University of Piraeus

Department of International & European Studies

Master of Science in

«ENERGY: STRATEGY, LAW AND ECONOMICS»

Postgraduate Dissertation

«Strategic Sustainability Risk Management in Product Development Companies: Key Aspects and Conceptual Approach. »

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Acknowledgements

This thesis is a dissertation of the MSc in Energy: Strategy, Law & Economics of the Department of International & European Studies of the University of Piraeus, Greece.

I would like to express a special thank you to my supervisor, Prof. Spyridon Roukanas, for his support, his patience, and for always willing to offer me his guidance. Thank you so much for your kindness and encouragement.

I would particularly like to thank my husband and my daughter for supporting me during the elaboration of this dissertation. I really feel that I would not have been able to complete it without their support.

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1. Introduction

The main goal of these effort is to capture the general environmental objectives and then the analysis of policies that are similar to these objectives as implemented by Cosmote. In order for that, in this thesis a literature review related to the subject of this paper is presented as well data regarding the specific company in order to evaluate the ways the company tries to follow up the trends regarding environmental policies in the business sector.

The volatility of the financial conditions and the uncertainty regime that the relevant markets are experiencing, are intensifying in the modern era, with the effects of the coronavirus pandemic becoming particularly felt in the world economy. The new financial data make it necessary to optimize corporate practices and review the applied methods of attracting investment. Inevitably, attracting investors presupposes, more than ever, the adoption of a different approach by the companies concerned, focused on proving the responsibility but also the resilience of companies, itself in unpredictable periods of financial instability.

From the investors' point of view, the emphasis is on the search for specific and reliable information regarding the choices of companies in critical issues, with the aim of making the safest possible, sustainable investment choices. This need, which is more evident internationally, pushes companies to certify their credibility through the preparation and publication of reports, in order to capture non-financial data, which are able to highlight the corporate responsibility of companies in environmental and social issues.

In this regard, companies apply a set of criteria for evaluating their basic environmental and ethical choices, which are internationally attributed to the term "ESGCriteria". These criteria are Environmental, Social and Governance.
The Environmental Criteria focus on the behavior that the company the company demonstrates in relation to the management of key environmental issues. Indicatively, the levels of CO^2 secretions are examined, as well as the percentages of air and water pollution. In addition, the general practices of dealing with climate change, such as: i)

the methods used for the efficient treatment of waste, ii) the use of renewable energy sources, are of interest.

The Social Criteria (SocialCriteria) deal with social nature issues, mainly the health and safety conditions prevailing in the workplace of each company, the protection of human rights and illegal child labor. At the same time, not only the relations of the company with its customers, providers and employees are examined are inspected, but also the methods of treatment chosen in order to de-escalate the conflicts that occur in the workplace.
Corporate Governance is a set of principles on the basis of which a business is organized and operates. The standards of corporate administration reflect the commitments and approaches that the company undertakes in order to optimize its development and progress systems. This category of criteria deals with issues of company leadership and business ethics. In more detail, the remuneration of the executive bodies, the structure of the Board of Directors, as well as the tax policy pursued within the company are investigated. At the same time, the transparency procedures observed at company level are examined in order to prevent and deal with corruption and unworthiness.

This three-tier approach to corporate valuation is proving to be beneficial for both prospective investors and the companies themselves. For investors, this view ensures the evaluation of the companies in which they intend to invest in the light of socially responsible investment (Social Responsible Investment), in order to ultimately favor those corporate schemes that present the least economic, social and environmental risks. Additionally, companies have the ability to conduct an internal evaluation of their practices in order to enhance their attractiveness and ensure the flow of investment capital.

The future of sustainable investment, both internationally and nationally, is inextricably linked to the establishment and implementation of corporate policies oriented towards society and the environment. The implementation of sustainable development practices and corporate governance systems, progressively can act as a strong counterweight to the insecurity of financial systems, giving companies that will follow them a significant lead in investment markets.

The economic activity of people affects the natural and man-made (structured / cultural) environment and is affected by it. Under a liberal economy, it is fatal for individuals to deliberately ignore for profit, but also for the rulers to be inactive with an ulterior purpose to realize financial development or in view of the so-called "political cost" of the need to maintain this environment next year.

In this context and until very recently, the science of economics defined its object by closely observing the size of the market and the productive problem (what, how much and how it will be produced and distributed) and with a short-term horizon, without taking into account the complexity that arises from the large number of values involved in the entire productive system and without including in its epistemological background the existing interactions between anthropogenic and natural ecosystems. In fact, he considered the adequacy of resources to be a given or, in any case, in the event of their depletion, he considered that technology was capable of inventing young people.

Since maintainability could be a modern and not however broadly caught on concept extending from staunch supporters to over the top adversaries, it is imperative to shed light on a few of its focuses to disperse any mistaken assumptions. So supportability does not fundamentally cruel less financial development and innovative advance, nor that each viewpoint of the current environment must be kept up at all costs. What it truly implies is that choices in society must take natural impact seriously. After all, a sound economy contains a more noteworthy capacity to create the assets required to meet human needs, whereas unused ventures and unused innovation regularly go hand in hand with environmental improvement. Maintainability looks for to discover arrangements that accommodate advancement with natural objectives and this is often not incomprehensible or idealistic, there are concrete recommendations, arrangements, standards and hones, and the short-term or person costs of their usage are balanced by the desire of accomplishing a healthy and just world for present and future generations.

In any case, the advancement of economical advancement markers raises different issues, as the universal organizations managing with the issue utilize distinctive pointers and distinctive criteria, with the result that their conclusions are more instructive and counseling in nature than they decide the arrangement choices. The most impediments of pointer advancement to date relate to the accessibility of substantial

information from all nations as well as the need of universal agreement on the markers chosen. In specific, in arrange to have a dependable framework of markers for measuring the execution of each nation on the issues of intrigued to us, there must be a authoritative understanding and universal acknowledgment on the topical units to be measured, the sort and number of pointers to be utilized per topical unit, the weighting of each pointer and its assessment strategy, as well as a recognized universal body that will attempt this venture.

It is presently clear that maintainability will not as it were be accomplished through enactment nor basically depends on government activity, but the part of neighborhood communities and citizens may be a basic calculate within the day-to-day interest of maintainability. It is the level at which human values are tried as they confront existing circumstances, and we should not rely on legislative initiative on the part of governments.

The contribution of this thesis is to present policies regarding sustainability, and how companies may contribute effectively in this global effort. As now days companies are not aiming in making profits, by all means, is very significant to present some effective practices for companies in order to remain profitable without overexploiting natural sources, as these sources are not unlimited, and new generations must have the same access, as present generations. Companies should make clear, by their practices, that they care for environment, as more and more humanity is facing serious situations, such as a variety of various environmental destructions. It very important to make clear that the aim of sustainability may keep up with profitable companies, in all sectors. Another contribution of this thesis is to present the current situation in Greece, regarding sustainability, and also to motivate businessmen, in adopting practices that are not harming the environment.

This work paper comprises of five (5) chapters. The first one in the chapter of introduction, where basic notions regarding the theme of this paper. In the second chapter a thorough literature review is presented in order to present current trends regarding Product Development Strategy, and Product Management and Risk on Sustainability. The third chapter focuses on Corporate Sustainability and Sustainable Finance. In the fourth chapter a critical analysis is presented regarding the case of ESG.

Specifically, the chapter focuses on the Telecom sector, especially in Greece, while the case study of Cosmote is presented. Finally, in the fifth chapter, results of the study are being presented.

2. Literature Review

2.1. Introduction

In the words of Phillip Sutton (2000), "sustainability is not about integrating ecological, social and economic issues, nor is it about broad consultation, nor is it about improving the quality of life." It has to do with maintaining or maintaining a situation. To understand the idea we need to identify the point at which we want to focus our concern" (Sutton, 2000). In the literature derived from the environmental movement, the social and economic aspects will usually be seen as tools for advancing this agenda. The same goes for the triple bottom line, a framework for sustainability that comes from a commerce perspective. As we can see in Figure 1. Sustainability is the common overlapping field of Social, Economic and Environment, which means that all these are closely related to Sustainability, and none may be accomplished by itself (McKenzie, 2004).

Figure 1. Model of overlapping cycles of aspects of sustainability. Source: McKenzie (2004).

The term "triple bottom line" was coined by environmentalist and economist John Elkington in 1994 and quickly became a common term used to portray corporate reporting that addresses both environmental, social, and economic concerns. The term is additionally utilized in discussions about sustainability. This expression of Elkington crystallized the progressively far reaching see that "we must keep in mind that it is not possible to achieve a desired level of ecological or social or economic

sustainability (separately) without achieving at least a basic level of all three aspects of it." sustainability, at the same time" (Sutton, 2000). In Elkington's own words, "the sustainability agenda, which has long been seen as an attempt to reconcile the traditional economic approach with emerging environmental thinking, is evolving more complex than some business proponents have imagined. "Progressively, we are considering of the term "triple bottom line", centering on financial thriving, natural quality, and - the component that businesses tend to overlook - social equity" (Elkigton, 1999).

Sustainability markers have been created broadly by counseling firms which in turn serve huge companies making a difference them to make marker frameworks to report their triple bottom line. Social sustainability is much more troublesome to evaluate than financial development or environmental impact and is in this manner the foremost dismissed component of the triple bottom line. In expansion, common utilize markers of social supportability are as well common to be valuable, and more specific pointers are created for particular companies independently, which suggests that their convenience in scholastic talk in a more common context of social sustainability is questionable.

Sometime recently the approach of the concept of three columns, economical advancement was recognized as social and financial improvement that is environmentally sustainable. Moldan, Janoušková, and Hák (2012) expressed that as it were after the development of this concept did social and financial maintainability ended up acknowledged as isolated, independent columns of sustainable improvement. In this manner, it is for the most part recognized that all three aspects of sustainability ought to be characterized and clarified independently. They too focused the importance of giving a clear and particular definition of environmental sustainability that is free of its economic and social perspectives.

Morelli (2011) accepted that rather than an interdependence between these three viewpoints of sustainability, a hierarchical model should be given due to the high dependence of economic and social sustainability on the environment, and that without a sustainable environment it is troublesome, if not impossible, to be considered a sustainable society or economy. It also defined environmental

sustainability as a "condition of balance, resilience and interconnectedness that enables human society to meet its needs without exceeding the capacity of its support ecosystems to continue to regenerate the services needed to meet those needs, and without human energies reducing biological diversity" (Morelli, 2011).

In the first decade after the introduction of the concept of sustainable improvement in 1987, the concept of social sustainability was ignored compared to the environmental and economic viewpoints of sustainability. Environmental and economic issues appear to have been the center of dialog, and social viewpoints have played a minor part within the sustainability wrangle about. Within the late 1990s, social sustainability was considered a crucial perspective of the sustainability plan.It then gained considerable recognition. In spite of the colossal endeavors made in this respect in later decades, there has been no understanding on a comprehensive, comprehensible definition of social sustainability to date, and this concept remains still fragmented.

It has been argued that it is not clear whether social sustainability refers to the need to maintain specific structures in societies and communities or is considered a prerequisite for sustainable development (Sachs, 1999). Based on these, the definition and basic concepts of social sustainability will be used as the basis of this thesis. It is accepted by some academics that the concept of sustainable development is primarily based on the social dimension.

One of them is Cuthill (2010), who contends that the economic and environmental aspects of sustainability are generally reflected within the setting of social sustainability. He contends that the environmental problem is in truth a social issue, as ecological sustainability will be tended to by the affect of people on the normal environment, not on the environment itself. It too states that individuals are served by economies, not economies by individuals, and this can be especially imperative for a reasonable dispersion of assets. As we will see in Figure 2. Social sustainability is related to Social Justice and Equity, Social infrastructure, Engaged Governance and Social Capital. Too, Social sustainability contributes within the Economic and Environmental Sustainability (Cuthill, 2010).

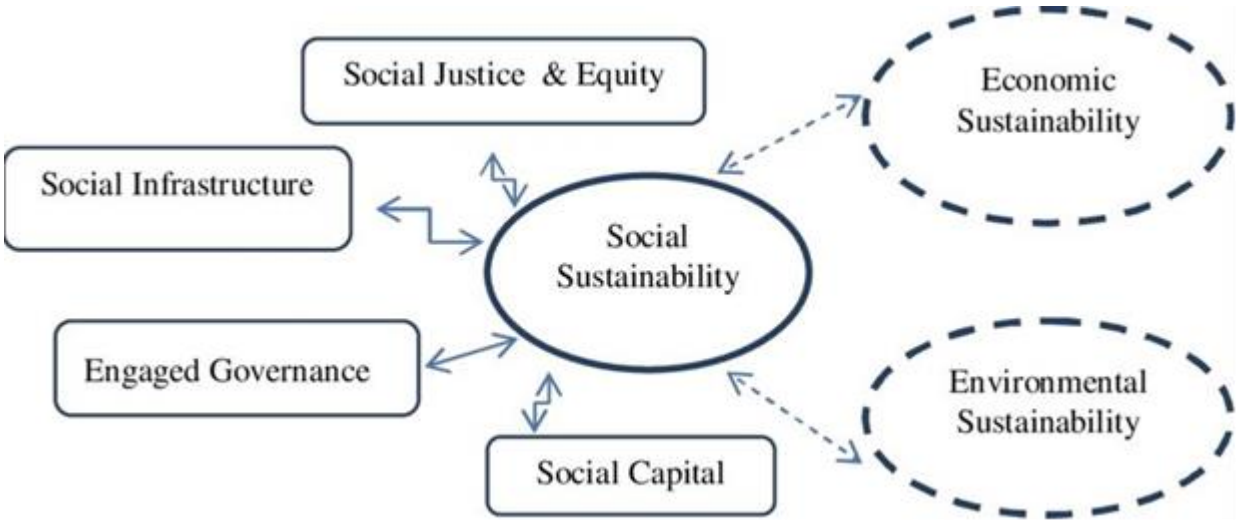

Figure 2. Conceptual framework of social sustainability. Source: Cuthill (2010).

Vallance, Perkins and Dixon (2011) in their attempt to define social sustainability, adopted three (3) subcategories of this concept. "Development" sustainability meets basic needs and includes equality (endogenous and intergenerational), employment, education, justice, freedom, access to decision-making influence, distribution of power and resources and access to basic infrastructure and services. "Bridge" sustainability emphasizes behavior alter to realize biophysical, environmental objectives. "Conservation" sustainability alludes to the maintenance of socio-cultural characteristics within the setting of alter but moreover the ways in which individuals respond to these changes, ie whether they grasp or stand up to them (Vallance, et al., 2011).

Caistor-Arendar (2011) proposed the following definition of social sustainability as a process of creating a affluent society with a narrow and thorough understanding of human needs. This includes a process of creating sustainable, successful spaces that promote prosperity by understanding what people need from the places where they live and work. "Social sustainability combines the design of natural space with the design of the social world - infrastructure to support social and cultural life, social benefits, citizen engagement systems and space for people and places to evolve." (Woodcraft et al., 2011).

2.2. Product Development Strategy

Product development strategy is a subset of corporate strategy, and practically all product strategies focus on new product development strategy. It characterizes the way for future items by making objectives and by funding decisions. The goal of a product development strategy is to create a competitive advantage by strategically positioning product offerings to achieve corporate objectives such as sales growth, revenue, or profitability.

New product development strategy is the means by which risk is mitigated when developing a product concept, improving product and market compatibility, revising a product line and increasing sales of existing products by increasing it (with an emphasis on novelty). Although market research and marketing strategy are mostly necessary, other inputs are needed to translate the corporate strategy into a fully shaped product strategy – such as your brand, platforms, technology, etc. Product development strategy enables product organizations to produce an innovation stream that disrupts competition and delights customers. product development strategy.

As we can see in Figure 3, product development strategy may be linked to product development. Specifically, a product development strategy is a sequence of steps that may bring a vision of a company to life. For that reason, these steps must be clearly defined in order the entire process become more manageable by a company.

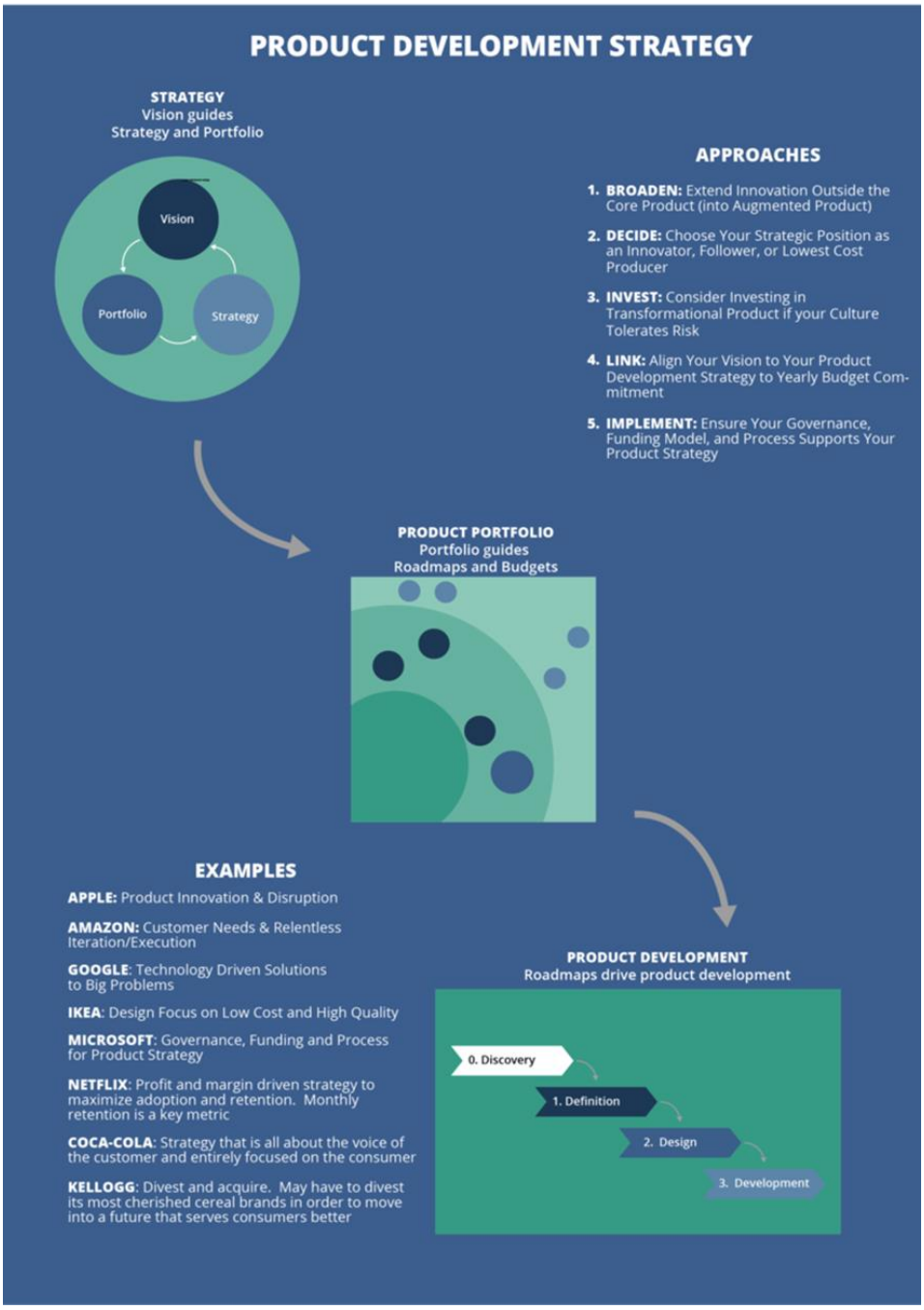

Figure 3. Product development strategy links vision to product development. Source: Carter (2022).

Amazon is an illustration of a product development strategy customer centered approach. Your product strategy is completely centered on client necessities. Apple is a case study that combines its top-level strategy with its item improvement preparation. The technology giant is usually produced. Apple produces products and later finds them on the market. Google's modern techniques for product development tend to be driven by innovation. "A major issue to solve in a major way, » Google bets on technology. This is a market-based approach because Google favors the growth of the market for all, which is the market leader in Google.

And for growth, not revenue, Google optimizes. Microsoft is a copy of a partnership-based product innovation strategy. In order to maximize adoption and retention Netflix has a profit-driven strategy. Netflix is the world's most important streaming service. A subscription with unlimited access to content is the core offer of Netflix. Its product strategy highlights the growth margin. Coca-Cola has an approach which concerns the customer's voice. IKEA has a policy for consistently focusing on low cost. A large global supply chain is needed for the high volume of exchangeable components. The company initially rented supplier's equipment and offered quality training. Later, it was re-organized its supply chain as an international brand to manage its suppliers' large volume and spread of geography. Ikea can pursue a product differences strategy that offers that gives decorations items for each domestic with its core expertise in supply chain management.

Product development strategies either increase or enable these positions to be addressed in time to the market; calculate the technology and market risk; create a strong platform for spin-off product families; and provide the best existing solution through customer insights and internal procedures. When your new product offering enters the market, a product development strategy approach emphasizes. The participants compete on time to the market in this approach. The measurements of the target or target audience are another common approach to create your product development strategies (marketing strategy focused). This frequently takes the form of a relative focus on innovation in technology or the market. Either the development of new products is technological innovation in the existing market, new market applications for existing products are found or a whole new market is opened up. Another approach consists of focussing on internal business processes to produce valuable innovations that delight customers and break away from existing products as a cornerstone of your product development strategies. The needs of the customers come first. Companies are investing in a deep understanding of the customer in this approach to product creation.

Through a series of consistent steps, they convert information from customers in successful market products. The company's vision, usually covering 3 to 5 years of time, and the strategic steps required in order to realize that vision, are linked together by a strategy product planning process. A strategic product planning process. It at that point joins the technique to the product innovation' s roadmaps, which enable decision-

makers to see product and technology progress and their potential alter in relations over time.

Then these roadmaps ought to relate to the yearly budgeting handle that gives need to future products and gives them with the essential assets at an early stage. The bridge between strategy and execution is the new product development process. Although many think it's mainly product design, it also includes business factors shaping the product definition (before product design), such as profitability for the product life cycle (over the whole product lifetime). While NPD tends to focus on the existing product being developed, the impact of the product line should also be included as part of the product definition in the product line (internal cannibalisation).

Product Management or individual product managers, who guide the product group with the project administration, often lead the new product development activities. Both the strategic planning and the cautious development of innovative product thoughts are the foremost striking product innovations. On the other hand, numerous organizations do not only have tools or processes to address both aspects of the product portfolio in future – numerous claims that such a system cannot be actualized.

2.3. Product Management and Risk on Sustainability

A critical challenge for all organizations is the current trade environment characterized by shorter product lifecycles (Hall and Andriani, 2003, Stonehouse and Pemberton, 2002), more demand for sustainable products by consumers (Taherparvar et al., 2014) as well as eco-friendly products and services (Lin and Chen, 2017). In arrange to be continually effective on a changing market, organizations must in this manner reexamine their existing commerce models and emphasize innovation towards sustainability (Bocken et al., 2014).

Additionally, organizations are moreover required to always observe developments on both the markets and society, in arrange to meet not only the present but also the future challenges. Climate alteration, migration, youthful unemployment, political and economic risks are increasingly being put at risk to organizations, which in turn requires

even more stringent knowledge management approaches (Chew and Gottschalk, 2013; Gupta et al., 2000; Johnson, 2017; Lopes et al., 2017; Quintas et al., 1997).

The management of the risk of knowledge may be characterized as a systemic activity devoted, to the utilize of an apparatuses and strategies essential for acknowledgment, examination and reaction to dangers related to knowledge production, utilize and detention (Durst et al., 2016). This approach has not been completely examined within the literature so far because knowledge was considered primarily a valuable organisation, rather than a threat for organizations (Quintas et al., 1997, Victer, 2014). (Bratianu, 2018, Hurmelinna-Laukkanen, 2015).

Knowledge risk may be characterized as "measuring that any activity involving or related in a certain way to knowledge that can affect the functioning of an organization at all levels is likely to have adverse effects" (Durst and Zieba, 2019, p. 2). With this in mind, organizations should be keen to identify correctly as well as eliminate or reduce knowledge risks which could impede their operations.

Sustainable organizations development and management activities are becoming increasingly important. For instance, in its theoretical paper, Baumgartner and Rauter (2017) gave some guidance for companies on how to integrate sustainable issues into corporate activities and strategies. Eccles et al. (2012) consider that sustainable organizations, with their inner and outer stakeholders in great detail, are more successful than their less sustainable counterparts.

Soyka (2012), who in his seminal work gives guidelines on how to create a sustainable organization, shares the view of strengthening corporate value through sustainability. Three aspects of social, economic and environmental development are said to be achieved and maintained through balancing (Johnson, 2017). In the analysis of their business practices, organizations must therefore take a broad approach to achieve this balance (MacDonald, 2011). The attention to sustainable operations was clarified by Tideman et al. (2013) in increasing awareness about the growing population that is not managed with limited resources globally. Thus, it is no longer possible to have a short-term orientation based primarily on self-interests.

Business sustainability is situated on the micro level of organizations, as opposed to sustainable development which focuses on the macro level. Thus, it was concluded by Dyllick and Muff (2016) that improvements to business sustainability would not significantly contribute to improving the global situation without links between those two levels. The creators proposed a typology for business sustainability in arrange to address this circumstance. This type of business is made up of four business sustainability types: business as usual, corporate sustainability 1.0, business sustainability 2.0 and business sustainability 3.0. According to Dyllick and Muff (2016), organizations that have accomplished such advancement have modified their point of view from seeking to diminish the negative affect of the operations to work on a positive business that is crucial for society and the entire world. The latter type is considered a real business sustainability.

These organizations have a clear outside see and after that inquire themselves in a further step what may well be done inside to address the display social challenges. Thus, the Business Sustainability 3.0 company has a clear outside perspective, as opposed to the other three types. To become sustainable, organizations have to assess the potential risk of knowledge they face and determine which dimensions of sustainability are at risk (Durst and Zieba, 2019)

Table 1. Knowledge risks and examples of actions to address them. Source: Durst & Zieba (2019).

Knowledge risk/Sustainability dimension	Environmental sustainability	Economic sustainability	Social sustainability
Human knowledge risks			
Knowledge hiding	**X**	**X**	**X**
Knowledge hoarding	**X**	**X**	**X**
Unlearning		**X**	
Forgetting		**X**	
Missing/inadequate competencies regarding sustainability among organizational members	**X**	**X**	**X**
Technological knowledge risks			
Risks related to cybercrime	**X**	**X**	
Risks related to old technologies	**X**	**X**	
Risks related to digitalization	**X**	**X**	**X**
Risks related to social media		**X**	**X**
Risks related to waste and pollution (due to resource-wasting machines etc.)	**X**	**X**	**X**
Operational knowledge risks			
Knowledge waste	**X**	**X**	**X**
Risks related to knowledge gaps	**X**	**X**	**X**
Relational risks		**X**	
Knowledge outsourcing risks	**X**	**X**	**X**
Risk of using obsolete/unreliable knowledge	**X**	**X**	**X**
Risk of improper knowledge application	**X**	**X**	
Espionage	**X**	**X**	
Continuity risks		**X**	

The above Table 1 describes and explains that the economic dimensions of organizational sustainability, which is not very surprising, may be hindered in all knowledge risks mentioned above. Different risks of knowledge are linked to some kind of inefficient and improper use of knowledge, which can damage an enterprise's economic sustainability. When the knowledge risks have been appropriately identified, organizations need to identify which knowledge hazards could lead to serious problems; in particular, the risk of incident should be determined and the anticipated size of loss.

In order to address these risks, practical measures are therefore required. Therefore, the identifying, analysis and mitigation of the knowledge risks with the highest probability of jeopardizing its sustainability should be emphasized in each organization.
Organizations can therefore use the following step-by-step guidance:

1. Identifying potential risks to knowledge.
2. Analysis of the impact potential of identified knowledge risks in the three dimensions of sustainable development (i.e., identification of the possibility and severity of the impact).
3. Focus on the most likely and severe sustainability risks in knowledge.
4. Identify and select ways to eliminate or reduce the impact of the identified knowledge risks, specify the necessary resources, and implement the necessary organizational changes (s).
5. Design and execution of a KRM plan that identifies knowledgment risks of relevance, how and how these risks are addressed and monitored (countermeasures in case the solutions chosen do not work) and methods of reporting to the main stakeholders of the organization.
6. Watch for new risks and preventive measures simultaneously.

By taking this methodology as a dynamic and continuous process, a tool for sustainable business development should be at your fingertips, i.e., better understanding and handling of potential risks related to the three dimensions of sustainability. The all-encompassing and efficient integration of ecological, socioeconomic and business risk factors into system involves sustainable risk management.

2.4. Conclusions

It is equally essential to an enterprise as CSR is for the community. CSR initiatives may contribute to building a closer link between employees and companies, raise moral standards and enhance the world around them. Firstly, an enterprise to be socially mindful, have to be responsible to itself and its shareholders. Enterprises adopting CSR initiatives often grew to such an extent that they were able to contribute back to society. Therefore, CSR is usually a strategy that big companies follow. The more visible and profitable a company is, the greater its responsibility for ethical behavior.

Additionally, social sustainability is a way to create sustainable locations that encourage well-being by knowing what people need to live and work from places. Social sustainability blends physical realm design with social world design- social and cultural life promotion infrastructure, social amenities, citizen participation mechanisms and space for people and places to develop.

While sustainability recognizes the importance of business growth and profitability, it also demands a company to achieve societal objectives, particularly those related to sustainability – environmental preservation, social justice and fairness and economic development. The relevant literature summarizes that corporate sustainability is based on the following principles: 1) sustainability; 2) corporate social accountability; 3) corporate theory; and 4) corporate accountability.

3. Corporate Sustainability

3.1. Introduction

Risk managers have become very concerned about "corporate sustainability" and were also examined by university literature (Bebbington and Gray, 1996; Gladwin et al., 1995a; Gladwin et al., 1995b; Hoffman and Ehrenfeld, 1998, Dyllick and Hockerts, 2002; Morrison, 1991a; Schaltegger et al., 2002; Winn, 1995). However, given the lack of a clearly defined corporate sustainability vision, the approach remains broad and covers various characteristics, in particular the contextual integration of economic, environmental and social aspects.

It can seem surprising to recognize that heuristic, three-pronged criteria are the best-known part of corporate sustainability The three dimensions of needs, known as "triple bottom line," covers corporate sustainability; economic prosperity and opportunity; social equity and quality of life; ecological preservation of resources. Corporate sustainability is an organizational commitment to achieve competitive advantage by taking and developing strategic approaches to production, products and services ecologically and socially sustainable and innovative managerial practices (Nemli, 2004).

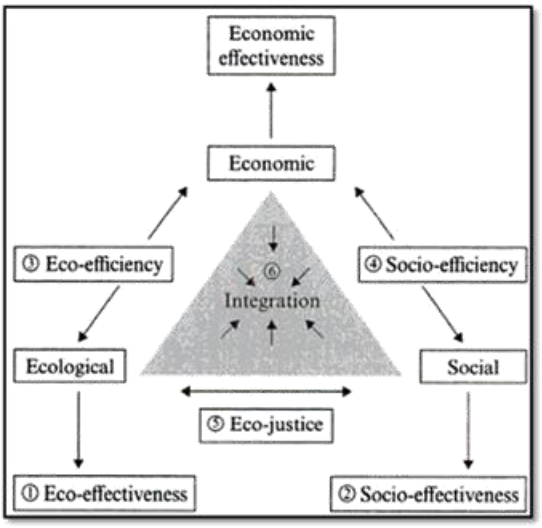

Figure 4. Corporate sustainability Challenges. Source: Folmer and Tietenberg (2005).

According to Folmer and Tietenberg (2005), companies have to deal with a lot of challenges regarding Sustainability their effectiveness. As seen in Figure 4., companies, besides of being economical effective, have also to consider both their eco-effectiveness and socio-effectiveness. The new and evolving management paradigm of corporate sustainable development can be seen. Salzmann, Steger und Ionescu- Somers (2005) define Corporate Sustainability Management as a "corporate response driven by the profitability of environment and social problems caused by primary and secondary activities of the organization." Business sustainability can be defined from a more focused perspective as "a business approach that creates long-term shareholder value by taking advantage of opportunities and managing risk derived from economic, environmental and social developments." (Dow Jones Sustainability Indexes, 2009).

The functional and institutional terms of corporate sustainability management can be described. It is designed to control the ecological, social and economic impacts of business activities so as to develop a company in a sustainable direction. from a functional point of view. The objective is not only to ensure that social and ecological aspects are managed systematically using economic methods but also to integrate them into the traditional business management process.

Corporate Sustainability Management describes the group of players and organizational structure within the business enterprise, which deals with social and ecological aspects and their integration into the conventional operational management process of business operations (Schaltegger, Herzig, Kleiber, Müller, 2002).

As seen in Figure 5, we have to mention that inside companies there's a rising mindfulness with respect to the criticalness to integrate sustainability and social responsibility into their standard commerce activities. The generative cause is due to external factors, such as social concerns, regulatory forces or competitive advantages, which lead them in adopting more sustainable business routines and policies. However, there are internal pressure factors, such as concerned employees themselves, who address many environmental issues. These interdependencies of

external factors and internal corporate sustainability are described in Figure 5 (Baumgartner and Ebner, 2006).

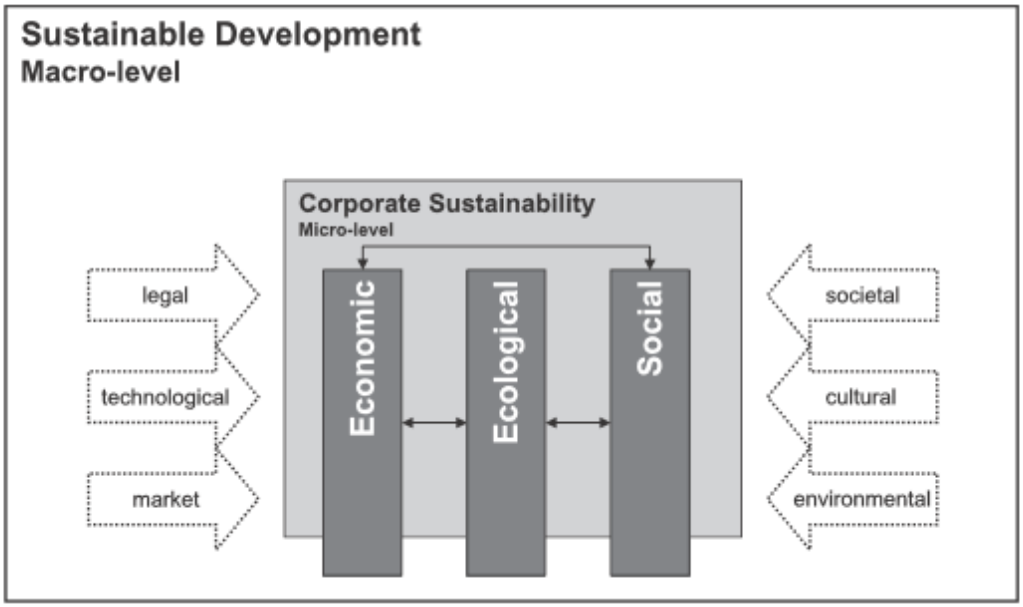

Figure 5. Corporate sustainability and its interdependences. Source: Baumgartner and Ebner (2006).

The Visser (2007) states that corporate sustainability is a value - a laden concept that alludes to the way business, society and the environment interface. Despite being a relatively young field of academic research, academics have successfully collaborated with management literature and created journals specializing in different aspects of corporate sustainability. But research on corporate sustainability continues to favour, mainly at the organizational level, an environmental association. The subject is approached in many ways, using both quantitative and qualitative methods and research in an exploratory, descriptive, normative or instrumental way (Visser, 2007).

Companies focus in very different ways on corporate sustainability. However, successful sustainable development methodologies approach strategic, operational, collaborative and management requirements methodologically (Deloitte, 2007). The Finance Initiative (Financial Initiative) of the United Nations Environment Programme, focuses on the interactions between financial institutions and four broad stakeholder groups, suppliers, staff, clients and shareholders, society and the environment.

Table 2. Corporate Sustainability Management Drivers. Source: Visser (2007).

Stakeholders Benefits	A. Suppliers	B. Internal	C. Clients & Shareholders	D. Society/ Environment
i. Revenue growth	Opportunities for new business developments	Improve competitiveness and business	New products and services	Boost local economic growth
ii. Risk management	Reduce risk of supply chain reputational damage	Governance – improve compliance and transparency	Manage environmental risk	Manage reputational risks
iii. Access to capital			Improve access to finance	Meet stock exchange listing requirements
iv. Cost savings & efficiency	Build better relationships	Reduce waste Motivate workforce	Build better relationships	

In Table 2 we may see the benefits of all kinds of stakeholders such as suppliers, internal stakeholders, clients and shareholders and the whole society and environment. These benefits are related to revenue growth, which is a key issue for every company, and also better management of risk. Furthermore, we have to mention also, the easier access to capital and the cost efficiency savings.

Sustainability decision is relatively straightforward. Nevertheless, a major challenge requiring fundamental business model innovation is that of implementing sustainability that balances opportunity and risk. Breakthrough thinking is needed in every aspect of the business model to integrate sustainability. Leading companies are changing their technologies into sustainable strategies and operations and developing regulatory requirements. Companies focus very differently on sustainability. However, strategic, operational, collaborative and governance requirements are met by successful sustainability programmes. When implementing sustainability in your organisations, leading companies adopt a sequential top-down approach. The most important first step is leadership engagement. Leading companies then ensure that the very fabric is linked to sustainability through non-traditional collaborations, systematic value assessments - impacts of the chain and robust management structures (Deloitte, 2007).

3.2. Ecological Dimension of Corporate Sustainability

This dimension addresses the impact of corporate activities on the environment. Several publications are available on the most relevant environmental aspects (GRI, 2006; Labuschagne et al., 2005; DJSI, 2007; FTSE, 2006). These environmental effects are caused by resource use and air, water and soil emissions, waste and dangerous waste. In addition, the impact of the product over the life cycle is important on biodiversity and environmental issues. This dimension is measured primarily by effects, but the focus must be placed in the corporate sustainable development strategies on the impacts causing those impacts, for example, the higher the maturity levels the more they must focus on causes rather than effects.

Many enterprises are determined by evaluation criteria, often taking into account costs, quality, risk, revenues, time, and market position, which include their products and technologies. Sustainability can help to create sustainable solutions from the early stages of the product development process, where there is more space for innovation in the assessment criteria of portfolio. Today, society faces many challenges to sustainability and production enterprises have a main role to play in solving the sustainability challenges (Folke et al., 2019). Manufacturing firms offer a variety of products, services and solutions in their portfolios. The enterprise's approach is based on the enterprise policy (Mansoornejad, Chambost and Stuart, 2010). The portfolio processes supply enterprises to become more competitive, identify new technologies, understand the market, involve various business functions, identify long-term profits and support firms in their budget, staff and capabilities for managing resources (Jugend et al., 2017). Cluzel, Yannou, Millet and Leroy (2016) say that enterprises want to incorporate sustainability as portion of their product portfolio but are confronted by integration and execution challenges.

A portfolio can be based on a company's strategic level, with projects, programs or subportfolios (Cooper, Edgett, & Kleinschmidt 2001) (Kohl, 2016). A portfolio is "a set of programs and projects" where the development of a project is developed to achieve the strategic business targets of the company (Heising, 2012). In terms of management, a "Iron Triangle: scope, time and cost" portfolio is shaped (Silvius & Schipper, 2014). Sustainability does not usually fall within this propose (Jugend et al., 2017). Management of the product portfolio is a process which is fluctuating and dynamic (Teller, Kock and Gemünden, 2014) in line with the market's market attraction

(Cooper, 2011; Cooper, Edgett, & Kleinschmidt, 2000). There is a link between front-end success and portfolio success, with more uncertainty in R&D portfolio (Teller et al., 2014) and a high-risk drive for Portfolio success (Kock, Heising, & Gemünden, 2016)

The product portfolio is organized during product planning (Buchert et al. 2014), during which a few ventures are assessed and evaluated on the premise of client necessities. Market push is provided to identify the products and services offered. This process consists of five (5) stages: "a) identification of possibilities; b) evaluation and project priority; c) allocation of resources and timing of a plan; d) full preproject planning and v) multiple variables evaluation using the competitive strategy" as seen in Figure 6 (Ulrich & Eppinger, 2012).

Figure 6. A generic description of a portfolio content. Source: Ulrich & Eppinger (2012).

In order to integrate and implement sustainable development, some enterprises have adopted approaches such as systems thinking that focus and assess the entire system (Hallstedt, 2017), eco-design that promotes the application in product design of environmental issues (Cluzel et al, 2016), eco efficiency in areas such as time, materials and energy, where resources are used in a rational manner (Centobelli, Cerchione, Chiaroni, Del Vecchio, & Urbinati, 2020). Jugend and Figueiredo (2017) identified the lack of knowledge about technology and legislation related to sustainability.

Previous researches have focused on collaboration between intern and external stakeholders (Jugend & Figueiredo, 2017) in assessing and prioritizing the offer of companies (Brook & Pagnanelli, 2014) as well as integrating eco-design within the management of the product portfolio using methods and tools, as well as organizational change and strategy development. Ma, Harstvedt, Jaradat and Smith (2020) suggested a selection portfolio based on the three dimensions of sustainability in line with Brook and Pagnanelli (2014) in order to evaluate the proposed portfolio innovations: (i) Net Present Value (NPV) is used for the economic dimension; (ii) Life Cycle Assessment (LCA) is used for the ecological dimension; and (iii) for the social dimension, they mainly focus on workers conditions.

The shape of future product portfolio scenarios is advantageous to create an ideal portfolio and to identify variations in environment, cost, market, etc (Sehatpour & Kazemi, 2018). In addition, several chal lens are required for the management of large product portfolios including cost, scalability, variability of supply change, etc (Zvezdov & Hack, 2016). The product portfolio can be based on risk management, resources allocation and portfolio components in line with these challenges (Dobrovolskienė & Tamošiunienė, 2016). It is thus possible to analyze trade-offs in the management process (Kirilova & Vaklieva-Bancheva, 2017).

Known methods of integrating sustainability into the evaluation and product portfolio selection were used, such as corporate social responsibility (CSR), LCA (Mansoornejad et al., 2010), ecodesign tools (Cluzel et al., 2016), checklisting, rankings, and score methoding (Cluzel et al., 2016; Pinheiro et al., 2018). In addition, enterprises have used bubble charts to visualize and compare various projects from a view to market change and sustainability (Brook & Pagnanelli, 2014). For example, some enterprises have developed their own ways, such as the Sustainability Product Performance Score (SPPS), for visualizing the performance in the social, economic and environmental aspects of new products by setting quantifiable indicators at each arrange of their life cycle, including the management phase (Artelt & Lukas, 2020).

Some enterprises have adopted criteria for selecting the product portfolio from a sustainable perspective, such as costs, quality, time, service, the consumption of resources and the environmental impact (Jiang et al., 2011). In addition, enterprises

used different methodologies, including the UN sustainable development goals (Artelt & Lukas, 2020), the LCA aspects, like human health, ecosystems, and resource availability damage (Ma et al., 2020) for their assessing of their product portfolio from a sustainability perspective. Three main portion of portfolio sustainability criteria were defined in a specific case described in BASF (2020): (1) Business: downstream cost savings. (2) Society: Health and safety, hunger and poverty. (3) Ecological: Biodiversity and renewables, Climate change and energy, Reduction in emissions from air, noise, and soil. In addition, the product range level was determined in four categories: accelerator (with high sustainability), performer, transitional and challenged (with a negative sustainability performance that needs to be solved).

3.3. Sustainable finance

Sustainable finance is often defined as tackling the impacts of financial services on environmental, social and governance (ESG). Moreover, a longer-term financial dimension and ethical aspect is part of the sustainability concept. The concrete significance of financial sector sustainability is a question of controversial discussion and is evolving (Gerster, 2012). The business case of sustainable finance is seen through a myriad of lenses, from cost reduction and risk management to expanding portfolios to identifying new opportunities.

The business case includes issues such as climate change, natural capital, human rights, reduction of unemployment, labor standards, social development, corruption, financial sectors such as asset management and investment, banks, micro-finance, insurance industry and re-insurance industries (Cherneva, 2012). Sustainability measures can perhaps lead to cost savings from material substitution or less packaging. Other cost reductions include lower energy consumption, reduced storage and handling costs for materials and reduced disposal during the production process. These measures send a positive message in terms of manufacturing performance to financial analysts and investors (Epstein and Roy, 2001).

Three main types of strategies are literature-based according to Cronin et.al. (2011): (1) green innovation, (2) organization greening, (3) green partnerships. These policies are

not a single strategy that helps organizations address ecological questions at certain times, but cover all activities aimed primarily at fulfilling the expectations of customers of greener products and services, and more sustainable and ethically oriented business conduct: to achieve the company's economic objectives; and to minimize the damages caused by its business and industrial activities (Fraj, et al., 2011: 341).

The environment concerns requirements that are to be revised and redesigned, reformulated or manufactured differently in many cases for new products (such as pollution control equipment) (Baker, 2003). Recycling products, less water consumption during the manufacturing or the use of raw materials that are friendlier to the environment, for example. The main philosophy of green development is to provide directions for enterprises to produce products and services that are more environmentally friendly.

One of the troublesome obligations for a enterprise is that green initiatives have to completely coordinates into the entire philosophy. In arrange to attain the objective of sustainability, the company must hire an individual or to assign to a team in order to attain this objective. The organization needs innovation in processes that lead towards processes such as environmental management systems, standards programs, slimming production, complete quality management etc. to become sustainable and more green. Simpson and Power (2005) reports that the success of the lean production system is strongly based on integration of the supply chain and the sharing of profits from investments in improving customer performance

Thus, both the lean system and the Greening organisation, the supply chain becomes an important issue. The Green Supply Chain Management consists of the green design (marketing and engineering), green procurement practices (i.e., certification of suppliers, the purchase and acquisition of environmentally-friendly material / product), full environmentally sound management (internal performance measurement, pollution prevention) (Hervani et al., 2005). The supply chains must therefore be managed carefully so that (1) maximize profit is ensured, (2) the regulatory requirements (e.g., waste reduction and disposal legislation) are met, and (3) consumer and supplier service is excellent (Cronin, et al., 2011).

3.4. Conclusions

Without betting the company, companies can advance on the sustainability front. Additionally, the incorporation of elements from the spirit of sustainable development into the thinking and culture of businesses can offer attractive short-term advantages, including:

- Opening up new pathways towards innovations in products, processes and relations between stakeholders
- Leveraging knowledge and creativity through the energies and enthusiasm of employees

The firms with the most obvious progress on the sustainable development objective have begun with strong corporate statements of their objectives. Their strongest visions are shared by a group that generates enthusiasm and innovation. It is cheerful, aspiring and inspiring. The revision of an enterprise value and even a reconsideration of the core mission of the organization are frequently complementary to a new vision.

4. Critical Analysis: The Case of ESG

4.1. Introduction

The environmental, social and governance criteria (ESG) are a set of requirements for the activities of a firm used by socially aware investors for possible investments. Environmental criteria evaluate how an enterprise functions as a nature steward. Social factors analyze how they handle their connections with their employees, suppliers. The administration addresses management, executive remuneration, audits, internal inspections and shareholder rights of the firm.

Environmental factors may include the energy consumption of a firm, waste, pollution, conservation of natural resources and animal care. The criteria may also be used to assess all environmental hazards facing an enterprise and how the enterprise manages these risks. The company's commercial interactions are considered by social standards. Does it work with suppliers that hold the same values? Is the firm giving the local community a portion of its earnings or encouraging workers to conduct voluntary work? Does the work environment of the firm demonstrate great respect for the health and safety of its employees? Are the interests of other stakeholders considered?

Investors may want to know on governance that a business employs accurate and transparent accounting procedures and that stakeholders may vote on significant matters. They could also seek guarantees that businesses prevent interest disputes in their selection of the board members, do not make unfavorable political donations, and do not, of course, participate in illicit conduct.

The Case of ESG

ESG means environmental and social governance, but what are the meanings of each letter?

- *Environmental.* E covers the environmental effects of businesses – directly or indirectly.

- *Social*. S covers the impact of a particular company on the community's social environment.
- Governance. G refers to the management of the company – for example, its Board of Directors' composition and diversity, public information policy on transparency or its codes of conduct.

It is worth noting that nowadays, investors pay particular attention to ESG criteria when it comes to investing in companies that have adopted them. It’s time to emphasize about investment that is socially responsible. What does that mean? What does it mean? Investment that integrates environmental, social and good management criteria into the research, analysis and selection of securities for the investments in a portfolio is sustainable and responsible investment.

In the beginning, these concepts were taken into consideration by rating agencies specialized in sustainability with more or less focus on some, according to the sector of the company analyzed. Sustainability or CSR teams provided these agencies with information, which they shared with their customers. Marked by the pandemic of COVID-19 and the global economic and social crisis, 2020 resulted in an "increased scrutiny of ESG issues by institutional investors and proxy advisors," as published in March 2021 by the ESG Investment Observatorium (Observatory on Investment).

This publication of a research paper shows that last year the biggest asset investors in the world have "nearly been closely integrated into their investment policy" by ESG factors. Two (2) turning points are marked in this regard: The asset manager BlackRock published a letter in March 2020 asking companies to supply information pursuant to Sustainability Accounting Standards Board (SASB) and TCFD guidelines. And on 26 January 2021, "BlackRock strengthened that message in an annual letter to CEOs, stating that the transition to climate represents a historical investment opportunity for businesses."

The World Economic Forum is one of the most aware international forums of climate risk impacts on the economy and society. In 2020, it published the "Company's purpose

is to cooperate with its stakeholders in creating value for sharing and sustainable development." In addition, the World Economicforum is responsible for the publication by 61 companies that belong to the Forum and by the Executive Group that are a part of its International BUCI, ESG metrics "Maasing Stakeholder Capitalism Initiative" (IBC). In 2021, BBVA joined the undertaking. 2020 has also been a year in law enforcement, on the one hand.

One of the foremost critical points of reference within the European Union has been the creation of a taxonomy that categorizes environmental economic activities based on the six objectives of climate change mitigation and adjustment, water and marine conservation, the transition to a circular economy, pollution prevention and control, biodiversity and ecosystems protection and restoration. The European Green Deal was also presented in 2020 as a milestone, because sustainability should be considered in a cross-cutting manner by all policies and legislative proposals.

The Renewed Sustainable Finance Strategy is expected to come out this year (the updated and extended version of the Sustainable Finance Action Plan).
Socially responsible investments were known in past years to have demanded a trade-off on the part of investors. As they limited the universe of investment-eligible companies, they limited the potential profit of the investor. Sometimes "Bad" companies did very well, at least with their stock price. In recent times, however, some investors have accepted that environmental, social and governance criteria go beyond ethical issues. They can avoid companies whose practices might indicate a risk factor by following the ESG criteria.

2020 was an unprecedented year of chaos - an international public health crisis, recession-driven global economies, civil unrest and changes in grass-roots movements. However, a constant topic was nevertheless raised. Despite the disruption caused by coronaviruses and in several cases, emphasis has continued to sharpen on sustainability and ethnicity.

Long-standing environmental, social and governance concerns (ESG) have not been dissipated, covering all aspects of palm oil use and carbon footprints, workers' rights and executive wages. They are merging to fuel the demands of consumers, NGOs,

communities, and the media for companies to do - and to be seen as doing - the right thing with the problems arising from Covid-19 and the Black Lives Movement.
This is reflected in the growth of ethical investment, not only amongst the many external stakeholders of companies, but also among their shareholders. Proactive investment in sustainable objectives has a positive impact on reputation of the company and on finance.

All this makes the proactive monitoring of the ESG profile in their risk management strategy essential for organizations of all sizes, in all sectors. In this way, they can recognise risks relating to ESG before they become material, while capitalizing on their positions on particular ESG considerations to be leaders in those areas.
In corporate evaluations, ESG performance is an increasing consideration. Enterprises can use the ESG criteria to assess their non-financial performance in the business environment that is central for sustainability and ethical impacts to survival.
However, measurement is not a simple discipline in a field that comprises so several elements, ranging from parental leave and politics on diversity to internal recycling and supply chain relations.

Dependent evaluation systems, out-of-day filings, and sporadic press coverage have been condensed throughout the evolution of ESG performances measurements. The overall performance picture relied on voluntary company divulgations together with mandatory company divulgations. For instance, it is up to companies to comply with specific ESG criteria if they sign up to UN Sustainable Development Goals. Several ESG rating systems have been developed to more accurately quantify the ESG position. ESG evaluations outline to recognize most reliable sustainable producers from the well-meaning, hazardous enterprises that evaluate their performance on a scale of sustainability from ESG criteria. A numerical score is produced as a proxy for ESG performance, using annual reports, media coverage, investment analytics and management data and factoring in ESG risk.

For ESG ratings, which depend on the robustness of used data and vary in consistency between industry, region and business dimension, no single gold standard exists.
To date, they are at best subjective, and at worst misleading, creating major challenges for managers, investors, consumers, and campaigners who are looking to evaluate their

ESG credentials in a business. A further layer of complexity is the need for a weighting system. In the overall ESG package, various stakeholders have very different priorities. Shareholders are seeking profitable longevity companies. Consumers use products and services for a clean conscience. Staff for an enterprise that aligns itself with its objectives and values. This may mean that carbon emission restrictions are respected, in order to prevent heavy fines.

The opacity of many score systems makes it difficult to detect any weighting and lets them open to arbitrary ranking accusations. This is compounded by an absence of industry standards which makes it impossible to compare different systems fairly. Furthermore, the data used to assess compliance with the ESG objectives are inconsistent and controversial. Confidence in company self-disclosure means understanding what they are prepared to report or not. Where there is a legal obligation for disclosure in large companies, for example, gender pay gaps, data can be easily compared but still prone to incoherence and of limited scope. It's another matter of timing. In addition, a business could continue to score after an ESG crisis, without factors in real-time reports and consequent ranking adjustments. The failure to trace source material in the existing systems casts additional doubt on their truthfulness.

In addition, in various industries, there is a necessity of elemental measurement. Different sectors, and every measurement system must take this into account, are prone to differing ESG risks and opportunities. The aviation sector for example has an ESG risk profile very different from that of the agriculture sector with its emission problems, its fossil fuel consumption and the latest bad press about mass redundancies post-Covid.

The growth and institutionalization of ESG methods and approaches calls for an in-depth understanding of the different contributors to the institutionalization of the ESG financial ecosystem. The ecosystem includes issuers and investment companies that communicate and use information on environmental, social and management issues, as illustrated in the diagram above. This note also concentrates

- a network of financial intermediaries and analytical service providers and
- a range of nongovernmental, private and international organizations that affect ESG investment's emerging practices.

- Financial issues. Financial issuers are all issuers who provide equity or debt – either public or private – to financial markets and who demand investment capital. In this regard sovereign to small and medium-sized enterprises issues are increasingly providing investors, ESG rating providers, rating agencies, and other motivated parties with information on the environment, social and government (e.g. climate or human rights NGOs). ESG evaluation is called for by a growing number of investors, who are looking to analyze information directly from the issuers, but by other sources such as financial and social media. ESG evaluation ESG is a conceptual partner.
- Providers of ESG ratings. The ESG rating provider includes companies providing equity and debt evaluations based on their disclosures that provide sustainability metrics and information explicitly or implicitly that contribute to the determination of ESG ratings. Some ratings are based on very quantitative methodologies, and they use and weigh several subcategory metrics on the basis of quantitative information either provided by companies or taken from other data sources in the industry. MSCI, Bloomberg, Thomson Reuters and RobecoSAM are the major ESG providers. In addition, traditional rating agencies like Moody's, Fitch and S&P now offer ESG ratings. Some of these are presented in the below Table 3.

Table 3. ESG Rating providers. Source: www.oecd.com

Environmental factors	Social factors	Governance factors
Natural resource use	Workforce	Board independence
Carbon emissions	Human rights	Board diversity
Energy efficiency	Diversity	Shareholder rights
Pollution/waste	Supply chain	Management compensation
Environmental opportunities		Corporate ethics

- Providers of ESG index. Many suppliers, including MSCI, FTSE Russel, Bloomberg, Thomson Reuters, Vigeo Eiris, etc. also have index providers. The use of these indices grows rapidly as a means to monitor the relative performance of different ESG market portfolios, from which institutional investors can assess their performance. These index providers are offering a range of stylised benchmarks that allow fund products for passive or active investment and portfolio managers to use their ability to compare excess risk-adjusted returns as a benchmark.

ESG ratings obtained from established ESG raters are one of the keyways in which ESG information is used among investors and other market participants. This section will therefore focus on the ESG evaluation process and the way that such ratings are translated into indexes, as they help make important changes to the raw ESG disclosure into investment products that enable investors to decide and take action. Since ESG ratings are available and widely used on business, our analysis will focus on their data and methodologies to show how ESG evaluation is conducted by the financial industry.

In deciding which parameters to incorporate, how measurements can be weighed in terms of materiality, and in determining the absolute and relative scores within and across the industry, a variety of rating practices exist. As ESG methodologies become more robust and scores with performance are further tested, they remain in a transitional state.

4.2. The Telecom Sector

Risks and opportunities in the areas of environmental, social and governance (ESG) can affect an organization's ability to fulfill its financial commitments in several respects. S&P Global Ratings incorporates these considerations into their assessment and analytics methodology, which enables analysts to influence both qualitative and quantitative short-, medium- and long-term effects on several steps. High ESG credentials do not necessarily indicate high credibility.

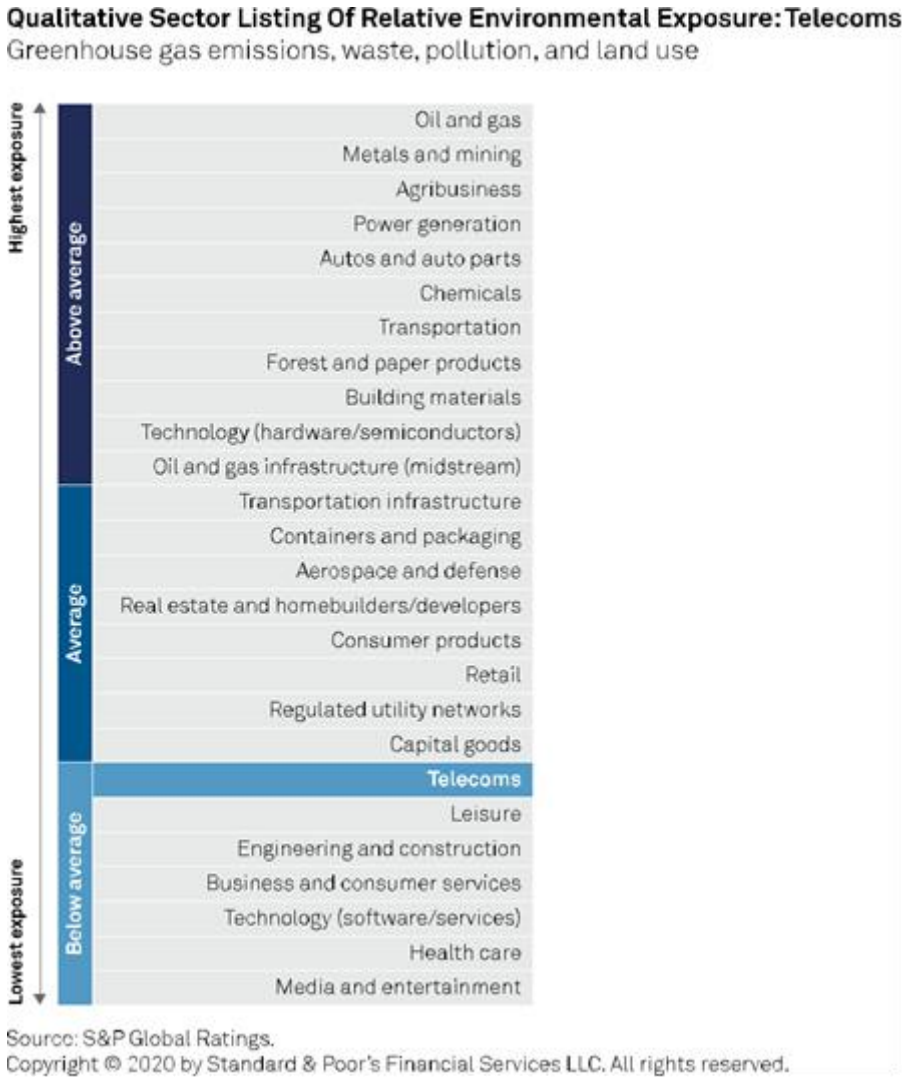

Figure 7. Telecoms rating. Source: https://greekreporter.com/

The telecommunications industry, compared with other industries, has an over average exposure to social risks, because any data security and system stability incidents in the telecom industry will be highly visible given the extensive scope of the sector. Regulatory or legal requirements affecting governance exposure could also have

reputational effects on consumers and business customers. In Figure 9 we may see the key issues regarding telecom sector and environmental exposure.
Telecommunications companies also have large, significantly unionized employees. Humans are thus another major social risk, even though the credit impact of a work stop is not as significant in different sectors such as heavy manufacturing. The industry's technicians and personnel who build and maintain the telecommunications infrastructure, including towers and data centers, are also associated with safety management risks.

Another nascent, though remarkable, social risk stems from the potential health concerns of high-frequency 5th-generation (5G) telecoms devices that are exposed to the electromagnetic frequency (EMF) radiation and have a higher-frequency and dense radio antenna. This can impact on telecom services' perception and use by consumers, although continuing medical studies, if at all, this issue takes time to resolve.
Many factors associated with governance are corporate or region-specific. In emerging markets, for instance, jurisdictional uncertainties could lead to regulatory and litigation risk. In addition, regulatory or operational frameworks such as spectrum auctions or card registration for subscribers may be unpredictable, leading to unforeseen results or delaying decisions.

Government rules can in some cases affect operations themselves - for instance, limitations on the use of Voice over Internet Protocol (VoIP) services can have clear implications for the use of information and ultimately for the potential revenue. In some countries, the government considers telecommunications operators more a public utility service. Service obligations affecting capital expenditure and capital return may apply to operators. They may be forced in rural areas for instance to build a physical network. Companies in the telecommunication sector are struggling with the same problems as many of others in ESG analysis - there is a wide variety of possible inputs and criteria that make up the whole picture. Our first step is to examine the fundamental drivers and specific characteristics of the sector concerned and then how these apply to key areas.

One example of this is that the connectivity needs, and data traffic increase are exponentially increasing, which is further exacerbated by 5G. The 5G era could lead to a possible upswing of traffic data up to 1,000 times according to the GSMA, the

association of the mobile communication industry. This could lead to a consumption of two to three times as much energy in the infrastructure to deal with this problem.

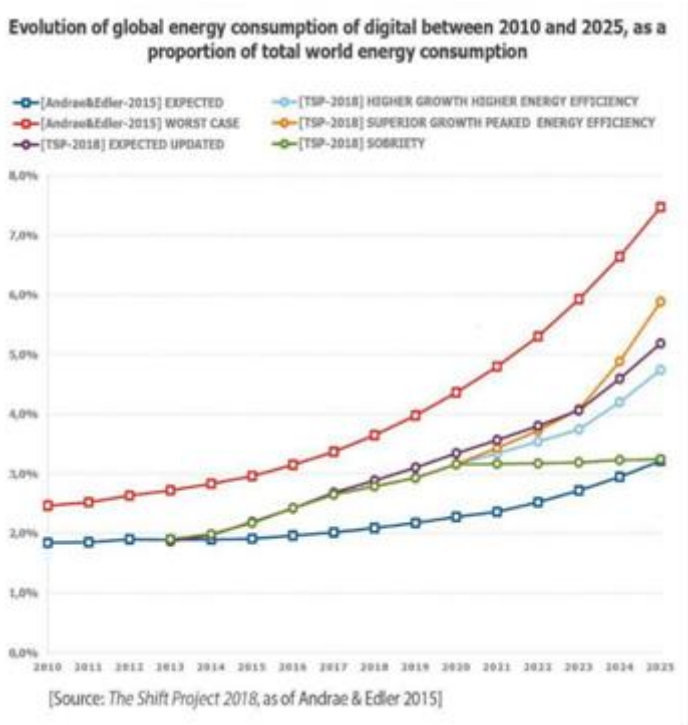

Figure 8. Global Energy Consumption. Source: https://ourworldindata.org/energy

As seen in Figure 10, global energy consumption increases rapidly. One of the factors that is to reduce CO2 emissions through digitalisation is that telecommunications is considered 'allowing' other industries. However, it remains difficult to assess the net impact, which explains the ongoing issues regarding the net zero transition commitments in the sector. Actual calculations on an absolute basis are in fact required to reduce CO2 emissions. With regard to the social pillar, data confidentiality and security are crucial and will likely increase, so that in-depth analysis of individual companies should provide an advantage in knowledge. In contrast, the pillar of governance may be easier to evaluate and certainly not sectoral.

For 2040-2050, net zero carbon commitments were established by key European players in the telecoms sector. However, if we include end users through so-called Scope 3 emissions (see graph below), this energy saving from fiber networks can be significant, the result can only be an increase in absolute CO2 emissions in the future.

The digital divide is the cause of lively discussions – and criticism – among telecoms operators. The notion that telecommunicative access is an essential element in modern life is unquestionable, but there are significant differences between small and large nations and between those with different regulatory histories or policy imperatives and their approaches to ensuring broad access. Operators need to invest heavily in networking, but governments that foster competition and low consumer prices have often been restricted on the price side.

That is, in our analysis, to moderate the weight given to this aspect of ESG – as underlined by the strict coverage requirements for operators during the 5G era. However, from its record on significant workforce reductions or on severe controversies, whether related to workers or on the supply chain we can draw practical conclusions about the performance of a company in the social pillar. Analysis of these factors can help determine our portfolio managers' best social performers and help prevent them from exposing themselves to operational risk, reputational risk and financial risk.

The telecoms sector presents difficulties to investors who want to really understand how companies respond to ESG's challenges, as well as other industries. However, we think investors can better understand which companies are well positioned from an ESG perspective in general by analyzing the characteristics of every pillar, and how they are related to sectoral particulars.

4.3. Situation in Greece

Greek listed companies appear reluctant, still having a long way to go, aiming at their mature and in-depth involvement with Sustainable Development practices. This is because very few companies and organizations are included in the ESG criteria that can enhance transparency and attract responsible investment for the benefit not only of the company but of the company as a whole of the Greek economy and society.

The prevailing trend is that although the vast majority of listed companies issue Corporate Responsibility and Sustainable Development Reports, which shows their strategic engagement with these issues, they do not use global and reliable Evaluation Standards, such as TCFDs and SASBs, and participate in ESG Ratings, which will help them to disclose important and useful information for decision making by investors.

These were some of the main findings of the Center for Sustainability (CSE) Annual Survey implemented by the Sustainable Development Reporting Observatory since 2012 annually with the support of the Corporate Responsibility Institute (CRI). The vast majority of Greek Listed Companies are not rated by international ESG Ratings and investors do not have access to significant information about their performance.

Of the few companies evaluated, the survey found that 77% have issued a Sustainable Development Report using specific standards. However, the performance of these companies in the ESG Ratings was in the range of 20% - 98%, with the average being around 70%. According to the survey, most companies (71%) participate in the Carbon Disclosure Project (CDP), a very reliable international assessment tool on environmental issues, albeit with low scores, while it is worth noting that Coca-Cola had the highest score. HBC. Also, few companies (30%) have taken into account the guidelines of the Task Force for Disclosure of Climate Related Economic Data (TCFD), but only one of them has prepared a Report on the TCFD recommendations.

Finally, a small percentage (12%) of companies have included the Sustainability Accounting Standards Board (SASB) in their reports. At the same time, according to a Sustainability Center (CSE) survey, the prevailing trend is that although the vast majority of listed companies issue Corporate Responsibility and Sustainable Development Reports, which shows their strategic engagement with these issues, they do not use global and reliable rating standards, such as TCFD and SASB, and do not participate in ESG Ratings, which will help them disclose important and useful information for decision-making by investors.

These were some of the main findings of the Center for Sustainability (CSE) annual survey conducted by the Sustainable Development Reporting Observatory since 2012 annually with the support of the Corporate Responsibility Institute (CRI). This year, the

Survey focused on the analysis of listed companies with a presence in international ESG Ratings, which in total employ more than 136 thousand employees, while their turnover exceeds 48 billion euros. These companies belong to a wide range of industries, such as food and beverage, telecommunications, retail, financial institutions, construction, shipping, energy and technology.

The survey showed that the vast majority of Greek listed companies are not rated by international ESG Ratings and investors do not have access to significant information about their performance. Of the few companies evaluated, the survey found that 77% have issued a Sustainable Development Report using specific standards. However, the performance of these companies in the ESG Ratings was in the range of 20% - 98%, with the average being around 70%. According to the survey, most companies (71%) participate in the Carbon Disclosure Project (CDP), a very reliable international assessment tool on environmental issues, albeit with low scores, while it is worth noting that Coca-Cola had the highest score. HBC. Also, a few companies (30%) have taken into account the guidelines of the Task Force for the Disclosure of Climate Related Economic Data (TCFD), but only one of them has prepared a Report on the TCFD recommendations. An even smaller percentage (12%) of companies have included the Sustainability Accounting Standards Board (SASB) in their reports.

It is also noteworthy that the connection of the best financial performance of companies with high performance in Corporate Responsibility and Sustainable Development is confirmed once again, in Greece, as has happened with another relevant research abroad.

A recent study by the Sustainable Development & Circular Economy Club of MBA International at the University of Economics and Business on greenwashing states that there is a growing trend of misleading and advertising 'green' profiles or pseudo-ecological products or services, due in part to a lack of environmental awareness. issues from a portion of advertisers and advertising companies and on the other hand to increase consumer interest in products and services that do not harm the environment.

The annual Survey of the Center for Sustainability (CSE) in Greece follows the same axis, which concluded that very few companies and organizations are included in the

ESG criteria. which can enhance transparency and attract responsible investment for the benefit not only of the company, but of the Greek economy and society as a whole. In Greece, unfortunately, the phenomenon is quite widespread and mainly in the form of green marketing and misleading advertising, ie the advertising that presents a product with environmental and social characteristics while it does not have them, in order to mislead the consumer to buy it. The prevailing impression, for example, is that electric motorcycles are more environmentally friendly than other modes of transport, mainly because they do not emit greenhouse gases. However, the manufacturing processes for these engines are not all carbon-free, ie they emit gas. Another case of greenwashing is a shampoo that promotes an image based on its natural ingredients from real herbs, while a closer look will show that it contains many 'unnatural' ingredients. Also, while PLA (bioplastic) is typically a better alternative to plastic than non-renewable raw materials (petroleum) it is not the most environmentally friendly choice and consumers need to be properly informed about how to recycle it.

The adoption of the ESG criteria - Environmental, Social and Corporate Governance - is the opposite of opacity tactics such as greenwashing. Of course, they are a broader institutional framework to which Greek companies are adapting, albeit at a slow pace. "In Greece, the ESG criteria relate more to listed companies, which participate in ESG ratings, issue Sustainable Development Reports for a number of years and have a specific strategy for sustainable development with measurable objectives. These companies are mostly owned by the energy, telecommunications and financial sectors. Companies, even large companies that are not so mature, are reluctant to include ESG, on the one hand because they do not understand their importance and on the other hand they have not yet been pressured to move in this direction - for example the need for funding as in America and other European countries. "But funds already located in Greek companies have begun to push for more transparency and more specific policies and goals around ESG issues."

It is noted that in order to support companies in the adoption of ESG criteria, specialized training is required while there are special tools and standards (eg the Sustainability Center (CSE) has at its disposal tools for strategy development, ESG Exhibitions and in general for the improvement of ESG Ratings).

4.4. The COSMOTE Case Study

OTE has been included in the FTSE4Good index for the 12th consecutive year, as a result of its performance in areas such as environmental protection, community support and corporate governance. Apart from OTE, the FTSE4Good Emerging index includes 35 other telecommunications companies around the world and 7 Greek companies.
The FTSE4Good International Indicators are used by investment schemes and market participants as a tool in evaluating listed companies on their performance in environmental, social and corporate governance (ESG - Environmental, Social, Governance) and in creating socially responsible investment funds and other products. In recent years, and especially with the Covid-19 crisis, there seems to have been a significant increase in interest in so-called "sustainable" investments, where investors take the Sustainable Development Criteria (ESG) seriously for the companies they invest in.

The integration of sustainable development together with profitability in the business strategy and overall activity of the OTE Group, the strictest criteria for measuring its performance, and the international standards for the formulation of its policies and procedures have contributed -among other things- to its participation OTE in sustainable development indices -SRI (Social Responsible Indexes).

OTE responds to analysts' evaluations, participating in a total of six indicators of sustainable development / socially responsible investments (Social Responsible Investments). Specifically, it participates in four indicators related to ESG (Environment, Society, Corporate Governance): FTSE4Good, VIGEO-EIRIS Best Emerging Market Performers, “Prime” Corporate ESG Performance by ISS-ESG, MSCI ESG Research, as well as the international CDP index on Climate Change and the 2020 Bloomberg LP Gender-Equality Index (GEI), one of the most important business indicators on equality and the promotion of women in the workplace.

The FTSE4Good Index Series, created by global stock index provider FTSE Russell (a partnership name between FTSE International Limited and Frank Russell Company),

is designed to measure companies' performance in implementing important environmental practices., society and corporate governance (ESG).

4.5. Policy for COSMOTE

COSMOTE is committed to new, more ambitious goals for tackling climate change with the goal of revising the emissions from energy consumption at the OTE Group facilities by 2025.

These include both direct emissions from the consumption of natural gas, diesel and gasoline as well as indirect emissions from the consumption of electricity in all buildings and facilities of the OTE group throughout the country. COSMOTE is intensifying its actions to address climate change and protect the environment in the context of the sustainable development strategy, which has already been adopted by its business function. Already, 100% of the electricity consumed for the Group's networks comes from renewable energy sources. The OTE group has chosen the path of sustainable development for many years by incorporating ESG criteria.

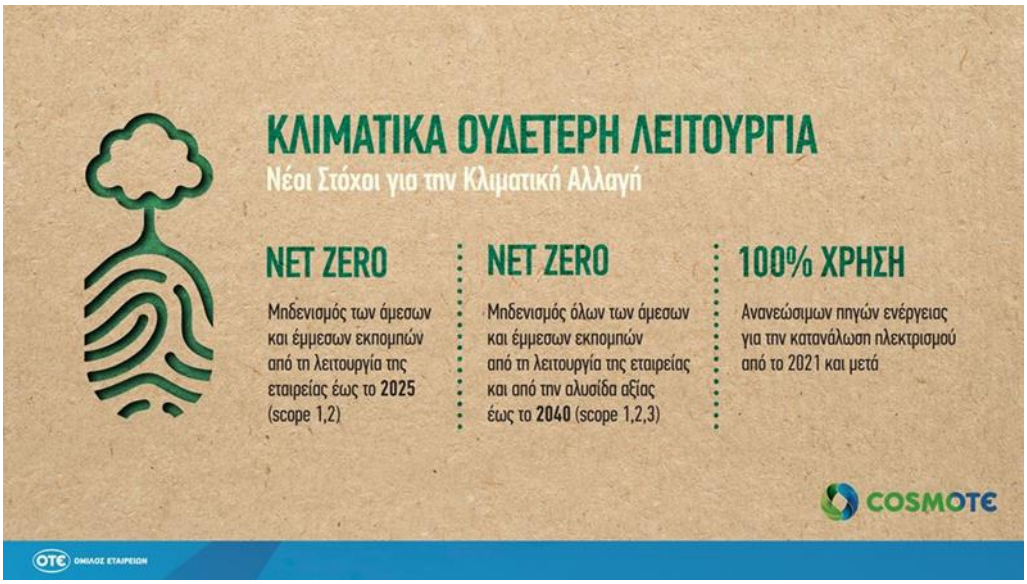

Figure 9. Energy Goals for Cosmote. Source: www.ote.gr

Specifically, the OTE group is committed to achieving new goals for tackling climate change, which also apply at the level of the Deutsche Telekom Group, which are (Figure 11):

- Zero emissions from energy consumption at its facilities by 2025. Includes emissions from gas, diesel and gasoline consumption as well as emissions from electricity consumption.
- Zero carbon footprint by 2040. Includes emissions from product production (supplier emissions) to product use by customers.
- 100% use of renewable energy sources for electricity consumption and for the future.

OTE group focuses -among other things- on the use of renewable energy sources, on actions for energy saving in the whole range of its activities but also on the use of ICT products and services with a small environmental footprint, in order to achieve the goal of zero-carbon footprint.

Already, in 2020 the OTE group achieved 100% of electricity consumption to come from renewable energy sources. Today we are talking about a green network -Green COSMOTE network- through which it provides its services. Also, the Group managed within a year to save energy 63.5 GWh which corresponds to the consumption (electricity) of a city of 40,000 inhabitants.

By defining specific, measurable goals and results for climate change and the integration of the corresponding ESG criteria, the OTE group contributes to achieving the goal of the Paris Agreement to limit global warming to well below 2 degrees Celsius. In fact, it participates in the efforts to limit the growth below 1.5 degrees Celsius.

Saving natural resources - based on the principles of the circular economy - is also an important priority of the group's overall strategy for environmental protection. More specifically, the OTE group:

- Consumed 4.5 million fewer disposable plastic pieces from the ZEROPLASTIC program in buildings and stores in the two years 2019-2020.

- Adopted FSC certified paper bags in COSMOTE and GERMANOS stores
- Remanufactured approximately 285,000 terminal equipment (routers and TV decoders) in 2020, saving 45 tons of plastic.
- Recycled or reused 93% of its waste in 2020.

The OTE group utilizes the possibilities provided by technology, in order to create a better world for all. Sustainable development is a business choice and is a strategic priority of the group of our companies. Key priorities are the improvement of the environmental and social footprint of the Group, as well as the equal access of all citizens to the digital opportunities of the future. Indicative of investors' interest in ESG performance is the fact that 22% of Deutsche Telekom shares are owned by investors who partially or totally look at ESG performance and this is something that is constantly growing. Today OTE is included in six international indicators of Socially Responsible Investments due to its performance in matters of corporate governance, environment and society.

Great importance is also attached to the disclosure of ESG information, as they are a key source of information for analysts and investors, referring to the long course and development of the OTE Group in the issuance of Sustainable Development Reports, but also to the Group's transition to the Single Sustainable Development Report.

4.6. Conclusions

The environmental, social and governance criteria (ESG) are a set of requirements for the activities of a firm used by socially aware investors for possible investments. Environmental criteria evaluate how an enterprise functions as a nature steward. Social factors analyze how they handle their connections with their employees, suppliers. The administration addresses management, executive remuneration, audits, internal inspections and shareholder rights of the firm, while environmental factors may include the energy consumption of a firm, waste, pollution, conservation of natural resources and animal care. These factors do not concern only consumers but also investors as in many cases they wish to invest in companies that are socially responsible.

Regarding the Telecom Sector, compared with other industries, has an over average exposure to social risks, because any data security and system stability incidents in the telecom industry will be highly visible given the extensive scope of the sector. Regulatory or legal requirements affecting governance exposure could also have reputational effects on consumers and business customers. Telecommunications companies also have large, significantly unionized employees. Humans are thus another major social risk, even though the credit impact of a work shop is not as significant in different sectors such as heavy manufacturing. The industry's technicians and personnel who build and maintain the telecommunications infrastructure, including towers and data centres, are also associated with safety management risks.

As for OTE, the company has been included in the FTSE4Good index for the 12th consecutive year, as a result of its performance in areas such as environmental protection, community support and corporate governance. Apart from OTE, the FTSE4Good Emerging index includes 35 other telecommunications companies around the world and 7 Greek companies. Also, the company responds to analysts' evaluations, participating in a total of six indicators of sustainable development / socially responsible investments (Social Responsible Investments). Specifically, it participates in four indicators related to ESG (Environment, Society, Corporate Governance): FTSE4Good, VIGEO-EIRIS Best Emerging Market Performers, “Prime” Corporate ESG Performance by ISS-ESG, MSCI ESG Research, as well as the international CDP index on Climate Change and the 2020 Bloomberg LP Gender-Equality Index (GEI), one of the most important business indicators on equality and the promotion of women in the workplace.

Finally, COSMOTE is committed to new, more ambitious goals for tackling climate change with the goal of revising the emissions from energy consumption at the OTE Group facilities by 2025. These include both direct emissions from the consumption of natural gas, diesel, and gasoline as well as indirect emissions from the consumption of electricity in all buildings and facilities of the OTE group throughout the country. COSMOTE is intensifying its actions to address climate change and protect the environment in the context of the sustainable development strategy, which has already been adopted by its business function. Already, 100% of the electricity consumed for the Group's networks comes from renewable energy sources. The OTE group has

chosen the path of sustainable development for many years by incorporating ESG criteria.

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5. Results

Sustainability is as a concept more necessary than ever. Sustainability is not limited to the protection of the environment, corporate social responsibility (Corporate Social Responsibility) and the need of every business and every organization to be responsible to society and the environment, but it is something much more. It is a culture of economic approach and entrepreneurship. If it diffuses on the one hand in the formulation of policies and governance in macroeconomics with the formulation of a national sustainability strategy (national sustainability council) with the active participation and cooperation of public and private sectors and other industries but also in enterprises (microeconomics), being an integral part of the corporate strategy. Sustainable Corporate Governance may lead to the improvement of the competitiveness of the economy and its more sustainable growth, in macroeconomic level, but also to better business performance regardless of industry sector. Central and Northern European countries, such as Germany, the Netherlands, the Nordic countries, have emphasized sustainability in recent years both in terms of policies, context and business, have shown a positive sign both in terms of macroeconomics and microeconomic level. Sustainability is a priority of Greek companies, at least the big ones, which through advertising campaigns inform the public about the rational use of resources, focusing especially on green energy, which provides resources for future generations, but also protects the environment.

But why can sustainability, especially when combined with innovation and extroversion, be a strategic factor in sustainable development? Some reasons are the following:

- In addition to the United Nations and EU Sustainable Development Goals, in the context of the EU 2020 Agenda, it is important to mention that from 2017, Member States are expected to be invited to adopt in their national legislation a new directive of the European Commission, which will concern the obligation of companies with more than 500 employees, to include in the annual report of

European companies in addition to financial data and measurable data of sustainability and corporate social responsibility, which confirms the immediate importance and impact of sustainability on business and its measurability. The new directive on the obligation to record annual sustainability data is expected to affect around 6,000 European companies.

- Positive effect of integrating sustainability into a company's strategy throughout a company's supply chain from suppliers (supply of raw materials) to production (production of high-quality products with the most efficient use of fewer resources), with increased employee productivity and by this as consumers (products not just environmentally friendly but also with high added value regardless of industry, eg organic products, electric cars, Renewable Energy Sources etc.). Holistic approach to the entire economic and business cycle. In this way the production of higher quality products, more environmentally friendly, with added value for the consumer and with the use of less resources is achieved, therefore with higher efficiency and added value.
- The integration of sustainability in the company's strategy not only as corporate social responsibility but as a component financial element of the strategy will positively and substantially affect all departments and actions of the company, will increase productivity and competitiveness of companies, while producing better products with less costs and more profits.
- If sustainability is combined with innovation and new technologies, an increase in productivity, competitiveness, efficiency, quality of products and services is achieved, but it also contributes to the creation of a culture of responsible consumers. Much more in some cases facilitates and improves the quality of life (eg Mobile Internet, E-Mobility, Green Energy & Renewables, Smart Grids, Internet of Things, Sharing Economy & Transport, Smart Cities). Also investing in innovation and new technologies and connecting university education with work, which enhances high-level employment. Innovation is a component of sustainability but also of sustainable development. The example of Silicon Valley's long-term success proves it.

After the recent global financial crisis, it was found that only the financial indicators and financial data of companies are not enough for the right choice mainly by the institutional investors of companies with long-term and not short-term growth

prospects. Through surveys and analyzes in different countries and by different companies, it was found that companies that had adopted sustainability as a component of their strategy were in most cases more likely to have good long-term corporate results. So, there was the development of the Responsible Investments model with the adoption of recognized research methods, based on the Principles for Responsible Investments of the United Nations Global Compact. These principles have been adopted by most major companies in the world but also by some companies in Greece. COSMOTE is one of these companies. Based on this philosophy, some internationally recognized methods have been developed, based on the return on invested capital, taking into account environmental and socio-economic factors in addition to purely financial ones. So, we are gradually moving into the field of investments from the era of Return on Investment, to the new era of Social Return on Investment.

The performance of the adoption of policies and methodologies of sustainability in a company are measurable and their performance can be quantified focused on international tools and standards (Measurement of Sustainability Value). Thus, each enterprise can annually evaluate the return on its investment in the previous year in specific goals and sustainability actions. The greater the number of sustainable enterprises with innovation and extroversion in an economy, the more the positive impact spreads to the industry but gradually to the economy as a whole and ultimately contributes to a sustainable development.

Sustainability always combined with the extroversion of the economy (exports - investments - friendly business environment), innovation and the adoption of new technologies, can be a decisive factor both at the micro level at increasing corporate efficiency (positively affecting the entire supply chain) but also at the macroeconomic level (positively affecting entire sectors of the whole economy), contributing to a long-term sustainable growth. Especially for economies in crisis and recession, such as the Greek one, it should be seen as an opportunity and not as a challenge, as it lays the foundations for a more stable, sustainable, economic and social future for future generations.

According to the site of Naftemporiki (https://www.naftemporiki.gr/), a total of 25 companies that make up the selected business representatives of Sustainable

Development and the ambassadors of a new development model, emerged in the context of the anniversary event Sustainable Greece 2020 held by the QualityNet Foundation, on the occasion of completing 6 years of organization.

In particular, the companies that are part of this leading group and which stood out based on the technical evaluation of their performance by the Sustainability Performance Directory are: Alumil, Genesis Pharma, IMERYS Industrial Minerals Greece, Interamerican, LIDL Hellas & Co., Mitsis Hotels, MSD - MERCK Sharp & Dohme, MYTILINEOS, Polyeco, Quest Holdings, TOYOTA Hellas, ElvalHalkor, Hellenic Petroleum, Hellenic Gold, European Loyalty SA, IRAKLIS Group of Companies, MEGA Personal Health Products, Personal Hygiene OPAP, OTE Group of Companies, PAEGAE, Titan, Eurobank Ergasias Bank, Piraeus Bank and HYGEIA.

Especially, OTE Group has integrated sustainable development into its business strategy. The goal, as Ms. Tzimea mentioned, is to create a world better for all through technology, in which everyone will be able to participate equally in the opportunities created by technology. The main directions focus on:

- Investments in the development of new generation networks 2 billion euros over the next four years, with the least possible burden on the environment.
- Emphasis on innovative technology products (ICT solutions), which help businesses reduce their environmental footprint
- High targets for tackling climate change: 90% reduction in greenhouse gas emissions by 2030.
- Saving natural resources based on the principles of the circular economy.

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