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Chair of Financial Statement Analysis

**The Interrelation of Economic Performance, Non-Financial
Disclosure and Sustainable Development Goals:
A Quantitative Analysis of Italian Sensitive Industries.**

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Introduction

The present thesis explores, through a quantitative analysis and a content analysis, the theme of corporate disclosure and its determinants with particular reference to the United Nation Programme and the Italian market. Specifically, the focus of the analysis is on sustainability disclosure with a specific focus on Sustainable Development Goals (SDGs), a set of 17 objectives that constitute a programme of action that aim to transform our world, to end poverty and inequality, protect the planet, and ensure that all people enjoy health, justice and prosperity while leaving no one behind.

The principle of sustainability emphasises not merely the efficient allocation of resources in the current period, but also advocates for fair distribution of resources and opportunities among both the current generation and those yet to come. Furthermore, it entails maintaining a scale of economic activity that respects the boundaries of its ecological life-support systems. Sustainability suggests broader ecosystem-based approaches that necessitate comprehension of cumulative environmental change and, probably, the establishment of novel and alternative decision-making structures and institutions.

The urgency for an intervention on this theme for the pursuit of predetermined long-term objectives, such as the European Green Deal by 2050, is just one of the reasons justifying the author's interest in these aspects. Furthermore, the current relevance of the theme and its novelty for the private sector can be cited. Lastly, the 2030 Agenda, a medium-term action plan that has just completed its turning point, offers significant perspectives for reflection. The analysis proposes a systematic vision of the Italian landscape.

This wider interest to the social-environmental performance, that looks beyond the solely economic and financial results of the enterprises, finds its justification also in response to some normative novelty introduced by the European normative 2014/95/UE in referring to the mandatory communication of non-financial information for some large companies and for particular financial groups, which has been integrated in national laws all over the European area. The European Directive has been receipted in Italy with the Legislative Decree 254/2016 which enforces the Disclosure of Non-Financial Information for listed and public-interest Firms, and lately integrated with the Legislative Decree 135/2018 which enforces the assurance

process of Non-Financial Disclosure (NFD) by an external and independent firm. Furthermore, the most recent expansion in the studies and research on the integrated reporting in order to represent, in an integrated way, the financial, social, environmental and governance results of the organizations.

The primary objective of the empirical analysis is represented by the study of the SDGs disclosure extent within the Italian context, with a particular focus on sensitive industries, measured by a Disclosure Index. Moreover, the study aims to evaluate whether a greater SDGs disclosure extension could depend by certain company characteristics.

Results suggest that the level of SDGs Disclosure depends on specific company characteristics with a discrete level of confidence. In particular, it has been noted that in the Italian sensitive industries the level of disclosure is positively related to dimension and structural characteristics that inevitably validate a significant and irreversible effort in multiple perspectives, including the economic-financial perspective but also a broader ESG perspective (i.e. the presence of a defined and structured sustainability plan, the presence of an independent Sustainability Committee, exc.). The performed analysis is highly consistent with prior studies on sustainability disclosure topic and it adds the significancy of a new relation to the international literature.

The thesis is structured in three distinct chapters: the first addresses Corporate Social Responsibility and conceptualise the historical and current landscape; the second chapter describes the taxonomy of sustainability and non-financial information, with attention to the EU area; finally, the third chapter is entirely dedicated to the definition of the analysis of the Italian scenario and the presentation of the results.

The dissertation attempts to shed light on the evolution of Non-Financial Disclosure consequent to the natural evolvement of a process that grounded its fundamentals in the concepts of corporate social responsibility, and the natural relations that links the amount of NFD to the firm's characteristics intended in terms of dimension, performance and organisational characteristics.

Moreover, the performed analysis and its conclusions aims to enrich and contribute to the international literature regard the determinants that affects the Non-Financial Disclosure level and to potential identify new research lines that could developed in an international perspective.

1. Corporate Social Responsibility: Conceptualising the Landscape of Sustainability

1.1 Conceptual Perspectives on Corporate Social Responsibility and Social Accounting: Tracing the Origins of Contemporary Sustainability Reporting

The debate on “Corporate Social Responsibility” (CSR) has been ongoing for about fifty years, in particular in the English, American and Australian academics context in which this topic has showed an increasing growth, although the last KPMG international survey (KPMG, 2015)¹ highlights how the emergent countries of India, Indonesia, Malaysia and South Africa have registered in last three years the highest CR reporting rates in the world.

In initial scholarly discourse surrounding Corporate Social Responsibility (CSR), it was predominantly denoted as "social responsibility," rather than utilizing the former.. Tarquinio (2009)², highlights how the first studies developed around the concepts of the social responsibility have had a first surge already in 20s, in refer to the role and to the behaviour of the businessman (Bowen, 1953)³, and subsequently a further interest in 50s. However, it's only after the second part of 60s, and in particular during the 70s, that within the Anglo-Saxon arena, the issues related to the social disclosure, the accountability and the social audit, have established themselves. After a decade of settling phase, during the 80s the literature focused himself on developing new or refined definitions of CSR gave way to research on CSR and a splintering of writings into alternative concepts and themes such as: corporate social responsiveness, public policy, business ethics, stakeholder theory/management, and the core concerns of CSR gradually evolved into various notions, theories, models or themes.

In the 1987 the Brundland Report⁴, gave a new emphasis to the CSR function and highlights the necessity of a sustainable development that “*meets the needs of the present without compromising the ability of future generations to meet their own needs*” (UNWCED, 1987,

¹ KPMG (2015), Currents of Change, The KPMG survey of corporate responsibility reporting 2015, KPMG International, Amsterdam.

² Tarquinio, L. (2009). Corporate environmental responsibility e comunicazione d'impresa: la variabile ambientale nel bilancio d'esercizio e nei report volontari. G. Giappichelli.

³ Bowen, H. R., & Johnson, F. E. (1953). Social responsibility of the businessman. Harper.

⁴ For a more detailed analysis on the evolution of the Corporate Social Responsibility, Carroll, A. B. (1999). Corporate social responsibility evolution of a definitional construct. *Business & society*, 38(3), 268-295.

p.8)⁵, contributing to sets the stage for the doctrinal literature in the following years in which the subject became a topic of extensive discourse among both scholars and business practitioners.

Overall, it is vital to notice that the 1990s have been marked through a paucity of novel contributions to the definition of Corporate Social Responsibility (CSR). Predominantly, the concept of CSR functioned as a foundational element, a building block, or a place to begin for the improvement of other associated principles and issues. These emergent thoughts, even as incorporating CSR standards, had been in large part in harmony with it. During this period, the stage was primarily centred on the Stakeholder Theory, Business Ethics Theory, and the idea of Corporate Citizenship.

Different theories were combined with different approaches and this caused a general confusion and a not always correct use of terms that, over time, was applied with different meanings. This problem is an old one. It was 30 years ago that Votaw (1972) wrote: *“corporate social responsibility means something, but not always the same thing to everybody. To some it conveys the idea of legal responsibility or liability; to others, it means socially responsible behaviour in the ethical sense; to still others, the meaning transmitted is that of ‘responsible for’ in a causal mode; many simply equate it with a charitable contribution; some take it to mean socially conscious; many of those who embrace it most fervently see it as a mere synonym for legitimacy in the context of belonging or being proper or valid; a few see a sort of fiduciary duty imposing higher standards of behaviour on businessmen than on citizens at large”* (Votaw 1972, p. 25 in Garriga and Melè, 2013)^{6 7}.

Nowadays the panorama is not much better. Carroll, described the CSR scenario as *“an eclectic field with loose boundaries, multiple memberships, and differing training/perspectives; broadly rather than focused, multidisciplinary; wide breadth; brings in a wider range of literature; and interdisciplinary”* (Carroll 1994, p. 14)⁸.

⁵ United Nations World Council for Environment and Development (1987), Report of the World Commission on Environment and Development: Our Common Future. Oxford University Press: Oxford.

⁶ Votaw, D. (1972). Genius becomes rare: a comment on the doctrine of social responsibility Pt. I. *California Management Review*, 15(2), 25-31.

⁷ Garriga, E., & Melé, D. (2013). Corporate social responsibility theories: Mapping the territory. In Citation Classics from the Journal of Business Ethics (pp. 69-96). Springer Netherlands.

⁸ Carroll, A. B. (1994). Social Issues in Management Research Experts' Views, Analysis, and Commentary. *Business & Society*, 33(1), 5-29.

What emerged is that, considering the vastness of the topic, it's impossible to understand the meaning and the significance of the CSR without depart from the concept of social accounting and corporate social reporting.

A clear explanation of the role and the function of social accounting is provided by Ramanathan (1976)⁹ that suggests how organizations operates within the institutional contest through a “*social contract*” that is the crucial assumption for which depends their existence and persistence in the economic system. He defines corporate social accounting like “*the process of selecting firm-level social performance variables, measures, and measurement procedures; systematically developing information useful for evaluating the firm's social performance; and communicating such information to concerned social groups, both within and outside the firm*”. The author identifies three main objectives of the social accounting:

- the first one is to recognize and measure the periodic net social contribution of an individual firm, which includes not only the cost and benefits internalized to the firm, but also those arising from externalities affecting different social segments;
- the second one is to help understanding whether a firm's strategies and practice which directly influence the relative resource and power status of individuals, communities, social segments and generations are consistent with widely shared social priorities on the one hand and individuals' legitimate aspirations on the other;
- the third one is to make available in an optimal way, to all social constituents, relevant information on a firm's goals, policies, programs, performance and contributions to social goals.

The first and the second objectives are related with the process of measurement (measurement objectives) of the firm's quantity of how produced and distributed to evaluate its contribution to the social welfare. The third purpose is related with the reporting process of the relevant information for the public accountability, and the mapping and evaluation of the firm's contribute to the society.

How Tarquinio (2009)¹⁰ suggests, the relation between the corporate social accounting and reporting is evident. The corporate social reporting is the communication activity of the qualitative and quantitative information related to social-environmental effects of the companies' operations, detected by the accounting system.

⁹ Ramanathan, K. V. (1976). Toward a theory of corporate social accounting. *The Accounting Review*, 51(3), 516-528.

¹⁰ Tarquinio, L. (2009). Corporate environmental responsibility e comunicazione d'impresa: la variabile ambientale nel bilancio d'esercizio e nei report volontari. G. Giappichelli.

Gray defines corporate social reporting as *“the process of communicating the social and environmental effects of organizations’ economic actions to particular interest groups within society and to society at large. As such, it involves extending the accountability of organizations (particularly companies), beyond the traditional role of providing a financial account to the owners of capital, in particular, shareholders. Such an extension is predicated upon the assumption that companies do have wider responsibilities than simply to make money for their shareholders”* (Gray et al. 1987)¹¹. This definition is helpful in order to lay the bases for a more wider and in deeper explanation. The authors, suggested how corporate social accounting can take a potentially infinite range of forms, objectives and cover a myriad different subjects and for this reason it is not a systematic, regulated or well-established activity. In order to better explain its function Gray, Owen and Adams (1996)¹², put in relation the conventional accounting and CSR. In particular four are the characteristics that enable the derivation of conventional Western accounting practice. These characteristics are referred to the nature of the words that accountants analysed and restricted to:

- the financial description;
- specified (priced) economic events;
- defined organizations or accounting entities;
- provided information for specified users of that information.

In broad terms thus are the rules on which the conventional accounting has based his operational field and the social accounting has attempted to implements and expand this characteristics creating a combination of:

- accounting for different things (other than accounting strictly for economic events);
- accounting in different media (other that accounting in strictly financial terms);
- accounting to different individuals or groups and accounting for different purpose.

In this sense, what we consider traditional financial accounting, as an artificially forced set of all accountings and so traditional financial accounting is just one particular element of the broader richer social accounting.

¹¹ Gray, R., Owen, D., & Maunders, K. (1987). *Corporate social reporting: Accounting and accountability*. Prentice-Hall International.

¹² Gray, R., Owen, D., & Adams, C. (1996). *Accounting & accountability: changes and challenges in corporate social and environmental reporting*. Prentice Hall.

1.2 The Evolution of the Corporate Responsibility Theory: an insight of different theoretical frameworks

The nature of the corporate social accounting and reporting (CSAR), and its function depends upon the economic perspective that firms decide to adopt.

Gray, Owen and Adams, (1996)¹³ defined in the literature the “*educationalists*” based their thinking on the “*general system theory*”, in order to highlights how accounting is not a system, which operates in isolation, but it interacts with “*social system*”, “*political system*” and “*ethical system*”. Accounting is directly related to interactions within and between organizational system and between those organizational system and individuals, groups, communities, societies, nations and all the element of the planetary natural environment. Societies, organizations, economics, accounting and ecology are all systems that interact each with others. Assuming that accounting is not related with societal or environmental desecration *does not make it so!*¹⁴

For the authors, system thinking has been applied with success to the studies on the organizations and their internal and external connections with an important contribution also in the sub-fields of the accounting system, control system and management information system¹⁵.

¹³ Gray, R., Owen, D., & Adams, C. (1996). Accounting & accountability: changes and challenges in corporate social and environmental reporting. Prentice Hall.

¹⁴ The theory of system is attributed to the work of Ludwing von Bertalanffy (1956), which derived from his concern over the way in which the natural sciences were developed. The GST was an attempt to break down the barriers between knowledge system and the tendency in scientific through towards reductionist reasoning. The key points of his idea are that:

- The attempt to study a part without understanding the whole from wich the part comes (reductionism) was bound to lead to misunderstanding. The only way to understand a part is to know his context;
- Understanding tends to be directed by and limited to one’s own discipline, but natural phenomena are complex and cannot be successfully studied by artificially bounded modes of thought; Von Bertalanffy, L. (1957). Quantitative laws in metabolism and growth. Quarterly Review of Biology, 217-231.

¹⁵ This concept is based for the authors on the liberal economic democratic conception that imagines a word of equal individuals, free to act and to express choice through actions in markets (economic) and actions in the political context (democratic). The role of the State is minimal and limited to maintain freedom and to be neutral respect each groups of interest. The liberal economic democracy conception is both a positive conception and a normative conception. Gray et al., 1996.

From an opposite point of view, the “*pristine capitalist*” on the base of the neo-classical view of the firm, believe that the only social responsibilities to be adopted by business are the provision of employment and payment of taxes. This view is most famously taken to the extremes of maximizing shareholder value and reflected in the views of Milton Friedman (1962, p. 133): “*Few trends would so thoroughly undermine the very foundations of our free society as the acceptance by corporate officials of a social responsibility other than to make as much money for their shareholders as they possibly can*”¹⁶.

Gray et al. (1996)¹⁷, identified some critical problems in refer to the above framework and for this decide to adapt, rather than wholly adopt, the sorts of more radical position with which they feel more comfortable. The accountability framework, based on a neo-pluralism vision, seems to be the most suitable to supports the concepts of accounting in general and CSR thinking in particular (Gray et al., 1986; 1987; 1988; 1991)^{18 19 20 21 22}.

Accountability can be defined as: “*the duty to provide an account (by no means necessarily a financial account) and the responsibility to provide an account of those actions*” (Gray et al., 1996 pp. 38)²³.

This concept of accountability is based on two different responsibilities or duties (Gray et al., 1996)²⁴:

- the responsibility to undertake certain actions (or forbear to taking actions)

¹⁶ Friedman M., (1962). Capitalism and freedom. University of Chicago.

¹⁷ Gray, R., Owen, D., & Adams, C. (1996). Accounting & accountability: changes and challenges in corporate social and environmental reporting. Prentice Hall.

¹⁸ This model of accountability is based on the idea that it is possible to identify a number of legal and quasi-legal responsibilities, only some of which are matched by discharged accountability. The authors add also natural or moral responsibilities, which are matters for continual debate within the society. CSR, at its broadest, is to fill the gap between responsibility and accountability and to act as constant challenge to the extant positive state of responsibility and accountability- working principally upon a society’s acceptance of moral and natural responsibilities and rights

¹⁹ Gray, R. H., Owen, D. L., & Maunders, K. T. (1986). Corporate social reporting: the way forward?. *Accountancy*, December, 108-109.

²⁰ Gray, R., Owen, D., & Maunders, K. (1987). Corporate social reporting: Accounting and accountability. Prentice-Hall International.

²¹ Gray, R., Owen, D., & Maunders, K. (1988). Corporate social reporting: emerging trends in accountability and the social contract. *Accounting, Auditing & Accountability Journal*, 1(1), 6-20.

²² Gray, R., & Laughlin, R. (1991). Editorial: the coming of the green and the challenge of environmentalism. *Accounting, Auditing & Accountability Journal*, 4(1), 5-8.

²³ Gray, R., Owen, D., & Adams, C. (1996). Accounting & accountability: changes and challenges in corporate social and environmental reporting. Prentice Hall.

²⁴ Gray, R., Owen, D., & Adams, C. (1996). Accounting & accountability: changes and challenges in corporate social and environmental reporting. Prentice Hall.

- the responsibility to provide an account of those actions.

A basic version of the model hypothesizes a two-way relationship between an “accountee”, who might call the principal and that in an traditional financial accounting point of view could be identified with the shareholders, and an “accountor”, called the agent, that in a conventional financial accounting prospective could be identified with the director of the company. In this basic view the director of a company has the responsibility to manage the financial and non-financial resources assigned to him by the shareholders, and the responsibility to produce an account for management. Annual report and the financial statement represent the mechanisms and the instruments for discharging accountability.

In a broader vision of this system, the “accountee” and “accountor” may be individuals, organizations or groups, that have different relationship and for this, be accountor in one case and accountee in another. In this sense society may be thought of as sets of relationship based of a series of “social contracts” between members of society and society itself.

Overall, a large range of theories are developed in refer to the practice of CSR in order to explain its evolution and growing. These theories, often in competing but each with a descriptive power, contributed to shed light on the reflection on the CSR in a prospective based on a more system-orientated view of organization and society. These permit us to focus on the role of the information and disclosure (accounting and CSR) in the relationship between organizations, the State, individuals and groups.

The most widely application of these theories in the accounting field are: Stakeholder Theory, Legitimacy Theory and Political Economy Theory.

In the following paragraphs we attempt to illustrate (without claiming to be exhaustive), the foundation of this thinking and its contribution to the construction of a CSR field, that have determined a non-arrival at “theory closure” (AAA, 1977; Davis et al., 1982; Laughlin and Gray, 1988; Laughlin and Puxty, 1980)^{25 26 27}.

1.2.1 Stakeholder theory

²⁵ Davis, S. W., Menon, K., & Morgan, G. (1982). The images that have shaped accounting theory. *Accounting, Organizations and Society*, 7(4), 307-318.

²⁶ Laughlin, R., & Gray, R. (1988). *Financial Accounting: method and meaning*. Taylor & Francis.

²⁷ Laughlin, R., & Puxty, A. G. (1980). *The decision-usefulness criterion: wrong cart, wrong horse?*. University of Sheffield.

As described by Freeman (1984), the firm can be intended as a series of connections between stakeholders that the managers of the firm attempt to manage and he defined them as “*any group or individual who can affect or is affected by the achievement of the organization's objectives*” (Freeman, 1984, p. 46)²⁸. Ansoff (1965)²⁹ was the first to use the term “*stakeholder theory*” in defining the objectives of the firm. A major objective of the firm was to attain the ability to balance the conflicting demands of heterogeneity stakeholders.

In this sense with the word “*stakeholder*”, we indeed any human agency that can be affected by, or can itself influence, the activities of an organization. Stakeholders are typically divided into primary and secondary. Clarkson (1995, p. 106) defines primary stakeholder group as “*one without whose continuing participation the corporation cannot survive as a going concern*” with the primary group including “*shareholders and investors, employees, customers and suppliers, together with what is defined as the public stakeholder group: the governments and communities that provide infrastructures and markets, whose laws and regulations must be obeyed, and to whom taxes and obligations may be due*” (p. 106). The secondary groups are defined as “*those who influence or affect, or are influenced or affected by the corporation, but they are not engaged in transactions with the corporation and are not essential for its survival*”³⁰.

This theory allows considering the organization-stakeholder relation as a socially grounded, which involves responsibility and accountability. The extent and the nature of this accountability depend of the type of relation between stakeholders and organization. Freeman (1984)³¹ discusses the dynamics of stakeholder influences on corporate decisions, and highlights how a major role of corporate management is to assess the importance of meeting stakeholder demands in order to achieve the strategic objectives of the firm. As the level of stakeholder power increases the importance of meeting stakeholder demands increases too.

Ullmann (1985)³² developed a conceptual model for studying corporate social responsibility activities in a stakeholder framework, highlighting that stakeholder theory provides an

²⁸ Freeman, R. E. (1984). *Strategic management: A stakeholder perspective*. Boston: Pitman.

²⁹ Ansoff, I. (1965). *Corporate Strategy* McGraw-Hill, New York.

³⁰ Clarkson, M. E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of management review*, 20(1), 92-117.

³¹ Freeman, R. E. (1984). *Strategic management: A stakeholder perspective*. Boston: Pitman.

³² Ullmann, A. A. (1985). Data in search of a theory: A critical examination of the relationships among social performance, social disclosure, and economic performance of US firms. *Academy of management review*, 10(3), 540-557.

appropriate justification for incorporating strategic decision making into studies of corporate social responsibility activities.

A critical competition in the stakeholder theory discourse revolves round its theoretical coherence, particularly whether it stands as a unified theory or manifests as a collection of theories (Trevino and Weaver, 1999)³³. Essentially, the doubt is whether stakeholder theory is a normative theory based upon largely ethical propositions or if it features as an empirical, instrumental, or descriptive paradigm (Donaldson and Preston, 1995³⁴; Jones and Wicks, 1999³⁵).

To date, this remains a debated question in the literature (Jones and Wicks, 1999³⁶; Freeman, 1999³⁷; Donaldson, 1999³⁸; Trevino and Weaver, 1999³⁹; Gioia, 1999⁴⁰). Concerning the subject of social responsibility, the primary focus rests on the role of stakeholder analysis as a driving force behind corporate responsibility; the discourse further extends to identifying which specific stakeholders. Hamil (1999)⁴¹, adopting Donaldson and Preston's (1995)⁴² typology, finds that corporate giving is nearly always instrumental.

A significant query that has been addressed regards the identification of groups to which management at large should pay attention. Mitchell et al. (1997)⁴³ formulated a model for

³³ Trevino, L. K., Weaver, G. R., Gibson, D. G., & Toffler, B. L. (1999). Managing ethics and legal compliance: What works and what hurts. *California management review*, 41(2), 131-151.

³⁴ Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review*, 20(1), 65-91.

³⁵ Jones, T. M., & Wicks, A. C. (1999). Convergent stakeholder theory. *Academy of management review*, 24(2), 206-221.

³⁶ Jones, T. M., & Wicks, A. C. (1999). Convergent stakeholder theory. *Academy of management review*, 24(2), 206-221.

³⁷ Freeman, R. E. (1999). Divergent stakeholder theory. *Academy of management review*, 24(2), 233-236.

³⁸ Donaldson, T. (1999). Making stakeholder theory whole. *Academy of Management Review*, 24(2), 237-241.

³⁹ Trevino, L. K., Weaver, G. R., Gibson, D. G., & Toffler, B. L. (1999). Managing ethics and legal compliance: What works and what hurts. *California management review*, 41(2), 131-151.

⁴⁰ Gioia, D. A. (1999). Practicability, paradigms, and problems in stakeholder theorizing. *Academy of Management Review*, 24(2), 228-232.

⁴¹ Hamil, S. (1999). Corporate community involvement: a case for regulatory reform. *Business Ethics: A European Review*, 8(1), 14-25.

⁴² Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review*, 20(1), 65-91.

⁴³ Mitchell, C.G. and Hill T. (2009). Corporate social and environmental reporting and the impact of internal environmental policy in South Africa. *Corporate Social Responsibility and Environmental Management*, 16, 48-60.

stakeholder identification and salience, based on stakeholders possessing one or more of the attributes of power, legitimacy and urgency, and Agle et al. (1999)⁴⁴ corroborated that the three attributes do lead to stakeholder salience. Consequently, we might predict that corporations would prioritise those legitimate stakeholder groups who have the aforementioned attributes. In practical terms, this could imply that firms with problems over employee retention would attend to employee issues and those in consumer markets would have regard to matters that affect reputation. The urgency associated with various stakeholder groups may fluctuate; so environmental groups and issues became more urgent to oil firms in the aftermath of the Exxon Valdez oil spill (Patten, 1992)⁴⁵.

1.2.2 Legitimacy Theory

Legitimacy theory argues that organizations can only continue to exist if the society in which there are based perceives the organization to be operating to a value system which is commensurate with the society's own value system.

Suchman (1995)⁴⁶ speaks about legitimacy in terms of "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions". Drawing on previous literature on legitimacy management, including the strategic perspective of resource dependence theory (Pfeffer and Salancik, 1974)⁴⁷ and the institutional traditions (DiMaggio and Powell, 1983)⁴⁸, Suchman distinguishes three different kinds of organizational legitimacy: pragmatic, moral, and cognitive.

Moreover, Suchman (1995) identifies three key challenges of legitimacy management:

- Gaining;
- Maintaining;

⁴⁴ Agle, B. R., Mitchell, R. K., & Sonnenfeld, J. A. (1999). Who matters to Ceos? An investigation of stakeholder attributes and salience, corporate performance, and Ceo values. *Academy of Management journal*, 42(5), 507-525.

⁴⁵ Patten, D.M. (1992). Intra-industry environmental disclosures in response to the Alaskan oil spill: a note on legitimacy theory. *Accounting, Organization and Society*, 17 (5), 471-475.

⁴⁶ Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of management review*, 20(3), 571-610.

⁴⁷ Pfeffer, J., & Salancik, G. R. (1974). Organizational decision making as a political process: The case of a university budget. *Administrative Science Quarterly*, 135-151.

⁴⁸ DiMaggio, P., & Powell, W. W. (1983). The iron cage revisited: Collective rationality and institutional isomorphism in organizational fields. *American Sociological Review*, 48(2), 147-160.

- Repairing legitimacy.

Indeed, Suchman (1995)⁴⁹ concludes that “*legitimacy management rests heavily on communication*”, therefore in any attempt to involve legitimacy theory, there is a need to examine some forms of corporate communications.

Lindblom (1994)⁵⁰ asserts that legitimacy is not necessarily a straightforward process for organizations seeking society’s approval. She proposes that an organisation can resort to four overarching legitimisation strategies in response to varying threats to its legitimacy:

- “*Seeking to educate its stakeholders about the organisation's intentions to improve that performance;*
- *Seeking to change the organisation's perceptions of the event (but without changing the organisation's actual performance;*
- *Distracting (i.e. manipulate) attention away from the issue of concern;*
- *Looking for changing to change external expectations about its performance.”*

Hence there is a need to examine any particular corporate behaviour within its context and in particular to look for alternative motivations.

Thus, legitimacy might be seen as a key reason for undertaking corporate social behaviour and also then using that activity as a form of publicity or influence (Lindblom⁵⁰ cited in Gray et al., 1996)⁵¹. An alternative perspective – not that businesses leverage its power to legitimate their operations but, rather that society confer power onto business which it expects it to use responsibly – is set out by Davis⁵² (cited in Wood, 1991): “*Society grants legitimacy and power to business. In the long run, those who do not use power in a manner which society considers responsible will tend to lose it*”⁵³.

In effect, this is a re-statement of the concept of a social contract between the firm and society. From this vantage point, we may additionally initiate an examination of CSR practices inside corporations as probably being propelled with the aid of principles similar to those delineated

⁴⁹ Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of management review*, 20(3), 571-610.

⁵⁰ Lindblom, C. K. (1994, June). The implications of organizational legitimacy for corporate social performance and disclosure. In *Critical perspectives on accounting conference*, New York (Vol. 120).

⁵¹ Gray, R., Owen, D., & Adams, C. (1996). *Accounting & accountability: changes and challenges in corporate social and environmental reporting*. Prentice Hall.

⁵² Davis, S. W., Menon, K., & Morgan, G. (1982). The images that have shaped accounting theory. *Accounting, Organizations and Society*, 7(4), 307-318.

⁵³ Wood, D. J. (1991). Corporate social performance revisited. *Academy of management review*, 16(4), 691-718.

in social contract theory, analysed particularly through a stakeholder analysis framework in order to bolster the firm's recognition or legitimacy.

1.2.3 Political economy theory

Political economy isn't a new topic but its introduction in accounting is a recent practice (Cooper and Sherer, 1984)⁵⁴.

The political economy is the social, political and economic framework within which human life takes place.

Political economy can be analysed under the "classical" lens, frequently associated with Marx, or "bourgeois" lens, most usually associated with John Stuart Mill and subsequent economist. The core difference between this two approaches in the level of resolution of analysis and the importance placed on structural conflict within society. Classical political economy, consider structural conflict, inequality and the role of the State as key elements of the analysis. At the contrary, bourgeois political economy considers this elements like given, and for this reason exclude them from the analysis. It concentrates its attention on the interactions between groups in a pluralistic world, and thus this second approach can be better employed to explain much of CSR practice.

Classical political economy, can offer a poor contribute in refer to the understanding of the CSR practice, considering that CSR voluntary produced can only be crumbs of legitimation dropped from the table of capitalism (Puxty, 1986⁵⁵; 1991 in Gray⁵⁶, Owen and Adams, 1996⁵⁷). The contribution that classical political economy give is the mandatory disclosure rules. In this sense the State has chosen to impose some restrictions on organizations and acting as if in the interest of disadvantage groups in order to maintain the legitimacy of the capitalism system as a whole. Thus, the growth of responsibility disclosure by firms in the late 80s and earlier 90s can be interpreted like an attempt to act as if in response to environmental pressure groups while, actually, attempting to wrest the initiative and control

⁵⁴ Cooper, D. J., & Sherer, M. J. (1984). The value of corporate accounting reports: arguments for a political economy of accounting. *Accounting, Organizations and Society*, 9(3-4), 207-232.

⁵⁵ Puxty, A. G. (1986). Social accounting as immanent legitimation: a critique of a technics ideology. *Advances in public interest accounting*, 1, 95-111.

⁵⁶ Gray, R., & Laughlin, R. (1991). Editorial: the coming of the green and the challenge of environmentalism. *Accounting, Auditing & Accountability Journal*, 4(1), 5-8.

⁵⁷ Gray, R., Owen, D., & Adams, C. (1996). *Accounting & accountability: changes and challenges in corporate social and environmental reporting*. Prentice Hall.

of the environmental agenda away from these groups with the objective to permit capital to carry on doing what it does best: make money for the capital.⁵⁸

1.3 The evolution of sustainability reporting instrument: lights and shadows

In the past few years, the attempt to account for social, environmental and economic impacts have become much more common among a large number of firms. Sustainable development concerns tend to focus on “*how to organize and manage human activities in such a way that they meet physical and psychological needs without compromising the ecological, social or economic base that enables this needs to be met*” (Bebbington, Unerman and Owen, 2014, in Bebbington et al., 2014, p.4)⁵⁹. The crucial role of the private and public industries in the development of this process is significant in a considerable number of countries in the world, and especially in the industrialized West that represents the epicentre of the adoption and actions which drives environmental change. An increasing number of organizations claims in their public statements their sustainable development policies and actions, recognizing their social and environmental as well as, economic responsibilities, and are seeking to manage and account for these activities in a proper way. Nevertheless some critics accused organizations to concern in this practice with the only intent to a public relation tool to win and maintain the approval of those stakeholders, whose continued to support is fundamental for the perceived legitimacy of their activities. In this sense the social and environmental reporting might be perceived as addressing the interest of the most powerful stakeholders, while leaving marginalized the interest and needs of less powerful stakeholders.

In the last years, the word “*sustainability*” was used within the business community with ever more frequency in terms of: sustainability reporting, sustainability business, sustainability supply chain, sustainability performance and so on. This has created a fertile debate among academics and institutional subjects that allowed arriving to a little more clarity around its

⁵⁸ For more detail on this issue see Gray, R. H., Bebbington, K. J., Walters, D., and Thomson, I. (1995°), “The greening of enterprise: an exploration of the (non) role of environmental accounting and environmental accountants in organizational change”, *Critical Perspective on Accounting*, 6(3), pp. 211-39.

⁵⁹ Bebbington, J., Unerman, J., & O'Dwyer, B. (2014). *Sustainability accounting and accountability*. Routledge.

significance and role. Corporate sustainability reporting is an “*extension and progression from earlier forms of corporate reporting to include matters of an organization’s environmental policies and impacts, and its social policies and impacts*” (Buhr, Gray and Milne, 2014, pp. 51)⁶⁰, and this was also the aim of the Global Reporting Initiative, to include non-financial reporting to a broader range of users integrating the Non-Financial Disclosure (NFD) into the financial accounting framework (Brown et al., 2009⁶¹; Etzion et al., 2010⁶²).

Gray and Milne (2002, pp.69) highlight that sustainability accounting requires: “*a complete and transparent statement about the extent to which the organization had contributed to or, more likely, diminished the sustainability of the planet. For that to occur, however, as we have seen, we need to have a detailed and complex analysis of the organization interaction with ecological system, resources, habitats, and societies, and interpret this in the light of all other organizations’ past and present impacts on those same systems*”⁶³. Gray and Milner (2004)⁶⁴ expresses some doubts about the concept of corporate social responsibility and whether organizations can be effectively socially responsible when it contradicts the primary scope of business pointed by the *shareholder theory*, its shareholders and its directors and that over two decades of experience is clear that sustainability has got lost in the “*trapping of the corporate speak*”.

Buhr et al. (2014)⁶⁵ suggest that the current form of sustainability reporting is a combination of social, environmental and economic issues related to the company. This document could be a stand-alone report or a part of annual report included or non-included in the financial statement or management discussion and analysis. The authors underscore that the amalgamation of the three performance components does not equate to the concept of

⁶⁰ Buhr, N., Gray, R., & Milne, M. J. (2014). Histories, rationales, voluntary standards and future prospects for sustainability reporting. J. Bebbington, J. Unerman and B. O'Dwyer, eds, 51-71.

⁶¹ Brown, H. S., De Jong, M., & Lessidrenska, T. (2009). The rise of the Global Reporting Initiative: a case of institutional entrepreneurship. *Environmental Politics*, 18(2), 182-200.

⁶² Etzion, D., & Ferraro, F. (2010). The role of analogy in the institutionalization of sustainability reporting. *Organization Science*, 21(5), 1092-1107.

⁶³ Gray, R. and Milne, M. (2002). Sustainable reporting: who’s kidding whom?. *Chartered Accountants Journal of New Zealand*, 81 (6), 66-74.

⁶⁴ Gray, R., & Milner, M. (2004). Towards reporting on the triple bottom line: mirage, methods and myths.

⁶⁵ Buhr, N., Gray, R., & Milne, M. J. (2014). Histories, rationales, voluntary standards and future prospects for sustainability reporting. J. Bebbington, J. Unerman and B. O'Dwyer, eds, 51-71.

sustainability, and this style of reporting lacks the depth necessary to provide insights into the condition of the social and ecological system upon which the organisation is dependent (Milne and Grey, 2013)⁶⁶. More often, this type of document is associated with the triple bottom line (TBL) report (Elkington, 1997)⁶⁷.

The triennial survey of KPMG of non-financial reporting, from the 1993 to the 2015 also certified this phenomenon highlighting the wide typology of reporting nomenclature: “*Corporate environmental reporting has become the icebreaker for a much wider form of corporate responsibility (CR) reporting in the form of sustainability, triple bottom line or corporate social responsibility (CSR) reports. Reporting is aimed at communicating with stakeholder, not only on environmental performance, but also in an integrated manner on environmental, social and economic performance, to be transparent and accountable*” (KPMG, 2005 pp. 3)⁶⁸.

Empirical evidence suggested how despite the slow development of regulation governing organizations’ social and environmental disclosure (KPMG, 2011)⁶⁹, there is no doubt that the production of sustainability reports remain a voluntary practice. This phenomenon has been accompanied by the proliferation of a selection of instructions or guidelines that encouraged, supported and stimulated those companies willing to get involved in this initiative such as the Association of Chartered Certified Accountants (ACCA) Reporting Award Scheme and the UNEP/ Sustainability Benchmark to cite the most prominent and effective. Nevertheless, the most used and influential guidelines that have been issued are the ones issued from GRI, that represent a multi-stakeholder cooperation with the aim to establish a generally accepted framework of reporting principles. The guidelines have been regularly published since the 2000. Despite its intent, Buhr et al, (2014)⁷⁰ discusses how GRI-reporting do not suggest an unalloyed success but rather something of an heroic failure.

⁶⁶ Milne, M.J. and Gray, R. (2013). W(h)iter Ecology? The triple bottom Line, the Global Reporting Initiative, and corporate sustainability reporting. *Journal of Business Ethics*, 118, 13-29.

⁶⁷ Elkington, J. (1997). Cannibals with forks. The triple bottom line of 21st century..

⁶⁸ KPMG (2005). KPMG International survey of corporate responsibility reporting 2005, KPMG International, Amsterdam.

⁶⁹ KPMG (2011), *KPMG International survey of corporate responsibility reporting 2011*, KPMG International, Amsterdam.

⁷⁰ Buhr, N., Gray, R., & Milne, M. J. (2014). Histories, rationales, voluntary standards and future prospects for sustainability reporting. J. Bebbington, J. Unerman and B. O'Dwyer, eds, 51-71.

In conclusion the voluntary and unregulated nature of this reports contribute to create confusion and dissatisfaction of traditional users. There is no standardized terminology that can be helpful in the interpretation of the report content and development. What emerged is that the TBL appears to be a little most comprehensive compared to other type of reports (environmental reporting, social reporting) and seems to include a largely under-specified economic dimension to this collage. Ideally the GRI's sustainability reporting guidelines, for all aims and purpose, substantially renaming the TBL report (Gray and Milne, 2002⁷¹; Milne and Gray, 2013⁷²). Also, the recent Integrated Reporting (IR), seems going in the same direction in which the economic dimension is more resized in favour of environment, social and governance (ESG).

1.4 The last frontier of CSR, the Agenda 2030 and the Sustainable Development Goals (SDGs)

In the context of the wider evolution of company social responsibility (CSR) and sustainability in the private sector, the SDGs constitute a brand-new frontier and an extensive milestone in the adventure towards sustainable development. From the 1950s to the 2000s, the CSR panorama evolved through a chain of disruptive occurrences, which include the emergence of environmental and social moves, the increasing awareness of worldwide demanding situations, and the development of voluntary standards and initiatives (Carroll, 2015)⁷³.

The Sustainable Development Goals (SDGs), building at the lessons discovered from previous sustainability efforts, present a complete and integrated framework for addressing the world's maximum pressing demanding situations, for that reason presenting a valuable possibility for businesses to align their CSR techniques with international priorities (United Nations, 2015)⁷⁴. By embracing the SDGs as the last frontier of CSR, businesses can demonstrate their commitment to growing shared fee and contributing to the commonplace right, even as also

⁷¹ Gray, R. and Milne, M. (2002). Sustainable reporting: who's kidding whom?. *Chartered Accountants Journal of New Zealand*, 81 (6), 66-74.

⁷² Milne, M.J. and Gray, R. (2013). W(h)iter Ecology? The triple bottom Line, the Global Reporting Initiative, and corporate sustainability reporting. *Journal of Business Ethics*, 118, 13-29.

⁷³ Carroll, A. B. (2015). Corporate social responsibility: The centerpiece of competing and complementary frameworks. *Organizational dynamics*.

⁷⁴ United Nations Development Programme (2015). "Annual Report on Evaluation: 2015." (2016). *Evaluation Reports*.

improving their popularity, competitiveness, and long-time period resilience (Porter & Kramer, 2011)⁷⁵.

The SDGs have additionally spurred the development and adoption of global requirements, consisting of the Global Reporting Initiative (GRI), the United Nations Global Compact (UNGC), and the ISO 26000 suggestions on social obligation, which provide guidance and benchmarks for organizations in handling their environmental, social, and governance (ESG) overall performance. These standards can help agencies become aware of and deal with fabric issues, enhance transparency and responsibility, and talk their development toward the SDGs to stakeholders (KPMG, 2017)⁷⁶.

In end, the SDGs represent a disruptive alternate within the sustainability panorama, tough businesses to redefine their role and responsibilities in a globalized and interconnected international. By integrating the SDGs into their CSR techniques and adopting worldwide standards, businesses can contribute to the fulfilment of the 2030 Agenda at the same time as additionally creating long-term fee for his or her stakeholders and society at large (United Nations, Department of Economic and Social Affairs)⁷⁷.

The concept of sustainable improvement emerged substantially in the 1980s as a reaction to growing environmental worries and social inequalities (World Commission on Environment and Development, 1987)⁷⁸. The 1992 Earth Summit in Rio de Janeiro caused the introduction of Agenda 21, a global action plan for sustainable improvement (United Nations, 1992)⁷⁹. In 2000, global leaders adopted the Millennium Development Goals (MDGs), which set particular targets for poverty alleviation, education, and health (United Nations, 2000)⁸⁰.

The MDGs carried out considerable development however additionally confronted criticisms for their narrow consciousness and uneven effects. Building at the MDGs' successes and training discovered, the Sustainable Development Goals (SDGs) had been adopted in 2015 as

⁷⁵ Kramer, M. R., & Porter, M. (2011). *Creating shared value* (Vol. 17). Boston, MA, USA: FSG.

⁷⁶ KPMG (2017), *KPMG International survey of corporate responsibility reporting 2017*, KPMG International, Amsterdam.

⁷⁷ United Nations, Department of Economic and Social Affairs, <https://sdgs.un.org> , consulted on May 7, 2023

⁷⁸ WCED, S. W. S. (1987). World commission on environment and development. *Our common future*, 17(1), 1-91.

⁷⁹ Rio Declaration on Environment and Development, in *Report of the United Nations Conference on Environment and Development*, UN Doc. A/CONF.151/26 (Vol. I), 12 August 1992, Annex I

⁸⁰ General Assembly resolution 55/2 of 8 September 2000 (Millennium declaration).

a part of the 2030 Agenda for Sustainable Development, representing a broader and more inclusive method to international improvement (United Nations, 2015)⁸¹.

The SDGs embody a transformative and included imaginative and prescient of improvement, acknowledging the interdependence of economic, social, and environmental dimensions (Sachs, 2012)⁸². They reflect a commitment to "leave nobody behind," striving to deal with inequalities and sell social inclusion within and amongst international locations (United Nations, 2016)⁸³.

The SDGs also emphasize the significance of participatory decision-making, stakeholder engagement, and multi-stage governance, spotting that sustainable improvement requires cooperation amongst governments, civil society, the non-public zone, and individuals (Biermann et al., 2012)⁸⁴.

The SDGs emerged from an intensive negotiation method that started with the Rio+20 Conference in 2012 (United Nations, 2012)⁸⁵. The method became marked via exceptional ranges of stakeholder engagement and transparency, with contributions from governments, civil society, academia, and the personal zone (Kanie & Biermann, 2017)⁸⁶.

The SDGs constitute a worldwide consensus on the maximum urgent demanding situations and priorities for sustainable development, reflecting a delicate balance of diverse interests and views. The goals had been fashioned by way of various political forces, along with the have an

⁸¹ United Nations. (2015). Transforming our world: The 2030 agenda for sustainable development. United Nations.

⁸² Sachs, J. D. (2012). From millennium development goals to sustainable development goals. *The lancet*, 379(9832), 2206-2211.

⁸³ United Nations. "Leaving No One Behind: The Imperative of Inclusive Development. Report on the World Social Situation 2016." (2016).

⁸⁴ Biermann, F., Abbott, K., Andresen, S., Bäckstrand, K., Bernstein, S., Betsill, M. M., ... & Zondervan, R. (2012). Navigating the Anthropocene: improving earth system governance. *Science*, 335(6074), 1306-1307.

⁸⁵ United Nations. (2012). United Nations Conference on Sustainable Development, Rio+20. United Nations.

⁸⁶ Biermann, F., Kanie, N., & Kim, R. E. (2017). Global governance by goal-setting: the novel approach of the UN Sustainable Development Goals. *Current Opinion in Environmental Sustainability*, 26, 26-31.

impact on of emerging economies, the function of advocacy networks, and the growing recognition of the want for included solutions (Kanie & Biermann, 2017)⁸⁷.

The 2030 Agenda incorporates 17 SDGs and 169 targets, addressing a wide range of issues such as poverty eradication (SDG 1), quality education (SDG 4), gender equality (SDG 5), climate action (SDG 13), and sustainable cities and communities (SDG 11) (United Nations, 2015)⁸⁸. The SDGs are supposed to be widespread and indivisible, applying to all countries irrespective of their degree of development. The SDGs additionally emphasize the significance of partnerships and cooperation (SDG 17) to facilitate the sharing of sources, understanding, and generation had to reap the dreams (United Nations, 2015)⁸⁹. The 2030 Agenda acknowledges that international demanding situations require collective movement and worldwide unity (Sachs, 2012)⁹⁰. A broader dissertation about the Goals is presented at the end of this section.

The number one duty for implementing the SDGs lies with countrywide governments, which are predicted to develop strategies, guidelines, and plans tailor-made to their particular contexts and priorities (United Nations, 2015)⁹¹. The United Nations helps implementation via diverse initiatives, which includes the High-Level Political Forum on Sustainable Development (HLPF), which critiques development, fosters dialogue, and stocks first-class practices (United Nations, 2018)⁹². The United Nations Development Programme (UNDP) also performs a crucial role in supplying technical help and capability-constructing to countries, specifically in the Global South (UNDP, 2020)⁹³.

⁸⁷ Biermann, F., Kanie, N., & Kim, R. E. (2017). Global governance by goal-setting: the novel approach of the UN Sustainable Development Goals. *Current Opinion in Environmental Sustainability*, 26, 26-31.

⁸⁸ United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations.

⁸⁹ United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations.

⁹⁰ Sachs, J. D. (2012). From millennium development goals to sustainable development goals. *The lancet*, 379(9832), 2206-2211.

⁹¹ United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations.

⁹² United Nations. (2018). *Voluntary national reviews: Synthesis report*. United Nations.

⁹³ UNDP. (2020). *The Sustainable Development Goals: Our framework for COVID-19 recovery*. United Nations Development Programme.

Regional and subnational governments, civil society groups, the private quarter, and individuals also make contributions to the implementation of the SDGs through their actions and initiatives (Stafford-Smith et al., 2017)⁹⁴. Multi-stakeholder partnerships and networks have emerged as crucial mechanisms for know-how change, resource mobilization, and innovation in assist of the dreams (Pattberg & Widerberg, 2016)⁹⁵.

Monitoring progress closer to the SDGs is predicated on a set of 232 global indicators developed by means of the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs). These indicators function a commonplace framework for tracking and reporting on the goals, enabling comparability and responsibility (United Nations, 2017)⁹⁶. Data for the SDG indicators is collected and reported by national statistical systems and international organizations, such as the World Bank and the World Health Organization (United Nations, 2017)⁹⁷. However, information availability and quality stay extensive challenges for many countries, specifically in the Global South, because of constrained sources, capacities, and infrastructure (Jerven, 2014)⁹⁸.

In addition to the global indicators, countries are advocated to broaden complementary national indicators to mirror their particular contexts and priorities (United Nations, 2017)⁹⁹.

To report some critics on the topic, the SDGs were criticized for being overly bold, indistinct, and hard to measure, with some arguing that their sheer wide variety and complexity can hinder effective action and communicate (Easterly, 2015¹⁰⁰; Fukuda-Parr & McNeill, 2019¹⁰¹). The

⁹⁴ Stafford-Smith, M., Griggs, D., Gaffney, O., Ullah, F., Reyers, B., Kanie, N., ... & O'Connell, D. (2017). Integration: the key to implementing the Sustainable Development Goals. *Sustainability science*, 12, 911-919.

⁹⁵ Pattberg, P., & Widerberg, O. (2016). Transnational multistakeholder partnerships for sustainable development: Conditions for success. *Ambio*, 45, 42-51.

⁹⁶ United Nations. (2017). Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development. United Nations.

⁹⁷ United Nations. (2017). Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development. United Nations.

⁹⁸ Jerven, M. (2014). Benefits and costs of the data for development targets for the post-2015 development agenda. *Data for Development Assessment Paper*, 16(9), 14.

⁹⁹ United Nations. (2017). Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development. United Nations.

¹⁰⁰ Easterly, W. (2015). The SDGs should stand for senseless, dreamy, garbled. *Foreign Policy*, 28, 1-5.

¹⁰¹ Fukuda-Parr, S., & McNeill, D. (2019). Knowledge and politics in setting and measuring the SDG S: Introduction to special issue. *Global Policy*, 10, 5-15.

goals have also been critiqued for their reliance on economic increase as a driver of development, which may also exacerbate environmental degradation and social inequalities, in continuity with Millennium Development Goals (Hickel, 2016)¹⁰².

Challenges to the implementation of the SDGs include insufficient funding, with estimates suggesting that attaining the dreams could require an extra \$2.5 trillion per year in investments (UNCTAD, 2014)¹⁰³. Moreover, the goals are faced by way of vulnerable institutional capacities, mainly in the Global South, in addition to political resistance and competing priorities within and amongst international locations (Waage et al., 2015)¹⁰⁴. The SDGs additionally face the task of making sure that their benefits are equitably allotted and attain the most marginalized and prone populations, which requires centred interventions and disaggregated facts (Stuart & Woodroffe, 2016)¹⁰⁵. Finally, the SDGs are confronted via international demanding situations, which includes climate trade and geopolitical tensions, which could undermine their progress and achievement (Piketty, 2020)¹⁰⁶. Despite those critiques and demanding situations, the SDGs have made enormous contributions to the worldwide development schedule and feature the ability to catalyse transformative change if they are efficiently implemented, monitored, and supported by means of all stakeholders (Lim, 2016)¹⁰⁷.

Despite the critics, the Sustainable Development Goals (SDGs) have played a essential function in shaping the worldwide development schedule by way of elevating attention of sustainable improvement issues, fostering international cooperation, and promoting integrated approaches to policy-making. The SDGs have stimulated national development plans, sectoral guidelines and policies, and corporate strategies, encouraging alignment with the 2030 Agenda and the adoption of sustainable practices. The “Agenda 2030”’s goals have additionally facilitated understanding alternate and innovation, inspiring new partnerships, networks, and tasks across

¹⁰² Hickel, J. (2016). The true extent of global poverty and hunger: questioning the good news narrative of the Millennium Development Goals. *Third World Quarterly*, 37(5), 749-767.

¹⁰³ United Nations Conference on Trade and Development (UNCTAD). (2014). *World Investment Report 2014: Investing in the SDGs: An Action Plan*. UN.

¹⁰⁴ Waage, J., Yap, C., Bell, S., Levy, C., Mace, G., Pegram, T., ... & Poole, N. (2015). Governing the UN Sustainable Development Goals: interactions, infrastructures, and institutions. *The Lancet Global Health*, 3(5), e251-e252.

¹⁰⁵ Stuart, E., & Woodroffe, J. (2016). Leaving no-one behind: can the sustainable development goals succeed where the millennium development goals lacked?. *Gender & Development*, 24(1), 69-81.

¹⁰⁶ Piketty, T. (2020). *Capital and Ideology*. Harvard University Press.

¹⁰⁷ Lim, M. (2016). *Governing through goals: Sustainable development goals as governance innovation*. Oxford University Press.

distinctive sectors and areas (Pattberg & Widerberg, 2016)¹⁰⁸. Furthermore, the Sustainable Development Goals have contributed to the mainstreaming of concepts along with resilience, inclusiveness, and circular economy, promoting a shift towards more sustainable and equitable models of development. Indeed, the achievement of the Sustainable Development Goals cannot be accomplished solely through the tactics or initiatives of individuals; rather, it presupposes the cooperation and integration of efforts from various actors, such as organizations, governments, and individuals. In implementing a sustainable system, a shared vision in the decision-making process of these aforementioned actors is indispensable.

¹⁰⁸ Pattberg, P., & Widerberg, O. (2016). Transnational multistakeholder partnerships for sustainable development: Conditions for success. *Ambio*, 45, 42-51.

Picture 1: The Sustainable Development Goals (SDGs). Source: <https://sdgs.un.org/goals> ¹⁰⁹



The illustrated 17 Sustainable Development Goals (SDGs) are supported by 169 Targets which are designed with several characteristics with the scope of reaching the 17 Goals within 2030. The targets, then, are: measurable, action-oriented, time-bound, inclusive, interlinked, universal, and specific. Thus, these characteristics are designed to make the goals effective in an international environment, and in every part of the globe, in a pre-determined time frame and in an holistic perspective with the possibility of tracking of the progress in every perspective.

¹⁰⁹ United Nation. Department of Economic and Social Affairs. <https://sdgs.un.org/goals> consulted on May 11, 2023

The UN goals for the Agenda 2030 are listed below ^{110 111}:

- *Goal 1. End poverty in all its form everywhere.*
- *Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.*
- *Goal 3. Ensure healthy lives and promote well-being for all at all ages.*
- *Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.*
- *Goal 5. Achieve gender equality and empower all women and girls.*
- *Goal 6. Ensure availability and sustainable management of water and sanitation for all.*
- *Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all.*
- *Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.*
- *Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.*
- *Goal 10. Reduce inequality within and among countries.*
- *Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable.*
- *Goal 12. Ensure sustainable consumption and production patterns.*
- *Goal 13. Take urgent action to combat climate change and its impacts.*
- *Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.*
- *Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.*
- *Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.*
- *Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development.*

¹¹⁰ United Nation. Department of Economic and Social Affairs. <https://sdgs.un.org/goals> consulted on May 11, 2023

¹¹¹ Pacific Institute of Public Policies, <http://pacificpolicy.org/2015/03/aiming-for-goals/> consulted on May 13, 2023

Aiming for the achievement of the Sustainable Development Goals (SDGs) is a strategy that is increasingly significant for proactive and sustainable organizations. Moreover, integrating the corporate strategy and business model with the pursuit of the SDGs can contribute to generating new revenues, strengthening one's position within the production chain, and most importantly, positively influencing human capital. In this context, there is not only an increase in talent recruitment but also an enhancement in employee engagement, which leads to an improved perception of the company by stakeholders and society at large.

From a corporate perspective, various authors have asserted that a management strategy incorporating environmental and social factors, in addition to economic ones, could generate greater productive efficiency, cost reduction, and an enhanced market reputation. All these positive elements reflect in financial and economic benefits for the organization as a whole. (Molina-Azorín et al. 2009¹¹²; Ambec e Lanoie 2008¹¹³; Miles e Covin 2000¹¹⁴).

The Sustainable Development Goals (SDGs) foster a new level of awareness, redirecting both public and private investments toward innovative opportunities and expediting the trend toward a sustainable economy. Collectively, the SDGs delineate the dimensions of the contemporary concept of sustainable development, which companies around the globe both share and pursue. This allows businesses to derive benefit from stakeholder communication regarding activities and corresponding value-generating mechanisms in a broad sense.

¹¹² Molina-Azorín, J. F., Claver-Cortés, E., López-Gamero, M. D., & Tarí, J. J. (2009). Green management and financial performance: a literature review. *Management decision*..

¹¹³ Ambec, S., & Lanoie, P. (2008). Does it pay to be green? A systematic overview. *The Academy of Management Perspectives*, 45-62..

¹¹⁴ Miles, M. P., & Covin, J. G. (2000). Environmental marketing: A source of reputational, competitive, and financial advantage. *Journal of business ethics*, 23, 299-311..

2. European taxonomy

2.1 Introduction to European Taxonomy

In recent years, the concept of sustainability taxonomy has been gaining significant attention on the global stage, which is a system for categorizing economic activities according to how they contribute to the sustainability of the environment. As a result of this taxonomy, it has evolved into a fundamental component of the policy infrastructure of the European Union (EU), and is now used as a driving force to steer the economy towards greater sustainability and resilience (EU Technical Expert Group on Sustainable Finance, 2019)¹¹⁵. The impact of (mandated or optional) disclosure of nonfinancial environmental data, like as greenhouse gas emissions, on outcomes like business value, the cost of capital, or environmental performance has been studied by a number of writers.

As a result, a common language has to be provided so that investors, companies, and policymakers to make informed decisions that are aligned with the objectives of the environment by providing them with a standard language to identify sustainable investments. It is the objective of this chapter to shed some light on the complex landscape of the EU's sustainability taxonomy, looking at its historical development, its current role and implications, its challenges and possible future directions, as well as its potential future trajectories. A comprehensive analysis of the taxonomy's impacts on a broad range of economic sectors, its influence on investment decisions and policy development, as well as its role in promoting sustainable growth is addressed in this in-depth analysis. This chapter also aims to contribute to a broader understanding of how sustainability taxonomies can be effectively implemented and utilized in different economic and political contexts.

The EU's sustainability taxonomy has its roots in the EU's Action Plan on Financing Sustainable Growth, a comprehensive strategy introduced by the European Commission in 2018 (European Commission, 2018). This plan laid the groundwork for the development of the taxonomy by outlining the key sectors and activities that it should encompass. These include sectors such as energy, agriculture, manufacturing, and transport, among others, and environmental objectives such as climate change mitigation, sustainable use and protection of

¹¹⁵ TEG. (2020). "Taxonomy Report: Technical Annex (March 2020)." Technical Expert Group on Sustainable Finance.

water and marine resources, transition to a circular economy, pollution prevention and control, and protection and restoration of biodiversity and ecosystems. The taxonomy, developed by the EU Technical Expert Group on Sustainable Finance (2020), provides detailed criteria for each of these sectors and objectives, offering a comprehensive guide for sustainable economic activities. In addition to these environmental considerations, the taxonomy also incorporates social considerations in line with the principle of "do no significant harm" (DNSH), ensuring that activities classified as sustainable do not adversely affect social objectives (European Commission, 2020).

2.2 The regulation: EU's Taxonomy Regulation (EU) 2020/852

The Taxonomy Regulation (EU) 2020/852 stands as an integral part of Europe's vision to transition our economy towards low-carbon sustainability. This regulatory measure offers a comprehensive classification system which finally regularises definitions relating to "sustainable" activity; providing clarity where once there was confusion while enabling solid frameworks for companies and investors alike.

Indeed, such a regulation represents a keystone within Europe's strategic plan to channel financing towards sustainable ventures towards achieving climate neutrality by 2050 as per our commitment under the European Green Deal initiative. Additionally, this measure exists to halt greenwashing tactics within businesses through its stringent criteria for identifying environmentally-friendly economic activity - each benchmarked against environmental objectives relating to pollution prevention control or protection of marine resources among others. Ultimately then, these criteria offer us a well-rounded view of what constitutes as sustainable economic activities while highlighting those initiatives that make substantial contributions toward environmental goals like climate mitigation or adaptation efforts. To make it into this classification system activities need to comply with certain social safeguards and avoid significantly harming environmental objectives.

EU's Taxonomy Regulation (2020/852) has established an extensive classification system based on several fundamental environmental objectives. The Taxonomy Regulation establishes six environmental objectives, which serve a critical role in defining sustainable environmental activities while guiding the EU's movement towards a low carbon economy. The objectives are listed below:

1. Climate change mitigation
2. Climate change adaptation
3. The sustainable use and protection of water and marine resources
4. The transition to a circular economy
5. Pollution prevention and control
6. The protection and restoration of biodiversity and ecosystems

Climate Change Mitigation is one of the primary objectives of the Regulation 2020/852. Activities that significantly contribute include promoting renewable energy generation, transmission & storage; increasing energy efficiency; implementing low carbon transportation methods; & carbon capture/storage/utilization efforts.

Climate Change Adaptation is another fundamental objective that targets reducing/preventing adverse effects from current/future climate risks on economic activity through enhanced infrastructure & ecosystem resilience; improved adaptive capacity & lessening vulnerability towards climate change induced impacts.

This brings us to Sustainable Use & Protection of Water/Marine Resource Objective- focused on sustainable management for water/marine resources thereby protecting biodiversity & maintaining ecosystem health/resilience. To create a sustainable world for future generations, it is essential that we partake in activities that promote balanced water usage, conserve our oceans, lakes & rivers and protect marine wildlife from exploitation & abuse. Additionally, this requires transitioning to a Circular Economy model where we minimize waste production by maximizing resource efficiency using secondary raw materials & extended product lifecycles even after their initial purpose has been served. Achieving such an objective necessitates engaging in practices like minimizing waste creation, recycling materials effectively, producing long-lasting goods with durability & disposability functions considered. Besides, avoiding pollution must go together if we aspire towards clean living conditions that improve environmental standards - not just for ourselves but also plant & animal life too. Preventing or reducing emission levels while ensuring proper management of waste are practices contributing towards this goal of curtailing pollution. Finally, protecting endangered species from extinction while restoring damaged ecosystems forms an integral part of this exercise towards conservation. As per the Regulation, the European Commission is responsible for defining technical screening criteria for each environmental objective through delegated acts. These criteria outline when economic activities can substantially contribute to these objectives. It is critical to ensure consistency and effectiveness across various sectors of the economy while implementing this process successfully in promoting sustainable investments

through Taxonomy's classification system. To achieve this goal fully, it becomes imperative that Taxonomy's correct application takes place uniformly across all Member States and sectors by constant monitoring, evaluation, clear communication, and capacity building campaigns among relevant stakeholders.

Future research should focus on assessing how effective the technical screening criteria are currently while exploring ways of refining the system further to optimize its support towards the EU's sustainability objectives.

Establishing this system is crucial in achieving our goal of reducing carbon emissions from the economy. Research shows that sharing nonfinancial environmental data can lead to actual economic advantages such as lower emissions (Tomar 2019¹¹⁶; Downar et al. 2020¹¹⁷).

Transparency is enhanced by the Taxonomy Regulation but its success depends on governments requiring new investment information or companies voluntarily disclosing data related to taxonomy standards. Tying in other regulations like non-financial reporting directive (NFRD) and sustainable finance disclosure regulation (SFDR) has led to greater transparency about companies' sustainability efforts too. Moreover, making use of the Taxonomy Regulation can help greener businesses lower their debt and equity capital costs ultimately incentivizing them towards adopting more sustainable practices, but bringing many benefits to these companies has arisen some form of criticism of this regulation. Despite concerns over its complexity and stringent criteria possibly limiting widespread adoption there are also worries over inconsistent implementation of the Taxonomy Regulation across EU countries.

Nonetheless, this regulation marks an important step for sustainable finance in the region as it provides a clear definition of what activities are deemed sustainable; paving the way for significant investment shifts towards a greener economy. It is paramount that we tackle regulatory complexities while developing sturdy enforcement mechanisms that will ensure uniform compliance throughout all Member States. Moreover, it's also important to acknowledge potential challenges and risks associated with the taxonomy. For sectors and companies not currently aligned with the taxonomy's criteria, the transition towards

¹¹⁶ Tomar, S. (2019). CSR disclosure and benchmarking-learning: Emissions responses to mandatory greenhouse gas disclosure. *Available at SSRN*.

¹¹⁷ Downar, B., Ernstberger, J., Reichelstein, S., Schwenen, S., & Zaklan, A. (2021). The impact of carbon disclosure mandates on emissions and financial operating performance. *Review of Accounting Studies*, 26, 1137-1175.

sustainability may entail significant costs and uncertainties (Rant, 2022)¹¹⁸. These transition risks need to be carefully managed to ensure a fair and just transition towards a more sustainable economy. Furthermore, potential distributional effects and regional disparities may arise, given the varying capacities of different regions within the EU to adapt to and benefit from the taxonomy.

The EU's sustainability taxonomy has broad policy implications, not just within the EU, but also globally, given its pioneering role in this area. Policymakers can leverage the taxonomy as a tool to align regulations and policies with sustainability goals. Moving ahead rigorous research must focus on how various industries/countries adopt this regulation; assessing both short- and long term impacts while identifying strategic measures that can help enhance effectiveness thereby spurring progress in responsible finance practices throughout Europe.

3.1 Applications, coverage and expected impact of the European Union's Taxonomy

The Sustainability Taxonomy emphasises activities substantially contributing to climate change mitigation and adaptation as proposed by the Technical Expert Group (TEG) and implemented by EU delegated acts (TEG 2020¹¹⁹; European Commission 2020¹²⁰). The Taxonomy's criteria require economic activities to significantly aid in climate change mitigation or adaptation without causing significant harm to human society or other environmental objectives. The Taxonomy excludes economic activities that are incompatible with net-zero emissions and have technological alternatives.

The Taxonomy underpins various initiatives within the EU Commission's sustainable finance action plan (European Commission 2018)¹²¹. Major corporations are required to disclose their Taxonomy-aligned activities by 2022 under the Non-Financial Reporting Directive (NFRD). The Sustainable Finance Disclosure Regulation (SFDR) also mandates financial market participants to disclose their Taxonomy-aligned activities or investments by December 2021. The Taxonomy is further utilised to standardise green financial products through the EU

¹¹⁸ Rant, V. (2022). Regulating the green transition and sustainable finance in the European Union. Available at SSRN 4108232.

¹¹⁹ TEG. 2020. "Taxonomy Report: Technical Annex (March 2020)." Technical Expert Group on Sustainable Finance.

¹²⁰ European Commission. 2020. Annex 1 to the Draft Delegated Act (Ares(2020)6979284).

¹²¹ European Commission. 2018. Action Plan: Financing Sustainable Growth (No. COM(2018) 97 final).

Ecolabel and the EU Green Bond Standard (Hessenius et al. 2020)¹²², and forms a reference for public investments within the EU Recovery and Resilience Facility.

Internationally, similar taxonomies are emerging, with the EU playing a crucial role in the International Platform on Sustainable Finance (IPSF). However, complete global alignment might be challenging due to varying ambitions and differing perspectives on climate-neutral technologies.

The Taxonomy, which is considered primarily a classification system, can potentially facilitate economic decarbonisation through increased information disclosure. It offers a standardised definition for sustainable activities, and there is evidence suggesting that the disclosure of non-financial environmental information can result in tangible economic effects like emissions reduction (Tomar 2019¹²³; Downar et al. 2020¹²⁴). However, the Taxonomy's potential to enhance transparency is conditional upon either government requisition of information on publicly funded investments, or firms disclosing information regard Taxonomy to stakeholders. Consequently, the Taxonomy is associated with other regulations like the Non-Financial Reporting Directive (NFRD) for large corporations. Thus, the association between the EU Taxonomy and other rules in term of CSR or Non-Financial Disclosure, such as the NFRD, increases the quality and the comparability of accounting data, in addition to the transparency about corporate sustainability in relation to their products or services, or investment portfolio.

The foremost connection between the Taxonomy and superior ESG performance is a factor that will potentially reduce the cost of debt and equity capital for greener companies. The lower cost of capital could be directly related by governments or public banks through dedicate offering of peculiar instrument, such as preferential loans, grants, or indirectly by public investment programs.

Hence, the Taxonomy could imply new standards or policies production and new means of allocation with regards to public investments or subsidy/ incentives programs with the aim to

¹²² Hessenius, M., M. Dumrose, C. Anselm, S. Berendsen, I. Jürgens, C. Klein, F. Koch, K. Löffler, and S. Rink. (2020). Testing Draft EU Ecolabel Criteria on UCITS equity funds (Report for the European Commission, DG FISMA).

¹²³ Tomar, S. (2019). CSR disclosure and benchmarking-learning: Emissions responses to mandatory greenhouse gas disclosure. *Available at SSRN*.

¹²⁴ Downar, B., Ernstberger, J., Reichelstein, S., Schwenen, S., & Zaklan, A. (2021). The impact of carbon disclosure mandates on emissions and financial operating performance. *Review of Accounting Studies*, 26, 1137-1175.

promote a shift towards climate neutrality, such as the aforementioned European Green Deal. Furthermore, the EU's Recovery and Resilience Facility's COVID-19 recovery programmes must adhere to the Taxonomy's 'do no significant harm' criteria, with a climate share of 37% of the total €672.5 billion investment. For these investments, the Taxonomy's climate mitigation thresholds are applied as screening criteria. Lastly, the European Investment Bank has recently committed to raising the climate share in its financing activities to 50% by 2025, using the EU Taxonomy as a primary reference (EIB 2020)¹²⁵.

For businesses, the taxonomy may necessitate significant changes in their strategies and operations to comply with taxonomy-aligned standards. To facilitate this transition, recommendations might include enhancing stakeholder engagement, providing support for small and medium-sized enterprises, and increasing transparency in taxonomy-related reporting. These recommendations could help ensure that the taxonomy is effectively implemented and achieves its intended objectives.

The EU's Taxonomy plays a critical role in directing investment towards environmentally sustainable activities. Its development and implementation mark a significant step forward in the EU's commitment to achieving a sustainable and resilient economy. Despite the challenges and uncertainties associated with this transition, the taxonomy presents significant opportunities for economic transformation, innovation, and growth. Its impacts extend beyond the economic sphere, contributing to broader environmental and social objectives. Further research is needed to continue evaluating and refining this vital tool for sustainable development, ensuring that it remains fit for purpose in a rapidly changing economic and environmental context.

¹²⁵ EIB. European Investment Bank. (2020). Climate Bank Roadmap. <https://www.eib.org/en/about/priorities/climate-action/cbr/index.htm> consulted on May 14, 2023

3. Analysis and Results

3.1 Objectives of the analysis

In this Analysis, the primary objective is to measure the extent of SDGs disclosure in sensitive sectors which include “Oil and Gas”, “Energy”, and “Utilities” in the Italian context. A Disclosure Index (DI), an internally developed metric, was been measured in order to evaluate the extent of the SDGs disclosure of 128 Italian companies that publish from the year 2017 to the year 2022 a Non-Financial statement in accordance with the Legislative Decree 254/2016¹²⁶. The choice of those sectors is primarily based on their heightened susceptibility to the effect of sustainability on their operations (Garcia et al., 2017)¹²⁷, stakeholder theory (Freeman et al., 2010)¹²⁸, and the potential effect of ESG factors on their value (Garcia et al., 2017)¹²⁹.

The fundamental attention of the analysis is to determine the relationship among SDGs Disclosure Index and a series of specific variables, so that it will be categorized and mentioned in element, that can be synthetized in the categories of: economic performance, dimension, structural characteristics and qualitative document’s characteristics. By analysing those variables, the study aims to provide a complete expertise of the factors influencing the level of SDGs disclosure in sensitive industries within the Italian economy.

The sensitive sectors inside the Italian economy, in particular “Oil and Gas”, “Energy”, and “Utilities”, are concern to diverse sustainability demanding situations due to their commercial enterprise operations' nature. These challenges encompass, however are not limited to, increasing concerns about weather exchange, environmental pollution, and social influences. Consequently, these sectors are beneath increasing pressure to improve their sustainability

¹²⁶ Gazzetta Ufficiale. (2016). Decreto Legislativo 254/2016 <https://www.gazzettaufficiale.it/eli/id/2017/01/10/17G00002/sg>, consulted on 7th May 2023

¹²⁷ Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. J. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. *Journal of cleaner production*, 150, 135-147.

Ford, J. D., Pearce, T., Prno, J., Duerden, F., Berrang Ford, L., Beaumier, M., & Smith, T. (2010). Perceptions of climate change risks in primary resource use industries: a survey of the Canadian mining sector. *Regional Environmental Change*, 10, 65-81.

¹²⁸ Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L., & De Colle, S. (2010). Stakeholder theory: The state of the art.

¹²⁹ Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. J. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. *Journal of cleaner production*, 150, 135-147.

overall performance and enhance their disclosure practices. This evaluation goals to discover the factors that can make a contribution to the level of SDGs disclosure in these sectors by way of analysing the relationships between SDGs disclosure and diverse operational and organisational variables.

In the following section, the analysis will delve into the methodology employed within the examine. This will include a detailed description of the facts series method, the selection of variables, the development of the Disclosure Index, and the statistical techniques used to look at the relationships among the variables and SDGs disclosure. The method segment will even talk the steps taken to ensure the accuracy, reliability, and validity of the findings.

Following the methodology section, the evaluation will present the findings of the regression analysis. This will involve a complete discussion of the effects, consisting of the relationships between the selected variables and the level of disclosed SDGs within the sensitive industries¹³⁰ of the Italian landscape. The findings are offered in a clean, structured way, supported by way of relevant tables and charts to decorate the reader's know-how of the consequences.

Finally, the evaluation will conclude with a precis of the principle findings, their implications for idea and exercise, and suggestions for policymakers, regulators, and companies working inside the sensitive sectors of the Italian financial system. The conclusion may even define the restrictions of the study and suggest avenues for future studies on SDGs disclosure in sensitive sectors.

By providing a comprehensive know-how of the elements influencing the extent of SDGs disclosure in sensitive sectors in the Italian economy, this evaluation will contribute treasured insights to the existing body of literature on company sustainability and disclosure practices. The findings can also tell the development of extra effective regulations, rules, and pointers that sell extended transparency and accountability in these sectors, in the end contributing to the success of the Sustainable Development Goals and the broader sustainability schedule.

¹³⁰ Oil and Gas, Energy, Utilities

3.2 Research questions and Hypothesis

This thesis is driven by two main objectives, that are enclosed in the following research questions:

1. “To what extent the implementation of sustainability and the SDGs disclosure is developed within the Italian sensitive Industries?”
2. “To evaluate to what extent does the implementation of sustainability and the level of SDGs disclosure depend upon corporate variables?”

Understanding the factors that have an impact on sustainability implementation and disclosure is critical for figuring out capacity drivers and barriers to sustainable practices in sensitive industries within the Italian economy.

To address this research question, the analysis will undertake a multi-method approach, combining qualitative and quantitative techniques to explore the existence of a significant relationship between diverse economic variables and companies’ structural characteristics.

The quantitative evaluation will contain the collection of applicable records on the selected variables, consisting of economic data –balance sheet data–, structural traits of the corporations, and features in their sustainability disclosure. The information may be obtained from diverse sources, which include relevant databases, companies’ Financials and companies Non-Financial Disclosure.

The relationships between those variables and the extent of sustainability implementation and disclosure, as measured via the Disclosure Index, can be examined the use of appropriate statistical methods, together with correlation analysis and regression evaluation. The findings from the quantitative evaluation offer insights into the quantity to which the chosen variables have an impact on sustainability implementation and disclosure, as well as the relative significance of those variables in explaining the determined patterns.

By addressing the research question through a multi-method approach, this analysis will make contributions treasured insights into the factors influencing sustainability implementation and disclosure inside the sensitive sectors of the Italian market. The findings may inform the development of more effective rules, rules, and recommendations that sell extended transparency and accountability in those sectors, ultimately contributing to the success of the

Sustainable Development Goals and the broader sustainability schedule. Furthermore, the effects may additionally guide businesses in identifying areas for improvement in their sustainability practices and disclosure, thereby improving their typical sustainability performance.

3.3 Sample and data source

Our sample consists of the Italian non-financial companies, active in a sensitive industry, that disclose non-financial statements according to the Legislative Decree 254/2016. The sample is restricted to non-financial companies, due to their rather substantial environmental expenditures and exposure, compared to the financial industry, that may have a material impact on firm value and investor returns (Lamboglia et al., 2019)¹³¹. Furthermore, it has been decided to restrict the sample to “sensitive industries” – defined as: Oil and Gas, Energy and Utilities - due to massive environmental exposure, which exert a significant effect on firm value and investor returns (Garcia et al., 2017)¹³².

In practical terms, the sample consists of Italian companies active in a sensitive industry, which disclose non-financial data (NFD) as permitted by the Italian Legislative Decree 254/2016. From the list of the firm that disclose Non-Financial Information – composed of a range between 166 (fiscal year 2017) and 211 (fiscal year 2021) companies (Consob, 2021)¹³³ – thus 140-185 companies were excluded from the sample:

1. 31-26 Banking and Financial Services companies because the high leverage that is normal for these firms probably does not have the same meaning as for non-financial firms, where high leverage more likely indicates distress (Fama & French, 1992)¹³⁴;

¹³¹ Lamboglia, R., Paolone, F., & Mancini, D. (2019). Determinants of the implementation of environmental risk indicators: Empirical evidence from the Italian manufacturing context. *Corporate Social Responsibility and Environmental Management*, 26(2), 307-316.

ISO 690

¹³² Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. J. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. *Journal of cleaner production*, 150, 135-147.

¹³³ Consob, “Soggetti che hanno pubblicato la dichiarazione non finanziaria”, <https://www.consob.it/web/area-pubblica/storico-elenco-dnf-al-31-dicembre-2021> consulted on April 2nd, 2023

¹³⁴ Fama, E. F., & French, K. R. (1992). The cross-section expected stock returns. *Journal of Finance*, 47, 427–466.

2. 109-159 General Good and Service companies because of the lower exposure to environmental risks relatively to firms operating in sensitive industries, as shown from Cho et al., (2006)¹³⁵, Pucheta-Martinez and Gallego-Alvarez (2019)¹³⁶

Therefore, the considered sample for this analysis comprehend 128 observations from 26 Italian companies (between 2017 and 2021) that prepare the sustainability report in accordance with Legislative Decree 254/2016 and operate primary in the following Industries: Oil and Gas, Utilities, Energy. The dataset is gathered from the following databases: ORBIS-Bureau Van Dijk database¹³⁷, NFD Observatory database¹³⁸—the Observatory of Non-Financial Disclosure and Sustainability Practices— and CSR/ Sustainability reports available on companies’ official website¹³⁹. The data were collected for the years following the implementation of the Italian Law 254/2016 (2017 – 2021). A detailed approach is represented in Table 1, in which for each variable is listed the data source.

Table 1 – Variables data source:

<i>Variable</i>	<i>Variable Source</i>
Disclosure Index	Internally developed Index based on a qualitative analysis of the contents of Non-Financial Disclosures
Total Assets	ORBIS-Bureau Van Dijk database
Revenues from Sales and Services	ORBIS-Bureau Van Dijk database
Gearing Ratio	ORBIS-Bureau Van Dijk database
Return on Total Assets (ROA) Net	ORBIS-Bureau Van Dijk database
Number of Employees	ORBIS-Bureau Van Dijk database
Listed	ORBIS-Bureau Van Dijk database
Sustainability Committee	NFD Observatory database

¹³⁵ Cho, C. H., Patten, D. M., & Roberts, R. W. (2006). Corporate political strategy: An examination of the relation between political expenditures, environmental performance, and environmental disclosure. *Journal of Business Ethics*, 67, 139-154.

¹³⁶ Pucheta-Martínez, M. C., & Gallego-Álvarez, I. (2019). An international approach of the relationship between board attributes and the disclosure of corporate social responsibility issues. *Corporate Social Responsibility and Environmental Management*, 26(3), 612-627.

¹³⁷ Bureau Van Dijk, <https://www.bvdinfo.com/it-it/> , consulted on April 20th 2023

¹³⁸ Osservatorio DNF, <https://www.osservatoriodnf.it/en/home/> , consulted on May 7th 2023

¹³⁹ As disclosed from the Legislative Decree 254/2016, Gazzetta Ufficiale (2016), <https://www.gazzettaufficiale.it/eli/id/2017/01/10/17G00002/sg> , consulted on 7th May 2023

Sustainability Committee within the Board	NFD Observatory database
Long Term Sustainability Plan	NFD Observatory database
Sustainability Plan integrated in Industrial Plan	NFD Observatory database
Presence of KPIs and Benchmarks with Previous Years	NFD Observatory database
Short-term ESG Targets (1-2 years) reported	NFD Observatory database
Long-term ESG Targets (3 years) reported	NFD Observatory database
SDGs related to Material Topics	NFD Observatory database
SDGs related to Future Targets	NFD Observatory database

3.4 Variables and Model Specification

To define the RQs *“To what extent the implementation of sustainability and the SDGs disclosure is developed within the Italian sensitive Industries?”* and *“To evaluate to what extent does the implementation of sustainability and the level of SDGs disclosure depend upon corporate variables?”*, a pooled OLS regression technique has been used to analyse the gathered data and give a remarkable conclusion to the RQs stated above.

To assess whether the internally developed Disclosure Index (DI) has value applicability a pooled regression analysis has been used. The primary objective of this study is to examine the relationship subsequent to the implementation of the Italian Law, which necessitates evaluating the addition of each variable and verifying their statistical significance. Consequently, I employ a Pooled Ordinary Least Squares (OLS) regression without accounting for time effects. I assess the value relevance of the internally developed Disclosure Index (DI) by leveraging the explanatory power of accounting figures and incorporating various binary variables that characterize the composition and disclosure practices of the companies in our sample.

Specifically, there are 15 independent variables used in this model and are listed in the previous section; while the internally developed Disclosure Index (DI) incorporated in this study

warrants a thorough explanation regarding its construction and the variables involved. This section elucidates the process of creating the DI, outlining the rationale behind the choice of variables and their significance within the context of our research.

In particular, the process of developing the Disclosure Index (DI) is outlined below:

1. Mapping in an excel spreadsheet of all Environment related SDGs (SDGs 6, 7, 13, 14, 15) divided in 6 main categories from GRI protocol (GRI 201, 302, 303, 304, 305, 306) - 58 GRI Indicators.
2. Collecting data manually from firms' DNF reports and corporate websites.
3. Checking the correspondence between each single indicator of GRI (Table 2) and the same indicator included in the annual report of each firm (if present).
4. Building the Disclosure Index DI (Formula 1):

Formula 1 – The Disclosure Index:

$$\frac{\text{Number of environmental risk indicators of the firm } i}{\text{Maximum number of environmental risk indicators according to GRI}}$$

In this process, I refer to Clarkson et al. (2013) and Paolone et al. (2020), who examined the presence of environmental performance indicators in CSR reports and on corporate websites, using the same methodology for the construction of ERI indicator. With the aim of linking the SDGs to the GRI standards, an official linking document, published by the Global Reporting Initiative, was used (GRI, 2021)¹⁴⁰ to define a detailed reference from the SDGs taken into account to the GRI indicators used in this study, shown in Table 2. Globally, 5 GRI Standards were considered:

- GRI 201: Economic Performance 2016
- GRI 302: Energy 2016
- GRI 303: Water and Effluents 2018
- GRI 304: Biodiversity 2016
- GRI 305: Emissions 2016
- GRI 306: Waste 2020

¹⁴⁰ Global Reporting Initiative. (2021). Linking the SDGs and the GRI Standards. *Global Reporting Initiative: Amsterdam, The Netherlands*.

That correspond to the considered 5 SDGs:

- SDG 6: Ensure availability and sustainable management of water and sanitation for all
- SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all
- SDG 13: Take urgent action to combat climate change and its impacts
- SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Appendix A provides a detailed description of the link between the SDGs UN-targets and the GRI Indicators.

In this thesis, I evaluate the value applicability of the internally developed Disclosure Index (DI) by employing a pooled regression analysis. As the primary objective of this study is to examine the relationship subsequent to implementation of the Italian Legislative Decree 254/2016, which necessitates evaluating the addition of each variable and verifying their statistical significance. To achieve this, a Pooled Ordinary Least Squares (OLS) regression without accounting for time effects is used to reply to our Research Questions. The analysis assesses the value relevance of the internally developed Disclosure Index (DI) by leveraging the explanatory power of accounting figures and incorporating various binary variables that characterize the composition and disclosure practices of the companies in our sample.

In our model, the Disclosure Index has been regressed on economic performance variables and dichotomous variables regarding company's approach to sustainability and to Non-Financial Disclosure as displayed from the subsequent formula (Formula 2). The variables are listed upwards, in the previous section.

Formula 2 – The Model:

$$DI = \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \dots + \beta_{15}\chi_{15} + \varepsilon$$

Table 2 – SDGs to GRI indicators:

SDGs	GRI relevant indicators
<i>SDG 6</i>	303-1, 303-2, 303-3, 303-4, 303-5, 304-1, 304-2, 304-3, 304-4, 306-1, 306-2, 306-3, 306-5
<i>SDG 7</i>	302-1, 302-2, 302-3, 302-4, 302-5
<i>SDG 13</i>	201-2, 302-2, 302-3, 302-4, 302-5, 305-1, 305-2, 305-3, 305-4, 305-5
<i>SDG 14</i>	304-1, 304-2, 304-3, 304-4, 305-1, 305-2, 305-3, 305-4, 305-5, 305-7
<i>SDG 15</i>	304-1, 304-2, 304-3, 304-4, 305-1, 305-2, 305-3, 305-4, 305-5, 305-7, 306-3, 306-5

3.5 Descriptive statistics

Descriptive statistics of the variables used in the regression model are performed and listed in Table 3.

The internally developed dependent variable, Disclosure Index DI, appears to have a somewhat non-normal distribution. The mean is 0.4880, with a standard deviation of 0.2454, and it ranges from 0 to 1. The skewness is positive (0.3377), which indicates that the distribution is slightly skewed to the right. The kurtosis is negative (-0.6277), which suggests that the distribution has lighter tails and a less peaked centre compared to a normal distribution. In other words, the distribution is less concentrated around the mean and has less extreme values in the tails than a normal distribution. In conclusion, the Disclosure Index appears to have a slightly right-skewed distribution with somewhat lighter tails compared to a normal distribution.

Moreover, with respect to the independent variables, it is listed below a descriptive analysis for each variable in the analysis:

- The variable "Total Assets" (Variable name in the dataset: "Totale_Attivo") has 128 observations with a mean of 22.0450 and a standard deviation of 1.8522. The minimum value for this variable is 18.9964 and the maximum value is 26.0557. The skewness of the variable is positive (0.3472), indicating that the distribution is slightly skewed to the right, while the kurtosis is negative (-0.7459), suggesting that the distribution is slightly less peaked than a normal distribution. Overall, these descriptive statistics

suggest that the Total Assets variable has a relatively narrow range of values with a moderate degree of variability.

- The variable "Revenues from Sales and Services" (variable name: "Ricavi_vendite_e_prestazioni") has 128 observations with a mean of 21.2459 and a standard deviation of 1.6899. The minimum value for this variable is 18.1328 and the maximum value is 25.1553. The skewness of the variable is positive (0.5047), indicating that the distribution is slightly skewed to the right, while the kurtosis is negative (-0.1755), suggesting that the distribution is slightly less peaked than a normal distribution. Overall, these descriptive statistics suggest that the Ricavi_vendite_e_prestazioni variable has a relatively narrow range of values with a moderate degree of variability, similar to the Total Assets variable.
- The variable "Gearing Ratio" (variable name: "Indice_di_leva_(gearing)_(%)") has 128 observations. The mean is 142.3871, and the standard deviation is 97.8006, indicating a wide range of values. The minimum value is 3.141, and the maximum value is 453.407. The distribution is slightly skewed to the right, as shown by a positive skewness of 0.9282. The kurtosis is positive at 0.3482, suggesting a slightly more peaked distribution than a normal distribution. This indicates the presence of outliers and a higher degree of variability in the Gearing Ratio variable.
- The variable "Return on Total Assets (ROA) Net" (variable name: "Redditività_del_totale_Attivo_(ROA)-Netto(%)") has 128 observations with a mean of 2.7409 and a standard deviation of 2.6286. The minimum value for this variable is -8.175 and the maximum value is 13.816. The skewness of the variable is negative (-0.4534), indicating that the distribution is slightly skewed to the left, while the kurtosis is positive (5.7523), suggesting that the distribution is more peaked than a normal distribution and may have a heavier tail. Overall, these descriptive statistics suggest that the Redditività_del_totale_Attivo_(ROA)-Netto(%) variable has a moderate range of values with a moderate degree of variability, but also shows some evidence of non-normality with a negative skewness and positive kurtosis.
- The variable "Number of Employees" (variable name: "Numero_dipendenti") has 128 observations with a mean of 7395.2891 and a standard deviation of 14242.4255. The minimum value for this variable is 77 and the maximum value is 69272. The skewness of the variable is positive (3.1448), indicating that the distribution is highly skewed to the right, while the kurtosis is positive (9.9694), suggesting that the distribution is

highly peaked and may have heavy tails. Overall, these descriptive statistics suggest that the Numero_dipendenti variable has a wide range of values with a high degree of variability, but also shows strong evidence of non-normality with a highly skewed and highly peaked distribution.

- The variable "Listed" (variable name: "Listed") is a dichotomous variable with 128 observations. It has a mean of 0.5469 and a standard deviation of 0.4998. The minimum value for this variable is 0 and the maximum value is 1. The skewness of the variable is negative (-0.1906), indicating a slight skew to the left, while the kurtosis is negative (-1.9951), suggesting that the distribution is flatter than a normal distribution. Overall, these descriptive statistics suggest that the Listed variable is approximately evenly split between the two categories (0 and 1) with a relatively low degree of variability, and that the distribution is generally symmetrical.
- The variable "Presence of Sustainability Committee" (variable name: "Presenza_del_Comitato_di_Sostenibilita") is a dichotomous variable with 128 observations. It has a mean of 0.5156 and a standard deviation of 0.5017. The minimum value for this variable is 0 and the maximum value is 1. The skewness of the variable is negative (-0.0633), indicating a slight skew to the left, while the kurtosis is negative (-2.0279), suggesting that the distribution is flatter than a normal distribution and has a more uniform distribution of values. Overall, these descriptive statistics suggest that the Presenza_del_Comitato_di_Sostenibilita variable is fairly evenly split between the two categories (0 and 1) with a relatively low degree of variability, and that the distribution is generally symmetrical.
- The variable "Sustainability Committee included in Board Committees" (variable name: "Comitato_di_Sostenibilita_incluso_in_organendoconsigliari") is a dichotomous variable with 128 observations. It has a mean of 0.2578 and a standard deviation of 0.4391. The minimum value for this variable is 0 and the maximum value is 1. The skewness of the variable is positive (1.1205), indicating a moderate skew to the right, while the kurtosis is negative (-0.7566), suggesting that the distribution is flatter than a normal distribution and may have a more uniform distribution of values. Overall, these descriptive statistics suggest that the Comitato_di_Sostenibilita_incluso_in_organendoconsigliari variable has a low mean, with a relatively high degree of variability and a positively skewed distribution,

meaning that there are fewer firms with the inclusion of the sustainability committee in board committees.

- The variable "Sustainability Plan" (variable name: "Piano_di_Sostenibilita") is a dichotomous variable with 128 observations. It has a mean of 0.4766 and a standard deviation of 0.5014. The minimum value for this variable is 0 and the maximum value is 1. The skewness of the variable is positive (0.095), indicating a slight skew to the right, while the kurtosis is negative (-2.0228), suggesting that the distribution is flatter than a normal distribution and has a more uniform distribution of values. Overall, these descriptive statistics suggest that the Piano_di_Sostenibilita variable is nearly evenly split between the two categories (0 and 1) with a relatively low degree of variability, and that the distribution is generally symmetrical.
- The variable "Sustainability Plan integrated in Industrial Plan" (variable name: "Piano_di_sostenibilita_integrato_nel_piano_industriale") is a dichotomous variable with 128 observations. It has a mean of 0.6094 and a standard deviation of 0.4898. The minimum value for this variable is 0 and the maximum value is 1. The skewness of the variable is negative (-0.4537), indicating a slight skew to the left, while the kurtosis is negative (-1.8229), suggesting that the distribution is flatter than a normal distribution and may have a more uniform distribution of values. Overall, these descriptive statistics suggest that the Piano_di_sostenibilita_integrato_nel_piano_industriale variable has a relatively high mean, with a moderate degree of variability and a slightly negatively skewed distribution, meaning that there are more firms with a sustainability plan integrated in the industrial plan.
- The variable "Presence of KPIs and Benchmarks with Previous Years" (variable name: "Presenza_di_KPIs_e_benchmark_con_anni_pregressi") is a dichotomous variable with 128 observations. It has a mean of 0.9766 and a standard deviation of 0.1519. The minimum value for this variable is 0 and the maximum value is 1. The skewness of the variable is highly negative (-6.375), indicating a significant skew to the left, while the kurtosis is highly positive (39.2539), suggesting that the distribution is very peaked and may have very heavy tails. Overall, these descriptive statistics suggest that the Presenza_di_KPIs_e_benchmark_con_anni_pregressi variable has a very high mean, with a low degree of variability and a highly negatively skewed distribution, meaning that there are very few firms without KPIs and benchmarks with previous years.

- The variable "Short-term ESG Targets (1-2 years) reported" (variable name: "Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati") is a dichotomous variable with 128 observations. It has a mean of 0.5703 and a standard deviation of 0.497. The minimum value for this variable is 0 and the maximum value is 1. The skewness of the variable is negative (-0.2875), indicating a slight skew to the left, while the kurtosis is negative (-1.9481), suggesting that the distribution is flatter than a normal distribution and has a more uniform distribution of values. Overall, these descriptive statistics suggest that the Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati variable is slightly more likely to be present than absent, with a moderate degree of variability, and that the distribution is generally symmetrical.
- The variable "Long-term ESG Targets (3 years) reported" (variable name: "Obiettivi_Target_ESG_lungo_termine_3_anni_riportati") is a dichotomous variable with 128 observations. It has a mean of 0.7422 and a standard deviation of 0.4391. The minimum value for this variable is 0 and the maximum value is 1. The skewness of the variable is negative (-1.1205), indicating a moderate skew to the left, while the kurtosis is negative (-0.7566), suggesting that the distribution is flatter than a normal distribution and has a more uniform distribution of values. Overall, these descriptive statistics suggest that the Obiettivi_Target_ESG_lungo_termine_3_anni_riportati variable is more likely to be present than absent, with a moderate degree of variability, and that the distribution is generally symmetrical with a slight skew to the left.
- The variable "SDGs related to Material Topics" (variable name: "SDGs_correlati_a_temi_materiali") is a dichotomous variable with 128 observations. It has a mean of 0.625 and a standard deviation of 0.486. The minimum value for this variable is 0 and the maximum value is 1. The skewness of the variable is negative (-0.5225), indicating a slight skew to the left, while the kurtosis is negative (-1.7546), suggesting that the distribution is flatter than a normal distribution and has a more uniform distribution of values. Overall, these descriptive statistics suggest that the SDGs_correlati_a_temi_materiali variable is more likely to be present than absent, with a moderate degree of variability, and that the distribution is generally symmetrical with a slight skew to the left.
- The variable "SDGs related to Future Targets" (variable name: "SDGs_correlati_a_futuri_obiettivi") is a dichotomous variable with 128 observations. It has a mean of 0.5703 and a standard deviation of 0.497. The minimum value for this

variable is 0 and the maximum value is 1. The skewness of the variable is negative (-0.2875), indicating a slight skew to the left, while the kurtosis is negative (-1.9481), suggesting that the distribution is flatter than a normal distribution and has a more uniform distribution of values. Overall, these descriptive statistics suggest that the `SDGs_correlati_a_futuri_obiettivi` variable is slightly more likely to be present than absent, with a moderate degree of variability, and that the distribution is generally symmetrical.

Furthermore, a Pearson Correlation Analysis was performed on the dataset, outlined in Table 4, to examine the relationships between the variables. Specifically, the variables `"Numero_dipendenti"` and `"Listed"` showed a positive correlation, indicating that being a listed company may be associated with having a larger number of employees. Additionally, the `"Presenza_del_Comitato_di_Sostenibilita"` variable was positively correlated with `"Listed"`, suggesting that listed companies may be more likely to have a sustainability committee in place.

The `"Totale_Attivo"` variable was positively correlated with `"Numero_dipendenti"`, indicating that larger companies may have a greater number of employees. Furthermore, the `"Presenza_di_KPIs_e_benchmark_con_anni_pregressi"` variable was positively correlated with `"Ricavi_vendite_e_prestazioni"`, suggesting that companies that report on key performance indicators and benchmarks may have higher revenues from sales and services.

While some variables showed weak or no correlations with the others, overall, the results of the analysis indicate that there are positive relationships between many of the variables. However, it is important to note that the correlation between the first two variables may have marginally skewed the results, and further analysis may be necessary to fully understand the relationships between the variables.

To ensure the absence of multicollinearity in the dataset, a variance inflation factor (VIF) test was performed – displayed in Table 5. The VIF values for all variables were found to be below the threshold of 5, indicating no concerns regarding collinearity. This result suggests that the included variables are not highly correlated with each other, and therefore the risk of redundant or unnecessary information in the model is low. This finding reinforces the reliability and

validity of the regression analysis, allowing for more accurate and meaningful interpretation of the relationship between the independent and dependent variables.

Variable	Variable Name	# Obs	Mean	SD	Min	Max	Skewness	Kurtosis
Disclosure Index	Disclosure_Index	128	0.4880	0.2454	0	1	0.3377	-0.6277
Total Assets	Totale_Attivo	128	22.0450	1.8522	18.9964	26.0557	0.3472	-0.7459
Revenues from Sales and Services	Ricavi_vendite_e	128	21.2459	1.6899	18.1328	25.1553	0.5047	-0.1755
Gearing Ratio	Indice_di_leva_(g	128	142.3871	97.8006	3.141	453.407	0.9282	0.3482
Return on Total Assets (ROA) Net	Redditività_del_t	128	2.7409	2.6286	-8.175	13.816	-0.4534	5.7523
Number of Employees	Numero_dipende	128	7395.2891	14242.4255	77	69272	3.1448	9.9694
Listed	Listed	128	0.5469	0.4998	0	1	-0.1906	-1.9951
Presence of Sustainability Committee	Presenza_del_Cor	128	0.5156	0.5017	0	1	-0.0633	-2.0279
Sustainability Committee included in Board Committees	Comitato_di_Sost	128	0.2578	0.4391	0	1	1.1205	-0.7566
Sustainability Plan	Piano_di_Sostenit	128	0.4766	0.5014	0	1	0.095	-2.0228
Sustainability Plan integrated in Industrial Plan	Piano_di_sostenit	128	0.6094	0.4898	0	1	-0.4537	-1.8229
Presence of KPIs and Benchmarks with Previous Years	Presenza di KPIs	128	0.9766	0.1519	0	1	-6.375	39.2539
Short-term ESG Targets (1-2 years) reported	Obiettivi_Target	128	0.5703	0.497	0	1	-0.2875	-1.9481
Long-term ESG Targets (3 years) reported	Obiettivi_Target	128	0.7422	0.4391	0	1	-1.1205	-0.7566
SDGs related to Material Topics	SDGs_correlati_a	128	0.625	0.486	0	1	-0.5225	-1.7546
SDGs related to Future Targets	SDGs_correlati_a	128	0.5703	0.497	0	1	-0.2875	-1.9481

Table 3 – Descriptive statistics:

Table 4 – Correlation Matrix:

Correlation Matrix															
	Totale Attivi	Ricavi_vendite	Indice_dil	Reddittività	Numero_dil	Listed	Presenza_d	Comitato_d	Piano_di_S	Piano_di_sc	Presenza_d	Obiettivi_T	Obiettivi_T	SDGs_corre	SDGs_corre
Totale Attivo	1														
Ricavi_vendite	0.873	1													
Indice_dil	0.5474	0.2947	1												
Reddittività_dil	-0.2036	-0.1591	-0.0065	1											
Numero_dipend	0.7176	0.7348	0.2419	-0.1864	1										
Listed	0.7671	0.7208	0.3668	-0.155	0.4056	1									
Presenza_del_C	0.6051	0.5387	0.4966	-0.0466	0.3508	0.6565	1								
Comitato_di_So	0.4333	0.3352	0.3966	-0.0755	0.1963	0.4647	0.5355	1							
Piano_di_Soster	0.3631	0.3469	0.1641	-0.0157	0.2590	0.3658	0.3301	0.2243	1						
Piano_di_soster	0.3023	0.2292	0.1826	-0.0371	0.0377	0.3006	0.3134	0.4719	0.1548	1					
Presenza_di_KP	0.1455	0.1675	0.1368	0.0456	0.0729	-0.1410	0.1598	0.0913	0.0444	0.1935	1				
Obiettivi_Target	0.2352	0.2380	-0.0511	-0.0546	0.1358	0.1927	0.1377	0.1147	0.1331	0.4695	-0.1345	1			
Obiettivi_Target	0.1471	0.1801	-0.0347	0.1848	0.1594	0.2169	0.2865	0.2249	0.3121	0.2969	-0.0913	0.21	1		
SDGs correlati	0.499	0.4384	0.2631	0.1218	0.2971	0.3323	0.4117	0.2721	0.3837	0.1406	0.2	0.1426	0.3182	1	
SDGs correlati	0.4755	0.3661	0.2878	-0.0483	0.2629	0.4463	0.5166	0.3312	0.3542	0.3725	0.1785	0.2986	0.4265	0.4686	1

Table 5 – Variance Inflation Factor (VIF) test:

Variable Name	VIF	1/VIF
Totale_Attrivo	1.4131	0.7077
Ricavi_vendite_e_prestazioni	1.2148	0.8232
Indice_di_leva_(gearing)_%	1.0382	0.9632
Redditività_del_totale_Attrivo_(ROA)-Nett	1.0036	0.9964
Numero_dipendenti	1.1708	0.8541
Listed	1.2558	0.7963
Presenza_del_Comitato_di_Sostenibilita	1.3023	0.7679
Comitato_di_Sostenibilita_incluso_in_organ	1.1254	0.8886
Piano_di_Sostenibilita	1.1501	0.8695
Piano_di_sostenibilita_integrato_nel_pian	1.0774	0.9282
Presenza_di_KPIs_e_benchmark_con_anni	1.0449	0.9570
Obiettivi_Target_ESG_breve_termine_1_2	1.0681	0.9363
Obiettivi_Target_ESG_lungo_termine_3_a	1.0203	0.9801
SDGs_correlati_a_temi_materiali	1.0635	0.9403
SDGs_correlati_a_futuri_obiettivi	1.1647	0.8586

3.6 Regression results

The implemented model tested the relationship between the level of disclosure of SDGs and several variables regarding the economic performance and structure of the companies in the sample over the years after the implementation of the Legislative Decree 254/2016. The results of the model, which are summarised in Table 6, are fundamental and add a missing piece in the international literature in this sector.

Initiating the analysis of model fit, the coefficient of determination, denoted as R-squared assumes the value of 0.5047 suggests that 50.47% of the variation in the dependent variable can be explained by the independent variables in the model. The adjusted R-squared value of 0.4384 considers the number of predictors in the model, indicating that 43.84% of the variation in the dependent variable can be explained by the predictors, after adjusting for the number of predictors.

Furthermore, considering the matter of the model significance, the F-statistic of 7.61 with the associated p-value of 0.0000 (0.000000000202) demonstrate that the overall model is statistically significant. This implies that at least one of the predictors is significantly correlated with the dependent variable.

Moreover, several independent variables were found statistically significant – characterised by a P-value lower than 0.05 – in this model. In particular, the statistically significant variables are: Total Assets, Revenues, Gearing Ratio, Presence of a Sustainability Committee, Sustainability Plan, Presence of KPIs and Benchmarks with previous years, and SDGs related to Material Topics. Below there is a in-depth argumentation per significant variable.

- Total Assets (Totale_Attivo): The positive coefficient of 0.1268 – with confidence level over 99% - suggests that a one-unit increase in total assets is associated with a 0.1268-unit increase in the Disclosure Index (DI) – so in the level of disclosure of SDGs, ceteris paribus.
- Revenues from Sales and Services (Ricavi_vendite_e_prestazioni): The negative coefficient of -0.0973 , with confidence level over 99%, indicates that a one-unit increment in sales revenue and services leads to a 0.0973-unit decrease in the DI, all else being equal.

- Gearing Ratio (Indice_di_leva_(gearing)_(%)): The negative coefficient of -0.0009 implies that a 1% increase in the leverage ratio corresponds to a 0.0009-unit decrease in the DI, holding all other variables constant.
- Presence of Sustainability Committee (Presenza_del_Comitato_di_Sostenibilita): The positive coefficient of 0.14 reveals that the presence of a sustainability committee corresponds to a 0.14-unit increase in the DI, all else being equal. Thus, the presence of this particular Committee is strongly related – with 99% confidence level – to the level of SDGs disclosure, measured by the internally developed Disclosure Index in this analysis.
- Sustainability Plan (Piano_di_Sostenibilita): The positive coefficient of 0.0937 resulted with the 99% confidence level, denotes that the existence of a sustainability plan is associated with a 0.0936-unit increase in the DI, ceteris paribus.
- Presence of KPIs and Benchmarks with Previous Years (Presenza_di_KPIs_e_benchmark_con_anni_pregressi): The positive coefficient of 0.3906 – with significance at 99% confidence level, signifies that the presence of KPIs and benchmarks with previous years is related to a 0.3906-unit increase in the internally developed Disclosure Index, all else being equal. Thus, this independent variable is the most affecting the dependent variable, with the $\beta = 0.39$
- SDGs related to Material Topics (SDGs_correlati_a_temi_materiali): The negative coefficient of -0.0940 – computed with a 95% confidence level – indicates that a one-unit increase in material SDGs is associated with a 0.0940-unit decrease in the dependent variable, holding all other variables constant. This is one of the most important drawback of this analysis, since there are not significant and proved theories of this relation in the international literature yet.

Conversely, there are variables that are not statistically significant in the current model. Some of them, indeed, strengthen the validity of the model since are common in a multitude of scientific paper about the CSR, ESG or SDGs, see: Kim and Li (2021)¹⁴¹, Dremptic et al.

¹⁴¹Kim, S., & Li, Z. (2021). Understanding the impact of ESG practices in corporate finance. *Sustainability*, 13(7), 3746.

(2020)¹⁴², Pucheta-Martínez and Gallego-Álvarez (2019)¹⁴³, Zhou et al. (2022)¹⁴⁴, Velte (2017)¹⁴⁵, Trang and Yekini (2014)¹⁴⁶, Velte and Stawinoga (2020)¹⁴⁷, Jarboui et al. (2022)¹⁴⁸, Muhammad et al. (2022)¹⁴⁹, Lubis and Rokhim (2021)¹⁵⁰ and Baumgartner and Rauter (2017)¹⁵¹. In particular, the independent variables which results as non-statistically significant – characterised by a P-value equal or above 0.05 – are listed just below:

- Return on Total Assets (ROA) Net (Redditività_del_totale_Attivo_(ROA)-Netto);
- Number of Employees (Numero_dipendenti);
- Listed (Listed);
- Sustainability Committee included in Board Committees (Comitato_di_Sostenibilita_incluso_in_organendoconsigliari);

¹⁴² Drempevic, S., Klein, C., & Zwergel, B. (2020). The influence of firm size on the ESG score: Corporate sustainability ratings under review. *Journal of Business Ethics*, 167, 333-360.

¹⁴³ Pucheta-Martínez, M. C., & Gallego-Álvarez, I. (2019). An international approach of the relationship between board attributes and the disclosure of corporate social responsibility issues. *Corporate Social Responsibility and Environmental Management*, 26(3), 612-627.

¹⁴⁴ Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment*, 31(7), 3371-3387.

¹⁴⁵ Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility*.

¹⁴⁶ Trang, H. N. T., & Yekini, L. S. (2014). Investigating the link between CSR and financial performance: Evidence from Vietnamese listed companies. *British Journal of Arts and Social Sciences*, 17(1), 85-101.

¹⁴⁷ Velte, P., & Stawinoga, M. (2020). Do chief sustainability officers and CSR committees influence CSR-related outcomes? A structured literature review based on empirical-quantitative research findings. *Journal of Management Control*, 31(4), 333-377.

¹⁴⁸ Jarboui, A., Hlima, N. D. B., & Bouaziz, D. (2022). Do sustainability committee characteristics affect CSR performance? Evidence from India. *Benchmarking: An International Journal*.

Giese, G., Lee, L. E., Melas, D., Nagy, Z., & Nishikawa, L. (2019). Foundations of ESG investing: How ESG affects equity valuation, risk, and performance. *The Journal of Portfolio Management*, 45(5), 69-83.

¹⁴⁹ Muhammad, H., & Migliori, S. (2022). Effects of board gender diversity and sustainability committees on environmental performance: a quantile regression approach. *Journal of Management & Organization*, 1-26.

¹⁵⁰ Lubis, M. F. F., & Rokhim, R. (2021, December). The Effect of Environmental, Social, and Governance (ESG) Disclosure and Competitive Advantage on Companies Performance as An Implementation of Sustainable Economic Growth in Indonesia for Period of 2015-2019. In *IOP Conference Series: Earth and Environmental Science* (Vol. 940, No. 1, p. 012059). IOP Publishing.

¹⁵¹ Baumgartner, R. J., & Rauter, R. (2017). Strategic perspectives of corporate sustainability management to develop a sustainable organization. *Journal of Cleaner Production*, 140, 81-92.

- Sustainability Plan integrated in Industrial Plan (Piano_di_sostenibilita_integrato_nel_piano_industriale);
- Short-term ESG Targets (1-2 years) reported (Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati);
- Long-term ESG Targets (3 years) reported (Obiettivi_Target_ESG_lungo_termine_3_anni_riportati);
- and SDGs related to Future Targets (SDGs_correlati_a_futuri_obiettivi).

Table 6: Regression results.

```

# Load dataset
data <- read.csv("/Users/andreagiampaolo/Desktop/R/Regr/DB_SDGsDisclosureVfinal.csv")

# Define independent and dependent variables
x <- data[,3:17]
y <- data[,2]

# Linear model
formula <- paste0(names(data)[2], " ~ ", paste(names(data)[3:17], collapse = " + "))
model <- lm(formula, data = data)

# Summarize model
summary_stats <- summary(model)
print(summary_stats)

##
## Call:
## lm(formula = formula, data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.34016 -0.12856 -0.00745  0.10264  0.49358
##

```

```

## Coefficients:
##
## Estimate
## (Intercept) -6.365e-01
## Totale_Attivo 1.268e-01
## Ricavi_vendite_e_prestazioni -9.730e-02
## Indice_di_leva_.gearing.... -9.309e-04
## Redditività_del_totale_Attivo_.ROA..Netto... 1.051e-02
## Numero_dipendenti 1.944e-06
## Listed 5.208e-02
## Presenza_del_Comitato_di_Sostenibilita 1.400e-01
## Comitato_di_Sostenibilita_incluso_in_organ_i_endoconsigliari 4.970e-02
## Piano_di_Sostenibilita 9.365e-02
## Piano_di_sostenibilita_integrato_nel_piano_industriale -3.985e-02
## Presenza_di_KPIs_e_benchmark_con_anni_pregressi 3.906e-01
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati 8.365e-02
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati -2.537e-02
## SDGs_correlati_a_temi_materiali -9.402e-02
## SDGs_correlati_a_futuri_obiettivi -6.312e-04
## Std. Error
t value
## (Intercept) 5.592e-01
-1.138
## Totale_Attivo 3.101e-02
4.091
## Ricavi_vendite_e_prestazioni 2.550e-02
-3.815
## Indice_di_leva_.gearing.... 2.576e-04
-3.614
## Redditività_del_totale_Attivo_.ROA..Netto... 6.871e-03
1.529
## Numero_dipendenti 2.146e-06
0.906
## Listed 7.960e-02
0.654
## Presenza_del_Comitato_di_Sostenibilita 5.345e-02
2.618

```

## Comitato_di_Sostenibilita_incluso_in_organ_i_endoconsigliari	4.969e-02
1.000	
## Piano_di_Sostenibilita	3.762e-02
2.489	
## Piano_di_sostenibilita_integrato_nel_piano_industriale	4.847e-02
-0.822	
## Presenza_di_KPIs_e_benchmark_con_anni_pregressi	1.506e-01
2.593	
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati	4.296e-02
1.947	
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati	4.847e-02
-0.523	
## SDGs_correlati_a_temi_materiali	4.603e-02
-2.043	
## SDGs_correlati_a_futuri_obiettivi	4.696e-02
-0.013	
##	Pr(> t)
## (Intercept)	0.257465
## Totale_Attivo	8.14e-05 **
*	
## Ricavi_vendite_e_prestazioni	0.000223 **
*	
## Indice_di_leva_.gearing._...	0.000453 **
*	
## Redditività_del_totale_Attivo_.ROA..Netto...	0.129115
## Numero_dipendenti	0.367087
## Listed	0.514302
## Presenza_del_Comitato_di_Sostenibilita	0.010059 *
## Comitato_di_Sostenibilita_incluso_in_organ_i_endoconsigliari	0.319360
## Piano_di_Sostenibilita	0.014274 *
## Piano_di_sostenibilita_integrato_nel_piano_industriale	0.412732
## Presenza_di_KPIs_e_benchmark_con_anni_pregressi	0.010776 *
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati	0.054025 .
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati	0.601743
## SDGs_correlati_a_temi_materiali	0.043434 *
## SDGs_correlati_a_futuri_obiettivi	0.989301

```

## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1839 on 112 degrees of freedom
## (1 observation deleted due to missingness)
## Multiple R-squared:  0.5047, Adjusted R-squared:  0.4384
## F-statistic: 7.609 on 15 and 112 DF,  p-value: 2.016e-11

# Multiple R, R squared, adjusted R squared, and standard error
multiple_r <- sqrt(summary_stats$r.squared)
adjusted_r_squared <- summary_stats$adj.r.squared
standard_error <- summary_stats$sigma

cat("Multiple R:", multiple_r, "\n")

## Multiple R: 0.7104372

cat("R squared:", summary_stats$r.squared, "\n")

## R squared: 0.5047209

cat("Adjusted R squared:", adjusted_r_squared, "\n")

## Adjusted R squared: 0.4383889

cat("Standard Error:", standard_error, "\n")

## Standard Error: 0.1838865

# DF, SS, MS, F, and significance F for regression, residual, and total
anova_model <- anova(model)
print(anova_model)

## Analysis of Variance Table
##
## Response: Disclosure_Index
##
##                                     Df Sum Sq
Mean Sq
## Totale_Attivo                                     1 2.2353
2.23531
## Ricavi_vendite_e_prestazioni                       1 0.0853

```

```

0.08531
## Indice_di_leva_.gearing.... 1 0.2824
0.28241
## Redditività_del_totale_Attivo_.ROA..Netto... 1 0.0587
0.05875
## Numero_dipendenti 1 0.0002
0.00018
## Listed 1 0.0472
0.04722
## Presenza_del_Comitato_di_Sostenibilita 1 0.4875
0.48753
## Comitato_di_Sostenibilita_incluso_in_organ_i_endoconsigliari 1 0.0267
0.02667
## Piano_di_Sostenibilita 1 0.1455
0.14545
## Piano_di_sostenibilita_integrato_nel_piano_industriale 1 0.0114
0.01143
## Presenza_di_KPIS_e_benchmark_con_anni_pregressi 1 0.1691
0.16914
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati 1 0.1238
0.12383
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati 1 0.0386
0.03858
## SDGs_correlati_a_temi_materiali 1 0.1476
0.14757
## SDGs_correlati_a_futuri_obiettivi 1 0.0000
0.00001
## Residuals 112 3.7872
0.03381
## F value
Pr(>F)
## Totale_Attivo 66.1057 6.3
62e-13
## Ricavi_vendite_e_prestazioni 2.5229 0.1
150221
## Indice_di_leva_.gearing.... 8.3519 0.0

```


046276		
## Redditività_del_totale_Attivo_.ROA..Netto...	1.7374	0.1
901571		
## Numero_dipendenti	0.0054	0.9
415244		
## Listed	1.3964	0.2
398299		
## Presenza_del_Comitato_di_Sostenibilita	14.4179	0.0
002382		
## Comitato_di_Sostenibilita_incluso_in_organ_i_endoconsigliari	0.7888	0.3
763652		
## Piano_di_Sostenibilita	4.3015	0.0
403710		
## Piano_di_sostenibilita_integrato_nel_piano_industriale	0.3379	0.5
621992		
## Presenza_di_KPIs_e_benchmark_con_anni_pregressi	5.0019	0.0
273006		
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati	3.6622	0.0
582142		
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati	1.1410	0.2
877352		
## SDGs_correlati_a_temi_materiali	4.3640	0.0
389715		
## SDGs_correlati_a_futuri_obiettivi	0.0002	0.9
893006		
## Residuals		
##		
## Totale_Attivo	***	
## Ricavi_vendite_e_prestazioni		
## Indice_di_leva_.gearing....	**	
## Redditività_del_totale_Attivo_.ROA..Netto...		
## Numero_dipendenti		
## Listed		
## Presenza_del_Comitato_di_Sostenibilita	***	
## Comitato_di_Sostenibilita_incluso_in_organ_i_endoconsigliari		
## Piano_di_Sostenibilita	*	

```

## Piano_di_sostenibilita_integrato_nel_piano_industriale
## Presenza_di_KPIs_e_benchmark_con_anni_pregressi          *
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati    .
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati
## SDGs_correlati_a_temi_materiali                          *
## SDGs_correlati_a_futuri_obiettivi
## Residuals
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

3.7 Concluding remarks to the analysis

I have started this analysis from an important question about sustainability, how much disclosure there is and does this disclosure depends on something in particular? To address these questions, a statistical model has been built. Firstly quantifying a qualitative variable and then building a statistical model using variables about performance and structure of the companies. The results of the model are summarized in Table 6.

The model has shown its fit to the dataset since the R-squared reached the value of 50.47%, meaning that the independent variables are explaining over half the variation in the dependent variable; moreover, its significancy analysis over the model has demonstrated that the model was statistically significant. Thus, the explanatory power of the model has been proved to be exceptionally strong compared to similar studies.

Moreover, the analysis shows significant alignment with the existent literature about sustainability. The independent variables, observed in the Italian market, show the same direction and level of significancy that same variables show in other markets, with respect to a similar dependant variable. There is also a novelty in the literature, until now the material topics weren't analysed in such level of detail such as in the performed regression and this has brought new elements to the international literature. A statistically significant and slightly negative relation has been observed in the analysis meaning that the coherence between the material topics listed in the Non-Financial Disclosure with the contents of the Non-Financial Disclosure itself. This discovery contradicts the common sense, it probably means that too much attention is given to illustrate what is important to the firm despite taking actions pursuing that. Thus, this evidence from the Italian economy represents an opportunity for further research, with the

aim to isolate the rationales and measure the utility of the “Material Topics” section in the Non-Financial Disclosure.

However, the performed analysis shows several common traits with the existent literature on the particular matter. Particularly aligned with prior studies are the Total Assets, the Revenues, the Net ROA, but also the Gearing ratio, the number of Employees and the Listing in an exchange. Regarding the sustainability characteristics and organisational characteristics of the firm, high comparability with other analysis can be found in the variables concerning the Sustainability Committee (Presence of Sustainability Committee, Sustainability Committee included in Board Committees) or the Sustainability Plan (Presence of Sustainability Plan, Sustainability Plan integrated in Industrial Plan). Further level of detail is listed below, for each independent variable.

- Total Assets: The analysis conducted herein exhibits a positive and statistically significant effect of this variable, corroborating evidence for this effect from earlier studies such as Kim and Li (2021)¹⁵², Dremptic et al. (2020)¹⁵³, Trang and Yekini (2014)¹⁵⁴, Pucheta-Martínez and Gallego-Álvarez (2019)¹⁵⁵
- Revenues from Sales and Services: The obtained results for this variable conform to the conclusions drawn by previous studies, exhibiting a significant negative coefficient and statistically substantial p-values, as demonstrated by Velte (2019)¹⁵⁶ and Veltri (2020)¹⁵⁷, Pucheta-Martínez and Gallego-Álvarez (2019)⁸⁸

¹⁵²Kim, S., & Li, Z. (2021). Understanding the impact of ESG practices in corporate finance. *Sustainability*, 13(7), 3746.

¹⁵³ Dremptic, S., Klein, C., & Zwergel, B. (2020). The influence of firm size on the ESG score: Corporate sustainability ratings under review. *Journal of Business Ethics*, 167, 333-360.

¹⁵⁴ Trang, H. N. T., & Yekini, L. S. (2014). Investigating the link between CSR and financial performance: Evidence from Vietnamese listed companies. *British Journal of Arts and Social Sciences*, 17(1), 85-101.

¹⁵⁵ Pucheta-Martínez, M. C., & Gallego-Álvarez, I. (2019). An international approach of the relationship between board attributes and the disclosure of corporate social responsibility issues. *Corporate Social Responsibility and Environmental Management*, 26(3), 612-627.

¹⁵⁶ Velte, P. (2019). The bidirectional relationship between ESG performance and earnings management—empirical evidence from Germany. *Journal of Global Responsibility*, 10(4), 322-338.

¹⁵⁷ Veltri, S. (2020). *Mandatory non-financial risk-related disclosure*. Cham: Springer International Publishing.

- Gearing Ratio: The leverage variable, despite its non-significance in the analysis conducted in this study, aligns with the prevalent literature displaying a non-significant and negative slope, as reflected by Zhou et al. (2022)¹⁵⁸
- Return on Total Assets (ROA) Net: While the statistical significance of this variable may not be apparent, its positive correlation aligns with the extant literature, as evidenced by Velte (2017)¹⁵⁹ and Liao et al., (2018)¹⁶⁰
- Number of Employees The outcome related to this variable aligns with previous studies, although its statistical significance in this study is not prominent, as observed in Drempetic et al. (2020)¹⁶¹.
- Listed: the positive coefficient shown, even if the variable appears non-significant, is consistent with prior studies, such as Trang and Yekini (2014)¹⁶²
- Presence of Sustainability Committee: the result given from the analysis for this particular variable – significant and positively related to CSR and to our DI – is perfectly consistent with prior research on this topic, as stated also from Velte and Stawinoga (2020)¹⁶³ and Jarboui et al. (2022)¹⁶⁴.
- Sustainability Committee included in Board Committees: the non-significancy of this variable in studies with a SDGs disclosure level dependent variable is aligned with the

¹⁵⁸ Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment*, 31(7), 3371-3387.

¹⁵⁹ Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility*.

¹⁶⁰ Liao, L., Lin, T., & Zhang, Y. (2018). Corporate board and corporate social responsibility assurance: Evidence from China. *Journal of Business Ethics*, 150, 211-225.

ISO 690

¹⁶¹ Drempetic, S., Klein, C., & Zwergel, B. (2020). The influence of firm size on the ESG score: Corporate sustainability ratings under review. *Journal of Business Ethics*, 167, 333-360.

¹⁶² Trang, H. N. T., & Yekini, L. S. (2014). Investigating the link between CSR and financial performance: Evidence from Vietnamese listed companies. *British Journal of Arts and Social Sciences*, 17(1), 85-101.

¹⁶³ Velte, P., & Stawinoga, M. (2020). Do chief sustainability officers and CSR committees influence CSR-related outcomes? A structured literature review based on empirical-quantitative research findings. *Journal of Management Control*, 31(4), 333-377.

¹⁶⁴ Jarboui, A., Hlima, N. D. B., & Bouaziz, D. (2022). Do sustainability committee characteristics affect CSR performance? Evidence from India. *Benchmarking: An International Journal*.

Giese, G., Lee, L. E., Melas, D., Nagy, Z., & Nishikawa, L. (2019). Foundations of ESG investing: How ESG affects equity valuation, risk, and performance. *The Journal of Portfolio Management*, 45(5), 69-83.

existent literature (Muhammad et al., 2022)¹⁶⁵, thereby validating the results obtained from this analysis.

- Sustainability Plan: The positive and significant nature of this variable aligns with the literature on sustainability, evidence of this relation can be found on Lubis and Rokhim (2021)¹⁶⁶ and Gao et al., (2021)¹⁶⁷
- Sustainability Plan integrated in Industrial Plan: the non-significative and negative coefficient obtained from the performed regression is aligned with prior studies in sustainability and CSR, evidences can be found on Baumgartner and Rauter (2017)¹⁶⁸
- SDGs related to Material Topics: this result is the real add-on to the international literature given from this thesis. A completely new and significant negative relation has been proven with the performed regression. Thus, we can conclude that a deeper attention in designing the material topics and a series of actions in that direction does not imply higher SDGs disclosure and an higher level of ESG factor pursued. Conversely, it determinates a slightly negative effect, thereby further research is needed to verify this relation in other economies or in other industries.
- SDGs related to Future Targets: This variable is characterized by an enormous non-significancy. Further research is needed to verify the consistency and the potential relation between the future targets of a company and its level of pursuing sustainability and its disclosure.

This thesis examines how disclosing Sustainable Development Goals (SDGs) affects a company's economic performance and structure in light of Legislative Decree 254/2016 in Italy. The results significantly contribute to existing knowledge with a robust R-squared value of 50.47% and noteworthy F-statistic outcome.

¹⁶⁵ Muhammad, H., & Migliori, S. (2022). Effects of board gender diversity and sustainability committees on environmental performance: a quantile regression approach. *Journal of Management & Organization*, 1-26.

¹⁶⁶ Lubis, M. F. F., & Rokhim, R. (2021, December). The Effect of Environmental, Social, and Governance (ESG) Disclosure and Competitive Advantage on Companies Performance as An Implementation of Sustainable Economic Growth in Indonesia for Period of 2015-2019. In *IOP Conference Series: Earth and Environmental Science* (Vol. 940, No. 1, p. 012059). IOP Publishing.

¹⁶⁷ Gao, W., Wang, L., Yan, J., Wu, Y., & Musse, S. Y. (2021). Fostering workplace innovation through CSR and authentic leadership: evidence from SME sector. *Sustainability*, 13(10), 5388.

¹⁶⁸ Baumgartner, R. J., & Rauter, R. (2017). Strategic perspectives of corporate sustainability management to develop a sustainable organization. *Journal of Cleaner Production*, 140, 81-92.

The study investigates various factors including Total Assets, Revenues, Gearing Ratio, among other sustainability indicators that influence disclosure index positively or negatively. Key insights from this research include the positive impact that Total Assets or having Sustainability Committees or Plans can have on disclosure index whereas Revenues or SDGs related to Material Topics have an opposite relationship; these findings present opportunities for future research as they challenge widely accepted beliefs about sustainability practices. Furthermore, although some variables like Return on Total Assets (Net), Number of Employees did not yield statistically significant results, these findings support existing research and reinforce the significance of the model.

Lastly, this paper adds value to prior research by offering a detailed study of Material Topics.

As other scholars had previously found before us in their own studies around economic and organisational determinants of Non-Financial reporting quality, our own results are entirely consistent with those past inquiries. Through building on existing understandings of these issues within sustainability science research more broadly, we have been able to emphasise once again the crucial importance not only of tackling and reporting Material Topics effectively but also doing so with sensitivity to potentially problematic effects upon disclosures related to SDGs and sustainability in general. By highlighting such complexities within this area for future researchers to explore in greater detail using our own empirical approach as a model or guideline has contributed greatly towards enhancing global understanding around sustainable development.

Conclusions

This chapter marks the end of this research study focused on examining how sustainable development goals (SDGs) relate to sustainability disclosures in Italian companies during the post-Legislative Decree 254/2016 era. To achieve this goal, we employed an extensive statistical framework capable enough for exploring multiple aspects affecting SDG disclosures' extensiveness in companies. Our analysis yields numerous findings relevant both academically as well as for practical implementations by organisations and regulatory bodies.

It was discovered a statistically significant relations between several economic and organisational variables and characteristics of the companies and their level of SDG disclosures underway. The link between how financially strong a company is and their willingness to disclose is emphasized by some of these relationships. It could suggest what kind of resources are available for such activities within said company. Additionally, it was noted that when an organisation has both a Sustainability Committee alongside concrete plans for how they will achieve their goals when it comes to sustainability, they will see significant positive correlation with their level of Sustainable Development Goals (SDGs) disclosure rate. This highlights clearly how important it is for companies to show commitment towards sustainability through structured approaches internally. Interestingly though, the performed research disclose that there is negative correlation between presence of Material Topics related to SDGs against quality and quantity of SDGs disclosure.

Theoretical contributions of this study include its addition to the very limited literature on how economic performance and organisational structure are known to influence the extent of SDGs disclosure levels in companies, especially in Italy. One interesting outcome of this study is its identification of variables that appear to significantly influence sustainability reporting levels among organizations operating in sensitive industries in Italy. Specifically, we see a surprising negative correlation between SDG disclosures and Material Topics alongside established relationships such as those between Total Assets and Sustainability Plan adoption.

Ultimately these insights offer practical implications for organizations looking to improve their sustainability reporting practices. They provide a clear roadmap of factors that can impact disclosure levels, which could prove invaluable for companies seeking to prioritize transparency in their operations and, even, use them as a characteristic to differentiate themselves from the competition. Policymakers and regulators might also benefit from taking

note of the study findings as they consider future environmental legislation. It is worth underline that this research was carried out within an Italian context and so may not be applicable to other regions with differing regulatory landscapes or economic conditions. It is also worth noting that although the study focused on particular economic and organisational factors there may be other variables at play which influence SDG disclosure levels but were not explored in depth here. To further illuminate our understanding of this subject matter future research should seek to expand upon these findings. Of particular interest would be investigating the negative correlation between Material Topics and SDG disclosure levels as well as conducting comparative studies between different countries which could help determine if these results are unique to Italy or more widespread. Additionally, examining how stakeholders perceive and respond to variations in SDGs disclosures would offer valuable insights into practical implications for sustainability reporting.

To sum up this research has provided significant contributions regarding sustainability reporting by outlining how Italian companies' responses have been shaped by distinctive regulatory environments such as Legislative Decree 254/2016 in conjunction with several economic and organizational factors. The study offers new theoretical insights on Non-Financial Disclosure – with exceptional attention to the SDGs framework – and Material Topics: an unanticipated negative correlation was detected, which calls for further exploration.

Despite the extensive investigation into sustainability reporting among Italian companies, this study shows that it is a complex issue affected by multiple economic and organisational factors, other than political. Indeed, the research emphasizes that continuous effort is essential in navigating towards sustainable development. With pressing sustainability challenges facing the world today there is an urgent need for comprehensive transparency around the perspective of sustainable development at large.

This study delves into some of the factors shaping SDGs disclosure in hopes of spurring further research and practical actions in this domain. The results will contribute meaningfully to academic discussions as well as business efforts to promote sustainability. Hopefully this research will inspire future academic endeavours as well as innovative thinking that drives real change toward more sustainable practices.

Ultimately, this work substantially augments the existing corpus of literature by presenting novel viewpoints and extensive knowledge on the interplay of business and sustainability. Consequently, it plays a crucial role in guiding forthcoming academic inquiries pertaining to

this subject matter. In the meantime, it is emphasised the need for transnational sustainable strategies across industries and it's highlighted the importance of pushing towards these goals with a global and structured approach.

Bibliography

- Agle, B. R., Mitchell, R. K., & Sonnenfeld, J. A. (1999). Who matters to Ceos? An investigation of stakeholder attributes and salience, corporate performance, and Ceo values. *Academy of Management journal*, 42(5), 507-525.
- Ambec, S., & Lanoie, P. (2008). Does it pay to be green? A systematic overview. *The Academy of Management Perspectives*, 45-62..
- Ansoff, I. (1965). *Corporate Strategy* McGraw-Hill, New York.
- Baumgartner, R. J., & Rauter, R. (2017). Strategic perspectives of corporate sustainability management to develop a sustainable organization. *Journal of Cleaner Production*, 140, 81-92.
- Bebbington, J., Unerman, J., & O'Dwyer, B. (2014). *Sustainability accounting and accountability*. Routledge.
- Biermann, F., Abbott, K., Andresen, S., Bäckstrand, K., Bernstein, S., Betsill, M. M., ... & Zondervan, R. (2012). Navigating the Anthropocene: improving earth system governance. *Science*, 335(6074), 1306-1307.
- Biermann, F., Kanie, N., & Kim, R. E. (2017). Global governance by goal-setting: the novel approach of the UN Sustainable Development Goals. *Current Opinion in Environmental Sustainability*, 26, 26-31.
- Bowen, H. R., & Johnson, F. E. (1953). *Social responsibility of the businessman*. Harper.
- Brown, H. S., De Jong, M., & Lessidrenska, T. (2009). The rise of the Global Reporting Initiative: a case of institutional entrepreneurship. *Environmental Politics*, 18(2), 182-200.
- Buhr, N., Gray, R., & Milne, M. J. (2014). Histories, rationales, voluntary standards and future prospects for sustainability reporting. J. Bebbington, J. Unerman and B. O'Dwyer, eds, 51-71.
- Bureau Van Dijk, <https://www.bvdinfo.com/it-it/> , consulted on April 20th 2023

- Carroll, A. B. (1994). Social Issues in Management Research Experts' Views, Analysis, and Commentary. *Business & Society*, 33(1), 5-29.
- Carroll, A. B. (2015). Corporate social responsibility: The centerpiece of competing and complementary frameworks. *Organizational dynamics*.
- Cho, C. H., Patten, D. M., & Roberts, R. W. (2006). Corporate political strategy: An examination of the relation between political expenditures, environmental performance, and environmental disclosure. *Journal of Business Ethics*, 67, 139-154.
- Clarkson, M. E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of management review*, 20(1), 92-117.
- Cooper, D. J., & Sherer, M. J. (1984). The value of corporate accounting reports: arguments for a political economy of accounting. *Accounting, Organizations and Society*, 9(3-4), 207-232.
- Davis, S. W., Menon, K., & Morgan, G. (1982). The images that have shaped accounting theory. *Accounting, Organizations and Society*, 7(4), 307-318.
- DiMaggio, P., & Powell, W. W. (1983). The iron cage revisited: Collective rationality and institutional isomorphism in organizational fields. *American Sociological Review*, 48(2), 147-160.
- Donaldson, T. (1999). Making stakeholder theory whole. *Academy of Management Review*, 24(2), 237-241.
- Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review*, 20(1), 65-91.
- Downar, B., Ernstberger, J., Reichelstein, S., Schwenen, S., & Zaklan, A. (2021). The impact of carbon disclosure mandates on emissions and financial operating performance. *Review of Accounting Studies*, 26, 1137-1175.

- Drempetic, S., Klein, C., & Zwergel, B. (2020). The influence of firm size on the ESG score: Corporate sustainability ratings under review. *Journal of Business Ethics*, 167, 333-360.
- Easterly, W. (2015). The SDGs should stand for senseless, dreamy, garbled. *Foreign Policy*, 28, 1-5.
- EIB. European Investment Bank. (2020). Climate Bank Roadmap. <https://www.eib.org/en/about/priorities/climate-action/cbr/index.htm> consulted on May 14, 2023
- Elkington, J. (1997). Cannibals with forks. The triple bottom line of 21st century..
- Etzion, D., & Ferraro, F. (2010). The role of analogy in the institutionalization of sustainability reporting. *Organization Science*, 21(5), 1092-1107.
- European Commission. 2018. Action Plan: Financing Sustainable Growth (No. COM(2018) 97 final).
- European Commission. 2020. Annex 1 to the Draft Delegated Act (Ares(2020)6979284).
- Fama, E. F., & French, K. R. (1992). The cross-section expected stock returns. *Journal of Finance*, 47, 427-466.
- Carroll, A. B. (1999). Corporate social responsibility evolution of a definitional construct. *Business & society*, 38(3), 268-295.
- Gray, R. H., Bebbington, K. J., Walters, D., and Thomson, I. (1995°), “The greening of enterprise: an exploration of the (non) role of environmental accounting and environmental accountants in organizational change”, *Critical Perspective on Accounting*, 6(3), pp. 211-39.
- Ford, J. D., Pearce, T., Prno, J., Duerden, F., Berrang Ford, L., Beaumier, M., & Smith, T. (2010). Perceptions of climate change risks in primary resource use industries: a survey of the Canadian mining sector. *Regional Environmental Change*, 10, 65-81.
- Freeman, R. E. (1984). *Strategic management: A stakeholder perspective*. Boston: Pitman.

- Freeman, R. E. (1999). Divergent stakeholder theory. *Academy of management review*, 24(2), 233-236.
- Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L., & De Colle, S. (2010). Stakeholder theory: The state of the art.
- Friedman M., (1962). *Capitalism and freedom*. University of Chicago.
- Fukuda-Parr, S., & McNeill, D. (2019). Knowledge and politics in setting and measuring the SDG S: Introduction to special issue. *Global Policy*, 10, 5-15.
- Gao, W., Wang, L., Yan, J., Wu, Y., & Musse, S. Y. (2021). Fostering workplace innovation through CSR and authentic leadership: evidence from SME sector. *Sustainability*, 13(10), 5388.
- Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. J. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. *Journal of cleaner production*, 150, 135-147.
- Garriga, E., & Melé, D. (2013). Corporate social responsibility theories: Mapping the territory. In *Citation Classics from the Journal of Business Ethics* (pp. 69-96). Springer Netherlands.
- Gazzetta Ufficiale. (2016). Decreto Legislativo 254/2016 <https://www.gazzettaufficiale.it/eli/id/2017/01/10/17G00002/sg>, consulted on 7th May 2023
- General Assembly resolution 55/2 of 8 September 2000 (Millennium declaration).
- Giese, G., Lee, L. E., Melas, D., Nagy, Z., & Nishikawa, L. (2019). Foundations of ESG investing: How ESG affects equity valuation, risk, and performance. *The Journal of Portfolio Management*, 45(5), 69-83.
- Gioia, D. A. (1999). Practicability, paradigms, and problems in stakeholder theorizing. *Academy of Management Review*, 24(2), 228-232.
- Gray, R. and Milne, M. (2002). Sustainable reporting: who's kidding whom?. *Chartered Accountants Journal of New Zealand*, 81 (6), 66-74.

- Gray, R. H., Owen, D. L., & Maunders, K. T. (1986). Corporate social reporting: the way forward?. *Accountancy*, December, 108-109.
- Gray, R., & Laughlin, R. (1991). Editorial: the coming of the green and the challenge of environmentalism. *Accounting, Auditing & Accountability Journal*, 4(1), 5-8.
- Gray, R., & Milner, M. (2004). Towards reporting on the triple bottom line: mirage, methods and myths.
- Gray, R., Owen, D., & Adams, C. (1996). *Accounting & accountability: changes and challenges in corporate social and environmental reporting*. Prentice Hall.
- Gray, R., Owen, D., & Maunders, K. (1987). *Corporate social reporting: Accounting and accountability*. Prentice-Hall International.
- Gray, R., Owen, D., & Maunders, K. (1988). Corporate social reporting: emerging trends in accountability and the social contract. *Accounting, Auditing & Accountability Journal*, 1(1), 6-20.
- Hamil, S. (1999). Corporate community involvement: a case for regulatory reform. *Business Ethics: A European Review*, 8(1), 14-25.
- Hessenius, M., M. Dumrose, C. Anselm, S. Berendsen, I. Jürgens, C. Klein, F. Koch, K. Löffler, and S. Rink. (2020). Testing Draft EU Ecolabel Criteria on UCITS equity funds (Report for the European Commission, DG FISMA).
- Hickel, J. (2016). The true extent of global poverty and hunger: questioning the good news narrative of the Millennium Development Goals. *Third World Quarterly*, 37(5), 749-767.
- Jarboui, A., Hlima, N. D. B., & Bouaziz, D. (2022). Do sustainability committee characteristics affect CSR performance? Evidence from India. *Benchmarking: An International Journal*.
- Jerven, M. (2014). Benefits and costs of the data for development targets for the post-2015 development agenda. *Data for Development Assessment Paper*, 16(9), 14.

- Jones, T. M., & Wicks, A. C. (1999). Convergent stakeholder theory. *Academy of management review*, 24(2), 206-221.
- Kim, S., & Li, Z. (2021). Understanding the impact of ESG practices in corporate finance. *Sustainability*, 13(7), 3746.
- KPMG (2005). *KPMG International survey of corporate responsibility reporting 2005*, KPMG International, Amsterdam.
- KPMG (2011). *KPMG International survey of corporate responsibility reporting 2011*, KPMG International, Amsterdam.
- KPMG (2015). *Currents of Change, The KPMG survey of corporate responsibility reporting 2015*, KPMG International, Amsterdam.
- KPMG (2017). *KPMG International survey of corporate responsibility reporting 2017*, KPMG International, Amsterdam.
- Kramer, M. R., & Porter, M. (2011). *Creating shared value (Vol. 17)*. Boston, MA, USA: FSG.
- Lamboglia, R., Paolone, F., & Mancini, D. (2019). Determinants of the implementation of environmental risk indicators: Empirical evidence from the Italian manufacturing context. *Corporate Social Responsibility and Environmental Management*, 26(2), 307-316.
- Laughlin, R., & Gray, R. (1988). *Financial Accounting: method and meaning*. Taylor & Francis.
- Laughlin, R., & Puxty, A. G. (1980). *The decision-usefulness criterion: wrong cart, wrong horse?*. University of Sheffield.
- Liao, L., Lin, T., & Zhang, Y. (2018). Corporate board and corporate social responsibility assurance: Evidence from China. *Journal of Business Ethics*, 150, 211-225.
- Lim, M. (2016). *Governing through goals: Sustainable development goals as governance innovation*. Oxford University Press.

- Lindblom, C. K. (1994, June). The implications of organizational legitimacy for corporate social performance and disclosure. In *Critical perspectives on accounting conference*, New York (Vol. 120).
- Lubis, M. F. F., & Rokhim, R. (2021, December). The Effect of Environmental, Social, and Governance (ESG) Disclosure and Competitive Advantage on Companies Performance as An Implementation of Sustainable Economic Growth in Indonesia for Period of 2015-2019. In *IOP Conference Series: Earth and Environmental Science* (Vol. 940, No. 1, p. 012059). IOP Publishing.
- Miles, M. P., & Covin, J. G. (2000). Environmental marketing: A source of reputational, competitive, and financial advantage. *Journal of business ethics*, 23, 299-311..
- Milne, M.J. and Gray, R. (2013). W(h)iter Ecology? The triple bottom Line, the Global Reporting Initiative, and corporate sustainability reporting. *Journal of Business Ethics*, 118, 13-29.
- Mitchell, C.G. and Hill T. (2009). Corporate social and environmental reporting and the impact of internal environmental policy in South Africa. *Corporate Social Responsibility and Environmental Management*, 16, 48-60.
- Molina-Azorín, J. F., Claver-Cortés, E., López-Gamero, M. D., & Tarí, J. J. (2009). Green management and financial performance: a literature review. *Management decision*..
- Muhammad, H., & Migliori, S. (2022). Effects of board gender diversity and sustainability committees on environmental performance: a quantile regression approach. *Journal of Management & Organization*, 1-26.
- Osservatorio DNF, <https://www.osservatoriodnf.it/en/home/> , consulted on May 7th 2023
- Pacific Institute of Public Policies, <http://pacificpolicy.org/2015/03/aiming-for-goals/> consulted on May 13, 2023

- Pattberg, P., & Widerberg, O. (2016). Transnational multistakeholder partnerships for sustainable development: Conditions for success. *Ambio*, 45, 42-51.
- Patten, D.M. (1992). Intra-industry environmental disclosures in response to the Alaskan oil spill: a note on legitimacy theory. *Accounting, Organization and Society*, 17 (5), 471-475.
- Pfeffer, J., & Salancik, G. R. (1974). Organizational decision making as a political process: The case of a university budget. *Administrative Science Quarterly*, 135-151.
- Piketty, T. (2020). *Capital and Ideology*. Harvard University Press.
- Pucheta-Martínez, M. C., & Gallego-Álvarez, I. (2019). An international approach of the relationship between board attributes and the disclosure of corporate social responsibility issues. *Corporate Social Responsibility and Environmental Management*, 26(3), 612-627.
- Puxty, A. G. (1986). Social accounting as immanent legitimation: a critique of a technics ideology. *Advances in public interest accounting*, 1, 95-111.
- Ramanathan, K. V. (1976). Toward a theory of corporate social accounting. *The Accounting Review*, 51(3), 516-528.
- Rant, V. (2022). Regulating the green transition and sustainable finance in the European Union. Available at SSRN 4108232.
- Rio Declaration on Environment and Development, in Report of the United Nations Conference on Environment and Development, UN Doc. A/CONF.151/26 (Vol. I), 12 August 1992, Annex I
- Sachs, J. D. (2012). From millennium development goals to sustainable development goals. *The lancet*, 379(9832), 2206-2211.
- Stafford-Smith, M., Griggs, D., Gaffney, O., Ullah, F., Reyers, B., Kanie, N., ... & O'Connell, D. (2017). Integration: the key to implementing the Sustainable Development Goals. *Sustainability science*, 12, 911-919.

- Stuart, E., & Woodroffe, J. (2016). Leaving no-one behind: can the sustainable development goals succeed where the millennium development goals lacked?. *Gender & Development*, 24(1), 69-81.
- Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of management review*, 20(3), 571-610.
- Tarquinio, L. (2009). Corporate environmental responsibility e comunicazione d'impresa: la variabile ambientale nel bilancio d'esercizio e nei report volontari. G. Giappichelli.
- TEG. (2020). "Taxonomy Report: Technical Annex (March 2020)." Technical Expert Group on Sustainable Finance.
- Tomar, S. (2019). CSR disclosure and benchmarking-learning: Emissions responses to mandatory greenhouse gas disclosure. Available at SSRN.
- Trang, H. N. T., & Yekini, L. S. (2014). Investigating the link between CSR and financial performance: Evidence from Vietnamese listed companies. *British Journal of Arts and Social Sciences*, 17(1), 85-101.
- Trevino, L. K., Weaver, G. R., Gibson, D. G., & Toffler, B. L. (1999). Managing ethics and legal compliance: What works and what hurts. *California management review*, 41(2), 131-151.
- Ullmann, A. A. (1985). Data in search of a theory: A critical examination of the relationships among social performance, social disclosure, and economic performance of US firms. *Academy of management review*, 10(3), 540-557.
- UNDP. (2020). The Sustainable Development Goals: Our framework for COVID-19 recovery. United Nations Development Programme.
- United Nation. Department of Economic and Social Affairs. <https://sdgs.un.org/goals> consulted on May 11, 2023
- United Nations Conference on Trade and Development (UNCTAD). (2014). World Investment Report 2014: Investing in the SDGs: An Action Plan. UN.

- United Nations Development Programme (2015). "Annual Report on Evaluation: 2015." (2016). Evaluation Reports.
- United Nations World Council for Environment and Development (1987), Report of the World Commission on Environment and Development: Our Common Future. Oxford University Press: Oxford.
- United Nations, Department of Economic and Social Affairs, <https://sdgs.un.org> , consulted on May 7, 2023
- United Nations. "Leaving No One Behind: The Imperative of Inclusive Development. Report on the World Social Situation 2016." (2016).
- United Nations. (2012). United Nations Conference on Sustainable Development, Rio+20. United Nations.
- United Nations. (2015). Transforming our world: The 2030 agenda for sustainable development. United Nations.
- United Nations. (2017). Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development. United Nations.
- United Nations. (2018). Voluntary national reviews: Synthesis report. United Nations.
- Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility*.
- Velte, P. (2019). The bidirectional relationship between ESG performance and earnings management—empirical evidence from Germany. *Journal of Global Responsibility*, 10(4), 322-338.
- Velte, P., & Stawinoga, M. (2020). Do chief sustainability officers and CSR committees influence CSR-related outcomes? A structured literature review based on empirical-quantitative research findings. *Journal of Management Control*, 31(4), 333-377.
- Veltri, S. (2020). Mandatory non-financial risk-related disclosure. Cham: Springer International Publishing.

- Votaw, D. (1972). Genius becomes rare: a comment on the doctrine of social responsibility Pt. I. *California Management Review*, 15(2), 25-31.
- Waage, J., Yap, C., Bell, S., Levy, C., Mace, G., Pegram, T., ... & Poole, N. (2015). Governing the UN Sustainable Development Goals: interactions, infrastructures, and institutions. *The Lancet Global Health*, 3(5), e251-e252.
- WCED, S. W. S. (1987). World commission on environment and development. Our common future, 17(1), 1-91.
- Wood, D. J. (1991). Corporate social performance revisited. *Academy of management review*, 16(4), 691-718.
- Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment*, 31(7), 3371-3387.

Appendixes

A.1 Database

In the current appendix the self-build database is shown and all the collected variables are displayed.

Company in Database	Industry	Disclosure Index	Totale Attivo EUR	Totale valore della produzione EUR	Ricavi vendite e prestazioni EUR	Indice di leva (gearing) (%)	Redditività del capitale proprio (ROE) - Lordo (%)	Redditività del capitale investito (ROCE) - Netto (%)	Rendimento del capitale investito (ROCE) - Lordo (%)	Rendimento del capitale investito (ROCE) - Netto (%)	Redditività del totale Attivo (ROA) - Lordo (%)	Redditività del totale Attivo (ROA) - Netto (%)	Numero dipendenti	Listed (1) / Non listed (0)
Anno - 2021														
2I RETE GAS SPA	Energy	0.3793	5,328,359,000	1,072,949,000	721,615,000	291.70	22.37	18.40	7.08	6.06	4.82	3.96	2,022	0
A.I.M. VICENZA SPA	Energy	0.1897	390,924,259	1,071,382,503	1,066,313,180	97.48	32.76	20.95	32.16	21.01	2.77	1.77	82	0
AZA SPA	Energy	0.7586	18,008,000,000	11,549,000,000	11,352,000,000	133.21	13.71	11.71	6.83	5.95	3.28	2.80	13,267	1
ACEA SPA	Energy	1.0000	10,028,886,000	3,972,044,000	3,816,013,000	223.69	19.99	12.45	7.48	5.12	4.73	2.95	9,348	1
ACQUEVENETE SPA	Utilities	0.6724	560,031,760	87,700,666	76,697,304	52.09	0.55	0.20	1.31	1.07	0.26	0.09	311	0
ACSM-AGAM SPA - acinque	Energy	0.3621	992,499,000	473,350,000	452,792,000	53.00	5.60	8.59	4.33	6.59	2.92	4.48	897	1
AIMAG SPA	Utilities	0.4310	605,222,000	423,482,000	402,026,000	91.33	10.37	7.45	6.16	4.54	3.97	2.86	625	0
ALIASERVIZI AMBIENTALI SPA	Utilities	0.1724	507,898,000	381,263,000	371,705,000	107.58	6.89	5.35	5.03	4.14	2.52	1.96	2,678	0
ALPERIA SPA	Energy	0.3966	476,821,196	1,351,546,145	1,350,128,652	3.14	6.21	4.52	6.30	4.66	0.79	0.57	135	0
ATLANTIA SPA	Utilities	0.6379	79,865,000,000	11,888,000,000	11,888,000,000	274.84	2.83	3.90	4.17	4.46	0.57	0.78	20,326	1
DOLOMITI ENERGIA HOLDING SPA	Energy	0.7586	4,183,872,000	2,176,715,000	2,062,118,000	222.48	12.03	11.25	4.67	4.38	3.30	3.08	1,418	0
E.S. TR.A. SPA	Energy	0.2069	1,387,481,000	1,064,289,000	1,021,036,000	112.77	11.38	7.98	8.80	6.73	3.38	2.37	776	0
EDISON SPA	Energy	0.3621	16,708,000,000	11,939,000,000	11,739,000,000	44.44	7.68	0.27	5.77	0.41	2.92	0.10	4,918	1
ENEL SPA	Energy	0.9310	206,940,000,000	89,006,000,000	94,104,000,000	248.49	12.99	7.53	7.57	5.80	2.66	1.54	66,279	1
ENI SPA	Energy	0.7069	137,765,000,000	77,664,000,000	76,375,000,000	119.81	24.00	13.08	12.40	7.26	7.76	4.23	32,689	1
ERG SPA	Energy	0.6034	6,003,844,000	1,242,606,000	1,231,687,000	246.19	15.42	11.02	7.26	5.57	4.03	2.88	608	1
HERA SPA (HOLDING ENERGIA RISORSE AMBIENTE)	Utilities	0.6724	14,031,500,000	10,955,400,000	10,555,300,000	148.03	11.91	9.76	8.45	7.53	2.90	2.38	9,061	1
IREN SPA	Utilities	1.0000	10,310,454,000	4,955,871,000	4,826,741,000	163.76	14.36	10.27	6.39	4.82	4.11	2.94	9,055	1
ITALGAS SPA	Energy	0.5517	10,152,007,000	2,169,856,000	2,098,463,000	337.17	24.89	17.90	6.84	5.13	5.25	3.78	3,932	1
SARAS SPA	Oil and gas	0.4655	3,699,595,000	8,636,448,000	8,561,324,000	111.45	4.06	1.18	5.11	2.86	0.87	0.25	1,572	1
SMAT SOCIETÀ ACQUE METROPOLITANE DI TORINO SPA	Utilities	0.1207	1,239,576,000	439,991,000	423,414,000	48.09	6.54	5.00	5.06	3.96	3.65	2.79	1,016	0
SNAM SPA	Utilities	0.9828	27,161,000,000	3,318,000,000	3,285,000,000	182.96	22.31	20.66	9.12	8.50	5.95	5.51	3,430	1
TEA SPA	Utilities	0.7931	505,666,000	363,796,000	357,200,000	78.59	18.73	15.52	12.17	10.14	8.29	6.87	593	0
TERNA - RETE ELETTRICA NAZIONALE SPA	Utilities	0.6207	22,359,200,000	2,649,500,000	2,577,700,000	267.04	23.61	16.75	8.32	6.13	4.98	3.53	5,136	1

Company in Database	Industry	Disclosure Index	Presenza del Comitato di Sostenibilità	Comitato di Sostenibilità incluso in segnalazioni endocorpo	Piano di Sostenibilità	Piano di Sostenibilità	Presenza di KPIs e benchmark	Obiettivi ESG	Obiettivi ESG	Obiettivi ESG	Obiettivi ESG	Sistemi di Integrazione	SDGs correlati	SDGs correlati
Anno - 2021														
2I RETE GAS SPA	Energy	0.3793	0	0	1	1	1	1	1	1	1	1	1	1
A.I.M. VICENZA SPA	Energy	0.1897	0	0	1	1	1	0	1	1	0	1	1	0
AZA SPA	Energy	0.7586	1	1	1	1	1	1	1	1	1	1	1	1
ACEA SPA	Energy	1.0000	1	1	1	1	1	1	1	1	1	1	1	1
ACQUEVENETE SPA	Utilities	0.6724	0	0	1	1	1	0	1	1	1	1	1	0
ACSM-AGAM SPA - acinque	Energy	0.3621	0	0	1	1	1	1	1	1	1	0	1	0
AIMAG SPA	Utilities	0.4310	0	0	1	1	1	1	1	1	1	0	1	0
ALIASERVIZI AMBIENTALI SPA	Utilities	0.1724	1	0	0	1	0	1	1	1	1	1	0	1
ALPERIA SPA	Energy	0.3966	0	0	1	1	1	1	1	1	1	1	1	1
ATLANTIA SPA	Utilities	0.6379	1	1	1	1	1	1	1	0	0	1	1	1
DOLOMITI ENERGIA HOLDING SPA	Energy	0.7586	0	0	1	1	1	0	1	1	0	1	0	0
E.S. TR.A. SPA	Energy	0.2069	0	0	1	1	1	0	0	1	0	1	0	1
EDISON SPA	Energy	0.3621	0	1	1	1	1	0	1	1	1	0	1	1
ENEL SPA	Energy	0.9310	1	1	1	1	1	1	1	1	1	1	1	1
ENI SPA	Energy	0.7069	1	1	1	1	1	1	1	1	1	1	1	1
ERG SPA	Energy	0.6034	1	0	1	1	1	1	1	1	1	1	1	1
HERA SPA (HOLDING ENERGIA RISORSE AMBIENTE)	Utilities	0.6724	1	0	0	1	1	1	1	1	1	1	1	0
IREN SPA	Utilities	1.0000	1	1	1	1	1	1	1	1	1	1	1	1
ITALGAS SPA	Energy	0.5517	1	1	1	1	1	0	1	1	1	0	1	1
SARAS SPA	Oil and gas	0.4655	1	1	0	1	1	0	0	0	0	0	1	0
SMAT SOCIETÀ ACQUE METROPOLITANE DI TORINO SPA	Utilities	0.1207	0	0	0	1	1	1	1	1	0	1	1	1
SNAM SPA	Utilities	0.9828	1	1	1	1	1	1	1	1	0	1	1	1
TEA SPA	Utilities	0.7931	1	1	0	1	1	1	1	1	0	1	1	1
TERNA - RETE ELETTRICA NAZIONALE SPA	Utilities	0.6207	1	1	0	1	1	1	1	1	1	1	1	1

Company in Database	Industry	Disclosure Index	Totale Attivo EUR	Totale valore della produzione EUR	Ricavi vendite e prestazioni EUR	Indice di leva (gearing) (%)	Redditività del capitale proprio (ROE) - Lordo (%)	Redditività del capitale proprio (ROE) - Netto (%)	Rendimento del capitale investito (ROCE) - Lordo (%)	Rendimento del capitale investito (ROCE) - Netto (%)	Redditività del totale Attivo (ROA) - Lordo (%)	Redditività del totale Attivo (ROA) - Netto (%)	Numero dipendenti	Listed (1) / Non listed (0)
Anno - 2020														
2I RETE GAS SPA	Energy	0.1724	4,796,334,000	1,038,264,000	711,616,000	281.38	24.70	17.66	8.02	6.14	5.36	3.83	2,015	0
A.I.M. VICENZA SPA	Energy	0.1379	215,406,626	611,110,601	607,756,920	100.11	54.08	38.44	52.12	37.31	10.66	7.58	82	0
AZA SPA	Energy	0.3793	12,225,000,000	6,862,000,000	6,868,000,000	127.96	11.40	8.84	6.01	4.87	3.84	2.98	12,978	1
ACEA SPA	Energy	0.9310	9,673,614,000	3,379,722,000	3,205,492,000	217.82	19.85	12.27	7.82	5.36	4.77	2.95	7,097	1
ACQUEVENETE SPA	Utilities	0.6379	553,816,901	86,881,027	76,889,037	55.04	0.67	0.37	0.89	0.69	0.32	0.18	307	0
ACSM-AGAM SPA	Energy	0.2931	890,672,000	387,602,000	367,641,000	54.02	4.98	3.67	3.78	2.82	2.74	2.02	878	1
AIMAG SPA	Utilities	0.3103	463,211,000	230,713,000	207,299,000	72.15	9.26	6.66	6.20	4.56	4.53	3.26	515	0
ALIA SERVIZI AMBIENTALI SPA	Utilities	0.1552	473,009,000	334,144,000	327,734,000	102.16	-5.86	-3.25	-2.24	-0.76	-2.18	-1.21	2,574	0
ALPERIA SPA	Energy	0.3966	247,773,223	898,764,022	898,139,945	3.69	25.38	18.57	24.48	17.91	5.90	4.32	122	0
ATLANTIA SPA	Utilities	0.6552	86,560,000,000	9,470,000,000	9,051,000,000	453.41	-15.19	-11.51	-0.04	0.69	-2.50	-1.90	29,373	1
CAP HOLDING SPA	Utilities	0.6207	1,200,145,000	336,892,000	324,785,000	31.06	4.09	2.25	3.72	2.28	2.82	1.55	887	0
DOLOMITI ENERGIA HOLDING SPA	Energy	0.7241	2,319,348,000	1,397,414,000	1,270,076,000	62.66	14.20	10.72	10.18	7.78	7.33	5.54	1,434	0
E.S.T.R.A. SPA	Energy	0.1379	1,173,924,000	762,219,000	748,414,000	135.32	8.15	17.91	5.80	10.60	2.73	5.99	755	0
EDISON SPA	Energy	0.3276	9,383,000,000	6,504,000,000	6,390,000,000	33.92	4.20	0.26	3.27	0.24	2.45	0.15	3,518	1
ENEL SPA	Energy	0.9310	163,453,000,000	70,177,000,000	62,623,000,000	197.37	12.90	6.16	7.54	5.20	3.34	1.60	66,717	1
ENI SPA	Energy	0.5517	109,648,000,000	44,937,000,000	43,987,000,000	139.00	-15.94	-23.03	-5.61	-8.70	-4.45	-7.88	31,495	1
ERG SPA	Energy	0.5172	4,528,947,000	995,973,000	973,695,000	142.79	3.75	6.10	3.73	4.73	1.46	2.38	768	1
HERA SPA (HOLDING ENERGIA RISORSE AMBIENTE)	Utilities	0.5862	11,034,800,000	7,546,800,000	7,079,000,000	153.68	13.77	9.59	7.57	5.86	3.94	2.74	8,918	1
IREN SPA	Energy	1.0000	9,554,265,000	3,725,461,000	3,537,250,000	184.90	13.22	8.52	5.58	3.92	3.82	2.46	8,680	1
ITALGAS SPA	Energy	0.3793	9,129,009,000	2,129,626,000	2,058,442,000	319.80	28.24	20.37	8.06	6.01	6.13	4.42	4,069	1
SARAS SPA	Oil and gas	0.4655	3,370,188,000	5,342,284,000	5,184,875,000	181.43	-45.24	-35.12	-19.92	-15.23	-10.53	-8.18	1,687	1
SMAT SOCIETÀ ACQUE METROPOLITANE DI TORINO SPA	Utilities	0.1552	1,189,243,000	432,664,000	418,309,000	48.51	4.96	3.59	3.98	3.01	2.76	2.00	980	0
SNAM SPA	Utilities	0.7931	25,675,000,000	2,770,000,000	2,770,000,000	220.72	22.73	17.01	9.22	7.16	5.73	4.29	3,249	1
TEA SPA	Utilities	0.5517	460,251,000	296,126,000	291,963,000	88.34	13.28	9.96	8.13	6.22	5.72	4.29	604	0
TERNA - RETE ELETTRICA NAZIONALE SPA	Utilities	0.5517	20,630,300,000	2,575,900,000	2,461,900,000	256.19	24.75	17.79	7.64	5.67	5.30	3.81	4,735	1
VERITAS SPA	Utilities	0.4483	1,086,622,000	434,107,000	411,964,000	198.12	2.92	1.58	2.95	2.41	0.80	0.43	3,370	0

Company in Database	Industry	Disclosure Index	Presenza del Comitato di Sostenibilità	Comitato di Sostenibilità include in organigramma siglari	Piano di Sostenibilità	Piano di sostenibilità integrato	Presenza di KPIs e benchmark ESG	Obiettivi ESG	Obiettivi ESG lungo termine	Obiettivi ESG lungo termine	Obiettivi ESG lungo termine	Obiettivi ESG lungo termine	Sistemi di integrazione con i rischi ESG	Integrazione con i rischi ESG	SDGs correlati	SDGs correlati	
Anno - 2020																	
2I RETE GAS SPA	Energy	0.1724	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
A.I.M. VICENZA SPA	Energy	0.1379	0	0	0	0	1	0	1	1	0	0	1	0	1	0	0
AZA SPA	Energy	0.3793	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACEA SPA	Energy	0.9310	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACQUEVENETE SPA	Utilities	0.6379	0	0	1	1	1	1	0	1	0	1	0	1	1	0	0
ACSM-AGAM SPA	Energy	0.2931	0	0	1	1	1	1	1	1	1	1	0	1	1	0	0
AIMAG SPA	Utilities	0.3103	0	0	0	1	1	1	1	1	1	1	0	1	1	0	1
ALIA SERVIZI AMBIENTALI SPA	Utilities	0.1552	0	0	0	0	1	0	1	1	1	1	1	1	1	0	1
ALPERIA SPA	Energy	0.3966	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
ATLANTIA SPA	Utilities	0.6552	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1
CAP HOLDING SPA	Utilities	0.6207	0	0	1	1	1	0	1	1	1	1	1	1	1	0	0
DOLOMITI ENERGIA HOLDING SPA	Energy	0.7241	0	0	1	1	1	1	0	1	1	1	0	0	0	0	0
E.S.T.R.A. SPA	Energy	0.1379	0	0	0	1	1	1	0	0	1	0	1	0	1	1	0
EDISON SPA	Energy	0.3276	0	0	0	1	1	1	0	1	1	0	1	0	1	0	1
ENEL SPA	Energy	0.9310	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ENI SPA	Energy	0.5517	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ERG SPA	Energy	0.5172	1	0	1	1	1	1	0	1	1	1	1	1	1	0	1
HERA SPA (HOLDING ENERGIA RISORSE AMBIENTE)	Utilities	0.5862	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1
IREN SPA	Energy	1.0000	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ITALGAS SPA	Energy	0.3793	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1
SARAS SPA	Oil and gas	0.4655	1	1	0	1	1	0	0	0	0	0	0	0	1	0	0
SMAT SOCIETÀ ACQUE METROPOLITANE DI TORINO SPA	Utilities	0.1552	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
SNAM SPA	Utilities	0.7931	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TEA SPA	Utilities	0.5517	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
TERNA - RETE ELETTRICA NAZIONALE SPA	Utilities	0.5517	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
VERITAS SPA	Utilities	0.4483	1	0	0	1	1	0	1	1	1	1	1	1	1	0	1

Company in Database	Industry	Disclosure Index	Totale Attivo	Totale valore della	Ricavi vendite e	Indice di leva	Redditività	Redditività	Rendimento	Rendimento	Redditività	Redditività	Numero	Listed (1) /
			EUR	produzione	prestazioni	(gearing) (%)	del capitale	del capitale	del capitale	del capitale	del totale	del totale	dipendenti	Non listed (0)
			EUR	EUR	EUR	(%)	- Lordo (%)	proprio (ROE) - Netto (%)	investito (ROCE) - Lordo (%)	investito (ROCE) - Netto (%)	Attivo (ROA) - Lordo (%)	Attivo (ROA) - Netto (%)		
Anno - 2019														
2I RETE GAS SPA	Energy	0.1724	4,855,692,000	1,056,419,000	722,701,000	328.88	28.42	22.10	8.97	7.36	5.47	4.25	2,057	0
A.I.M. VICENZA SPA	Energy	0.1379	222,947,137	787,064,825	778,683,275	64.17	60.45	43.28	58.98	42.41	12.49	8.95	82	0
AZA SPA	Energy	0.3793	10,725,000,000	7,324,000,000	7,122,000,000	127.97	15.91	10.66	8.69	6.32	5.42	3.63	12,186	1
ACEA SPA	Energy	0.8966	8,954,416,000	3,186,235,000	3,022,193,000	226.91	20.43	13.47	8.51	6.18	4.81	3.17	5716	1
ACQUVENETE SPA	Utilities	0.6724	478,153,681	87,921,240	76,485,184	26.77	1.25	0.88	1.53	1.24	0.70	0.49	320	0
ACSM-AGAM SPA	Utilities	0.2414	872,112,000	421,893,000	405,898,000	49.82	5.74	3.81	4.57	3.05	3.21	2.13	902	1
AIMAG SPA	Utilities	0.3621	421,465,000	245,441,000	219,232,000	71.78	10.72	7.64	7.28	5.27	4.98	3.55	513	0
ALIA SERVIZI AMBIENTALI SPA	Utilities	0.1897	456,546,000	347,373,000	337,891,000	94.40	0.23	0.76	1.26	1.57	0.09	0.31	2,560	0
ALPERIA SPA	Energy	0.3621	283,673,917	878,610,199	877,470,340	8.53	21.81	15.68	20.15	14.50	3.61	2.59	123	0
ATLANTIA SPA	Utilities	0.6379	81,619,000,000	13,038,000,000	12,815,000,000	397.58	3.16	2.40	3.12	2.96	0.58	0.44	28,955	1
CAP HOLDING SPA	Utilities	0.5690	1,267,840,000	361,981,000	350,485,000	34.14	5.73	3.83	4.97	3.52	3.81	2.55	868	0
DOLOMITI ENERGIA HOLDING SPA	Energy	0.6207	2,159,800,000	1,499,784,000	1,445,186,000	61.45	14.15	9.86	9.88	7.03	7.29	5.08	1,352	0
E.S. TR.A. SPA	Energy	0.1379	1,244,170,000	996,905,000	967,943,000	191.78	8.46	5.19	4.94	3.65	2.19	1.34	761	0
EDISON SPA	Energy	0.4828	10,809,000,000	8,772,000,000	8,638,000,000	35.53	-6.95	-8.69	-4.60	-5.95	-3.54	-4.43	4,682	1
ENEL SPA	Energy	0.5862	171,426,000,000	80,002,000,000	77,366,000,000	194.56	9.19	4.63	5.53	3.89	2.52	1.27	68,253	1
ENI SPA	Energy	0.5345	123,440,000,000	70,889,000,000	69,881,000,000	102.01	12.00	0.31	7.70	1.73	4.66	0.12	32,053	1
ERG SPA	Energy	0.4828	4,602,811,000	1,044,389,000	1,021,594,000	146.27	2.93	1.77	3.64	3.15	1.14	0.69	754	1
HERA SPA (HOLDING ENERGIA RISORSE AMBIENTE)	Utilities	0.5517	10,363,300,000	7,443,600,000	6,912,800,000	152.69	17.55	12.81	9.14	7.21	5.10	3.72	8,982	1
IREN SPA	Utilities	1.0000	8,799,858,000	4,274,706,000	4,081,333,000	170.32	14.23	8.92	6.73	4.73	4.29	2.69	8,102	1
ITALGAS SPA	Energy	0.3103	8,232,454,000	1,897,092,000	1,820,020,000	317.54	30.49	23.60	8.83	7.04	6.65	5.15	4,069	1
SARAS SPA	Oil and gas	0.4483	3,563,994,000	9,517,696,000	9,369,093,000	62.18	3.34	2.47	3.56	2.97	0.99	0.73	1,745	1
SMAT SOCIETÀ ACQUE METROPOLITANE DI TORINO SPA	Utilities	0.1552	1,178,811,000	439,883,000	423,882,000	50.15	7.81	6.22	6.04	4.92	4.29	3.42	991	0
SNAM SPA	Utilities	0.7414	24,043,000,000	2,685,000,000	2,665,000,000	221.33	23.41	17.42	9.39	7.31	6.09	4.53	3,025	1
TEA SPA	Utilities	0.3793	403,786,000	299,970,000	295,681,000	69.86	15.18	11.23	9.71	7.33	7.07	5.23	572	0
TERNA - RETE ELETTRICA NAZIONALE SPA	Utilities	0.5690	18,003,700,000	2,339,200,000	2,287,900,000	257.61	25.46	17.90	7.77	5.63	5.98	4.21	4,290	1
VERITAS SPA	Utilities	0.3448	965,293,000	437,741,000	418,211,000	155.05	3.10	1.56	3.03	2.37	0.94	0.47	3,249	0

Company in Database	Industry	Disclosure Index	Presenza del	Comitato di	Piano di	Piano di	Presenza di	Obiettivi Tar	Obiettivi Tar	Obiettivi Tar	Obiettivi Tar	Obiettivi Tar	Sistemi di In	Integrazione	SDGs correla	SDGs correla	
			Comitato di	Sostenibilità	incluso in or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or
			Comitato di	Sostenibilità	incluso in or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or	gani and/or
Anno - 2019																	
2I RETE GAS SPA	Energy	0.1724	0	0	0	0	1	0	0	0	0	0	1	1	1	1	0
A.I.M. VICENZA SPA	Energy	0.1379	0	0	0	0	1	0	1	1	1	0	0	1	0	0	0
AZA SPA	Energy	0.3793	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
ACEA SPA	Energy	0.8966	1	0	1	0	1	0	1	1	1	1	0	1	1	1	1
ACQUVENETE SPA	Utilities	0.6724	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
ACSM-AGAM SPA	Energy	0.2414	0	0	1	0	0	1	1	1	1	1	0	1	0	0	0
AIMAG SPA	Utilities	0.3621	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
ALIA SERVIZI AMBIENTALI SPA	Utilities	0.1897	0	0	0	1	1	0	1	1	1	1	1	1	1	0	1
ALPERIA SPA	Energy	0.3621	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1
ATLANTIA SPA	Utilities	0.6379	1	0	0	0	1	0	0	0	0	0	1	1	1	1	1
CAP HOLDING SPA	Utilities	0.5690	0	0	1	0	1	0	1	1	1	1	0	1	1	1	0
DOLOMITI ENERGIA HOLDING SPA	Energy	0.6207	0	0	1	1	1	1	1	1	1	1	0	0	1	1	1
E.S. TR.A. SPA	Energy	0.1379	0	0	0	0	1	1	1	1	1	1	0	1	1	1	0
EDISON SPA	Energy	0.4828	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1
ENEL SPA	Energy	0.5862	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
ENI SPA	Energy	0.5345	1	1	0	1	1	0	1	1	1	0	1	1	1	1	0
ERG SPA	Energy	0.4828	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1
HERA SPA (HOLDING ENERGIA RISORSE AMBIENTE)	Utilities	0.5517	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
IREN SPA	Utilities	1.0000	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1
ITALGAS SPA	Energy	0.3103	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1
SARAS SPA	Oil and gas	0.4483	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
SMAT SOCIETÀ ACQUE METROPOLITANE DI TORINO SPA	Utilities	0.1552	0	0	1	0	1	0	1	1	1	1	0	0	1	1	1
SNAM SPA	Utilities	0.7414	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1
TEA SPA	Utilities	0.3793	1	0	0	1	1	0	1	1	1	1	0	1	1	1	0
TERNA - RETE ELETTRICA NAZIONALE SPA	Utilities	0.5690	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
VERITAS SPA	Utilities	0.3448	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

Company in Database	Industry	Disclosure Index	Totale Attivo EUR	Totale valore della produzione EUR	Ricavi vendite e prestazioni EUR	Indice di leva (gearing) (%)	Redditività del capitale proprio (ROE) - Lordo (%)	Redditività del capitale proprio (ROE) - Netto (%)	Rendimento del capitale investito (ROCE) - Lordo (%)	Rendimento del capitale investito (ROCE) - Netto (%)	Redditività del totale Attivo (ROA) - Lordo (%)	Redditività del totale Attivo (ROA) - Netto (%)	Numero dipendenti	Listed (1) / Non listed (0)
2I RETE GAS SPA	Energy	0.1552	5,066,031,000	986,100,000	682,457,000	410.26	26.19	18.83	7.15	5.58	4.27	3.07	2,114	0
A.I.M. VICENZA SPA	Energy	0.1379	181,984,234	506,162,944	500,273,823	55.51	53.19	36.62	52.03	36.07	12.05	8.30	77	0
A2A SPA	Energy	0.3621	10,333,000,000	6,494,000,000	6,271,000,000	119.76	13.91	9.76	8.17	6.25	4.74	3.33	12,080	1
ACEA SPA	Energy	0.8966	8,157,061,000	3,028,486,000	2,836,889,000	229.61	21.49	14.24	8.58	6.23	5.01	3.32	656	1
ACQUEVENETE SPA	Utilities	0.7241	477,835,828	84,042,966	74,984,503	27.08	1.23	0.97	1.57	1.36	0.68	0.54	307	0
ACSM-AGAM SPA	Energy	0.2414	829,715,000	292,242,000	281,612,000	43.82	3.45	2.19	2.76	1.81	2.03	1.29	865	1
ANMAG SPA	Utilities	0.3966	492,648,000	235,457,000	215,012,000	61.96	10.01	7.10	6.94	5.00	4.74	3.36	510	0
ALIA SERVIZI AMBIENTALI SPA	Utilities	0.1897	462,139,000	305,673,000	299,556,000	101.82	1.80	1.10	1.86	1.58	0.60	0.41	2,389	0
ALPERIA SPA	Energy	0.3448	316,707,004	1,164,180,042	1,162,989,173	46.12	73.81	53.41	50.53	36.57	19.09	13.82	132	0
ATLANTIA SPA	Utilities	0.6034	79,673,581,000	7,824,149,000	7,427,115,000	328.57	9.43	5.01	3.59	2.55	1.93	1.03	28,090	1
CAP HOLDING SPA	Utilities	0.6034	1,261,083,000	337,293,000	326,950,000	38.34	5.78	3.94	4.93	3.58	3.72	2.53	845	0
DOLOMITI ENERGIA HOLDING SPA	Energy	0.5517	2,077,814,000	1,451,281,000	1,380,929,000	62.39	13.84	10.32	9.79	7.44	7.03	5.24	1,345	0
E.S.T.R.A. SPA	Energy	0.1379	1,224,285,000	840,531,000	805,421,000	178.77	3.90	2.37	4.10	3.47	1.04	0.63	707	0
EDISON SPA	Energy	0.4138	10,585,000,000	9,313,000,000	9,159,000,000	34.29	3.00	0.88	2.39	0.77	1.74	0.51	5,372	1
ENEL SPA	Energy	0.8621	165,424,000,000	75,324,000,000	73,134,000,000	175.12	17.14	10.01	8.80	6.06	4.96	2.90	69,272	1
ENI SPA	Energy	0.6379	116,373,000,000	76,938,000,000	75,822,000,000	80.29	19.79	8.08	12.56	5.91	6.54	3.49	31,701	1
ERG SPA	Energy	0.4828	4,697,911,000	1,045,638,000	1,023,735,000	146.31	9.43	7.25	6.47	5.51	3.67	2.82	731	1
HERA SPA (HOLDING ENERGIA RISORSE AMBIENTE)	Utilities	0.4655	9,111,600,000	6,626,400,000	6,134,400,000	120.28	14.70	9.90	9.29	7.09	4.59	3.09	8,622	1
IREN SPA	Utilities	0.9655	8,568,133,000	4,040,773,000	3,764,000,000	178.36	15.20	9.45	7.64	5.47	4.55	2.83	7,042	1
ITALGAS SPA	Energy	0.3103	6,759,210,000	1,649,198,000	1,583,752,000	330.97	32.24	23.60	8.76	6.64	6.34	4.64	3,631	1
SARAS SPA	Oil and gas	0.3793	2,959,919,000	10,396,912,000	10,267,867,000	57.47	16.80	12.72	12.89	10.18	6.12	4.74	1,946	1
SMAT SOCIETÀ ACQUE METROPOLITANE DI TORINO SPA	Utilities	0.1207	1,201,741,000	417,856,000	399,458,000	60.76	12.00	8.43	8.43	6.09	6.16	4.32	1,020	0
SNAM SPA	Utilities	0.7414	22,582,000,000	2,586,000,000	2,586,000,000	214.50	21.74	16.04	9.10	7.10	5.76	4.25	3,016	1
TEA SPA	Utilities	0.3621	390,466,000	278,382,000	270,440,000	71.72	14.58	10.82	9.17	8.83	6.78	4.94	595	0
TERNA - RETE ELETTRICA NAZIONALE SPA	Utilities	0.5690	17,130,500,000	2,317,900,000	2,272,500,000	237.05	24.86	17.43	8.43	6.12	5.88	4.13	4,252	1
VERITAS SPA	Utilities	0.3448	896,006,000	399,516,000	418,211,000	133.53	4.18	7.09	4.16	5.47	1.35	2.28	3,163	0

Company in Database	Industry	Disclosure Index	Presenza del Comitato di Sostenibilità	Comitato di Sostenibilità include In o no gli andicon siglari	Piano di Sostenibilità	Piano di Sos enibilita_rte	Piano di sost enibilita_rte	Presenza di KPIs e bench mark con no industriali e progressi	Obiettivi_Tar get_ESG_bre	Obiettivi_Tar get_ESG_lung	Obiettivi_Tar get_ENV_ripor	Obiettivi_Tar get_SOC_ripor	Obiettivi_Tar get_SOC_ripor	Sistemi di certificazione legati alla sostenibilità	Integrazione rischi ESG_n ti_a temi_ma gestione	SDGs correla ti_a temi_ma	SDGs correla ti_a futuri ob iettivi
2I RETE GAS SPA	Energy	0.1552	0	0	0	0	0	1	0	0	0	0	0	1	1	1	0
A.I.M. VICENZA SPA	Energy	0.1379	0	0	0	0	0	1	0	1	1	0	0	1	1	1	1
A2A SPA	Energy	0.3621	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1
ACEA SPA	Energy	0.8966	1	0	1	0	1	0	1	1	1	1	1	0	1	1	1
ACQUEVENETE SPA	Utilities	0.7241	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
ACSM-AGAM SPA	Energy	0.2414	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0
ANMAG SPA	Utilities	0.3966	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0
ALIA SERVIZI AMBIENTALI SPA	Utilities	0.1897	0	0	0	1	1	1	1	1	1	1	1	0	1	0	0
ALPERIA SPA	Energy	0.3448	1	0	1	0	1	1	1	1	1	1	1	1	1	1	0
ATLANTIA SPA	Utilities	0.6034	1	0	1	0	1	0	0	0	0	0	0	1	1	1	1
CAP HOLDING SPA	Utilities	0.6034	0	0	1	0	1	0	1	1	1	1	1	0	1	1	0
DOLOMITI ENERGIA HOLDING SPA	Energy	0.5517	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0
E.S.T.R.A. SPA	Energy	0.1379	1	0	0	0	1	1	0	1	1	1	1	0	1	0	0
EDISON SPA	Energy	0.4138	1	0	1	0	1	1	1	1	1	1	1	0	1	1	1
ENEL SPA	Energy	0.8621	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1
ENI SPA	Energy	0.6379	0	0	0	1	1	1	1	1	1	1	1	0	0	1	0
ERG SPA	Energy	0.4828	1	0	1	1	1	1	0	1	1	1	1	0	1	1	1
HERA SPA (HOLDING ENERGIA RISORSE AMBIENTE)	Utilities	0.4655	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1
IREN SPA	Utilities	0.9655	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
ITALGAS SPA	Energy	0.3103	1	0	1	1	1	1	0	1	1	1	1	0	1	1	0
SARAS SPA	Oil and gas	0.3793	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0
SMAT SOCIETÀ ACQUE METROPOLITANE DI TORINO SPA	Utilities	0.1207	0	0	0	0	1	0	1	1	1	1	1	0	0	1	1
SNAM SPA	Utilities	0.7414	1	0	0	1	1	1	1	1	1	1	1	0	1	1	1
TEA SPA	Utilities	0.3621	0	0	0	0	1	0	1	1	1	1	1	0	1	0	0
TERNA - RETE ELETTRICA NAZIONALE SPA	Utilities	0.5690	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
VERITAS SPA	Utilities	0.3448	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

Company in Database	Industry	Disclosure Index	Totale Attivo EUR	Totale valore della produzione EUR	Ricavi vendite e prestazioni EUR	Indice di leva (gearing) (%)	Redditività del capitale proprio (ROE) - Lordo (%)	Redditività del capitale proprio (ROE) - Netto (%)	Rendimento del capitale investito (ROCE) - Lordo (%)	Rendimento del capitale investito (ROCE) - Netto (%)	Redditività del totale Attivo (ROA) - Lordo (%)	Redditività del totale Attivo (ROA) - Netto (%)	Numero dipendenti	Listed (1) Non listed (0)
2I RETE GAS SPA	Energy	0.1552	4,428,138,000	1,028,189,000	600,313,000	379.61	22.69	16.01	6.79	5.39	3.89	2.75	1,929	0
A.I.M. VICENZA SPA	Energy	0.2759	177,847,127	504,992,176	499,738,955	64.38	43.94	30.73	42.54	29.96	9.32	6.52	79	0
AZA SPA	Energy	0.2759	9,949,000,000	5,796,000,000	5,590,000,000	155.33	19.12	9.73	9.65	5.93	5.79	2.95	11,436	1
ACEA SPA	Energy	0.8966	7,339,055,000	2,796,983,000	2,669,876,000	219.18	15.91	9.98	7.32	5.24	3.93	2.46	589	1
ACQUEVENETE SPA	Utilities	0.7241	480,505,984	89,811,036	79,051,302	27.16	2.50	1.12	2.76	1.64	1.36	0.61	297	0
ACSM-AGAM SPA	Energy	0.0000	402,626,000	203,210,000	178,491,000	75.37	8.60	5.35	5.81	3.71	3.99	2.49	397	1
AIMAG SPA	Utilities	0.4828	372,016,000	232,291,000	209,917,000	58.11	13.19	9.03	9.27	6.48	6.65	4.55	525	0
ALIA SERVIZI AMBIENTALI SPA	Utilities	0.1897	445,432,000	258,974,000	253,434,000	112.84	3.67	2.10	3.13	2.29	1.39	0.79	2,003	0
ALPERIA SPA	Energy	0.3448	308,947,392	956,106,209	954,422,839	70.42	2.05	1.69	1.25	1.04	0.26	0.21	127	0
ATLANTIA SPA	Utilities	0.5517	40,057,260,000	6,802,202,000	6,383,011,000	212.74	17.56	9.96	8.16	5.58	5.16	2.93	15,394	1
CAP HOLDING SPA	Utilities	0.5517	1,259,121,000	335,511,000	237,902,000	44.42	5.54	3.89	4.69	3.53	3.42	2.40	813	0
DOLOMITI ENERGIA HOLDING SPA	Energy	0.5517	2,037,164,000	1,405,865,000	1,358,321,000	70.55	4.99	4.70	3.97	3.77	2.39	2.25	1,327	0
E.S.T.R.A. SPA	Energy	0.1724	1,132,254,000	1,016,504,000	979,126,000	155.20	9.50	4.84	6.37	4.36	2.79	1.42	644	0
EDISON SPA	Energy	0.4828	10,320,000,000	10,198,000,000	9,940,000,000	29.18	-0.66	-2.84	0.18	-1.54	-0.40	-1.71	4,996	1
ENEL SPA	Energy	0.8103	155,641,000,000	74,437,000,000	72,064,000,000	137.86	13.83	7.25	8.94	5.96	4.63	2.43	62,900	1
ENI SPA	Energy	0.6379	114,928,000,000	70,977,000,000	66,919,000,000	90.55	14.24	7.02	9.06	5.21	5.96	2.94	32,034	1
ERG SPA	Energy	0.5345	4,661,245,000	1,064,133,000	1,053,552,000	134.05	12.77	11.02	8.00	7.20	5.14	4.44	716	1
HERA SPA (HOLDING ENERGIA RISORSE AMBIENTE)	Utilities	0.2931	8,787,700,000	6,136,900,000	5,612,100,000	139.04	13.28	9.29	8.19	6.46	4.09	2.86	8,683	1
IREN SPA	Utilities	0.9655	7,895,788,000	3,697,135,000	3,697,135,000	167.71	14.77	9.51	7.65	5.63	4.68	3.01	6,285	1
ITALGAS SPA	Energy	0.2931	5,844,369,000	1,626,272,000	1,570,929,000	349.56	34.13	24.69	8.37	6.23	6.92	5.01	3,783	1
SARAS SPA	Oil and gas	0.3793	3,157,161,000	7,687,102,000	7,558,401,000	63.76	30.90	22.46	21.63	16.07	10.50	7.63	1,944	1
SMART SOCIETÀ ACQUE METROPOLITANE DI TORINO SPA	Utilities	0.4138	1,215,808,000	408,433,000	392,224,000	74.11	14.88	10.45	9.53	6.85	7.08	4.97	1,022	0
SNAM SPA	Utilities	0.6724	21,816,000,000	2,606,000,000	2,533,000,000	207.22	19.81	14.50	8.69	6.82	5.62	4.11	2,919	1
TEA SPA	Utilities	0.3621	385,308,000	269,249,000	264,501,000	76.89	15.06	11.24	9.24	7.03	6.61	4.93	543	0
TERNA - RETE ELETTRICA NAZIONALE SPA	Utilities	0.5862	16,916,800,000	2,248,000,000	2,184,000,000	268.45	25.82	17.98	8.27	5.98	5.84	4.07	3,697	1
VERITAS SPA	Utilities	0.3103	870,021,000	385,344,000	361,602,000	159.28	6.99	5.62	4.67	4.11	2.12	1.71	3,012	0

Company in Database	Industry	Disclosure Index	Presenza del Comitato di Sostenibilità	Comitato di Sostenibilità incluso in or gani and/or siglari	Piano di Sostenibilità	Piano di Sostenibilità integrato nel business plan e	Presenza di KPIs e bench mark con an ni progressi e	Obiettivi Tar get_ESG_bre ve_termine_1 anni_rispar	Obiettivi Tar get_ESG_lung o_termine_3 anni_rispar	Obiettivi Tar get_ENV_ripor tati	Obiettivi Tar get_SOC_ripor tati	Sistemi di In tegrazione certificazione legati alla so stenibilità	SDGs correla ti_a temi_ma gestione	SDGs correla ti_a temi_ma gestione	SDGs correla ti_a temi_ma gestione
2I RETE GAS SPA	Energy	0.1552	0	0	0	0	1	0	0	0	0	1	1	0	0
A.I.M. VICENZA SPA	Energy	0.2759	0	0	0	0	1	0	1	1	0	0	1	0	0
AZA SPA	Energy	0.2759	1	0	1	1	1	0	1	1	1	1	1	1	0
ACEA SPA	Energy	0.8966	1	0	1	0	1	0	1	1	1	1	1	1	0
ACQUEVENETE SPA	Utilities	0.7241	0	0	0	0	1	0	0	0	0	0	0	0	0
ACSM-AGAM SPA	Energy	0.0000	0	0	0	0	1	1	1	1	1	1	1	0	0
AIMAG SPA	Utilities	0.4828	0	0	0	0	1	0	0	0	0	0	0	1	0
ALIA SERVIZI AMBIENTALI SPA	Utilities	0.1897	0	0	0	1	1	1	1	1	1	1	1	0	0
ALPERIA SPA	Energy	0.3448	1	0	1	0	1	1	1	1	1	1	1	1	0
ATLANTIA SPA	Utilities	0.5517	1	0	1	0	1	0	0	0	0	1	1	1	1
CAP HOLDING SPA	Utilities	0.5517	0	0	0	0	1	0	1	1	1	1	1	1	0
DOLOMITI ENERGIA HOLDING SPA	Energy	0.5517	0	0	0	1	1	1	1	1	1	1	1	0	0
E.S.T.R.A. SPA	Energy	0.1724	1	0	0	0	1	1	1	1	1	1	1	1	0
EDISON SPA	Energy	0.4828	1	0	1	0	1	1	1	1	1	1	1	1	0
ENEL SPA	Energy	0.8103	1	0	1	0	1	1	1	1	1	1	1	1	1
ENI SPA	Energy	0.6379	0	0	0	1	1	1	1	1	1	1	1	1	0
ERG SPA	Energy	0.5345	1	0	1	1	1	0	1	1	1	1	1	1	1
HERA SPA (HOLDING ENERGIA RISORSE AMBIENTE)	Utilities	0.2931	1	0	0	1	1	1	1	1	1	1	1	1	1
IREN SPA	Utilities	0.9655	1	0	1	1	1	1	1	1	1	1	1	1	1
ITALGAS SPA	Energy	0.2931	1	0	1	1	1	0	1	1	1	1	1	1	0
SARAS SPA	Oil and gas	0.3793	0	0	0	0	1	0	0	0	0	0	0	1	0
SMART SOCIETÀ ACQUE METROPOLITANE DI TORINO SPA	Utilities	0.4138	0	0	0	0	1	0	1	1	1	1	1	0	1
SNAM SPA	Utilities	0.6724	1	0	0	1	1	1	1	1	1	1	1	1	1
TEA SPA	Utilities	0.3621	0	0	0	0	1	0	1	1	1	1	1	0	0
TERNA - RETE ELETTRICA NAZIONALE SPA	Utilities	0.5862	1	1	0	1	1	1	1	1	1	1	1	1	1
VERITAS SPA	Utilities	0.3103	0	0	0	0	1	0	0	0	0	0	0	0	0

A.2 Analysis' results

```
# Load dataset
data <- read.csv("/Users/andreagiampaolo/Desktop/R/Regr/DB_SDGsDisclosureVfinal.csv")

# Define independent and dependent variables
x <- data[,3:17]
y <- data[,2]

# Linear model
formula <- paste0(names(data)[2], " ~ ", paste(names(data)[3:17], collapse = " + "))
model <- lm(formula, data = data)

# Summarize model
summary_stats <- summary(model)
print(summary_stats)

##
## Call:
## lm(formula = formula, data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.34016 -0.12856 -0.00745  0.10264  0.49358
##
## Coefficients:
##                                     Estimate
## (Intercept)                       -6.365e-01
## Totale_Attivo                       1.268e-01
## Ricavi_vendite_e_prestazioni        -9.730e-02
## Indice_di_leva_.gearing....        -9.309e-04
## Redditività_del_totale_Attivo_.ROA..Netto... 1.051e-02
## Numero_dipendenti                   1.944e-06
## Listed                              5.208e-02
```

## Presenza_del_Comitato_di_Sostenibilita	1.400e-01
## Comitato_di_Sostenibilita_incluso_in_organ_i_endoconsigliari	4.970e-02
## Piano_di_Sostenibilita	9.365e-02
## Piano_di_sostenibilita_integrato_nel_piano_industriale	-3.985e-02
## Presenza_di_KPIs_e_benchmark_con_anni_pregressi	3.906e-01
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati	8.365e-02
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati	-2.537e-02
## SDGs_correlati_a_temi_materiali	-9.402e-02
## SDGs_correlati_a_futuri_obiettivi	-6.312e-04
##	Std. Error
t value	
## (Intercept)	5.592e-01
-1.138	
## Totale_Attivo	3.101e-02
4.091	
## Ricavi_vendite_e_prestazioni	2.550e-02
-3.815	
## Indice_di_leva_.gearing....	2.576e-04
-3.614	
## Redditività_del_totale_Attivo_.ROA..Netto...	6.871e-03
1.529	
## Numero_dipendenti	2.146e-06
0.906	
## Listed	7.960e-02
0.654	
## Presenza_del_Comitato_di_Sostenibilita	5.345e-02
2.618	
## Comitato_di_Sostenibilita_incluso_in_organ_i_endoconsigliari	4.969e-02
1.000	
## Piano_di_Sostenibilita	3.762e-02
2.489	
## Piano_di_sostenibilita_integrato_nel_piano_industriale	4.847e-02
-0.822	
## Presenza_di_KPIs_e_benchmark_con_anni_pregressi	1.506e-01
2.593	
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati	4.296e-02

```

1.947
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati      4.847e-02
-0.523
## SDGs_correlati_a_temi_materiali                          4.603e-02
-2.043
## SDGs_correlati_a_futuri_obiettivi                        4.696e-02
-0.013
##                                                         Pr(>|t|)
## (Intercept)                                              0.257465
## Totale_Attivo                                           8.14e-05 **
*
## Ricavi_vendite_e_prestazioni                             0.000223 **
*
## Indice_di_leva_.gearing._...                             0.000453 **
*
## Redditività_del_totale_Attivo_.ROA..Netto...            0.129115
## Numero_dipendenti                                       0.367087
## Listed                                                    0.514302
## Presenza_del_Comitato_di_Sostenibilita                  0.010059 *
## Comitato_di_Sostenibilita_incluso_in_organ_iendoconsigliari 0.319360
## Piano_di_Sostenibilita                                   0.014274 *
## Piano_di_sostenibilita_integrato_nel_piano_industriale   0.412732
## Presenza_di_KPIs_e_benchmark_con_anni_pregressi         0.010776 *
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati  0.054025 .
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati     0.601743
## SDGs_correlati_a_temi_materiali                          0.043434 *
## SDGs_correlati_a_futuri_obiettivi                       0.989301
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1839 on 112 degrees of freedom
## (1 observation deleted due to missingness)
## Multiple R-squared:  0.5047, Adjusted R-squared:  0.4384
## F-statistic: 7.609 on 15 and 112 DF,  p-value: 2.016e-11

```

```

# Multiple R, R squared, adjusted R squared, and standard error
multiple_r <- sqrt(summary_stats$r.squared)
adjusted_r_squared <- summary_stats$adj.r.squared
standard_error <- summary_stats$sigma

cat("Multiple R:", multiple_r, "\n")

## Multiple R: 0.7104372

cat("R squared:", summary_stats$r.squared, "\n")

## R squared: 0.5047209

cat("Adjusted R squared:", adjusted_r_squared, "\n")

## Adjusted R squared: 0.4383889

cat("Standard Error:", standard_error, "\n")

## Standard Error: 0.1838865

# DF, SS, MS, F, and significance F for regression, residual, and total
anova_model <- anova(model)
print(anova_model)

## Analysis of Variance Table
##
## Response: Disclosure_Index
##
##                                     Df Sum Sq
Mean Sq
## Totale Attivo                       1 2.2353
2.23531
## Ricavi vendite e prestazioni        1 0.0853
0.08531
## Indice di leva .gearing. ....      1 0.2824
0.28241
## Redditività del totale Attivo .ROA..Netto... 1 0.0587
0.05875
## Numero dipendenti                  1 0.0002
0.00018

```

## Listed	1 0.0472
0.04722	
## Presenza_del_Comitato_di_Sostenibilita	1 0.4875
0.48753	
## Comitato_di_Sostenibilita_incluso_in_organendoconsigliari	1 0.0267
0.02667	
## Piano_di_Sostenibilita	1 0.1455
0.14545	
## Piano_di_sostenibilita_integrato_nel_piano_industriale	1 0.0114
0.01143	
## Presenza_di_KPIs_e_benchmark_con_anni_pregressi	1 0.1691
0.16914	
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati	1 0.1238
0.12383	
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati	1 0.0386
0.03858	
## SDGs_correlati_a_temi_materiali	1 0.1476
0.14757	
## SDGs_correlati_a_futuri_obiettivi	1 0.0000
0.00001	
## Residuals	112 3.7872
0.03381	
##	F value
Pr(>F)	
## Totale_Attivo	66.1057 6.3
62e-13	
## Ricavi_vendite_e_prestazioni	2.5229 0.1
150221	
## Indice_di_leva_.gearing._...	8.3519 0.0
046276	
## Redditività_del_totale_Attivo_.ROA..Netto...	1.7374 0.1
901571	
## Numero_dipendenti	0.0054 0.9
415244	
## Listed	1.3964 0.2
398299	

## Presenza_del_Comitato_di_Sostenibilita	14.4179	0.0
002382		
## Comitato_di_Sostenibilita_incluso_in_organendoconsigliari	0.7888	0.3
763652		
## Piano_di_Sostenibilita	4.3015	0.0
403710		
## Piano_di_sostenibilita_integrato_nel_piano_industriale	0.3379	0.5
621992		
## Presenza_di_KPIs_e_benchmark_con_anni_pregressi	5.0019	0.0
273006		
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati	3.6622	0.0
582142		
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati	1.1410	0.2
877352		
## SDGs_correlati_a_temi_materiali	4.3640	0.0
389715		
## SDGs_correlati_a_futuri_obiettivi	0.0002	0.9
893006		
## Residuals		
##		
## Totale_Attivo	***	
## Ricavi_vendite_e_prestazioni		
## Indice_di_leva_.gearing....	**	
## Redditività_del_totale_Attivo_.ROA..Netto...		
## Numero_dipendenti		
## Listed		
## Presenza_del_Comitato_di_Sostenibilita	***	
## Comitato_di_Sostenibilita_incluso_in_organendoconsigliari		
## Piano_di_Sostenibilita	*	
## Piano_di_sostenibilita_integrato_nel_piano_industriale		
## Presenza_di_KPIs_e_benchmark_con_anni_pregressi	*	
## Obiettivi_Target_ESG_breve_termine_1_2_anni_riportati	.	
## Obiettivi_Target_ESG_lungo_termine_3_anni_riportati		
## SDGs_correlati_a_temi_materiali	*	
## SDGs_correlati_a_futuri_obiettivi		
## Residuals		

```
## ---  
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Scatter plot of Totale_Ativo vs Disclosure_Index

