From Oil to Green Energy: Galp's Journey in Embracing the Sustainable Development Goals

Marta Rosado Rodrigues
152122202

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Abstract

Title: From Oil to Green Energy: Galp's Journey in Embracing the Sustainable Development Goals

Author: Marta Rosado Rodrigues

In the age of information, for-profit companies are experiencing increasing scrutiny from stakeholders for higher social and environmental accountability. Companies have felt the need to extend their strategy and business operations to include social and environmental responsibilities. This study aims to determine how a for-profit can be aligned with the Sustainable Development Goals (SDGs) while it changes its business model to a sustainable business model. The company chosen for this study is Galp, a Portuguese integrated energy company from the oil and gas industry, a major industry that contributes to carbon emissions through its business activities. This ensures that the company chosen is robust for this analysis.

The study follows the process of designing and planning the SDG implementation on the company, with the accompanied four phases since this allows the implementation to show more noticeable results. At the same time, it determines if the company has a sustainable business model through a framework from the literature that analyses the social and environmental benefits of the business and the company's business environment.

This analysis could assist managers who intend to implement such a process in their organizations since it contains a detailed implementation process that applies to all companies. This will direct the organization towards a more complete core logic while addressing stakeholders' demands for social and environmental responsibilities by implementing new strategies and business activities in a way that isn't considered greenwashing since it's based on a real-life example of a company that has gone through a similar process.

Keywords: Sustainable Development – Sustainable Development Goals – Sustainable Business Models – Stakeholder Theory – Oil & Gas Industry – Renewable Energy – Energy Transition – Galp.

Sumário Executivo

Título: Do petróleo à energia verde: A jornada da Galp para os Objetivos de Desenvolvimento Sustentável

Autor: Marta Rosado Rodrigues

As empresas têm vindo a sentir o escrutínio dos stakeholders para serem mais responsáveis social e ambientalmente, pelo que sentem a necessidade de alargar as suas estratégias e operações de maneira a incluir essas responsabilidades. Este estudo mostra como uma empresa com fins lucrativos consegue estar alinhada com os Objetivos de Desenvolvimento Sustentável (ODS) ao mesmo tempo que altera o seu modelo de negócio para ser mais sustentável. A empresa escolhida para este estudo é a Galp, uma empresa portuguesa de energia pertencente à indústria petrolífera, uma das principais fontes das emissões de carbono. Isto faz com que a empresa seja robusta para esta análise.

O estudo acompanha o processo de planeamento e implementação dos ODS na empresa, acompanhado pelas respetivas quatro etapas detalhadas que permitem uma implementação com resultados mais notórios. Determinamos ainda a sustentabilidade do modelo de negócio da empresa através de um modelo proveniente da literatura que analisa os benefícios socias e ambientais da empresa através do seu contexto.

Esta análise poderá ser útil a gestores que queiram implementar este processo nas suas organizações, uma vez que detalha um processo de implementação aplicável a qualquer empresa. Isto direciona a empresa para uma lógica central mais completa ao mesmo tempo que considera as exigências dos stakeholders para uma maior responsabilidade social e ambiental através da implementação de novas estratégias e atividades de maneira a não ser considerada como greenwashing, já que é baseado no caso real de uma empresa que passou por um processo semelhante.

Palavras-chave: Desenvolvimento Sustentável– Objetivos de Desenvolvimento Sustentável – Sustainable Business Models – Stakeholder Theory – Oil & Gas Industry – Energia Renovável – Transição Energética – Galp.

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The process of writing a dissertation has been one of the main challenges I ever faced during my academic life, with an extra layer of difficulty added by having started my internship program at the same time I started writing this dissertation. I found this to be an interesting project, with a learning curve that grew exponentially with each passing day. I delved into this process wholeheartedly and never found myself uninterested as there were always new minor details to be discovered every day. With this project, I also learned the process of choosing a general topic and getting consequently more focused until finding the main topic of the dissertation and researching everything that is known to date concerning the same topic.

In the face of numerous challenges and difficulties, this journey wouldn't have been as meaningful without the invaluable support of my dissertation supervisor, Professor Marta Bicho, to whom I first want to express my profound gratitude for all the motivation, helpful explanations, and feedback sessions. Although this is my first written dissertation, Professor Marta guided me with expertise and helped me along the way, easing out all the doubts that arose during the process. I would like to express my appreciation to Galp and all the company representatives who generously made themselves available to answer the inquiries during the interviews, which were instrumental in developing the case study. I was warmly welcomed and everyone was willing to share valuable information to contribute to this dissertation. I would also thank my dissertation's peers Mariana Gris, Marie Stoever, and Gonçalo Matos for their valuable insights during the seminars and network of support and encouragement.

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List of Abbreviations

O&G	Oil and Gas
BM	Business Model
SBM	Sustainable Business Model
SDG	Sustainable Development Goals
MDG	Millennium Development Goals
SD	Sustainable Development
KPI	Key Performance Indicators.
R&D	Research & Development
HVO	Hydrogenated Vegetable Oil
GW	Gigawatt

1. Introduction

In today's globalized world, there's unprecedented access to information and more firms have been able to extend their operations across different countries and cultures. At the same time, firms are increasingly scrutinized and under pressure from stakeholders to be more responsible for businesses and focus on other factors besides maximizing financial gains (Battilana & Dorado, 2010; Tate et al., 2010). Thus, there's an increasing need for firms to adopt social and environmental responsibilities into their operations and throughout the many different components of value chains. (Tate et al., 2010). Firms have responded to this immense pressure from the stakeholders in several ways, which include the publication of CSR reports and the implementation of new strategies (Esrock & Leichty, 1998) so that stakeholders can monitor the firm's behavior and ascertain the firm's intention in changing their mission and adopt measures that will contribute to value creation, over value capture (Elbardan et al., 2023; Santos, 2012). This allows firms to focus on creating benefits for the environment and the communities they operate in instead of just capturing gains for the firm (Rauter et al., 2017; Santos, 2012).

Human behavior is a leading driver of climate change (Burkett, 2011a; Höök & Tang, 2013) and one of the main culprits is the emission of greenhouse gases, of which carbon dioxide (CO2) emissions are appointed as a main disruptor of the environment. Typically, companies that are part of the oil and gas (O&G) industry emit these gases throughout their operations due to the burning of fossil fuels (Le Menestrel et al., 2002). At the same time, these companies have been key players in the generation and distribution of energy since they began their operations many decades ago. Energy is a key resource that is present in many aspects of our lives, so in a time where O&G companies must do the transition to clean energy sources, it's important to invest in innovation and shift towards more sustainable practices and strategies to ensure a sustainable future for now and for the generations to come (Le Menestrel et al., 2002; Marcel, 2012). This needed change in the business practices of companies in the O&G industries can be encapsulated by the Sustainable Development Goals (SDGs), created by the United Nations in 2015. As of 2023, the progress has been mixed because while important steps have been taken there are still challenges to solve, particularly in regions affected by conflicts, such as the recent conflict in Ukraine (United Nations, 2023c). It's within this context that companies from this industry are of the utmost importance since their business operations have an impact on so-called "triple bottom line" indicators: economy, environment, and society (Elkington &

Rowlands, 1999; Höök & Tang, 2013). Thus, their business activities must be scrutinized and changed to mitigate the environmental impacts of this industry and be able to achieve progress on the SDGs by 2030.

There's already extensive research done on hybrid organizations that focuses on matters such as their emergence, descriptions, particularities of these organizations and what are they doing differently compared to more traditional ways of conducting businesses (Doherty et al., 2014). Despite all this focus on hybrid organizations, there's been a shift in the business practices of for-profit companies as they are actively incorporating strategies to address social responsibilities and be more sustainable, which also applies to companies in the O&G industry (Burkett, 2011b; Holt & Littlewood, 2015; Höök & Tang, 2013; Stephan et al., 2016). Thus, there are still unanswered questions when it comes to how for-profit companies in the O&G industry are changing business practices to be more sustainable as a way to answer stakeholders' demands and how are they doing the energy transition to more sustainable ways of generating energy.

This dissertation employs a teaching case that aims to address the following teaching questions:

1. How is Galp implementing the SDGs into its operations?
2. How has Galp changed its business model to a more sustainable business model while dealing with stakeholder scrutiny?

The methodology employed by this study will be based on both primary and secondary data, as presented in Figure 1, including internal records, public documents, webpage articles, CSR reports, and interviews to develop and solve the case study. The interviews were conducted with relevant representatives of the company, from several departments, to have a more in-depth context of the company. The interviewees also added valuable inputs for the case study. The other public and internal documents were valuable in ascertaining information about the company and its industry.

Data Collection Table		
Source	**Subject**	**Objectives**
6 interviews with relevant Galp representatives	**Eva Leite** - Sustainability, Investor Relations Team (via Teams and in Person).	Understanding the company's environmental positioning and relationship with the SDGs.
	Sandra Aparício - Communications, Social Impact & External Affairs Team (via Teams and in person).	Understanding the company's social impact and relationship with the SDGs.
	Belém Costa - Strategy, Portfolio & M&A (via Teams).	Understanding the strategies employed by the company for the SDGs and overall net zero ambitions.
	Susana Quitério - Knowledge & Insights, Digital Operations Team (via Teams).	Understanding the company's market segments.
	Pedro Lobato - Brand & Strategy, Marketing & Convenience Team (via Teams).	Understanding the company's communication channels.
Internal Documents	Reports regarding the company's standing on sustainability matters.	Important documents to understand the company's relationship with the SDGs and components of the business model. Other documents include the materiality matrix and the company's annual reports with its Sustainability Journey.
Public Documents and Webpage Articles	Galp's Website, Online Articles, Integrated Annual Reports.	Relevant information about the company and for the case study.

Figure 1: Data sources for the case study

This study proceeds as follows. First, the Introduction refers to the main themes of this teaching case and presents the teaching questions. Second, the Literature Review on Sustainable Business Models and the SDGs gives context to the importance of these concepts to our teaching objective of exploring how companies can adapt their business models to meet stakeholders' expectations and change their operations to be more sustainable and align with the SDGs. Third, the Case Study contains all the important data from the company, such as the strategies implemented by the company, to prepare the fourth section, the Teaching Notes. Here, we apply the data previously collected to answer the two teaching questions presented in the introduction of the dissertation and lastly, discuss the implications of this extensive case in the Conclusion chapter.

2. Literature review

2.1 Business models

Various definitions regarding the concept of business models (BMs) have emerged from several sources, authors, and industries; nevertheless, the underlying principle remained the same across all of them: it's a company's core logic for value creation and capture, before delivering it to consumers, which enables the company to remain a key player on the market for a long period (McGrath, 2010; Osterwalder et al., 2005; Shafer et al., 2005; Teece, 2010; Zott et al., 2011). The concept of BMs as a management principle has existed since at least the mid-20th century, gaining particular attention towards the end of the century, specifically in the late

nineties. This happened due to the globalized access to the Internet, which brought increased attention to Internet companies and e-commerce enterprises. It's important to note that while a BM serves the purpose of analyzing and validating a firm's strategic choices and its operating implications, it is not in itself a strategy (Shafer et al., 2005). Thus, BMs refer to the way an organization aligns strategy with operational activities, implying that is an important tool for the company to understand its value, what it can deliver to consumers, and how it can strategically position itself in the market to differentiate from competitors. As such, it is also a potential source of competitive advantage (McGrath, 2010; Osterwalder et al., 2005; Shafer et al., 2005; Teece, 2010).

There has been an effort to define a BM through a framework throughout the years, with the first initiatives being developed by Osterwalter et al. (2005) and Shafer et al. (2005). The first defined a BM as one containing the following nine core elements: Value Proposition, Target Customer, Distribution Channel, Relationship, Value Configuration, Core Competency, Partner Network, Cost Structure, Revenue Model; the second defined it as being composed of four key terms: Core Logic, Strategic Choices, Value Creation and Capture and lastly Value Network. Another framework was later developed by Richardson et al. (2008), in which a BM is reorganized into three different categories: Value Proposition, Value Capture, and Value Creation and Delivery. Value proposition refers to what the firm delivers to customers - products or services - and what they will be willing to pay for since this will be the source of the company's competitive advantage. It also includes the customers for the target market; value capture refers to how the firm earns revenues and profits from what it delivers to customers; value creation and delivery refers to the operations of the firm that aim to create and deliver value to customers (Bocken et al., 2014; Richardson, 2008). Later, these frameworks were further developed into what is known today as the "Business Model Canvas" (Osterwalder & Pigneur, 2010) which reorganizes the nine core elements into the previously mentioned three categories.

Previous research on the topic suggests that BMs are essential for a firm's prosperity. However, for firms to be able to take full advantage of it, their BMs should aim to be dynamic and a true representation of the firms' core logic. This is essential for firms to stay relevant in a constantly evolving world and their operating market. A firm with such BM will be ready to adapt to any emergent market trends by changing some part of its operation, which in turn can result in a better and consolidated position of the firm in the market. (McGrath, 2010). With this, firms

become more aligned with their strategies, which also enables them to create a competitive advantage (Boons & Lüdeke-Freund, 2013; McGrath, 2010; Shafer et al., 2005). Despite all the previously mentioned benefits of the use of BMs, there could be some disadvantageous situations when they are misused or aren't properly structured, such as difficulties in penetrating the market, in innovation if the core logic is flawed in any way, and in the firm's success if the business model only has a few components represented when it should aim to have all the components there (Shafer et al., 2005).

2.1.1 Sustainable Business Models

Besides the traditionally defined field of BMs, there's a growing focus on Sustainable Business Models (SBMs), which according to Lüdeke-Freund et al. (2010) can be defined as "a business model that creates competitive advantage through superior customer value and contributes to the sustainable development of the company and society". This definition recognizes that the core logic of a sustainable business still consists in creating and delivering value to customers, much like conventional BMs, all the while including environmental and social benefits (Chesbrough, 2010; Osterwalder and Pigneur, 2010; Teece, 2010; Zott et al., 2011).

The growth in interest in this concept is explained by the increased attention towards sustainability and social issues, meaning that firms have been dealing with an increasing demand for social and environmental responsibility from stakeholders (Comin et al., 2020). Thus, firms must confirm their positions regarding these matters (Gimenez et al., 2012; Tseng et al., 2015) as sustainable business models aim to provide value for all stakeholders (Normann and Ramirez, 1993; Hörisch et al., 2014). However, unlike conventional BMs, no framework has been developed nor adopted as the norm regarding the way SBMs are presented since the frameworks available are usually industry-specific or specialized in other areas, such as innovation (Bocken et al., 2014; Boons & Lüdeke-Freund, 2013; Yang et al., 2017) or circular economy (Bakker et al., 2014; Kiørboe, 2015). Despite this, Bocken et al. (2014) further developed the "Business Model Canvas" (Osterwalder & Pigneur, 2010) and suggested a framework that adapts it into eight archetypes to analyze possible innovations and scenarios that would translate into several SBMs, organized according to three areas where innovation is most likely to occur. Nevertheless, this study adopts the framework developed by Gao & Li et al. (2020) to analyze SBMs of firms (See Figure 2).

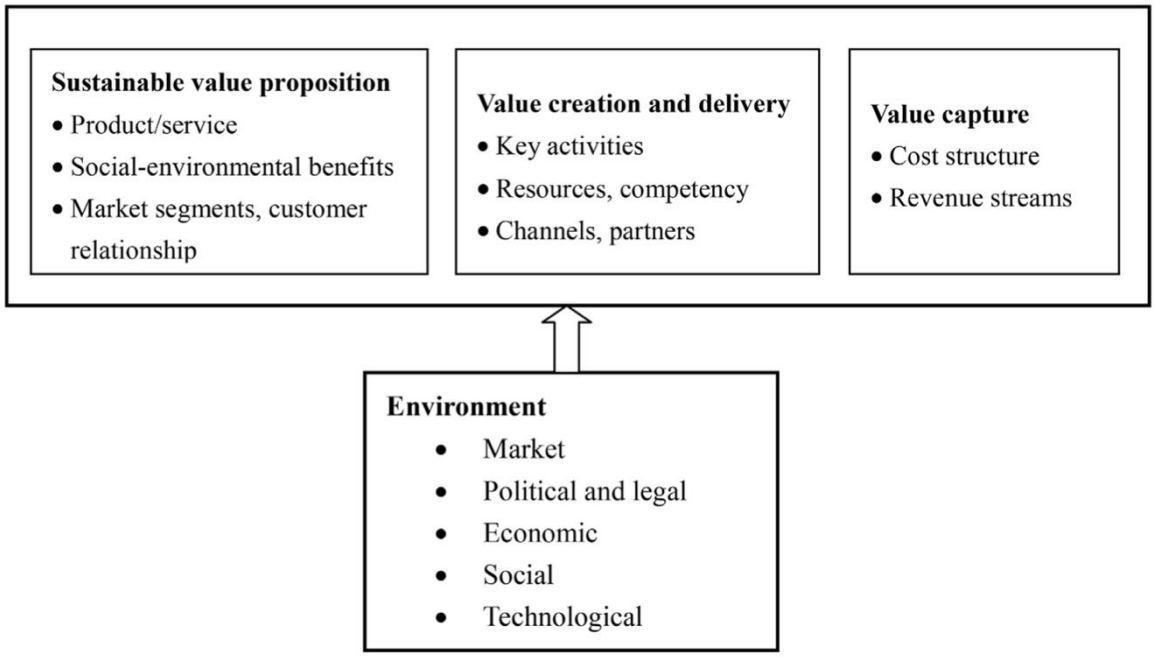

Figure 2: Framework for a Sustainable Business Model (Source: Gao & Li, 2020)

This framework is based on the three dimensions that compose a BM - Value Proposition, Value Capture, and Value Creation and Delivery - as defined by Richardson et al. (2008). A SBM differs from conventional BMs as it includes a sustainable value proposition and considers the business environment (Gao & Li, 2020). The framework presented above has two dimensions: the sustainable and environmental dimensions. The first dimension includes the Sustainable Value Proposition, Value Creation and Delivery, and Value Capture. All these components remain the same, except the sustainable value proposition, which adds the social-environmental benefits of the company's product/service, besides other economic elements – product/service, market segment(s), and customer relationship – which are present in conventional business models. This sustainable value proposition is key when defining a SBM as a firm should make sure that sustainability is an important part of its proposition. (Baumgartner & Ebner, 2010; Boons & Lüdeke-Freund, 2013; Gao & Li, 2020; Schaltegger et al., 2012).

The second dimension is based on the PESTLE model (F. J. Aguilar, 1967; Gupta, 2013) and comprises several factors - Market, Political, Legal, Economic, Social, and Technological – that will affect a firm's advantage and position in the market (Gao & Li, 2020). The market is the only microeconomy factor of this dimension as the other factors are all macroeconomy. It is related to the market conditions that affect the firm's strategy and performance. The market comprises customers, suppliers, competitors, and stakeholders (Porter, 1985); the political and legal factors refer to the rules and regulations present in governments that determine how firms

operate; the economic factors refer to the level of economic development of a country and how it will impact the firm's business activities; the social factors refer to the customs, culture, and traditions of a country or region where the firm is located and how is it linked with the firm's business (Gupta, 2013); the technological factors refer to the current life cycle of the technology employed by the company and how innovation in such technologies could impact the firm's business. Thus, this second dimension will determine the sustainability associated with the firm's business model (Gao & Li, 2020).

The recent focus on SBM is understandable as it's a new way for companies to address stakeholder demands by creating and capturing value while incorporating social and environmental benefits, besides the traditional economic benefits for the firm (Boons & Lüdeke-Freund, 2013; Davies & Doherty, 2019; Teece, 2010; Zott et al., 2011). Companies can adopt these newly defined SBMs by changing and adapting their current BMs to consider topics and strategies relevant to addressing sustainability and social issues. This way, companies innovate on their traditional way of conducting business by considering a sustainable approach to their business operations, while at the same time continuing to operate and generating profits. (Bocken et al., 2014; Comin et al., 2020; Rauter et al., 2017; Yang et al., 2017). Despite being a new concept with much research still left to be done, (Boons & Lüdeke-Freund, 2013; Ritala et al., 2018) early research has proven that this shift towards SBMs is effective for companies that already have solid and defined business models in place. An important benefit of adopting SBMs is that they automatically create benefits for the triple bottom line sections (Bocken et al., 2014; Boons & Lüdeke-Freund, 2013). As mentioned previously, it's important for firms to constantly update their BM to be able to keep up with market trends and maintain their position in the market, which implies that firms should do the same process with the end goal of achieving sustainability, by altering their business environment to be more sustainable. This change could be achieved through business model innovation, as companies need to innovate on their current business models to be able to achieve sustainability, and by having well-defined SBMs (Schaltegger et al., 2012). Other frameworks on the topic don't acknowledge the business environment (Bocken et al., 2018; Joyce & Paquin, 2016), which research has shown to be important to achieve truly sustainable development, as just having sustainable practices and strategies isn't enough if it doesn't consider the business context. Thus, if companies want to achieve sustainable development through their business operations, they first need to understand their business environment and then design an accurate BM that fits that

environment. Firms will need to update their BM as the environment keeps changing (Gao & Li, 2020).

2.1.2 Sustainable Development

The concept of Sustainable Development (SD) was first mentioned in the Brundtland Commission in 1987, where it was defined as "the development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). It can also be described as the intersection of three important sections that are the economy, society, and environment, which are known as the "triple bottom line" (Elkington & Rowlands, 1999). This was the base for the elaboration of both the SDGs and its predecessor, the Millennium Development Goals (MDGs), both proposed and developed by the UN (United Nations, 2023b). In the SDGs, it is assumed that all 17 goals are linked to all three previous sections (Dalampira & Nastis, 2020; Dhahri & Omri, 2018) and several models have been established to illustrate how the sections are connected (Ali-Toudert & Ji, 2017). Despite this, previous research on the topic mentions that this connection between the SDGs and the SD's sections is not clear, meaning that further research on the topic and simplification of the concept is needed for a successful implementation of the goals (Le Blanc, 2015; Spangenberg, 2017). To achieve this, research is being done on SD innovation as this could imply changing the way sustainability is understood and incorporated (Silvestre & Ţîrcă, 2019).

2.2 Sustainable Development Goals

The Sustainable Development Goals (SDGs) were developed by the United Nations and adopted by all member states in 2015. It consists of 17 global goals (see Figure 3) that aim to address and end several challenges that are part of the world today, such as poverty, hunger, access to education, healthcare, and sanitation, among other equally important goals. The progress towards the goals is monitored as each goal is composed of targets that are then monitored through indicators. This is the official framework developed by the UN to monitor the progress on the goals and it constitutes the reference to measure sustainability globally (Folqué et al., 2023; UN, 2017). It is composed of 169 targets and 232 indicators (Fritz et al., 2019; IAEG-SDGs, 2017; UN, 2017). These goals are part of the UN's Agenda for Sustainable Development which aims to have all the goals completed and achieved by 2030 (United Nations, 2023a, 2023b). As of the latest UN report that dates July 2023, more than halfway to the deadline of 2030, progress has been mixed. While some important steps have been taken

regarding, for instance, poverty and child mortality that have continued to decrease, other challenges arose due to recent events such as the COVID-19 pandemic and the conflict in Ukraine. Currently, only 15% of goals are on track, while almost 50% have had weak or insufficient progress and the remaining 30% are either stagnant or have even regressed. While this situation applies to all member states, developing countries are facing staggering difficulties as debt levels are increasing and most don't have the means to repay it. (United Nations, 2023c).

The indicators used to monitor the progress of the goals can be classified into one of three tiers: Tier 1, Tier 2, or Tier 3, depending on the methodology associated with it and its current status on the progress of the goal (Appendix 1). As of the latest report from July 2023, there are 148 indicators in Tier 1, 77 indicators in Tier 2, 0 indicators in Tier 3, and 6 indicators in multiple tiers, meaning that different components of the indicator belong to different tiers (IAEG-SDGs, 2022). The data used to report on the progress of the goals comes from global databases such as national statistical offices, governments, and international organizations from all member states. These reports are voluntary and submitted to the High-Level Political Forum for Sustainable Development (HLPF) to be further analyzed and reported through the UN's reports on the progress of the SDGs (Allen et al., 2018; HLPF-UN, 2023). Even with all these reports and data sources, progress on the goals can be difficult as this data is costly to obtain, implying that data collection doesn't happen as often as it should (Fritz et al., 2019); nevertheless, due to there being voluntary reporting, the data obtained might also not be a true representation of the reality of those member states or of the progress towards achieving the goals (Allen et al., 2018).

Figure 3: Sustainable Development Goals (source: UN)

The SDGs were preceded by the Millennium Development Goals (MDGs), adopted from 2000 to 2015, which consisted of 8 goals and 21 indicators. It had a greater focus on developing countries compared to the SDGs, which apply to all member states. This makes the SDGs more detailed and with a broader scope since it applies to both developing and developed countries, and due to the increase in the number of goals considered (Morton et al., 2017; Owens, 2017; UN, 2017). Although the MDGs were a first step towards having several countries and governments involved in trying to solve some of the world's most concerning challenges, there were some criticisms associated with it, as the selected goals didn't have an apparent justification as to why they were prioritized over others. There were also difficulties in tracking the performance of countries on the goals as there wasn't enough data to do so nor was there a developed framework, which now exists with the SDGs (Morton et al., 2017). Another difference between these two initiatives is that with the SDGs it's more noticeable how each goal and its associated targets influence one another, other goals, and even targets, which means that improvements in one goal will influence immensely and better another goal and its targets, making the progress towards the completion goals more efficient (Allen et al., 2018; Morton et al., 2017).

The previous research done on the SDGs has noted that SDG implementation has been difficulted because of the lack of methodology available, which although currently better than what was previously available during the MDGs, still doesn't allow for a generalized path for SDG implementation nor the dynamic tracking of the progress on each goal by the member states. This means that even if a member state is making progress toward a certain goal by implementing specific measures, other member states might not be able to replicate this (Abson et al., 2017; Allen et al., 2018; Fritz et al., 2019). Another gap in the literature identified by researchers is that despite the official framework for SDGs developed by the UN and several guidelines for SDG adoption in firms, published by renowned consulting firms such as Mckinsey, PwC, Delloite, among others, there's no official framework for the implementation process in firms. Thus, there's a disconnect between the available research on the topic of SDGs and the practicality of SDG implementation (Allen et al., 2018; Berrone et al., 2023). As such, this study employs a framework developed by Berrone et al. (2023) as a possible reference for SDG implementation in firms. According to this framework, there are four steps in the process of SDG implementation (See Figure 4) that will be explored in the following subsections:

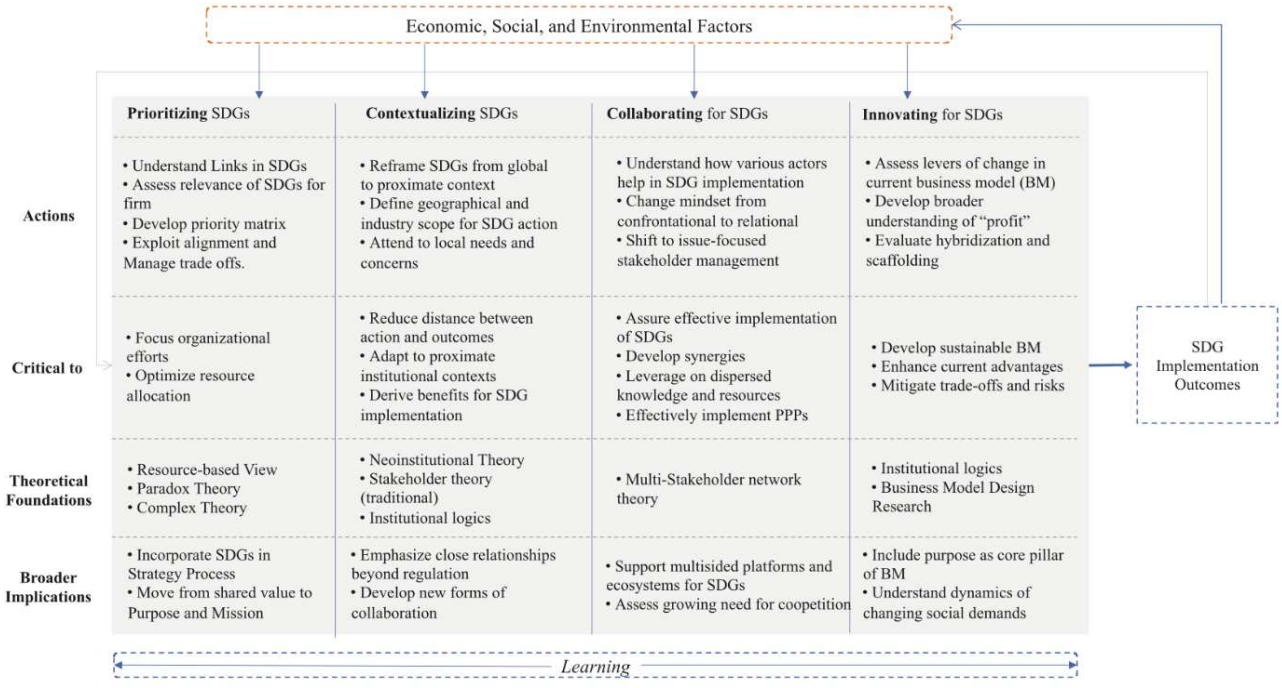

Figure 4: Integrative Framework for SDG implementation (Source: Berrone et al., 2023)

Prioritizing – The SDG agenda is often too general regarding details of the goals, which are often interconnected with each other and across several sectors, which doesn't make it any

easier for companies to address them all at once, nor is this recommended as previous research has found this to be counterproductive (Holden et al., 2017). Thus, a first screening of all the goals needs to be done to decide which makes sense to be prioritized by the company. The process of SDG prioritization can promote synergies between the goals and the company's results, but it can also lead to trade-offs between the goals and stakeholders' demands, so companies need to be mindful in this phase since what matters is for the prioritized SDGs to be aligned with the company's core logic (Berrone et al., 2023). To do this, firms can depend on several approaches, such as the firm's business experience and implementation simplicity (Preston, 2015), opt for goals that are directly connected to the firm's commercial activity and stakeholder initiatives (Guerrero et al., 2015) or choose goals for strategic and management purposes (Child, 1997). This first step is essential as it enables firms to focus on the goals that matter the most for the company, nevertheless, most firms don't have the time nor the resources to do this first analysis.

Contextualizing – Each company has several contexts associated with it, either geographical, sectorial, social, or environmental that will impact SDG implementation, so it's important for a company to have these contexts well defined and known to evaluate how relevant each of the goals is to the company. This will contribute to the integration of the goals into the company's strategy (Berrone et al., 2023). Here, companies must analyze the SDGs through their several contexts and not generally across it to promote value creation (Stephan et al., 2016) by also involving stakeholders in the process (McWilliams & Siegel, 2011). This contextualization should be detailed as it will prove effective for the implementation process as firms will be able to identify challenges for the implementation, update strategies and actively contribute to the progress of the goals (Hawn & Ioannou, 2016). Previous research shows that firms with an active engagement with the community via SDGs increase their legitimacy (Battilana et al., 2015) and have a better relationship with stakeholders (Slawinski & Bansal, 2015), which in turn can improve its public image and also serve as protection in the future (Koh et al., 2014; Mair et al., 2012).

Collaborating – Even if firms are successful in the previous stages, the implementation process will not produce much impact if firms are acting alone. Thus, firms need to engage with multiple external partners to cooperate and share results to face the challenges imposed by the SDG agenda (SDG Fund, 2015). This idea is also present in SDG17 "Partnerships for the goals", which states that the progress toward the goals can only be met through the joint efforts of

several stakeholders and entities. This implies that partnerships within the company and with other companies and external partners are essential for the SDG implementation process (McKinsey, 2019; PwC, 2015). Previous research shows that collaboration has several benefits such as better use of common resources and technology (Bowen et al., 2018), broader and more complete solutions to challenges imposed by climate change (Doh et al., 2019; Pinkse & Kolk, 2012) and higher progress towards the SDGs. There are some challenges regarding collaboration, such as stakeholder heterogeneity, meaning that stakeholders might support some ideas and not agree with others and the priorities, criteria, and incentives might also differ among them. To mitigate this, a possible solution could be collaborative platforms (Berrone et al., 2023) or stakeholder dialogue (Ferraro et al., 2015; Tost, 2011).

Innovating – This last step is crucial and related to the previous stages, pointing once more to the need to work on all four phases together and not on just a single phase. The literature states that the SDGs will likely be achieved through tools and technologies that are not there yet (BCG, 2019; United Nations Global Compact, 2020; WBCSD, 2017) so firms need to change the way they currently conduct business for advances to be achieved (Ferraro et al., 2015). This innovation could apply to business models, which are the core logic of a firm and how it creates and shares value for the various stakeholders (Battilana & Dorado, 2010), which implies changing the way the firm conducts its business, the activities conducted or even how firms create and share value.

2.3 Stakeholder Theory

Before expanding on the theory, it's important to have a solid notion of the concept of stakeholders. There are several definitions from different authors; nevertheless, for the purpose of this study, it can be defined as "any group or individual who is affected by or can affect the achievement of an organization's objectives" (Freeman & McVea, 2005, p.192). The typical stakeholders of a firm are consumers, suppliers, the government, competitors, employees, communities, and also shareholders. This is a generalized example as depending on the firm considered, the stakeholders will differ (Carroll 1996, p.84-88). Stakeholder theory aims to analyze the relationships between a firm and its several stakeholders so that they are included in the process of managerial decisions, which could ultimately alter the way a firm conducts its business and activities (Donaldson & Preston, 1995; Freeman, 2010; T. E. Jones & Wicks, 1999; T. M. Jones, 1995). Previous research states that this process comes with benefits for the

firm, such as higher financial performance, meaning that firms still maintain their profits while addressing stakeholder demands (Battilana & Dorado, 2010; Ioannou & Serafeim, 2019).

The relationship between the firm and its stakeholders should aim to be of mutual benefit for both parties rather than the firm controlling stakeholders. Each stakeholder has interests that should be considered while noting these relationships are dynamic and not bidirectional between the firm and each stakeholder as stakeholders are often connected (Buchholz & Rosenthal, 2005). This means that besides the traditional idea that firms should focus on earning profits for shareholders (Friedman, 2007), they should also start considering how their activities affect stakeholders to be more socially and environmentally responsible (Freeman, 2010). This is particularly relevant as firms worldwide are facing increasing scrutiny and demand for business transparency from stakeholders, which has changed the way firms communicate their stances on social and environmental issues (Battilana & Dorado, 2010; Rauter et al., 2017; Santos, 2012).

Despite being a theory that produces several benefits for both the firm and the stakeholders, it also has some limitations, as the identification of stakeholder groups is often vague and not detailed, meaning that companies won't be able to make use of the theory (Dunfee, 2009; Dunham et al., 2006; Orts & Strudler, 2009).

3. Case Study

Galp is a company from the O&G industry, founded on the 22nd of April 1999, whose activities range from the exploration, production, refining, distribution, and selling of oil, gas, and recently the generation of electricity. It's currently one of the most notable companies in Portugal, with a current market share of 26%. It specializes in the commercialization of oil and gas products, has total ownership of the refining capacity in Portugal through the Sines

Refinery, and is one of the largest producers of photovoltaic energy in Iberia. The company can be organized into four different business units: Upstream, Industrial & Midstream, Commercial and Renewables & New Business. Upstream is the area responsible for the searching, exploration, and extraction of oil and gas from the reserves, with the company having several projects in different development phases and geographies, such as Brazil, Mozambique, and Namibia, among others. Galp currently has two important development projects that include the most noticeable discoveries of oil and natural gas of the last decades, located in Brazil and Mozambique, respectively. Industrial is responsible for the refining process of the extracted products from the previous business unit, such as oil, electricity, and gas, while Midstream (also called Energy Management) is responsible for the supply and trading of those products. It's in this area that the company is making several efforts and investments to decrease its carbon footprint, with the planned construction of a new hydrogen production facility at Sines refinery, and the further decarbonization of conventional oil and gas products that come out of the refinery, with new and emerging biofuels such as the Hydrotreated Vegetable Oil (HVO). Commercial is the area responsible for the link between the company's product portfolio and its clients. It's important to mention the company's newly renovated convenience stores and services as in 2022 there were 1475 service stations and 2382 electric charging points, which are expected to increase in the following years. This business unit mainly operates in Iberia and some African countries. A highlight of this business unit is Galp Solar, a company from the group that specializes in the distribution of solar renewable energy, which reinforces the company's commitment to a clean energy transition. Lastly, the Renewables & New Businesses area is where projects that will contribute to the company's portfolio diversification and carbon emission reduction are developed. This is the newest business unit of the company, which includes the innovation department where projects that aim to solve challenges associated with the energy transition are developed through Galp's startup platform – Upcoming Energies.

3.1 Road to net zero by 2050

The year 2017 was particularly significant for the company due to portfolio diversification, which included the commitment to develop a clean energy transition strategy and the reduction of carbon emissions. Due to this, 2017 has been the year considered as a baseline for all measurements and results. The company developed and planned a strategy towards zero carbon emissions until 2050, while at the same time aligning itself with the SDGs until 2030. To

achieve this ambition by 2050, the company has developed a Sustainability Roadmap, which was updated in 2022. It has five core foundations that serve as a base for what all four business units should strive to achieve and implement. This roadmap represents a straightforward way for Galp to communicate and organize the steps they are taking towards sustainability.

Figure 5: Sustainability Roadmap (retrieved from document provided by Galp)

3.1.1 The 2030 ambitions

Galp has made a top priority the goal of achieving and positively contributing to the UN's SDGs. To do so, they have created five sections under their Sustainability Roadmap to further explain which part of their operations will change with the 2030 ambitions in mind. This documentation is located in the Sustainability Journey appendix, which is part of the annual Integrated Management Report (IMR). Each section includes the specific targets and Key Performance Indicators (KPIs) to measure and quantify that change and how it is aligned with the different SDGs. Even though each section focuses on different topics and metrics, it's important to note that together these sections are all interconnected, as the SDGs are connected.

3.1.1.1 Our journey to net zero by 2050

In the first section, there's an alignment with SDGs related to industry specifics and the climate such as SDG7, SDG9, SDG11, SDG12, and SDG13. There are two ambitions that the company aims to achieve by 2030: have a full decarbonization process across the operation and a portfolio focused on low-carbon energy solutions. For the first ambition, the KPIs and targets developed are all related to decreasing absolute emissions and carbon emissions across their

operations and business units, with significant reductions already achieved in 2022 with -20% absolute emissions from operations, -14% production-based carbon intensity and -4% sales-based carbon intensity. For the second ambition, the KPIs established aim to have the capital expenditures for low carbon projects above 70%, of which 33.5% totaling €29.7m were done just in the year 2022.

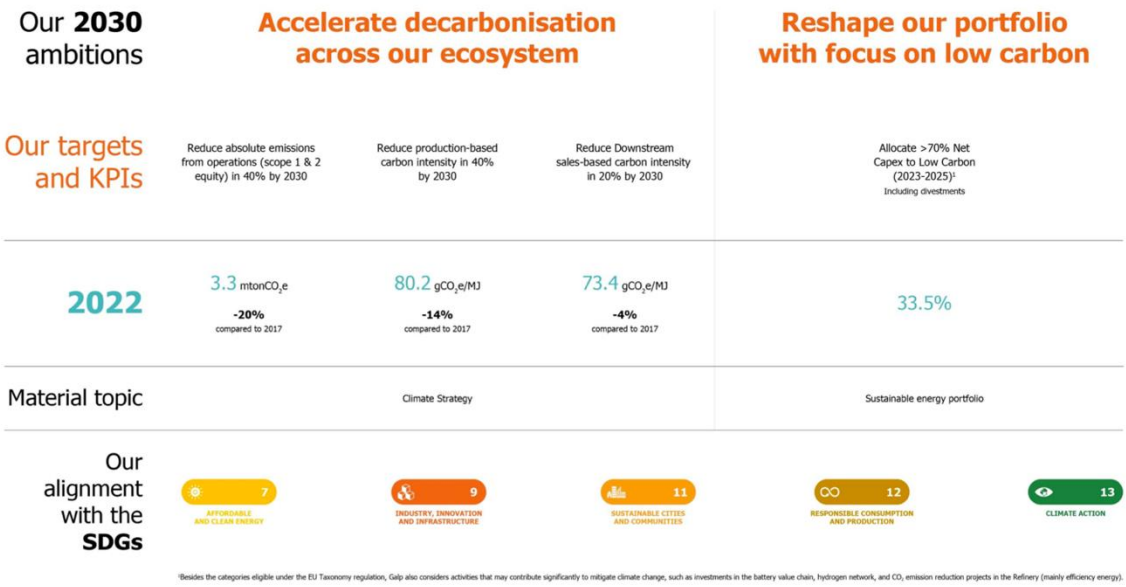

Figure 6: Our journey to net zero by 2050 (retrieved from document provided by Galp)

3.1.1.2 Preserve our planet

For the second section, there's an alignment with more SDGs since its content relates to general ambitions for the planet, such as SDG3, SDG6, SDG7, SDG9, SDG11, SDG12, SDG13, SDG14, SDG15, and lastly SDG17. There are three ambitions defined by the company for this section, which are to protect biodiversity, to have effective water stewardship, and to achieve operational excellence while transitioning towards a circular economy. For the first ambition, the company currently has 0 operational sites in World Heritage UNESCO areas, 2 sites in IUCN Category IV areas, and one site with positive plans in place. For the second ambition, the company has withdrawn -15% freshwater and recycled about 14% of the water used in operations in the year 2022. For the third ambition, the company was able to consume less than 39% of energy and recover about 62% of the water used in operations.

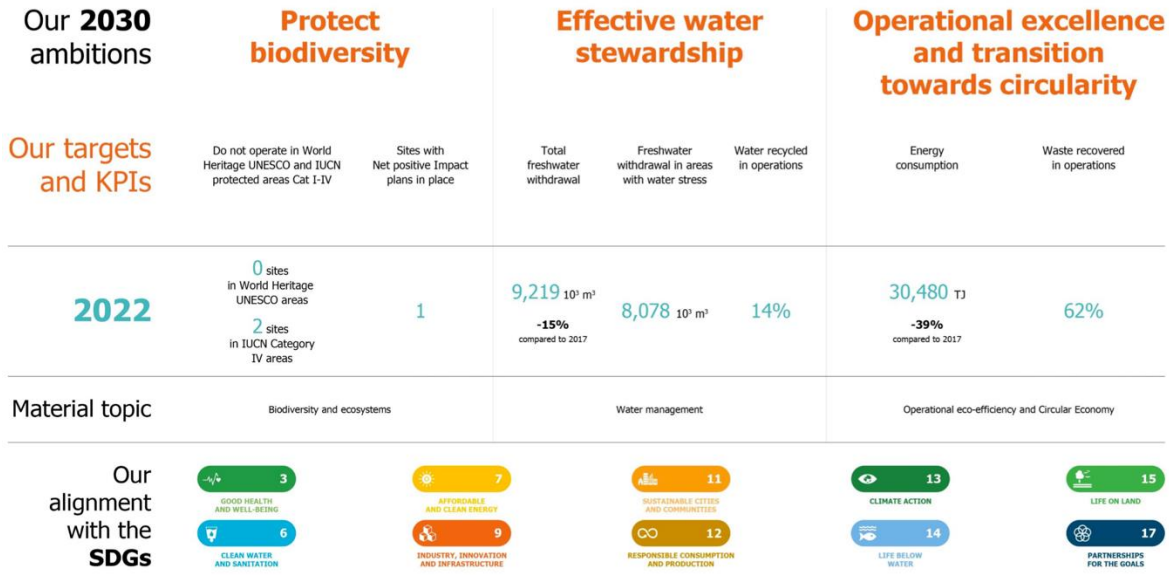

Figure 7: Preserve our planet (retrieved from document provided by Galp)

3.1.1.3 Boost a just transitions for all

The third section is the one aligned with the highest number of SDGs, totaling 13 goals. These SDGs are related with social matters, such as SDG1, SDG2, SDG3, SDG4, SDG5, SDG6, SDG7, SDG8, SDG9, SDG10, SDG11, SDG16 and SDG17. There are three ambitions for the company to achieve until 2030, which entail an energy transition centered around the people, the promotion of diversity, equity, and inclusion every day, and respect, protection, and fulfillment of human rights. For the first ambition, the company allocated more than 50% of the Matosinhos workforce to other businesses and roles inside the company, and generally about 97% of the hiring is local. For the second ambition, the company aims to achieve gender equality by 2030, and for the year 2022 that meant 35% of women in management positions, 28% of women in the board of directors, and a 19% mean gender wage gap. For the third ambition, the company established a target of assessing human rights in the most representative geographies for the company, of which 73% were already assessed in the last 3 years.

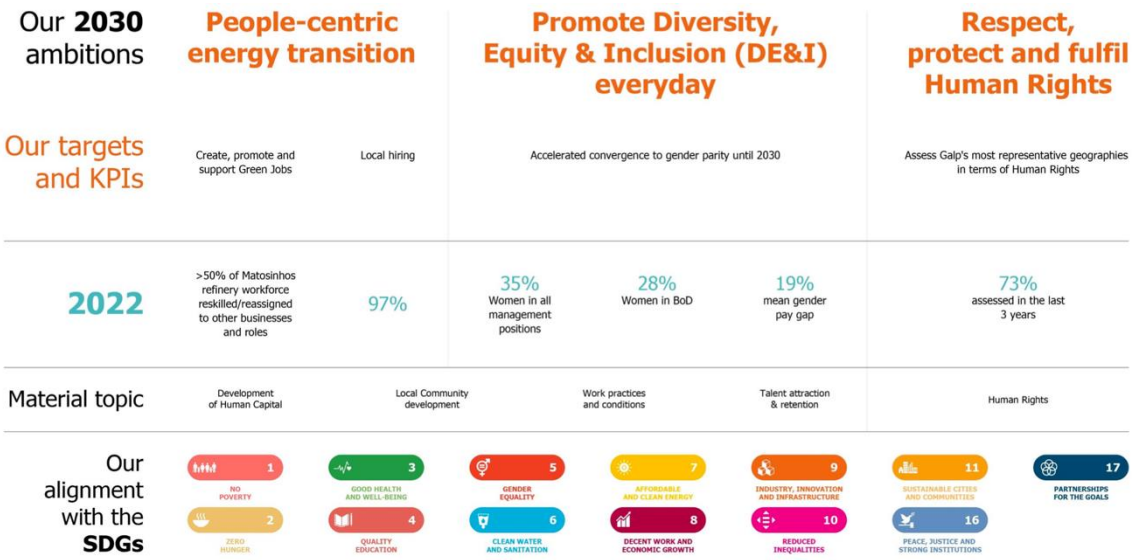

Figure 8: Boost a just transitions for all (retrieved from document provided by Galp)

3.1.1.4 Protect and empower our people

In the fourth section, there's an alignment with SDGs related to the company's specifics and conditions, such as SDG3, SDG8, SDG9, SDG10, SDG16 and SDG17. There are two ambitions for this section, which are to make Galp both the safest energy company in the world and the greatest place to work. For the first ambition, the company has had 0 fatalities and aims to have a Lost Time Injury Frequency (LTIF) below 0.9 for 2023, with it being 1.2 in 2022. The LTIF measures all accidents with lost time per million work hours. Although there were no major industrial accidents for the company in 2022, there were seven primary containment losses that impacted the environment. For the second ambition, there was an engagement level with the company of 74%, a new hire rate of 18%, and a turnover rate of 9% in 2022.

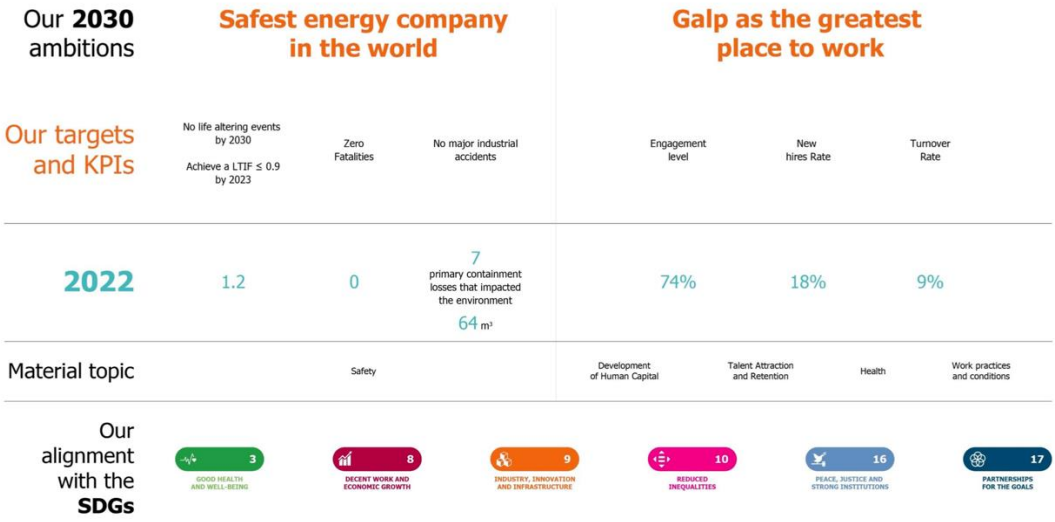

Figure 9: Protect and empower our people (retrieved from document provided by Galp)

3.1.1.5 Promote a value-adding, conscious business

For the last section, there's an alignment with several SDGs as it is related to the future possibilities of innovation in the company's business, such as SDG4, SDG8, SDG9, SDG10, SDG11, SDG12, SDG16, and SDG17. For this section, there are four ambitions to be achieved by 2030, such as embedding sustainability in the company's culture, making transparency and ethics key principles in the company, having a sustainable supply chain for the business, and having no significant cyber security breaches. For the first ambition the company has adopted Environmental Social Governance (ESG) metrics in performance evaluation, with it weighing 25% for employees and 15% for executive members. For the second ambition, the company has implemented a Non-financial Information (NFI) internal control framework, and 18% of the cases reported needed disciplinary actions. For the third ambition, 100% of suppliers need to be classified into Tier 1, in terms of ESG, of which 93% already are as of 2022. For the last ambition, there were no significant cyber security breaches in 2022.

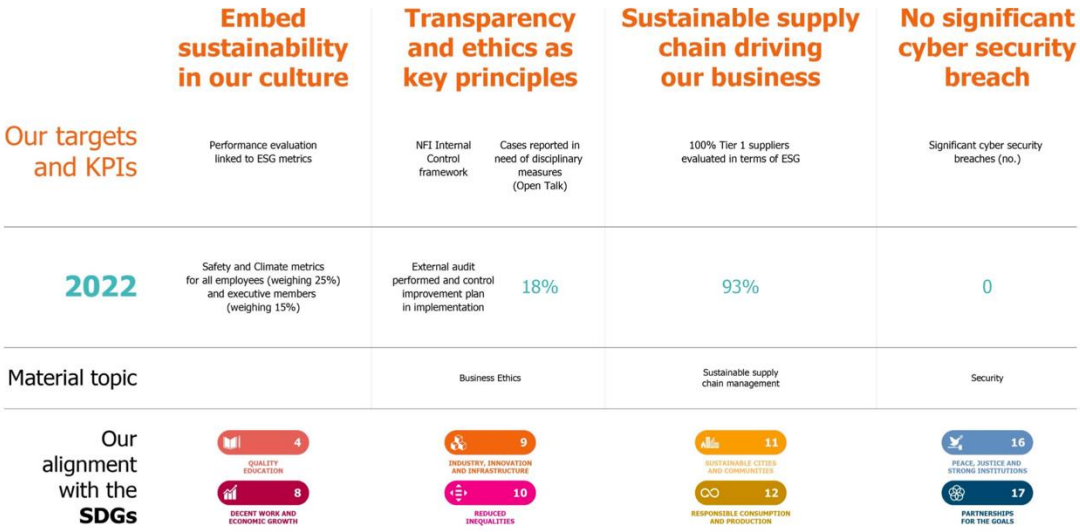

Figure 10: Promote a value-adding, conscious business (retrieved from document provided by Galp)

SDG implementation is relevant to the whole O&G industry, with a particular focus on the companies belonging to this industry as they have enormous social, environmental, and economic impacts (Arena et al., 2023; Höök & Tang, 2013). A study done on SDG implementation and reporting for companies in the O&G sector confirms that there's a high SDG implementation rate (Arena et al., 2023; Rosati & Faria, 2019) and that these companies define objectives as a way to communicate and keep track of their progress towards the goals that the company is committed to (Arena et al., 2023).

3.2 Contribution to the SDGs

Galp has developed a "Materiality Matrix" where it assesses the relevance of each goal for the company by classifying the SDGs into three tiers, with decreasing levels of impact both on and by the company: first, the Material goals – most relevant goals for the company, greatly affected by the company's operations and the most relevant goals to stakeholders. It includes SDG7, SDG8, SDG9, SDG12, SDG13, and SDG17; second, the Direct goals – still relevant for the company, directly affect and are affected by the company, with a minor impact compared to the previous level, thus still monitored by the company. It includes SDG3, SDG6, SDG11, SDG14, SDG15, and SDG16; third, the Indirect goals – some expression in the company and not impacted solely by Galp's operating activities. These goals are connected to other goals so the company also monitors them. It includes SDG1, SDG2, SDG4, SDG5 and SDG10. In the following subsections, we will be focusing on the Material Goals and the latest report on SGDs from the UN (July 2023).

Figure 11: Materiality Matrix (retrieved from document provided by Galp)

3.2.1 “Affordable and Clean Energy”

There has been some progress on the 7th goal, but it’s not happening fast enough to achieve the 2030 goals. It is estimated that 660 million people lack access to electricity and 2 billion people will still rely on polluting sources of energy for cooking by 2030. There have been significant improvements in the renewables area as they now represent almost 30% of the energy consumption for the electricity sector, but there are still challenges in terms of investment in renewable sources and in introducing them for heating and transportation (United Nations, 2023b). In this regard, Galp is working on renewable solutions for a clean energy transition, having integrated 306,000 cubic meters of biodiesel in their fuels, which represents almost 890 ktons of avoided CO2 emissions in 2022. In 2021 about 38% of commercialized electricity came from renewable sources and it aims to add 4 GW of installed capacity by 2025, to the current 1.4 GW.

3.2.2 “Decent Work and economic growth”

For the 8th goal, economic progress has been halted as predictions for the global Growth Domestic Product (GDP) estimate that it will slow down in 2023 due to the multiple crises that have happened around the world, from the COVID-19 pandemic to the conflict in Ukraine, even though there was an increase in digital solutions for financial services due to the previous pandemic. Overall, unemployment rates have been decreasing, except for youth unemployment which has been increasing, and the fact that more women often have employment without social protection, indicating that there needs to be solutions so that people can have access to proper wages and working conditions. These challenges are more noticeable in low-income countries. Galp has contributed to this matter with the development of the communities in the geographies where it operates since about 99% of workers are hired locally. It also strives for social protection with health insurance being available to 93% of its workers and is actively recruiting young people since about 10% of the company’s workers are less than 30 years old.

3.2.3 “Reduced inequalities”

There has been considerable progress in the 9th goal since wages in the poorest countries have been steadily growing. However, the previous pandemic stopped this growth since it caused the largest increment in income inequalities between countries in over three decades, about 4.4%. The recent conflicts also caused the highest recorded number of refugees, about 35 million people. Inequality and discrimination are mostly experienced by women and people with

disabilities and to eliminate this problem, there needs to be more investment in resource distribution, education, and skills development. For this, Galp has planned to invest more than €181m until 2025 in projects related to innovation, research, and technology. To contribute to education, the company is a founding member of the Singularity University Portugal and established a partnership with the Heriot-Watt University of Research.

3.2.4 "Responsible consumption and production"

In the 12th goal, there has been a global backward movement. The recent conflicts have caused a resurgence in fossil fuel subsidies, which have doubled from 2020 to 2021, along with issues in sustainable consumption and tourism. Compared to low-income countries, high-income countries have a material footprint that is at least 10 times higher, and adding to this there is a rise in global hunger, despite there currently being high food waste levels, about 13.2% of the world's food. Galp has assured access to renewable energy to its clients while ensuring efficiency during its production by using 17% of reused water in its refining activities, having 56% of its residues valorized, and using electricity that is 100% renewable for its operations in 2021. The company has also made investments of €4.4m in 2019 alone for projects related to ecoefficiency in the refining processes.

3.2.5 "Climate Action"

The 13th goal is one of the most urgent and in need of progress since the current climate plans are insufficient and there needs to be commitment and actions to put a halt to extreme weather conditions such as floods, droughts, the sea-level rising and the rise the in the global temperature to more than 1.5ºC degrees. To achieve this, there needs to be a decrease in global carbon emissions of about half until 2030, which could happen if the climate finance goal by developed countries is met and with efforts to increase climate education. Regarding climate actions, Galp participates in several initiatives to be transparent regarding their carbon footprint and tackle climate change such as the TCFD and Zero Routine Flaring. For the year 2022, the company has taken several measures which translated into 1,595 ktons of avoided CO2 emissions, mainly by incorporating biofuels, generating renewable energy, and through electricity sales.

3.2.6 “Partnerships for the Goals”

There has been some progress towards the 17th goal, which has been slowed down due to recent conflicts, as external debt levels have reached record highs totaling 9 trillion dollars in 2021, a 5.6% increase from 2020. Although there were improvements in digital access, much due to the pandemic, it has slowed down since so there needs to be efforts to make sure that there’s equitable access to the internet for everyone. Countries need to cooperate in terms of innovation and technologies for global progress on the goals to be achieved so that implementation is easier. Galp takes part in several initiatives that aim to create shared value and promote progress towards the goals, such as the United Nations Global Compact, the Women’s Empowerment Principles, Equality Means Business, and the Voluntary Principles on Security and Human Rights, among other initiatives.

4. Teaching Notes

4.1 Synopsis

Galp is an integrated energy company that belongs to the O&G sector, which is more relevant than ever in the context of the energy transition with the need for firms in the sector to decrease their carbon emissions. Galp is committed to and aims to achieve a sustainable energy transition, while also having a leadership position in the Portuguese market with a market share of 26% and currently being the third-largest solar energy producer in Iberia, with its newly Alcoutim solar park inaugurated in September of this year. The company has several other important initiatives in the innovation area, such as the Upcoming Energies platform – Galp’s innovation hub. This platform allows startups that are working on solutions for the energy transition to showcase their projects, with Galp providing investment for the selected projects. The company has embraced the process of decarbonizing its whole operation until 2050, while at the same time making commitments towards the progress of the SDGs, developed by the United Nations, until 2030. This focus on sustainable and social responsibilities started to have real implications for the company in 2017 since this was the year in which the company had a portfolio diversification for the commitment to develop a transition strategy to cleaner energy sources. This process required a high capital allocation for low-carbon initiatives, which according to the company’s strategic plan for 2023-2025, foresees over 70% of capital expenditures to be allocated to low-carbon projects.

4.2 Target Group

This case study is designed for a class discussion in both Undergraduate and Master's-level classes, with a particular focus on courses such as Marketing, Sustainable Strategy, Strategic Management, Business Ethics, or other courses related to strategy and sustainability.

4.3 Learning Objectives

This case study can be an innovative teaching tool that challenges students to apply theoretical management concepts to real-life scenarios and companies, which in this case means that students will be able to understand how an established for-profit company can imbed environmental and social responsibilities into their operations and core logic of the business while belonging to an industry that typically exhausts the planet's resources and contributes to climate change. After the case discussion, students will be able to demonstrate how a for-profit can change its business model to address stakeholder's demands and analyze how it can align and implement SDGs into its strategy. This case study is intended for students to be able to understand the following questions in further detail:

- Analyze the current SBM of the company;
- Identify the necessary steps for SDG implementation;
- Identify the SDGs that the company intends to include in its strategy and how are they changing their operations due to it.

4.4 Assignment Questions

These questions aim to deepen the student's knowledge and comprehension of the learning objectives, namely how Galp was able to integrate SDGs into its operations while also changing its business model to be more sustainable. The questions were developed so that students understand how a for-profit can pledge to the SDGs and change their business strategy, implying that this commitment doesn't happen just to momentarily appeal to stakeholders.

The assignment questions are the following:

1. How is Galp implementing the SDGs into its operations?

2. How has Galp changed its business model to a more sustainable business model while dealing with stakeholder scrutiny?

4.5 Class discussion

The following section describes a 90-minute class where the instructor gives a possible solution to the teaching questions presented in the introduction. To do this, the instructor must first provide a detailed explanation of the concept of business models, alongside the context surrounding the SDGs. To facilitate the immersion in all these concepts, the case study, literature review, and teaching questions should all be delivered to the students so that they can take notes of the explanations provided by the instructor and get familiar with all the concepts. In the first 20 minutes, the instructor should begin by introducing the concept of Sustainable Development, using the existing literature on the topic and how companies adopting strategies that concern sustainability and social responsibility will have reputational gains that could translate into profits in the future (Berrone et al., 2023). After this, the instructor should delve into the topic of the SDGs, explaining the context and the reason why it's important to achieve progress on them. Here, there could be a question to follow up and to introduce the case study (i.e., *'How can a for-profit company from the O&G industry be aligned with the SDGs and what would a possible SBM look like?*'). Afterwards, the instructor should mention the environmental and social concerns that surround the O&G industry given how this industry impacts our daily lives and this will also serve as an introduction to the company selected for this case study – Galp.

4.5.1 How is Galp implementing the SDGs into its operations?

For this first assignment, the instructor should introduce the main topics of the literature review, starting with the SDGs, mentioning how important it is for companies to be able to implement the goals into their operations and strategies as this ensures real progress towards the goals, instead of being labeled as greenwashing practices. After this, the instructor should focus on the integrative SDG implementation framework by Berrone et al. (2023). This way, students will understand how companies can implement and monitor their work towards the progress of several goals. The framework will serve as a canvas to be filled out by the students as it is applied at Galp. This first analysis should take approximately 30 minutes to be completed.

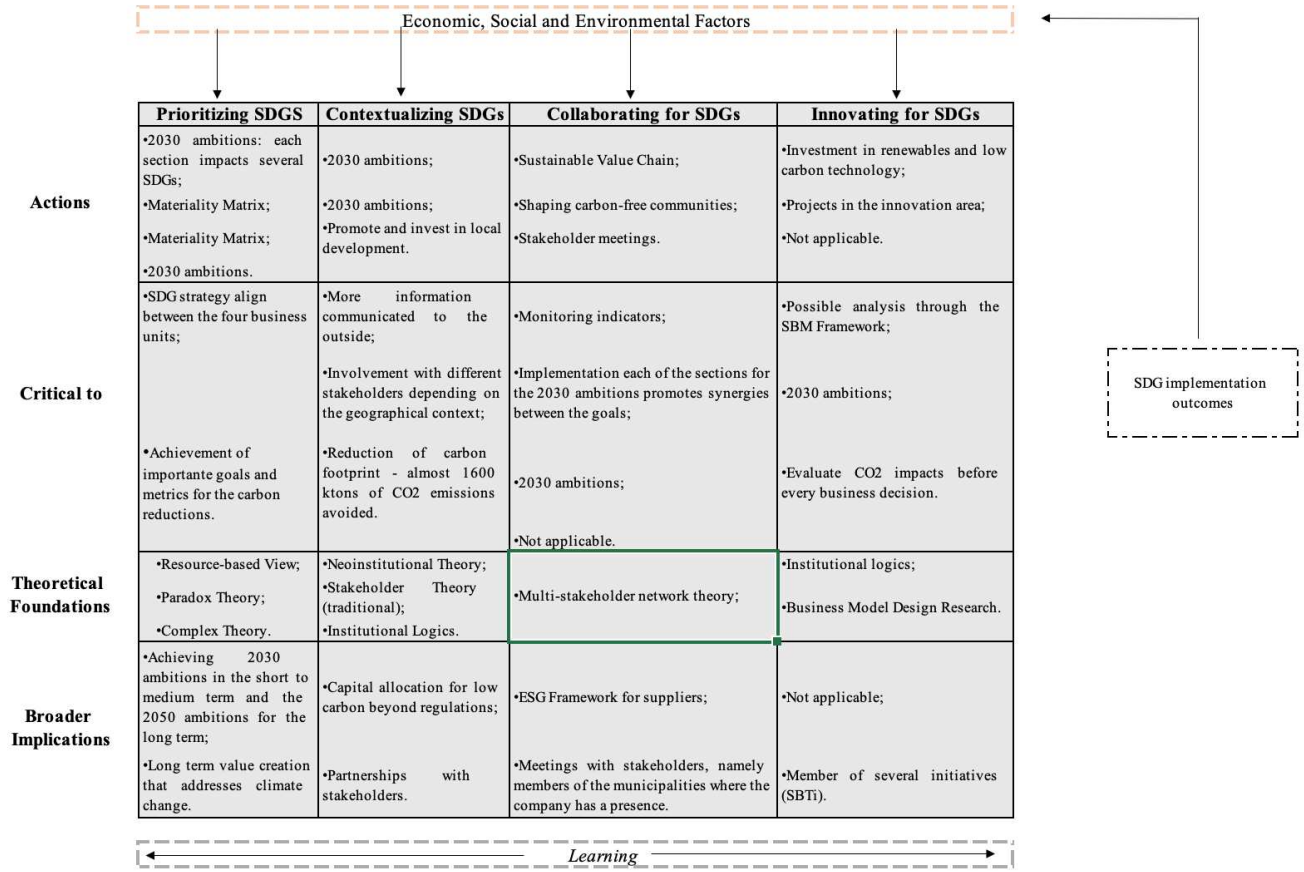

Figure 12: SDG implementation framework for Galp

1) Prioritizing

Galp has taken the actions needed through the development of their 2030 ambitions in alignment with the UN's SDGs, as this process happens across the different business units of the company, contributing to the achievement of these ambitions and goals. The full decarbonization until 2050 is another key aspect that has been planned for this phase as it's a way for the company to be able to strive for long-term commitments, thus continuing to make progress in terms of social and environmental contribution beyond the SDGs. To succeed in fulfilling these ambitions, the company has developed a Materiality Matrix (Figure 11) to order the goals depending on their relevance and impact on the company, which is important for the implementation process. A broader implication of this first step for the company is the long-term value creation across the value chain that addresses climate issues and betters the communities where the company has a presence, which could be verified in the year 2022 when the company avoided the emission of almost 1600 ktons of CO2 (Appendix 3) due to the implementation of sustainable practices and strategies.

2) Contextualizing

The company has several types of contexts, ranging from the different operational activities according to the business unit considered, to the different geographies where the company has a presence such as Spain, Brazil, Mozambique, and others. Thus, the company has adapted its strategy depending on the context considered while at the same time promoting and investing in the communities where they conduct business activities. This can be verified through the company's policy of prioritizing contacts with local products and services and also the work developed to analyze how the environment will impact the company's financial performance through biodiversity assessments. In this phase, the company also has an opportunity to determine where it can add more value or which goals it can impact more as with several contexts it's possible to contribute to several goals all at once and even several targets of the same goal. Another implication of this phase for the company is that throughout the process of SDG implementation, it surges the case where the company applies measures that go even beyond the UN's recommendations or the regulations in place, such as investments in battery value chain and hydrogen projects, that could mitigate the effects of climate change and further develop the energy transition process.

3) Collaborating

The company is becoming more active in communicating its commitments and involvement with the SDGs to stakeholders. However, this is still quite limited to avoid being labeled as greenwashing. The company does several types of collaborations to create a sustainable value chain, with almost 90% of the company's procurement being local based, and carbon-free communities by engaging with the local communities and stakeholders during the development of the company's projects. In the Alcoutim solar park, with the aid of local stakeholders, an electric mobility system and a social program for the elderly population were implemented. This way the company keeps engaging with stakeholders and holds stakeholders' meetings to understand their concerns and work on implementing them into strategies and business activities. The company also monitors several other indicators to verify progress toward the goals, including regular evaluations of current and possible suppliers to see if they meet the company's sustainability standards. On this matter, the company has also been working on a better Environmental, Social, and Governance Framework (ESG) to be more aligned with the company's current strategies and performance in the transition journey.

4) Innovation

Galp has innovation departments dedicated to R&D in every business unit to discover new profit streams in areas that could aid with a sustainable and equitable energy transition. The company currently has a variety of innovation projects, with a capital allocation for low-carbon technology totaling almost €30m in 2022. This is important to solve the technological challenges imposed by the energy transition. The company also evaluates the possible CO2 impacts before every major business decision to make sure that it stays on track with the progress towards the SDGs and the net zero goal for the near future. With the suggestion of a possible SBM of the company presented in the section below, based on the literature framework (Figure 2), the company is aware of changing social demands and able to take its advantages to the fullest as it has been changing its traditional business model from belonging to the O&G industry since the portfolio redesign that happened in 2017.

4.5.2 How has Galp changed its business model to a sustainable business model while dealing with stakeholder scrutiny?

For the second assignment, the instructor should introduce the remaining topics of the literature review – BM and SBM – and explain how SBMs are becoming the popular choice regarding the way an organization organizes and presents its core logic and activities, rather than the traditional BMs. This second analysis should take approximately 30 minutes to be completed.

Sustainable Value Proposition	**Value creation and delivery**	**Value Capture**
• Product/service – oil, gas electricity, biofuels and renewables; convinience stores; • Social-environmental benefits – Carbon emission reduction; 2030 ambitions and net zero for 2050; Development and investment in local communities; • Market segments, customer relationship – analysis done per product; deciding factor based on price; online website and "Mundo Galp" app.	• Key activities – exploration, extraction, refining, transportation and distribution of oil and gas products; R&D applied to innovation and renewable projects; expansion to other markets; • Resources – physical, human and financial; • Competency – R&D, intelectual property; • Channels – traditional and digital; • Partners – suppliers, distributors, regulatory bodies and technological partners.	• Cost Structure – exploration, distribution and refining; marketing; R&D projects; operational, administrative and infrastructures; • Revenue Streams – sale of products and services; OCF to be about 35% of renewables until 2030.

Environment
• Market – high competition, high barriers and entry costs; • Political and legal – Laws and regulations from EU and UN; going beyong regulation; • Economic – New market opportunites; • Social – development and investment of the communities where the company operates; • Technological - HVO, hydrogen production facility, Upcoming Energies platform.

Figure 13: SBM framework for Galp

The instructor should explain the framework in Figure 13 as a possible analysis to determine the SBM of the chosen company for this study – Galp – emphasizing the sustainable value proposition and environment dimensions. To engage in the discussion, the instructor should form at least 4 groups in class so that each group contributes to one of the four available dimensions. With this, students will be able to understand the complexity associated with this recent concept of SBM, how this process has several components, and the main differences between a BM and a SBM. Students will discuss among themselves first and afterward the instructor starts the class discussion, always intervening when deemed appropriate. This possible analysis of Galp's SBM is presented in the following subsections.

1) **Sustainable Value Proposition**

- **Product/service**

Besides the conventional O&G products, the company has invested in the diversification of its portfolio with the increment in the use of low-carbon fuels, renewable electricity, and new energies. Since the energy transition process will take years to be completed, there's still the need for conventional O&G products, which will make the company maintain its refining position in Sines. There will also be an industrial reconfiguration where the company will decarbonize its operations in the refinery by making the oil conversion process more efficient, increasing the production of HVO and other sustainable low-carbon fuels, and building the hydrogen production facility, which will increase the use of green hydrogen over grey hydrogen. Regarding renewable electricity, in the year 2021, almost 40% of the commercialized energy came from renewable sources, and by 2025 the company wants to further develop its renewables portfolio by adding 4 GW to its 1.4 GW already installed capacity. The company also provides the option to get photovoltaic panels installed in its portfolio through Galp Solar, which emphasizes the company's commitment to the energy transition. Regarding services, the company has recently undergone a renovation of all their gas stations to update them to a convenience store since now they have extended meal and coffee options, all with daily production, besides the typical packed options already available in conventional gas stations. Adding to this, the company now has stores with a new "hub" concept that fully expands on the convenience business as there are no gas pumps available.

- **Social – environmental benefits**

Since the portfolio redesign in 2017, there has been an overall decrease in the company's carbon emissions, which totaled almost 1600 kton of avoided CO2 emissions just in the year 2022

(Appendix 3). The most important contributors to this were the integration of biofuels and electricity sales in the company's portfolio, which jointly avoided the emission of almost 1200 kton of CO2. With the 2030 ambitions and the net zero goal until 2050, the company has several projects regarding the development and investment of the local communities where the company operates, which represents some of the benefits that the company gives back to the environment and society. Adding to this, about 86% of the total procurement is local, there are biodiversity assessments done in areas where the company has a presence and there's a continuous engagement with important stakeholders, such as the members of local municipalities where the company operates, to understand and meet the communities' expectations.

- **Market Segments and Customer Relationship**

Galp analyses its customers and markets according to each of the company's products, meaning that across business units the market segments will differ substantially. For instance, when considering a customer that has a normal fuel vehicle and a customer with an electric vehicle, different analyses will be conducted, as one could base their decision on just pricing and the other considering more factors besides price such as environmental impacts. Generally, the consumer segments have changed and they tend to make their decisions in regards to price and discounts. The company has also furthered its products and services with renewable electricity and the renovated convenience stores, now including dog washing, which ultimately allows the company to gain notoriety from more types of customers besides the typical users of their O&G products. After gaining customers, the company builds and maintains a relationship with them through several ways. One is the company's app "Mundo Galp" where customers can manage their electricity and gas bills, as well as fuel discounts. Through Galp's website, customers can become aware of the several sustainability commitments made or subscribe to their services. This can also be done through several local points in physical stores.

2) Value Creation and Delivery

- **Channels**

The Commercial business unit is the one that mostly has expression over-communicating the company's message to regular and potential customers. The company uses more conventional

channels to communicate such as television, radio, bus stops, metro stations, and even the press, both generic and specialized. It has also embraced the digital era as it has a presence on several social media platforms, such as YouTube, Facebook, and Instagram. The company can make both notoriety and performance campaigns, with the first aiming to reach the highest number of people possible and the second intending to gather new customers. These two types of campaigns aren't necessarily competing against each other as they can also be complementary, as in the case of the "Pluma" adverts. The company opts to not communicate that often their sustainable and social commitments as this could be labeled as greenwashing.

- **Partners**

Galp has several partnerships established to be successful in conducting its business activities. From suppliers, distribution, and transportation partners that allow the company's products to reach gas stations and convenience stores to be sold, to the development of partnerships in the form of technical groups inside the O&G industry such as the Science Based Targets Initiatives (SBTi) that allow companies in this industry to be aware of their carbon emissions, almost all activities conducted by the company require established partnerships. It should also be mentioned the importance of all the regulatory bodies and technology partners that together with Galp drive the company to better its carbon footprint and stay on track with the several environmental and social commitments of the company.

- **Resources**

The resources of the company depend on the business unit considered as it differs across them. In Upstream, all the equipment related to the exploration and extraction of O&G from the reserves is a key asset of the company as it's through this first process that the company gets the raw materials that will end up sold to the final customers after a long supply chain process. It includes all the specialized equipment typical of the O&G industry, such as the FLNG (Floating Liquified Natural Gas) and the FPSO (Floating Production Storage and Offloading). In Industrial & Midstream, there's the refinery, one of the most important assets of the company as it's through this structure that the company gets its products ready to be sold to customers, which also depends on the cargo ships that transport and deliver these products. Adding to this, Galp also relies on pipelines to deliver its products to distribution centers. Commercial depends on its convenience stores to be able to reach regular and potential customers, which in 2022 meant 1,482 convenience stores, of which 153 were renovated, 2,382 electric charging points

across Iberia, and 12 new hub stores. For the Renewables & New Businesses, their resources relate to the recently built solar parks with photovoltaic panels able to deliver renewable electricity to customers. New business opportunities are also being explored in the storage technology area, thus making the company's investments in the battery value chain important resources, despite still not contributing to the company's current profits, compared to all other resources from the company. This section also includes the company's physical resources, such as its oil and gas products, its human resources, and all the intellectual resources from the innovation area as important resources for the company.

- **Key activities**

Galp has several operational and business activities, depending on the business unit considered that will point to a specific activity of its long supply chain process. First, there's the extraction and storage process of the oil and gas products done by the Upstream team, which is then followed by its transportation and refining process done by the Industrial & Midstream team. Here these products are traded and supplied in the energy market as this ensures that the company's products get sold at the best price and market conditions, assuring the company good financial results. Following this, the Commercial department contributes by being the first point of contact of the company to customers, not only through sales in the convenience stores as the company's marketing efforts are also an important activity for the company as it can retain customers and reach more potential customers. Lastly, in the Renewables & New Businesses areas there are high R&D efforts, which will contribute to the company's further portfolio diversification and aim to solve some of the present challenges for the energy transition process, which are two important topics for the future of the company.

3) Value Capture

- **Revenue streams**

Galp's revenue comes from the sale of its oil, gas, and renewable products, with each of the business units contributing to a part of this value chain. While Upstream is responsible for the exploration and extraction of oil and gas from their natural reserves, the Industrial and Refining unit processes these materials into their finished form so that the Commercial unit can deliver them to several selling points intending to reach the final customer. In 2022 the company's EBITDA was about €3,849m, with noticeable changes in the Renewables business unit as its

EBITDA reached €50m, compared to the -€16m from the previous year. It's important to note that while in 2022 the majority of the Operating Cash Flow came from oil & gas products, with low carbon businesses contributing only about 10%, this weight is expected to increase to 35% by 2030 with the company's commitments to follow sustainability practices and changing their strategies. Thus, it's expected that in the future the Renewables and New Energy unit will increase their contribution to the company's revenues.

- **Cost structure**

Just like other for-profit companies from the O&G sector, Galp has several costs associated with its business operations and activities. The highest costs for the company are related to all the activities that allow the company to maintain its activity, such as the exploration, refining, and distribution processes of those products. Besides this, there are shipping and supply costs that connect all these phases, as well as third-party companies that are responsible for the transportation of the products from several logistic parks, where the products are stored, to the gas stations where the products are ready to be used by the end-consumers. It's important to note that this transportation can also happen via pipelines, with the associated costs being related to the proper maintenance of those conducts and the personnel involved in controlling and overseeing this process. It also included all the administrative and infrastructure costs that apply to all major companies and the long-term investments that the company currently has, related to projects involving the Renewables business unit, with a high amount of capital expenditures.

4) Business Environment

- **Market**

The O&G market is comprised of several phases to get the finished products ready to be sold to customers, such as the exploration, extraction, refining, transportation, and distribution of oil and gas products, with a recent tendency to include renewables in each company's portfolio. It's a market characterized by high competition and high entry costs and barriers, making it difficult for new players to come into the industry that at the same time is heavily scrutinized by stakeholders due to its impacts on climate change. This entry is also difficulted due to compliance with an increasing number of environmental regulations, which often require high amounts of capital, which forces new players out of the market.

- **Political and Legal**

Currently, there are laws and regulations from the EU and UN that oblige firms from the O&G sector to follow strict guidelines to decrease the level of carbon emission, while also being environmentally responsible throughout their operations and value chain. In this regard, Galp has even gone further than some of these regulations by implementing measures such as investments in the decarbonization of Sines Refinery and the battery value chain process. This allows the company to gain some competitive advantage compared to its competitors as this is a new emerging market full of business opportunities, which boosts the company's intention to explore new and innovative technological solutions to face the challenges imposed by the energy transition process.

- **Economic**

This sector is particularly important for the company as there's a new growing economy surrounding renewables and other emerging fields related to the energy transition process. Thus, Galp could take advantage of this by becoming a key player in these areas as this would make the company even more committed to the energy transition cause. For this, the company currently has investments in low-carbon projects and renewable projects, to be able to decarbonize its operations and products soon.

- **Social**

Despite being an industry that conventionally only takes value instead of adding it to the communities where it operates, Galp is seemingly getting more involved in the community through several social impact initiatives in the different geographies where the company has a presence, such as the "Fumukaba" project in Guiné-Bissau, which aims to substitute all the firewood and charcoal utilized for cooking and other necessities with butane gas or "Vinum Solis" in Portugal, a partnership between Galp and ISA (Instituto Superior de Agronomia), which is studying the shadow effects that result from photovoltaic panels in mitigating the consequences of climate change for viniculture. Adding to this, there's a growing matter for the company to acknowledge its social and environmental responsibility, which is being communicated through the annual reports.

- **Technological**

Galp is aware that the technology to facilitate the energy transition is not there yet, thus it's currently investing a high amount in new and emerging technologies that will aid in some challenges for this transition such as the recently announced HVO and Hydrogen production facilities at Sines Refinery. The company is currently the highest producer and consumer of grey hydrogen in Iberia, making this investment in green hydrogen particularly important as it would cause a significant decrease in the company's carbon emissions. The company also has several investments in promising startups with interesting projects for this cause, through the Upcoming Energies platform hub. In 2022 alone the company invested almost €30m, of a total of €80m, in projects for the innovation area. Adding to this, the company also has the Upcoming Energies platform, which is essential to finding solutions to the current challenges imposed by the energy transition.

From this SBM analysis, Galp is aware of its business environment and able to adapt to changes in the environment and new market trends to stay relevant in the O&G sector and to be able to succeed as a firm (Gao, 2008; Worthington, 2009). The company analyzes its business environment to be able to plan its strategies for the foreseeable and to innovate its operations.

4.6 Class conclusion

In the last 10 minutes, the instructor should reminisce with the students about the introductory teaching questions and how this process of formulating the SBM and the implementation of the SDGs of a for-profit company is complex. With this analysis, the students should be able to understand how Galp can be part of an industry that contributes to exhausting the planet's resources while at the same time striving to achieve carbon neutrality by changing its strategies and operations, with an ever-growing sense of social and environmental responsibility.

5. Conclusion, Limitations, and Future Research

This study aimed to understand how a for-profit company from the O&G sector can transform its business operations to have a SBM and how it integrates the SDGs into its strategy, despite belonging to one of the most polluting industries (Burkett, 2011b; Höök & Tang, 2013; Marcel, 2012). To do this, qualitative data was gathered, two frameworks from the literature were

employed (Figures 2, 4) and Galp's strategies and documentation were described in detail in the case study. Galp hasn't got a single strategy employed in terms of making its business model more sustainable as all the business units of the company have implemented and planned strategic measures to achieve their sustainability targets. It became clear that sustainability at Galp is becoming more relevant with each passing year, with the sustainability team being called to assess the environmental impacts of every major business decision. This is clear during the elaboration of the business plans by all four business units, which consists of the units' predictions for the next four years that are revised by the sustainability team to determine how they might affect the overall goal of carbon neutrality. This is what determines if the plans are approved or rejected.

Regarding Galp's SBM, it's important to note that the company doesn't have a document that provides all this information jointly, as it is divided by several teams in the marketing department and this analysis is usually done through each of their portfolio's products and not generally across the company. When analyzing the company's SBM through the chosen framework (Figure 2), it's clear that the company is aware of its business environment, which is the first step to achieving SD through the company's business model (Gao & Li, 2020). This will keep changing as the company does the energy transition process and keeps changing its product and service portfolios to add on the social and environmental benefits. Through the analysis of the SDG framework (Figure 4), it's clear that the company has taken several steps to ensure SDG implementation across the company and there's active progress towards the goals, ensuring that this process isn't solely a greenwashing tactic to better its public image and appease stakeholders. Many of these steps for the implementation are present in the company's 2030 ambitions and overall goal of carbon neutrality until 2050. A limitation of this study relates to the framework employed to assess how a company can implement the SDGs into its operations (Figure 3), published by Berrone et al., 2023. Previous research on the topic of the SDGs and their implementation mentions that there's a gap in the literature regarding the theoretical research and the reality of SDG implementation for companies and organizations. This means that even with a clear explanation of what each goal entails, there isn't a generally applicable framework for its implementation as no methodology for this has been established (Abson et al., 2017; Allen et al., 2018; Berrone et al., 2023; Fritz et al., 2019). Nevertheless, this disconnect can also be a future research suggestion as it would be beneficial to have more studies done on the topic so that more frameworks are created and the resulting synergies between the goals and with stakeholders are analyzed as a way to guide corporations through

the SDGs and all sustainability goals that will succeed the SDGs soon (Berrone et al., 2023). For this to happen, both academia and organizations need to collaborate so that the main challenges in this topic can be identified to further the developments in this topic (Allen et al., 2018; Berrone et al., 2023). Thus, this study is particularly relevant as it's a first attempt to fill this gap between academia and organizations as it uses one of the few frameworks on the topic (Figure 4) to understand the process and practicality of SDG implementation in a for-profit company and how this impacts the company's strategies and business activities for the foreseeable future. However, it's important to note that this analysis is based on the real example of a for-profit company that belongs to the O&G industry, which is heavily regulated and scrutinized since it has huge impacts in three key areas - environment, society, and economy - implying that it's not representative of other for-profit companies from different sectors, as this process might differ depending on each of the company's processes and operations, that could be different from the ones employed by the company chosen in this study; nevertheless, it's still an example that could assist managers who intend to implement such a process in their organizations since it contains a detailed implementation plan, which will guide them towards the right decisions in this process, as Galp significantly changed their strategy and business model to be aligned with the SDGs, making it a robust example.

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7. Appendixes

Appendix 1: A note on the definition of the indicators' tier classification

Tier 1: The indicator is conceptually clear, has an international methodology and standards established and the data relevant for that indicator is frequently produced by at least 50% of the member states involved with the SDGs.

Tier 2: The indicator is conceptually clear, and has an international methodology and standards established; However, the data relevant for that indicator is not frequently produced by the member states.

Tier 3: The indicator is not conceptually clear as the methodology and standards haven't been established and are still being (or will be) tested.

Appendix 2: A Note on Galp's Indexes Classifications

As of the latest annual report from 2022, Galp is included in several lists and indexes that evaluate the reporting standards and guidelines, such as the Global Reporting Initiative (GRI), the United Nations Global Compact, the WEF Measuring Stakeholder Capitalism, the Task Force on Climate related Financial Disclosure (TCFD) among others (Galp, 2022). This demonstrates the commitment of the company in disclosing its sustainable commitments and how sustainability and social responsibilities are important for the company and being included in their business operations.

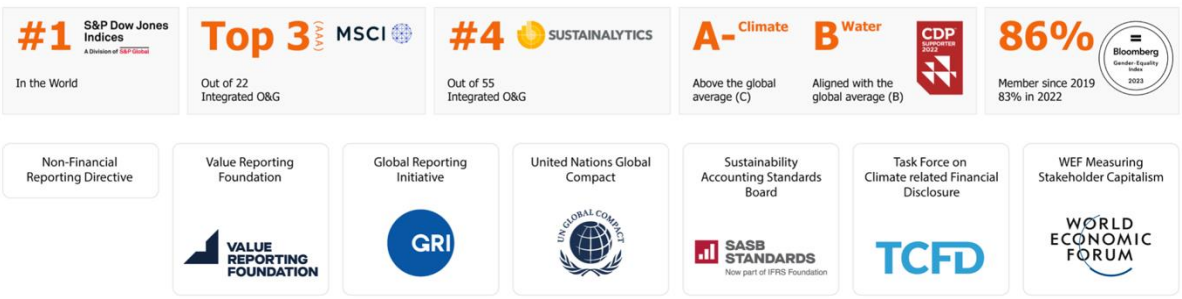

Figure A1: Galp's indexes classification (retrieved from document provided by Galp)

Appendix 3: Avoided Emissions by Galp in 2022

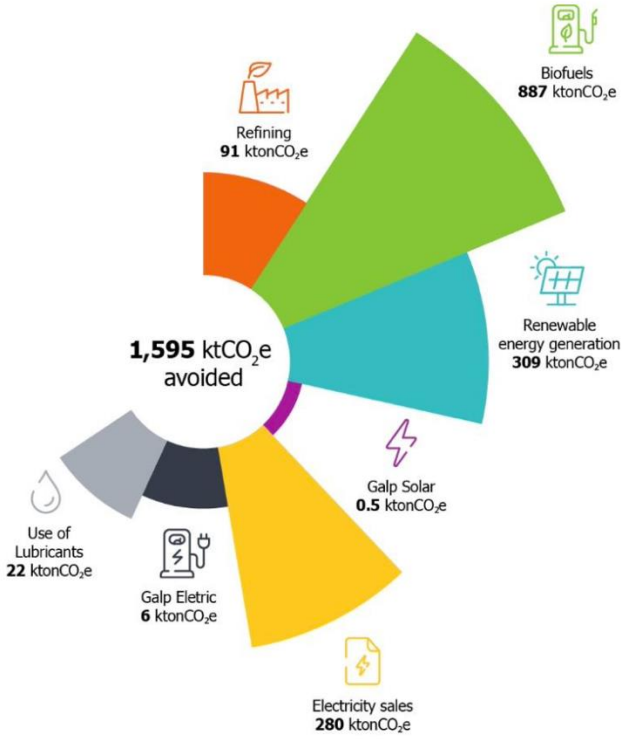

Figure A2: Avoided emissions in 2022 (retrieved from document provided by Galp)

Appendix 4: Industry Overview

It has long been established the negative relationship between the company's activities in the O&G industry and climate change, which is also negatively affected by the process of generating electricity since both of these activities include the burning of fossil fuels. The industry also faces the possibility of depletion of the fossil fuel reserves in the future, which means that if the energy transition is to happen smoothly and naturally, there needs to be an increased focus and investment in alternative and renewable sources of energy, which already happens, just not as quickly as previously thought. Thus, companies in this sector must make the transition to operating through cleaner energy sources to solve the issue of global warming, even though it's certain that for the foreseeable future, there will still be a huge dependency on

fossil fuels (Höök & Tang, 2013). Following 2021 data, CO2 emissions globally rebounded to levels close to before the COVID-19 pandemic, with 80% of the primary energy in the world being derived from fossil fuels, of which 30% is due to oil, 27% due to coal and 24% due to natural gas (IEA, 2021). Even though this has been an industry heavily regulated through policies since its beginning (Davidson, 1963) and that is crucial for the generation of energy, it's also an industry whose main byproduct is highly damaging the environment (Höök & Tang, 2013; Le Menestrel et al., 2002)