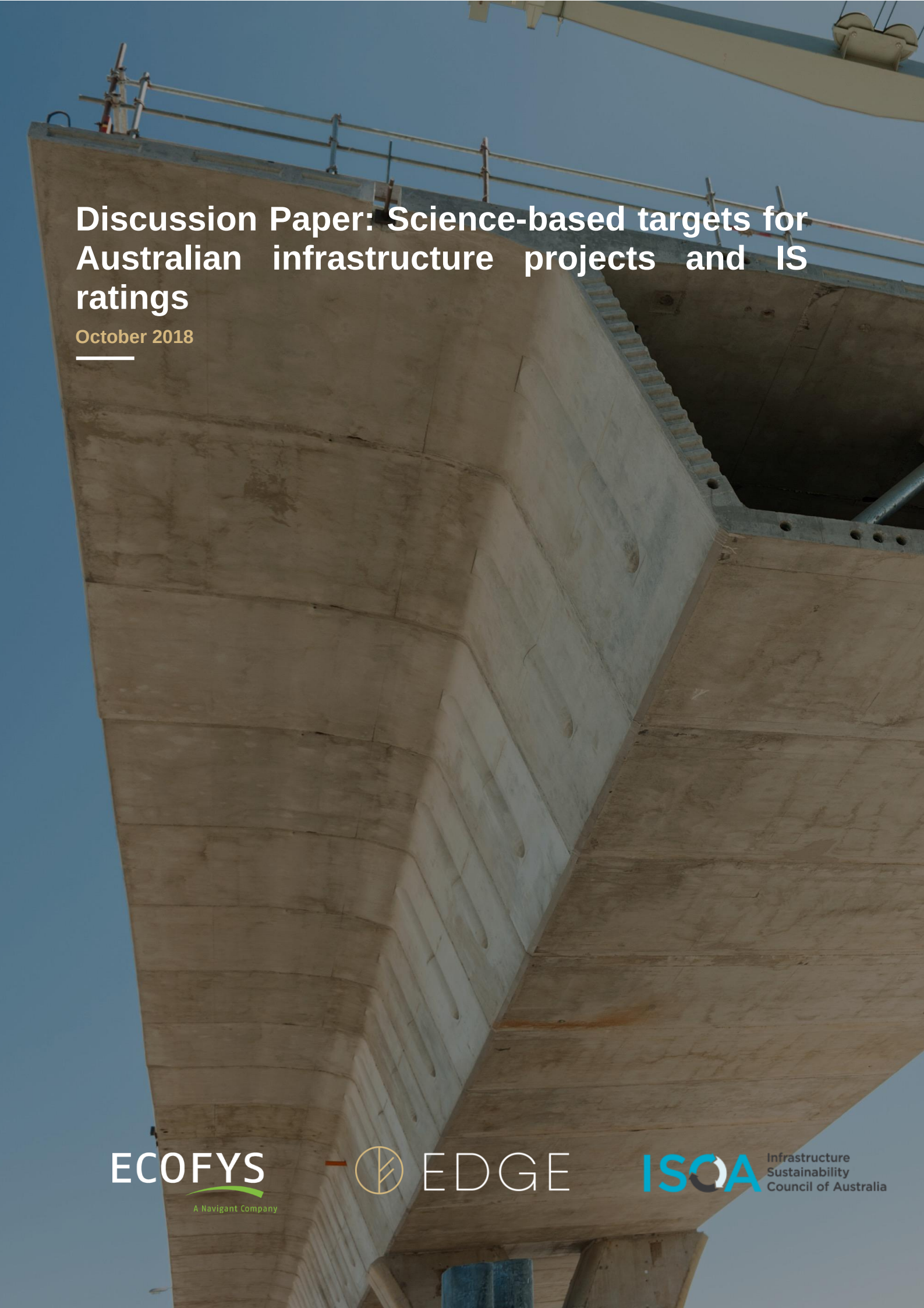

Discussion Paper: Science-based targets for Australian infrastructure projects and IS ratings

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ECOFYS
A Navigant Company

EDGE

ISCA Infrastructure Sustainability Council of Australia

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1. Introduction

Infrastructure contributes significantly to Australia's GHG emissions, with transport and mining alone responsible for 20.5% of Australia's emissions. Within infrastructure, energy use and transport represent more than 90% of emissions. The long-lived nature of infrastructural elements, they can be in operation for longer than a century, meaning that projects in development today can affect GHG emissions and energy use for decades. Reductions are integral to the sustainability of the industry.

This discussion paper investigates the feasibility of Infrastructure Sustainability Council of Australia (ISCA) integrating Science Based Targets (SBTs) into the Infrastructure Sustainability (IS) rating scheme through the application of a science-based target methodology as an alternative approach to the IS base case for energy and carbon for ISv2.0.

The paper was commissioned by ISCA and developed by leading international energy and climate consultancies Edge Environment and Ecofys.

Science-based Targets

COP21 occurred in Paris in 2015 and the resulting agreement pledges countries to reducing their emissions to keep temperature increases below 2°C pre-industrial temperatures. As the figure below illustrates, this means zero net emissions globally within the next 30-50 years. 195 countries signed the agreement including Australia and New Zealand.

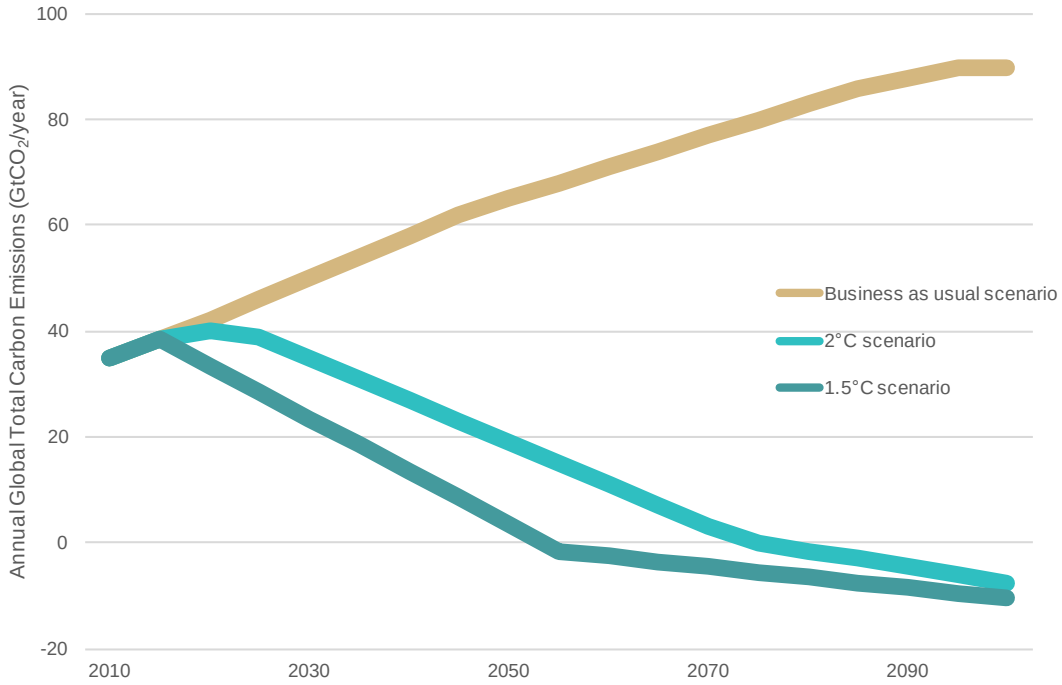

Figure 1: Carbon emission trajectories.

Science Based Targets initiative (SBTi) is a collaboration between the Carbon Disclosure project (CDP), World Resources Institute (WRI), World Wide Fund for Nature (WWF) and United Nations Fund for Nature to engage businesses in setting science-based targets for greenhouse gas (GHG) emissions reduction. It is hoped that SBT will enable companies to align their reduction targets to the low carbon economy defined in the Paris Agreement. Targets that are in line with this are considered to be science-based. Meaningful targets: stimulate innovation and development of technologies that enable low carbon business; reduce uncertainty; help shape future policy; and increase investor confidence as well as profitability and competition.

How to set Science Based Targets

There are four steps to setting SBTs:

1. Submit the commitment letter;
2. Develop a target;
3. Submit the target for validation; and
4. Announce the target.

At the current time of writing, there are over 450 companies with either approved science-based targets or with public commitments to develop approved targets within one year.

SBT Methods

There are several methods available for setting science-based targets:

- The Sectoral Decarbonization Approach;
- The 3% Solution;
- BT – CSI;
- C-Fact;
- CSO's Context-based Carbon Metric;
- GEVA (Greenhouse gas emissions per unit of value added); and
- Mars Method.

Each of these methods fall into one of the following three main approaches:

- Sector-based: Companies are allocated a carbon budget based on their sector;
- Absolute-based: Regardless of sector, the percent of absolute emission reduction is assigned equally across companies and is equivalent to the global requirement of 49% by 2050 from 2010 levels; or
- Economic-based: A company's share of the carbon budget is based on its gross profit.

The Sectoral Decarbonisation Approach, or SDA, provides the most detail at a sectoral level. It includes, for example, specific emissions trajectories for cement production, iron and steel production and serviced buildings (**Figure 2**). These specific insights make the SDA the most relevant methodology for infrastructure projects. In the rest of this discussion paper we therefore refer to the SDA when mentioning science-based target setting.

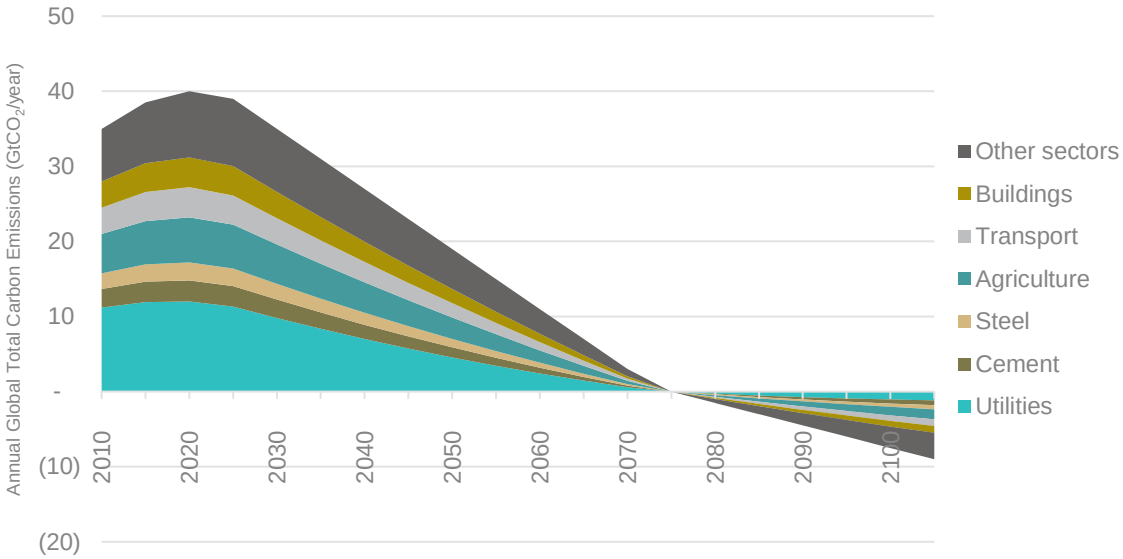

Figure 2: The Sectoral Decarbonisation Approach

Application of SBT

In Australia, companies across a range of sectors have committed to setting science-based targets. Australian companies that have made commitments to set science-based targets include:

- Australian Ethical Investment; Bank Australia, Teachers Mutual Bank and Westpac Banking Corporation in the banks, diverse financials and insurance sector;
- Origin Energy and Infigen Energy in the energy sector;
- Investa and Dexus in the real estate sector;
- Mahindra Automotive Australia in the Automobiles and Components sector; and
- Edge Environment in the Professional Services sector.

Government is also applying SBT methodologies. For example, the Victorian Government is using in part a sector-based approach to determine emissions reductions: a net zero target by 2050 with interim targets every five years to ensure emission reduction measures are tracking to an ambitious level.

The infrastructure sector has yet to commit to science-based targets in Australia; however, globally, many infrastructure companies have already committed and successfully set science-based targets. These include power companies and transmission system operators such as Eneco, Enel, NRG Energy and Verbund, and construction companies such as Ferrovial, Acciona, Royal BAM Group, Morgan Sindall Group and Shimizu Corporation, and telecom/network operators such as BT Group, Proximus and KPN.

2. Can the SBT approach be applied to the IS base case?

We investigated using SBTs as an alternative approach to the IS base case for energy and carbon for ISv2.0. Based on our assessment, we found the adoption of a SBT approach, specifically SDA, to not be directly applicable. This section details our assessment.

As the basis of the assessment, we determined the following key phases in an infrastructure project's lifecycle in which climate aspects play an important role:

1. **Inception Phase**, when the decision is made whether to start an infrastructure project or not. In this phase, the implementing organization can assess the climate impact of a project and see whether the project is in line with a global 2°C pathway.
2. **Design and As Built**, where two types of climate impacts typically occur:
    a. the climate impact of the materials used (emissions arising from the production of e.g. concrete, steel, wood and glass); and
    b. the climate impact of the energy used during the construction process (emissions from fuel use of generators, vehicles and machinery).
3. **Operations**, where climate impacts can occur in two ways:
    a. directly, using fuels and electricity during the operation of the infrastructure (e.g. electricity consumption for lighting in tunnels or emissions from water treatment facilities); and
    b. indirectly, using the infrastructure by third parties (e.g. the fuel consumption of passenger vehicles driving over a road or a bridge or the fuel consumption of airplanes departing from an airfield).

As part of this assessment, we adopted the following assumptions:

- We have included the application of science-based targets concepts during both project inception (should we do this project?) and project development (how should we do this project?) in this analysis;
- We exclude physical climate risks, such as vulnerability to floods/droughts or supply chain risks. SBTs are focussing on mitigation, not adaptation;
- We assume that the majority of lifecycle emissions of a project take place in the supply of construction materials and during the construction and use phases of the project. Other parts of the lifecycle are excluded; and
- Science-based target approaches are currently only available on a global level and not yet tailored specifically to Australian conditions. We were therefore not able to apply a truly Australian tailored approach.

Inception phase: Can SDA be used to assess whether a project is in line with a 2°C scenario?

The SDA is designed for application on a global level, where regional differences average out. Furthermore, the approach does not account for many of the factors that influence the climate impact of a specific infrastructure project. Additionally, there are a lot of uncertainties that make a quantitative assessment difficult. As such, application of the SDA to assess whether individual projects are in line with a 2°C scenario is not appropriate.

Another complicating factor is the uncertainty of the emissions during the use phase and the limited influence of the project owner on these emissions.

For a scoring system, one could consider including the "2°C readiness" of a project qualitatively. This qualitative assessment could for example ask whether the extent to which a project fits within a 2°C scenario was considered. However, this should be a standard part of the decision to construct a project or not, thereby also limiting risks for stranded assets. In conclusion, the SDA is not the right tool for such a qualitative assessment.

Design and As Built: Can the SDA be used during the construction phase of a project?

The carbon and energy impact associated with the construction phase of an infrastructure project is largely due to materials and their embodied emissions, which are captured under the Resources category and the energy and carbon used to construct the asset. The focus of this discussion paper is the Energy and Carbon category. As such, the carbon and energy impact of materials during the construction phase of a project is not assessed here.

For energy consumption during the construction of the project, application of the SDA is unlikely to be a useful methodology (except for electricity consumption). However, grid electricity is often not available on site and fuel is required for generators, vehicles and machinery. Therefore, the impact would be minimal.

Lastly, the SDA does not contain any information about the decarbonization of the construction sector. However, the principles behind science-based target setting and the underlying IEA energy technology perspectives data could be useful to develop a framework to guide construction emissions in line with a 2°C pathway.

Operations: Can the SDA be used during the use phase of a project?

The application of the SDA to the operations phase is likely more complicated than application during the construction phase of a project. This is largely because the underlying data in the SDA does not include the demand for products and services (e.g. materials, transport, buildings). This means that in the current form, the SDA cannot be used to determine the effect of a project on, for example, a reduction in the demand for airplane travel or fossil fuels. Therefore, the SDA cannot be used to determine whether the construction of an airport or a fossil fuel power plant is appropriate.

However, the IEA does model demand projections for different regions which could be combined with regional projections to develop an assessment methodology for whether projects are in line with a 2°C scenario.

The operation and use of an infrastructure asset is therefore not currently applicable under the SDA method, but there is potential for the approach to be developed in that direction.

3. Can SBT be used by organisations on a project level?

A carbon budget for the infrastructure industry can be calculated. Similarly, could a carbon budget concept be applied to projects? Based on our assessment, a carbon budget is not relevant to a specific project largely because a project is relatively static. A company can improve/shift its activities to bring their impact in line with a 2°C scenario, but for a project this is less applicable. A carbon budget, on the other hand, is *not* static because it relies on projected emissions. Unless all parties participate in SBT and meet their targets perfectly, the carbon budget will shift over the years. In addition, it is likely that carbon budgets will develop over time due to new modelling updates and insights.

However, there remains potential for organisations to consider application of specific aspects of the SDA at the project level. Specifically, adoption of the following criteria can aid in achieving the requirements of the ISv2.0 Energy and Carbon category.

Approval of SBTs at the company level

At first glance, it appears that having the company that builds the project have approved SBTs implies that the project is also in line with a 2°C scenario, because the company's performance has a correlation with the performance of the sum of its projects.[1] On the other hand, this does not mean that every individual project necessarily needs to be science-based. Regardless, it shows that a company itself has an effective climate policy. As such, it is likely the company would enact a series of energy efficiency measures (e.g. onsite renewable technology, carbon offsets for operational activities) throughout the project process and thereby gaining IS points (e.g. Ene-2 Renewable Energy, Ene-3 Carbon offsetting).

However, it is important to note that the reverse is also true; you cannot say with certainty that a project does not meet 2°C criteria if the company does not have SBT. A company without SBT can still perform very well on climate.

Consideration of the "2°C readiness" of a project qualitatively

Prior to project implementation, the 2°C readiness of a project should be assessed qualitatively. Have the carbon impacts of the Operation phase been considered over the coming 15 years? What about the carbon impacts of the Design and As Built phase? Are there ways / alternatives to limit the carbon impact?

There are likely many cost-positive / cost-effective carbon reduction measures that can be implemented across all stages of a project. Not only do these measures aid in the alignment of a project to a 2°C scenario, but they can also aid in achieving the requirements of the ISv2.0 Energy and Carbon category.

Examples to consider include:

- Carbon accounting (Ene-1);
- Energy efficiency measures (Ene-1);

[1] It is important to note here also that the SBTi requires you to set targets on the majority of your scope 3 emissions. This might make a one-on-one comparison between a company and the sum of its projects less straightforward.

- Use of renewable energy (Ene-2); and
- Purchasing carbon offsets (Ene-3).

Source materials from SBT-approved companies

The project could source, where possible, materials from companies that meet SBT criteria and, where possible, materials from companies that can demonstrate that their products meet SBT criteria. This approach could achieve points under the ISv2.0 Materials category, ISv2.0 Sustainable Procurement category and the ISv2.0 Leadership category if energy and carbon emissions are material to the project or asset.

If companies that are part of a project's supply chain can demonstrate that their products are in line with SBT criteria, sourcing products from these companies would improve the climate impact of a project. Under the SBTi initiative, companies are required to address their scope 3 emissions if scope 3 emissions make up at least 40% of their emissions.

For example, lighting fixtures sourced from a manufacturer with approved SBTs are likely to be energy efficient, thereby improving the likelihood of gaining points in the Ene-1 Energy Efficiency category and the Sustainable Procurement category.

However, simply sourcing products from a company that has SBT does not necessarily mean that all materials meet SBT criteria. It is therefore still important to investigate the performance of the specific product.

4. Conclusion

Based on our assessment, we found the adoption of a SBT approach, specifically SDA, to not be feasible. However, there remains potential for organisations to consider application of specific aspects of the SDA at the project level. Specifically, adoption of the following criteria will aid in achieving the requirements of the ISv2.0 Energy and Carbon category:

- Approval of SBTs at the company level;
- Consideration of the "2°C readiness" of a project qualitatively; and
- Source materials from SBT-approved companies (also relevant to the ISv2.0 Sustainable Procurement category).