

# SCIENCE-BASED TARGETS

Setting the bar high enough:  
The case for science-based targets on climate change



A satellite image of Earth showing swirling white clouds over a dark blue ocean. The clouds are dense and form a large, circular pattern in the upper half of the image. The ocean surface is visible in the lower half, showing some texture and darker patches.

This booklet contains a five-part series of articles on the need for science-based targets on carbon emissions, which were written and published by the team at the Carbon Trust in the summer of 2016, and updated in September 2018.

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At the back of the booklet you can find more details about how the Carbon Trust can help your organisation to set a science-based carbon emissions target, alongside putting in place realistic plans to deliver those reductions.

# Why do we need to set science-based targets on climate change?



**Veronika Thieme**  
**Consultant**  
**Business Services**

As we increasingly see the impacts of a changing climate around the world, we have reached a point where the common consensus recognising the challenge posed by global warming needs to be translated into urgent action.

After years of dithering and dispute, businesses and governments around the world are broadly in agreement about the enormous risk that climate change poses to society and the environment. An overwhelming majority now accept that we need to do something about it – and soon.

In Paris in 2015 we had an historic and unprecedented moment of international consensus. Nearly 200 countries signed up to an ambitious agreement to keep global warming well below 2°C above pre-industrial levels, pursuing efforts to hold it at no more than 1.5°C.

Yet with a clear international agreement between governments, backed up by commitments at a national level, why are the targets set by individual organisations so important?

The simple answer is that the best available climate science tells us that as a society we are not doing anywhere near enough. At present the collective sum of all national commitments on climate change only account for around a third of the total reductions required to keep the world on a below 2°C pathway.

Although there is a mechanism in place under the Paris Agreement to ratchet commitments upwards at regular intervals, there is no certainty on whether this will happen and by how much pledges will increase.

In fact, since 2015 we have seen backpedalling from some countries on their commitments, most notably with the Trump administration in the USA. Despite emissions plateauing over recent years, in 2017 fossil fuel emissions reached a new record high.

Where nations are clearly not doing enough, what is done at a subnational level becomes of critical importance. And there are some reasons for optimism, with major commitments being made by cities, states and regions. Yet perhaps the greatest reason for hope is the growing group of companies setting science-based targets on climate change.

These targets are not based upon what is easy to do, desirable to shareholders, or demanded by customers. They are objective goals based on our most advanced understanding of how greenhouse gas emissions impact the climate.





# 500

Companies have either set or committed to set science-based targets in line with a below 2°C future.

Today around 500 companies – collectively accounting for a substantial chunk of the global economy, and a not insignificant proportion of all global emissions – have either set, or committed to set, science-based targets that are genuinely in line with a below 2°C future. And thanks to the example these companies are setting for their industry peers and supply chains, the momentum behind the movement continues to grow.

If we are going to have a reasonable chance of avoiding the worst consequences from climate change, it is imperative that we close the gap between the ambition of the Paris Agreement and the action objectively required to deliver on it.

# What exactly is a science-based target?



**Guy Rickard**  
**Senior Consultant**  
**Business Services**

To put it simply, a carbon emissions target is defined as science-based if it is in line with the scale of reductions required to keep global temperature increase below 2°C above pre-industrial temperatures.

In less simple terms, science-based targets are based on the concept of a global carbon budget. By accounting for the greenhouse gas emissions that have been put into the atmosphere since the industrial revolution began, and having a good understanding of how these affect the climate, it is possible to estimate the level of further emissions that can still be put into the atmosphere and have a good chance of maintaining global warming levels below 2°C.

Once you understand the global carbon budget and have a good grasp of the different sources of greenhouse gas emissions from across the economy, society and natural sources, then you can plot necessary reduction pathways in a fair and transparent way. When this is done at an organisational level, then this is considered to be a science-based target.

When considering what will be required to meet the 2°C goal at a global level, we are often thinking about timescales out to 2050 and 2100 and it can be logical to use these timeframes for setting long-term targets. But points along these trajectories can be more useful for setting organisational targets over a shorter time horizon, such as 2025 or 2030. These more immediate targets offer advantages, as they increase the sense of urgency for achieving reductions and have fewer uncertainties, putting the climate challenge onto the priority list for management and boards today.

However, setting these targets requires some serious thinking, as there are a range of factors that must be considered. There is a need to navigate through considerable uncertainty in a company's future development, particularly over a 10 or 15 year time horizon. Although some of the most important questions are ones that large corporates will already have thought about in detail, such as predicting their own future growth, market share, asset portfolio and geographic locations.



Other questions can be more challenging. What will the low carbon transition mean for the growth or contraction of different sectors of the economy between now and 2050? How do you account for the impact of disruptive technologies or unexpected events? Should a company that has already taken action to lower carbon emissions today have to make the same level of reductions as those that haven't started yet?

Fortunately, there are several methodologies to assist with setting science-based targets, which can provide useful frameworks for going through the process.

Perhaps the most detailed methodology released to date – and also the most commonly used – is known as the Sectoral Decarbonisation Approach (SDA). This was published in 2015 by the Science-Based Targets initiative (SBTi), a partnership between CDP, UN Global Compact, the World Resources Institute and WWF. The methodological development was supported by a technical advisory group of international experts, which included the Carbon Trust.

This methodology enables companies to set a science-based target based on the required decarbonisation trajectory of their sector, or the sectors in which they each operate. This builds upon robust climate change mitigation scenarios developed by the Intergovernmental Panel on Climate Change (IPCC) and the International Energy Agency (IEA), which are based on the best available science and analysis from around the world. These same scenarios underpin national and international climate change policy decisions.

The SDA takes into account the potential for sectors to reduce emissions through improved efficiency and new technology, factoring in future growth projections and market share for different geographies. Based on this companies can then calculate the level of emissions reductions that they themselves will need to achieve to put their sector on track for a below 2°C pathway.

However, the SDA can only be applied in certain sectors at present, so some companies choose to use different approaches (of which several are available and published on the SBTi's website). But the SDA is increasingly becoming ever more flexible to meet varying business needs, and sector-specific guidance is continually being developed to help overcome barriers to adoption.

In essence, science-based targets build upon the expertise and rigor used to build international scientific consensus, combining it with a transparent approach to allocate a fair share of reductions to a company. This means that a business is now able to credibly demonstrate that it is doing its fair share in efforts to achieve the ambitions of the Paris Agreement.



# Why should a company set a science-based target?



**Hugh Jones**  
**Managing Director**  
**Advisory**

Experience tells us that there isn't always an obvious business case for doing the right thing or for moving too far ahead of your market.

Taking a leadership position on sustainability issues can seem risky, particularly when your actions could add to your direct costs or put you at a short-term competitive disadvantage. There is also considerable political and market uncertainty at the moment, which means that many businesses are adopting a wait-and-see approach before making big decisions.

It is therefore helpful to outline some of the reasons why senior leaders at large corporates across a range of industries have been willing to commit to science-based targets, knowing that this will support long term company value creation.

One major reason is to get ahead of regulatory risk. With the window of opportunity to avoid dangerous climate change getting ever shorter, indications are that governments could take an increasing strong regulatory position on greenhouse gas emissions, especially given the growing frequency of severe climate-related incidents. In setting science-based targets and aligning to the ambitions of the Paris Agreement, businesses are able to anticipate the impacts of these regulatory changes.

In many countries we are already seeing increased costs for business as a result of needing to comply with national climate change policies. These are often being surpassed at the subnational level, with major cities and regions implementing their own ambitious strategies.

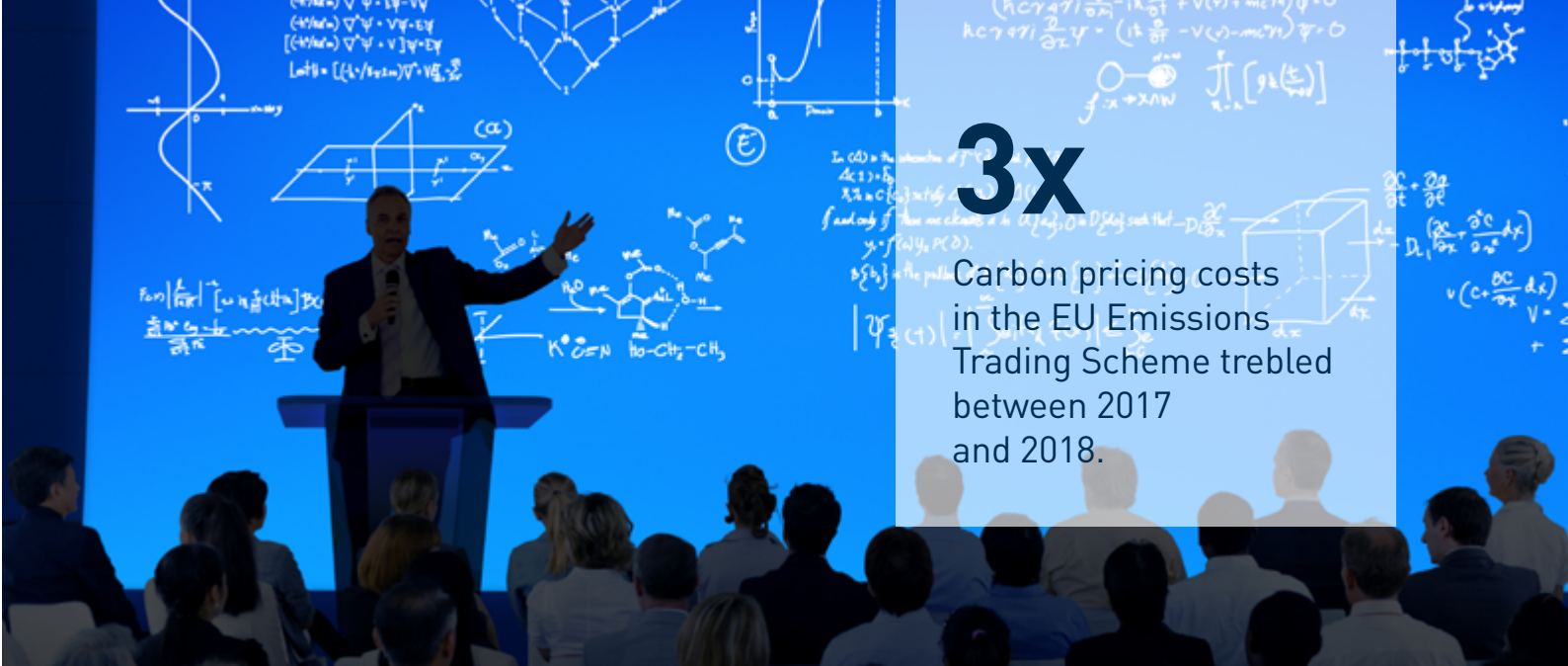
Those compliance costs become even higher with the addition of a carbon price, through either taxes or cap-and-trade schemes. Currently carbon pricing is either in place or scheduled for implementation in 45 national and over 25 subnational jurisdictions, across major economies in both developed and developing markets. These schemes already cover around a fifth of global emissions.

There is every indication this movement towards carbon pricing will expand and costs will continue to increase. Of the countries signed up to the Paris Agreement, 88 have indicated they are either using or intend to use carbon pricing to deliver on their national commitments, which would result in a price being put on well over half of all global emissions. And these can spike rapidly, with costs in the EU Emissions Trading Scheme trebling between 2017 and 2018 to reach over €18 a tonne.

Taking strong action to reduce emissions from energy use and broader resource use also drives direct operational cost savings. As the costs of low carbon technology are rapidly reducing thanks to innovation and higher levels of deployment, the business case for investing in everything from renewable energy to electric vehicle fleets becomes more and more attractive.

In addition to managing costs, reducing resource use helps to shield companies from increasingly uncertain commodity markets. These investments into new technologies also support companies





3x

Carbon pricing costs  
in the EU Emissions  
Trading Scheme trebled  
between 2017  
and 2018.

involved in other popular corporate climate leadership initiatives, such as the renewable energy and electric vehicle campaigns RE100 and EV100.

Setting big, bold, ambitious targets can also unlock the potential for innovation within an organisation. There are now numerous companies that have set stretching sustainability goals, delivering these alongside substantial cost savings, product improvements and increased market share.

The long-term nature of science-based targets provides a clear direction of travel and can offer insight into important market trends that will be shaped by the low carbon transition. This clarity can shift the focus of a business towards the development of innovative solutions and new opportunities.

At the same time, there are clear reputational benefits for companies that adopt science-based targets as part of their sustainability strategy. As the physical impacts of climate change start to be felt more acutely, the public are taking an increasingly poor view of companies that do not do their fair share to reduce emissions.

Similarly, as other businesses take progressive leadership positions on climate issues, laggards may appear unreasonable and regressive. There is now a trend towards companies that have set science-based targets encouraging their major suppliers to do the same, as they seek to reduce their indirect impacts.

Strong commitments on climate change could even improve access to capital. A number of financial institutions – particularly institutional investors such as pension funds – are putting in place specific investment criteria related to environmental performance for their portfolios, including some that are linked directly to a 2°C target.

This dovetails with the emerging implementation of the recommendations of the G20 Financial Stability Board’s Taskforce on Climate-related Financial Disclosures. Science-based targets provide a clear signal to investors, helping companies to cut through the noise of corporate reporting and communicate to investors and regulators their commitment to long term sustainable growth.

Alongside financial capital, there is an opportunity to strengthen human capital. It is now well-established that taking positive action on sustainability and providing employees with a sense of purpose at work can boost morale and productivity, as well as improving the recruitment and retention of quality staff. Being able to claim that a company is objectively taking sufficient action on one of the most pressing environmental issues facing the planet is a simple and strong internal message.

Finally, there is the moral case for action – doing the right thing. For many, the importance of taking an ethical stance may be adequate justification in itself. Sometimes when there is an uncertain business case, good leaders need to make brave decisions based on principles, to inspire their company to succeed in the right way. As more and more leading companies set science-based targets and succeed, it will become easier for others to follow them.



# How do you make the internal business case for setting a science-based target?



**Mark Reynolds**  
**Account Director**  
**Business Services**

Convincing boards to adopt stretching environmental targets often requires the presentation of a business case and phased investment plan. Traditionally companies set their ambitions for levels of carbon reductions based on the level of change that is most financially attractive – the most compelling investment plan – rather than an understanding of what reductions

The question for sustainability teams is usually, “What are the greatest improvements I can realistically achieve within our financial constraints?” With science-based targets the question shifts slightly, with the need to strategically consider, “What plan will deliver the best possible business case for achieving these goals?”

In the Carbon Trust’s experience working with multinational businesses on sustainability strategy and target setting, we recognise that internal teams can often struggle to align environmental improvements with wider business goals, in order to drive sufficient action. Agreeing targets out to 2050 can be difficult, especially when even the largest businesses struggle to make plans beyond a ten-year horizon.

Indeed, many of the changes in technology, policy and energy markets that will enable businesses to actually meet science-based targets are considered to be outside the control of any individual company. Nevertheless, it is very important to be able to demonstrate that the first few steps towards these targets are not only achievable, but positive for the business.

For most organisations, a large proportion of their current carbon emissions reduction potential today will exist in direct energy use. Understanding and explaining opportunities to reduce this is therefore an important precursor to securing internal buy-in. Most commonly, this includes a comprehensive approach to improving energy efficiency, which continues to be a highly cost-effective route to direct operational savings for most organisations. Given cost reductions in renewables, it can also be appealing to look at opportunities for installing these on-site.

The strategic approach to achieving reductions in energy has also changed significantly with the uptake of the new GHG Protocol Scope 2 Guidance, allowing companies to effectively account for their purchase of renewable and low carbon electricity. This is hugely important as a lever to support emissions reduction in the energy system, while also allowing companies to make progress before other transformational low carbon technologies become commercially attractive.

Multinational companies that cannot procure sufficient levels of renewable electricity in each

of their markets will need to consider a blended strategy, leveraging a mix of solutions that are appropriate for each country in which they operate. And although initiatives to source low carbon electricity are typically the focus for many companies in the short term, in the longer term companies will also have to address other major emission sources such as heat, vehicle fleets or refrigerant leakage.

When considering the route to achieving carbon reductions in line with a science-based target trajectory, it is important from the outset understand when and how fast different emission sources will need to be phased out to keep on the required pathway. With this understanding it is then possible to look at developing a bottom-up target, that assesses the technical potential for reduction across all operations – taking into account likely technology development pathways and cost projections – to develop a complementary investment programme.

It is important at this stage to identify and engage with key stakeholders across a business, so that the implementation of a reduction programme will align with business strategy and be factored into future planning. Giving them evidence – that making reductions in line with a science-based target is both possible and can result in good financial returns – will be invaluable in securing consensus.

Although companies may not know how they will reach the final destination, having a detailed map for the first stage of the journey can provide decision-makers with the confidence needed to set out in the first place.



# 500

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# How does setting a science based target fit in with your wider sustainability strategy?



**Ben Peel**  
**Consultant**  
**Business Services**

While we should rightly recognise the ambition of companies setting science-based targets, if we are going to meet our goals on climate change we will need broader and bolder ambition from businesses, beyond mitigating their own emissions.

Although science-based targets can work for organisations of any size in principle, in practice it is expected that only businesses of a significant size will set them. They are complex to set and implement, requiring the sort of knowledge, skills and forward planning capability that typically only exists in larger corporates.

Even if there were universal adoption of science-based targets by large corporates, we would not get anywhere near the levels of emissions reductions required across the whole economy. In the UK, almost half of private sector turnover comes from small and medium-sized enterprises, providing 60 percent of private sector employment. In other countries – especially in the developing world – this proportion can be far greater.

It is important to recognise that for most businesses, the overwhelming majority of the greenhouse gas emissions associated with their products or services are outside of their direct operational control. There are only a few sectors where this may not be the case, such as agriculture, electricity generation, cement, or some services businesses.





Although science-based targets can drive very high levels of emissions reductions from direct operations, it is by no means the highest impact way that most businesses can take action on climate change. It is for this reason that, in order to sign up to the Science-Based Targets initiative (SBTi), additional commitments are required.

Organisations with value chain (scope 3) emissions that make up more than 40% of their total emissions – which will also include direct emissions (scope 1) and indirect emissions from purchased electricity, heat and steam (scope 2) – are required to set ambitious value chain targets in addition to their science-based target for this to be recognised by the SBTi.

As of August 2018, a total of 454 companies had committed to science based targets, but only 124 of these had submitted and had their targets approved by the SBTi – little over a quarter. Over 190 of the companies without approved targets had been committed for over a year.

From our own experience at the Carbon Trust, we know there also are many other companies who are working hard to finalise their targets before committing. Given the backlog in companies that are keen to set targets and the number that are actually approved, is it worth asking why there is such a large gap?

Based on targets that were submitted for validation to the SBTi in 2017, 64% of those that failed were due to issues with their additional scope 3 targets. In particular, companies seeking validation had often not consistently completed a full screening of their end-to-end value chain impact. Many also had difficulty setting acceptable targets for reducing these emissions that were considered to be suitably ambitious.

These value chain targets are generally a sticking point for companies. It can be an area where they either do not have good visibility and data on their impacts, or aren't sure how to translate their ambitions into credible targets.

A key point for companies seeking to overcome this is to remember is that you can't manage what you don't measure. Knowing where the most material impacts exist across a value chain, companies are able to put in place strategies to mitigate them appropriately. There are simple approaches available to perform an initial screening of scope 3 emissions across different categories, which typically use spend data to give a high level estimate of emissions.



# 64%

Of companies that failed validation to the SBTi were due to issues with their additional scope 3 targets.

These simple tools help to provide insight into where hotspots of scope 3 impact will exist, but may not give information that is specifically useful for an organisation. Calculations based on generic spend data do not provide an especially accurate measurement.

It is therefore important for companies to go beyond this and perform deep dives into their identified hotspots, which can provide a business with valuable insights into its supply chain and customers. Armed with these insights, a company can then start to consider how it could frame a target that is not only ambitious but also where progress can be meaningfully tracked in the future.

While some companies have chosen to set absolute scope 3 targets, which are fully aligned with below 2°C reductions on a science-based trajectory outside of their organisation, this is not the typical approach. Most companies with approved targets have looked to align to the alternative criteria set by the SBTi.

For some, this involves setting ambitious targets that – at a minimum – do not result in absolute emissions growth alongside economic growth. Others look at engagement targets, where science-based targets are cascaded along the supply chain to a significant proportion of suppliers.

Engagement focused targets are a good solution for companies that both have significant purchasing power, and procure goods and services from large corporates that could also implement their own science-based targets. However, this combination is comparatively rare, so many companies will have to grapple with what ambitious really means for them.

To have a scope 3 target recognised by the SBTi as being ambitious, companies need to prove that it will deliver absolute reductions, regardless of how it is worded. This involves making a clear, unambiguous commitment to decouple business growth from growth in emissions. This can involve the use of intensity targets, or product-related targets, but it is important show that the target should in all cases achieve an overall scope 3 reduction.

Successfully approved scope 3 targets are frequently phrased in very simple terms. But achieving this simplicity can be a struggle for companies working on a wide range of reduction activities and engagement actions across their value chain.

It is important here to try and incorporate the full impact of these initiatives in the target setting process, weaving together supply chain and customer engagement into a single cohesive narrative. Having this clarity of purpose also serves to illustrate a company's ambition to external stakeholders both, and assist with demonstrating progress against the target. It also may identify crossovers and gaps in action.

Without the addition of an ambitious scope 3 target, even a company achieving reductions in line with its science-based target may not be considered to be taking enough action on climate change. We will need leading companies to bring their suppliers and customers along with them in the journey towards a low carbon economy. Without collaborative and inclusive action on mitigation, we will fall well short of our global climate ambitions.

# Science-based targets

Leading organisations are now setting carbon reduction targets aligned with the latest climate science. We help organisations apply the methodologies to develop appropriate science-based targets and to engage stakeholders.

A carbon emissions target is defined as 'science-based' if it is in line with the level of decarbonisation required to keep the global temperature increase below 2°C compared to pre-industrial temperatures. A science-based target is a powerful tool that allows businesses to align themselves with the commitments made under the Paris Agreement.

This approach involves combining carbon emission trajectories from the IPCC (Intergovernmental Panel on Climate Change) with allocation algorithms to distribute a share of the global emissions budget to the operations of an organisation.

## How are targets set?

The Science Based Targets initiative (SBTi) acts as a global gatekeeper for what should be considered a science-based target and the Carbon Trust a member of its Technical Advisory Group. There are number of methodologies that can be applied to develop Science Based Targets, the most prominent being the Sectoral Decarbonisation Approach (SDA) developed by the SBTi. Finding the most suitable methodology for a company depends on the specific sector and nature of its operations.

Whilst 2050 offers a logical timeframe for setting long-term ambitions for carbon reduction, scientific emissions trajectories can be used to set targets for shorter time horizons, such as 2025 or 2030.

## Why set a science-based target?

Setting a science-based target offers a range of benefits:

- Demonstrates a leadership position in the market
- Aligns your business' strategy with global commitments under the Paris Agreement and future regulation
- Provides short and long-term pathways to emissions reduction that unlocks innovation and competitive advantage
- Engages internal and external stakeholders, creating a 'buy-in' that helps drive the achievement of the target





## The Carbon Trust approach

Our approach to supporting businesses is based on a series of stages which we adapt to meet your specific needs.

### **Methodology choice**

Our experts will identify the methodology to suit your business' needs and opportunities

### **Model reduction targets**

We will build a bespoke target setting model to align and integrate data on carbon emissions, economic activity and climate scenarios

### **Communicate science-based target**

We will support you in translating the complexity of SBTs into a credible, compelling and accessible narrative for your stakeholders

### **Scope 3 hotspot & target setting**

We can calculate a scope 3 hotspot to assess the relevance of different emissions categories in your value chain and develop scope 3 targets that meet the requirements of the SBTi's Call to Action

### **Develop reduction plan**

We will help you understand the most strategic and cost-effective way of achieving your science-based targets

For more information, please visit [www.carbontrust.com](http://www.carbontrust.com) or call **+44 (0)20 7170 7000**

We have helped over a dozen global companies from a variety of sectors to set science-based targets, including BT, Carlsberg, Landsec and Mahindra Sanyo.



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“The Carbon Trust’s expertise and collaborative approach enabled us to cut through the complexities of science-based targets and develop reduction targets tailored to our operations. This analysis will form an essential part of Landsec’s sustainability strategy going forward.”

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Caroline Hill, Head of Sustainability, Landsec

## Case study: Mahindra Sanyo



The Carbon Trust was approached by Mahindra Sanyo to support the development of its targets, thanks to its world-leading track record of science-based targets work and a deep technical understanding of how to reduce emissions from heavy industry.

Mahindra Sanyo, a member of the Mahindra Group, is one of India's leading alloy steel manufacturers that was created as a joint venture with the two Japanese companies Sanyo and Mitsui & Co.

The business became the first company from an emerging economy to set a science-based target on climate change and have this approved by the Science Based Targets initiative (SBTi). This officially recognises that the goal is in line with meeting the Paris Agreement's ambition of keeping global warming well below 2°C above pre-industrial levels.

The company set its target following a pledge from the chairman of the Mahindra Group, Anand Mahindra, who committed that all his companies would do this at the World Economic Forum in Davos in 2018. This was alongside a wider challenge he set out to businesses around the world, calling for 500 companies globally to commit to science-based targets in advance of the 2018 Global Climate Action Summit in San Francisco.

The Carbon Trust was approached by Mahindra Sanyo to support the development of its target, thanks to its world-leading track record of science-based targets work and a deep technical understanding of how to reduce emissions from heavy industry.

The targets were set through the use of a Sectoral Decarbonisation Approach (SDA) methodology. This involved analysing data to establish a baseline from which to create targets and exploring emissions reduction pathways for two different company growth scenarios.

Following this process a target was set for reducing scope 1 & 2 operational emissions per tonne of steel produced by 35% by 2030, when compared to 2016/17 levels. This is in line with the emissions reductions the entire sector needs to achieve in order to deliver on the Paris Agreement.

To have a target approved by the SBTi most companies also need to set ambitious goals for reducing their indirect scope 3 emissions. To support this the Carbon Trust helped the company to calculate its global scope 3 footprint and set targets of also reducing its scope 3 emissions per tonne of steel produced by 35% by 2030, when compared to 2016/17 levels.

Mahindra Sanyo is now working to reach these time bound ambitious targets through efforts to increase the locally available recycled scraps to reduce manufacturing and transport emissions. The company is also investing in energy efficiency, purchasing more renewable electricity, carbon to product, heat recovery, circular economy, IoT assisted efficiency improvements and also researching into new generation steel with least resource intensity.

“The Carbon Trust has been a key partner in the journey to setting science-based targets. Thanks to the support we received that we were able to become the first steel business, as well as the first company in an emerging economy, to have our targets recognised by the SBTi. Going through the process we have learned valuable lessons that we can now share with the rest of the Mahindra Group.”

## Case study: Carlsberg



Carlsberg Group, one of the world's largest brewery companies, worked with the Carbon Trust to measure the end-to-end carbon footprint of its full value chain, set science-based targets and develop a roadmap to meet targets.

Carlsberg Group is one of the world's largest brewery companies, employing more than 41,000 people and with products available in over 150 global markets.

Selling billions of beers each year, the business has a significant direct and indirect environmental impact. This occurs across several areas, such as: the agricultural production of ingredients; the use of energy and water in the brewing process; and the manufacturing and recycling of bottles and cans.

Over the past decade Carlsberg has made good progress in reducing negative impacts throughout its operations and supply chain.

However, the business still did not feel that it was doing enough given the scale of the challenges the world currently faces. It recognised that increased levels of action would be necessary to deliver on the UN's globally-agreed Sustainable Development Goals and the Paris Agreement on climate change.

Carlsberg therefore decided to strengthen its sustainability ambitions with targets towards 2022 and 2030. In order to develop these targets and make sure they would be credible, the business wanted to work with experienced, expert partners to provide technical support and practical guidance.

The Carbon Trust was selected to support Carlsberg on the issue of climate change, working closely with the group's sustainability, utility management and supply chain teams, as well as a number of key suppliers. This involved three particular pieces of work:

### Step One

Ensure the company is accurately measuring the end-to-end carbon footprint of its full value chain, incorporating both supply chain emissions and downstream customer use and disposal of products.

### Step Two

Define stretching but achievable targets for emissions reduction that are in line with what climate science says will be required to limit global warming to no more than 2 degrees Celsius.

### Step Three

Develop a roadmap that sets out how these targets could be achieved.

A critical first step in developing an updated climate change ambition for Carlsberg was the measurement of the global carbon footprint of the business. This is because good quality measurement of emissions underpins the development of successful approaches to reducing them.



The Carbon Trust supported Carlsberg by developing a database and emissions calculators, alongside a business intelligence dashboard that helped to highlight insights from the data. An important part of the approach was to make use of company data in its existing formats, to minimise any requirements for new data collection or input from different parts of the group.

Building on a detailed understanding of Carlsberg Group's global impact, the next stage in the Carbon Trust's work was to support setting a science-based target. This involved establishing that Carlsberg's operational emissions reduction goals were fully in line with what is required to have a good chance of keeping global warming below 2 degrees Celsius above pre-industrial levels.

Carlsberg's current commitment is to achieving net zero greenhouse gas emissions at its breweries by 2030, which would reduce the company's total Scope 1 and 2 emissions by 92 percent from 2015 levels. This is supported by an interim 2022 target to cut brewery emissions in half from the same base year, which would reduce the company's total Scope 1 and 2 emissions by 46 percent.

These targets go beyond the level of emission reductions required for the 2 degrees threshold, and are at a level that would contribute to limiting global warming to 1.5°C, the higher level of ambition contained within the Paris Agreement.

The Carbon Trust sits on the Technical Advisory Group of the Science Based Targets initiative and has worked with clients across multiple sectors to set science-based targets using different methodological approaches. This experience was used to tailor the principles of the initiative to fit with Carlsberg's internal group targets and metrics, confirming that the company's goals exceeded the levels of carbon emissions reduction required.

For this target to be recognised by the Science Based Targets initiative, Carlsberg also needed to have measured and put in place goals to reduce Scope 3 emissions. To do this the company made a further commitment to reduce the beer-in-hand value chain carbon footprint associated with its products by 30 percent by 2030, again using 2015 as a base year, with an interim target of reaching 15 percent by 2022.

This target was possible thanks to the value chain footprinting work that had already been completed with the Carbon Trust. This provided a measurement baseline and the business intelligence required to set stretching but achievable goals to have an impact with suppliers and customers.



**TOGETHER  
TOWARDS  
ZERO** 

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The Carbon Trust is an independent company with a mission to accelerate the move to a sustainable, low carbon economy. The Carbon Trust:

- Advises businesses, governments and the public sector on opportunities in a sustainable, low carbon world.
- Measures and certifies the environmental footprint of organisations, products and services.
- Helps develop and deploy low carbon technologies and solutions, from energy efficiency to renewable power.



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Published in the UK: September 2016, last updated November 2018

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