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Sustainability Reporting: Paths Towards Standardization

Supervisor
Martina Nardon

Graduand
Francesca Maria Estori
Matriculation number
860894

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Abstract

This thesis aims at reviewing the progress made in the field of disclosure of sustainability measures, identifying the reasons why their development constitutes the basis for the transition to a low-carbon economy, exploring currently available options and analysing investors' response to transparency and efficiency in this area.

The issue is initially contextualized with regards to the international response it has generated in the primary regulatory authorities, and how their statement of intent has been received by various reporting organizations.

The major proposals are then investigated, first in terms of external sustainability reports and subsequently focusing on how disclosure of new factors can be integrated into existing metrics.

The conclusion aims at highlighting which one, among the disclosure methodologies that were discussed, appears to constitute the most promising path toward an efficient sustainability-reporting environment.

Introduction

In the last decade we have witnessed the launch of a vast number of initiatives dedicated to the transformation of the rationale guiding economic decisions, and the transition to a sustainable economy has become, slowly but steadily, one of the core issues we need to face.

This has translated into a shift of paradigm, from an economy in which the interests of shareholders were viewed as the top priority to a new model with different prime concerns. This new form of capitalism, called stakeholder capitalism, examines the role of corporations with respect to their impact on every other player benefiting or losing from their actions, thus including the interests of workers, communities, customers, the environment and other economic entities[1]. This new focus on the links between multiple, interdependent areas has produced a deep transformation specifically in the notions of value and value creation, which companies are now trying to express with the support of ESG (Environmental, Social and Governance) metrics.

In fact, the call on companies to set public goals implies the necessity to address a new set of risks and opportunities that require long-term strategies to be devised and the disclosure of performances measured against new information.

In order to meet these new requirements, new principles involving ownership, governance, measurement, performance, finance and investment are being adopted, and the legislative authorities are activating in order to create an environment able to regulate the latest developments. Ideally, companies will be held accountable for the provision of specified purposes, social licenses to operate, constructive relations with both board members and long-term shareholders in line with the entity's objectives, and partnerships with relevant organizations. These elements will need to be accompanied by the adoption of "standardized sets of metrics that assess the extent to which companies adhere to common minimum standards of conduct […]. In addition, companies will determine the metrics that are most relevant to their specific corporate

[1] See Samans and Nelson (2020).

purposes and adopt key performance indicators to evaluate and reward employees against them"[2].

In this regard, the British Academy (2019) highlights that the growing discrepancy between the extent of a company's impact and the elements that actually get recorded and managed, along with the misallocation of resources that this information gap inevitably generates, have brought about an abundance of providers of non-financial information. This exponential growth, though, has not been accompanied by a system that allows to navigate this amount of additional data in a consistent and cost-effective fashion, and the following lack of clarity has pushed the need for standardisation of available information at the top of both regulatory and economic entities' agenda. The following research will shed light on the consequences of this transformed hierarchy of needs, beginning by presenting an overview of how it's currently being communicated by international regulatory authorities.

After having addressed the legal framework, Chapter 2 will present an analysis of the methodologies behind the redaction of sustainability reports and the mechanisms in place that are driving homogenization in their content; a representative sustainability report, considered to be effective in communicating ESG-related issues by a recognized sustainability-rating organization, will then be analysed. The Chapter is then closed with considerations on the performance of an index constructed on the basis of sustainability scores assigned through sustainability reports' analyses and on the shortcomings of the use of this tool for disclosure.

Chapter 3 is instead dedicated to integrated reporting, with a particular focus on the Task Force on Climate-related Financial Disclosure's recommendations and on the Integrated Reporting Framework. The discussion is then completed with the description of an integrated reporting presentation standard model and a brief discussion on impact-weighted financial accounts as the next step for efficient sustainability disclosure. Concluding remarks compare the different tools analysed in the present document and individuate the most effective solution.

[2] See Colin Mayer et al. (2019).

Chapter 1

Drivers of Standardization in Sustainability Reporting

The collective attempt to meet sustainability-related demands cannot be reduced to a handful of initiatives, since it has been gaining consensus for decades and lays its roots in the social sphere, which has constituted a shared concern since long before environmental issues became a mainstream topic of international discussion. This chapter will therefore focus on the current discourse, and to this aim it will begin by presenting the two initiatives that are deemed the most effective in depicting intra-governmental bodies' current stance on what is to be considered the appropriate line of action: the 2030 Agenda for Sustainable Development and the 2020 Davos Manifesto. These, along with the actions of the International Business Council in collaboration with the World Economic Forum - which worked to align business' goals with long-term stakeholders' goals – represent the starting point for the creation of a system capable to foster sustainable development.

1.1 The 2030 Agenda for Sustainable Development and the Davos Manifesto

The "2030 Agenda for Sustainable Development" (2015) was drafted by the United Nations with the aim of identifying 17 development goals and 169 targets pertaining the economic, social and environmental dimensions. It was deemed necessary as the UN Framework Convention on Climate Change represented the primary forum of discussion for the organization of a coordinated global response, effectively making it the United Nations' responsibility to take action against the growing gap between collective mitigation pledges and actual greenhouse gasses' patterns[3].

The Agenda's recommendations pertain to multiple critical arenas, among which we find the mandate to "protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking

[3] See UN General Assembly (2015).

urgent action in climate change"[4], and especially to do so by means of a revitalized Global Partnership for Sustainable Development.

This Partnership is a network of governments and private actors that facilitates the engagement in support of the Sustainable Development Goals, and it does so by providing channels of communication, coordination and data collection. Global participation has emerged in more concrete terms as the sum of cohesive national development strategies, an improved support of the United Nations and international financial institutions, and the creation by the Global Partnership for Sustainable Development Data of an enhanced system for monitoring progress and sharing knowledge.

More specifically, by focusing on the means of implementation the 2030 Agenda better defines the role of the public and private sector, and establishes a better system for coordinating them: as national policies remain the main source of technical change[5], international entities work to build integrated national financing frameworks, incentives are created to fund and share knowledge, data collection is institutionalized and practical policies and actions for meeting the Global Development Goals are outlined by building on the Addis Ababa Action Agenda. The Action Agenda, that serves the function of a building block, had already touched on how to steer domestic resources, private businesses, finance, international trade, debt sustainability and technology innovation towards sustainable development and international coordination[6].

To complement the guidelines set by the UN, that are designed to be universalizable enough that they can be endorsed by a wide range of subjects, the Davos Manifesto (2020) emerges as a more focused set of principles. It was drafted by the World Economic Forum specifically for companies, and it aims at guiding the response of the private sector to twenty-first century challenges by presenting both moral and practical recommendations. Again, the theme of value creation represents the core issue, an issue that is analysed through the lenses of stakeholder capitalism: five pillars are dedicated to regulating the relationship between the company and a corresponding number of actors that interact at multiple levels (customers, employees, suppliers, civil

[4] See UN General Assembly (2015).
[5] See Global Partnership for Sustainable Development Data (2020).
[6] See UN General Assembly (2015).

society and shareholders) so that the Manifesto can lay the grounds to break these interactions free from the constraints of a zero-sum game. The company becomes "more than an economic unit generating wealth. It fulfils human and societal aspirations as part of the broader social system. Performance must be measured not only on the return to shareholders, but also on how it achieves its environmental, social and good governance objectives" [7].

The pattern emerging from these two initiatives, which are here considered to be representative of a school of thought shared by international institutions, national governments and private actors alike, is that it is now required to reassess the impact of economic interactions. In order to achieve a better understanding of interdependencies a renewed focus on coordination, along with the necessity of adequate assessment methods, appears to be the first fundamental steps towards the realization of a shift in the economic paradigm.

1.2 Classification of Other Leading Initiatives

Data collection and disclosure, which are intrinsically linked to the needs highlighted in the previous section, will be explored in terms of their re-organization and effectiveness of new forms of communication. To this end it is necessary to introduce some of the additional organizations, other than the United Nations, the International Business Council and the World Economic Forum, that in virtue of their narrower scope have been able to move past broadly-appliable recommendations and statements of intent and towards more targeted proposals. Again, they do not represent the totality of the initiatives partaking in the creation of a more effective framework for measurement and disclosure, but they are the ones that are emerging as leading organizations and that are participating in extended collaborations that allow for a meaningful dialogue with traditional reporting authorities.

It should be noted that reporting and disclosure attempt to tackle systemic issues that unfold at multiple levels, thus rendering it a very delicate matter to decide how broad or narrow the scope of the reporting is supposed to be in order to find a right balance

[7] See Klaus Schwab, World Economic Forum (2019).

between specificity and comprehensiveness. It is therefore necessary to introduce a definition of sustainability and its possible facets before we begin to understand the specific role of the organizations that are participating in the matter. Rather than referring to a single universal methodology for assessing sustainability issues, this thesis will adopt the categorization proposed by the Impact Management Project (IMP) in their 2020 publication on a comprehensive corporate reporting system. The IMP is an initiative that arises as a response to the challenge posed by the Sustainable Development Goals to measure and manage the economy's impact on the planet, and it takes the form of a collaboration between a network of practitioners and standard-setting organizations. Their work together brought about the proposal for a clear distinction between the different kinds of responses called for by different types of sustainability matters: the ones that imply wider impacts affecting the environment and the society, sustainability matters that only affect the enterprise value, and those issues that are already easily quantifiable and appear on financial statements.

Reporting that reflects the category of sustainability matters impacting the broadest range of subjects, which is "designed to inform assessments and decisions by a wide range of users who want to understand a company's positive and negative contribution to sustainable development […], is referred to as sustainability reporting"[8], and it includes both quantitative and qualitative information relating to behavioural standards, societal goals and how managerial approaches and strategies can be contextualized within the effort to reach those targets.

Reporting concerned with the interaction between a company's financial returns and sustainability issues is referred to as "sustainability-related financial disclosure" as long as it attempts to capture fluctuations in value that are not yet integrated into financial statements in monetary terms, while "financial accounting and disclosure", destined to the use of investors, is linked to the more specific and more easily quantifiable aspects of how sustainability matters affect the company's performance.

Leading initiatives on the matter deal with all three levels of sustainability, and in doing so they address four areas in need of renewal.

[8] See Impact Management Project, World Economic Forum and Deloitte (2020).

Tables 1.1, 1.2, 1.3 and 1.4 list the major standard-setting organizations active in the field of sustainability-related reporting, grouped in subsets which have been determined by a classification relying on the Impact Management Project's considerations on the nature of their work.

Table 1.1 - Organization Dedicated to the Construction of Conceptual Frameworks for Measurement
Source: Impact Management Project, World Economic Forum and Deloitte (2020)

Area of Interest	**Dedicated Initiatives**
Conceptual frameworks for measurement	GRI
	SASB
	SVI

This first category, which is represented by the Global Reporting Initiative, the Sustainability Accounting Standards Board and Social Value International, is composed by organizations which are currently collaborating with the OECD for the creation of frameworks that facilitate the development of standards and common practices.

Their work constitutes the first step towards a homogeneous integration of sustainability-related issues into valid forms of disclosure, and it is only after having defined the content elements that are to be included into sustainability-disclosure practices that the work of organizations defining more detailed methodologies for the quantification of those elements becomes relevant.

Table 1.2 - Organizations Dedicated to the Definition of Key Metrics and Targets
Source: Impact Management Project, World Economic Forum and Deloitte (2020)

Area of interest	Dedicated Initiatives
Metrics Science-based targets to contextualize performance	GRI
	CDP
	SASB
	IRIS+
	HIPSO

In order to develop accounting methodologies that capture new forms of impact it is necessary to integrate the existing set of metrics and to identify how to measure performance in these new fields. The achievement of this goal, pursued by GRI and SASB along with the Carbon Disclosure Project, the Impact Reporting and Investments Standards and the Harmonized Indicators for Private Sector Operations, would allow companies to make explicit choices between strategies, specifically by rendering comparisons between different social and environmental implications significant.

The challenge posed by their mission does not stem from the difficulty of elaborating new key indicators per se, but rather from conciliating the necessity of rendering those indicators useful by a vast set of companies with the need for precision.

Table 1.3 - Organizations Dedicated to the Establishment of Valuation Techniques
Source: Impact Management Project, World Economic Forum and Deloitte (2020)

Area of interest	Dedicated Initiatives
Valuation techniques	IFC SVI

The evolution of the concept of value accompanying stakeholder capitalism and impact investing has resulted in organizations such as the International Finance Corporation and Social Value International dedicating their work to the establishment of new ways to measure performance and to assess a company's impact. The creation of new valuation techniques represents what is probably the most delicate step in the process of understanding sustainability-related risks and opportunities, as it relies on the work of the previous categories in an attempt to capture and measure the way different stakeholders are able to capture value.

Table 1.2 - Organizations Dedicated to the Establishment of Integrated Reporting Frameworks
Source: Impact Management Project, World Economic Forum and Deloitte (2020)

Area of Interest	Dedicated Initiatives
Integrated reporting	IIRC TCFD

Lastly, an effort is being made to integrate sustainability reporting into existing disclosure practices to bring standardization to a level that will allow entities not to be constrained by the choice of a specific external reporting system.

In this field, guidance is largely provided by the International Integrated Reporting Council, along with the recommendations of the Task Force on Climate-related Financial Disclosure.

Having identified both the institutional entities that are directing the discourse on sustainability and the leading actors that are actively working on the concretization of their recommendations, the need arises for a clear understanding of the regulatory environment the players are acting in.

1.3 European Regulatory Framework

The focus of this section will be on European law, since it represents the playing field relevant to standardization and harmonization efforts. Currently, sustainability-related disclosure is being largely regulated by the 2014 Non-Financial Reporting Directive, although in 2020 the partial implementation of the Taxonomy Regulation has begun, which controls the application of the EU Taxonomy classification system.

1.3.1 Non-financial Reporting Directive

Directive 2014/95/EU, also known as the Non-Financial Reporting Directive, is an amendment to the 2013 Accounting Directive. It applies to large, public-interest companies with more than 500 employees, which includes banks, insurance companies and listed companies, along with additional entities deemed of public interest by national governments.

This obliges more than 11 700 companies and groups to disclose information pertaining to[9]:

- environmental matters,
- social matters, specifically employees' working conditions,
- respect for human rights,
- anti-corruption measures,

[9] See European Union Official Website, https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en#review.

- board composition and diversity.

The objective of this Directive is to improve transparency of those companies that impact the economic, environmental and social environment the most, specifically by requiring the publication of reports on the policies they implement to manage those areas. The information needed to meet the requirements includes, as a baseline, an entity's "business model, policies (including implemented due diligence processes), outcomes, risks and risk management, and key performance indicators (KPIs) relevant to the business"[10].

However, the NFRD does not specify a reporting standard that must be met in order to satisfy its implementation, nor it imposes the presentation of specific indicators. The absence of detailed methodology requirements has allowed for a certain freedom in the choice between the drafting of management reports expanded to include non-financial statements and the use of completely external reports. Moreover, companies can choose among numerous sources which reporting guidelines to use, that can either be European or national.

As anticipated, "international and European non-financial reporting frameworks and standards include, inter alia, the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), the International Integrated Reporting Framework (IIRC), the Task Force on Climate-related Financial Disclosures (TCFD), the United Nations (UN) Guiding Principles Reporting Framework, the UN Global Compact, the OECD guidelines for multinational enterprises and ISO 26000"[11].

This amount of flexibility carries its benefits, mainly in the use of the reporting system that better emphasises the information that a company considers to be the most useful to disclose, but it is also associated to a heavy cost: reporting decisions are extremely time-consuming, and confusion arises from different disclosure requirements referring to numerous pieces of EU legislation, specifically for companies operating in the financial sector.

In addition, requirements are not only coming from legislative authorities anymore, but from sustainability-rating agencies as well, which do not value the same reporting

[10] See Nora Hahnkamper-Vandenbulcke (2021).
[11] See Nora Hahnkamper-Vandenbulcke (2021).

standards in the same way and whose analyses can have a strong impact on a company's ability to collect capital. These shortcomings brought forward the need for a more structured framework, one that would allow a trustworthy comparison between the impact of different investment choices and that clearly highlights a company's management of sustainability-related risks, measured against its possibilities and contextualized by its strategy.

A broad package of legislative tools has since complemented the NFRD, primarily to combat greenwashing in the financial sector, to redirect investment towards economic activities that contribute to environmental or social objectives, and to establish a common reporting framework. The following discussion will focus on the EU Taxonomy and Taxonomy Regulation as it represents the most recent piece of legislation and deals with companies both in the financial and non-financial sector.

1.3.2 EU Taxonomy and TR Overview

In order to discuss the Taxonomy Regulation it is necessary to introduce the EU Taxonomy, which is a classification system that establishes a list of environmentally sustainable economic activities with the aim of redirecting investment towards projects that have a positive impact.

It was established by the Technical Expert Group on Sustainable Finance (TEG) after the EU's 2018 Action Plan on Financing Sustainable Growth called for the creation of a tool capable of providing a common language and of coordinating the efforts towards the achievement of six environmental objectives:

- climate change mitigation,
- climate change adaptation,
- sustainable use of water and marine resources,
- transition to a circular economy,
- pollution prevention and control,
- biodiversity and ecosystem protection.

Its classification system uses the Nomenclature of Economic Activities (NACE) codes to classify different activities in 21 sectors, that are in turn divided in sub-levels that result in 615 classes. Given that each sector is associated with a substantial or marginal level of emissions, a further classification identifies priority sectors, in which sustainability undertakings would be more impactful.

Priorities were initially assigned using 2016 Eurostat emissions inventory data and then implemented with more recent datasets, although this did not substantially change TEG's emission sector profile[12].

After completing the priority ranking, in order to identify those activities that had the highest chance to positively impact specific sectors, another distinction was made between the nature of possible contributions. Table 1.5 and 1.6 provide a definition of the two different kinds of activities that can be performed by entities pursuing climate change mitigation or climate change adaption, along with the corresponding sub-categorizations and specifications about which are the actors that can contribute to the performance of each specific activity.

Table 1.3 – EU Taxonomy Categorization of Activities Contributing to Climate Change Mitigation
Source: EU Technical Expert Group on Sustainable Finance (2020)

<table>
<tr><th colspan="4">Activities that entail a substantial contribution to climate change mitigation</th></tr>
<tr><td colspan="4">Def: "An economic activity that substantially contributes to the stabilization of greenhouse gas concentrations in the atmosphere at a level which prevents dangerous anthropogenic interference with the climate system by avoiding or reducing greenhouse gas emissions or enhancing greenhouse gas removals"[13].</td></tr>
<tr><th colspan="2">Type 1:</th><th colspan="2">Type 2:</th></tr>
<tr><td colspan="2">Activities that have a substantial contribution due to their own performance (within the activity boundaries).</td><td colspan="2">Activities enabling mitigation in another economic activity.</td></tr>
<tr><th colspan="2">Who can perform this activity?</th><th colspan="2">Who can perform this activity?</th></tr>
<tr><td>Entity performing the already low-carbon activity.</td><td>Entity performing the activity to contribute to transition.</td><td>Entity performing the activity where the enabling activity is implemented.</td><td>Entity performing the activity as service or product.</td></tr>
</table>

[12]See EU Technical Expert Group on Sustainable Finance technical annex (2020).
[13] See EU Technical Expert Group on Sustainable Finance technical annex (2020).

Table 1.4 – EU Taxonomy Classification of Activities Contributing to Climate Change Adaptation
Source: EU Technical Expert Group on Sustainable Finance (2020)

Activities that entail a substantial contribution to climate change adaption	
Def: *"An economic activity shall be considered to contribute substantially to climate change adaptation where:* ***a****. that economic activity includes adaptation solutions that either substantially reduce the risk of adverse impact or substantially reduces the adverse impact of the current and expected future climate on that economic activity itself without increasing the risk of an adverse impact on other people, nature and assets; or where* ***b****. that economic activity provides adaptation solutions that […] contribute substantially to preventing or reducing the risk of adverse impact or substantially reduces the adverse impact of the current and expected future climate on other people, nature or assets, without increasing the risk of an adverse impact on other people, nature and assets"*[14]*.*	
Type 1:	**Type 2:**
Activities adopting adaptation solutions (reducing all identified material physical climate risks).	Activities enabling adaptation of an economic activity (the activity reduces material physical climate risk in other economic activities and/or addresses systemic barriers to adaptation, and is itself also adapted to physical climate risks).
Who can perform this activity?	**Who can perform this activity?**
Entity adapting to climate change.	Entity adapting or performing the enabling activity as a service or product.

Furthermore, activities that were deemed, under the Taxonomy, as substantially contributing to climate change mitigation or adaption must be further assessed to ensure that they do not cause significant harm to any other environmental objective (DNSH principle).

By merging sectors' priority ranking and activities' classification it is possible to introduce technical screening criteria that establish how valuable and effective specific measures can be.

[14] See EU Technical Expert Group on Sustainable Finance technical annex (2020).

For example, sectors that are in critical need of climate change mitigation actions are, by urgency[15]:

- forestry,
- agriculture,
- manufacturing
- electricity, gas, steam and air conditioning supply,
- water, sewerage, waste and remediation,
- transportation and storage,
- information and communications,
- construction and real estate activities.

For each sector a list of activities that will contribute to mitigation is presented (ex. in the forestry sector it is possible to perform afforestation, reforestation, restoration/rehabilitation, existing forest management and conservation), and they will each be associated to specific thresholds and criteria companies will be held accountable for. The same operation was carried out for climate change adaptation, which is associated to a different priority ranking given that climate change mitigation and adaptation activities might contribute with different degrees of effectiveness to progress in the same sector.

This enormous classification effort is substantial to the Taxonomy Regulation, which establishes whether a disclosed activity qualifies as contributing to sustainable growth by setting specific assessment methods and associated disclosure standards. More specifically, regulation 2020/852/EU was designed to establish the criteria for determining whether an economic activity or an investment qualifies as environmentally sustainable and to which degree.

It applies to:

- measures, designed for financial market participants in the European market or in national markets of Member States, that set requirements for financial products marketed as “environmentally sustainable”;
- issuers of such financial products;

[15] See EU Technical Expert Group on Sustainable Finance technical annex (2020).

- undertakings already under the obligation of publishing a non-financial statement under Article 19a or 29a of 2013 Accounting Directive, or under the NFRD.

In practice, new legal obligations are set out for financial markets participants, large companies, the European Union and Member States. Technical screening criteria determining Taxonomy-alignment of all activities are currently being developed, and a series of delegated acts will supplement the Taxonomy Regulation and strengthen the framework for the EU Taxonomy.

1.3.3 Taxonomy Regulation for Non-financial Market Participants

Non-financial market participants will be obliged to present both qualitative and quantitative information, including[16]:

- a description of how, and to what extent, the performed activities can be considered aligned with the Taxonomy;
- the proportion Taxonomy-aligned turnover;
- capex and/or opex aligned with the Taxonomy.

Figure 1.1 resumes the quantitative requirements that have to be listed for each kind of activity, referencing the classification in Tables 1.5 and 1.6.

The inclusion of the Do No Significant Harm principle (DNSH) in the scheme does not indicate the necessity of listing an additional set of activities other than the ones bringing substantial contributions to climate change mitigation or adaption, but it acts as a reminder that taxonomy-aligned activities do not stem from a single screening: all identified activities must be further assessed to ensure that they do not harm all remaining environmental objectives and do not hinder climate change adaption. The association of quantitative measures to this final stage of activity assessment is particularly important because passing the DNSH test implies a thorough examination involving the creation of screening criteria on the basis of specific quantitative thresholds.

[16] See EU Technical Expert Group on Sustainable Finance final report (2020).

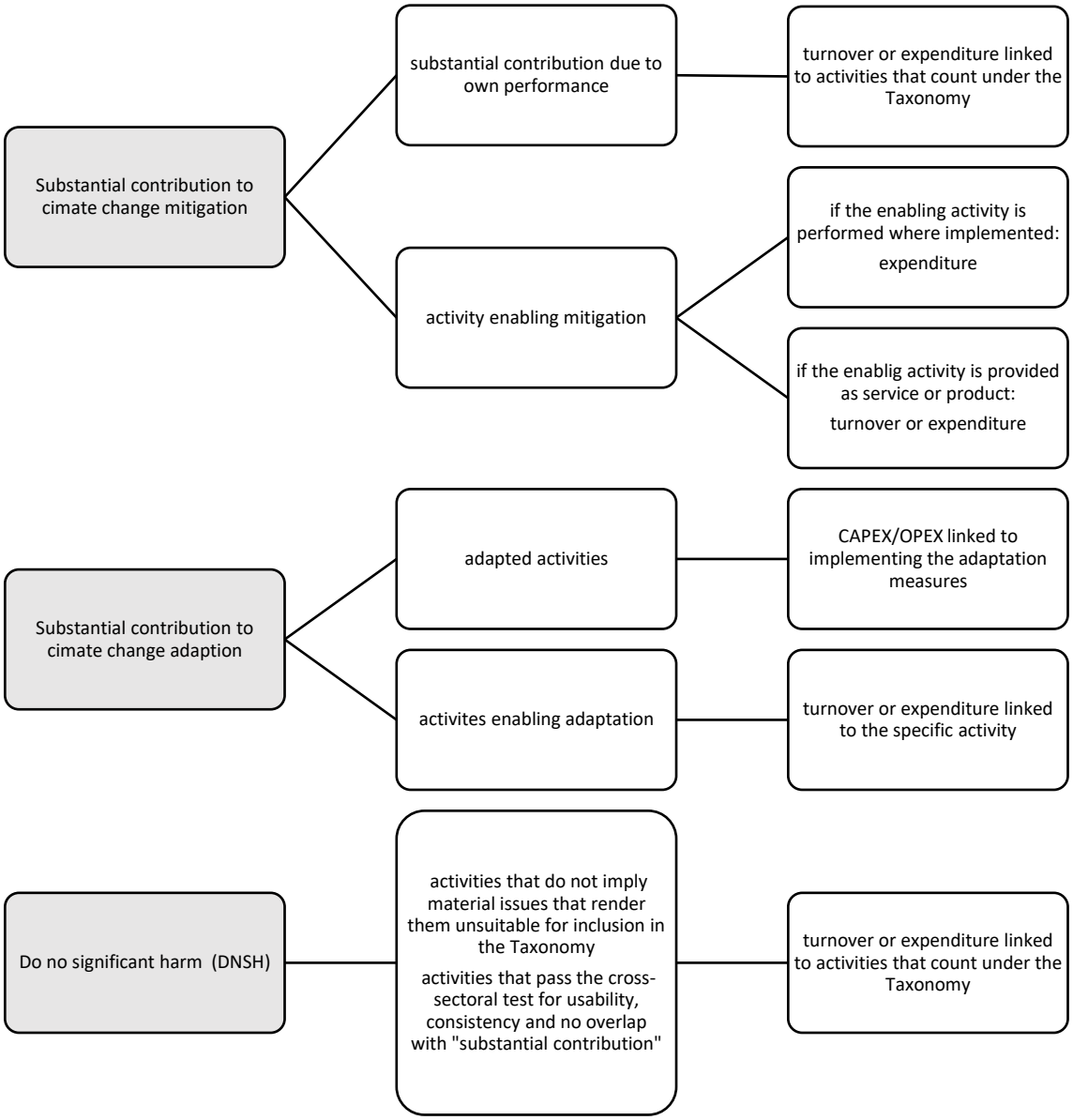

Figure 1.1 - Taxonomy Regulation Quantitative Disclosure Requirements
Source: EU Technical Expert Group on Sustainable Finance technical annex

The reason turnover (revenues calculated after deducting sales rebate and value added tax, corresponding to a firm's total revenues over a period of time) is used as indicator is that it gives information necessary to understand a company's efficiency; it is then possible to isolate the percentage of investors' funds dedicated to taxonomy-aligned

investments.

Capital expenditure (payments capitalized in the balance sheet dedicated to the acquisition or maintenance of physical assets) is instead an indicator of new undertakings and investments, and it can be used as a tool for assessing "a company's strategy for improving environmental performance and resilience"[17].

Finally, operating expenses, which are defined as the short-term expenses a firm has to sustain to meet ongoing operational costs, give investors information on a firm's direction and on the efficiency of a strategy. OPEX also contain information on the amount of capital invested into R&D and into economic activities dedicated to efforts made towards Taxonomy alignment.

The disclosed information should be reported in the form of non-financial statements, either inserted in annual reporting or prepared as a separate sustainability report. They must also include details on the company's position with respect to minimum safeguards established by OECD Guidelines on Multinational Enterprises and by the UN Guiding Principles on Business and Human Rights. In addition, a company needs to assess its compliance with technical screening criteria linked to the DNSH principle, which will entail the inclusion of quantitative, process-based and principles-based criteria.

1.3.4 Taxonomy Regulation for Financial Market Participants

As we have seen financial market participants fall under the TR's jurisdiction as well, whether they are regulators or issuers.

In this case Taxonomy-required disclosure is a piece of a broader sustainability-related set of directives, and it lays its basis on the Regulation on Sustainability-related Disclosures in the Financial Service Sector (SDR).

Relevant articles in the SDR introduce pre-contractual disclosure requirements on environmental and social objectives, obligations for investment funds to state in their website "the methodologies used to assess, measure and monitor the characteristics or impact of the underlying investments, data sources and screening criteria"[18], and the

[17] See EU Technical Expert Group on Sustainable Finance final report (2020).
[18] See EU Technical Expert Group on Sustainable Finance final report (2020).

obligation to periodically produce reports assessing the sustainability-related performance of the financial products.

The Taxonomy Regulation's disclosure requirements scale up the Regulation on Sustainability-related Disclosures in the Financial Service Sector recommendations, in that they add to the obligations:

- the disclosure, for each relevant financial product, of how and to what extent the Taxonomy was part of the sustainability assessment for that product;
- the environmental objectives each financial product contributes to;
- the proportion of an investment fund's capital invested in Taxonomy-aligned products, including specifications on the percentage dedicated to substantial and enabling activities.

This information must be integrated into existing reporting requirements.
It is useful to remember that disclosure about Taxonomy-alignment of single financial products does not provide substantial information on the distance from an environmental objective, nor about the opportunity cost linked to that particular choice of investment.

The Taxonomy Regulation constitutes an important tool for supporting strategic decisions, but it cannot stand alone. Nonetheless, the progress made in the individuation and standardization of key indicators represents an important step, and future technical amendments containing screening criteria relative to the remaining four environmental objectives will substantially contribute to the soundness of the framework.

Another important element that emerges from the Non-financial Reporting Directive and Taxonomy overview is the almost universal choice of a sustainability report as preferred mean to disclose sustainability-related information, which is in line with initial considerations on the nature of the organizations presented in Tables 1.1 - 1.4.

The next chapter will therefore examine more in depth how credible sustainability reports are structured, in which ways they are positively contributing to efficient disclosure, and which are the shortcomings that prompted scholars to turn to integrated reporting.

Chapter 2

Effectiveness of Sustainability Reports as ESG Disclosure Tools

Sustainability reports are the most widespread tool used by companies to communicate ESG-related information in response to both legal requirements and investor needs. As we have seen, the content of these reports is only partially regulated, and the lack of official standards has led to the appearance of non-institutional organizations coordinating companies' disclosure and partnering with investment funds eager to access valid information. Furthermore, disclosure models designed by these organizations have sometimes been applied directly by investment firms themselves, that catered standards to their needs and constructed independent databases. This is the case, for example, of the SAM Corporate Sustainability Assessment (CSA), now issued by S&P Global and used as the basis for the construction of a number of sustainability indices, namely the Dow Joes Sustainability Indices (DJSI).
The strength of sustainability reports drafted and communicated through guided channels lays in the comparability of their content and in the guarantee of normative alignment. An overview of these three options will be presented in this chapter, starting from the introduction of the Carbon Disclosure Project as standard-setting organization and then analysing the additional sustainability report drafted by one of the top performing companies collaborating with it.

2.1 The Carbon Disclosure Project

The Carbon Disclosure Project manages the disclosure of the environmental impact of almost 10.000 companies worldwide. It is based in the US, UK and in Germany, and it is dedicated to gathering self-reported data and to channelling them towards investors. It does so by asking companies to fill out three questionnaires on climate change, water security and forests conservation.
Specifically, it requires the reporting of:

- greenhouse gasses' emissions,

- energy consumption,
- the assessment of climate and water risks,
- resources' management strategies,
- reduction targets.

Moreover, "CDP reporting guidance asks companies to provide basic information on any emissions reduction initiatives undertaken, but companies in CDP's high-impact sectors (materials, energy, transport and agriculture) are asked to provide more detailed information, including for investments in research and development (R&D)"[19]. Oliver Wyman (2020) analysed the most common reported emission reduction initiatives of 2019, making available a detailed list stating the exact number of reported activities for each category. The list has been transposed in Figure 2.1.

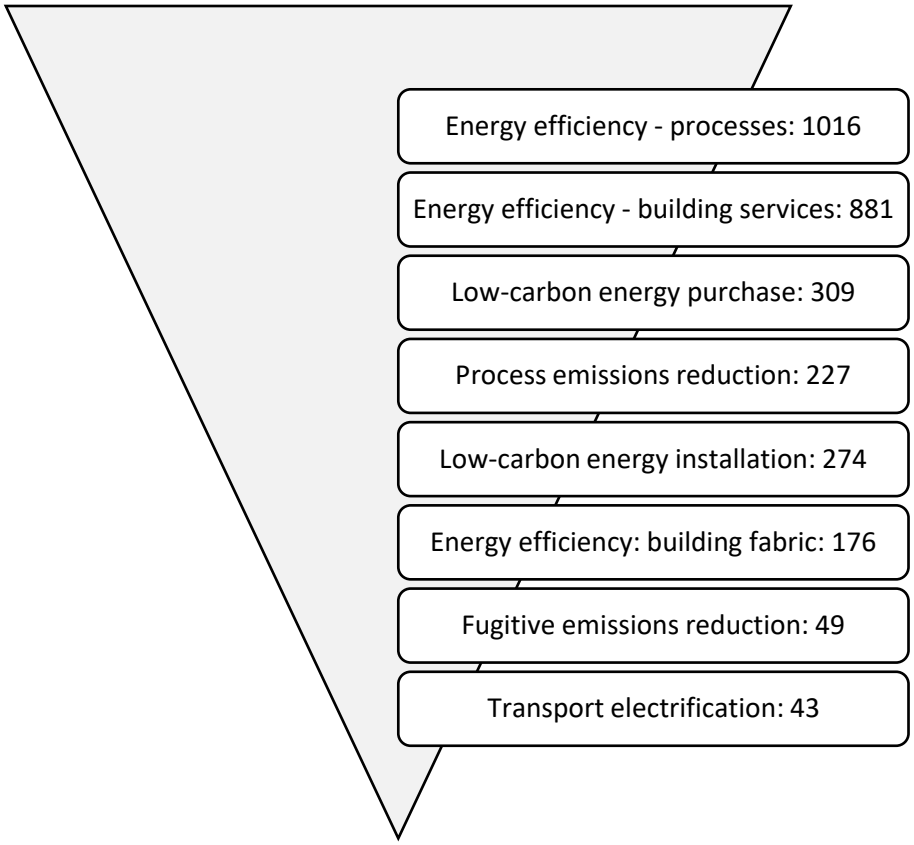

Figure 2.1 - 2019 Reported Emission Reducing Initiatives
Source: Oliver Wyman (2020)

[19] See Oliver Wyman (2020).

In addition, CDP requires the disclosure of metrics used to assess and manage climate-related risks and of the position of a company with respect to reporting and climate targets in place. In order to gain a better understanding of some of the most used metrics, it is useful to define the categorization of greenhouse gases (GHGs) emissions:

- Scope 1 emissions are defined as direct emissions produced by an organization's direct activities;
- Scope 2 emissions, also called indirect emissions, include all GHGs released during the production of the energy consumed by an organization;
- Scope 3 emissions correspond to those emissions produced out corporate boundaries but within a company's value chain.

Greenhouse gases' emissions constitute the first disclosure requirement, and they must be explicitly broken down into Scope 1, 2 and 3, even if the recording of the latter is still problematic due to difficulties in the monitoring of the sources outside of the organization's control.

In 2021, "less than 35% of companies in high-impact sectors are found to be disclosing meaningful information on scope 3 emissions"[20], another reason why guided disclosure and trans-institutional collaboration are rapidly becoming vital to drive progress.

In practice, disclosing against the CDP entails the use of predetermined formats: the three questionnaires must be completed in January, after which it is possible to access the scoring methodologies. In July, the Online Response System (ORS) becomes available, and companies can submit the information provided to customers and investors. The Carbon Disclosure Project then associates scorings to companies' performances on sustainability themes and produces a ranking, the A-list, that presents the best scoring companies on the three themes.

In 2021, 277 companies made the Climate Change A-List, 16 made the Forests A-List, and 106 made the Water Security A-list.

The 10 companies with maximum scoring in all three categories are, in hierarchical order[21]:

1) Danone,

[20] See Oliver Wyman (2021).

[21] Source: *https://www.cdp.net/en/companies/companies-scores*.

2) Firmenich SA,
3) Fuji Oil Holdings INC,
4) HP INC,
5) KAO Corporation,
6) L'Oréal,
7) Mondi PLC,
8) Philip Morris International,
9) Symrise AG,
10) UPM-Kymmene Corporation.

The service is not only dedicated to non-financial markets participants: investment funds are rated as well. For this purpose, in 2017 CDP Europe has instituted Climetrics, a rating agency with public rating results that uses a scoring methodology sourcing information from CDP databases and that enables to assess the same themes which were considered fundamental to the production and service sectors. More than 17.000 funds were rated on this platform at the end of 2020.

Climetrics' scores, returning a simple one-to-five rating, analyse each fund's investment policy, the asset manager's governance of climate issues and portfolio holdings - which are in turn scored across the themes of reduction of GHGs - management of water resources and forest protection. Good scores are therefore directly correlated to transparency on those themes, and they are an indicator of a proactive approach towards the transition to a low-carbon economy.

As an example, it will now be provided an in-depth analysis of the sustainability report of Danone, the best-scoring company of CDP's A-list. Although its report does not have the same format of the information reported to the Carbon Disclosure Project, the primary content elements do coincide.

2.2 Sustainability Report of an A-listing Company: Danone

Danone's sustainability report is public, easily accessible and introduced by a declaration of the company's goals, an explanation of its governance bodies and sustainability committees along with their respective responsibilities, and the company's approach

towards external demands. The report subsequently proceeds to present the definition, policies, governance, action plans and outcomes relative to the following themes:

- *health and safety* (divided into the healthy product portfolio and food safety standards' sections);
- *responsible communication* (specifically marketing to children and marketing of breast milk substitutes);
- *resource preservation and renewal* (structured into environmental strategy, fight against climate change, transition towards regenerative agriculture, preservation of water resources and steps towards a circular economy through packaging and water management);
- *treatment of employees* (inclusive talent development, social relations, workplace health and safety and employee security);
- Danone's *innovation funds*;
- the *vigilance plan*.

Along the whole report it is clearly stated the position of the company towards numerous organizations Danone is collaborating with, being it in the guise of data provider or signatory member, leader of sustainability initiatives or equal participant.
We will now analyse more in depth the theme of resource preservation, which can be considered a meaningful representative of the overall disclosing methodology in virtue of the consistent structure of the report, and which allows to highlight with clarity the compatibility of the document with CDP disclosure requirements.
The first section defines Danone's environmental strategy as composed by four pillars, namely the fight against climate change, the transition to regenerative agriculture, a substantial progress towards circular economy and the preservation of resources, specifically water and forests. Strategical progress in these areas is monitored by the Chairman and Chief Executive Officer together with the Chief Financial Officer, members of the Executive Committee and of the Board of directors. They coordinate with the Chief Cycles and Procurement, and there are numerous governance bodies that report to them: "the Engagement Committee of the Board of Directors, the OPOH Integration and Investment Board, the Executive Committee, the Audit Committee, the Cycles and

Procurement Department, the Nature and Water Cycle Department and the Reporting entities and their subsidiaries[22].

Once the chain of responsibilities over management and disclosure for that specific activity has been defined, the management tools used to measure overall performance are presented, in this case a combination of internal and external certifications. Danone's main production sites are certified via the ISO 14001 certification, which is used to complement its Global Risk Evaluation for Environment (GREEN) program. GREEN consists in a series of internal and external audits that identify and monitor risk-related performance in the fields of GHGs emissions, waste and wastewater management and soil exploitation. The company disclosed the number of sites that underwent the GREEN assessment in 2019 and 2020, the number of the sites that resulted compliant with the internal standards and the number of sites that obtained the ISO 14001 certification. This information is reported in Table 2.1.

Table 2.1 - Risks and Opportunities Mapping
Source: Danone Universal Registration Document (2020), pag. 157-158

	Year ended December 31	
	2019	**2020**
Sites having undergone a GREEN audit		
Number of sites	126	121
Percentage of sites	68%	67%
Percentage of production covered by a GREEN audit	79%	79%
Compliance with GREEN standards		
Number of compliant sites	109	104
Percentage of compliant sites	87%	86%
Percentage of compliant production	95%	94%

	Year ended December 31	
	2019	**2020**
ISO 14001 certification [a]		
Number of certified sites	85	82
Percentage of certified sites	46%	46%
Percentage of volumes covered	67%	65%

(a) Production Site Environment scope, see Methodology Note.

[22] See Danone Universal Registration Document (2020).

2.2.1 Fight Against Climate Change

After having introduced the main objectives of the environmental strategy, the sustainability report proceeds to disclose details relative to Danone's fight against climate change, which is defined as a response resulting from the identification of specific climate-related risks:

- the impact of catastrophic events over production sites and, in case of prolonged droughts, over the availability of ingredients;
- the impact of water degradation on freshwater and groundwater availability, both for Danone's production needs and for local communities;
- the impact of price volatility on supply of materials outside the company's integrated production chain;
- the rising cost of financing the transition towards sustainable agriculture.

These risks were subsequently mapped together with the related opportunities, and they were associated to a high, medium or low probability of occurrence. The assigned probabilities were used to develop three possible scenarios to test the company's resilience and long-term profitability against, thus highlighting the strengths and weaknesses of Danone's environmental management.

Table 2.2, extracted from Danone Universal Registration Document, summarizes the results of the climate-related risk analysis.

Table 2.2 - Risks and Opportunities Mapping
Source: Danone Universal Registration Document (2020), pag.159

Risk and opportunity categories	Risk and opportunity descriptions	Probability of occurring between 2020 and 2030	Significance of the potential financial impact 2030–baseline scenario [a]	Significance of the potential financial impact 2030–alternative scenarios [a][b]
Transition risks	Shift to plant-based alternatives	High	++	+++
	Growing consumer engagement in fighting climate change	High	++	+++
	Carbon pricing in the procurement of packaging and logistics	Medium	++	++/+++
	Carbon pricing in the cost of direct operations	Medium	++	++
	Increasing reporting obligations	Medium	+	+
Physical risks	Water stress and thermal stress on the milk supply chain	Medium	++	++
	Water stress and thermal stress on agricultural ingredients	Medium	++	++
	Extreme events affecting direct operations	Low	+++	+++
	Water stress on direct operations	Low	++	++
	Impact of climate change on product use	Low	+	+

(a) The significance of the financial impact has been assessed on the basis of the reduction in the Company's profit margin if the risk occurs.
(b) Some risks have two impact assessments because their financial impact differs depending on which climate change scenario is concerned.

Policies were developed to support the fight against climate-related risks, specifically supported by the implementation of three tactics.

The first one entails the cutting of greenhouse gases' emissions through a plan for the achievement of interim targets, which consist in a 50% reduction in emission intensity of all-scope's emissions before 2030 and a 30% reduction of Scope 1 and Scope 2 emissions before the same year. These objectives were set in 2015, and the company's reduction trajectory is currently in line with both its environmental strategy and the 2°C warming scenario set by the UN.

Transforming the agricultural practices, mainly by the implementation of regenerative agriculture in its supply chain, constitutes another important objective. This is the main element affecting Danone's carbon emission levels, as it allows the application of carbon sequestration tactics. Initiatives enhancing cooperation in this regard are often coordinated by the Sustainable Agriculture Initiatives, with which Danone has worked in multiple occasions.

The last project contemplates the elimination of deforestation from the supply chain while improving traceability of specific resources that, if ill-managed, contribute greatly

to the conversion of wooded areas to large-scale intensive agriculture. In order to limit those practices Danone is devoted to:

- the development of a responsible supply chain for the soy used both directly and as animal feed,
- ensuring palm-oil traceability,
- ensuring a circular packaging strategy through the development of lighter-weight solutions and the use of recycled fibres, thus complying with its special Paper and Cardboard Packaging policy,
- offsetting emissions by partaking in several reforestation programs and by building commitments towards carbon neutrality.

The outcomes of these strategies are primarily expressed by disclosing the variation of carbon emissions of the entire value chain, disclosure which is based on the methodology required by the international GHG Protocol. The GHG protocol is accompanied, since 2019, by the development of an additional measure: a carbon-adjusted recurring earnings per share (EPS) evolution that estimates the financial cost of gas emissions of the whole production cycle. The cost of carbon for the company is computed as EPS minus the estimated cost of carbon per share, which in turn equals "the product of Danone's total scope 1, 2 and 3 emissions […] by the cost per ton of carbon, divided by the number of shares after dilution […]. The cost per ton of carbon is estimated at €35/t, a figure that Danone has used internally since 2015 as well as in its reporting to the Carbon Disclosure Project"[23].

The combination of these measures allows stakeholders to get a comprehensive picture of the absolute quantity of GHGs produced by the company, and of the direct effect that variations in these levels entail. Emissions are measured in metric tons CO_2 equivalent, that convert emissions of different greenhouse gases into the quantity of carbon dioxide that should be emitted in order to obtain an equivalent global warming potential.

As it can be observed in table 2.3, Danone's total emissions diminished by roughly one million metric tons CO_2 equivalent from 2020 to 2019: this progress has been linked primarily to the adoption of less emission-intensive energy sources and to progress in the field of regenerative agriculture. Energy efficiency improvements impacted the

[23] See Danone Universal Registration Document (2020).

numbers as well, driven by "optimization of energy production […], optimization of energy use […] and by the systematic sharing of best practices among production sites"[24].

Table 2.3 - Danone's Emission Reduction Report, scopes 1 and 2
Source: Danone Universal Registration Document, pag. 162

Greenhouse gas emissions on scopes 1 and 2

For scopes 1 and 2, Danone includes all emissions sources from activities under the operating control of its production sites, warehouses and vehicle fleets.

Danone sets its scope 1 and 2 emissions targets according to the GHG Protocol "market-based" method in order to reflect the share of renewables in its energy mix (Greenhouse Gas Environment scope, see Methodology Note).

Its total emissions in metric tons of CO_2 equivalent for scopes 1 and 2 decreased by 12.4% between 2019 and 2020, mainly due to purchases of electricity from renewable energy sources and energy efficiency improvements. On a like-for-like basis, these emissions decreased by 11.5% compared to 2019 and 38.1% compared to 2015.

	Year ended December 31	
Scope 1 and 2 emissions, market-based (in $ktCO_2$) [a]	**2019**	**2020**
Scope 1	722	668
Scope 2	588	479
Total Scopes 1 & 2	**1,310**	**1,147**
Absolute emissions reduction, scopes 1 and 2, market-based since 2015	**29.1%**	**38.1%**

(a) Greenhouse Gas scope, see Methodology Note.

Table 2.4 - Danone's Emission Reduction Report, scopes 1 and 2, all scopes
Source: Danone Universal Registration Document, pag. 162

Greenhouse gas emissions on scope 3

Danone measures indirect emissions from the following scope 3 categories (Greenhouse Gas Environment scope, see Methodology Note).

	Year ended December 31	
(in $ktCO_2eq$)	**2019**	**2020**
Purchased goods and services	20,628	19,921
Upstream transportation and distribution of goods	382	322
Downstream transportation and distribution of goods	2,199	1,627
Use of sold products	1,922	1,886
End-of-life treatment of sold products	245	783
Fuel and energy related activities	320	284
Waste generated by operations	173	153
Total Scope 3	**25,869**	**24,974**

Greenhouse gas emissions on scopes 1, 2 and 3

	Year ended December 31	
(in $ktCO_2eq$) [a]	**2019**	**2020**
Scope 1	722	668
Scope 2 [b]	588	479
Scope 3	25,869	24,974
Total Scopes 1, 2 and 3	**27,179**	**26,122**
Emissions intensity ratio scopes 1,2 and 3 *(in grams of CO_2 eq/kg of product sold)*	**740.1**	**755.9**
Reduction in intensity on a like-for-like basis since 2015	**24.8%**	**24.5%**

(a) Greenhouse Gas scope, see Methodology Note.
(b) Market-based.

[24] See Danone Universal Registration Document (2020).

Moreover, Danone provided a breakdown of the sources of Scope 3 emissions, allowing to identify the sectors in which sustainability-related improvements could have the biggest impact. Agriculture emerges from this analysis as the biggest source of emissions (up to 61% of the total in the last year), which renders regenerative agriculture the most impactful strategical point of the company's sustainability plan. In addition, it also represents the primary source of water use, which links the issue with another of Danone's focus points, namely the preservation of water resources.

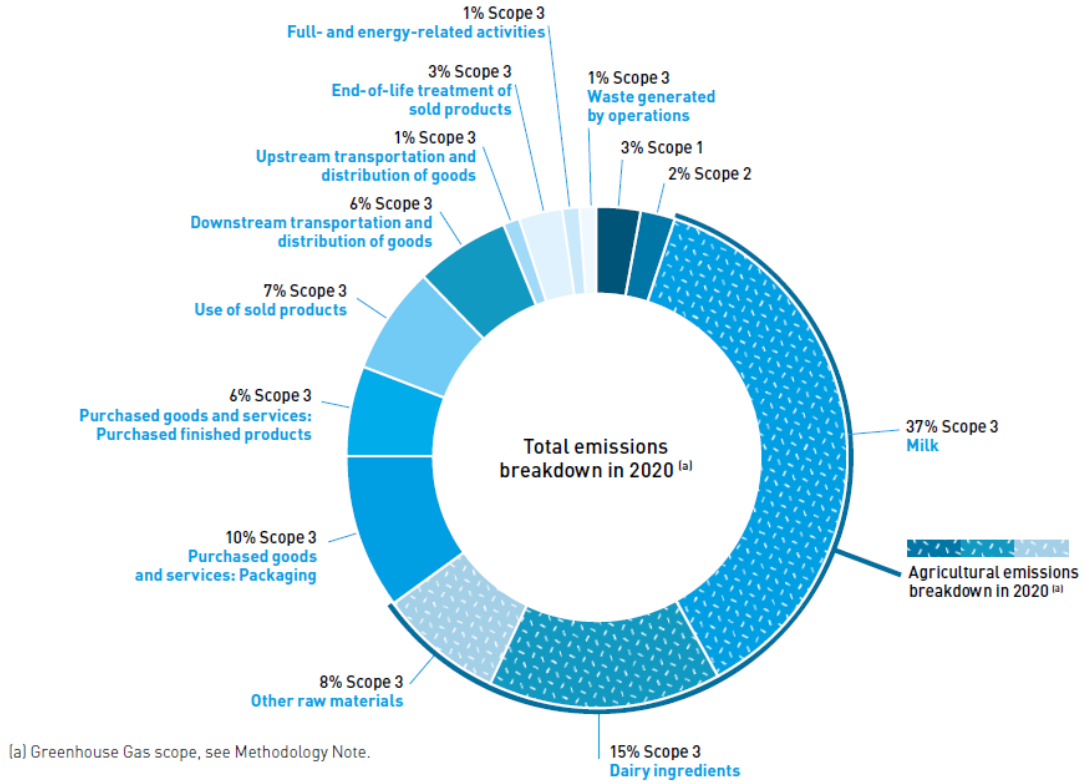

Figure 2.2 - Danone 2020 Emissions' Breakdown
Source: Danone Universal Registration Document, pag. 162

2.2.2 Transition Towards Regenerative Agriculture

These findings lead to the following section of the sustainability paper, which is defined as the disclosure of Danone's commitment to "promote practices that protect the soil

and biodiversity as well as animal welfare while also supporting farmers in the transition toward more resilient agricultural models that protect natural resources"[25].

The policies dedicated to supporting this commitment consist in a series of actions tackling three areas, the first of which is constituted by the protection of soils, water and biodiversity through:

- limiting the depletion of nutrients through the application of cultivation techniques that allow remineralization (for example crop rotation),
- preserving soil's natural capacity to regulate water resources,
- limiting the use of chemical substances impacting biodiversity and preserving wildlife habitats by increasing areas designated for environmental protection (buffer zones).

The adoption of these measures is discussed and coordinated with local farmers and suppliers: the company acts as a partner to them along with other NGOs and agricultural technicians that help efficient implementation of best practices.

Another effective tool for transitioning towards regenerative agriculture coincides with the empowerment of new generations of farmers, an activity supported most notably by the implementation of Cost Performance Model (CPM) contracts, that act as a guarantee for greater stability and alleviate the uncertainty that comes with executing a transition, and by partnerships with entities that guarantee the access to social innovation funds.

Lastly, the respect of animal welfare emerges as an essential step that can be supported by:

- certifications for dairy cows, that in 2020 were assigned to sites responsible for the provision of 80% of the milk used,
- the signature of the Broiler Chicken Act, a pledge to improve living and crowding conditions of chickens,
- guaranteeing access to pasture to the totality of cattle.

[25] See Danone Universal Registration Document (2020).

2.2.3 Pursuing a Circular Economy

Another important disclosure point is constituted by the section dedicated to circular economy, which is defined as the undertaking of a number of collaborations with a series of value chain stakeholders, all working together to mitigate pollution caused by packaging and by waste management.

To the aim of tackling packaging life-cycle issues, Danone developed a Packaging Policy that, along with numerous additional arrangements, enables the company to set a series of commitments along with the relative action plans.

The first pillar is dedicated to rendering all packaging recyclable, reusable, free from unnecessary plastic and, where possible, constructed with alternative materials. In this regard Danone tried to accelerate the elimination of single-use packaging by designing and selling reusable containers to hotels, restaurants and canteens, and by taking this opportunity to experiment with new delivery models. It has also begun to use PET instead of plastic for some products sold in France and in the UK, and it eliminated a large number of unnecessary plastic spoons and straws. As a result of these policies, 81% of the packaging produced by Danone is now recyclable, reusable or compostable, and in 2020 the company produced nearly 100.000 tons of plastic less than the previous year.

The second pillar entails meeting the European Union's targets for plastic collection, to which end Danone is working by setting up package collection and recycling programs. The company is also working to extend the launch of these initiatives to transitional markets as well, until they cover an area that accounts for at least 90% of sales. Relevant collaborations in this field include participation to the Consumer Goods Forum and adherence to its Extended Producer Responsibility programs, investments in private initiatives such as the Circulate Capital Ocean Fund, and partnerships with the Citeo eco-organization in France or the PRAISE industrial coalition in Indonesia.

Lastly, in order to preserve natural resources, Danone aims at only marketing recycled PET bottles in all major markets by the end of 2021, and to use 50% recycled materials in all its packaging by the end of 2025. Currently, percentages of recycled materials in its packaging vary between 10% and 40%, depending on the main material used (plastic tends to be to the lower-end of the spectrum in terms of recycled proportions, while

reconverting PET is less challenging), and on local standards. The company is also launching alternatives to PET in the form of bio-based materials, currently marketed in France and in the United States.

The second mean to attain circularity is constituted by the reduction of food waste: "Danone's target is to (i) reduce waste in its operations and its supply chain, notably by combating food loss and recovering food waste, and (ii) help reduce loss and waste prior to and following its direct operations by means of partnerships, consumer education or improved product markings"[26].

By aligning with the Sustainable Development Goals, the company pledged to reduce its food waste by 50% before 2030, counting on the possibility of waste measurement in all its production sites at all productivity levels, and on the subsequent optimization of its production processes.

Danone designed action plans that are not limited by the company's boundaries, but that develop collaborations both upstream and downstream: the formers allowed an increased use of producers' surplus and of other ingredients destined to be wasted, while the latter resulted in consumer education programs. For what concerns internal approaches to the problem, the company saw an improved management of warehouses and logistic centres, redistribution of food surplus to charities and redirection of products deemed unfit to be sold in conventional channels to other distribution networks.

2.2.4 The Preservation of Water Resources

The last part of the section of the sustainability report dedicated to resource preservation and renewal discloses the company's strategy for water conservation. Danone follows three principles in order to protect ecosystems and guarantee freshwater access:

- spreading knowledge based on a new perception of the role of water, specifically details about the ramifications of consequences of affecting the water cycle,

[26] Danone Universal Registration Document (2020).

- building scientific knowledge that values local peculiarities and allows the implementation of ad-hoc strategies,
- following a cooperative approach together with local communities, in order to ensure advantages for all stakeholders.

Policies based on a scientific assessment of the local water cycle entail collaborations with experts for the identification of needs, water management and strategy design. New governance models are thus needed, which try to preserve resources through the entire value chain, rely on circularity and defend water access of vulnerable communities affected by the presence of production sites.

Action plans have been devised by a special team, the Water Cycle, instituted by Danone with the aim of identifying the major physical, reputational and regulatory risks linked to water resources mismanagement in water-stressed areas, and of associating priorities to strategical responses. The methodology that guides implementation of water stewardship projects tailored to each local context is called SWAN. In addition, the Water Cycle team provides training to all internal stakeholders that are to undertake collaborations with external experts.

In practice, commitments set in place to preserve water resources, rethink circularity and ensure freshwater access to vulnerable communities relate to agriculture, watersheds, water consumption reduction, the quality of water discharges and compliance with the United Nations' sustainable Development Goal 6 relating to water and sanitation.

Agriculture is currently being redirected on the basis of a 2020 assessment of the environmental footprint and water-related risk of each ingredient used by the company. This will help Danone's project to support farmers in high-priority areas to reduce water use, optimize fertilizer use and increase buffer zones.

The issue of watersheds was tacked by the company through the deployment, in 2020, of 15 watersheds protection plans devised with the Nature Based Solution alliance, that include agroforestry, wetland protection and agriculture optimization. In addition, groundwater resources are managed under the supervision of its internal SPRING project, providing assessing and decision-making frameworks and ensuring suitable allocation of resources in distressed areas. The objectives guiding these programs are

the restoration of the totality of watersheds in which Danone operates that are located in high-risk areas, the creation of an effective integrated governance system, and the development of an “open source” platform on which the company plans to share all data on stewardship programs.

Water consumption reduction, moreover, has been a major factor of success and produced consistent and increasing water savings in the last five years. Specifically, the intensity of water consumption dropped by 49% between 2000 and 2020, and last year saw the set-up of projects building on the knowledge collected during this process: a Water Reporting Entity was instituted, and the Rotselaar site saw the implementation of the first system for the reconversion and reuse of water effluents.

Danone is also concerned with the maintenance of a high quality of the water discharges, which is needed in order to facilitate reintegration into the water cycle. Specifically, Danone’s water standards are stricter than the equivalent regulations, and in 2020 the compliance rate with these standards was 77%, building on the 100% compliance with legal standards. Increasing circularity falls into the company’s “Zero Impact Operations” program, for which a two-step filtration technology was devised, that allows the recovery of up to 75% of wasters.

To conclude, compliance with the “Clean Water and Sanitation” Development Goal is guaranteed through the provision of safe drinking water to communities in need in multiple areas hosting some of Danone’s production sites. This currently being supported through specific programs that entail the company’s collaboration with external initiatives redirecting funds. In 2020 related activities included Danone’s Communities Fund operating in Asia, Africa and Latin America, AQUA in Indonesia and the water kiosk distribution model in India.

Table 2.5 and Figure 2.3, extracted from the report, help to visualize some of the progress made in production-related water consumption: it can be observed that between 2019 and 2020 there was a substantial decrease in the volume of water withdrawn, and of the total extracted only 57% was used in industrial processes, a figure that has nearly halved, in absolute terms, with respect to the water consumed for production in the year 2000. Water use intensity has also noticeably diminished when compared to two decades ago, although the level appears to have stabilized.

Table 2.5 - Evolution in Danone Water Consumption
Source: Danone Universal Registration document, pag. 172

	Year ended December 31	
(in thousands of m³)	**2019**	**2020**
Water drawn from the surrounding area [a]		
River water	3,038	2,852
Municipal water	22,751	22,986
Well water	47,276	43,312
Total water drawn volume	**73,064**	**69,150**

(a) Production Site Environment scope, see Methodology Note.

In 2020, the total volume of water withdrawn decreased by 5.4% compared to 2019. The uses associated with this total volume of water withdrawn in 2020 are as follows:

- 43% went into finished products, mainly at bottling plants, or was used for by-products;
- 57% was used in industrial processes, with details given in the table below.

	Year ended December 31	
(in thousands of m³)	**2019**	**2020**
Water related to the production process [a]		
Consumption *(in thousands of m³)*	41,773	39,714
Intensity of consumption *(in m³ per metric ton of product)*	1.13	1.13
Reduction in water consumption intensity since 2000	**49%**	**49%**

(a) Production Site Environment scope, see Methodology Note.

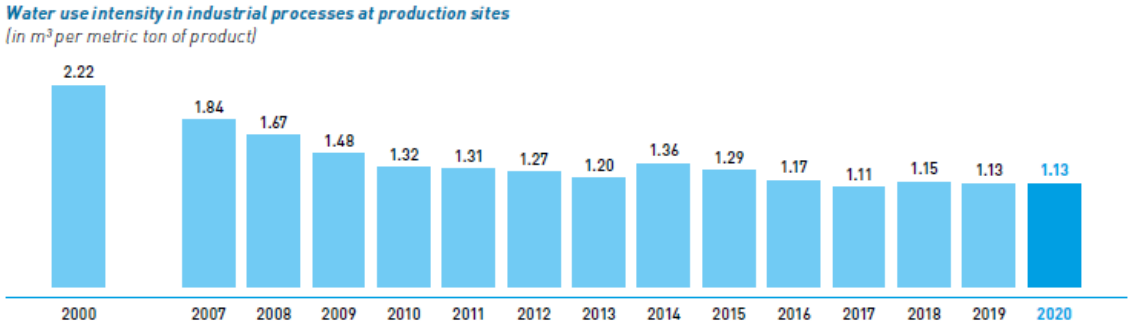

Figure 2.3 - 2000-2020 Reduction of Danone Water Use Intensity
Source: Danone Universal Registration document, pag. 172

The reported information on management of water resources concludes the section of the report dedicated to environmental issues.

2.2.5 Considerations on Disclosed Information

As previously stated, the report's structure is repeated throughout all sections, so that conclusions drawn on the efficiency of disclosure of the analysed topics can be considered to hold for the totality of the document.

Disclosure is in this case constructed primarily on qualitative information, but it is heavily focused on strategy: it is structured so that all objectives and relative actions are clearly stated, and figures tracking progress present the variation of the chosen indicators with respect to the previous year without exception, often extending the comparison to a ten-year period.

The report is thought to be read in combination with Danone "Exhaustive 2020 Environmental Data", available in Appendix A, that discloses more detailed quantitative information concerning the same topics. Nevertheless, context about the financial burden of these measures relative to the overall company performance is absent, and would have to be extracted from traditional accounting reports.

It is also notably absent the cost of the numerous collaborations with NGO's and other supporting organizations that are carefully specified for each strategical point.

The report however is not void of useful information for investors, and it allows to overcome issues linked to greenwashing: each statement of intent is accompanied by a paragraph dedicated to outcomes, explanations about how declared standards are met are available, and the transparency in the field of collaborations allows for easy additional research on specific projects. Overall, the sustainability report emerges as a crucial additional tool for impact investment, and it is in line with all five macro-areas of the Carbon Disclosure Project's reporting requirements.

2.3 Investor Use of Sustainability Scoring

After having analysed the criteria for sustainability disclosure that are communicated to firms by coordinating entities, and having examined the independent sustainability report of a company that has proven to respect and exceed disclosure standards set by such an organization, it is useful to assess the use that can be done with an efficient form of communication in the field.

The first consumers of sustainability-related information are investment funds, that mediate between impact investors and disclosing companies. Many funds rely on external services to assess whether sustainability disclosure on part of a given firm can be considered reliable, and to this end scoring systems were devised by entities assisting clients with disclosure. It is quite uncommon though for an investment fund to solely rely on outsourced information for green portfolios' construction, and it is becoming common practice to establish independent assessment practices to rate sustainability-related performance and combat greenwashing.

It must also be noted that, even if affirmed projects like the CDP are currently working with an outstanding amount of firms, to solely rely on one external sustainability ranking would be limiting, while to accept different scoring systems would cause comparability issues.

Those rankings are therefore often used to signal interesting companies to investment funds that then proceed with further independent evaluations, maintaining the same structural frameworks analysed in Section 2.1 but adjusting disclosure requirements and organization of collected data to suit their specific needs.

One significant example of such an approach can be found in the Sustainability Assessment Model (SAM) Corporate Sustainability Assessment (CSA), issued by S&P Global and that partners with the S&P Dow Jones Indices. SAM provides a service very similar to the CDP, and enables to measure sustainability performance with respect to a large number of economic, social and environmental criteria. It is a useful tool based on 61 industry-specific questionnaires, each covering 20 different themes. The scoring system linked to those questionnaires extracts the final points by assigning scores to data and weighting them at each aggregating level.

The S&P Dow Jones Indices are a family of float-adjusted market capitalization weighted indices that measure the performance of a series of companies chosen for their high achievements relative to specific selection criteria. Among them, the Dow Jones Sustainability Indices (DJSI), instituted in 1999, determine the indices' components based on ESG criteria, which are tailored to reflect the results of SAM's research and data collection efforts. DJSI are then used by investors to select companies that perform best in specific areas of the sustainability arena.

It will now be examined more in depth the process behind the selection of DJSI' components and the performance of an exchange-traded fund constructed to replicate one of its sustainability indices.

2.3.1 The Construction of Dow Jones Sustainability Indices

The starting point for Dow Jones Sustainability Indices' construction is the selection of the constituent companies, which are initially chosen based on the results of the S&P Global ESG Score, which in turns mirrors the Sustainability Assessment Model's industry classification.

The gradings are the result of the Corporate Sustainability Assessment, which combines the answers collected from industry-specific questionnaires and an additional monitoring of publicly available information regarding the assessed companies. This allows to isolate companies' responses to challenging situations and their ESG risk-containment strategies.

All entities involved in the CSA constitute the Invited Universe, which coincides with the set of companies under scrutiny to possibly become a constituent part of a Dow Jones Sustainability Index. The choice ultimately depends on the results of a weighting process that will now be presented and that is designed to guarantee the indices' representativeness of the underlying market.

Companies that pass the initial selection must have completed the CSA questionnaire and must possess a market capitalization which is above a relevant threshold, specific to each DJSI sub-family. Subsequently, the companies that meet both prerequisites are grouped by region and by industry, their float-adjusted market cap is added and the totals are expressed in terms of percentage of the total market capitalization of the corresponding industry, which is available as S&P Global BMI data from the previous year end.

These proportions are calculated with the aim of ensuring adequate representation, so that if the resulting market cap is less than 50% of the total for that industry, companies from the corresponding Invited Universe that were cut out from the initial selection because they failed to fill in the questionnaire are selected again: the ones with the largest market cap are included first, and when the 50% target is met, additional

research is run by SAM on these companies so that they can each be associated to a representative score.

All entities with a corresponding ESG Score as a result of this process constitute the Assessed Universe, which is to be further elaborated into different Eligible Universes for all sustainability indexes. Qualifying companies are the ones with an ESG score corresponding to at least 45% of the points obtained by the top-scoring company for that industry.

At the end, DJSI are constructed by extracting from each Eligible Universe the top-ranking companies, specifically all the ones above the selected threshold (expressed as a target percentage of the corresponding Eligible Industry) plus all companies with an ESG score that does not differ by more than 0.6 points from the lower-scoring selected company and all eligible companies that were already DJSI constituents in the previous year.

Since the weighting process is such an important part of the indices' creation it is useful to specify how market cap weighted indices are constructed.

The general formula used to calculate the index level is, for n stocks:

$$Index\ level = \frac{\sum_{i=1}^{n} P_i * Q_i}{Divisor}. \qquad (2.1)$$

The numerator in equation (2.1) corresponds to the sum, for all stocks in the index, of "the price P_i of each stock multiplied by the number of shares Q_i used in the index calculation […]. The denominator is the divisor which both represents the initial market value and sets the base value for the index"[27]. It is a value catered to the index components - constant as long as those components remain unchanged - whose role is to scale the index and to balance off the possible effects that singular extraordinary events could have on the overall index value.

As for the majority of S&P Dow Jones Indices, adjustments to the share count of DJSI are made by following the float-adjusted methodology: it is not the total number of shares

[27] See S&P Dow Jones Indices (2021), *Index mathematics methodology*.

issued by a company that is considered for the calculation of the index level, but only the number of those shares available to investors. From the computation are therefore excluded "shares that are closely held by control groups, other publicly traded companies, government agencies, or other long-term strategic shareholders"[28]. The result is an index that better serves short-term investors in that it does not reflect holdings acquired for control purposes that are unlikely to become available for trade, but only those of shareholders interested in the economic fortunes of the company. The application of such a methodology to ESG indices' calculation is a particularly interesting choice because it limits the influence of strategic shareholders over the price of companies working in a transitioning market, but it actually serves the purpose of rendering those financial products interesting to a larger user base without damaging the interests of companies or control groups.

Usually, for each stock an Investable Weight Factor is calculated as:

$$IWF = \frac{available\ float\ shares}{total\ shares\ outstanding}. \tag{2.2}$$

The numerator, $available\ float\ shares$, corresponds to "total shares outstanding less shares held by strategic holders"[29].

The formula for the calculation of the index level then becomes:

$$Index\ level = \frac{\sum_{i=1}^{n} P_i * Q_i * IWF_i}{Divisor}. \tag{2.3}$$

In equation (2.3) the number of shares of each stock is rescaled to mirror investability.

[28] S&P Dow Jones Indices (March 2021), *Float adjusted methodology.*

[29] S&P Dow Jones Indices (March 2021), *Float adjusted methodology.*

2.3.2 S&P 500 ESG Performance

Having understood the mechanism used to render DJSI representative of the best performing companies in different sustainability arenas, it is now possible to examine market trends of ESG reporting companies.

In particular, S&P 500 ESG is ideal among DJSI as it is composed by companies responding to Environmental, Social and Governance sustainability criteria and it is constructed to represent a market that reflects as closely as possible its non-sustainability-focused counterpart, the S&P 500 Index, in terms of market, sector weights, size of the companies and market capitalization.

Data in the following graph track the performance of two corresponding Exchange Traded Funds, S&P 500 (GSPC) and the Amundi S&P 500 ESG UCITS ETF (S500.MI).

S&P 500 (GSPC) vs. Amundi S&P 500 ESG (S500.MI)

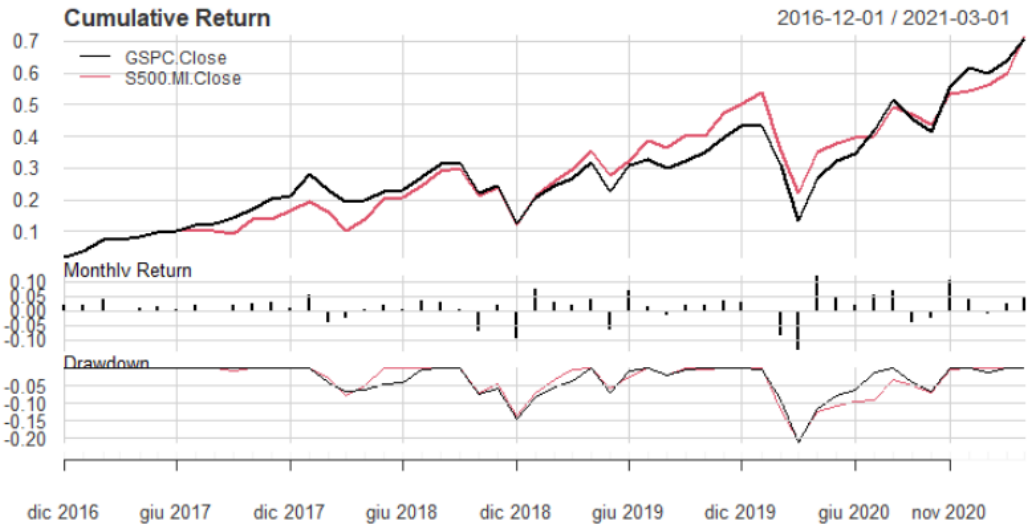

Figure 2.4 - ESG vs. non-ESG Index Monthly Returns Comparison
Source of financial data: finance.yahoo

Data relative to S&P 500 ESG prior to January 28, 1019 is hypothetical back-tested, and does not represent actual performance. Nonetheless, it can be observed that from that date onward the performance of Amundi S&P 500 ESG, represented by the red line,

follows closely S&P 500's performance, generating higher returns from January 2019 to July 2020. The two funds do not respond in a radically different way to the Covid 19-related drop in the first semester of 2020, with the sustainability-related fund's performance only being superior in absolute terms. From the second half of 2020 to March 2021 returns nearly coincide, with S&P 500 temporarily performing better during the beginning of the second wave of the pandemic. Even if investing in the fund mirroring the S&P 500 ESG Index does not ensure substantially higher gains with respect to investments in its non-sustainability-focused counterpart, this comparison highlights the possibility of constructing a sustainable portfolio that does not entail a trade-off between sustainability and financial performance, and whose historical data do not indicate hidden risks worsening its performance in the presence of strong market fluctuations.

2.4 Shortcomings of Sustainability Reports

The conclusions drawn from the analyses presented in Chapter 2 allow to state that sustainability reports constitute a useful instrument for the disclosure of companies' initiatives and measures that contribute to the fight against climate change and to the achievement of better physical and social conditions of all stakeholders: legal initiatives are validating them as they come to address a series of standardization issues, the specificity of disclosure requirements constitutes an effective tool to counter greenwashing and investors that rely on those requirements can effectively create alternative portfolios that are just as remunerative as their counterparts.

The success of certain sustainability indices can also incentivise companies to adhere to disclosure initiatives offered by entities that are building extensive datasets, which implies a further strengthening of the system in place and its subsequent refinement.

There are however some problems that are systematic to the use of sustainability reports which cannot be overcome by expanding the list of disclosure requirements alone, and neither by only facilitating data access for investment funds, although the importance of these two steps is not to be underestimated.

The documents are drafted in a very discursive fashion, also due to the emphasis put on contextualizing measures within the company's strategy to meet wider sustainability goals, and they often result in reports which are hundreds of pages long.

The length itself only constitutes a problem when coupled with a lack of consistency in the positioning of relevant data, which is often found when comparing reports of different companies since institutional guidelines do not contain structural indications.

Difficulties in isolating significant data also result in inaccurate assessments of the company's position with respect to strategical goals, or of the feasibility of the desired achievements. As previously observed, in fact, data relative to the financial or opportunity costs are often not available in the same report, which renders the assessments even more time-consuming, and which could mislead users of sustainability-related information.

The increasingly tight relation between sustainability reports, data collection models and sustainability rankings also generates shortcomings when coupled with previous observations on strategy evaluation: investment funds' ratings, in impacting prices of sustainable companies' stocks, are considered to be a proxy for the value added by sustainable strategies. This is only partly true and strongly depends on the inclusion of additional analysis in the rating methodology.

Lastly it is important to notice that freedom in the formulation of sustainability reports can constitute a strong weapon for legitimizing a company's actions, and that firms working in high-impact sectors will have to learn how to effectively disclose previously hidden negative impacts without tarnishing the perception that the company is operating within legal and societal norms (Deegan and Unerman, 2011). The normalization of sustainability reports constitutes a line of defence, but it is not a guarantee against the evolution of new manoeuvres for redirecting public opinions.

Possible effective solutions to these drawbacks could entail the integration of sustainability-related information into traditional financial accounts.

Numerous problems arise when attempting to quantify impacts that affect such a wide set of stakeholders or when measuring value that is not entirely appropriated by the company, but Chapter 3 is dedicated to the analysis of three related proposals.

Chapter 3

The Advantages and Challenges of Integrated Reporting

The last four years have seen regulatory entities undertake a huge effort in the attempt to include sustainability related information into mainstream reporting of other financial data, so much so that in 2020 the Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting instituted by the United Nations published a document summarizing the good practices individuated by standard-setting organizations, as well as the key challenges encountered.

The following section presents a brief overview of the literature related to integrated reporting with the aim of individuating the leading actors driving innovation in the field, and it additionally highlights the issues that sparked the discourse on implementing this new methodology. More in-depth information about the most important among the listed publications will be presented later in the chapter.

3.1 Record of Integrated Reporting-related Publications and Common Themes

A concise overview of publications attempting the institution of good reporting practices includes[30]:

- the Task Force on Climate-related Financial Disclosure 2017 final report, "Recommendations of the Task Force on Climate-related Financial Disclosures";
- the Task Force on Climate-related Financial Disclosure "Good Practice Handbook";
- the Sustainability Accounting Standards Board and the Climate Disclosure Standards Board collaboration resulting in "Converging on Climate Risk: CDSB, the SASB and the TCFD";
- the Sustainability Accounting Standards Board's "Technical Bulletin on Climate Risk";

[30] See Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (2020).

- the Principles for Responsible Investment's guide on implementing the Task Force's recommendations;
- the report issued by the Corporate Reporting Dialogue, "Driving Alignment in Climate-related Reporting: Year One of the Better Alignment Project";
- the result of the Climate Disclosure Standards Board and the Carbon Disclosure Project's collaboration, "First Steps: Corporate Climate and Environmental Disclosure under the EU Non-Financial Reporting Directive";

The authors of those publications are often the same organizations that dealt with the design of sustainability reporting standards, now coming together under new forms of collaboration such as the Corporate Reporting Dialogue, which includes the Climate Disclosure Project, the Climate Disclosure Standards Board, the Global Reporting Initiative, the International Integrated Reporting Council and the Sustainability Accounting Standards Board. When not operating as a unit, these entities' practical indications are often the result of smaller and less organized forms of cooperation that result in them working in smaller groups, but the standardizing rationale still clearly emerges in their attempt to align their efforts with one another. The institutional counterpart of these private initiatives is constituted by an industry-led task force instituted by the Financial Stability Board and called the Task Force on Climate-related Financial Disclosure (TCFD), that will be referred to as Task Force from this point onwards.

The publication of the Task Force's first report in 2017 has constituted the foundation for the majority of subsequent efforts, with the result of becoming a reference point for most of the alignment endeavours on the part of previously presented organizations. In fact, when examining the themes of the publications cited in the previous list, it emerges that aside for the report itself and the related Good Practice Handbook -which deals with practical examples of how entities in different jurisdictions effectively complied with the Task Force recommendations on disclosure- they are almost completely dedicated either to demonstrating how previous standards are being calibrated to become compatible with said recommendations, or to help their practical implementation (see for example the Principles for Responsible Investment's guide).

Remaining areas of focus are constituted by technical analyses of disclosure practices and corporations' effectiveness in dealing with sustainability-related risks.

Given the weight that the Task Force's proposals seem to have gained in the discourse on building effective integrated reporting practices, Section 3.2 will be dedicated to the presentation of the original final report in order to gain insight on how it is influencing other standard-setting organizations.

It is important to note that the presentation of relevant actors and works in the field proposed by the Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting does not include an additional organization, a project of the International Integrated Reporting Council (IIRC): the 2021 Integrated Reporting Framework. The reason behind this omission is likely to be linked to the slightly different approach of this reporting framework with respect to the coordinated approach of the listed publications, as it is principle-based and it aims to redefine the notion of value creation as a by-product of the process of standardization. The Integrated Reporting Framework will be analysed in Section 3.3 of this thesis.

Overall, the challenges that brought about these developments in the disclosure arena are to be linked to the increasing shortcomings in the way sustainability reports fail to tackle materiality issues and to provide a common narrative, along with a lack of standardized metrics and targets and the accompanying lack of technical expertise. It is exactly from the concept of materiality that the Task Force begins to design its recommendations.

3.2 Recommendations of the Task Force on Climate-related Financial Disclosure

The task Force on Climate-related Financial Disclosure's mission was born out of the necessity to correctly price climate-related risks and opportunities during a period of economic transition, a challenge the organisation responds to by attempting to institute an environment enabling informed investment and a full understanding of value creation and distribution by all stakeholders. Its work builds on materiality analysis, proceeds to individuate how climate-related risks and opportunities translate into financial impact and presents disclosure recommendations enabling companies to

better communicate how they are able to manage these forms of impact. The Task Force is currently expanding its work and assisting companies in the practical implementation of its recommendations.

3.2.1 Application of Materiality in Sustainability-related Financial Disclosure

The Task Force individuated materiality as the basis for the institution of efficient reporting methodologies, in that it represents the criteria for establishing the appropriate level of disclosure that is to be reserved to different content elements of mainstream reports, and therefore of integrated reports.

It is also a concept that is strictly linked to all recommendations that the Task Force has made, since any suggested disclosure calls for an explicit statement of the principle of materiality that dictated the inclusion of that particular information into the report. This necessity is dictated by considerations that emerged from the discussion on stakeholder capitalism, which highlights the difficulty of setting disclosure boundaries when corporations are called upon to track the impact of their actions on all stakeholders, and by problems in the definition of the concepts of short, medium and long run. The inclusion or exclusion of information is in fact directly linked to the time period under scrutiny, and it is not easy to balance efficient communication, extensive analyses and the interests of multiple stakeholders' groups. Moreover, this is an issue that doesn't only affect financial entities, but the legislative sphere as well: the Task Force has in fact stated that there is a "considerable disagreement over what constitutes a "material" climate risk that triggers disclosure requirements in most jurisdictions" and that "the divergent range of approaches [to climate reporting] reflects the lack of consensus around what constitutes a material climate risk"[31].

As a result, the Task Force considers materiality to be a function of the users of disclosed information and of the purpose and the scope of disclosure and of the related materiality assessments. It therefore proceeds to advance a proposal for the application of materiality for sustainability reporting.

[31] See Climate Disclosure Standards Board position paper (2018).

In order to do so, all variables that could affect the interpretation of the concept are defined:

- the disclosed information should be directed at an audience of "investors, lenders and insurance underwriters"[32],
- the purpose of disclosing that information should be to facilitate the assessment of sustainability-related risks and opportunities, so that market discipline and the legislative role of authorities are facilitated through extensive data analyses and the understanding of the channels of propagation of climate-related financial impacts,
- the scope of the materiality assessment is limited by the kind of disclosure it is run for, and it is specified in each recommended disclosure.

Further details on materiality assessments pertaining to different areas of disclosure will be provided when presenting the Task Force's four recommended disclosures.

In the process of reviewing the Task Force, the International Accounting Standards Board and the Financial Reporting Council's stances on materiality, the Climate Disclosure Standards Board (2018) individuates in its position paper a series of challenges that emerge from common themes discussed by those entities.

The first set of issues arises by the individuation of the users of sustainability-related information: selecting information that is material to an audience of investors implies that they represent a uniform group with shared interests, while the reality presents a much more heterogeneous set of needs that could even appear to be in contrast with one another when gathering feedback from stakeholders.

Another concern is related to the request to omit immaterial information in order to favour clarity and efficiency, which becomes challenging task when applied to climate-related impacts that, depending on the time horizon, will always affect and entity's operations to some degree. Nevertheless, it is crucial that each materiality assessment is driven by the desire to only communicate material information.

Along with constraints linked to time, entity-specific aspects will impact materiality assessments as well: the nature and the magnitude of certain elements in a financial report with respect to the others will render the same climate-related risks or impacts

[32] See Climate Disclosure Standards Board position paper (2018).

material or immaterial for different reporting entities. This leads to a narrow pool of resources that management can draw on when devising strategies to contrast these risks, and often to analyses that leave out general economic and industry sector information that should be granted greater attention.

Challenges are also linked to assessing the materiality of non-financial items that do not possess a specific magnitude allowing for comparison with other elements in the financial statement: when qualitative characteristics are all that is available, the construction of long-term scenarios constitutes a useful instrument, but the soundness of the materiality assessment remains dependent on a series of assumptions that might hinder its significance.

Lastly, the choice of material performance indicators is associated to difficulties related to the choice of the most appropriate set of metrics and targets among the multitude that is currently offered by standard-setting organizations. Each company's choice for a specific materiality assessment method heavily impacts the significance of the available indicators.

The presentation of these challenges is not accompanied by a corresponding list of solutions because financial entities are the only ones that have the power to cater their response and evaluate the positive and negative consequences of adopting a specific approach towards materiality. It is nonetheless of interest to define the areas that must be given considerable thought, as they constitute valid inputs for the construction of disclosing practices that do not overlook the implications of delicate balancing choices.

Having defined the major issues surrounding the inclusion of sustainability-related information into traditional reports it is possible to examine the Task Force's proposal for applying integrated reporting in a way that allows corporations to defend themselves against the consequences of poorly designed sustainability disclosure.

3.2.2 Causes and Consequences of Climate-related Financial Impact

The recommendations are necessarily introduced by the Task Force's definitions of the concepts of climate-related risks, opportunities and financial impacts, which constitute the basis for its proposal. Having a clear idea of the channels through which specific types of risks or opportunities differently affect certain elements in the balance sheet or

income statement is also fundamental to identify what disclosures are to be rendered mandatory for each element.

Climate-related risks are interpreted as divided into physical and transition risks: the former, which can be acute or chronic, are caused by the propagating consequences of climate change and catastrophic natural events, while the latter are constituted by the possible adverse financial impacts of transitioning to a lower-carbon economy. Transition risks are divided in[33]:

- policy and legal,
- technology,
- market,
- reputation.

Climate-related opportunities are to be divided in different areas, and they are defined as those opportunities arising from adaptation efforts. They are categorised as stemming from the following sources[34]:

- resource efficiency,
- energy source,
- product and services,
- new markets,
- resilience through improved efficiency.

Lastly, climate-related financial impact is conceptualized as the effect that climate-related risks and opportunities will have on an entity's income and cash flows, along with their respective statements and on the balance sheet. Figure 3.1 reflects the pattern of interdependencies among the defined elements as it was presented in the 2017 Final Report. It can be observed that strategic planning and risk management cover the central role, as they act as a filter between climate-related impacts in absolute terms and the way these impacts reflect within the entity.

[33] See Task Force on Climate-related Financial Disclosure final report (2017).
[34] See Task Force on Climate-related Financial Disclosure final report (2017).

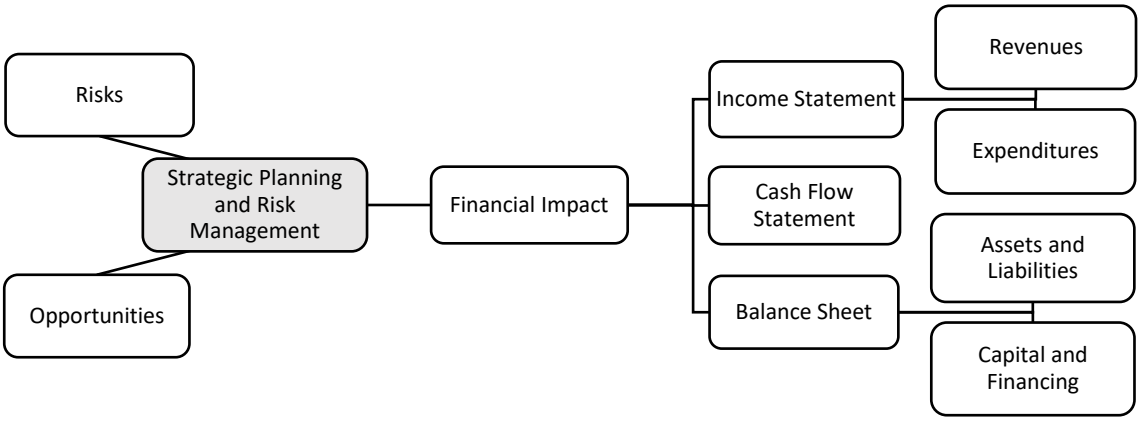

Figure 3.1 – Climate-related Risks, Opportunities and Financial Impact
Source: Task Force on Climate-related Financial Disclosure final report (2017)

The categorization of financial impact allows to specify how transition and physical risks affect the different elements of the income statement and of the balance sheet.

Among the elements of the income statement, revenues are dependent on the demand for products and services, which is affected by both categories of risk. Out of all the sources of impact the policy and legal aspect of transition risks is the one that is bound to produce the heaviest consequence in the short-term, primarily due to carbon pricing initiatives.

Expenditures are instead linked to the efficiency of a firm's response to risks and opportunities, which is an element that is in turn linked to its cost structure and the ease with which it can be adapted. Flexibility of the cost structure therefore emerges as a fundamental part of sustainability-related disclosure to investors, along with capital expenditure plans and the level of debt and equity that their implementation would require.

The balance sheet is instead deconstructed into impacts on assets and liabilities and impacts on capital and financing. "Supply and demand changes from changes in policies, technology and market dynamics related to climate change could affect the valuation of organizations' assets and liabilities. Use of long-lived assets and, where relevant,

reserves may be particularly affected by climate-related issues"[35]. The appropriate response would be for a firm to evaluate possible medium and long term impacts of the identified risks and to disclose it along with the possible strategies that would constitute a feasible mitigation tool.

Capital and financing are instead affected both in the debt and equity structure, which could easily be tilted out of balance by rising debt caused by lower cash flows or necessary new capital expenditures, and in the ability itself to raise new debt.

3.2.3 The Task Force on Climate-related Financial Disclosure's Recommendations

To counter the adverse effects of an inadequate disclosure of the mechanisms illustrated in the previous section, the Task Force organized its proposal around "four thematic areas that represent core elements of how organizations operate: governance, strategy, risk management, and metrics and targets"[36]. An additional focus is then dedicated to the use of climate-related scenarios, a topic that, although treaded in close relation with strategy, was granted a set of additional instructions.

The recommendations were initially designed to support organizations operating in the financial sector, but were subsequently confirmed to be applicable to all sectors and integrated with technical supplements simulating their application into multiple high-impact sectors. They are supposed to equip investors with a proper assessment tool for the evaluation of how a firm is planning to respond to social and environmental challenges. This is the reason why they were designed to be included into public annual financial filings, and although they do not supersede national disclosure requirements, they are unlikely to be incompatible with them. This can be considered a valid statement in virtue of the fact that climate-related risks were understood by the Task Force to be non-diversifiable and material to almost all industries.

As emerged from the analysis of the issue of materiality, information prepared in accordance with the recommendations should result from materiality assessments that are in line with materiality determination processes designed for the rest of their

[35] See Task Force on Climate-related Financial Disclosure final report (2017).
[36] See Task force on Climate-related Financial Disclosure final report (2017).

financial filings. Additionally, recommended disclosures of governance and climate-risk management should be included whether they are material or not, differently from strategy and metrics and targets that should only be included to the extent that is deemed material for the period taken in consideration. This is tactic allows for a smoother inclusion of risks that, although not yet material to the time periods taken in consideration, will shortly have to be addressed also from a strategic point of view. This results in a detailed disclosure of strategic moves and quantifiable elements, but maintains a comprehensive overview of how an organization is preparing for future challenges and when it expects to meet them.

Table 3.1 is dedicated to the listing of all disclosure recommendations made by the Task Force around governance, strategy, risk management and metrics and targets. Each recommendation is then accompanied by in-depth indications about elements that can be included in the disclosure to meet the corresponding disclosure objectives by companies in all sectors. Supplemental guidance, published in the Technical Annex of the final report, has been devised for energy, agriculture, materials and buildings and transportation sectors, besides additional carbon footprinting directions.
An illustrative example of metrics suggested for disclosure in the energy sector is presented in Appendix B.

Table 3.1 - Task Force's Recommended Disclosures
Source: Source: Task Force on Climate-related Financial Disclosure final report (2017)

Governance

- Describe the board's oversight of climate-related risks and opportunities.
- Describe management's role in assessing and managing climate-related risks and opportunities.

Strategy

- Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term.
- Describe the impact of climate-related risks and opportunities on the organization's business, strategy and financial planning.
- Describe the resilience of the organization's strategy, taking in consideration different climate-related scenarios.

Risk Management

- Describe the organization's processes for identifying and assessing climate-related risks.
- Describe the organization's processes for managing climate-related risks.
- Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management.

Metrics and Targets

- Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
- Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 GHG emissions, and the related risks.
- Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

Guidance for all sectors relative to governance disclosure suggests the inclusion of the following information:

- the frequency and the channels through which board members are informed of climate-related risks and opportunities,
- in which way this information is included into decision-making processes,
- how the efficiency of the adopted solutions is measured,
- how climate-related responsibilities have been distributed among managers and the detailed structure that allows them to learn about climate-related risks and opportunities,
- how managers monitor climate-related issues,
- how managers report to board members.

Strategy-related disclosure is instead supported by:

- the company's definition of short, medium and long term and the justification for this choice in terms of lifespan of a company's assets and the rate at which they are impacted by climate-related issues;
- a description of the relevant climate-related risks and opportunities for each relevant time period, along with a description of the methodology that allowed that categorization;
- a discussion of all possible ways the identified risks could affect the company's business, strategy and financial planning, and in which ways this knowledge has been integrated into financial planning processes;
- an analysis of the impact of climate-related risks on "operating costs and revenues, capital expenditures and capital allocation, acquisitions or divestments and access to capital"[37], including an additional disclosure if these considerations result from the application of climate-related scenarios;
- an analysis of the resilience of the company's strategy to scenarios consistent with rising transition risks stemming from the increasing urgency of stabilizing global warming to 2°C above pre-industrial levels.

[37] See Task Force on Climate-related Financial Disclosure final report (2017).

Risk management is one of the most delicate steps for the construction of efficient climate-related disclosure standards, and it has therefore been accompanied by numerous precautionary specifications as well:

- risk-management processes for the identification of climate-related risks should be rendered public, along with an explicit statement of how their significance to the firm is determined,
- alignment with overall risk management and with existing regulatory requirements is to be stated by specifying which are the obligations met -or that the company is going to meet- in virtue of the different strategic steps that the firm is undertaking,
- risk terminology used and references to existing classifications must be made explicit,
- disclosure must be accompanied by a description of how the entity is planning to mitigate and transfer the identified risks, along with the consequences of the materiality assessment of each risk over the way they are prioritized.

The last area of disclosure, namely metrics and targets, is to be integrated with directions designed for specific sectors, but overall guidance includes:

- the provision of key metrics relative to "water, energy, land use, and waste management where relevant and applicable"[38],
- disclosure of the reasons behind the choice of specific performance metrics and the ways they are useful to measuring goal alignment,
- where relevant, a corporation's carbon prices and other climate-related metrics giving information on opportunities producing financial gains should be stated,
- a historical periodization should be associated with different groups of metrics, so that the impacts of trends are easily quantifiable,
- explicit alignment with the GHG Protocol when measuring greenhouse gases' emissions, accompanied by a presentation of commonly accepted GHG efficiency ratios calculated over appropriate time periods,

[38] See Task Force on Climate-related Financial Disclosure final report (2017).

- among climate-related goals, the company should specify "whether the target is absolute or intensity-based, the time frames over which the target applies, the base year from which progress is measured and key performance indicators used to assess progress against targets"[39].

Overall, the recommendations do not provide a universal format that companies can use to produce perfectly comparable disclosures, but by increasing the level of detail of requirements for each area it is possible to almost eliminate one of sustainability reports' major shortcomings, namely the controlling of the narrative. Qualitative information is still predominant, but it is less easy to only emphasize certain areas at the expense of others, nor it is possible to hide the costs of risk mitigation, which were almost absent in Danone's report despite its high sustainability score resulting from an external assessment of its sustainability disclosure. The heavy focus on strategy and the association of quantitative elements with respective targets represents a positive step forward as well, since the disclosure of comprehensive specifications around the choice of metrics (grouping associated with periodization, absolute or relative nature, choice of commonly used ratios, etc.) compensates, to an extent, the lack of standardization in the field. More significant comparisons are now possible, even though the high cost in terms of the time needed is not significantly cut down as these comparisons are not immediate.

Another characteristic that emerges from the analysis of the Task Force's recommendations is the importance of the series of assumptions that precedes the building of a strategy. Figure 3.2 resumes the main variables that need to be disclosed in order for investors to make informed judgements on the soundness of a company's statements on future performance. Categories were extracted from Figure 3 of the final report's technical supplement guiding the use of scenario analysis.

[39] See Task Force on Climate-related Financial Disclosure final report (2017).

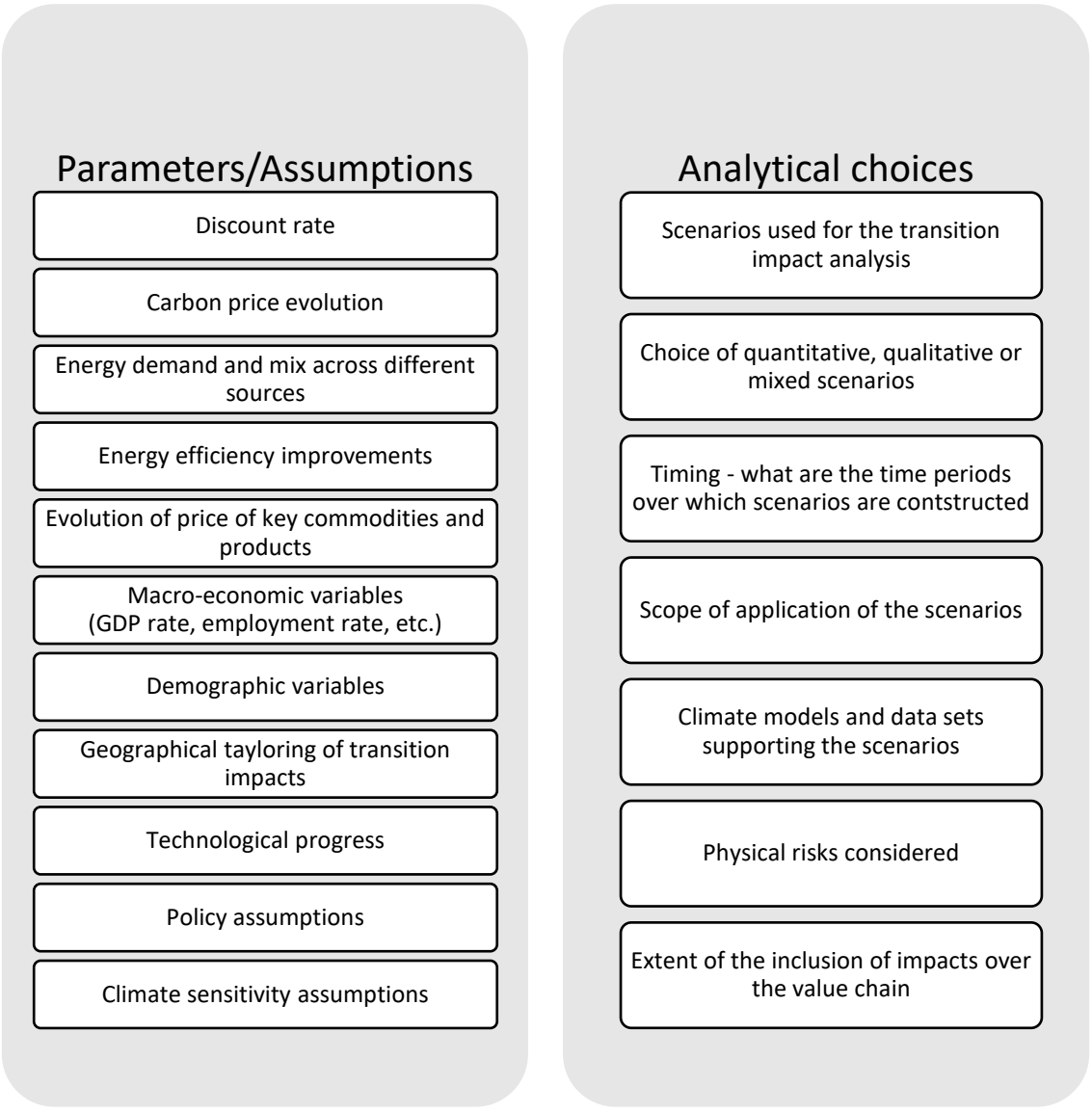

Figure 3.2- Variable Inputs for the Construction of Scenario Analysis
Source: Task Force's technical supplement for the use of scenario analysis

It is important to notice that the practice of identifying plausible courses of events under uncertain conditions is largely left to the users' discretion. The Task Force does present an ideal process of four steps (assessment of materiality of climate-related risks, identification of a range of possible scenarios, evaluation of impacts on business and

identification of potential responses[40]), but it only represents a framework that informs the level of attention that must be maintained when conducting scenario analysis and that attempts to limit mistakes caused by superficiality. Some guidance providing plausible ranges of values for inputs does exist, but it usually contains information on the macro level designed to benefit policy-makers more than private corporations, with the result of not providing an adequate level of transparency. Improving disclosure relative to scenario construction would therefore contribute to the creation of a more reliable datasets improving the efficiency of this tool.

It can accordingly be stated that scenario analysis, being still at an early stage, is one of the elements amongst the Task Force's recommendations that would benefit the most from further developments. It is not the only problematic area though: the way climate-related risks impact a company's finances is still subject to research, and more data will be needed before consistent patterns can be individuated on a smaller scale. Moreover, aligning the recommendations with the other frameworks conceived by multiple standard-setting organizations is not an easy task, and although the body of work dedicated to this harmonization is substantial (see the list of integrated reporting-related publications introducing Chapter 3) it still is not a completely consolidated approach.

The next sections will expand on this statement by analysing the International Integrated Reporting Council (IIRC) IR Framework and Impact-weighted financial accounts.

3.3 Overview of the Integrated Reporting Framework

The Integrated Reporting Framework constitutes an interesting element of discussion as it provides recommendations that are in line with the work of the Task Force for Climate-related Financial Disclosure, but that do not provide the same level of detail in their requirements. The guiding principles that inform the preparation of a report under the Integrated Reporting Framework structure disclosure in such a way that it is fit to meet the needs of both providers of financial capital and stakeholders, exactly as the

[40] See Task Force final report's technical supplement (2017).

framework proposed by the Task Force does. The content of the former, though, is principle-based: the prescription of key performance indicators is lacking, and so are measurement methods or specific content elements. Indications are instead broad enough for a company to cover the required topics within the boundaries of its capabilities and preferences.

The creation of an integrated report in line with the organization's recommendations must provide the following information:

- insight into the value-creation capability of a company based on its short, medium and long run strategic choices, contextualized with historical data of past performance,
- a wholesome picture of interdependencies among the elements that affect an organization capability of creating value, specifically how internal activities influence one another and how strategy and business model respond to changes in the external environment,
- trade-offs between the availability of different forms of capital,
- an explanation of the way qualitative and quantitative indicators were combined to describe the company's activities and the reason behind that choice,
- key elements for understanding "the nature and the quality of the organization's relationship with its key stakeholders, including how and to what extent the organization understands, takes into account and responds to their legitimate needs and interests"[41],
- materiality of matters relating to the value-creating capability of the company in the short, medium and long run,
- identification of additional relevant matters, evaluated and ordered in terms of priority,
- identification of reporting boundaries.

Aside from information about the content of the report, the Integrated Reporting's guiding principles also include a request for conciseness of information, for

[41] See Integrated Reporting Framework (2021).

completeness with respect to all material matters and for reliability, consistency and comparability. Those are essential characteristics that are not uniquely requested by organizations working with sustainability reporting, but that acquire new importance in light of the magnitude of materiality issues in the field.

Additional information to be disclosed is presented by the standard-setting organization in the form of questions structured along the following thematic areas[42]:

- organizational overview and external environment,
- governance,
- business model,
- risks and opportunities,
- strategy and resource allocation,
- performance,
- outlook and basis for preparation and presentation.

The first element of the list is formulated so that the organization is expected to be able to thoroughly report the circumstances under which it is operating and the reason why it is operating in that environment in the first place, which entails the disclosure of all environmental factors positively or negatively impacting value creation.

The description of the way the governance structure supports the entity's objectives, instead, calls for a thorough examination of the processes behind strategic decisions, of monitoring practices and of the ways in which governance procedures support value creation by reflecting the firm's values, by respecting legal requirements and by the instauration of an efficient chain of responsibilities.

Structuring disclosure around the theme of the business model calls for an explanation that includes key inputs, business activities, outputs and outcomes, with a particular emphasis on the latter. Outcomes are defined in the Integrated Reporting Framework as the internal and external consequences that business activities produce on financial, manufactured, intellectual, human, social and natural capital.

An integrated report should also be able to answer questions on the ways specific risks and opportunities are affecting value creation in different time periods and how the

[42] See Integrated Reporting Framework (2021).

organization is dealing with these effects, which is a topic that leads to strategy-related disclosure: this topic expands considerations on the effects that risks and opportunities might have on a company's direction and relates them to the achievement of an ultimate corporate objective, which must be accompanied by a clear plan for getting there.

Performance must be consequently measured with respect to these strategic achievements, always in terms of its overall effects on the different forms of capital and therefore by taking in consideration both internal and external elements subject to the company's influence.

The last two factors requiring particular attention during the preparation of integrated reports are the challenges an organization is likely to incur into and the way it defines and quantifies material issues. Disclosing an entity's outlook on future scenarios in particular requires the construction of hypothetical transformations in strategy and business model, but this proposition is not accompanied by any indication on the appropriate use of scenario analysis.

A preliminary inspection of this framework would leave the impression of a less detailed - but similarly structured - set of disclosure indications with respect to the one analysed in the previous section, also due to the fact that the Integrated Reporting Framework has been redacted and aligned with the Task Force's recommendations. The lack of key performance indicators mentioned when introducing this topic, combined with the complete absence of suggestions on the appropriate elements to focus on when constructing hypotheses on future conditions and performance, becomes even more significant of a shortcoming after the framework overview. In fact, the emphasis on the necessity of taking in consideration the short, medium and long term and on presenting justified assumptions on future challenges is just as strong as in the Task Force's final report, driving companies to produce reports that do integrate sustainability-related information into traditional financial statements, but that can do so by continuing to mostly rely on qualitative information or scenarios that are difficult to prove reliable or unreliable, causing issues linked to the controlling of the narrative on the part of corporations to re-emerge.

These considerations show that, even if alignment in integrated reporting is getting stronger, the construction of a standardised methodology will require further work:

integrated reporting does not in fact constitute a solution to all of sustainability reports' shortcomings per se, but it does possess the potential to embody an adequate tool.
The different forms of support for the creation of integrated reports previously presented, whether detailed or principle-based, were advanced by standard-setting organizations in the form of extensive reports. Section 3.4 will therefore be dedicated to illustrating what is instead currently accessible to companies looking for less time-consuming ways of transforming their reporting practices.

3.4 Sustainability-Related Financial Reporting Prototype

The Impact Management Project (IMP) has attempted to embody general discursive recommendations into a model for a presentation standard, which could provide a desirable immediacy of application and could compensate for the lower level of accuracy in its requests with standardization and therefore more efficient data gathering, elements that would contribute to progress in the fields of scenario analysis construction and key performance indicators. Its work constitutes a practical example of how financial reporting could be re-organized to include sustainability-related information, and it is constructed on existing and already widely adopted frameworks in order to relieve companies from alignment efforts that are not strictly necessary. Moreover, the model is structured in a schematic fashion that favours immediacy of application, characteristic that highlights the intentions of the Impact Management Project in presenting companies with a tool rather than recommendations.

3.4.1 The Impact Management Project's Proposal to Integrate the International Accounting Standards Board's Conceptual Framework

The Impact Management Project based its proposal on the International Accounting Standards Board's (IASB) Conceptual Framework for financial reporting, using it to pinpoint those areas that could be most effectively modified to increase the quality of decision-making stemming from financial analysis.

The IASB Conceptual Framework aims at providing standards allowing for transparency and consistency in reporting, and in doing so it defines the qualitative characteristics of useful information, along with the objective and the end user of that information[43]. The identified characteristics are for the financial statement to be understandable, relevant, reliable and comparable, characteristics that should hold to be true for both the balance sheet and the income statement, which are in turn to list a number of specified items. The Framework also provides specific instructions for the recognition of each one of these items and for their measurement, which is not unique but must follow certain unambiguous models.

Chapter 7 of the Framework is of particular relevance as it deals with presentation and disclosure of information in the financial statements, and in doing so it "notes that the statement of profit or loss is the primary source of information about an entity's financial performance for the reporting period"[44], although the concept of profit lacks a clear definition that would allow to clearly tell apart its building blocks from different elements that contribute to other comprehensive income instead.

The Conceptual Framework and the methodology that comes with it are familiar to most corporations as it has hardly changed since its publication in 1989, and it has only once been partially revised by a joint project proposed by the IASB together with the Financial Accounting Standards Board (FASB), that integrated two chapters in the years between 2004 and 2010, along with the publication of a discussion paper. The comprehensive revision of the Framework was later abandoned in favour of a renewed focus on underdeveloped concepts and pressing shortcomings, but none of the proposals was concerned with the practical introduction of sustainability indicators[45].

It is on these premises that the Impact Management Project advances a proposal on how to integrate an additional set of information that is supposed to reflect both tangible and intangible drivers of value: not an easy task given that the Conceptual Framework was designed to only provide general purpose information relating to the primary financial statements[46]. It should be pointed out that the gap in the existing

[43] See Impact Management Project, World Economic Forum and Deloitte (2020).
[44] See IASB revised Conceptual Framework (2018).
[45] See IASB revised Conceptual Framework (2018).
[46] See Impact Management Project, World Economic Forum and Deloitte (2020).

reporting structure doesn't call for a complete transformation, as some specific sustainability-related risks are already accounted for in monetary terms when stating a company's assets; there are nonetheless viable solutions that could be adopted in order to help with the acquisition of standards for the identification of long-term value drivers. The proposal is divided into three sections, identifying respectively the common components between traditional accounting and sustainability-related financial disclosure, the elements that are exclusive to one of the two practices, and finally how to merge each and every component into a common presentation.

Shared aspects of the two systems include:

- the purpose declaration, which defines the Conceptual Framework as an aiding tool for clear interpretation, standard setting and policy development, specifically in those situations where more than one set of accounting rules would apparently apply,
- the statement of the objective that drives financial reporting,
- the role of people in need of that information and the qualitative characteristics of what is considered to be useful data.

In this regard, the only suggestions are related to terminology adaptation, in particular to "replace [the expression] general purpose financial reporting with [the phrase] enterprise value reporting, defined as financial accounting and disclosure, and sustainability-related financial-disclosure"[47].

The second portion of the prototype, which is concerned with those elements that only pertain to sustainability-related financial disclosure, focuses on the revision of three fundamental concepts: materiality, relevance of information and dimensions of sustainability matters.

Materiality, analysed by the Impact Management Project in its traditional definition of "omitting, misstating or obscuring [information that] could reasonably be expected to influence decisions that the primary users of general purpose financial reports make on the basis of those reports, which provide financial information about a specific reporting entity"[48], requires the revision of some of the notions that are fundamental to its

[47] See Impact Management Project, World Economic Forum and Deloitte (2020).
[48] See International Accounting Standards Board Conceptual Framework (2018).

significance.

First of all, the relevant time horizon needs to be adapted in a way that allows for medium and long term effects of sustainability matters to be clearly reflected on financial outcomes and company performance, which is in turn affected by a wider range of elements than the one previously taken in consideration; the concept of enterprise value is therefore to be revised as well, and there is the need to find a new way of identifying those matters that are material to value-creation. Finally, the boundaries of the reporting entity that discloses the information require to be re-defined, as does the set of those stakeholders that have the power of affecting value-creation for a company. Another issue requiring particular attention is that sustainability-related financial disclosure cannot be structured in an universal fashion: "metrics need to represent business model levers that are actionable by companies to improve performance"[49], which means that the impacts of the production process and the drivers responsible for value creation are to be put in relation to one another in a way that is reflective of the strategic choices of a company, thus highlighting those elements over which the stakeholders have influential power.

The last factor that needs to be customized to reflect the desired changes concerns the way sustainability matters are logically structured, differentiated and associated into groups: the aim in this regard wouldn't be to unify but rather to harmonize those systemic approaches to gain consistent methodology and to allow for significant comparisons.

3.4.2 The Impact Management Project's Presentation Standard Model

The last section of IMP's adaptation of the Conceptual Framework is developed more thoroughly and goes into detail about the reasons behind the presence of each section of the presentation prototype, as well as their content. It is analysed through tables which are structured to reflect the tabular format chosen by the Impact Management Project to present the disclosure model it elaborated, therefore they were transposed

[49] See Impact Management Project, World Economic Forum and Deloitte (2020).

in a way that doesn't affect the immediacy-of-use rationale based on the transformation of discursive information into a schematic but all-inclusive set of adaptations.

Tables 3.2 and 3.3 summarize, respectively, the objective and scope of the presentation standard and the qualitative characteristics its content must comply to.

Table 3.2 - Objective and Scope of the Presentation Standard Model
Source: Impact Management Project, World Economic Forum and Deloitte (2020)

Foundation
Objective: • To define a comparable and consistent methodology for the presentation of sustainability-related financial information. • To produce information: a. referring to an extended time-horizon, b. possessing the qualitative characteristics identified by the Conceptual Framework, c. compatible with and in support of existing financial accounting.
Scope: • The presentation must follow the requirements set by national and international laws, codes and standards. • Different sustainability matters must be addressed by different standards catered to the specific issues they address.

Table 3.3 - General Features of the Presentation Standard Model
Source: Impact Management Project, World Economic Forum and Deloitte (2020)

General Features
Comparative information: • Information pertaining to the preceding periods must be presented for all metrics and for all qualitative elements that are deemed relevant to the understanding of the financial statement.
Materiality: • Discussed adaptations referring to the concepts of time horizon, enterprise value and boundary must be integrated into the presentation standard.

It is interesting to notice how, differently from the Integrated Reporting Framework, this presentation standard model is not intrinsically aligned with a specific set of reference recommendations, but it explicitly refers to additional standards. This entails substantial implications: where the Integrated Reporting Framework justifies the level of detail it requires as being the correct balance between external guidance and internal freedom, the Impact Management Project's Presentation Standard has been explicitly designed to be integrated at will if organizations deem it necessary. This does not imply the impossibility of integrating principle-based, discursive frameworks with additional support relating to materiality assessments, key performance indicators or scenario construction, but the structure of a schematic presentation standard and the lack of conflict with other recommendations renders the operation less time-consuming. Tables 3.4, 3.5 and 3.6 are instead dedicated to the content elements of the integrated financial statement: they are structured in a way that allows to isolate six fundamental areas that are to be reported and to explicit their minimum content.

Table 3.4 - Business Model and Outlook in the Presentation Standard Model
Source: Impact Management Project, World Economic Forum and Deloitte (2020)

Content Elements: Business Model and Outlook
Business model: • **Objective:** To enable the primary users of information to evaluate capital management and value-creation processes. • **Content:** A detailed explanation of all the steps that produce value and strategic outcomes in different time periods.
Outlook: • **Objective:** To understand the nature of the challenges that the entity is facing and the different sources of uncertainty, along with their likely impact. • **Content:** a. Short, medium and long-term predictions about future external conditions, b. possible effects of the interactions between company and environment, c. likeliness of future availability of resources and impact of the entity's actions over this availability, d. elements protecting the entity from adverse conditions over time.

Table 3.5 - Governance and Strategy in the Presentation Standard Model
Source: Impact Management Project, World Economic Forum and Deloitte (2020)

Content Elements: Governance and Strategy
Governance: • **Objective:** To understand the governance procedures and how they relate to the management of sustainability-related risks and opportunities. • **Content:** a. The extent of the board of directors' oversight, b. detailed information about the scope of management's role, c. clear references to the relation between the presented information and other governance arrangements.
Strategy: • **Objective:** To understand how sustainability-related risks and opportunities are integrated into the general value-creation strategy • **Content:** a. A classification of short, medium and long term sustainability-related risks and opportunities, b. the impact those risks and opportunities might have on planning and achievements, c. the resilience of the strategy (explained) in face of different possible scenarios over multiple time periods, d. the identification of the resources needed to implement the strategy, e. clear references to the relation between the sustainability-related elements of the entity's strategy and the overall plan of action.

Table 3.6 - Risk Management and Metrics and Targets in the Presentation Standard Model
Source: Impact Management Project, World Economic Forum and Deloitte (2020)

Content Elements: Risk Management and Metrics and Targets
Risk management: • **Objective:** To understand the identification and management procedures for sustainability-related financial risks. • **Content:** a. A detailed description of the risk-assessment process, b. risk-management strategies, c. a clear explanation on how sustainability-related risk management strategies relate to the entity's overall response to risk exposure.
Metrics and targets: • **Objective:** To understand chosen metrics and targets and the reason they are deemed the most descriptive. • **Content:** a. A description of the used metrics, b. the entity's performance measured against strategic targets, c. the nature of the relation between sustainability-related financial risks and the entity's position and performance, d. a comparison between the entity's current financial position and performance and the same data from previous periods, e. industry-specific matters material to the entity's position and performance accompanied by the relevant metrics, f. specifications about possible omissions or deviation from guidelines along with a clarification of the reasons for these omissions and possible strategies for conforming to disclosure requirements.

What emerges from the content requirements of this prototype is the complete compatibility with IASB's classical format along with the possibility of extending the Board's responsibilities to sustainability-related matters without altering the nature of its mandate. Integrated reporting, as it was discussed in the first section of this chapter, must constitute the framework that sets the guiding principles for merging the two areas of disclosure.

The prototype was built on standards that already exist and was assembled with the intention of providing an input to meet stakeholders' rising needs to manage the interdependency between sustainability and financial performance. It does not contain new elements with respect to the frameworks analysed in Section 3.2 and 3.2, but it possesses an intrinsic value constituted by the organizational effort of schematization.

3.5 The Ambitions of Impact-Weighted Financial Accounts

This section marks the end of the discussion dedicated to current proposals for integrated reporting standard practices, and briefly explores a more ambitious project for communicating the effects of a company's activities on the environment and the society. Given the lack of widely accepted frameworks for the calculation of the exact value of impacts of different nature on each possible stakeholder, this analysis is dedicated to highlighting the reasons why the creation of impact-weighted financial accounts represents a challenge that must be faced nonetheless, and which are the most debated issues surrounding this methodology's implementation.

Impact-weighted financial accounts are defined as financial accounts that have been integrated with line items that reflect the impact that a company's actions are producing on various categories of stakeholders. These items do not merely provide additional information presented along with traditional financial information, which represented integrated reporting's primary objective, but they also add or take away from the level of value created calculated in a traditional manner. The aim behind the implementation of this methodology would be to promote a comprehensive view of gains and losses by translating "all types of social and environmental impact into comparable units that business managers and investors intuitively understand"[50]. This stemmed by the desire of equipping the users of financial information with a tool allowing to quantify value created by firms that partly sacrifice monetary gains to redistribute them over multiple dimensions.

Serafeim, Zochowski and Downing (2019) actually individuate four states a company can

[50] See G. Serafeim, T.R. Zochowski and J. Downing (2019).

find itself in, that result from different combinations between the conditions of creating or eroding owner value, and creating or eroding non-owner stakeholder value. Their hope is to allow for a correct positioning of the analysed companies in the matrix.

The starting point for this alternative performance assessment is a figure representing a company's revenues and expenses calculated by following the International Financial Reporting Standards or, in the US, Generally Acceptable Accounting Principles, so that its significance is maintained in terms of comparability. However, expanding this notion of value is problematic, and it requires the deconstruction of the additional layer representing benefits and drawbacks for a wider set of stakeholders. The first component that has been individuated is the easiest one to calculate, and it coincides with value accrued to stakeholders by business activities. Even though it could ideally be represented by a set of figures including, for example, "expenses on employees' wages, benefits and training, […] and spending on public service programs"[51], the definition of value-creating and value-destroying activities to the employees and to the community is not straightforward, and it varies industry to industry. Even the construction of a guide supporting a homogeneous calculation of monetary value accrued to the community would therefore imply a consistent categorization effort, the acceptance of conventions relating to some grey areas, and a high level of detail.

The second layer is constituted by benefits that the product or service brings to the society, which introduces the need of constructing a different calculation methodology for each product category. The easiest examples would be linked to the healthcare sector, where benefits could be estimated in terms of the avoided costs of future treatments, or to the food industry, where "the value created by a fast-food manufacturer could be offset by the public health costs associated with saturated fats that are incurred by society but not included in existing accounting paradigms"[52]. It is clear that the specificity of these cases represents a huge obstacle to homogenization in the field.

The last consistent issue is linked to the choice of the most adequate indicator for value creation, which could be constituted by something other than money. In fact, the use of currencies is better fit to measure inputs than outcomes, especially when considering

[51] See G. Serafeim, T.R. Zochowski and J. Downing (2019).
[52] See G. Serafeim, T.R. Zochowski and J. Downing (2019).

the quantification of the impacts of different business activities, for which it can be observed a clear trend of expenses-constituted indicators. The use of money is however associated with the benefits that only a single-dimension indicator would bring, shifting the focus from the search of alternative measures of value to the construction of methodologies for the conversion of this multiplicity of indicators in monetary terms. This would also render the final step - the inclusion of the value-adjusting item into the financial statement – notably less problematic, along with the understanding of the trade-offs between different forms of value creation.

As mentioned above, a complete framework guiding impact measurement is still missing, but the Impact-weighted Accounts Initiative, which resulted from the collaboration of the Impact Management Project with the Global Steering Group, is currently working towards the creation of a methodology enabling to capture financial, social and environmental impacts of a company's performance. The organization's results will be heavily dependent on data gathered from empirical research, which in turn rely on the work of standard-setting organizations, whether they are dedicated to the production of sustainability reports or integrated accounting methodologies. Impact-weighted financial accounts could thus be seen as an effort to increasingly refine the attempt to capture the way companies engage with sustainability-related issues, and they could constitute the most effective tool for managing the transition to a lower-carbon economy in the future.

Concluding Remarks

Analysing different options for communicating the steps that a company is taking to manage sustainability-related risks and opportunities has highlighted the existence of numerous tools that can be used to improve the quality of reported information. Both sustainability reports and integrated reports present strong limitations in their effectiveness, in each case attributable to some degree to a lack of homogenization.

The institution of presentation standards and legal requirements is proceeding almost at the same pace, fact that entails both advantages and disadvantages: while the legal arena is benefiting from the close collaboration with standard-setting organizations for the establishment of the mandatory elements that are to be included in regulated disclosures, the same standard-setting organizations are currently propelled to fill the holes in existing regulations. In order for this mission to produce viable solutions, it would be required a level of coordination that can only partly be met in an environment where alignment efforts are largely voluntary. Nonetheless, it can arguably be individuated an evolution in the effectiveness of the instruments suggested for sustainability-related disclosure, since the upcoming shift from the use of sustainability reports to the use of integrated reports ideally provides a solutions to all issues linked to voluntary manipulation of the disclosed information.

Effectiveness of integrated reporting, however, is strongly dependent on the quality of scenario analysis, which is a tool that still requires refinement, as does the appropriate selection of key performance indicators in different industries. Data gathering efforts stemming from aggregate analysis of sustainability reports therefore retains its importance, also because integrated reporting is still far from producing a universal reporting methodology. The comparison between the widely accepted recommendations of the Task Force, the work of the International Integrated Reporting Council, representing an independent standard-setting organization attempting to align its framework to the Task Force's reporting requirements, and the more schematic presentation of the Impact Management Project's Presentation Standard Model highlighted embedded issues in standardization. In fact, even when aligning on the content requirements of an integrated report, it has emerged how seemingly

interchangeable models actually imply different degrees of freedom in both the form and content of the disclosed information.

It can be therefore understood the reason why sustainability reports are still the companies' first choice for ESG disclosure, although progress in integrated reporting will shortly lead to a shift in preferences driven by the likely choice of investors to stop relying on such a ductile source of information. Further viable solutions could be provided by progress in impact-weighted financial accounting, but such a possibility requires the achievement of all regulatory and standardizing objectives as a prerequisite for data collection and data analysis on which such progress can be built.

Overall, it can be stated that there is currently no way for investors to make perfectly informed judgements on the effectiveness of a company's sustainability-related efforts, but that it is becoming easier to individuate and eliminate inaccuracies linked to incompetence or greenwashing, given that said investors have the possibility to dedicate a consistent amount of time to the analysis.

Appendix A
Extract of Danone 2020 Exhaustive Environmental Data

Exhaustive 2020 Environmental Data

	Unit	2019	2020	TARGET	TARGET YEAR	BASELINE	EXTERNALLY VERIFIED
Production Site Environment scope[a]							
Total number of sites in the Production Site Environment scope	Number of sites	185	180				✔
Environmental performance coverage rate	Number of sites under Production Site Environment scope/Total number of sites	99%	100%				✔
(a) Refer to Methodology Note							
Production volumes	Thousands of tons	36,904	35,127				✔
(a) Production Site Environment Scope (refer to Methodology Note)							
ISO 14001 certification[a]							
Total number of ISO 14001 certified sites	Number of sites	85	82				✔
Percentage of ISO 14001 certified sites	%	46%	46%				
Production volumes covered by ISO 14001 certification	Thousands of tons of products	24,554	22,849				
Percentage of volumes covered by ISO 14001 certification	%	67%	65%				
ISO 50001 certification							
Total number of ISO 50001 certified sites	Number of sites	8	11				
Percentage of ISO 50001 certified sites	%	4%	6%				
Percentage of volumes covered by ISO 50001 certification	%	6%	7%				
(a) Production Site Environment Scope (refer to Methodology Note)							
GREEN audit[a]							
Percentage of sites undergone an external GREEN audit	%	68%	67%				
Number of sites undergone an external GREEN audit	Number of sites	126	121				
Percentage of production covered by a GREEN audit	%	79%	79%				
Number of sites compliant with GREEN standards (scoring over 800 out of 1000)	Number of sites	109	104				
Percentage of sites compliant with GREEN standards (scoring over 800 out of 1000)	%	87%	86%				
Percentage of compliant production	%	95%	94%				
(a) GREEN (Global Risk Evaluation for the Environment) program of external audits world- wide to identify and monitor the main environmental risks related to the production sites (see Universal Registration Document 2020).							
CLIMATE							
CO2 EMISSIONS SCOPE 1, 2 AND 3							
Scope 1 & 2 emissions market-based[a]							
Scope 1	Ktons CO_2 equivalent	722	668				✔
Scope 2	Ktons CO_2 equivalent	588	479				✔
Total Scope 1 & 2	**Ktons CO_2 equivalent**	**1,310**	**1,147**				✔
(a) Greenhouse Gases Scope (refer to Methodology Note)							
Absolute reduction of scope 1 & 2 emissions market-based since 2015[(a)]		29.1%	38.1%	30%	2030	2015	✔
(a) Based on constant consolidation scope and methodology							
Greenhouse gas emissions in scope 3[a]							
Purchased goods and services	Ktons CO_2 equivalent	20,628	19,921				
Upstream transportation and distribution of goods	Ktons CO_2 equivalent	382	322				
Downstream transportation and distribution of goods	Ktons CO_2 equivalent	2,199	1,627				
Use of sold products	Ktons CO_2 equivalent	1,922	1,886				
End-of-life treatment of sold products	Ktons CO_2 equivalent	245	783				

	Unit	2019	2020	TARGET	TARGET YEAR	BASELINE	EXTERNALLY VERIFIED
Emissions related to upstream energy use	Ktons CO_2 equivalent	320	284				
Waste generated in operations	Ktons CO_2 equivalent	173	153				
Total Scope 3	**Ktons CO_2 equivalent**	**25,869**	**24,974**				

[a] Greenhouse Gas Environment scope (refer to Methodology Note)

Total greenhouse gas emissions on the extended responsibility perimeter for scopes 1, 2 and 3[a]

Scope 1	Ktons CO2 equivalent	722	668				✔
Scope 2[b]	Ktons CO2 equivalent	588	479				✔
Scope 3	Ktons CO2 equivalent	25,869	24,974				
Total Scope 1, 2, 3	**Ktons CO2 equivalent**	**27,179**	**26,122**				
Ratio of total emissions for scopes 1, 2, 3	grams of CO_2 equivalent/kg of product sold	740.1	755.9				
Intensity reduction full scope since 2015[c]		24.8%	24.5%	50%	2030	2015	

[a] Greenhouse Gases Scope (refer to Methodology Note)
[b] Market-based.
[c] Based on constant consolidation scope and methodology

Total emissions breakdown[a]

Scope 1	%	2.7%	2.6%				
Scope 2	%	2.2%	1.8%				
Scope 3 | Purchase of goods and services : Agriculture - milk	%	35.5%	36.9%				
Scope 3 | Purchase of goods and services : Agriculture - dairy ingredients	%	15.4%	15.1%				
Scope 3 | Purchase of goods and services : Agriculture - other raw materials	%	9.0%	8.4%				
Scope 3 | Purchase of goods and services: Packaging	%	10.3%	9.6%				
Scope 3 | Purchase of goods and services: Purchase of finished products	%	5.6%	6.2%				
Scope 3 | Upstream transportation and distribution of goods	%	1.4%	1.2%				
Scope 3 | Downstream transportation and distribution of goods	%	8.1%	6.2%				
Scope 3 | Use of sold products	%	7.1%	7.2%				
Scope 3 | End-of-life treatment of sold products	%	0.9%	3.0%				
Scope 3 | Fuel and energy related activities	%	1.2%	1.1%				
Scope 3 | Waste generated in operations	%	0.6%	0.6%				

[a] Greenhouse Gases Scope (refer to Methodology Note)

Agricultural emissions breakdown[a]

Milk	%	59.2%	61.1%				
Dairy ingredients	%	25.7%	25.0%				
Other raw materials	%	15.1%	13.9%				

[a] Greenhouse Gases Scope (refer to Methodology Note)

	Unit	2019	2020	TARGET	TARGET YEAR	BASELINE	EXTERNALLY VERIFIED
ENERGY EFFICIENCY AND RENEWABLES							
Energy consumption within the organization[a]							
Total thermal energy consumption	MWh	3,298,502	3,223,381				✔
Total electricity consumption	MWh	2,122,809	2,015,977				✔
Total	**MWh**	**5,421,311**	**5,239,358**				✔
Percentage Grid Electricity	%	39.1%	38.2%				
Intensity of energy consumption	KWh/ton of product	146.9	149.2				✔
Total reduction of energy intensity since 2000		47%	46%	60%	2020	2000	✔
[a] *Production Site Environment Scope (refer to Methodology Note)*							
Renewable energy[a]							
Production plant purchasing electricity from 100% renewable sources	Number of sites	50	74				✔
Percentage of renewable electricity purchase	Quantity of renewable electricity/ total electricity purchased	42.4%	54.3%	100%	2030	2017	✔
Percentage of total renewable energy	Quantity of renewable energy/total energy	19.7%	24.5%				✔
[a] *Production Site Environment Scope (refer to Methodology Note)*							
DEFORESTATION							
Palm oil and soy policy							
Tons of palm oil used	Tons	≈68000	65,600				
"RSPO segregated" certified palm oil	%	48%	95% [a]				
"RSPO Mass Balance" certified palm oil	%	51%	3% [b]				
[a] *End of year number. For full year 2020, this number is 50%.*							
[b] *End of year number. For full year 2020, this number is 48%.*							
Paper and board for packaging							
Percentage of recycled paper-based[a]	%	70%	65%				
Percentage of paper and board packaging made of recycled fibers or virgin certified fibers (FSC, PEFC, SFI)[a]	%	90%	98%	100%	2020		
[a] *Packaging Scope (refer to Methodology Note)*							
REFRIGERATION RESOLUTION							
Emissions of ozone-depleting substances (ODS)[a]							
CFC	Ton equivalent CFC	0	0				
HCFC	Ton equivalent CFC	0.056	0.157				
[a] *Production Site Environment Scope (refer to Methodology Note)*							
New Cooling equipment purchased using HFC free or Low GWP gas (<150)[a]							
Industrial cooling installation	%	98%	92%				
Commercial coolers	%	79%	96%				
[a] *Refrigeration resolution scope (refer to Methodology Note)*							

REGENERATIVE AGRICULTURE

REGENERATIVE AGRICULTURE PRACTICES

Animal welfare

	Unit	2019	2020	TARGET	TARGET YEAR	BASELINE	EXTERNALLY VERIFIED
Lamb and beef having access to pasture (Socrates Scope: Early Life Nutrition food factories in the EU)		100%	100%				
Cage-free eggs and eggs ingredients volumes sourced worldwide		>80%	100%	100%	2019	2018	
Percentage of fresh milk volumes worldwide assessed through Danone's welfare assessment tool or via Validus Animal Welfare certification in Essential Dairy and Plant-Based Business [a]	%	81%	87%	80%	2020		

[a] Including the following countries covering more than 80% of total fresh milk (Algeria, Argentina, Belgium, Brazil, Egypt, France, Germany, Mexico, Poland, Romania, Russia, South Africa, Spain, and U.S.A.)

CIRCULAR ECONOMY

Post-consumer Packaging[a]

Tons of plastic used by Danone	Tons of plastic	800,000	716,500				
Total Weight of Packaging	Tons		1,461,957				
Percentage of total packaging being reusable, recyclable or compostable (primary, secondary & tertiary packaging)[b]	%	81%	81%	100%	2025		
Percentage of total plastic packaging being reusable, recyclable or compostable	%	67%	67%				
Percentage of packaging coming from recycled materials (primary, secondary & tertiary packaging)[b]	%	39%	36%				
Percentage of recycled materials in plastic packaging	%	10.6%	10.3%	25%	2025		
Percentage of recycled PET in Waters Business where local standards and regulations allow	%	20.5%	25.5%	25%	2020		
Percentage of recycled PET in Waters Business worldwide	%	16%	19.8%	50%	2025		

[a] Packaging Scope (refer to Methodology Note).

[b] SASB definition in the Standard is only on primary & secondary packaging, when Danone reports primary, secondary packaging and tertiary packaging

Industrial waste[a]

Total quantity of industrial waste	in ktons	511	433				✔
Total quantity ratio of industrial waste per ton of products	in kg/tons	13.8	12.3				✔
Proportion of industrial waste recovered	%	90.1%	91.2%				✔
Waste generated	Total quantity in thousand of tons	545	467				
Recovered waste	Total quantity in thousand of tons	584	405				
Proportion of recovered waste	%	84.9%	89.2%				
Ratio of total quantity of waste per ton of products	**Kg/ton of products**	**15.0**	**13.3**				

[a] Production Site Environment Scope (refer to Methodology Note)

Industrial Packaging waste[a]

Total quantity of packaging industrial waste	in ktons	122	116				✔
Total quantity ratio of packaging industrial waste per ton of products	in kg/tons	3.3	3.3				✔
Packaging industrial waste recovered	Thousand of tons	116	112				✔
Proportion of packaging industrial waste recovered	%	95.3%	96.7%				✔
Proportion of plastic packaging waste recovered	%	95.8%	96.6%				✔

[a] Production Site Environment Scope (refer to Methodology Note)

Industrial Food waste[a][b]

Total quantity of food waste generated	Thousand of tons	386	313				✔
Total quantity of recovered food waste	Thousand of tons	344	280				✔
Ratio of total quantity of food waste per ton of products	Kg/ton of products	45.0	36.3				✔
Ratio of total quantity of food waste recovered per ton of products	Kg/ton of products	39.9	32.4				✔
Proportion of recovered food waste	%	88.6%	89.3%				✔

[a] Production Site Environment Scope (refer to Methodology Note)

[b] Excluding Waters Business

Total food waste in our operations (Industrial and supply chain)[a][b]

Total quantity of food waste generated	Thousands of tons	481	409				

	Unit	2019	2020	TARGET	TARGET YEAR	BASELINE	EXTERNALLY VERIFIED
Total quantity of recovered food waste	Thousands of tons	396	332				
Proportion of recovered food waste	%	82%	81.2%				
Ratio of total food waste per ton of products sold	Kg/ton of product sold	57.3	46.8				
Ratio of total recovered food waste per ton of products sold	Kg/ton of product sold	47.2	38.5				
Ratio of total non-recovered food waste per ton of products sold	Kg/ton of product sold	10.1	8.8				
Total reduction in non-recovered food waste ratio since 2016		-7.0%	-15.6%	50%	2025	2016	

(a) *Excludes Waters Reporting Entity sites.*
(b) *Production Site Environment scope and Scope 3 downstream, see Methodology Note.*

WATER

Water Risk Assessment[a]

Percentage of the watershed where Danone operates are identified in high or extremely high physical risk according to the WFR[b] tool	%	44%	34%				
Percentage of Danone sites audited for their water risk according to the WRF[b] tool	%	76%	100%				
Percentage of production sites identified at high risk for the Company [c]	%	19%	17%				

(a) *Production Site Environment Scope (refer to Methodology Note)*
(b) *Water Risk Filter (WRF) from the World Wildlife Fund, more information in our 2020 Universal Registration Document*
(c) *2019 number is based on the WRF methodology 2016 version, for the assessment of 142 sites.*
2020 number is based on the updated WRF methodology v5.0. This number is for the assessment of 174 sites and focuses on sites at high physical risks. Percentage of sites which are at high water risks (Physical, Regulatory and Reputational: 23%

SPRING audits[a]

Percentage of Waters division sites having run a SPRING audited	%	100%	100%	100%	2020		

(a) *Internal water resource management tool SPRING (Sustainable Protection and Resources managING) that covers the physical, regulatory and community management of aquifers (geological formations containing (groundwater) and their watershed (see 2020 Universal Registration Document*

Water withdrawal at production sites[a]

River water withdrawn from the surrounding area	Thousand of m^3	3,038	2,852				✔
Municipal water withdrawn from the surrounding area	Thousand of m^3	22,751	22,986				✔
Well water withdrawn from the surrounding area	Thousand of m^3	47,276	43,312				✔
Total water withdrawal from surrounding area	**Thousand of m^3**	**73,064**	**69,150**				✔
Water used in finished products and water co-product	Thousand of m^3	31,292	29,436				✔
Water consumption in the production processes	Thousand of m3	41,773	39,714				✔
Water consumption intensity related to the production processes	m^3/tons of product	1.13	1.13				✔
Total reduction of water intensity since 2000	%	49%	49%	60%	2020	2000	✔

(a) *Production Site Environment Scope (refer to Methodology Note)*

Wastewater[a]

Final discharge of Chemical Oxygen Demand (COD)	Thousands of tons	6.38	5.95				✔
Net COD Ratio	Kg/ton of product	0.17	0.17				✔
Compliance with Clean Water Standards (CWS) of production sites discharging wastewater directly to nature	Nb of sites compliant / total nb of site under CWS	68%	77%	100%	2020		
Percentage of clean wastewater returned to nature	m3 of clean wastewater / m^3 of wastewater under CWS	62%	75%	100%	2020		

(a) *Production Site Environment Scope (refer to Methodology Note)*

Source: Danone Exhaustive Extra Financial Data, pag. 2-6

Appendix B
Task Force's Proposal for Metrics Disclosure in the Energy Sector

ENERGY GROUP METRICS – ILLUSTRATIVE EXAMPLES								
Financial Category	**Climate-Related Category**	**Example Metric**	**Unit of Measure**	**Alignment**	**Rationale for Inclusion**	**Oil and Gas**	**Coal**	**Electric Utilities**
Revenues	GHG Emissions	Estimated Scope 3 emissions, including methodologies and emission factors used	MT of CO_2e	GRI: 305-3 CDP: EU4.3	(Relatively) high carbon emissions in the value chain may accelerate development of alternative technologies in a low-carbon economy. The level of emissions informs vulnerability to a significant decrease in future earning capacity.	■	■	■
Revenues	Risk Adaptation & Mitigation	Revenues/savings from investments in low-carbon alternatives (e.g., R&D, equipment, products or services)	Local currency	CDP: CC3.2, 3.3, CC6.1 SASB: NR0103-14	New products and revenue streams from climate-related products and services and the return on investments of CapEx projects that create operational efficiencies.	■	■	■
Expenditures	GHG Emissions	Describe current carbon price or range of prices used	Local currency	CDP: CC2.2 SASB: NR0101-22, NR0201-16	Internal carbon prices used, affecting the assessment of an organization's key assets, provide investors with a proper understanding of the reasonableness of assumptions made as input for their risk assessment.	■	■	■
Expenditures	Risk Adaptation & Mitigation	Expenditures (OpEx) for low-carbon alternatives (e.g., R&D, equipment, products, or services)	Local currency	GRI: G4-OG2 CDP: EU4.3	Expenditures for new technologies are needed to manage transition risk. The level of expenditures provides an indication of the level to which future earning capacity of core business might be affected.	■	■	■
Expenditures	Risk Adaptation & Mitigation	Proportion of capital allocation to long-lived assets versus short-term assets	Percentage	N/A	Impacts of climate change are subject to uncertainty in terms of extent and timing. Understanding the allocation to long- versus short-lived assets informs the potential of an organization to adapt to emerging climate-related risks and opportunities.	■	■	■
Expenditures	Water	Percent water withdrawn in regions with high or extremely high baseline water stress	Percentage	SASB: IF0101-06	Water stress can result in increased cost of supply, impacts to operations, and increased regulation/reduced access to water withdrawal. The percent withdrawn in high water-stress areas informs the risk of significant costs or limitations to production capacity.	■	■	■
Expenditures	GHG Emissions	Amount of gross global Scope 1 emissions from: (1) combustion, (2) flared hydrocarbons, (3) process emissions, (4) directly vented releases, and (5) fugitive emissions/leaks	MT of CO_2e	SASB: NR0101-01	Relatively significant Scope 1 emissions are expected to drive regulations (including carbon prices) that require lower emissions from products. This can result in a significant decrease in future earning capacity.	■		

Energy Group Metrics – Illustrative Examples *(continued)*

ENERGY GROUP METRICS – ILLUSTRATIVE EXAMPLES

Financial Category	Climate-Related Category	Example Metric	Unit of Measure	Alignment	Rationale for Inclusion	Oil and Gas	Coal	Electric Utilities
Expenditures	Energy/Fuel	Indicative costs of supply for current and committed future projects (e.g., through a cost curve or indicative price range. This could be broken down by product, asset, or geography)	Local currency	CDP: CC3.3	Cost of supply is important because in a market with falling demand, low-cost products will continue to be brought to market. Understanding the cost of supply informs investors about portfolio vulnerability and thus earning capacity.	■	■	
Assets	Water	Assets committed in regions with high or extremely high baseline water stress	Number of assets, value, percentage of total assets	SASB: IF0101-06	Water stress can result in interruptions to or limitations on production capacity or early curtailment of operating facilities. The value of assets in high water-stress areas informs the potential implications for asset valuation.	■	■	■
Assets	Risk Adaptation & Mitigation	Investment (CapEx) in low-carbon alternatives (e.g., capital equipment or assets)	Local currency	GRI: G4-OG2 CDP: EU4.3	Investments in new technologies are needed to manage transition risk. The level of investment provides an indication of the level to which future earning capacity of core business might be affected.	■	■	■
Assets	GHG Emissions	A breakdown of reserves by type and an indication of associated emissions factors to provide insight into potential future emissions	Amount of reserves MT of CO_2e per unit of reserves	SASB: NR0101-23	Transition to a low-carbon economy may affect the value of reserves or long-lived assets. Providing insight into potential future emissions can help to inform investors about the potential impacts of regulatory measures and demand changes on earning capacity.	■ ■	■ ■	
Capital	Risk Adaptation & Mitigation	Capital payback periods or return on capital deployed	Years, percentage return on investment	CDP: CC3.3	Impacts of climate change are subject to uncertainty in terms of extent and timing. Understanding the capital payback periods or return on capital deployed informs the vulnerability of the organization to emerging climate-related risks and opportunities and the flexibility to continue the current technology portfolio at lower financial returns in a transition period to low-carbon technologies.	■	■	■

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