



SCIENCE
BASED
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Raising the Bar

Exploring the Science Based Targets initiative's progress in driving ambitious climate action



Foreword

When the Science Based Targets initiative (SBTi) was launched in 2015 our goal was clear: for companies across the globe to set targets to reduce their greenhouse gas (GHG) emissions according to what science showed was needed to avert dangerous climate change. A simple idea, but also a step-change in how companies thought about climate action.

Since then, many of the world's largest companies have responded to this call to action. As of November 2019, more than 700 companies are setting science-based GHG emissions reduction targets - and many more are joining the movement every week.

These companies represent 45 sectors—from chemicals to construction, and from textiles to telecom, spanning 46 countries around the globe. Together, their operational emissions total more than 1 billion tonnes of CO₂e, more than the annual emissions of Germany. Their combined market capitalisation is over \$10 trillion USD.

They are at the vanguard in the fight against climate change and are demonstrating to decision-makers in governments, financial markets, and the private sector that operating within the scientific threshold for a climate-safe world goes hand-in-hand with a successful business and economy.

A fledgling initiative has snowballed into a global movement.

As a uniquely collaborative endeavour, the SBTi has had remarkable success in driving ambitious, science-based climate action in the private sector. The initiative has evolved, learning and adapting in the process to better serve its purpose. Yet, we are still only at the beginning of this journey and much remains to be done.

This report takes stock of the progress the SBTi has made since its launch and explores its impact across the globe. The report also analyses where progress is uneven and where additional efforts are necessary to drive the level of ambition and action we understand is necessary from the private sector to meet the goals of the Paris Agreement.

For the highest emitting sectors, the steps they must take are nothing short of transformative. However, ambition and innovation are the backbone of any successful business, and some of the world's highest emitters are proving that they are more than up to the challenge.

As the SBTi embarks on its next chapter, let us celebrate how far this movement has come and renew our focus on driving transformative climate action from the private sector.



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Summary

The Science Based Targets initiative (SBTi) drives ambitious climate action by mobilising companies to set science-based targets (SBTs), GHG reduction targets that are aligned with what climate science tells us is required to meet the goals of the Paris Agreement.

Since its launch in 2015, the SBTi has made significant progress against its goal of making science-based target setting standard business practice.

Strong growth in adoption of SBTs

As of October 31st 2019, 686 companies have publicly joined the SBTi and 285 of these have had their targets officially approved. Notably, the pace at which companies join the initiative has doubled over the past 18 months, with 352 companies, (19 per month), joining between April 2018 and October 2019, compared to 334 companies, (9 per month), in the previous 36 months between April 2015 and March 2018.

The growing momentum is even more pronounced in the number of companies that have had their targets approved by the SBTi, driven by companies turning their commitments into approved targets. In the 18 months between April 2018 and October 2019, the targets of 195 companies were approved, compared to 90 in the three years before.

Several developed economies and sectors like food and beverage are already seeing a critical mass of companies setting SBTs, while first-mover companies in developing economies and sectors like heavy industry and automotive are yet to be joined by their peers.

Evolution of climate science and technical resources

With climate science evolving and the urgency of ambitious climate action becoming ever clearer, there now is even greater transparency on the ambition of companies' GHG reduction targets. More than a quarter of the targets approved by the SBTi are already aligned with limiting global temperature increase to 1.5°C. These companies are joined by others that have pledged to follow their example. Over 100 companies have now joined the 'Business Ambition for 1.5°C' campaign and committed to set 1.5°C-aligned climate targets across their operations and value chains.

Keeping abreast with its growing momentum, the SBTi has significantly updated and improved its target-setting resources and support to companies. Companies now receive a detailed response within 30 business days of submitting targets to the SBTi and improved clarity on methods and criteria have led to 80% of submissions over the past 9 months resulting in approvals.

SBTs are becoming a shared language

The trend towards a broader adoption of SBTs is catalysing the institutionalisation of SBTs as a shared language for climate ambition amongst companies and their stakeholders.

Financial markets, driven by a growing awareness for the enormous financial risks associated with climate change, are using SBTs to guide investment and lending decisions.

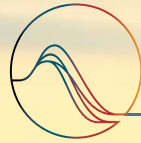
Regulators faced with the task of decarbonising the economy are both encouraging and responding to the ambition companies are demonstrating by setting SBTs.

And over 92% of companies with approved SBTs have set ambitious value chain (scope 3) emissions targets, thereby cascading their ambition to suppliers and customers.

Companies are driving ambitious climate action

Companies that have set SBTs will make significant contributions to global climate goals:

- SBTs cover 752 million tonnes CO₂e of annual scope 1 and 2 emissions, equivalent to the annual emissions of 193 coal fired power plants
- When all scope 1 and 2 targets are met, annual emissions will have been reduced by 35% from the base year, or 265 million tonnes CO₂e, equivalent to shutting down 68 coal fired power plants
- Meeting all scope 1 and 2 targets will drive up to \$18 billion of investment into mitigation activities
- Ambitious scope 3 targets approved by the SBTi cover 3.9 billion tonnes CO₂e, equivalent to the annual emissions of over 828 million cars
- Meeting all targets approved by the SBTi will drive up to 90 TWh of annual renewable electricity generation, enough to power 11 million households.



INTRODUCTION

“ *Having a network of business leaders that are committed to science-based targets in line with the Paris Agreement creates incredible leverage and the opportunity to apply international best practice to dramatically reduce their emissions.* ”

- **Jacinda Ardern**
(Prime Minister of New Zealand)

Introduction

Stopping climate change is the defining challenge of our time. While there is political and scientific consensus on what is needed, the current ambition of global efforts falls short.

With the adoption of the Paris Agreement in 2015, the world's governments made a strong, collective commitment to avoid the worst impacts of climate change "by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius."

Not long after, the IPCC's Special Report on Global Warming of 1.5°C,¹ published in 2018, spelled out the dramatic and far-reaching impacts on humans and nature that even 1.5°C of global warming would bring, highlighting the importance of limiting global warming to this critical threshold. Alongside this sobering assessment of the impact of climate change, the report sent a strong message of urgency for global climate action, but also gave a reason for optimism: we can still meet the 1.5°C goal if the world acts swiftly and decisively, halving global emissions by 2030 and reaching net-zero emissions by the middle of the century.

Yet, the world remains far off-track from reaching the goals of the Paris Agreement while ambitious climate action is simultaneously integral to the achievement of the 17 UN Sustainable Development Goals. Global annual greenhouse gas (GHG) emissions continue to increase and the combined GHG reductions from current national climate targets and non-state actors put us on track to over 3.0°C of global warming by the end of the century² – a level of warming that would have catastrophic consequences for communities and ecosystems across the globe. In short, while climate science clearly spells out the scale of action that is required, we are facing a dramatic gap of ambition.

Closing this gap and enabling the transition towards an economy that generates net-zero emissions will require determined action by a broad range of stakeholders, including national and sub-national governments, businesses, financial institutions and civil society. In this context, the role of the business sector is critical. Businesses have control over the majority of global emissions as well as a unique capacity to develop and rapidly deploy innovative solutions at scale. There is no pathway to

meeting the Paris goals without holding businesses accountable for their impact and harnessing their strengths to deliver the scale and pace of change required. Many business leaders are waking up to the risks and opportunities related to climate change and the accelerating low-carbon transition, and are looking for robust tools to future-proof their growth.³

Recognising the pivotal role businesses must play in the decarbonisation of the global economy, and the need to provide them with credible support in understanding what this means in practice, the Science Based Targets initiative (SBTi) was launched in 2015 to promote the wide-spread adoption of "Science-Based Targets" (SBTs) — corporate GHG reduction targets that are aligned with what climate science tells us is required to meet the goals set out in the Paris Agreement.

What is a 'science-based target'?

Targets adopted by companies to reduce GHG emissions are considered "science-based" if they are 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.

Science-based targets provide companies with a clearly defined pathway to future-proof growth by specifying how much and how quickly they need to reduce their greenhouse gas (GHG) emissions.

This report draws on corporate emissions and target data⁴ submitted to the SBTi and CDP — as well as extensive interviews with businesses and other stakeholders — to explore the progress the SBTi has made in driving the adoption of SBTs by businesses and the impact this has on decarbonising the economy.

¹ IPCC, 2018: Global warming of 1.5°C

² Climate Action Tracker

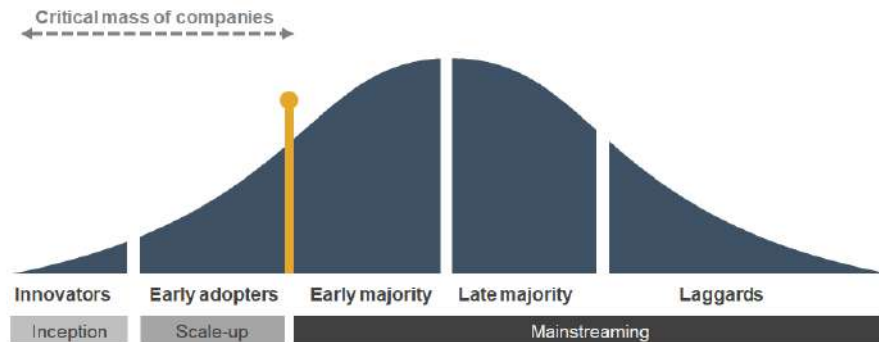
³ To understand more about the many business benefits of setting science-based targets, [please refer to the SBTi website](#)

⁴ All data and figures in this report are current as of October 31st 2019

About the Science Based Targets initiative

The Science Based Targets initiative (SBTi) mobilises companies to set science-based targets and boosts their competitive advantage in the transition to a low-carbon economy. It is a collaboration between CDP, the United Nations Global Compact, World Resources Institute (WRI), and the World Wide Fund for Nature (WWF), and is one of the We Mean Business coalition commitments.⁵

While a growing number of businesses are measuring and reporting their GHG emissions, and many are setting GHG reduction targets, those that have set them aligned with climate science have been a minority. The SBTi's vision is to make science-based target setting standard business practice. In pursuit of this vision, the SBTi follows a theory of change drawing on Diffusion of Innovation theory⁶ i.e. building a 'critical mass' of companies adopting SBTs to reach a tipping point which is followed by the rapid adoption of SBTs by the mainstream of companies - SBTs become standard business practice.⁷






⁵ Please refer to the SBTi's website for further details on its governance: <https://sciencebasedtargets.org/governance/>

⁶ ROGERS, E. M. (2003). *Diffusion of innovations*. New York, Free Press.

⁷ Empirical analysis of the diffusion of innovations in social systems indicates that the adoption of an innovation by 10-25% of system members (the 'critical mass') is followed by rapid adoption by the remaining members. The SBTi assumes the threshold for a 'critical mass' within a given sector or geography to be 20% of companies.

The SBTi's strategy to realise this theory of change has three key pillars:

-  **Remove technical barriers for the adoption of science-based targets** by translating climate science and emission scenarios into accessible and actionable target-setting methods, tools, and guidance.
-  **Create a critical mass of companies with science-based targets** by engaging businesses and providing an independent and objective assessment of, and visibility for, corporate targets that represent best practice in target-setting and align with the goals of the Paris Agreement.
-  **Institutionalise the adoption of science-based targets** by embedding them in and amplifying them through value chains, financial markets, reporting frameworks and regulatory frameworks.

In the SBTi's theory of change these three pillars reinforce each other to drive the mainstreaming of SBTs.

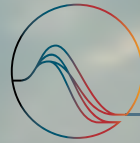
Lowering the transaction costs of setting SBTs by removing technical barriers is an essential enabler for both building a critical mass of companies with SBTs and the subsequent adoption of SBTs by the majority of companies.

Likewise, as a critical mass of companies adopts SBTs, the learnings from a larger and broader user base enhances understanding of the barriers to adoption and ways to overcome them. This enables the SBTi to continuously improve the support it provides to companies.

A critical mass of companies also enables the institutionalisation of SBTs. With their growing adoption, SBTs are becoming a powerful tool for investors, regulators, and businesses across supply chains looking to judge the robustness of a company's climate commitments. As these actors in turn include SBTs into their strategies and frameworks, network effects take hold that further drive the uptake of SBTs by companies.

This institutionalisation of SBTs creates a shared language for climate ambition amongst all relevant actors which further reduces the barriers to adoption of SBTs and enables the adoption of SBTs by the majority of companies.

The following section will explore the progress the SBTi has made against these strategic objectives.



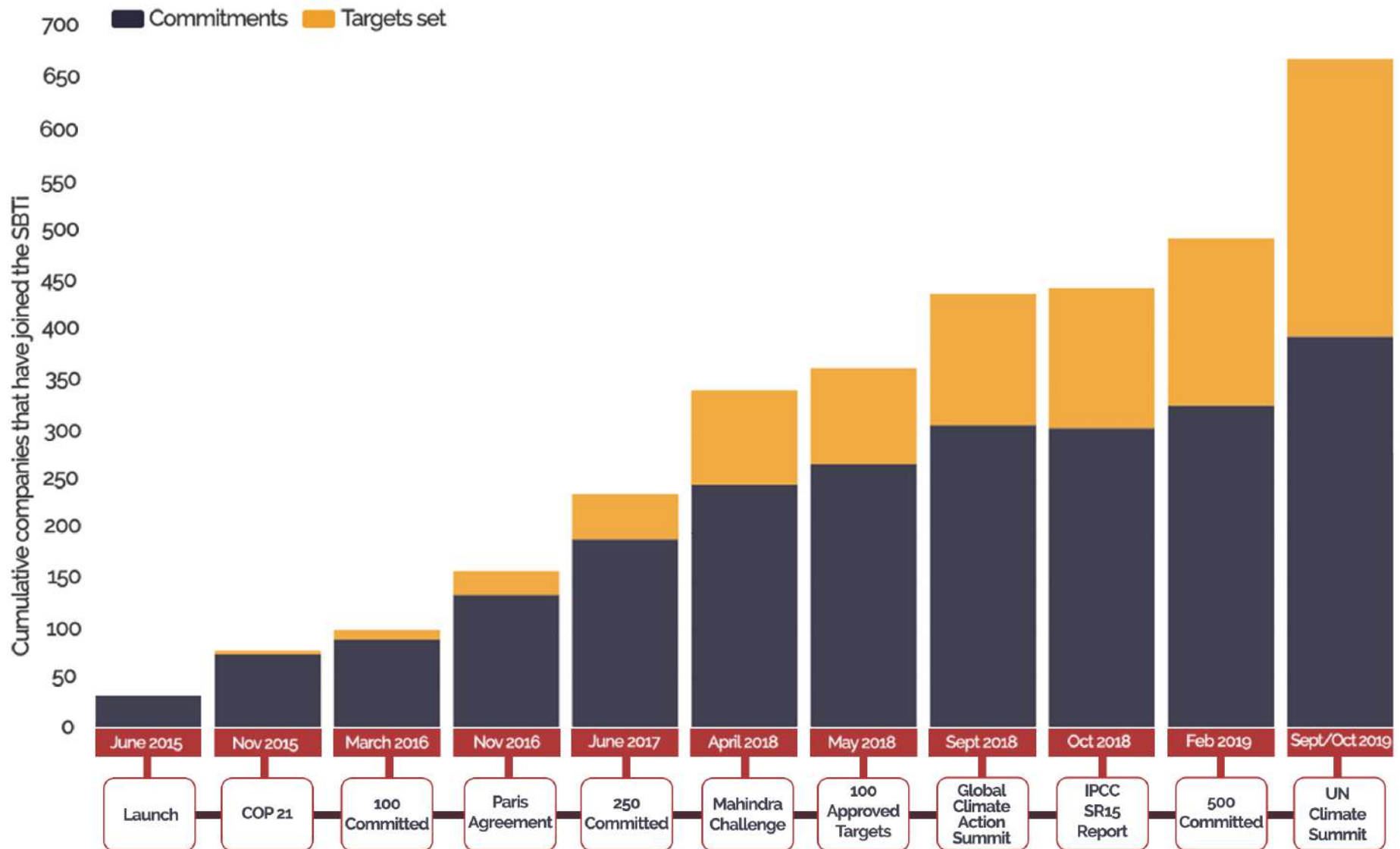
PROGRESS TO DATE

“ It is encouraging to see global companies setting science-based targets in line with the Paris Agreement. The science is clear: current levels of ambition are insufficient and businesses have a role to play in limiting temperature rise to 1.5°C. ”

- Patricia Espinosa
(Executive Secretary, UNFCCC)

Progress to date

Growth in number of companies setting SBTs



Create a critical mass of companies with SBTs

Since its launch, the SBTi has been driving the adoption of SBTs by companies through its [Call to Action](#) campaign. Companies can make a public commitment to setting an SBT, after which they have two years to develop their targets and have them officially approved by the SBTi.⁸

The adoption of SBTs by companies is making strong progress and seeing accelerating momentum. As of October 31st 2019,

686 companies have publicly joined the SBTi and 285 of these have had their targets officially approved.⁹

The rate of companies joining the SBTi has consistently accelerated since its launch. The number of companies that have joined the SBTi has more than doubled over the past 18 months with 352 companies, (19 per month), joining between April 2018 and October 2019, compared to 334 companies, (9 per month), in the previous 36 months between April 2015 and March 2018. The acceleration is even more pronounced for the increase in approved targets, where 195 targets were approved between April 2018 and October 2019, compared to 90 in the three years before.

While the numbers of commitments and approved targets continue to accelerate, we are also seeing a robust rate of conversions of companies' commitments to approved targets. Of the 285 approved targets, 168 were approved within two years of the commitment being made, and 47 companies chose to make their approved targets public without previously making a public commitment. Seventy companies have taken longer than the standard 2-year commitment period to have their targets approved

The **combined market value** of all listed companies that have committed to or set science-based targets is estimated at



roughly equivalent to the value of the **NASDAQ Stock Exchange**



Companies that exceed the commitment period are subject to removal from the SBTi website.¹⁰ Over the past 18 months, this has been the case for 43 companies.

BUSINESS AMBITION FOR 1.5°C   **OUR ONLY FUTURE**

The Intergovernmental Panel on Climate Change's (IPCC) landmark Special Report on 1.5°C published in October 2018 clearly spelled out the imperative of raising ambition and limiting global temperature rise to 1.5°C.

In the lead up to the UN Secretary-General's Climate Action Summit in September 2019, the SBTi launched a new campaign — "Business Ambition for 1.5°C: Our Only Future" — together with a global network of UN agencies, business organisations and industry partners. The campaign calls on companies to step up and commit to setting science-based targets aligned with limiting global temperature rise to 1.5°C above pre-industrial levels and reaching net-zero emissions by no later than 2050.

To date, over 100 companies, representing over 4.2 million employees from 33 sectors and headquartered in 29 countries have responded to this call-to-action. They have committed to set 1.5°C-aligned climate targets across their operations and value chains, making this the most ambitious level of action called for by the SBTi to-date.

As a significant private sector outcome of the UN Climate Action Summit 2019 — and complement to the enhancement of the Nationally Determined Contributions (NDCs) by governments — the campaign helped further institutionalise science-based targets as a means of how companies are contributing to the climate agenda within the United Nations.

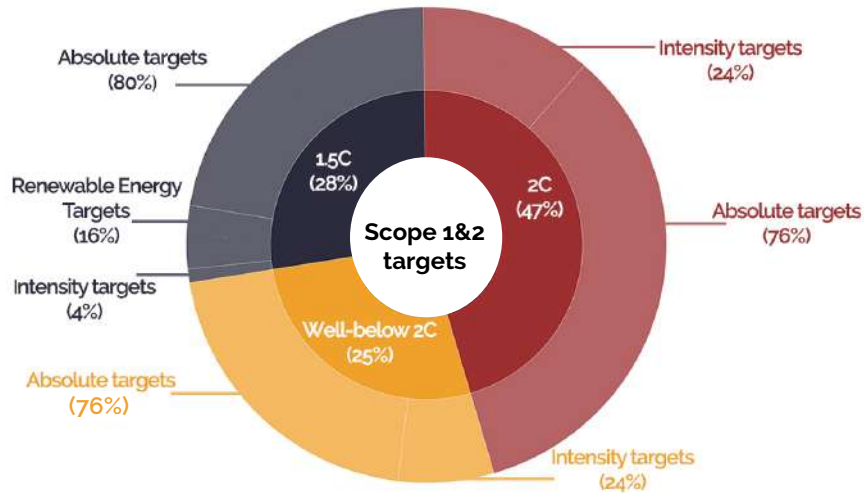
Leadership from the private sector remains critical in the pivotal time for global climate action and we invite companies to [join us in tackling the climate crisis](#).

⁸ For more details on how companies can set SBTs under the Call to Action campaign, please refer to the [step-by-step](#) guide on the SBTi's website.

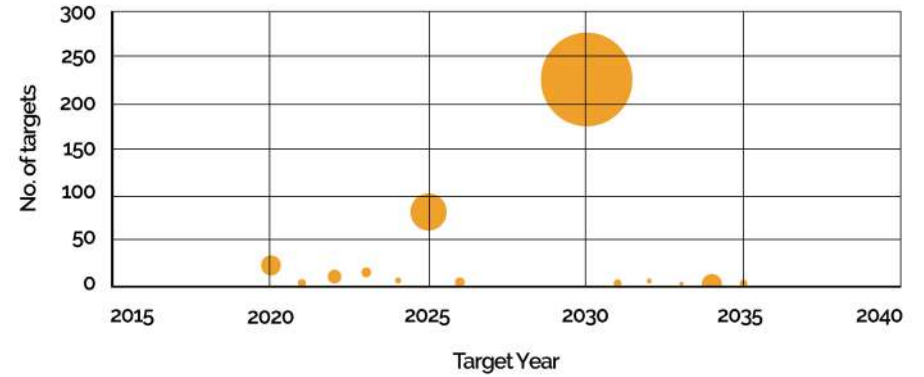
⁹ A comprehensive, up-to-date list of companies that have joined the SBTi can be found on the [Companies Taking Action page](#) of the SBTi website.

¹⁰ Please refer to the SBTi's [Protocol for expired commitments on its website](#) for further details around this.

Analysis of approved targets



Target years and emissions covered of all approved targets



● Emissions covered by targets

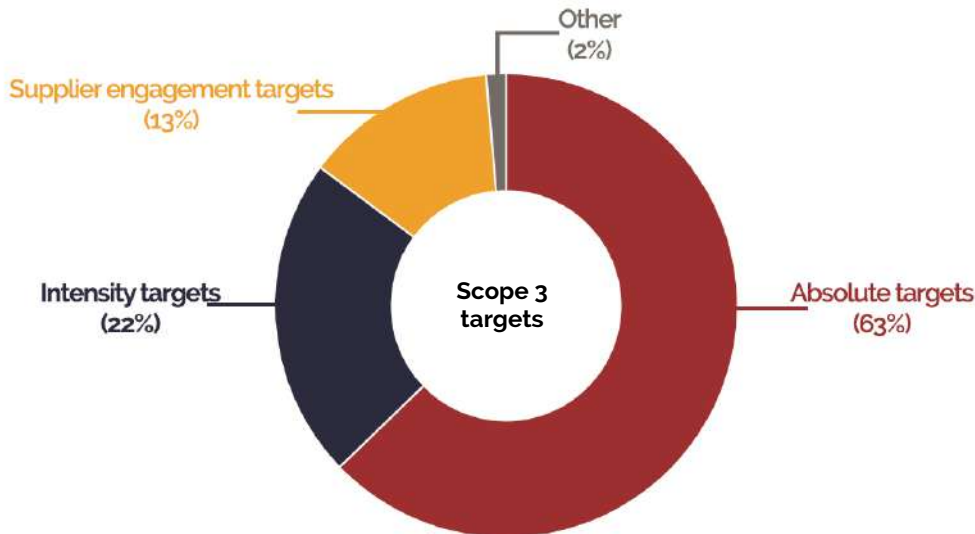
Notes:

The analysis of scope 1 and 2 targets is based on 285 companies' approved targets. The analysis of scope 3 targets is based on 262 companies' approved targets.

The SBTi provides resources for companies to set scope 1 and 2 targets against different temperature goals, where limiting global warming to 1.5°C presents the highest level of ambition. For further information on how targets are classified against these temperature goals, please refer to the SBTi's Target Validation Protocol.

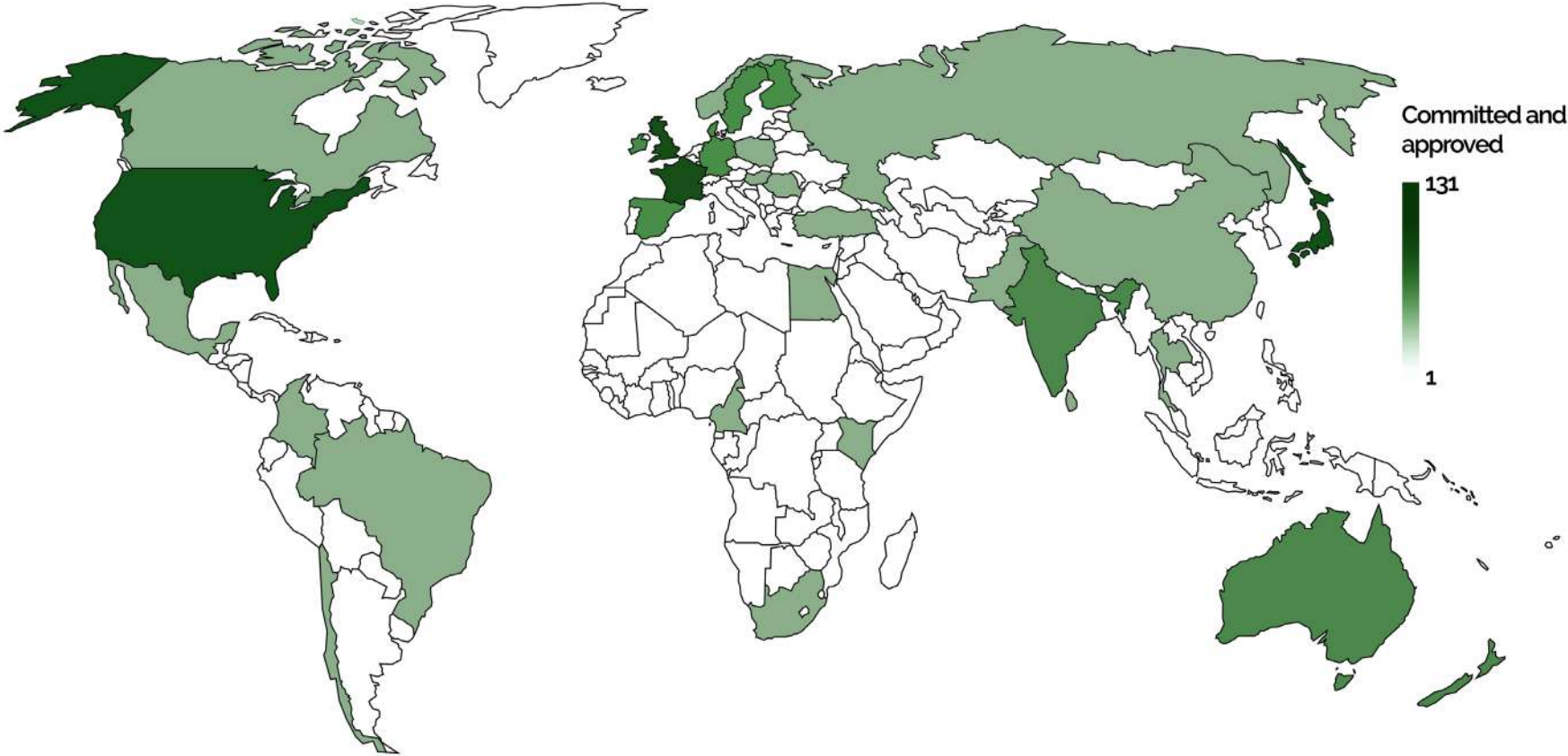
The GHG Protocol accounting standards differentiate emissions by 'scopes'. Scope 1 and 2 emissions are emissions from a company's operations, mostly related to energy use and process emissions. Scope 3 emissions are all indirect emissions that occur in the value chain of the reporting company, including both upstream and downstream emissions. The SBTi has different criteria for different emission scopes, requiring companies to set 'science-based' targets for scope 1 and 2 emissions and 'ambitious' targets for scope 3. For further information on these requirements, please refer to the SBTi's criteria.

Absolute targets are targets set for the absolute amount of GHG emissions a company emits into the atmosphere. Intensity targets are targets set for the amount of GHG emissions a company emits into the atmosphere relative to an activity, e.g. emissions per ton of product produced.



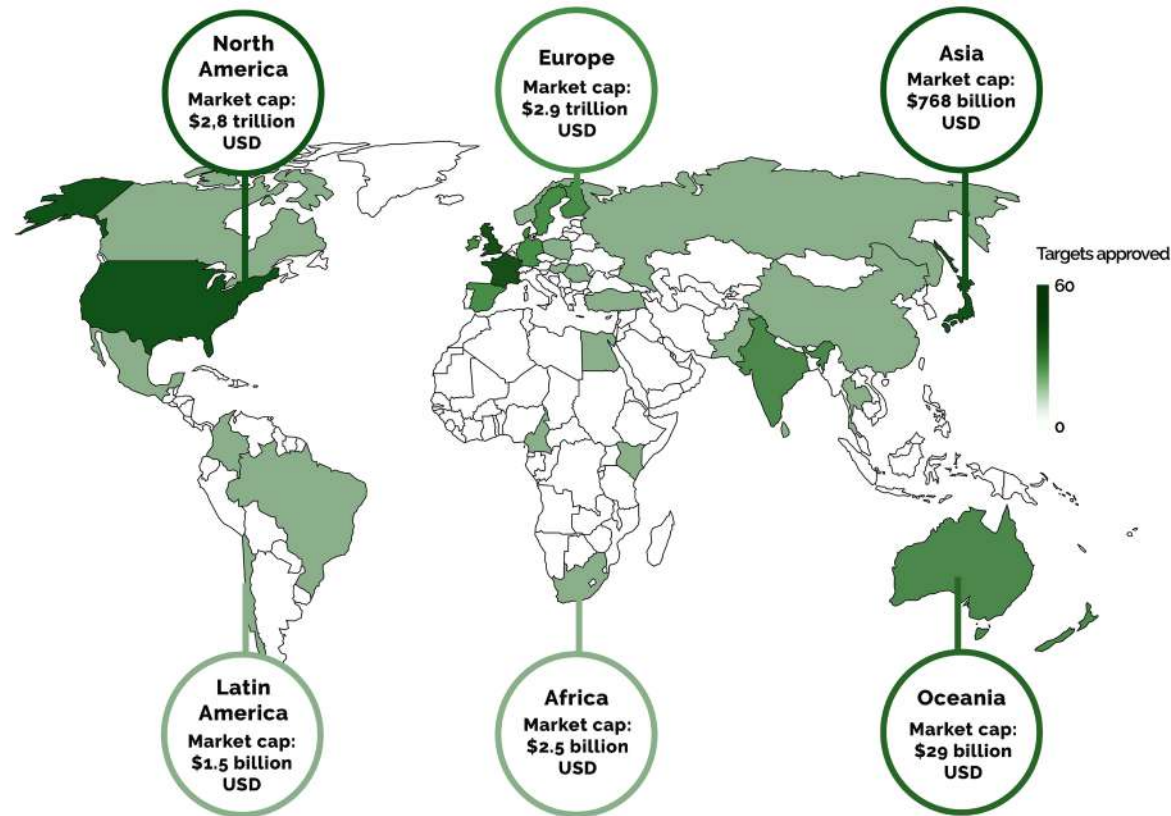
Geographical analysis

Geographic distribution of companies that are setting SBTs (committed to or with targets)



Geographical analysis

Geographic distribution of companies with approved targets



The SBTi has become a global movement, with companies from 46 different countries committed to setting SBTs. However, beneath the overall global momentum lie stark regional differences in the adoption of SBTs.

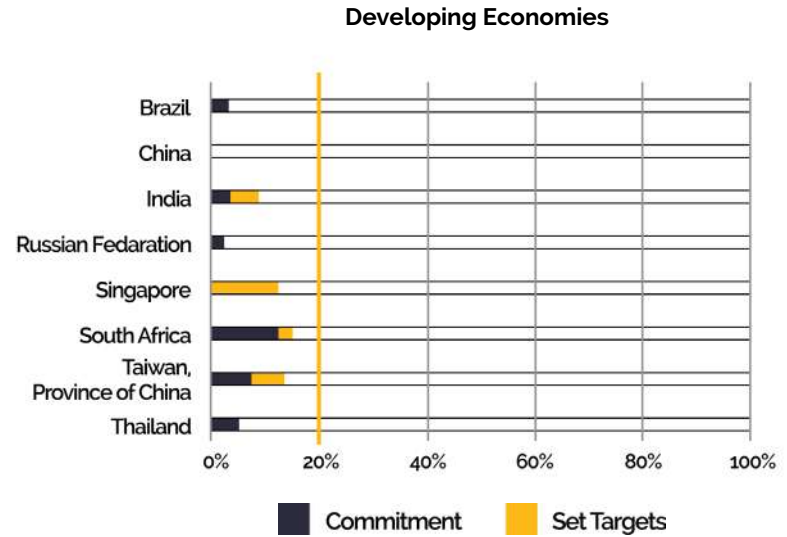
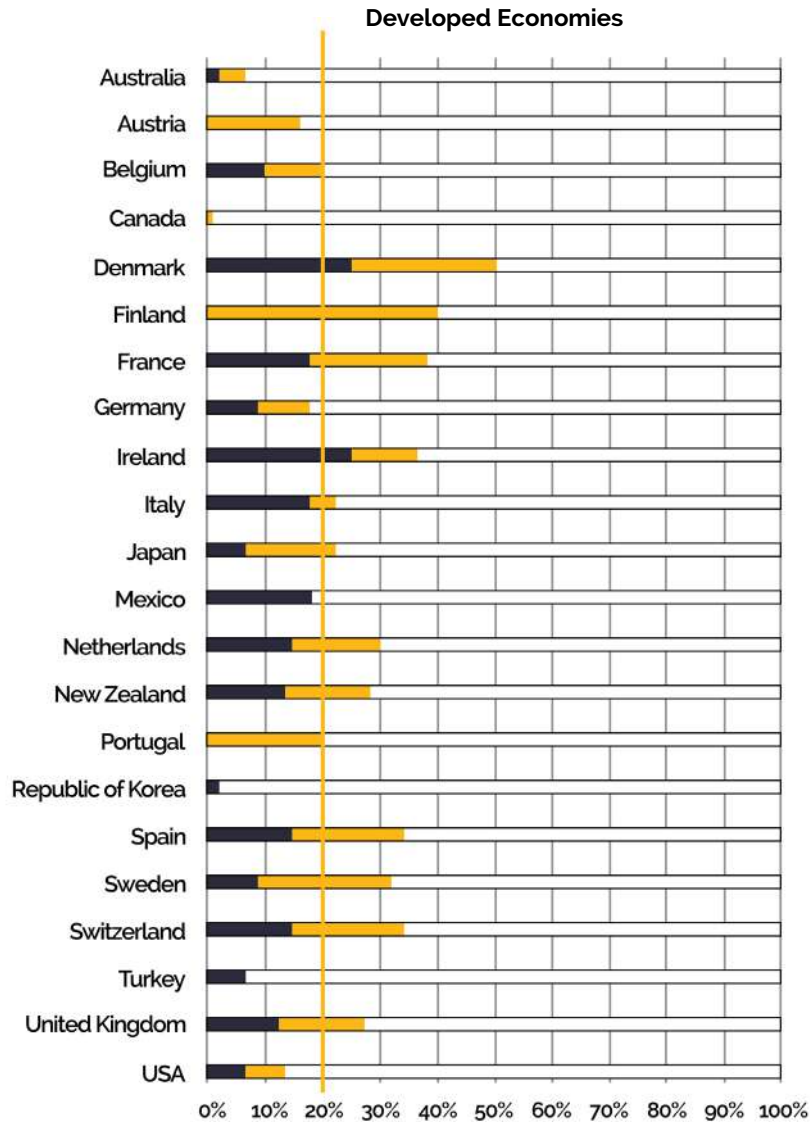
Many developed economies have seen a remarkable number of companies join the SBTi. 131 companies headquartered in the USA have committed to the SBTi, 56 of which have already had their targets approved. Not far behind is Japan, with 85 total companies and 52 approved targets. Finally, 318 companies headquartered in Europe have joined the SBTi, and 145 have already had their targets approved. Encouragingly,

notable hotspots within Europe are its largest economies, Germany, the UK, and France. Several large developed economies are close to or already have a critical mass of companies joining the SBTi.

This success in developed economies contrasts starkly with the situation in most developing economies. Only 15% of commitments, and 6% of approved targets are from companies in non-OECD countries. This includes the heaviest emitting emerging markets, which count a small number of companies with approved targets among them. A notable exception is India, where 37 companies have joined the SBTi, and a growing number of companies are having their targets approved, nine to date.

Geographical analysis

Geographic analysis of critical mass of high-impact companies



Notes:

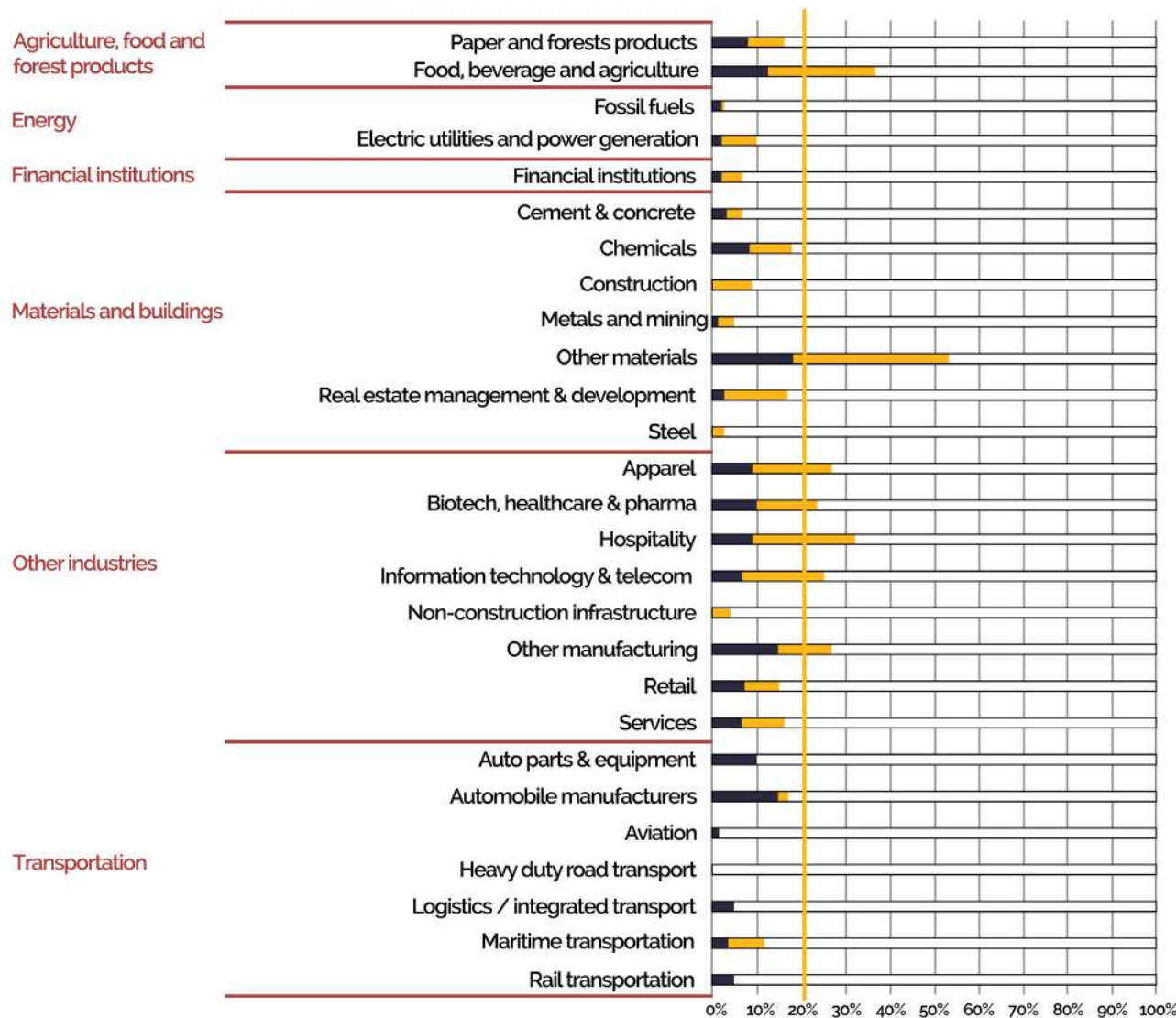
In line with the SBTi's Theory of Change explained in the introduction of this report this analysis tracks in which countries a critical mass (i.e. 20%) of companies from the SBTi's sample of high impact companies has set targets.

The sample of ~1,800 high impact companies of particular interest for the SBTi was developed based on an analysis of companies with the greatest potential impact on climate mitigation judged by emissions and market capitalisation.

Please note that there may be companies with commitments or approved targets in some countries that are not reflected here since they are not part of the high-impact sample.

Sectoral analysis

Sectoral analysis of critical mass of high-impact companies



Progress in the adoption of SBTs remains uneven across different sectors. Critical mass has been achieved in the food and beverage and hospitality sectors. First-movers from high-polluting sectors like cement, steel, chemicals, and automotive are also joining the SBTi. However, adoption in these sectors is still lagging.

■ Commitment ■ Set Targets

Notes:









In line with the SBTi's Theory of Change explained in the introduction of this report this analysis tracks in which sectors a critical mass (i.e. 20%) of companies from the SBTi's sample of high impact companies has set targets.

The sample of ~1,800 high impact companies of particular interest for the SBTi was developed based on an analysis of companies with the greatest potential impact on climate mitigation judged by emissions and market capitalisation.

Please note that there may be companies with commitments or approved targets in some sectors that are not reflected here since they are not part of the high-impact sample.

Adoption of SBTs in key sectors

Snapshot of adoption of SBTs by largest high-impact companies by market capitalisation in selected sectors

 Automotive	Toyota Motor Corporation	Volkswagen AG	Tesla Motor, Inc.	Daimler AG	BMW AG	General Motors Company	Saic Motor Corporation	Honda Motor Company	Ford Motor Company	Fiat Chrysler Automobiles NV
 Cement and concrete	Anhui Conch Cement	LafargeHolcim Ltd	Heidelberg Cement AG	CRH Plc	Vulcan Materials Company	Martin Marietta Materials, Inc.	Ultratech Cement	Siam Cement	Shree Cement	China Resources Cement Holding
 Chemicals	Merck KGaA	Linde AG	Novozymes A/S	BASF SE	Air Liquide	Bayer AG	Sherwin Williams Company	Air Products & Chemicals, Inc.	DuPont de Nemours, Inc.	Shin_Etsu Chemical Co., Ltd.
 Food, beverage and agriculture	Nestlé	The Coca-Cola Company	Pepsi Co, Inc.	Anheuser Busch InBev	Philip Morris International	Diageo Plc	Altria Group, Inc.	British American Tobacco	Mondelez International Inc	Dean Foods Company
 Maritime transportation	Carnival Corporation	A.P. Moller-Maersk	Royal Caribbean Cruises Ltd.	Norwegian Cruise Line Holdings Ltd	MISC	China COSCO Shipping Holdings Co., Ltd.	Kirby Corporation	Qatar Gas Transport	Mitsui O.S.K Lines Ltd.	Nippon Yusen Kaisha Line
 Paper and forests products	Kimberley-Clark Corporation	Weyerhaeuser Company	Uni-Charm Corporation	UPM- Kymmene Corporation	International Paper Company	Brambles	Suzano Papel & Cellulose	Mondi PLC	Stora Enso Oyj	Packaging Corporation of America
 Power generation utilities	Nextra Energy, Inc.	ENEL SpA	Dominion Energy	The Southern Company	Duke Energy Corporation	Iberdrola SA	Exelon Corporation	American Electric Power Company, Inc.	Sempra Energy	National Grid PLC
 Steel	Vale	Fortescue Metals Group	POSCO	Nucor Corporation	ArcelorMittal	Nippon Steel & Sumitomo Metal Corporation	China Steel Corporation	Novolipetsk Steel OJSC	Severstal PAO	Inner Mongolian Baotou Steel Union (A)

 Committed  Targets Set

Please note that some of the above companies may have submitted targets for validation by the SBTi, but not have made their status public by copy deadline for this report.

Remove technical barriers for the adoption of SBTs

Since the SBTi launched its first suite of resources to support companies with their target-setting, it has built on several years of research, as well as experience with hundreds of companies, to continuously improve its understanding of science-based target-setting. Reflecting these learnings, as well as evolving climate science and best practice in corporate sustainability, the SBTi has significantly updated and supplemented its target-setting resources and support services over the years. In its technical research and development activities, the SBTi is supported by a Scientific Advisory Group¹¹, as well as a [Technical Advisory Group](#), comprised of some of the world's leading climate scientists and sustainability professionals respectively.

Some of the key resources the SBTi currently provides to companies are:

- [SBTi Criteria](#) - The criteria the SBTi applies for the validation of GHG reduction targets as science-based
- [Science-based Target-Setting Manual](#) - A step-by-step guide to science-based target-setting for companies
- [Science-based Target-Setting Tool](#) - An Excel based tool allowing companies to calculate GHG reduction targets in line with the SBTi's target validation criteria
- [Foundations of Science-based Target Setting](#) - A research paper detailing the technical foundations for the translation of climate science to individual companies
- [Target Validation Protocol](#) - The protocol that sets out the process and procedures that the SBTi follows to validate companies' targets in detail.
- A growing suite of [sector-specific resources and guidance](#)

¹¹ The SBTi's Scientific Advisory Group consists of international climate science and modelling experts; details of the membership will be published on the SBTi's website shortly

The updates and additions to these resources have resulted in significantly increased accessibility, clarity, and transparency around science-based target-setting for companies. This is reflected in the percentage of targets submitted to the SBTi that are approved, rising from below 50% between 2015 and 2018, to over 80% over the nine months leading up to September 2019. These improvements are mirrored in the direct support and feedback companies receive from the SBTi. In the first six months following the SBTi's launch in June 2015, a company had to wait, on average, more than 100 days for a decision on its target submission. Following significant upgrades to the target validation service, companies have received a response after an average of 28 days in the first nine months of 2019.

Sector Developments

For many of the most critical sectors of the economy, the SBTi provides sector-specific resources or is in the process of developing these. While all companies other than financial institutions can and most do set SBTs without using sector-specific methods, they can be powerful in mobilising key sectors by taking into account the different situations of each sector.

For many industry sectors the SBTi provides the Sectoral Decarbonisation Approach (SDA). The SDA is intended to help companies in homogenous, energy intensive sectors align their emissions reduction targets with climate science by allocating the global carbon budget out to sectors and sub-sectors of the economy. Sectoral pathways are already available for many key industry sectors, including iron & steel, cement, aluminium, pulp & paper, power generation, commercial buildings, and transport. Adding to these sectors, the SBTi is working towards adding and updating SDA pathways for several sectors, including ICT, chemicals, and transport.

In addition, the SBTi is currently developing even more specific sectoral approaches for financial institutions, oil & gas companies, and the forestry, land, and agricultural sectors.

All sector development projects are delivered through participatory multi-stakeholder processes. The SBTi invites third-parties to propose and develop sector methods through its [Sectoral Development Framework](#).

For an overview of sector developments [please visit the SBTi website](#).

Institutionalise the adoption of science-based targets

As a growing number of businesses set SBTs and the technical foundations of science-based target-setting continue to improve, SBTs are increasingly used by stakeholders and shareholders to judge the robustness of a company's climate commitments and strategies. This is increasingly reflected in their assessment and decision-making frameworks. Moreover, the high number of large multinational corporations setting GHG reduction targets for their value chain (scope 3) emissions cascades science-based climate ambition through international supply chains. Overall, there is a pronounced trend towards the institutionalisation of SBTs.

Financial markets have been particularly proactive in adopting SBTs, and verification by the SBTi, as decision-making guidance. One example is corporate debt markets, where corporates are seeing significant financial rewards for delivering science-based climate action. The Italian power utility [Enel issued a bond linked to it meeting its SBTi approved target](#), potentially yielding tens of millions of Euros savings on its cost of capital over the lifetime of the bond. Similarly, Finnish ICT company [Nokia recently signed a \\$1.5 billion revolving credit facility with the pricing mechanism linked to it meeting its SBTi approved target](#).

More broadly, the investor community is waking up to the risks that climate change brings to financial markets - and their portfolios. Catalysed by the recommendations of the [Taskforce for Climate-Related Financial Disclosure \(TCFD\)](#), investors are setting clear expectations for companies to understand and plan for the risks and opportunities a changing climate and changing markets bring. A key strategy for investors looking to manage climate related financial risks in their portfolios is to ensure the companies they invest in are mitigating climate change. A prominent investor coalition working towards this is [Climate Action 100+](#), bringing together over 370 global investors with more than \$35 trillion in assets under management. The coalition is engaging 160 focus companies deemed particularly important for decarbonisation of the economic system, and accounting for over 80% of corporate GHG emissions, on improving climate governance, disclosure, and action. The number of companies approved by the SBTi is [an important progress indicator used by the coalition](#).

For a business, setting SBTs is a powerful way to demonstrate to investors that they are reducing their exposure to transition risks. Likewise, investors want to understand

their portfolios' exposure to these risks are limited - and they are therefore setting their own goals of aligning their portfolios with the Paris Goals.

A notable effort in this direction is the [Net Zero Asset Owner Alliance](#), which brings together asset owners with more than \$2 trillion in assets that committed to "transitioning their investment portfolios to net-zero GHG emissions by 2050 consistent with a maximum temperature rise of 1.5°C above pre-industrial temperatures" and explicitly highlights collaboration with the SBTi as to enable implementation of this commitment.

The first [portfolios built completely around SBTi companies](#) are emerging.

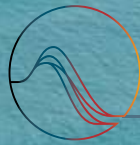
As part of a strategy to more directly cater to the needs of the investor community, the SBTi is in the process of developing a [bespoke approach for science-based target-setting for financial institutions](#).

Through companies' targets and actions to reduce emissions in their value chains, SBTs are also becoming increasingly embedded in international supply chains. Over 92% of companies with approved SBTs have set ambitious targets for their value chain (scope 3) emissions. And companies are well on their way on implementing these targets.¹² This cascading of ambition is becoming a major driver for climate action as many companies' first point of contact with the concept of science-based target-setting, particularly in emerging markets, is coming through customers or suppliers. This is further facilitated by the integration of SBTs into established corporate reporting frameworks, notably the CDP Investor and Supply Chain questionnaires.

Finally, regulators are increasingly turning to the SBTi as a powerful tool to catalyse private sector action. Notably, the Japanese Ministry of Environment has set itself a goal of 100 Japanese companies with approved SBTs by 2020. In some instances there are first signs of [ambition loop](#) - positive feedback loops in which bold government policies and private sector leadership reinforce each other, and together take climate action to the next level.

The above described trends of institutionalisation are explored in more detail in the case studies in the following section.

¹² According to a recent survey of companies with approved conducted by SBTi, 80% (76 out of 95) of the respondents developed comprehensive strategies to reduce scope 3 emissions, and 46%(43 out of 93) reported that they are on track to meet their scope 3 targets.



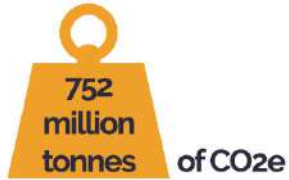
IMPACT OF THE INITIATIVE

“Targets based on science are the only effective way to meet the challenges we face. Around the world, hundreds of businesses are already showing that this is possible with substantial benefits to brand reputation and the bottom line.”

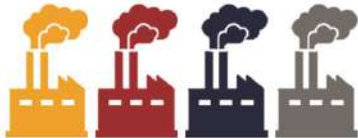
**- Anand Mahindra
(Chairman, Mahindra Group)**

Impact of the initiative

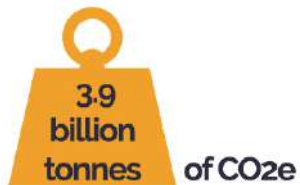
The annual scope 1 & 2 GHG emissions covered by science-based targets are



roughly equivalent to the annual emissions of 193 coal fired power plants



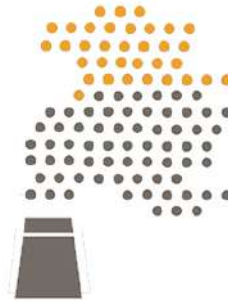
The annual scope 3 GHG emissions covered by science-based targets are



roughly equivalent to a years worth of emissions of over 828 million cars



When all targets are achieved, annual scope 1 & 2 emissions will be reduced by **265 million tonnes** representing a **35%** reduction from all companies' base year emissions



These savings are equivalent to shutting down **68** coal fired power plants



Implementing all scope 1 & 2 targets will drive **investment into mitigation activities** of up to



Meeting all targets will drive up to **90TWh** of annual renewable energy generation



enough to power **11 million households**



Note:

Please see overleaf for explanation of methodology used to estimate impacts

As the adoption of SBTs by companies continues to accelerate, we are seeing significant and growing impact. The broad adoption of SBTs by businesses has the potential to catalyse transformative, systemic change by:

- Driving GHG emission reductions in the real economy that significantly contribute to bringing down GHG emissions at the global level
- Driving innovation and deployment of low-carbon solutions through high ambition targets
- Cascading ambition through the economy with SBTs for companies' value chains
- Catalysing more ambitious climate goals at the country-level through a strong signal from business to government in support of ambitious climate policy – starting an 'ambition loop'
- Shifting investment flows to support the transition to a net-zero economy by providing banks and investors with a framework to align their portfolios with

These different levers of change are explored further in the following case studies.

Notes on approaches to estimate impact:

Annual scope 1 and 2 emissions reductions driven by SBTs:

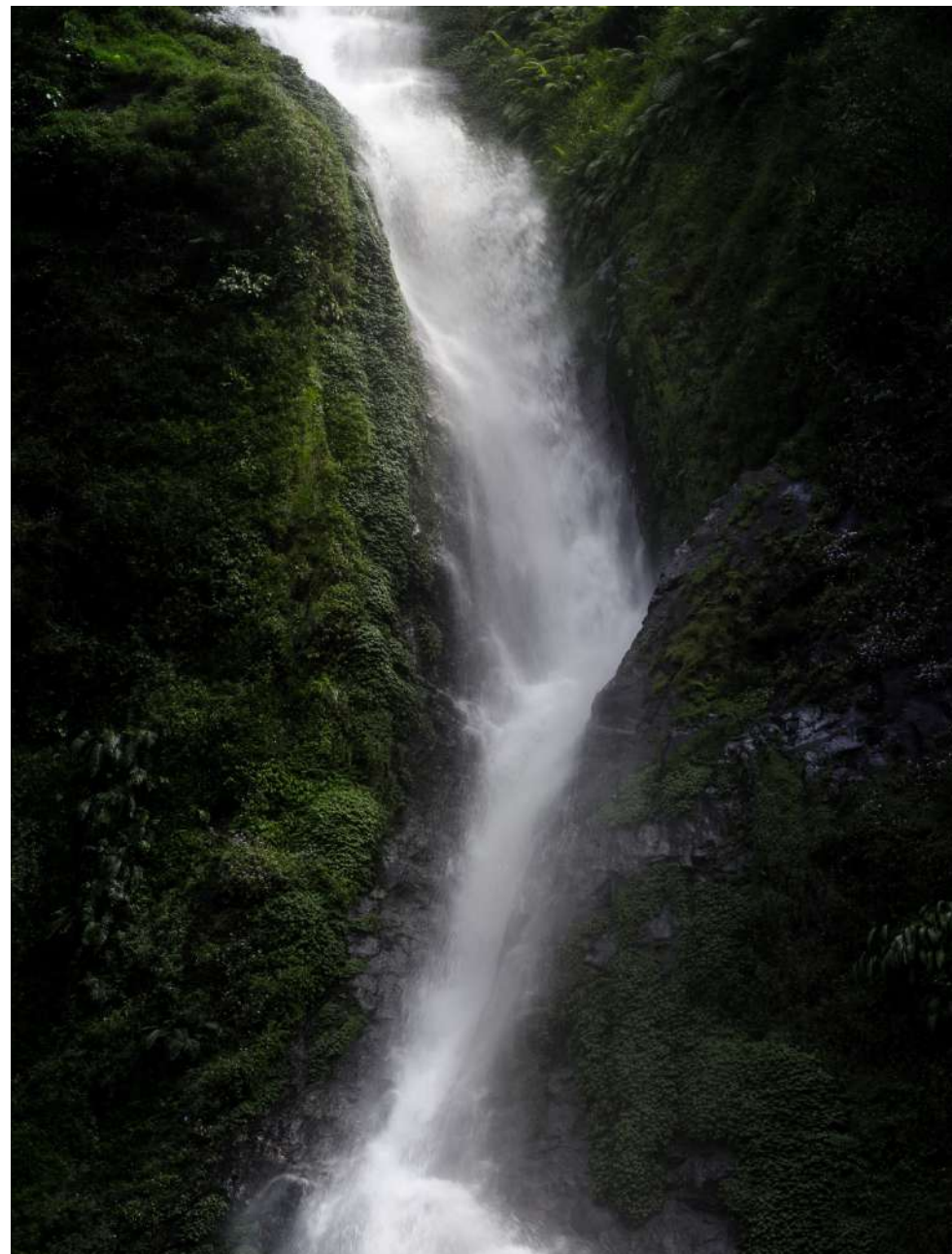
Annual emissions in the respective base years for SBT companies equate to 752 million tonnes. The weighted average ambition of all approved scope 1+2 emissions is 35% reduction in annual emissions over the target periods. This means that in their respective target years, collective annual emissions will be 265 million tonnes lower, when compared to the base years, for all approved companies.

Investment driven by implementation of SBTs:

The International Energy Agency's (IEA) marginal abatement costs are used to determine how much investment the reductions from SBTs would drive. The IEA estimates marginal abatement costs of 30 – 50 USD / ton up to 2020, and 80 – 100 USD / ton between 2020 and 2030 to keep warming below 2°C; mid-ranges of 40 USD / ton up to 2020, and 90 USD between 2020-2030. These values were applied to the collective annual reductions that would be achieved if all approved SBTs were achieved.

Renewable electricity generation driven by SBTs

Additional renewable electricity consumption driven by SBTs was estimated by assessing the emissions and electricity consumption covered by all scope 2 and renewable energy targets based on GHG emissions and energy consumption data submitted to the SBTi and CDP. An estimate of non-renewable electricity consumption in the sample was developed, as well as the shift in this consumption necessary to achieve the respective targets.



Ambition breeds ambition - Some leading companies have already met their science-based

Among the 280 plus companies who have set science-based targets there are a handful that have already met their goals, and are looking to renew them. Enel, Ingersoll Rand and Telefónica were early signatories to the initiative, and set targets for 2020. They have already delivered direct emission reductions in the real economy and are now building on their success and setting new goals for 2030 and beyond.

Enel is a multinational energy company and one of the world's leading integrated electricity and gas operators. It works in 34 countries, generating energy with a managed capacity of more than 89 GW, and selling gas and distributing electricity to over 70 million end users via a network spanning approximately 2.2 million km.

Old Target:

Reduce GHG emissions per kWh by 25% by 2020 from a 2007 base, reaching a GHG emission value lower than 350g/kWh by 2020.

New Targets:

Reduce scope 1 GHG emission by 70% per kWh by 2030, from a 2017 base.
Reduce absolute scope 3 GHG emissions for the use of sold products by 16% by 2030 from a 2017 base.

Ingersoll Rand is a diversified industrial manufacturing company headquartered in Davidson, NC. Its brands — including Club Car®, Ingersoll Rand®, Thermo King® and Trane® — enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. In 2020, Thermo King and Trane will form a new company while Ingersoll Rand's industrial segment will combine with Gardner Denver.

Old Target:

Reduce scope 1 and 2 GHG emissions (on a per unit revenue basis) by 35% by 2020, from 2013 levels. Reduce the refrigerant footprint of products by 50% over the same period.

New Targets:

New targets will be made public in the near future.

Telefónica is a multinational telecommunications company headquartered in Madrid. It is one of the largest telephone operators and mobile network providers in the world, providing fixed and mobile telephony, broadband and subscription television, in Europe and the Americas.

Old Target:

Reduce scope 1 and 2 GHG emissions in absolute terms by 30% by 2020 and 50% by 2030 from a 2015 base.

New Targets:

New targets will be made public in the near future.

The journey to certification

For each of these companies (all from very different sectors), the decision to set a science-based target came about in different ways. However, the UN climate change talks in Paris in 2015, which resulted in an agreement to "keep global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 °C", proved inspirational for them all.

Telefónica first set targets for energy efficiency in 2010, which they met. In the wake of the Paris Agreement, the company set new targets that were more comprehensive – for energy efficiency, emissions and renewables. According to Maya Ormazabal Herrero, Head of Environment and Climate Change,

“We realised our targets had to be absolute and that we had to decouple our business growth from GHG emissions.”

For Javier Bolanos Munoz, Head of ESG Ratings and Sustainability Indices at Enel, the key is to have a destination, and to use the science-based targets as a roadmap to get there. Enel announced a commitment in 2015 to full decarbonisation by 2050. Their 2020 targets – which they are on track to meet – and their new 2030 targets are staging posts along the way.

Similarly, Ingersoll Rand knew they had to address the carbon footprint of refrigerants use in their products and setting a target gave them a framework to start doing this.

Ambition breeds ambition

One thing these early movers have in common is that the experience of setting science-based targets and then implementing the policies necessary to meet their 2020 goals has bolstered ambition and inspired them to set new, bolder goals for the decades to come.

Holly Emerson, Senior Sustainability Analyst at Ingersoll Rand said that when they set their 2020 targets they thought they were ambitious. But they met them two years early. "The next frontier of sustainability will require bold action and this made us establish an even more ambitious set of targets – even if we don't know for sure yet how we'll meet them. We are setting ambitious, impactful targets that are aligned with what the science says is necessary – and that will force us to innovate and think differently."

Telefónica also met its 2020 targets early, as a result of implementing new initiatives across its operations. In 2019, the company signed the 'Business Ambition for 1.5°C' pledge, joining other leading companies (including Enel) in aligning their businesses with the aim of limiting global temperature rise to 1.5°C, and is agreeing new, ambitious targets for 2030.

Enel too has upped its ambition, with a 2030 target that is much more ambitious than its 2020 one.

Leadership is key

For each of these companies, buy in and support from senior leadership has been absolutely critical. Javier Bolanos Munoz from Enel explained that, "Everything changed when our management changed in 2014. Our new CEO, Francesco Starace, had a vision for Enel to change completely, and he updated the mission and vision of the company and began accelerating the transition towards a sustainable energy model."

Similarly, the CEO of Ingersoll Rand, Michael W. Lamach, has said that the climate and energy targets are foundational to the company. In the company's 2019 Sustainability Report he wrote: "Sustainability is more than something we do; it's everything we do. Sustainability is embedded into our brand promise and our core strategies. It differentiates our business model, allowing us to drive strong shareholder returns over the long-term."

Meanwhile, at Telefónica climate has gone from being a specialist issue in the company to being a mainstream part of business strategy. Climate targets are now linked to the variable bonuses of Board members and other senior staff (this is also true at Enel) and every part of the company has something to do on climate – from HR, to marketing, to operations, and purchasing.

Renewables at the heart

For Enel and Telefónica, in very different ways, renewable energy is a key plank in their strategy for emissions reduction. Enel is transforming the fundamentals of its business by moving from generating power from fossil fuels to producing it from renewables. In 2014, the company had a renewables installed capacity of 38.3%; by 2021 they expect to reach 55%. They are already the world's largest renewable utility in terms of installed capacity.

The flip side to increasing investment in renewables is the divestment from fossil fuels. Enel has committed to reducing its thermal capacity by 7 GW between 2019 and 2021, with a focus on phasing out coal, which currently makes up about a fifth of the energy mix in terms of installed capacity. They have already closed or announced closure of plants in Italy, Spain and Chile and, working with regulators, will close others over the next few years.

Meanwhile, Telefónica's main emissions come from electricity use, and so shifting to renewables is essential for them to reduce emissions. They have a target of 100% renewables by 2030 (already met in Brazil and Europe), which they will reach through a combination of strategies: buying green energy certificates, entering power purchasing agreements, and generating energy on site.

Technology, innovation and collaboration

For all of these companies, achieving their 2020 targets, and even more so, setting their sights on bigger cuts for 2030 and beyond, means having faith in future technology and the fruits of research and development, innovation, and collaboration.

For example, Ingersoll Rand is working with suppliers to develop new generation refrigerants. In 2018, they introduced several new products designed to lower environmental impact. They know they need to continue this innovation. As Holly Emerson explained, "We don't know what technology will exist in ten years to help us meet our target. But now we have the incentive to find out."

Similarly, Maya Ormazabal Herrero explained how Telefónica is working with its suppliers to discover technical solutions to increase efficiency: "We need to keep our energy use as flat as possible so that as we grow, we don't consume more energy. This means increasing efficiency by investing in new technology and innovation. For example, we're replacing copper wires in our network with optic fibres, and investing in more efficient cooling." So far, it's working: data traffic on Telefónica network has almost tripled over the last 3 years, but energy use has remained flat.

For Javier Bolanos Munoz the key to achieving Enel's ambitious 2030 goals will be open innovation:

“We need to collaborate with people from inside and outside the company to develop the new technology and other solutions needed to help us reach our targets. We have to accelerate ambition if we are to meet the Paris goals. Everyone has to play their part.”

Governments have signed up to Paris: now they need to put the policies and long-term plans in place to deliver on their commitments. And this in turn will enable businesses to plan and do their bit.”

Between them, these companies are helping show what is possible via a combination of vision, ambition, technical know-how and strategy. They are leading the way on science-based targets and demonstrating what being fit for the future means for business.



The heavy lifting - How heavy industry is implementing science-based targets

There are some sectors in which reducing emissions is particularly challenging due to the nature of the product or service, or the production processes involved. As Jeff Turner, Head of Sustainability at DSM said when he spoke to the Science Based Targets initiative: "Setting a science-based target is hard enough but doing it in a heavy industry like steel, cement, or chemicals is really tough!" It's critical that progress is made in these sectors, as they contribute significantly to total greenhouse gas emissions globally. By deciding to implement science-based targets, the companies profiled below are setting an important example, and demonstrating that with innovation and vision, even the most carbon-intensive industries can make progress towards being part of a new low-carbon future.

thyssenkrupp AG is a German multinational conglomerate with focus on industrial engineering and steel production. The company is based in Duisburg and Essen and employs over 160,000 people in 78 countries. It is one of Europe's largest steel producers.

Targets:

Reduce absolute scope 1 and 2 GHG emissions by 30% by 2030 from a 2018 base year.
Reduce absolute scope 3 GHG emissions by 16% by 2030 from a 2017 base year.

Royal DSM is a Dutch multinational active in the fields of health, nutrition and materials. The company was established in 1902 by the Dutch government to mine coal reserves but shifted away from mining and later petrochemicals towards health, nutrition and materials. Headquartered in Heerlen, DSM employs over 20,000 people in around 50 countries.

Targets:

Reduce absolute scope 1 and 2 GHG emissions 30% by 2030 from a 2016 base year.
Reduce scope 3 GHG emissions from purchased goods and services, up-stream transportation and distribution and waste generated in operations by 28% per ton of product produced by 2030 from a 2016 base year.

HeidelbergCement is a German multinational building materials company headquartered in Heidelberg, Germany. It is a DAX corporation and is one of the largest building materials companies in the world.

Targets:

Reduce scope 1 GHG emissions by 15% per tonne of cementitious materials by 2030 from a 2016 base year (includes biogenic emissions and removals associated with the use of bioenergy).

Reduce scope 2 GHG emissions by 65% per tonne of cementitious materials within the same timeframe.

It's a journey

For each of these companies, the decision to set a science-based target was a step on a journey they had been on for some time. For example, HeidelbergCement had already set a target for their operations, which they got certified retrospectively with help from a consultant, making them the first cement company to have a target approved by the Science Based Targets initiative.

For Thyssenkrupp, setting science-based targets was also part of a longer process that had started years before. Eleonora Mueck, Sustainability Strategy Manager said: "We had been tracking scope 1 and 2 emissions for a long time. The challenge was to get an understanding of the whole footprint. We started modelling scope 3 emissions a few years ago, with a view to identifying which were the most relevant, and understanding which levers we could pull, which technologies we could use to reduce emissions. We set our targets in May 2019, and have continued to work since then, breaking down the targets for different parts of the group."

For DSM, the catalyst was the 2015 UN Climate Agreement in Paris. As Jeff Turner, Head of Sustainability explained: "DSM was a vocal supporter of the Paris Agreement. Following Paris, we started thinking about our own science-based targets. We thought: 'if there's a methodology we should start using it'. We already had ambitious reduction targets; we thought we'd better check if they aligned with Paris and with the science."

They were in for a surprise: "We were astonished and concerned when we discovered that the targets we had were way short of what we needed to do our fair share. At first there was disbelief, then acceptance and determination to work out a credible pathway to deliver the necessary reductions."

Raising ambition, going beyond operations

For each of these companies, joining the Science Based Targets initiative raised challenges, and forced them to learn more about their emissions and stretch beyond where they had already got to. For HeidelbergCement, the first step was to increase the ambition of their operational targets (scopes 1 & 2) to ensure that together they were aligned with the science.

For thyssenkrupp, the challenge was more in scope 3, which represents the largest part of their overall footprint. One of the things they do is build industrial plants for other companies, including cement companies, which have a high footprint. Daniel Schleifer, Senior Sustainability Manager said: "It's a challenge, but it's also an opportunity to use technology to make a really significant difference. As an engineering company, we think: 'We have innovative solutions to reduce CO2 emissions for our customers. Let's implement them.'"

For DSM, setting the targets required a lot of upfront mapping work. As Jeff Turner explained: "As a science-based company we needed to know from the outset if we could achieve a science-based target, what it would cost, and the resources involved."

Ron van den Akker, Director Environment & Manufacturing Competences at DSM added: "We had to do a lot of work – feasibility studies etc. It was a long process to interpret the climate science and then connect that to our science and engineering mind-set, and get the numbers on the table. It took the best part of a year."

What they received is indeed challenging. Jeff Turner: "Our science-based targets represent a huge change for us – a step change in ambition, and commitment of resources & investment. We have had to look at how we will grow organically and adapt our due diligence on acquisitions."

As with Thyssenkrupp, there is significant reduction potential - and significant complexity - in DSM's scope 3 emissions. As van den Akker explained: "Our scope 3 emissions are bigger than scope 1 and 2. There's huge variety in where they come from – we have 1000s of suppliers. We need to engage with at least 200 of them to cover 70% of scope 3 emissions. Our suppliers have to speak to their suppliers and their suppliers have to speak to their suppliers and so on."

Technology and innovation

For companies in these sectors, the task of reducing emissions is arguably more challenging than for others because of the nature of what they do and make. They, more than others, are dependent on new technology and innovation to create new opportunities for lower-carbon production.

Peter Lukas, Sustainability Manager at HeidelbergCement explained: "Sixty five percent of the CO2 footprint of cement comes from the chemical composition of limestone, and 35% from the heat used in the process. The production process is less carbon heavy than steel or glass, however we know we have to do more to further improve sustainability. We are improving energy efficiency, and increasing the use of alternative fuels and alternative raw materials. We are also investing heavily in R&D into new products and technologies for capturing carbon.

"Indeed, a key part of our strategy to reduce emissions is to capture the CO2 generated during the production process, and either use it or store it underground. Chemical companies need CO2 for their business so we can provide captured CO2 to them as a raw material. However, there are technological and resource-related limitations to this option, because you need access to hydrogen from renewable sources. Sequestration is possible, but the best option is to bind CO2 back into recycled concrete. This is called 'recarbonation' and offers the potential to reach equilibrium by bringing the two material streams together – i.e. CO2 from the production of new cement, and recycled concrete from demolished buildings.

"For recarbonation to work at scale you need a clear recycling system for concrete from demolished buildings that is specially designed for this purpose. This does not exist yet. Most demolished concrete - 90% - is just used as sub-surface base material during the construction of roads and buildings. There should be regulation in place that says before any recycled building materials are used in the foundations of new construction, they must be recarbonated. Comparable regulations exist for other materials like steel, for example. We need to catch up, and new infrastructure, such as pipelines, needs to be provided for the sustainable transport of the captured CO2."

thyssenkrupp is also looking at lower-carbon ways of producing steel, and at capturing the CO2 from the production process and turning it into marketable chemicals. Daniel Schleifer: "Although thyssenkrupp is known as a steel company, we are in fact a very diversified industrial group, and this is reflected in our emissions. That said, more than 90% of our operational emissions come from the steel part of the business, which accounts for roughly 20% of our turnover. The two main ways we are reducing emissions are 'carbon direct avoidance', and 'carbon capture and use', through Carbon2Chem® technology

"The former involves changing the whole steel making process by replacing coal as a reduction agent with green hydrogen. The latter involves capturing the carbon emitted in steel production and converting it, using green hydrogen, into base chemicals such as methanol and ammonia, that can be used in fertilisers, bioplastics and fuel among other things. These are the same chemicals that industry is using already but because of the mode of production (i.e. green hydrogen, not fossil fuels) they have much lower emissions."

Critically, the Carbon2Chem® technology thyssenkrupp is developing can also be applied in other sectors besides steel, such as lime and cement, so there is a business opportunity for them. They can reduce their own emissions and also market the technology to other companies. However, currently there is not enough green hydrogen available to achieve their targets.

Daniel Schleifer: "We as a society need to increase the capacity to produce hydrogen from renewables. We also need investment in transport infrastructure– e.g. pipelines and ships. Ultimately, all industrial sectors need a lot more green energy for their transition towards net greenhouse gas neutrality than there is now or than there are plans to have."

The chemical sector is highly diverse and heterogeneous, ranging from petrochemicals and base chemicals to biochemicals and nutritional ingredients. DSM's portfolio is in these latter classes and as such don't have the high footprint of petrochemical companies producing the base chemicals. Ron van den Akker explained: "In general, chemical processing requires considerable energy inputs. However, our portfolio makes us a bit unusual. We are a chemicals company by nomenclature but by mindset and portfolio less and less. We have a really heterogeneous portfolio, and the bulk of our emissions are with our suppliers. We are migrating our own processes to limit GHG emissions by making energy sources cleaner and increasing its energy efficiency. We have identified ample opportunities and are beginning to act on them. Similar journeys are expected from our suppliers as the majority of our emissions lie in our value chain and form part of our scope 3 target."

Leadership and belief

For all of these companies, stepping up to the challenge of reducing emissions has been about leadership and belief. In Feike Sijbesma, DSM has a CEO who has staked

his reputation on the company's climate goals. In a video on their website he says, "If you, as a company, have the ability to make a difference, then you must use it. Doing well and doing good must go hand in hand together, otherwise people don't work for your company anymore, people don't buy your products anymore, you lose your licence to operate."

For Jeff Turner, this in turn creates an imperative for his sustainability team to deliver: "If your CEO is on the world stage advocating for carbon pricing but you don't have a GHG emissions target aligned with science that's problematic."

“We are translating Paris into what it means for us. It's incredibly ambitious and tough to imagine how we will get there. But we are not heroes. We are just doing our fair share. Everyone has to do that.”

Leadership has also been important at HeidelbergCement. Peter Lukas said: "The momentum for our target came from the top management, with strong support from the sustainability department. We could see clearly what was happening to industries that were failing to adapt. As big players in an important industrial sector we knew we had to act. There are a number of imperatives for – and potential benefits of – action, including enhanced reputation and lower costs."

Daniel Schleifer also sees a number of reasons for action: "Climate strategy is core to our company strategy – increasingly so. Emissions are a key factor in operational decisions. There are a number of reasons for this. Regulation creates pressure; markets are changing; we need to take into account long terms risks and opportunities; it's important from a competitiveness perspective. And then there is personal conviction: we have to do this, it's the right thing to do, and we have to start now if we want to be ahead of the others."

His colleague Eleanora added: "Setting a target is just the beginning. It shows you where you need to go, and it leads to an extra effort being made, and forces a focus on the detail. As an engineering company, technology and innovation are at the heart of what we do which makes us confident that we have the necessary skills and resources. Still, we needed to get buy in from other departments and the business, and to get them lining up behind our commitments. Luckily, we have had backing of the Board all along."

Whole economy transition

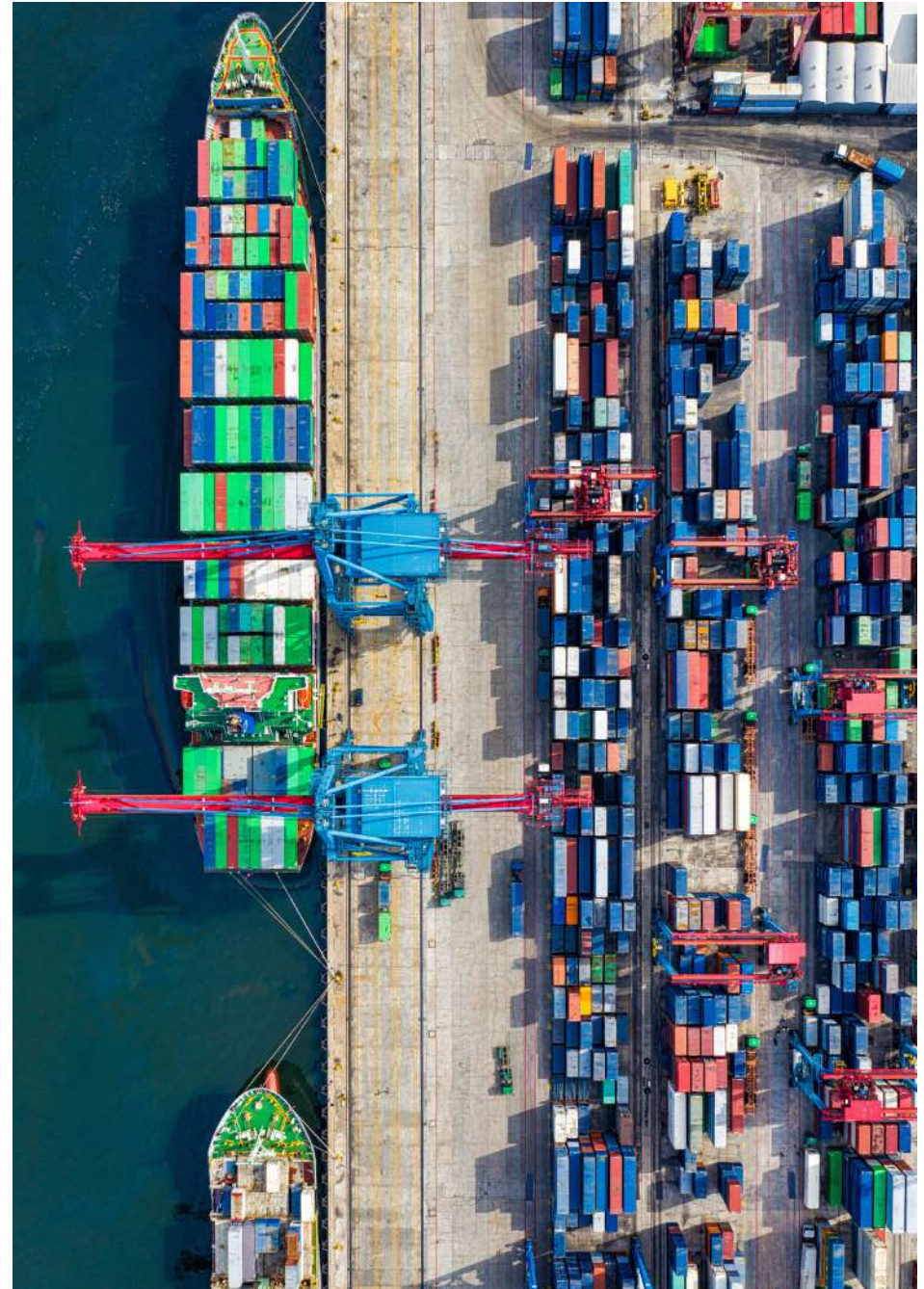
None of these companies believes they can do this alone. They are fully aware of the scale of the challenge and the need for collective action.

As thyssenkrupp's Daniel Schleifer put it: "I believe steel has a place in a climate neutral economy. Indeed, I don't think a climate neutral economy would be able to run without steel. Of course, there are some really big challenges to get from where we are not to where we need to be. These changes don't just have to take place within single companies, but across whole industries, the whole economy, including energy provision and infrastructure. It's a whole scale transformation that is needed but I am confident and positive that it is possible. Governments need to support this transition by creating the right conditions and incentives for investment, and by understanding and accepting the scale of the transformation needed. Regulation is needed to support this."

Peter Lukas at HeidelbergCement agreed: "This is an overarching societal task which won't work if one company alone tries to do it. The whole industry needs to cooperate and fundamentally change the way it works. And other industries as well, for example construction. We need a lot of political support, regulatory support, and commitment from companies." And the message is the same from Jeff Turner at DSM: "None of us can deliver on the Paris agreement without significant changes to government policy."

“Even the more progressive companies like ours know we are not going to get where we need to unless the key policies are broadly in place, starting with a meaningful price on carbon.”

The whole sector and the actors in our supply chain need to be lifted up, and that will only happen with legislation."



Clearing the highest bar - How companies are setting targets to keep global warming below 1.5°C

In October 2018 the Intergovernmental Panel on Climate Change (IPCC) set out the case for limiting global warming to less than 1.5°C above pre-industrial levels. The report, collectively authored by the world's leading scientists, and approved by 195 governments, compared the risks of 2°C warming to 1.5°C and concluded that limiting warming to 1.5°C was possible but would require "rapid and far-reaching transitions in energy, land, urban and infrastructure [...] and industrial systems." It said that ambitious climate action would bring many benefits for shared prosperity and economic stability, including more jobs, increased energy access, and improvements in health.

In April 2019, six months after the IPCC's report came out, the Science Based Targets initiative launched new resources to allow companies to align their scope 1 and 2 targets with either a 'well-below 2°C pathway' or a '1.5°C pathway', the two levels of ambition called for in the Paris Agreement. Electrolux, Microsoft and Viña Concha y Toro are among the companies that have aligned their scope 1 and 2 targets with a goal of limiting warming to 1.5°C – the highest level of ambition.

Electrolux is a multinational home appliance manufacturer headquartered in Sweden. Electrolux products are primarily major appliances and vacuum cleaners for consumer use. It is one of the world's largest appliance makers by units sold.

Targets:

Reduce absolute scope 1 and 2 GHG emissions by 80% between 2015 and 2025.

Reduce absolute scope 3 emissions from the use of sold products by 25% during the same time frame, covering two thirds of all products.

Microsoft is an American multinational technology company with headquarters in Redmond, Washington. It says it "enables digital transformation for the era of an intelligent cloud and an intelligent edge." It is the world's most valuable company.

Targets:

Continue to annually source 100% renewable electricity through to 2030.

Reduce scope 3 GHG emissions intensity per unit of revenue by 30% by 2030 from a 2017 base year and avoid growth in absolute scope 3 emissions.

Viña Concha y Toro is the largest producer of wines from Latin America. It is headquartered in Santiago, Chile and its vineyards cover nearly 10,000 hectares throughout Chile's major wine regions.

Targets:

Reduce absolute scope 1 and 2 GHG emissions 40% by 2030 from a 2017 base year and 50% per bottle of wine over the same time frame.

Reduce absolute scope 3 GHG emissions 17% by 2030 from a 2017 base year and 30% per bottle of wine over the same time frame.

Climate ambition not new

For each of these companies, the ambition to reduce their contribution to global warming by cutting emissions was not new. Setting ambitious science-based targets was the next step on a sustainability journey that they had begun years previously. Valentina Lira, Sustainability Manager at Viña Concha y Toro, explained, "Sustainability is one of the main themes for our business. It always has been. We are linked to the earth!" The Latin American wine producer began tracking their emissions and reporting them to CDP in 2007, and then drew up their first sustainability strategy in 2011, informed by a complete mapping of their carbon footprint from vineyard to final destination in over 130 countries.

Similarly, Microsoft first set climate targets in 2009. They updated them in 2012, with a commitment to carbon neutrality, which includes investments in efficiency, green power and carbon offsets to better address the energy consumption and emissions associated with their cloud servers and data centres. They began sourcing 100% renewable energy in 2013.

At Electrolux, the environment and energy use have been a top priority since the 1990s, with a focus on the energy efficiency of products, reducing greenhouse gas emissions, and increasing efficiency in manufacturing. In 2014, the company set a relative target to reduce emissions by 50%.

The Paris Agreement and IPCC report as catalysts

For each of these companies, the UN climate change agreement reached in Paris in 2015 and the 2018 IPCC report on keeping warming below 1.5°C were catalysts for more ambitious action. Henrik Sundström, Vice President, Group Sustainability Affairs at Electrolux explained how the Sustainable Development Goals and the Paris

Agreement created global momentum on sustainability, and motivated them to get more involved: "The goals we set in 2018 followed on from where we had been before – but they were more ambitious, and absolute rather than relative targets."

The importance of science

For all of these companies having targets that are grounded in science is critical. As Elizabeth Willmott, Carbon Programme Manager at Microsoft explained: "Everything has to come back to the science. We are a data-driven company, and it was clear that the scientific data indicated greater action was necessary." For Microsoft, the robustness of the Science Based Targets initiative methodology was a key consideration before they joined. Willmott:

“When we set targets, we do this to drive real change – not just a commitment on paper. Working with the Science Based Targets initiative validates that roadmap and provides the certification to ensure we are on track.”

Similarly, for Viña Concha y Toro, the appeal of setting a science-based target for inclusion in their 2020 Sustainability Strategy was that they knew they would be doing the right thing. Valentina Lira: "We wanted to know what sort of target would be meaningful, rational, and justifiable – rather than just doing what we could, or what others were doing." And Hendrik Sundström agreed: "Paris clearly set out where we need to get to. Setting a science-based target will help us get there."

The scope 3 challenge – and opportunity

On their science-based targets journeys each of these companies realised the importance of setting scope 3 targets – and how this was both extremely challenging, but also the key to unlocking significant emissions reductions that would bring them in line with a 1.5°C goal. As Henrik Sundström of Electrolux put it: "When you set a science-based target you have to work out where most of your emissions are coming from. Ours are concentrated in the product use phase so it was really important to address this in a meaningful way."

"It was challenging to set the scope 3 targets because we have a range of different products, not all with energy standards, all used differently in different countries. We had information on usage for the largest appliances but not for all, so we had to assess these for each country in which we operate. And then we calculated the total overall impact of our products. Now we are improving the reporting systems to allow us to track impact."

For Microsoft it was a similar challenge. Elizabeth Willmott said: "Our scope 3 target is the most exciting for us. This is where the majority of our emissions are – i.e. in the use of our products, and upstream from our suppliers. We began to look seriously at scope 3 at least a year and a half ago, and the first step was to understand fully where the emissions were. This wasn't easy. A lot of the data we had on product use was estimated, and we had to work out who 'owned' different bits, and what the levers of change were that we could use to shift them. "One of the great things about the Science Based Targets initiative is it gives you a tool to engage with your suppliers by asking them to set science-based targets themselves. This has led to a great conversation, within and beyond the company."

Supplier engagement has also been critical for Viña Concha y Toro, where scope 3 emissions (mainly from packaging) account for 80% of the total, and for whom setting scope 3 emissions targets has been "the hardest part". Valentina Lira: "We are working with our suppliers as partners to reduce emissions. They have been very receptive and engaged, and between 2015 and 2018 we already reduced emissions by 22%."

A range of strategies and solutions

A focus on energy efficiency and shifting to renewables have been key planks for both Microsoft and Electrolux in their efforts to reduce emissions. Each company has also focused on how the products they make can help customers reduce their footprints.

As Elizabeth Willmott explained: "Microsoft is an organisation where change is radical and constant, driven by digital transformation. Applying the power of technology to help solve some of the most pressing environmental challenges is one of the many ways Microsoft is committed to making a positive social impact." The company recently launched a pilot to make 825,000 Xbox consoles carbon neutral.

At Electrolux, the thinking is along similar lines. Henrik Sundström said: "We are looking at how our products can help our consumers reduce their impact – not just via increased energy efficiency of the products themselves, but also by what they enable them to do, such as reduce food waste. Through our communications and advertising we are looking to nudge our consumers towards more environmentally friendly behaviours, for example we might advertise our ovens using a picture of a baked potato or vegetables rather than a steak, to encourage consumption of more plant-based foods. And at the same time, we'll make sure there's a programme on the oven for these sorts of foods."

For Viña Concha y Toro, the biggest opportunities lie in reducing the footprint of their packaging, and also making distribution more efficient and low-carbon. Caring for the land is a key part of their approach. The company has some vines that are 135 years old. The sustainability of their business is, more obviously than for some others, directly linked to the health of the planet.

Government action needed

The IPCC report said that all countries and non-state actors would need to strengthen their contributions without delay if the world was to limit global warming to 1.5°C. These leading companies agree that their efforts must be complemented by stronger action from governments to drive the unprecedentedly rapid transformation needed.

For Microsoft a carbon price is the most important policy reform. Elizabeth Willmott: "We have used an internal carbon tax at Microsoft since 2012 to manage our growth sustainably, and we know it works."

“We want regulators to put a price on carbon to drive greater change in a way that is both effective and fair to companies.”

Meanwhile, Electrolux's Henrik Sundström sees government action as the necessary corollary to business ambition: "We have to do our bit. But in order to be carbon neutral in our value chain we are dependent on clean electricity. Politicians have to act. Ultimately, we are dependent upon decarbonising the grid. We can play our part by creating demand for renewables, but governments need to commit to decarbonisation."



Cascading ambition - How leading companies are cutting emissions in their value chain

For a company aiming to set and achieve ambitious science-based targets, one of the most challenging tasks is influencing actors in their value chains. So-called 'scope 3' emissions are those produced by a business's suppliers and end users (as opposed to scope 1 and 2 emissions which come from the company's own operations and energy use). For Hewlett Packard Enterprise, IKEA and Nike, scope 3 emissions account for a majority of their total footprint, and so strategies to cut them will be critical to successfully reducing their overall environmental impact.

IKEA is a Swedish multinational group that designs and sells home furnishings. It is the world's largest home furnishing retailer. Its vision is to "create a better everyday life for the many people". Inter IKEA Group is the owner of the IKEA Concept and the worldwide IKEA franchisor and Ingka Group is a strategic partner in the IKEA franchise system, operating 374 IKEA stores in 30 countries.

Targets:

Reduce greenhouse gas emissions from IKEA Group stores and other operations by 80% in absolute terms, compared to 2016. (Ingka Group)

Reduce greenhouse gas emissions from IKEA Group customer and co-worker travel and customer deliveries by 50% in relative terms, compared to 2016. (Ingka Group)

Reduce greenhouse gas emissions relating to home furnishing products and food by at least 15% in absolute terms by 2030, compared to 2016. (Inter Ikea Group)

Hewlett Packard Enterprise (HPE) is an American multinational information technology company founded in November 2015 when it split from The Hewlett-Packard Company. HPE is focused on developing intelligent solutions that allow enterprises to capture, analyse and act upon data seamlessly from edge to cloud.

Targets :

Reduce absolute scope 1 and 2 GHG emissions by 55% by 2025 from 2016 base.

Reduce absolute manufacturing-related GHG emissions in the supply chain by 15% by 2025 from 2016 base.

Increase the energy performance of the product portfolio 30-fold by 2025 from a 2015 base.

Enable manufacturing suppliers covering 80% of spend to set science-based targets by 2025.

Nike, Inc. is an American multinational corporation engaged in the design, development, manufacturing, and worldwide marketing and sales of footwear, apparel, sports equipment, accessories, and services. The company is headquartered near Beaverton, Oregon.

Targets:

Reduce absolute scope 1 and 2 GHG emissions 65% by 2030 from a 2015 base.

Reduce absolute scope 3 GHG emissions 30% within the same timeframe.

Map the footprint

The first task for any company setting a science-based target is to understand where their emissions are coming from and what areas offer the best potential for reduction. This mapping exercise is particularly challenging for scope 3 emissions, especially if a company has a large number of different suppliers, and / or a diverse range of end users or customers.

In an interview with the Science Based Targets initiative, Karol Góbczyński, Climate and Energy Manager at Ingka Group said that the first step on their target-setting journey was to map their emissions: "In spring 2017, we developed a tool to do that, with the result that we now know where 99% of our scope 3 emissions come from, including raw materials, customer travel and deliveries. We understand the total footprint of our value chain, which means we know where the opportunities are to reduce emissions."

For HPE, target setting also started with a mapping exercise. Shannon Siart, Manager of Climate Strategy & Sustainability Initiatives, explained what they found when they did this mapping: "The majority of our emissions as an IT company are scope 3 – i.e. they come from customers using our products (downstream), and from the extraction of raw materials (upstream). The breakdown is as follows – 6% operations; 67% product use; and 27% suppliers. Because of this it's vital that we engage on scope 3."

The majority of Nike's emissions are also concentrated in their supply chain. They have been engaging with suppliers on sustainability targets since 2010, but when it came to setting a science-based target they discovered how complex the mapping exercise was. Jeremy Lardeau, Senior Director of Global Sustainability Data & Analytics said: "We learned that we would need to enhance our capacity to analyse our footprint across our complex global value chain. We had to bring together footprinting experts and data engineers to fully understand and model our emissions, and then do

projections to 2030. We did extensive analytical work, including scenario planning, and this built the foundation for our target setting process."

Engagement, engagement, engagement

Having mapped the emissions and set their Scope 3 targets, each of these companies had to intensify outreach to and engagement with suppliers and customers.

For IKEA, this meant initially collaborating with companies within the IKEA value chain, i.e. the franchiser (Inter IKEA Group) and the franchisees (the biggest of which is Ingka Group). As Karol Góbczyński explained: "If you are setting science-based targets you need to include the carbon footprint across your value chain. In IKEA this includes companies within the value chain. We all have a common ambition to be climate positive by 2030, by reducing more greenhouse gas emissions than the IKEA value chain emits."

For Nike, it was about building on and deepening the relationships they already had with suppliers. Scott Vitters, Senior Director of Sustainable Manufacturing & Sourcing said: "A science-based target that includes scope 3 emissions signals little more than intent until a company's suppliers are aligned and committed to the reduction required. We have been setting carbon reduction targets with our supply partners for nearly a decade and are using our science-based target to guide our current target setting process with both finished goods and materials suppliers. We have also initiated a discussion with several of our most strategic suppliers on having them set their own science-based targets.

"For anyone setting a science-based target there is an initial: 'Wow this is big lift'. Same for us, and the same for our suppliers. But having a common methodology helps focus all stakeholders on the scale of change required based on the science, rather than arbitrary, company-led goals. It also ensures our collective attention is on the best levers for driving the scale of improvement needed."

Hewlett-Packard Company was the first electronics company to publish a list of its manufacturing suppliers and HPE is now asking 80% of its manufacturing suppliers by spend to set science-based targets in their own operations by 2025. HPE will track their progress through each supplier's publicly reported greenhouse gas emissions and through direct one-on-one engagement with the supplier. HPE will hold suppliers accountable for their own progress towards publicly stated goals and provide resources to help them set science-based targets.

Shannon Siart of HPE: "We have launched the world's first comprehensive supply chain management program. The program includes three key components: an aggressive

new goal to drive accountability within our own supply chain; a plan to build the capability of our suppliers to set science-based targets in their own operations; and a commitment to lead the business community by setting a standard for supplier GHG engagement and abatement. It's a ripple effect that will drive action through our suppliers, customers and the world.

"We are supporting our suppliers to create customised targets based on the size and complexity of their operations and to track progress. Given that the IT industry has a complex and often shared supply chain, HPE is challenging our peers to join us in enabling suppliers to set science-based targets by implementing capability-building programs. So far, 11% of our suppliers by spend have set science-based targets, while 67% have committed to do so in the next two years. The impact of these scope 3 supplier targets will reach way beyond the HPE supply chain.

“Our suppliers also supply others and so the targets they are setting will affect the downstream footprint of other IT companies.”

Renewables, reuse, recycling

There is a range of tactics that these companies are using to drive down emissions in their value chains, but one of the main ones is renewable energy. Since 2009, Ingka Group has invested €2.5 billion in renewable energy globally, and now owns and operates more wind turbines than stores. Almost 50% of IKEA stores have solar PV installations, reducing the company's electricity costs and climate footprint. They are also aiming to become a circular company. At this moment, 60% of materials in IKEA products are renewable and 10% are recycled.

As of December 1, 2019, Nike has been powered by 100% renewables in North America and is more than halfway to meeting its commitment to source 100% renewable energy across owned and operated facilities worldwide by 2025. It is also helping suppliers understand how they can use more renewable energy. Through its Energy and Carbon Program, which is active in more than 15 countries, Nike is working directly with contracted factories on reducing energy use. Nike is also engaging with governments and policymakers to advocate for policies that let factories directly source renewable electricity from local power utilities.

Scott Vitters: "Using a common methodology helped us understand with our supply partners that the emission reduction opportunities available to us currently won't be enough to hit targets. With most of our manufacturing energy coming from local

electric grids and much of our manufacturing base located in countries where current policy mechanisms limit renewable electricity purchasing options, our science-based target provided clarity on the importance of accelerating action with other stakeholders to remove shared barriers to renewable power."

Driving innovation

For all of these companies, having science-based targets is driving innovation, increased efficiency and investment in new technology. For example, HPE's products are 1.6 times more efficient than they were in 2016. The aim is for them to be thirty times more efficient by 2025. Shannon Siart: "That's an exponential improvement. It's ambitious and will depend on innovation. We will need to reinvent the whole system to hit that target."

At IKEA, the belief is that this innovation will be a win-win for the climate and the company. Karol Gobczyński explained: "Our science-based targets will challenge us even more to work in new ways, and will drive innovation and renewal in our business. The transition to a low-carbon economy is not only a challenge, but something which will bring new opportunities. The low-carbon economy is boosting investment and innovation. It's inclusive, and will create meaningful work."

Meanwhile, Nike has been focused for decades on embedding sustainability and innovation into its operations and working collaboratively with others to drive change across the industry. It took the same approach to setting its science-based targets, initiating a sectoral guidance working group with the World Resources Institute in June 2017. The working group included more than ten apparel companies, materials suppliers and manufacturers, and over the course of a year was critical to simplifying the complexities of the industry and developing sectoral guidance.

Meeting – and creating – demand

For all of these companies, innovation is in part about responding to, as well as helping to create, customer demand and awareness. IKEA is enabling people to visit its stores in a way that produces fewer emissions, e.g. via city centres locations, public transport, or in electric vehicles that can be recharged in their car parks. They are also enabling customers to generate electricity via their 'home solar' offer, which includes financing of PV panels.

Enabling customers to reduce their footprints and thereby earn a competitive edge is also a motivation for HPE. Shannon Siart explained: "For HPE having a product use goal is important because it aligns with our business strategy and offers the opportunity to differentiate ourselves in the market. We want to be known for cutting edge technology that drives transformational efficiency. This is what we offer our clients. By

increasing the energy efficiency of our products we are providing business value to our customers."

HPE also sees itself as providing the technology of the future, which will be part of the solution to climate change. Shannon Siart: "We want to connect the dots and show that technology and sustainability are intertwined. We want our products to help achieve climate goals, for example through enabling new research."

For Nike it's about demonstrating values that align with customers' expectations. Virginia Rustique-Petteni, Senior Director of Engagement for Global Sustainability said: "Consumers today expect brands to stand for something. Consumers want us to show we are a sustainable business. It's about what we do, say and how we behave but also what we make and how we make it. We need to be part of the conversation, and use our global reach and brand equity to galvanise our partners, other industries, and other sectors. Initiatives like Science Based Targets and the G7 Fashion Pact, which we recently joined, are important for maintaining trust."

“Consumers today expect brands to stand for something. Consumers want us to show we are a sustainable business.”

Economy-wide transformation

For all these companies, there is a recognition that their efforts must be part of a wider whole. Implementing serious and ambitious scope 3 targets is a key way of cascading impact beyond the individual business, and is seen as the start of a bigger movement. Jeremy Lardeau at Nike said: "Setting science-based targets highlighted the scale of the decarbonisation that has to happen across the whole economy. Our scope 3 target covers raw material extraction and basic processing for the key commodities that our industry and others rely upon. If we are to meet our science-based target, these sectors must contribute; we can't do it alone."

Similarly, Shannon Siart from HPE said: "Of course, no one company can solve climate change – it requires global collaboration and commitment. Our aim is that our innovative programs will act as a model for the industry and the world."

Creating an ambition loop - How the private sector can enhance national climate action, and vice versa

As more and more companies across the globe step up to the challenge of aligning their business with a climate-safe future, they are sending a clear signal to policymakers that the transition to a low-carbon economy is underway. However, the private sector relies on governments to create the right conditions, policies and incentives to support this transition.

To solve climate change, business and government leaders must work together to accelerate what we call an ["ambition loop,"](#) a cycle in which government policy and private sector leadership reinforce each other and help take global climate action to the next level.

Smart government policies are helping businesses accelerate climate action around the world. For example:

- In India, bold national renewable energy targets and consistent financing terms helped spur record open-access solar energy projects.
- In Europe, clear rules for power purchase agreements helped lead to increased renewable energy use.
- Strong mandates and economic incentives for electric vehicles in Norway and California helped make them global leaders in electric vehicle sales.
- And in China, clear financing led to a rapidly expanding fleet of electric buses.

[Japan as a case study](#)

Corporate actions are at the heart of Japan's long-term climate and growth strategy submitted under the Paris Agreement. Japan is the first country to provide explicit government support for companies to set science-based greenhouse gas emissions reduction targets.

In 2017, Japan's Ministry of Environment began supporting Japanese company low-carbon innovation through a dedicated budget that helps companies to set SBTs with the Science Based Targets initiative.

In fiscal year 2019 the total budget related to Japan's SBT support program is approximately 150 million yen (\$1.4 million). Companies apply to the Ministry of Environment; if they are selected, they receive one-on-one SBT advice from consultants. After initially focusing on large companies, the program has expanded to small- and medium-sized firms.

This is not the first chapter in Japan's push towards SBTs—just its latest. The country has had a Mandatory GHG Accounting and Reporting System for large-emitting companies since 2006. In 2015, Sony became the first Japanese company to set an SBT. Since then, dozens of Japanese companies have set SBTs across at least 18 sectors.

The program has been very effective at growing the number of Japanese companies with approved SBTs. In 2018, Japan became the first country with a chemical sector company SBT. Japan has traded places with the United States throughout 2019 as the country with the largest number of companies with approved SBTs and clearly leads in the number of high-emissions companies. By the end of 2020, the Ministry of Environment aims to have at least 100 approved Japanese company SBTs.

By stepping up with leading mitigation targets, Japanese companies are providing a foundation for the government to set more ambitious policies and regulations, initiating an ambition loop.

Japan's private-sector engagement on climate goes beyond SBTs. Based on the success of the SBT program, the Ministry of Environment has broadened its company support to include company participation in RE100—a group of companies that commit to be powered 100% by renewable energy—and development of company disclosures as recommended by the Task Force on Climate-related Financial Disclosures (TCFD). Rising investor pressure is starting to turn these initiatives into sources of competitive advantage for companies. In 2019, Japan's Ministry of Economy, Trade, and Industry (METI) and the Ministry of Environment released supporting guidance for Japanese companies to join established international initiatives including SBTi. On the international stage, Japan's focus on business-led engagement and innovation is reflected in its Partnership to Strengthen Transparency for co-Innovation (PaSTI), among other initiatives.

Japan's efforts at company engagement can be straightforwardly replicated in other countries seeking to kickstart the transition toward ambitious long-term climate goals. In the decentralised and bottom-up world of [post-Paris Agreement governance](#), country-level targets for company SBT development can be part of a politically-viable approach to spurring business and industry action that supports achievement of national climate targets. Company climate engagement and supporting policies (such as the [renewable electricity feed in tariff](#)) are two components in Japan's ongoing transition to a decarbonised society, which is also reflected in the country's reduction of its [energy-related carbon emissions](#) by more than 10% from their peak in 2012 to 2018.

Japan's pursuit of global SBT company leadership raises the question of when and how company targets will translate into more ambitious government mitigation policies. The race-to-the-top aspect of Japan's climate policies and long-term strategy is a positive driver of innovation, but it cannot supplant regulatory approaches to laggards and obsolete facilities. The country's climate tipping point is yet to be identified, but the [long-term strategy development process](#) indicates it will likely be linked with industry associations and companies across the private sector.

A menu of options for enhanced NDCs

Company engagement and innovation are essential components of transition, but they are not sufficient for global climate stabilisation. To stabilise the climate, we need policies that support companies in achieving reductions and address stragglers and adverse impacts. A full range of complementary, voluntary and mandatory approaches can address both ends of the performance spectrum and catalyse ambition feedback loops between national governments and the private sector.

Under the 2015 Paris Agreement, countries must submit new or updated national climate commitments, known as nationally-determined contributions (NDCs), by the end of 2020. This is an important opportunity for countries to submit bolder pledges that provide businesses with greater clarity and confidence to invest in climate solutions and, in turn, accelerate the transition to a net-zero economy.

[There are a number of options for countries to include the private sector in enhanced NDCs](#) and formalise the virtuous cycle of the ambition loop.



Shifting investment flows to align with Paris - How investors are using science-based targets to help decarbonise their portfolios

Investors are increasingly integrating sustainability aspects into their investment decisions. Reliable and comparable information on how companies are adapting to a low-carbon future by reducing their greenhouse gas emissions is critical. Science-based targets can help provide this information, and indicate to investors how seriously companies are taking their climate-related responsibilities. The Science Based Targets initiative spoke to Allianz, a global insurer and investor, and Ceres, a non-profit working with investors and companies to achieve sustainability goals, about how the investor community is using science-based targets to help decarbonise their portfolios.

Ceres is a non-profit organisation working with influential investors and companies to build leadership and drive solutions throughout the economy. Through powerful networks and advocacy, Ceres tackles the world's biggest sustainability challenges, including climate change, water scarcity and pollution, and inequitable workplaces.

The Ceres Investor Network includes over 170 institutional investors, managing more than \$26 trillion in assets, advancing leading investment practices, corporate engagement strategies, and key policy and regulatory solutions. Ceres is also involved in the Global Investor Coalition on Climate Change, Climate Action 100+ and The Investor Agenda.

Allianz Group is one of the world's leading insurers and asset managers, headquartered in Germany.

Allianz offers 92 million customers in more than 70 countries a wide range of products, services, and solutions in insurance, financial service and asset management.

Allianz is one of the world's largest investors, managing around 673 billion euros on behalf of its insurance customers. The asset managers PIMCO and Allianz Global Investors manage over 1.4 trillion euros of third-party assets. Allianz holds the leading position for insurers in the Dow Jones Sustainability Index.

Growing awareness and leverage

Climate change – and the risks associated with it – have gone from being an issue that many companies and investors did not consider as central to their business strategy only a few years ago, to now being mainstream in the finance sector. Sue Reid, Vice President of Climate and Energy at Ceres, told the Science Based Targets initiative, "When we first hosted an investor summit on climate change over fifteen years ago, it was a struggle to get people in the room. Many saw climate as a moral issue, not a financial one. Now investors are banging on the doors seeking to be part of the conversation."

Reid identified a 2015 speech by the Governor of the Bank of England, Mark Carney, on the systemic financial market risks of climate change and of pursuing short-term profit without thinking about the long-term implications, as a "clarion call" to investors. "At the same time," she said, "climate risk is manifesting in the real world, for example in the form of extreme weather events. Investors know they have to get serious about this and manage their portfolio with a view toward these risks as well as climate solutions opportunities."

Similarly, Thomas Liesch, Climate Integration Lead at Allianz said they have been working with investees whose attitudes to climate risk have changed radically over a short period: "We have seen investee companies going over the course of a couple of years from not even realising that climate change was an issue for them to recognising the strategic risk and opportunity, and responding to it in their operations."

For Liesch, this shows the importance of engagement, and of being prepared to work with companies to support their change: "It's all about asking how they want to adapt to a climate friendly business model. And then, are they going quickly and far enough? If not, why not, what are the obstacles - and how can we as a partner support? The task for investors is not just to 'polish' your portfolio, and divest from energy-intensive sectors, it's to help companies in all sectors to decarbonise and to finance this transition within the next few decades. We should reserve divestment for companies that ignore the requirements for a climate-neutral economy."

Science-based targets provide a 'guide rail'

For both Allianz and Ceres, the Science Based Targets initiative is a useful tool to help guide company action, and send signals to investors about companies' readiness for and commitment to the low-carbon transition. Reid: "The Science Based Targets initiative is crucial to our work. It provides sector-by-sector methodologies for companies to develop credible pathways to reduce their emissions. The initiative ticks all the boxes for investors – it's science-based, there's transparency around the methodologies and commitments, and there's tailoring for different sectors."

Similarly, Liesch explained,

“A company's commitment to the Science Based Target initiative is useful for us, because it shows that the decision-makers have made up their mind. They are aligning the business strategy with internationally acknowledged climate goals.”

What a science-based target does not tell you is how they are going to get there. But it makes it easier for us to ask questions."

Both Liesch and Reid see science-based targets as helping companies manage the risks of transition to a low carbon economy. Reid said: "When companies set themselves on a credible path to GHG emission reductions they are better prepared for resilience, and less likely to be stuck with stranded assets. Liesch agreed: "Having a science-based target doesn't mean a company faces no transition risk. But if a company has a science-based target that is translated into corporate action then it's much more likely that they will solve the problems associated with transition."

Tipping point

For each of these actors, there is a sense that momentum is building but that the finance sector is still short of reaching a 'tipping point'. Reid is broadly optimistic: "The fact that there have been nearly 200 climate related shareholder resolutions a year in the US alone shows that this is increasingly important to investors. That said, there is still room for improvement – especially on the US side. Some really large asset managers with huge influence are saying the right things but not necessarily following up with actions. Their impact is difficult to assess because they are having conversations with companies behind closed doors. If these big players get on board – including on key votes on climate-related resolutions – a tipping point may be reached."

Liesch agreed that the European investors are leading the way, but said others in the US and Asia were also making influential moves. "There has been quite a lot of progress over recent years. There is a pack who are more advanced and are leading in terms of ambition and operationalisation – especially in Europe. We don't yet have commitment or engagement on climate from the whole financial market. But for sure, if you are coming from a sector associated with high emissions and you want to get finance then increasingly you need to be showing a credible and robust strategy on how to reduce emissions."

Both Liesch and Reid agreed that joint investor initiatives like Climate Action 100+, which is backed by more than 370 investors with over \$35 trillion in assets under management, are really important. Reid sees them as "a strong indicator of investor attitude and ambition" and fully agrees with Liesch's assessment that they are already having "an impact in the real economy".

Allianz is also a founding member of the UN-convened Net-Zero Asset Owner Alliance, which means it is committed, along with 11 other institutional investors with more than 2 trillion US-Dollar under management between them, to decarbonising its portfolios by 2020. Liesch explained: "It's important for us to be part of groups with like-minded climate ambassadors because we cannot do this alone. We need more asset owners to act, and we need the companies we invest in to get the message. As investors, we all need to be saying to them 'Dear Company, if you want our clients' money, you have to show us that you are prepared for future challenges."

New methodologies needed to unlock full potential

Each of the interviewees said there were "methodology gaps" to be closed, which would enable more far-reaching, transformative action. Allianz have been members of the Science Based Targets initiative since 2018, and are committed to setting their own target as soon as the methodology becomes available for financial institutions.

Liesch said: "We could already set a target for our own emissions – for example from heating and power – but the challenge is measuring and tracking the impact of the billions we invest in other companies. We are part of the group within the Science Based Targets initiative that is committed to developing a methodology for the financial sector."

Part of the problem as Liesch sees it is, “we don’t know how the transition will play out across the sectors.” For him, part of the answer is to ask the companies themselves: “We need companies to set out their steps to reducing emissions. They know their challenges and opportunities best. Our role is to keep saying: ‘show us your strategy to decarbonise.’”

Liesch and Reid both see the fact that there are not methodologies for all sectors as an obstacle to total economy-wide transformation. Liesch cited sovereign bonds as an issue. Investments in sovereign bonds currently make up significant shares in many institutional investor portfolios, but at the moment science-based targets can’t be used to assess these entities’ plans to reduce emissions. Liesch: “Addressing questions like this could be part of the second wave of the Science Based Targets initiative”.

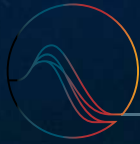
Reid agrees there’s more potential for the initiative to contribute to the low-carbon transformation necessary to prevent runaway climate change. She applauded the initiative for having started the work a few years ago to create the first methodologies and put the frameworks in place. As well as developing new guidance for other sectors, and adjusting goals to align with 1.5 degrees, she also sees a need for more concerted and targeted outreach to investors, using “their language,” and helping them “see the value, from an investor perspective, of calling on companies to set science-based targets.”

Fit for the future

Both Allianz and Ceres are convinced of the necessity of investor action in facilitating the transition to a greener future. For Allianz this also offers new business opportunities.

Liesch: “We are convinced that if we clearly act on the global climate change challenge, which will affect individuals and companies around the world, we will earn the respect and trust of our customers, partners and colleagues. We need to set clear expectations and state our commitment to invest where the future is being made. This sort of change can’t happen overnight. You need to prepare for it and get on board early. We believe our strategy will benefit the companies we invest in – making them fit for this future – and therefore also the clients on whose behalf we are investing. Ultimately, it will also drive down emissions, which in turn will reduce climate risk - a key concern for us as an insurance company, and for our clients.”





NEXT STEPS FOR THE INITIATIVE

“ It is encouraging to see many first-movers in the private sector align with civil society and ambitious Governments by stepping up in support of a 1.5°C future. Now we need many more companies to join the movement, sending a clear signal that markets are shifting. ”

- António Guterres
(Secretary General, United Nations)

Next steps for the initiative

Over the past 5 years, the SBTi has made remarkable progress towards its goal of promoting science-based target-setting by companies and in the process raised the bar for ambitious corporate climate action.

Yet, as the influence and impact of the initiative grows, so does the scale of the challenge ahead. Global emissions continue to grow, progress is uneven across regions and sectors, and for every company that has set a science-based target, many remain that have not.

As the SBTi enters its next phase, it will need to meet these challenges head on to ensure it is delivering the support to companies and their stakeholders that enables an exponential growth of SBT adoption and impact.

Some of the key priorities the SBTi will focus on are:

- **Enabling the institutionalisation of SBTs by exploring the standardisation of SBTs**
- **Lowering the barriers for ambitious value chain action in line with the Paris goals**
- **Integrating SBTs more closely into financial markets**
- **Providing a robust framework to track companies progress against their targets**
- **Supporting the adoption of SBTs in developing economies**
- **Catalysing the ratcheting of private sector and national targets to align with 1.5C**

Over the next years the SBTi will work closely with companies and other partners to deliver on these priorities and further catalyse leadership from the private sector as it continues to raise the bar on global climate action.

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