min
2°C Readiness Programme (Charles Henderson)	5 min
Policy Risks (Jeff Swartz)	10 min
Physical Risks (Nico Kröner)	15 min
Q&A	20 min

Emissions Gap¹ and The Global Carbon Law²

Annual global total GHG Emissions



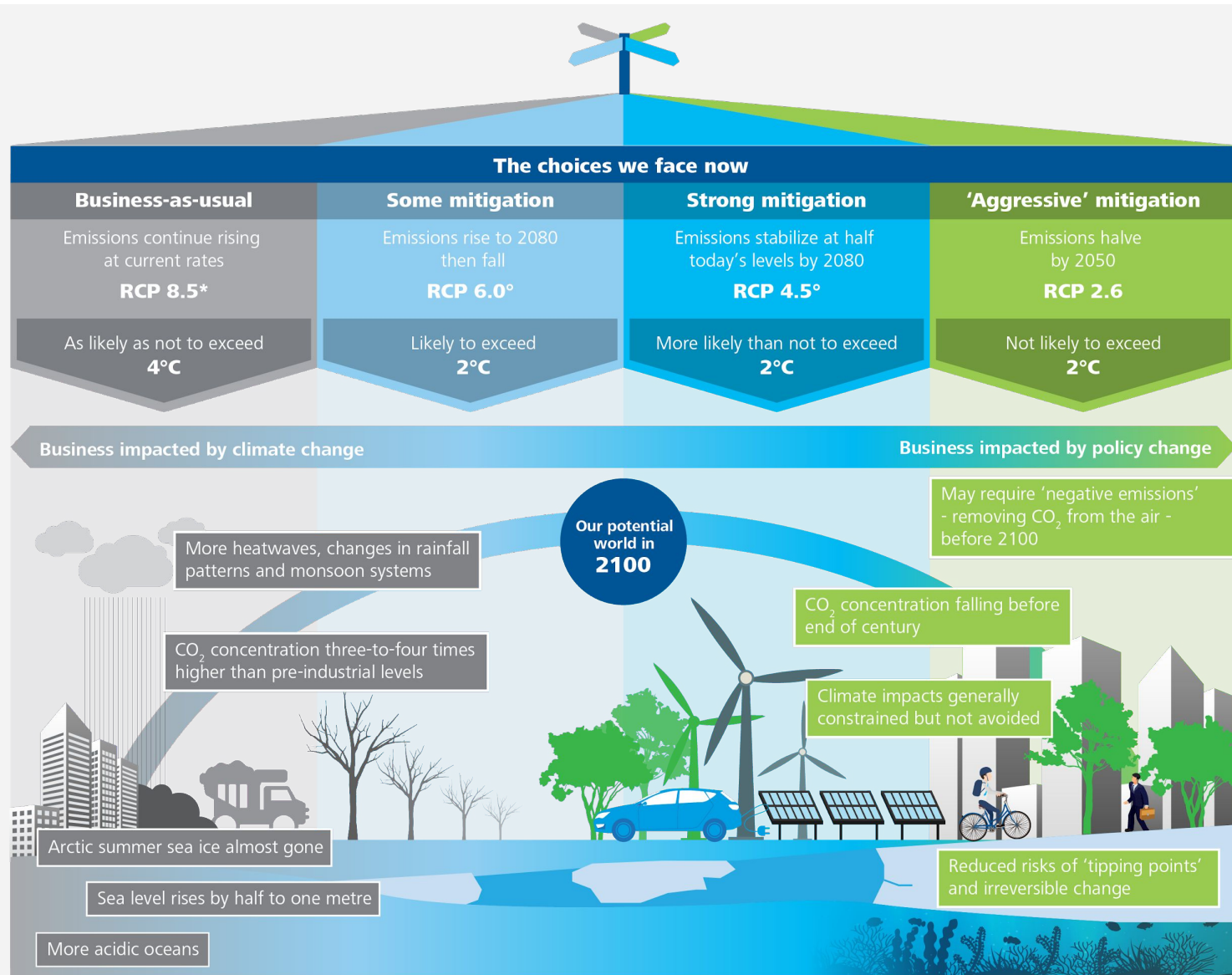
Decade Emissions Pathway to close the gap



- Considerable Emissions Gap; emissions to peak by 2020
- Decadal carbon law: cut global emissions in half every decade from now until 2050
- Corporate climate action is key; SBTs are a promising way to plan deep decarbonisation
- Transformational shift

¹ UNEP Emissions Gap Report 2017

² Rockström et. al (2017), A roadmap for rapid decarbonisation, in *Science Volume 355 Issue 6331*



*The four RCP (Representative Concentration Pathway) scenarios each predict carbon emissions and resultant warming
 Source: IPCC 5th Assessment Report, Climate Change Action, Trends and implications for Business, 2013

Trillions at Risk



- \$2.2 Trillion of economic output at risk by 2025 ¹
- Up to \$24 trillion of assets (18% of all global assets) at risk by 2100 in a 2.5°C scenario ²

Trillions of Opportunities

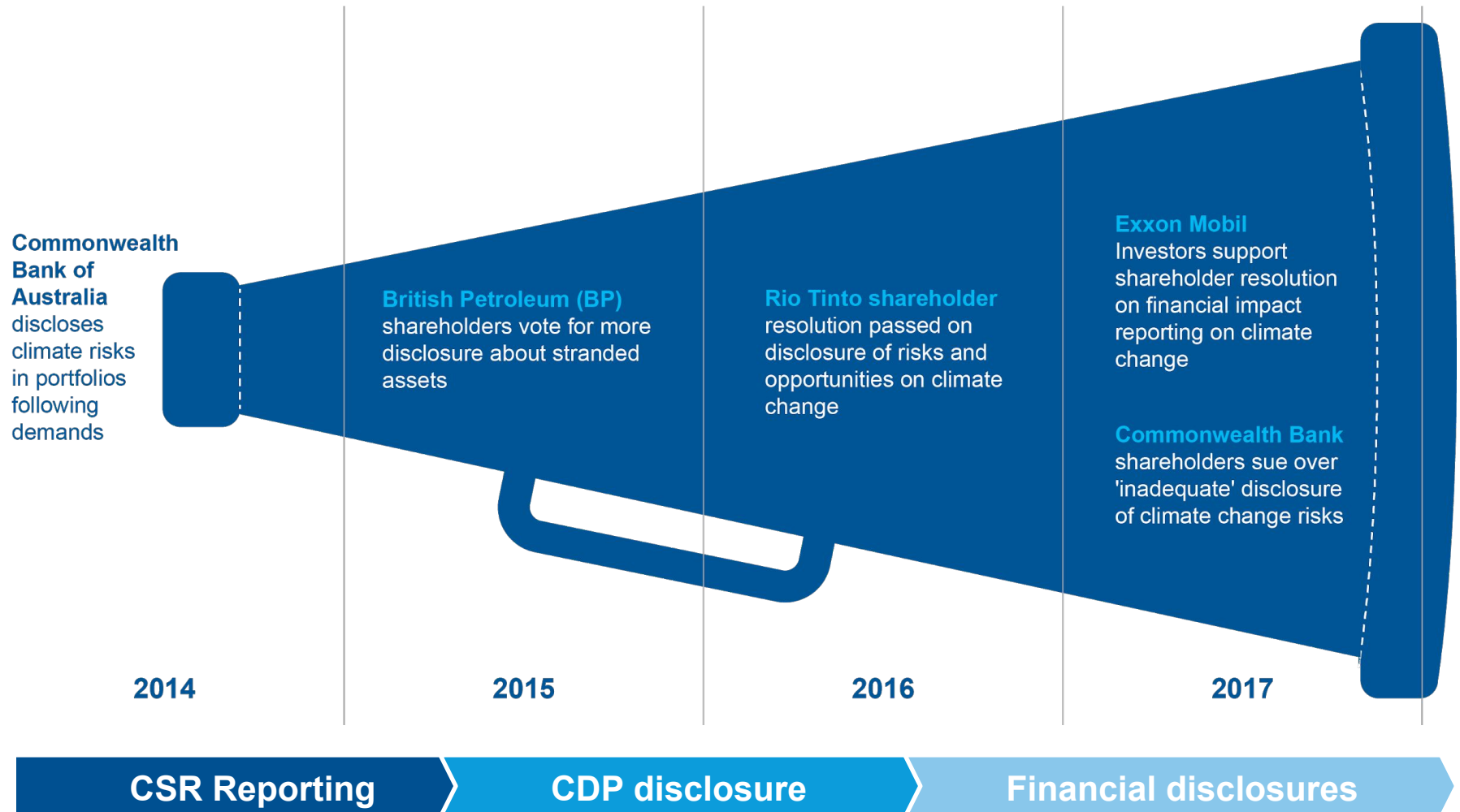


- Prominent Example: Competitiveness of Renewables
- \$12 trillion investment opportunity of achieving the climate related UN SDGs (incl. Food and agriculture, energy, cities, materials, well-being)

¹ Harvard Business Review, 12 June 2017

² Nature Climate Change (2016), Climate Value at Risk of Global Financial Assets

Shareholder demands are also getting louder



“Climate change will threaten financial resilience and longer term prosperity”

Mark Carney, Governor of the Bank of England, December 2015

GOAL

Universal disclosure of climate risks and opportunities in mainstream financial filings under consistent reporting framework

OPPORTUNITY

Drive internal best practice on climate change and provide much needed investor transparency

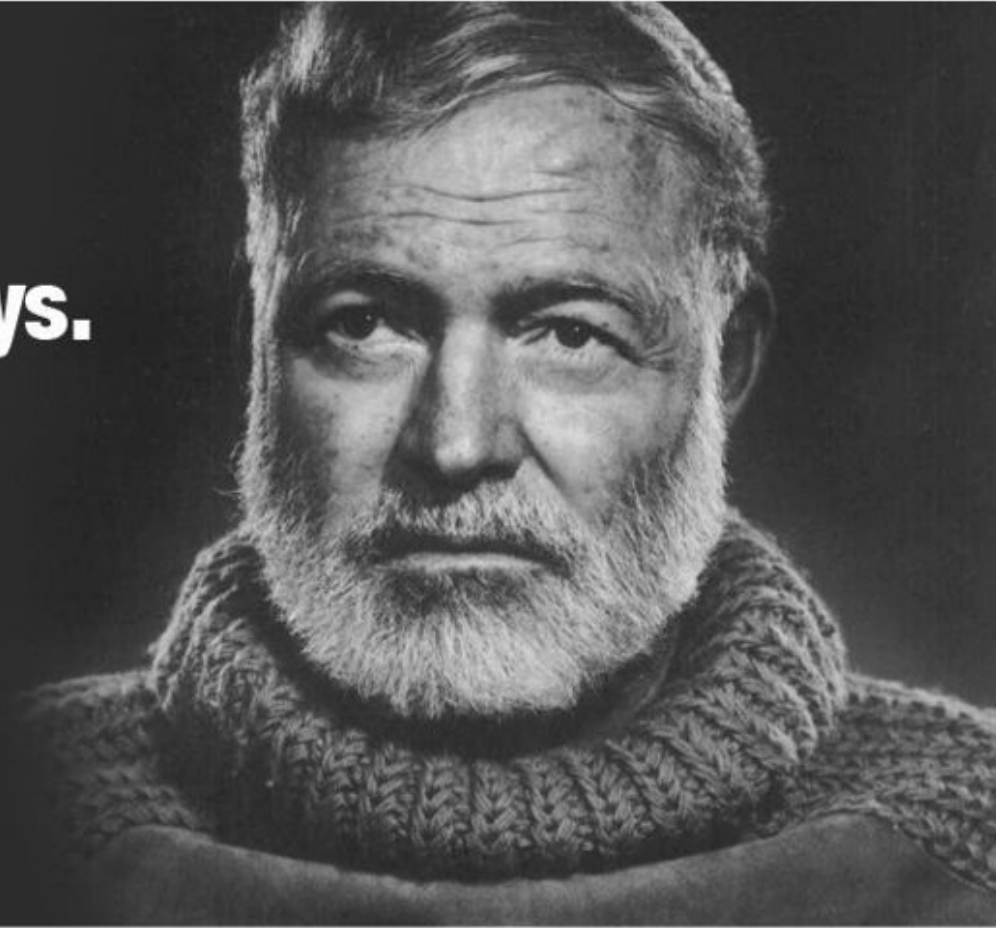
ACTION

Assess and improve climate Governance, Risk Management, Strategy and Metrics and Targets

Tipping Points

**How did you go
bankrupt? Two ways.
Gradually, then
suddenly.**

Ernest Hemingway



Agenda

Context and Introduction

2°C Readiness Programme

Policy Risks

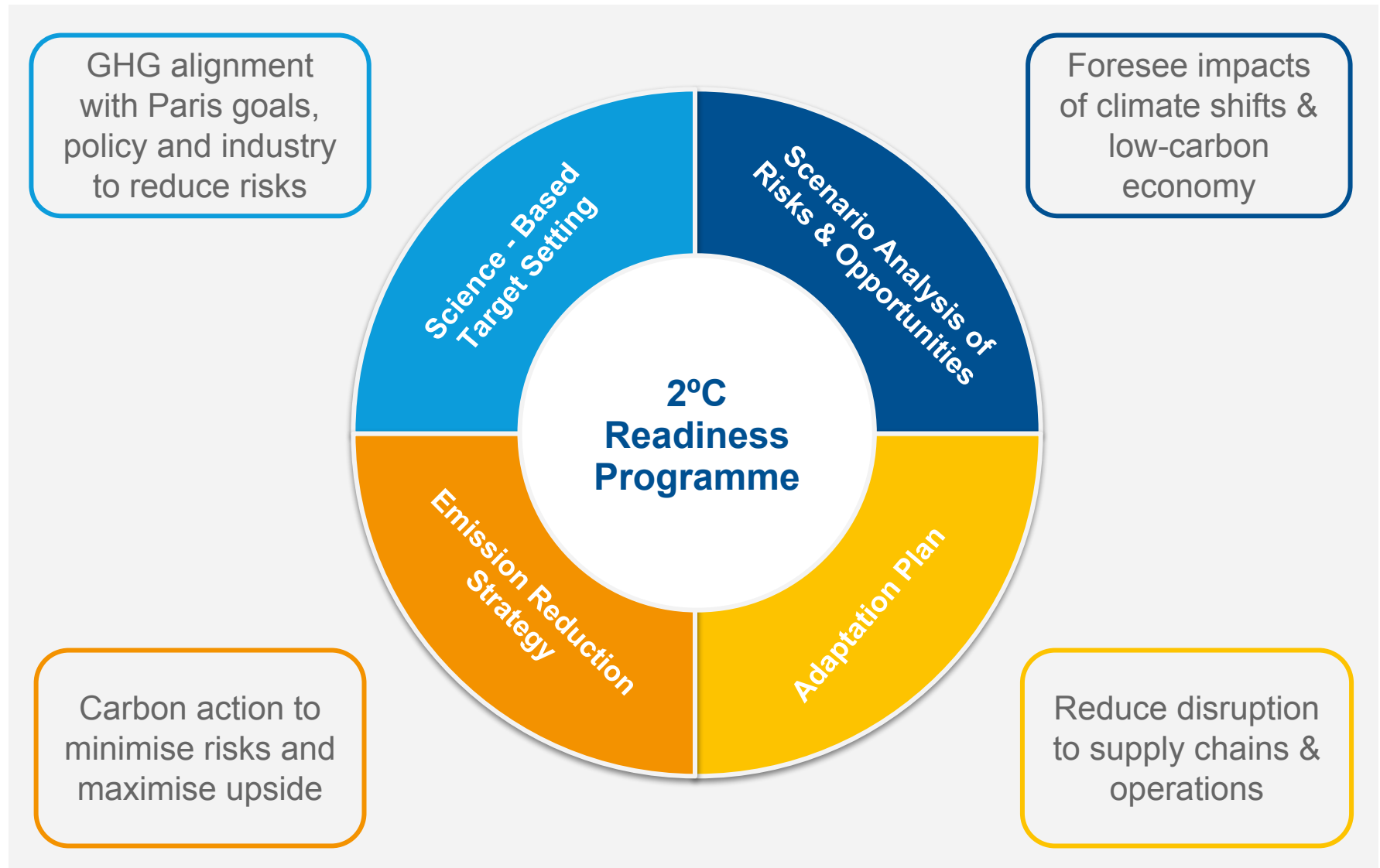
Physical Risks

Q&A

The 4 dimensions of 2°C readiness



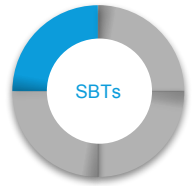
Providing resilience and competitive advantage



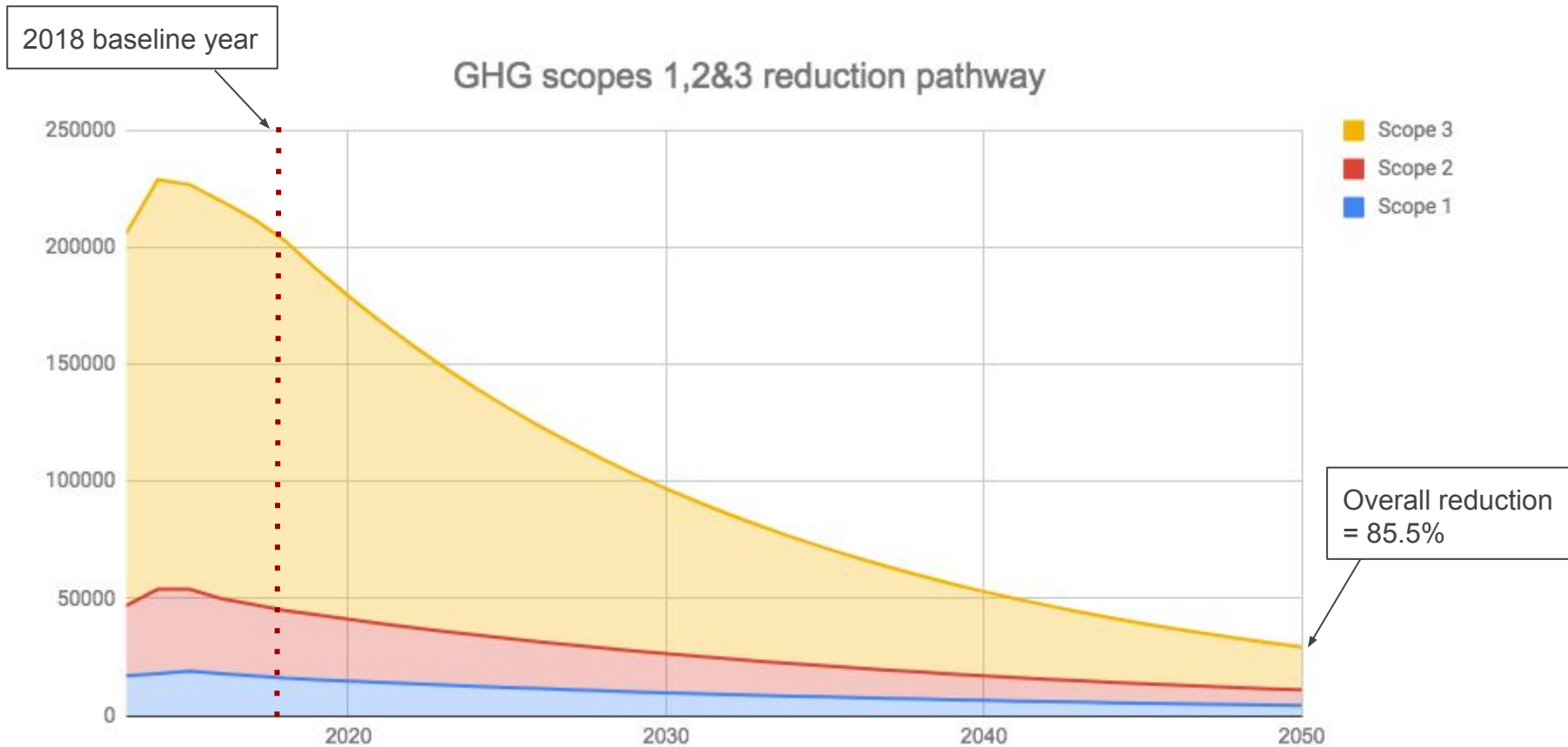
Science-Based Targets



2°C science-based GHG emissions reduction target



We design suitable GHG reduction targets based on the latest scientific and technology developments, bearing in mind financial and practical constraints.



Scenario Analysis



Step 1

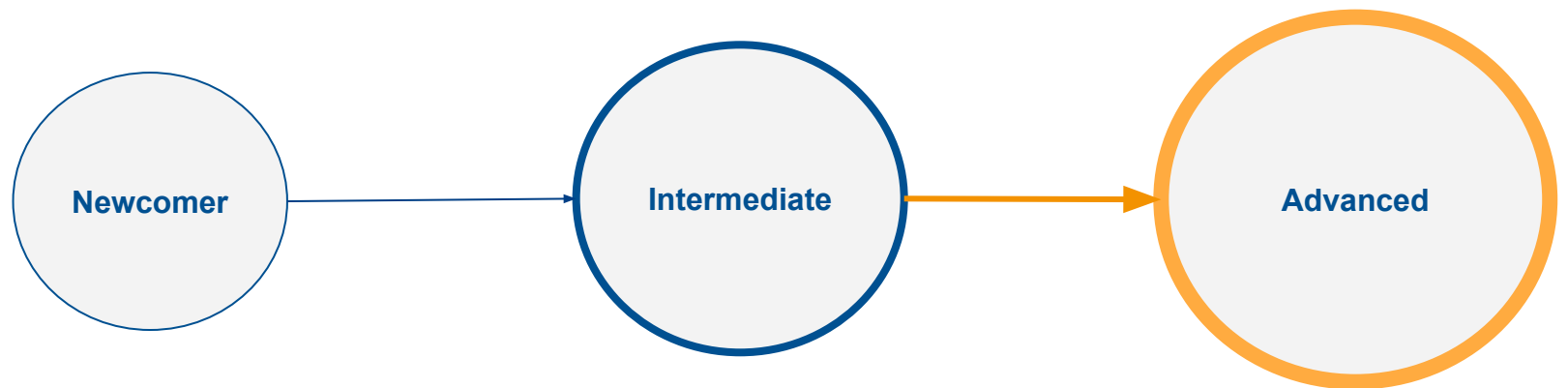
Scenario selection

Step 2

Risk analysis

Step 3

Reporting and disclosure

C. Selecting a scenario off the shelf

- IEA 2°C scenario
- IPCC RCP4.5 or 8.5 scenario
- Low resolution data
- Qualitative data
- 2-3 major risks

- IEA 2°C scenario
- IPCC RCP4.5 or 8.5 scenario
- Mostly quantitative data with some qualitative data
- >3 risks

- IEA and/or SSP scenarios with sensitivity
- IPCC's 4 RCPs
- High resolution data
- Mostly quantitative data and quantitative financial impact
- As much risks as possible
- Scenario against SBTs

Emissions Reduction Strategy



2°C GHG emissions reduction strategy

We develop a viable programme of GHG emissions reduction to meet your targets.



Adaptation Plan



Adaptation solutions (examples)



Our deliverables



Illustrative example



(Source: confidential clients
Global manufacturers)

Agenda

Context and Introduction

2°C Readiness Programme

Policy Risks

Physical Risks

Q&A

Paris Ratification is near **HERE**

193

Parties **signed** the Agreement

175

Parties **ratified** the Agreement
(status March 2018)

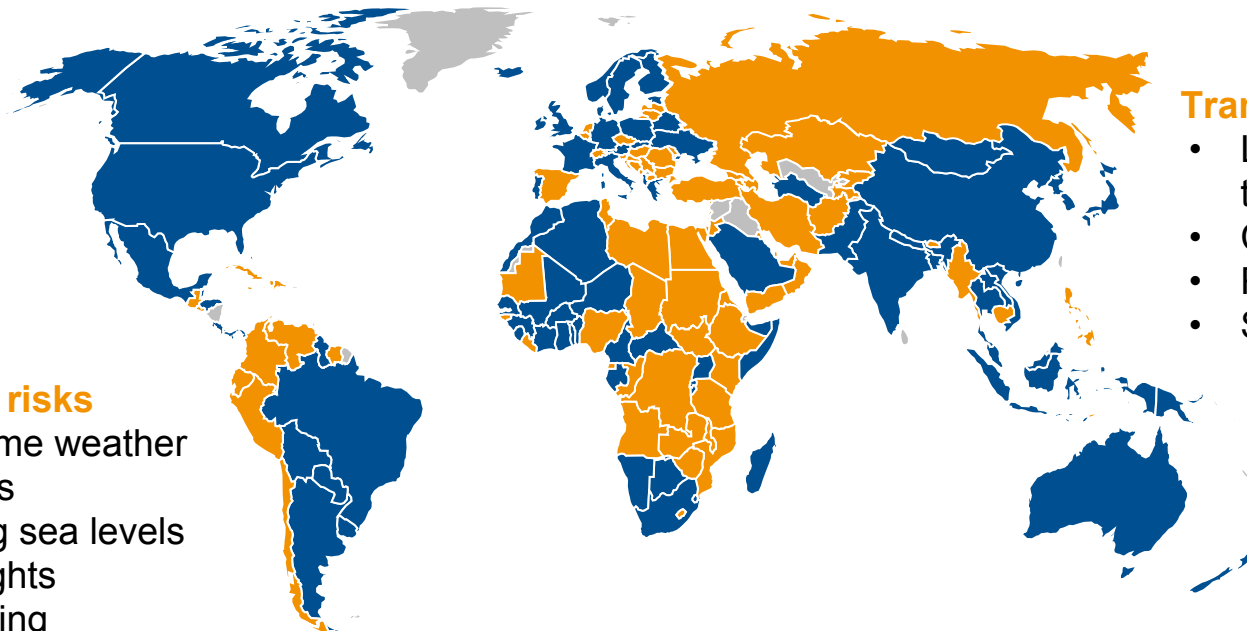
+80%

of the total global greenhouse gas emissions covered (status March 2018)

Source: climateanalytics.org

Physical risks

- Extreme weather events
- Rising sea levels
- Droughts
- Flooding



Transitional Risks

- Loss of license to operate
- Carbon Pricing
- Regulation
- Societal change

Paris Agreement: Towards Implementation

Decisions must be adopted by 2018 on a range of topics:

- ✓ Mitigation
- ✓ Adaptation
- ✓ Finance
- ✓ Transparency
- ✓ Global Stocktake (2023 Start)
- ✓ Implementation & Compliance
- ✓ Market Mechanisms



Challenges for a 2°C World



Invested
2010-2014
\$1.1 trillion

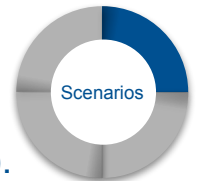


Needed to support
NDC pledges
\$13.5 trillion

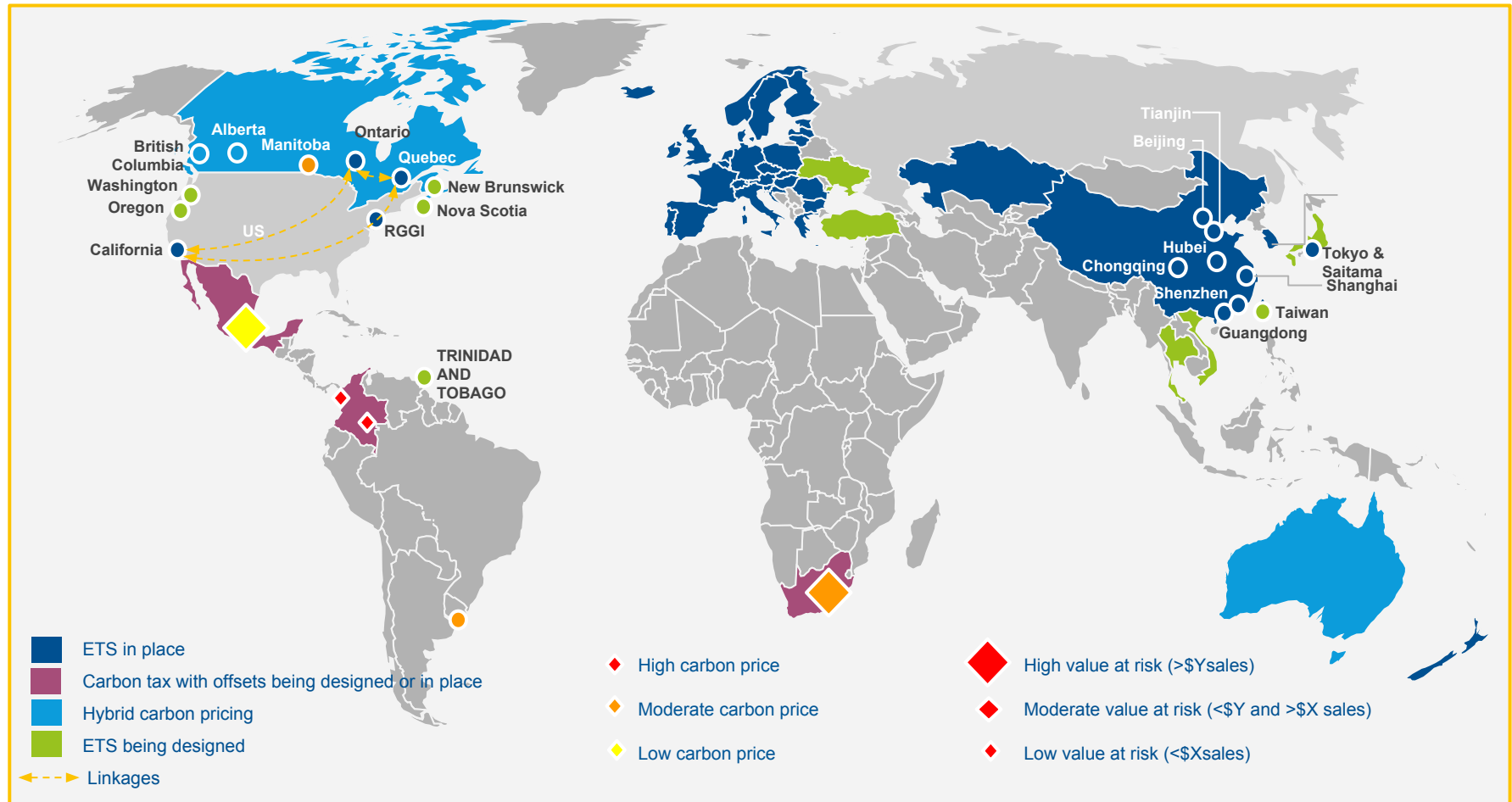


Needed to limit
to 2°C
\$16.5 trillion

Example: carbon & policy risks



Our solution assesses the financial impact of carbon taxes and emission trading schemes (ETS). These may be assessed against varying time horizons (immediate, short term and long term), a selection or full inventory of assets in your portfolio and optional 'boundaries' of operations & supply chains / GHG scope.



Carbon pricing

Progress in 2018

- **Carbon Pricing expanding across the globe**

North American markets starting to grow, China's ETS has 'officially' begun, and many countries exploring carbon pricing (Mexico, Colombia)

- **Reforms to the EU ETS now having a real effect**

Improved economic outlook in Europe has improved confidence amongst market players and prices have risen by 100% since 2017. EU governments collecting €1 billion monthly from EUA sales

- **CORSIA moving towards implementation**

Focus in 2018 is on MRV and finalising SARP's, offset purchasing amongst airlines not expected until after 2020

- **Article 6 rulebook eagerly awaited**

Governments, NGO's and private sector all awaiting rules on how Article 6 will be implemented so policy decisions and business plans on cross border emissions trading can take effect.

Carbon as a transition risk

Carbon pricing is a key policy risk, but there are other policy risks at play in key countries and regions

- Supply chain commitments are changing global commodity supply chains. 65% of all traded palm oil covered under zero-deforestation commitments.
- Brazil and Indonesia have set moratoriums on production of soy and in peatland areas
- Ambitious EV policies have been announced in Norway, China, etc.
- Since the start of 2018, more countries are aiming to reduce plastic consumption more seriously.

Agenda

Context and Introduction

2°C Readiness Programme

Policy Risks

Physical Risks

Q&A

Climate change - physical risks are already posing a threat

Increase in Cat4 hurricanes making landfall drives up insurance premiums



Suitable coffee and cocoa growing areas under threat, driving higher prices



Water scarcity leads to steep rise in migrants moving north, creating investment instability



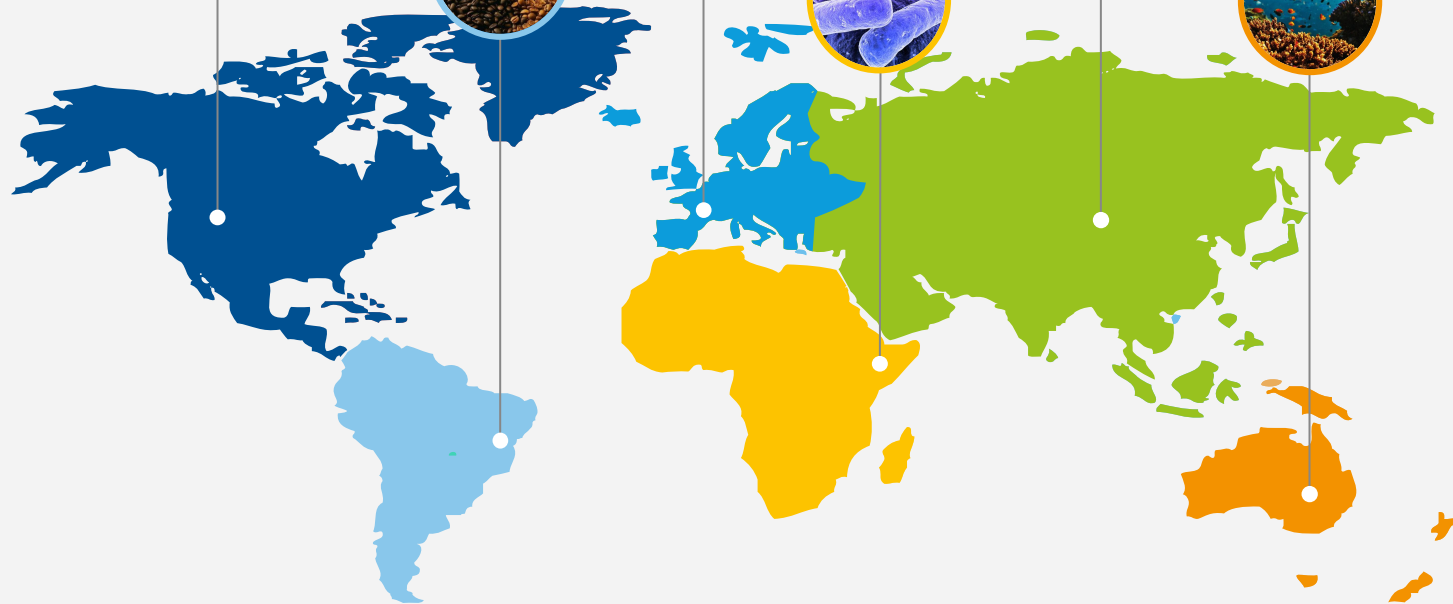
Rising bacterial infections lead to travel restrictions



Famine and commodity shortages as wheat production drops on the Ganges plain



Collapse of Great Barrier Reef tourism due to coral bleaching



Step 1
 Risk inventory

Step 2
 Timeline

Step 3
 Granularity

Choosing relevant physical risk categories

1. Analyse historical impacts
2. Start from general assessments

	Extreme wind	Extreme rainfall and floods	Extreme heat	Precipitation Variability	Variability in temperature	Water Stress	Sea level rise	Overall sensitivity
Financial Services	Low	Medium	Low	Low	Low	Low	Medium	low
Insurance	High	High	Medium	Low	Low	Medium	High	Medium
Gas and Utilities	Medium	High	High	Medium	Medium	High	High	High
Infrastructure	High	High	Medium	Low	Medium	Low	High	Medium
Retail	Low	Medium	Low	Low	Low	Low	Medium	Low
IT (Semi-conductor, hardware and equipment)	Medium	High	High	Medium	Low	Medium	High	Medium
IT (Software)	Low	Medium	Low	Low	Low	Low	Medium	Low
Advertising (Media)	Low	Medium	Low	Low	Low	Low	Medium	Low

Step 1

Risk inventory

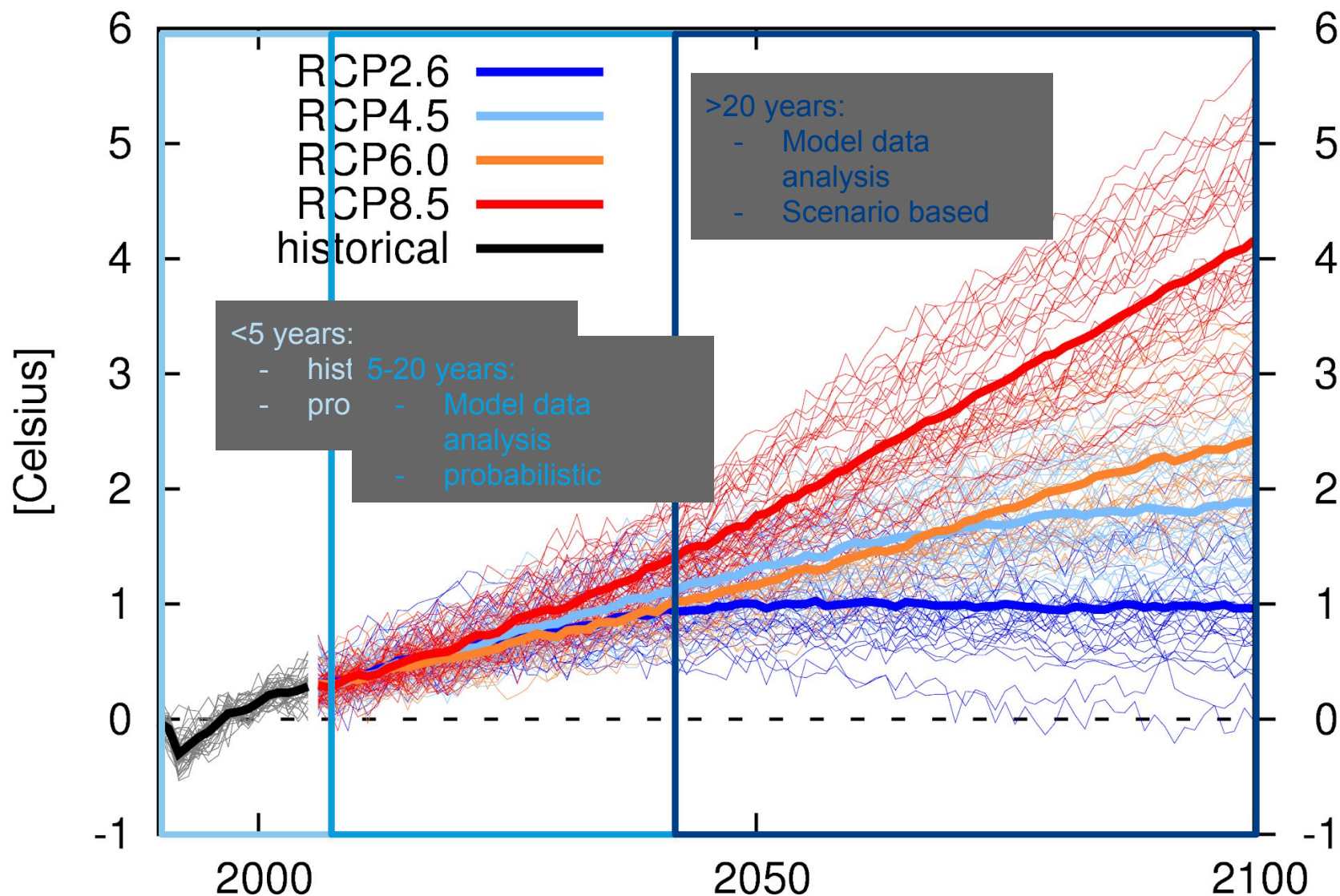
Step 2

Timeline

Step 3

Granularity

Timeline the critical parameter

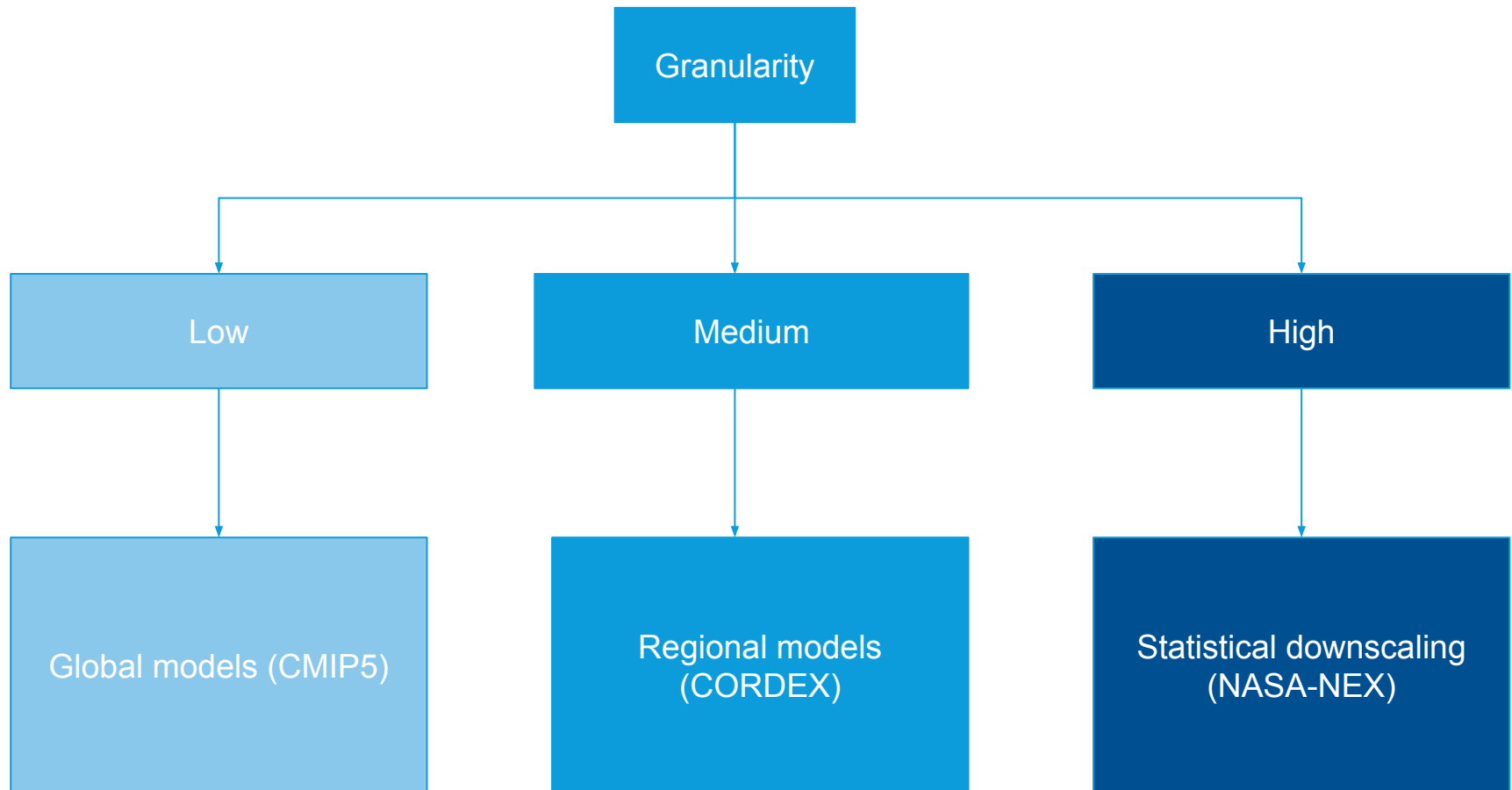


Step 1
Risk inventory

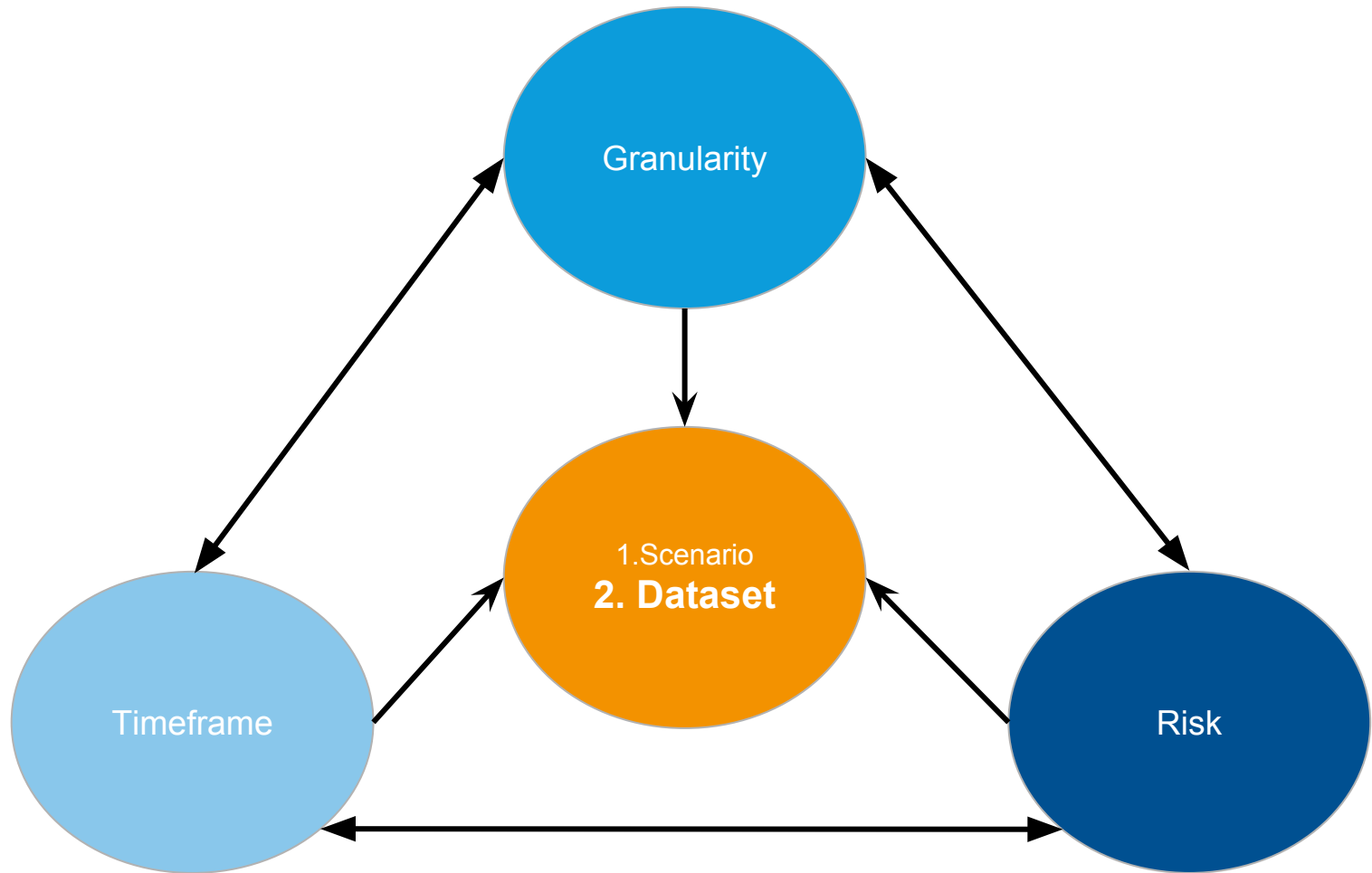
Step 2
Timeline

Step 3
Granularity

Granularity a question of budget and data availability?



Selecting the right scenario and dataset



Selecting the right scenario and dataset

Scenarios	Transition	Physical	°C	Timeframe	Geography
RCP - Representative Concentration Pathways (IPCC)	No	Yes	1-5°C	2010-2100	World wide
TCS - Temperature change scenarios	No	Yes	1°C, 2°C, 3°C, 4°C	No time attached	World wide

Datasets	Dynamic	Statistical	Scenario	Timeframe	Geography	Risks	Resolution
Global model intercomparison project 5 (CMIP5)	Yes	No	RCP, TCS	2010-2100	World wide	All	100km x100km
Coordinated regional climate model experiment (CORDEX)	Yes	No	RCP, TCS	2010-2100	World wide (Different ensembles for regions)	All	25km x25km
NASA-NEX	No	Yes	RCP, TCS	2010-2100	World wide	Temperature and precipitation	25km x25km

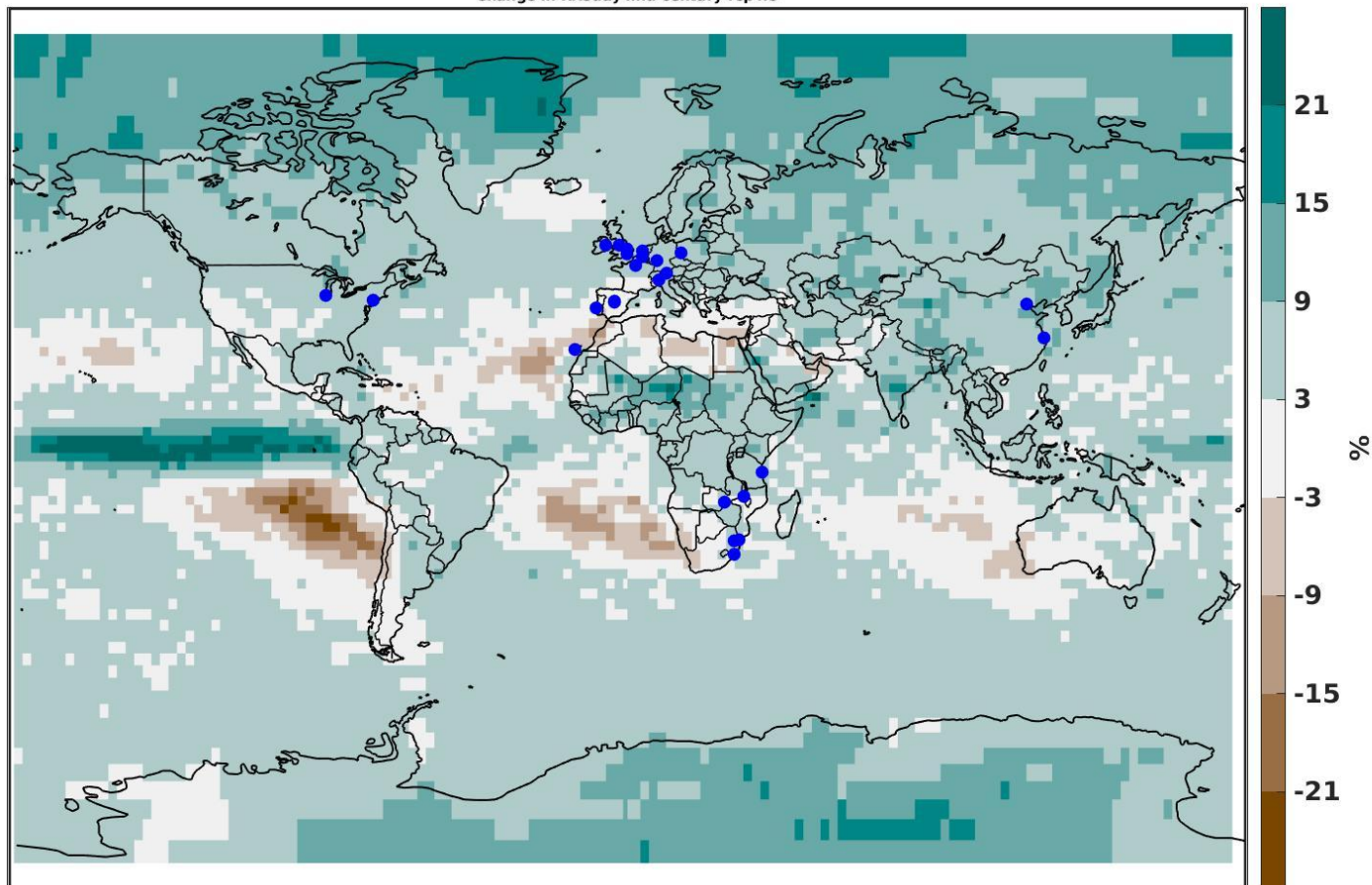
Physical risk analysis

Examples for physical risks analysis and the appropriate indicators/metrics, models and datasets

RISK CATEGORY	Acute: heatwave	Acute: heavy precipitation	Chronic: water	Chronic: sea level rise
METRICS	Additional days affected by extreme heat	Percentage of assets affected / damage to the asset	Percentage of water withdrawn / average water price	Locations within endangered coastal zones
MODELS	Climate model output, dynamical downscaling	Climate model out, statistical analysis	Shadow water prices	global digital surface model (DSM)
DATA	IPCC datasets: CMIP5, CORDEX	IPCC datasets: CMIP5, CORDEX	Aqueduct tool, in-house analysis	ALOS Global DSM, global sea level rise.

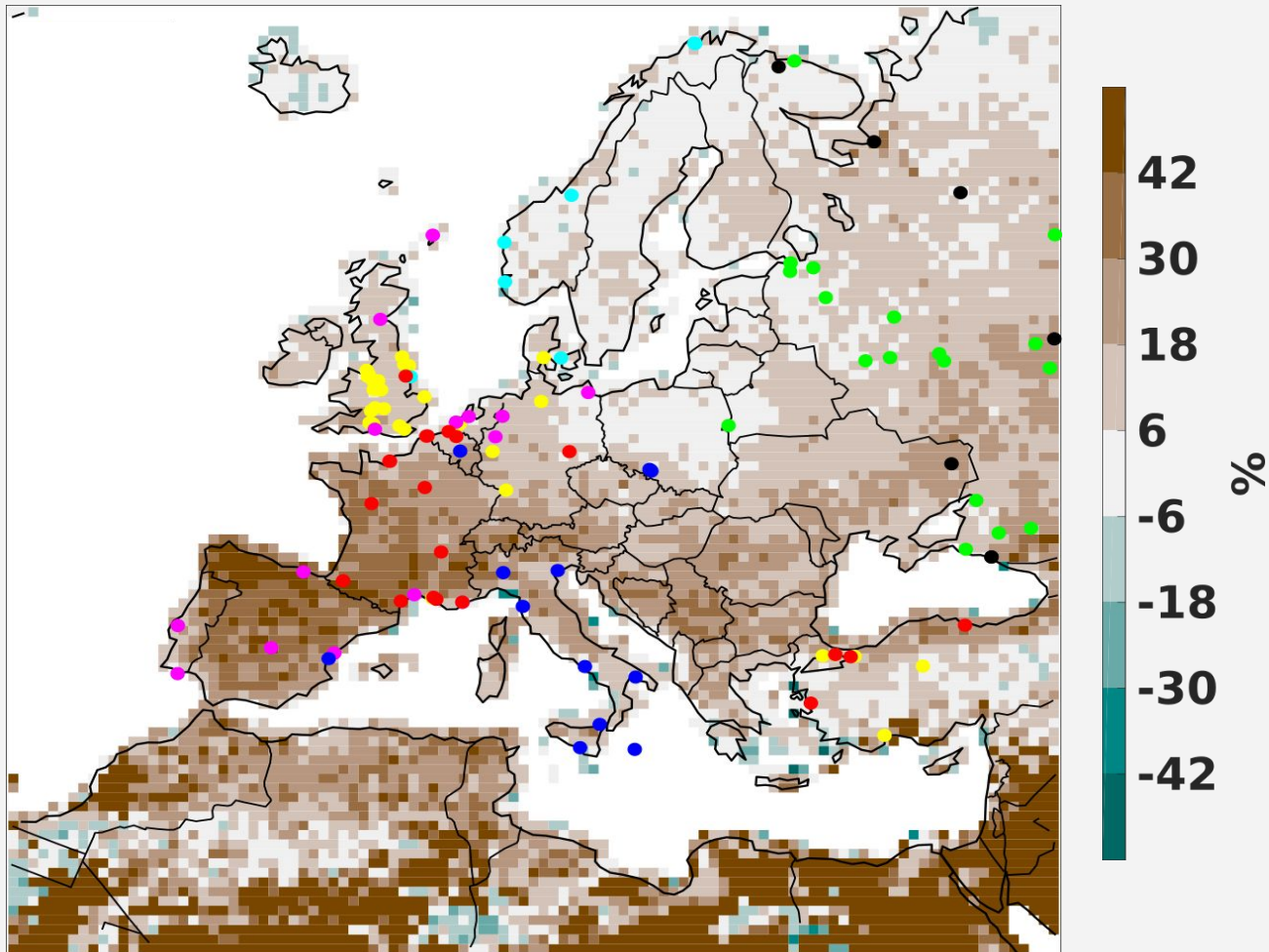
Example: Heavy precipitation

Hotspot analysis: Climate change for heavy precipitation and asset location. Change for mid-century 2040 and climate change scenario RCP4.5.



Example: Drought

Hotspot analysis: Change in risk due to drought and asset location. Change for late-century 2080 and climate change scenario RCP8.5.



Example: assessing water risk

Using the newest water stress projections¹, we will identify which of your assets are most exposed to water shortages globally.



Figure shows the water risk on asset level. The key shows water stress (from 1 = low to 5 = very high), with the size of the marker showing water consumption of the respective facility.

Agenda

Context and Introduction

2°C Readiness Programme

Policy Risks

Physical Risks

Q&A

Q&A

The background of the slide features a collection of 3D question marks. Most are light blue and semi-transparent, creating a sense of depth. One question mark on the right side is a solid, darker blue and is more prominent than the others. The text "Any questions?" is centered over the image in a bold, blue font.

Any questions?

Thank you

southpole.com

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Offices worldwide

Amsterdam, Bangkok, Beijing, Berlin, Bogotá, Hanoi, Jakarta, London, Madrid, Medellín, Melbourne, Mexico City, New Delhi, San Francisco, Singapore, Stockholm, Sydney, Valencia, Zurich.



Back-up Slides

Objectives, format and context

Context and rationale for scenario analysis

Why perform climate scenario-analysis?



Sustainable business rationale

- Reducing fossil fuel risk exposure
- Energy cost saving
- Preparing for carbon pricing
- Future-proofed technology
- Resilient operations and supply chains
- Employee satisfaction

TCFD

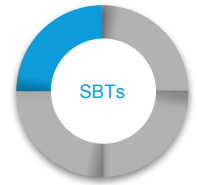


Investors, governments, NGOs and consumers pressure

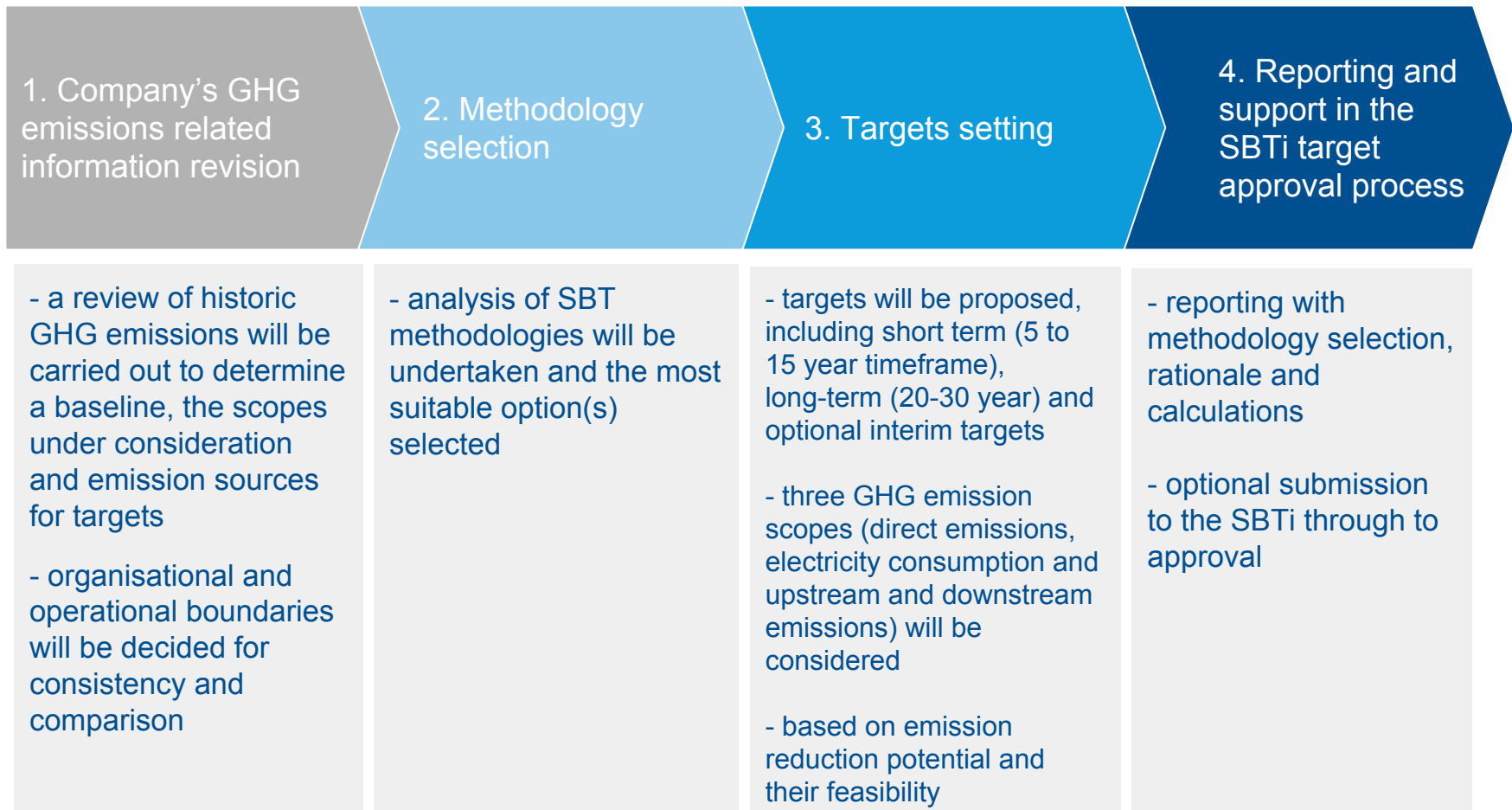
- Task Force on Climate Related Financial Disclosure (TCFD) reporting
- Carbon Disclosure Project (CDP) reporting
- Article 173 of the French Energy Transition Law
- Climate Action 100+
- More to come?

The 2°C elements in more detail

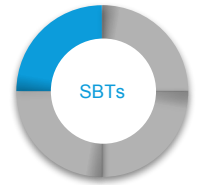
2°C science-based GHG emissions reduction target



“Businesses can ensure they are playing their part in the global effort to limit global warming to well below 2 degrees celsius by setting a science-based target.” SBTi



Science-based target methodologies



Our team of climate experts will help you to choose the appropriate SBT methodology based on your company's information, resources, and needs.

Approach		Description	Methods
1	Sector-based	Based on carbon budgets specific to the company's sector determined by peer reviewed projections	• Sectoral Decarbonisation Approach (SDA) • 3% Solution (US located companies only)
2	Absolute-based	Linear absolute emissions reduction approach aligned with the carbon budget determined in climate reports, e.g. 49-72%	• Absolute contraction
3	Economic-based	Based on the average emission reduction estimated in climate reports per projected economic output.	• Corporate Finance Approach to Climate-Stabilization Targets (C-Fact) • Climate Stability Intensity Targets (CSI) • Center for Sustainable Organisations (CSO) • GHG emissions per value added (GEVA)

2°C GHG emissions reduction strategy



Our team of climate experts will help you to develop your high level GHG reduction strategy so you can meet your targets.

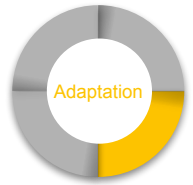
Method

- Understanding existing material factors included in your strategy, including corporate vision, budget and decision making process
- Identifying renewable energy sourcing options, including on-site generation, RECs procurement or PPA signing
- Energy efficiency initiatives, paying special attention to no-cost and low-cost measures
- Analysing the value chain for emission sources and opportunities for GHG emissions reduction and carbon project development
- Delivering a workshop with key staff for capacity building and/or awareness raising purposes
- Recommend options to mitigate policy and liability risks

Outcomes

- Report with GHG mitigation strategy

2°C adaptation strategy



Our team of adaptation experts will help you develop a resilience strategy for your operations and supply chain taking into account the most significant 2° impacts of climate change, arising from temperature rises and precipitation changes. These include heat waves, water stress and ecological shifts.

Method

- Longlist major physical risks in operations & supply chains
- Run workshop with key staff e.g. operations, procurement, supply chain
- Develop resilience recommendations e.g. water conservation, raw material supply, soil carbon

Outcomes

- Report with prioritised programme of activities for climate resilience including water conservation, materials, soils, suppliers. Optional implementation timetable.

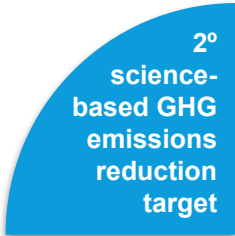
Costs

Indicative Professional Fees

Module	Offering	Information requirements	Caveats	Indicative Fees (€) ex VAT
 2° scenarios risks analysis	High-level risks mapping. This includes, water risks, heat stress, sea level rise, precipitation and policy risks.	Material factors for the company (e.g. specific locations, products, sites, interests, stakeholder groups). Site locations. Detrimental impacts experienced and documented by the company.	Supply chain is excluded from the scope of work for this budget. A maximum number of sites will have to be agreed. A more advanced work package (with a bespoke budget) could include: • Legal, technology, reputational and market risks analysis • Carbon pricing • Water pricing • Tailored physical risk assessments	€10,000

- Fees shouldn't be the sole determinant in your decision-making, we will be happy to work with you towards a customised work plan
- In addition to professional fees, out-of-pocket expenses will be charged as incurred
- This proposal does not constitute a contract and will be subject to acceptance by both parties and contracts

Indicative Professional Fees

Module	Offering	Information requirements	Caveats	Indicative Fees (€) ex VAT
	SBT setting and support in the target setting process	Historic and recent GHG inventories and other related information. Organisational and operational boundaries set for the GHG emissions inventories. Information on the company's: • Core activities and sectors • Growth projections • Most important countries for their operations • Targets already in place • Internal and external commitments • Resources (budget) restrictions	SBT emission reduction targets rely on sound GHG data, particularly for Scope 3. This budget does not include a “quick” GHG estimation, which would be budgeted separately (if needed). Support in the target setting process is concluded on the final decision from the SBT initiative. We cannot assure the decision of the SBT initiative will be positive. This will rely on an ambitious target to get a successful resolution.	€10,000

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Indicative Professional Fees

Module	Offering	Information requirements	Caveats	Indicative Fees (€) ex VAT
	High-level GHG emissions reduction strategy	Organisational and operational boundaries set for the GHG emissions inventories. GHG emissions inventories (most recent and, if possible, also historical data). Company's portfolio of actions under implementation or considered for further analysis. Projected budget for GHG reduction activities. Contact information of key team members taking part (or that could potentially lead) GHG emission reduction initiatives.	Only Energy Efficiency measures already documented by the client can be considered in scope. This budget comprises a high-level estimation based on data provided by the client. Scope 3 emission reduction opportunities can only be estimated if the Company's GHG emission inventory includes these. Deliverables considered are: • Executive report with the strategy • Presentation of findings to the client	€10,000

- Fees shouldn't be the sole determinant in your decision-making, we will be happy to work with you towards a customised work plan
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Indicative Professional Fees

Module	Offering	Information requirements	Caveats	Indicative Fees (€) ex VAT
 2° adaptation plan	High-level adaptation strategy to climate change.	Inventory of operations and supply chains. Risk inventory including issues under consideration (water, raw materials for supply chains, operations etc) and historical data. Company's portfolio of actions under implementation or considered for further analysis. Projected budget for adaptation activities. Contact information of key team members taking part (or that could potentially lead) adaptation initiatives.	Only adaptation measures identified through collaboration (e.g. in the workshop) will be considered in scope. Deliverables considered are: • Executive report with the strategy • Presentation of findings to the client	Price on application Budget will be based on complexity of operations and supply chains

- Fees shouldn't be the sole determinant in your decision-making, we will be happy to work with you towards a customised work plan
- In addition to professional fees, out-of-pocket expenses will be charged as incurred
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About us

Why use South Pole?

Our staff of about 250 experts over 16 offices worldwide are passionate about tackling climate change and improving organisations' sustainability performance.

Your complete sustainability team under one roof: industry leaders in risk assessment, climate modelling, carbon costing, target setting, GHG accounting, renewable energy, carbon project development and offsets.

Our team is fully integrated across specialisms and continents, meaning it can meet your every need, and is cost effective and efficient.



Our experience and services in summary

South Pole has over a decade of experience in delivering business value from tackling climate change. We are pioneers in developing climate risk mitigation strategies for corporate and financial clients. We offer a full range of climate change, water and sustainability services.

Our experts can support you with 2° readiness and TCFD compliance through:

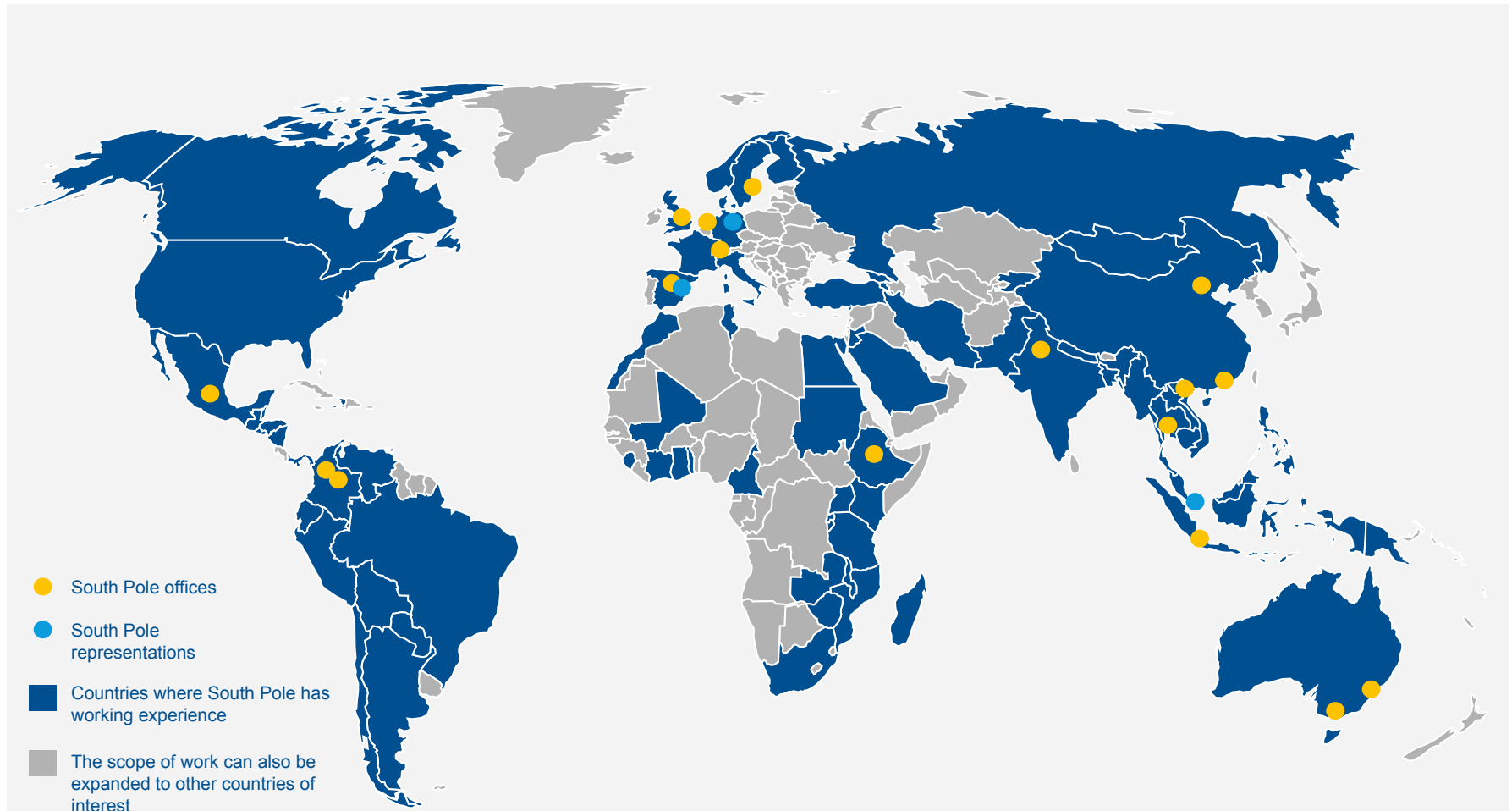
- Physical and transition risk scenario development
- Science-based targets and carbon assessments
- Carbon reduction strategies including energy efficiency and renewables
- Water assessments
- Risk materiality assessments
- Supply chain adaptation plans
- TCFD and CDP filings

Note: South Pole can also support you on a journey to a more rigorous target e.g. 1.5°C



Our global experience

South Pole has worked on carbon, water, and forest projects in countries around the globe. There is the possibility to expand the scope of work into other countries of relevance.



Project References

LM Wind: full company-wide climate neutral programme: GHG accounting, energy efficiency across manufacturing and operations, carbon pricing for a CAPEX tool, renewable solutions, carbon offsets



L'Oréal: Improving and identifying opportunities for the strategic integration of L'Oréal sustainability initiatives into the CDP Water Programme 2016.



Tobacco sector (confidential): GHG accounting and reporting services, including direct and indirect emissions, with special focus on Scope 3 emissions from a smoke-free product portfolio. Providing broad water-related services, including developing and delivering a water risk assessment approach, and monitoring process.



Food sector (confidential): Disclosing of performance and actions: climate change, water security, forests and supply chain. Additionally, understanding water risks at a global level for mapping hotspots and outlining following steps to converting risks into opportunities.



CDP Strategic Partnership: Scoring partner of 350 companies in CDP water program. Included analysis of supply chain water impacts.



The 4 dimensions of 2°C readiness



The 4 dimensions of 2°C readiness

