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THE SUSTAINABLE IMPACT OF THE USE OF SCIENCE BASED TARGETS IN ORGANISATIONS

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Abstract: Due to the increase in gas emissions and the growth of environmental problems globally, companies are striving to reduce their emissions and waste products in order to become more sustainable and preserve the environment. In order to solve this problem, an initiative called Science Based Targets has been created with the aim of defining targets and paths for companies to follow in order to reduce their carbon footprints.
This article will analyse the impact that adherence to this initiative has had on companies' sustainability. To obtain the data, a survey was sent to Portuguese companies.
It was concluded that in general Science Based Targets contribute to the sustainable development of organisations, however it is still a very recent initiative which has had low uptake by Portuguese companies.
Keywords: Sustainability, Science Based Targets, Survey, Portugal

1. INTRODUCTION

Due to current environmental problems globally, companies are being pressured by governments and their stakeholders to take action to reduce their environmental impacts (de Silva et al., 2019; Kuo & Chang, 2021; Walenta, 2020). One example of such pressure

from governments globally was the creation of the Paris Agreement in an effort to reduce the risks and impacts of climate change. The Paris Agreement aims to achieve the decarbonisation of the world's economies and aims to limit an increase in the global average temperature to below pre-industrial levels and pursues efforts to limit temperature increases to 1.5°C (Bjorn et al., 2022).

In order to define sustainability objectives, various public and private initiatives have been set up to help companies fulfil these proposed sustainability targets. According to some studies the use of platforms to control emissions targets generates a win-win relationship enabling the reduction of emissions without sacrificing the company's financial performance (Faria & Labutong, 2020).

The Science Based Targets initiative (SBT), created in 2015, is a joint initiative between the World Wide Fund for Nature (WWF), the World Resources Institute (WRI), the United Nations Global Compact (UNGC) and the Carbon Disclosure Project (CDP**)** (Bjorn et al., 2021; Giesekam et al., 2021; Walenta, 2020)**.** The initiative consists of setting targets to reduce greenhouse gas (GHG) emissions in order to meet the measures proposed by the Paris agreement and to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" (Giesekam et al., 2018)**.**

Its implementation has had an impact on the issue of sustainability, with a growing number of companies setting environmental targets since it was founded(Bjorn et al., 2021)**.**

One of the main values analysed by the initiative are the Environmental Scopes (types of emissions)(Reavis et al., 2022), which are as follows:

- Scope 1: Emissions directly produced by the company, resulting from its operations.
- Scope 2: Emissions indirectly produced as a result of the company's energy consumption.
- Scope 3: Emissions occurring as a result of the organisation's activities, from sources not owned or controlled by the company, but within its supply chain.

Although this initiative appears to be showing positive results, many companies still have doubts about joining this initiative (Bendig et al., 2022; Bjorn et al., 2022; Giesekam et al., 2021), mainly because they are unsure as to whether joining SBT is beneficial for their organisation.

In order to dispel these doubts, this article seeks to answer the following research questions:

- RQ1: What are the basic concepts of the SBT initiative?.
- RQ2: What are the advantages of joining the SBT initiative?.
- RQ3: What impact do SBT have on the sustainability of organisations?.

2. METHODOLOGY

In order to answer the proposed research questions, two research paths were defined. The first path aims to answer questions RQ1 and RQ2. This will be done by analysing publications containing the keyword "Science Based Targets", and also by analysing the official platform of the SBT initiative. The second path aims to answer question RQ3. To this end, a quantitative survey was carried out with companies operating in Portugal, in order to understand the impact of this initiative on the economic, environmental, and social levels of an organisation. The survey was opened between 8 June 2023 and 16 July 2023 and received 657 responses of which 637 complete responses for which consent was received were analysed.

3. RESULTS

3.1 Concepts and Advantages

Considering the first research path, it was analysed how companies could join this initiative, and it was discovered that this process consists of 5 steps (SBTi, 2023). These were:

- Commitment: individual companies can send a letter to the SBT institution stating their intentions of setting a science-based goal.
- Develop: the participant company works on an emissions reduction goal according to SBTi criteria.
- Send: The participant company present the target to SBTi for full validation.
- Communicate: The participant company announces their goal and informs their stakeholders.
- Disclose: A report of company-wide emissions with tracking of progress against the SBT goal is issued by the participant company on an annual basis.

After sending a commitment letter, organizations have 24 months to submit their target. The targets submitted to SBTi first go through an initial screening to ensure that basic criteria are met. After passing the initial screening, companies will be then asked to sign the validation contract. Once signed, SBTi will evaluate the submitted targets and communicate its decision within 30 business days of the contract signing to the participant company or within 60 business days for financial institutions. The validation service is closed every year from December to January, therefore, validation activities are suspended during this period. If the targets are not approved, companies must review the feedback and resubmit the targets as soon as possible.

After joining the initiative, the company can be classified in two ways:

- Committed: An organisation that has started a commitment to the SBTi has a two-year period to define its sustainability goals. "Committed" organizations are those which have not yet defined a goa but are working towards defining the goal (SBTi, 2023).
- With Targets: Organisations that already have targets approved by the SBTi are classified as “with targets”. These targets can be long-term or short-term. Short-term targets describe how organizations will reduce their emissions in the next 5 to 10 years, and these targets galvanize the necessary actions to achieve their significant emission reductions by 2030 (SBTi, 2023).

In order to understand which countries, have the highest adherence to Science Based Targets, an analysis was conducted on the companies officially involved in the initiative (Figure 1 and Table 1) which was 4535 companies at the time of the analysis on February 16, 2023.

Analysing Figure 1 and Table 1, it can be seen that the continent with the highest take-up of this initiative is Europe, with six European countries in the top 10. Regarding the countries with the most participating companies in the initiative, the United Kingdom is in first place (767) followed by the United States of America (618) and Japan (430). These three countries alone account for 40 per cent of all the companies that have joined the initiative. With regards to the country that is the focus of this study Portugal, it can be seen that it has only 27 companies participating.

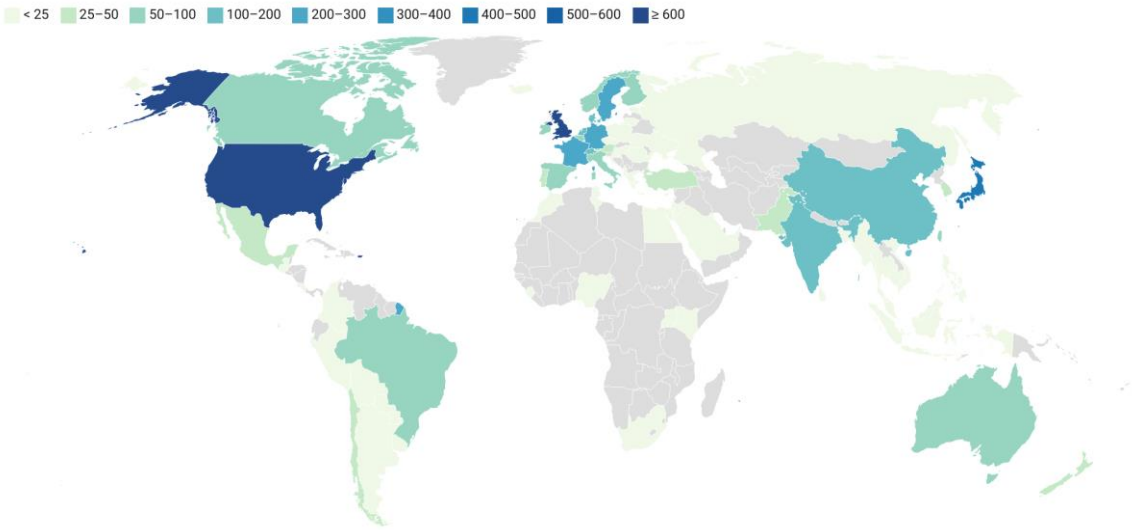

Fig. 1. Distribution of companies by country with SBT (Sá et al., 2023)

Table 1 Number of companies with SBT by country Source: (Authors own analysis)

Ranking	Country	Number of Companies with SBT
1	United Kingdom	767
2	United States of America	618
3	Japan	430
4	Germany	274
5	France	227
6	Sweden	224
7	China	146
8	Denmark	139
9	India	118
10	Switzerland	111
11	Netherlands	109
12	Spain	99
13	Belgium	88
14	Taiwan	84
15	Italy	80
16	Australia	79
17	Finland	77
18	Canada	73
19	Ireland	63
20	Norway	60
21	Brazil	52
22	Hong Kong, China	49
	Turkey	49
23	Austria	38
24	South Korea	37
25	Pakistan	32
26	Singapore	30

Ranking	Country	Number of Companies with SBT
27	Chile	27
	Portugal	27
28	Luxembourg	26
	New Zealand	26
29	Mexico	25
30	Thailand	24

With regard to the advantages of joining the initiative, several organisations have reported that the use of SBT provided them the following benefits (SBTi, 2023):

- Guarantees future growth.
- Saves money.
- Provides resilience against regulation.
- Increases investor confidence.
- Stimulates innovation and competitiveness.
- Creates concrete sustainability commitments for increasingly conscious consumers.

Other advantages for participating organisations include:

- Providing technical assistance and specialised resources for companies and financial institutions setting science-based targets in line with the latest climate science. Having a target validation process with detailed feedback and support from SBTi's technical experts.
- Organisations that sign the SBTi commitment letter are immediately recognised as "Committed" on the SBT website, as well as on the CDP and We Mean Business websites.
- If the company commits to the highest level of commitment (Corporate Ambition for 1.5°C campaign) it is also recognised on the UN Global Compact website.

3.2 Survey results

After analysing the current state of the SBT and its concepts, the second path of investigation is followed, which focuses on analysing the results obtained from the questionnaire developed for Portuguese companies.

The first task was to ascertain is how many companies calculate their emissions output. Respondents were asked which of the scopes were calculated in their organisation and the results obtained are shown in the Figure 2. It can be observed that the majority of organisations do not calculate these emissions (52.6%), and the type of scope that is most calculated is scope 1 (18.7%), as it is easier to measure because it only includes emissions produced in the company. Scope 3 (8.8%) is the least used, as it is more complex to measure because it includes emissions from the organisation's supply chain,. Also in order to obtain these results, suppliers and customers need to be on the same page in terms of improving environmental performance.

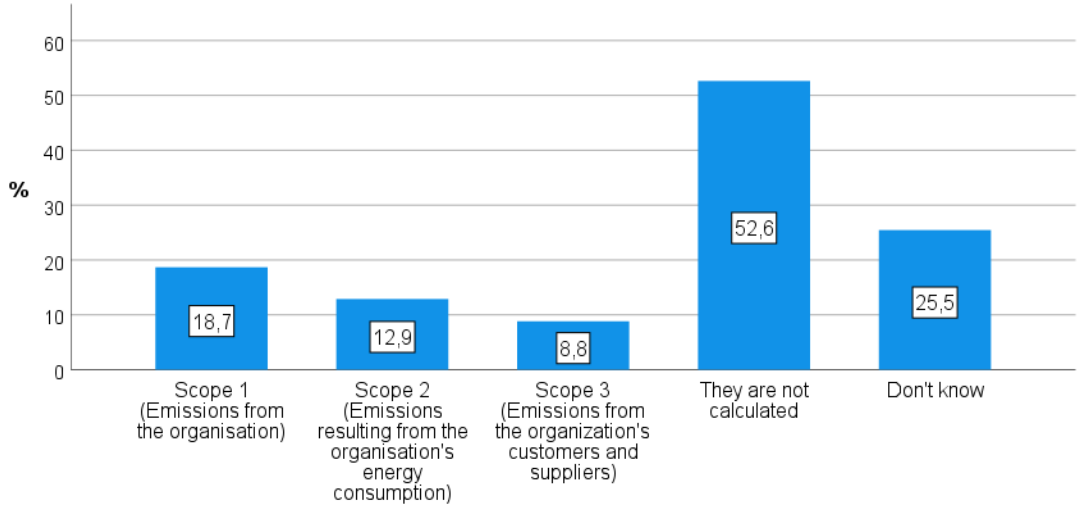

Fig. 2. Percentage of companies calculating each Scope

SBT is a relatively new concept, so not many companies know about it, and those that do may not know enough about it to implement their measures correctly. In order to understand how many companies are taking part in this initiative, it was first asked if they had heard of this concept and then they were asked if they are part of this initiative (Figures 3 and 4).

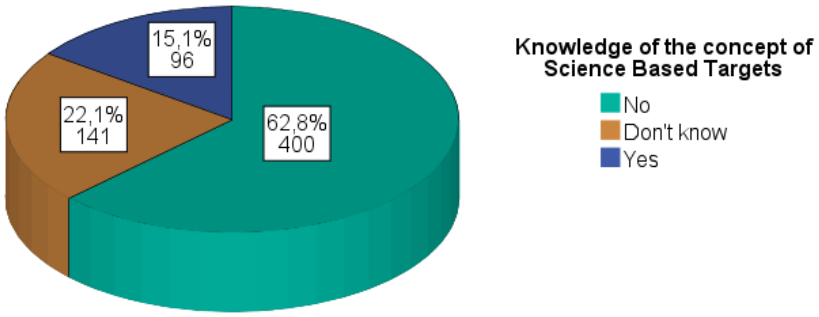

Fig. 3. Number of respondents familiar with the SBT concept

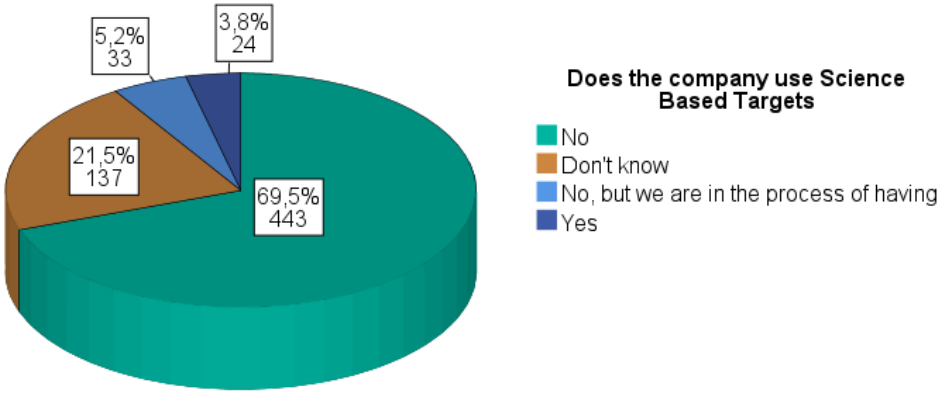

Fig. 4. Number of companies using SBT

Through the results obtained, it can be seen that there are some companies that have already heard of this initiative and some of them are anticipating joining the scheme in the future. However, the companies that actually have SBTs are relatively few, with only 24 of the 637 companies questioned (6.5%). Although this is not a large number, as can be seen in the table 1 at the time of data collection there were only 27 companies in Portugal with SBT even though 89% of the Portuguese companies that have joined the initiative in Portugal participated in the questionnaire. This allows us to analyse the impact of SBTs in terms of their deployment and application in Portuguese companies.

In order to understand the impact of using SBTs, a question was asked about the impact that adherence to this initiative had on their organisations in terms of sustainability levels. The impact could be assessed on a scale of 1 to 8, with 1 representing a very negative impact and 8 a very positive impact. Respondents also had the option to tick "Don't know" if they were unable to assign a value to the impact produced by the SBT (Figure 5 and Figure 6).

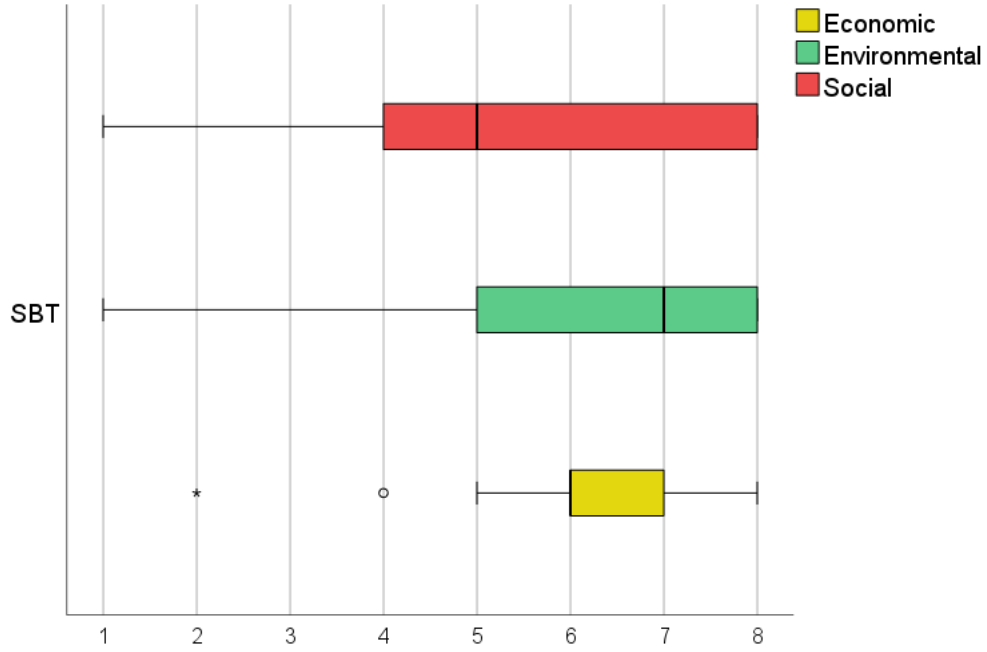

Fig. 5. Impact of the use of SBT in organisations

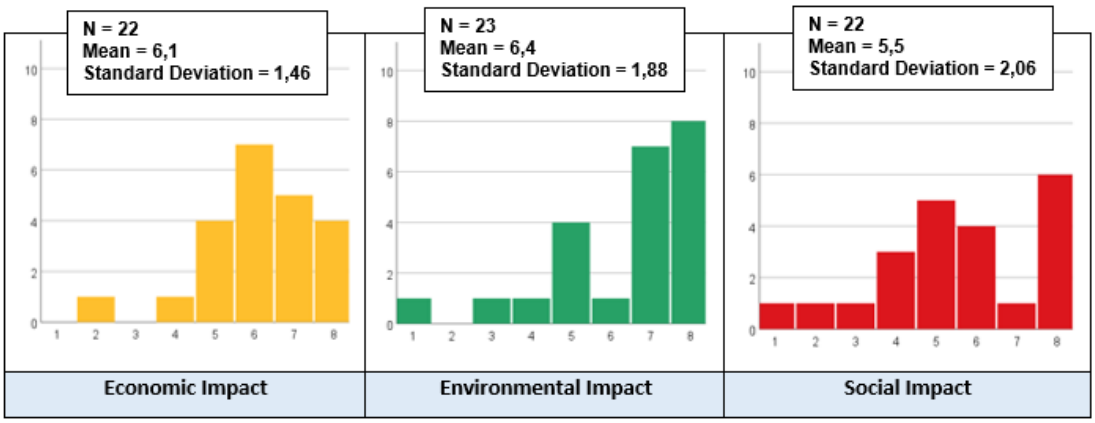

Fig. 6. Distribution of SBT impact results

Analysing the data, it is possible to conclude that the environmental impact level had with the best results, with a large number of answers with values of 7 and 8, followed by the economic impact level, which has little dispersion and some outliers, and finally the social impact level. The social impact level also shows good results, but has the least impact, which is to be expected since the SBTi measures are more focused on the environmental and economic aspects.

4. DISCUSSION

According to the data obtained in the results, it is possible to answer the proposed research questions:

RQ1: What are the basic concepts of the SBT initiative?.

- The Science Based Target initiative is an organization that help companies to reduce their emissions by designing a path for decarbonization. The process for joining the initiative is simple, with five well-defined steps. The number of SBT companies has been growing, especially in the more developed countries, which are responsible for the most global carbon emissions.

RQ2: What are the advantages of joining the SBT initiative ?.

- Some companies that joined this initiative have given statements regarding the benefits their companies have had since joining. They reported having economic growth and a positive sustainable development. Other advantages are the recognition of the UN and CDP, which strengthen the company's environmental reputation.

RQ3: What impact do the SBT's have on the sustainability of organisations?.

- Through the data obtained in the questionnaire, it was possible to perceive that the use of SBT in organizations has a positive impact on their sustainability, especially at an environmental level. It was also observed that there are still very few companies that calculate the emissions they produce. This is a negative aspect because in order to outline a path for carbon reduction, it is first necessary to be aware of the values of past and current emissions. Despite the increasing importance and positive results of SBT, the majority of Portuguese companies claim to be unaware of this concept, with other countries having much more representation and participation in the initiative.

5. CONCLUSION

This article was developed in order to understand the concepts and advantages of using SBTs by organisations, as well as the impact it would have on their economic, environmental, and social impact levels. The initiative presents a simple membership process with several advantages that were mentioned by some of the companies that joined. In terms of impact, SBT have a positive result on the sustainable development of organizations, especially at the environmental impact level, which was expected since this initiative was created to help companies improve their environmental performance by reducing their emissions.

This article presents the results of a study conducted with Portuguese companies, the majority of whom are part of the SBT. The fact that the study includes almost all Portuguese companies that have joined this initiative presents a clear and accurate representation of the current experiences of the Portuguese deployment in relation to the

implementation of SBT and measures that allow emission reduction. Future research could focus on applying this study at a global level, not just at a national level in Portugal.

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