Science-Based Targets: the Pros and Cons

Seeking an approval for energy efficiency projects and campaigns from organisations' key stakeholders can be a daunting process. Increasingly, reputational issues and corporate responsibility towards climate change can drive organisational energy efficiency in the right direction and have a positive influence on getting approval and financing for upcoming energy management projects. Nowadays, setting a science-based target (SBT) could be counted as an influencer amongst senior management. There are several options how a target can be set and the EMA members share their experience of setting their target and describe the stages of considering, preparing and committing to SBTs in their organisations.

Parthena Exizidou – Energy & Carbon Reduction Manager at British Antarctic Survey

Target: commitment to address the 1.5°C global warming challenge

The British Antarctic Survey (BAS) operates in the most remote places on earth like the Antarctic, the Southern Ocean and the Arctic. The challenges around logistics and extreme weather conditions entail many risks associated with energy security, fuel dependency and carbon emissions. Future-proofing BAS against these risks is a high priority.

To future-proof BAS's longevity to continue to deliver world class environmental science and contribute to the global effort of addressing climate change, BAS is working towards net zero carbon emissions from own operations before 2040[1]. Committing to climate action and developing an ambitious vision for the future will help BAS remain at the forefront of climate protection, influence and drive change within its supply chain and beyond.

Recognition of the climate change emergency is rapidly escalating. At BAS, we aspire to act in ways that are consistent with our understanding of global climate change, and with the science that we communicate – it is not enough to solely "talk the talk" we also have to "walk the walk".

Within our responsibility to address the 1.5°C challenge of the Paris Agreement, BAS has committed to

- Intensify how we share the scientific evidence.
- Practice what we preach: work towards net zero carbon emissions from our own operations before 2040[1].
- Invite others to join us on that journey.

At the same time understanding the challenges around decarbonisation of BAS operations is crucial in order to achieve the target. An important part of the process is to understand what responding to the 1.5°C challenge means for us. What is the timeframe? How can we achieve this? What changes do we need to make in our science delivery?

Setting a science-based target

A first step is to develop a carbon reduction target in line with the scale necessary to limit global warming to 1.5°C, also known as a science-based target (SBT).

SBTs represent a robust approach for managing emissions for short- and long-term horizon, setting interim targets for 2025, 2030 and 2035 that are crucial in order to steadily progress and keep track of the organisation's performance.

To develop a target for BAS[2], we worked with an external consultancy who took into account the nature of our operations, reviewed our historic carbon data, developed a baseline and identified the importance of different elements of Green House Gas (GHG) emissions within Scope 1, 2 and 3 (see below). The following step was an analysis of the different methodologies around SBTs and the identification of a credible science-based GHG reduction target for the organisation.

A review of the assumptions, advantages and disadvantages of six widely used SBT methods was carried out before selecting the Absolute Emissions Contraction (AEC) method as the most appropriate. The AEC method was considered appropriate due to its rigor, transparency and simplicity to communicate. It considers all three scopes of emissions including: Scope 1 direct emissions (those produced by our sites in the UK and Antarctica

[1]Aligned with the commitment of the Natural Environment Research Council and the UK Research and Innovation.
[2]The science-based target was developed for the Natural Environment Research Council (NERC). The British Antarctic Survey is part of NERC and therefore the policies/strategies are aligned.

including our ships and aircraft), Scope 2 indirect emissions (those produced through purchased electricity in the UK); and Scope 3 all indirect emissions (those attributed to purchasing goods and services, Antarctic and non-Antarctic business travel, investments, leased assets, etc.).

Under the SBT initiative and the 1.5°C scenarios, a minimum annual linear reduction of 4.2% in GHG emissions is required to meet the global level of reduction in order to remain within 1.5°C. Absolute targets are the most meaningful in reducing overall global emissions because they are straightforward to calculate and communicate.

The key initiatives to deliver the carbon reductions in line with the SBT are:

- Replacement of ageing buildings with new energy efficient infrastructure designed with low energy demand for all stations in Antarctica and offices in Cambridge;
- Continue to invest in robust renewable energy technology where possible – two new solar roof projects are in the pipeline for 2020, to follow from the completion of a solar carpark in Cambridge during 2019;
- Investigate large scale renewable energy generation and storage systems to completely decarbonise BAS's largest Antarctic station, Rothera;
- Develop a smart grid to ensure efficient energy and load management for the reliable supply of electricity and reduced vulnerability at Rothera Research Station;
- Electrify heating by investing in energy efficient sea water or air source heat pumps in the Antarctic stations;
- Supply of 100% renewable grid electricity for Cambridge offices since April 2019;
- Travel strategy to support SBT reduction and influence behaviour change – Prioritising travel and identifying alternatives ways with reduced environmental impact;
- Electrification of station vehicles and boats in Antarctica;
- Procurement of a replacement inter-continental aircraft that reduces fuel use and supports the use of sustainable biofuels;
- The new ship's innovative design which makes use of the latest technologies to reduce carbon emissions, including a hybrid electrical system;
- Embedding embodied carbon into the design decision making process for all new construction projects.

Benefits of science-based targets

There are many benefits of setting a SBT:

- Strengthening reputation; BAS works in partnership with business, government, civil society, the public and the wider research community to shape the environmental research and innovation agenda. It is therefore crucial for BAS to maintain its reputation across its partnerships and science community.
- Increasing operational efficiency; Operational efficiency also stimulates innovation, drives down costs and increases competitiveness enabling BAS to remain an attractive organisation and a fascinating place to work.
- Increasing resilience; Setting short- and long-term targets will also help in being prepared for the shift in public policy required to meet the UK's 2050 target for net-zero GHG emissions and therefore increasing resilience.

British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Challenges and opportunities

Although we are making significant global progress in reducing the operational carbon emissions, embodied carbon is still not actively taken into account. At BAS, we aim to improve the process of capturing and assessing embodied carbon and embed it into the design decision making process for all new construction projects. Another challenge on BAS' decarbonisation journey is the commissioning and operation of the new polar ship, RRS Sir David Attenborough. The operation of the new ship will account for a large part of BAS' carbon footprint going forward. However, its innovative design can significantly reduce the ship's carbon emissions.

For example, the ship has a hybrid electrical system consisting of large capacity batteries and four main engines – two nine-cylinder and two six-cylinder models. This configuration of different engine sizes means the ship can operate efficiently, whatever environmental conditions she faces.

The hybrid system allows the RRS Sir David Attenborough to operate on a single main engine, preventing the need to run engines at part-load to provide enough spinning reserve for transient spike loads. This will save a significant amount of fuel over the life of the ship.

Panelling around the hull has been laid internally to provide a smooth hull, reducing friction and further increasing the ship's fuel efficiency. Even the ship's heating system is designed to save power – waste heat from the engines is recycled to heat water and keep the ship warm.

Technological advancements around shipping have not progressed enough to assist with BAS decarbonisation efforts. However, there are areas that renewable energy technology can help us decarbonise sooner, such as at Cambridge offices and in most of our research stations. This will reduce the need for ship visits to the stations (e.g. to deliver fuel) and it will have a significant impact of reducing the ship's carbon emissions.

Delivering the maximum of our capacity within the following years is the main focus of our efforts at BAS for decarbonisation. A review of carbon insetting/offsetting approaches would be the following step that will help BAS completely decarbonise. On the positive side, future technology like low-carbon hydrogen/ammonia is likely to play an important role especially for shipping and long-term energy storage and might accelerate the decarbonisation process.

Note: The SBT was developed by an external consultant for BAS/ NERC following the guidelines of the science-based targets initiative (SBTi) for 1.5°C. The target is following the absolute-based approach where a percentage reduction in absolute emissions is required by the 1.5°C scenario and is applied to all companies equally. The target is not validated from the SBTi; however it gives BAS a clear path, through setting interim targets, for targeting and monitoring progress in the journey of addressing the 1.5°C global warming challenge.

Sarah Jolliffe – Company Energy Manager at BAM Nuttall Ltd

Target: set at 2°C in April 2019

The science-based targets initiative (SBTi) has been born out of a collaboration between 4 organisations, WWF, UN, CDP and World Resources Institute in order to set out a more robust and tangible system whereby companies can set meaningful carbon reduction targets.

The scheme has been in existence for a little over 5 years and is increasingly seen as the 'gold' standard in carbon reduction labels. But unlike simple narrative carbon reduction statements, the SBTi requires organisations to not only measure and report emissions, but also identify a tangible pathway of emissions reduction activities which is assessed by the SBTi panel. It also requires organisations to include reduction strategies for their organisations indirect emissions associated with Scope 3 activities where those activities comprise more than 40% of the total emissions.

Pros

- They are more tangible against the backdrop of well-established global climate models.
- They are founded on the principle of absolute emissions reductions – not intensity related.
- It forces organisations to look deeper into their emissions sources to identify a reduction strategy.
- They go beyond the traditional '5 year' business plan – SBTs must be between 5 and 15 years.
- They complement other business aspirations such as improving air quality, social value and innovation.
- Enables businesses to be more competitive.

Cons

- Requires a high level of granularity which may be difficult to measure, particularly for Scope 3 emissions.
- You cannot exclude more than 5% of direct emissions (typically associated with de-minimis activities).
- Scope 3 target is mandatory for the vast majority of applicants, but measurement methodologies are for the most part very high level and have a high error margin.

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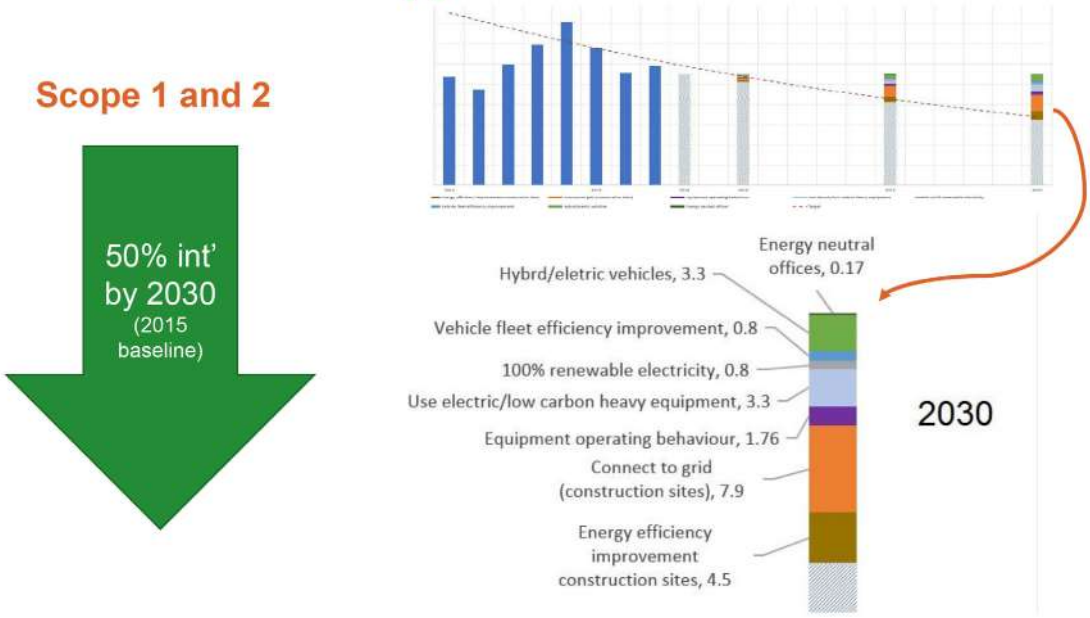
How has BAM applied them?



BAM's experience

BAM Nuttall (subsidiary of Royal BAM Group nv) is a large Tier 1 contractor who undertakes civil infrastructure projects such as marine structures, highways, tunnels, bridges, railways, energy and aviation. It has been in existence for over 150 years and supports a workforce of 3,000 direct employees plus thousands more in its supply chain ranging from SME's to well-known material suppliers as well as sub-contractors and labour providers.

BAM has long been recognised as a leader in sustainability, having secured CDP 'A' list status for over 5 years. But in order to maintain this, it has been necessary to seek out better and better ways to measure and reduce our carbon impact beyond simply doing business as usual. We learned of the SBTi through our affiliation with CDP and it seemed a great fit for BAM, so in 2017 we undertook a complete carbon baselining exercise in collaboration with the Carbon Trust. From this we were able to identify the focus areas for emissions reductions which enabled us to approach SBTi and commit to our next generation – long term strategic carbon reduction target.

We found the process quite straight forward requiring only a few meetings and some back and forth clarifications. SBTi ratified our SBT in 2019 and we are now well underway with implementing the action plan. Being a large construction and civil engineering company, naturally our focus is in the materials we use and also the use of millions of litres of liquid fuel. Actions being implemented include:

- Seeking alternatives to cement-based products;
- Eliminating liquid fuel power generation on site;
- Utilising renewable power sources;
- Making sure the construction process is as streamlined as possible.

Penelope Guarnay – Carbon Programme Manager at BT

Target: set 1.5°C in September 2017

BT is one of the world's leading communications services companies. We serve the needs of customers in the UK and in 180 countries worldwide. Our main activities are the provision of fixed-line services, broadband, mobile and TV products and services as well as networked IT services. In 2008, BT set its first Science Based Target to reduce emissions by 80% by 2020. BT met this target in 2016 – four years ahead of schedule. In 2017, BT then set out a more ambitious target – to achieve a 1.5-degree SBT of 87% reduction in the carbon emissions intensity of its business by 2030, and to become a net zero carbon emissions business by 2045. We also aim to get almost 90% of the way there by 2030.

Our goals are not arbitrary. They represent a firm commitment to achieving the targets set out by climate scientists in the Paris Agreement – that is, taking the action necessary to prevent dangerous climate change by limiting global warming to well below 2°C.

SBTs are vital in providing companies with a clearly defined pathway for reducing greenhouse gas. The Science Based Targets initiative brings together partners such as the UN Global Compact and the World Business Council for Sustainable Development who help promote the importance of taking measured and validated action.

The SBTi has been a key factor in achieving boardroom buy-in. Previously, we could go to the board and ask to set a carbon reduction target e.g. 20% by 2020 or 80% by 2080 – but there was no basis, and the board knew we could make up any number. Now, we can demonstrate to the board that our targets correlate to the recommendations of the scientific community, which brings more weight to the table and has accelerated discussions around adaptation and driving the required changes.
Our commitment to the SBTi isn't just good for the planet, it's good for business too. Companies taking a leadership position on climate bolster their credibility and reputation among stakeholders, and in 2019/20, BT celebrated its tenth year of investment in energy reduction programmes, through which we have consistently delivered energy consumption savings amounting to around £298m. We are also delighted that we have just achieved the CDP's highest rating yet again. We now have a four-year CDP "A-list" track record – a clear sign that we are pioneers in acting on climate change.

When BT initially set its targets, we didn't know how we were going to get there – however our commitment drove us to find solutions. We also saw the need to encourage and support our suppliers and customers to join us in cutting emissions. For example, we've teamed up with npower to offer our UK suppliers a deal on renewable electricity. We also set ourselves a target to get 125 of our top suppliers switching to renewable energy by 2020 – and have already exceeded this with nearly 140 suppliers now using renewable energy. Furthermore, nearly 300 of our suppliers now submit climate-related data to CDP; that's 30 more than last year and represents 51% of our total spend.

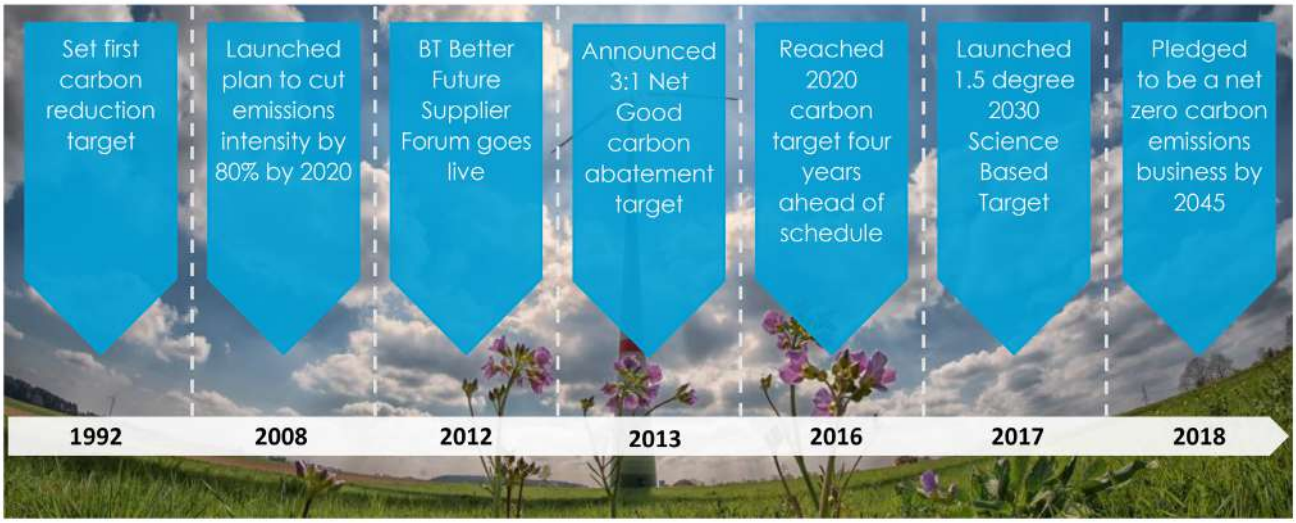
Lessons learned & the way ahead

Our experience at BT has demonstrated the value of working with an independent third-party consultancy in setting and adopting Science Based Targets. We joined forces with the Carbon Trust not only because we recognised that we didn't have the requisite carbon modelling expertise in house, but also because partnering with the Carbon Trust gave credibility to our goals.
We also realised the importance of developing a business culture which makes long-term planning possible. Many boards and executive committees are focused on one, two or – at maximum – five-year plans but Science Based Target force organisations to look long term, galvanising the business to innovate and find solutions.

At BT, we've done the easy bit, i.e. "Switching to Renewables". When we look at the future, we still have not worked out all the solutions required, for example, regarding Electric Vehicles and other unknowns such as heating. But we will get there, and we will achieve this through collaboration.

Climate change is a global issue and we're all in this together. Policy makers, businesses and industry – and it is only through working together that we will achieve our goals and make the necessary transition – globally – to a low carbon economy.

Tackling climate change and environmental challenges



We've saved over **£298m** through our energy efficiency programme since 2009/10

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